

The Planet and Denmark

Danish Climate Policy in a Global Context

Published on the occasion of
the Danish Council on Climate
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The Planet and Denmark

Danish climate policy in a global context

By the Danish Council on Climate Change, Peter Møllgaard, Bente Halkier, Bo Jøllemark Thorsen, Brita Bye, Per Heiselberg, Marie Trydeman Knudsen, Marie Münster, Marit-Solveig Seidenkrantz and Christina D. Tværnø.

A risky world

The world as we know it faces several pressing challenges that are connected and which need to be managed responsibly. The climate crisis is just one of them. In addition to the climate crisis, we are also facing a biodiversity crisis, a security crisis rooted in geopolitical challenges, and a European innovation crisis – often referred to as a *technology gap*. Finally, there is also a crisis of misinformation and disinformation that undermines our ability to make informed decisions. Together these crises constitute a complex reality which, in a recent report from Navigating 360, is referred to as *the wicked circle of risks*.

This anthology, *The Planet and Denmark: Danish Climate Policy in a Global Context*, explores how these agendas influence and shape climate policy in the world, the EU and Denmark.

The anthology begins by addressing the planetary frameworks that support our climate policy, including the concept of *planetary boundaries*, and the key reports from the IPCC and UNEP that are to guide our actions. Next, it looks at the EU's role in promoting climate policies that are not only effective in tackling climate change, but which can also contribute to a sustainable future for all EU citizens. How can EU strategies serve as a model for cooperation and innovation and what challenges do we face in the EU?

The primary focus of the anthology is, however, Denmark's climate policy, viewed from the perspectives of various different stakeholders. How do the government, business, NGOs and citizens contribute to the shaping of a sustainable future for Denmark? What role do these actors play and how can we ensure that all voices are heard in the debate around climate policy?

Finally, the anthology also reflects on the development and role of the Council in Denmark's climate policy over the past decade. From its creation until today, the Danish Council on Climate Change has had a significant influence on how Denmark relates to climate policy. How has this role evolved alongside the challenges that we face today?

We hope that this anthology will cast some light on the many facets of Danish climate policy and provide inspiration for the further development of climate policy both in Denmark and across the rest of the planet.

A planetary framework for climate policy

As we navigate the complex challenges that the climate crisis presents us with, it has become increasingly clear that we cannot separate climate change from the other impacts that humanity has on the planet. As Katherine Richardson points out in her chapter, "Climate Advice in 2025 Requires Planetary Perspectives," the expectations we place on climate advice have changed considerably over the course of the last ten years. There is a growing recognition that the Earth functions as a complex system, and so the many interactions between its various components – from the atmosphere to the oceans and biodiversity – must be considered when we develop climate policies. This more systemic approach challenges the traditionally sector-based approach to policy development and calls for an integrated management of our climate impacts.

Understanding these planetary boundaries is, according to Richardson, essential for formulating effective climate policies. The way we address climate challenges must therefore integrate knowledge about how human activities affect the entire planetary ecosystem. This recognition is not just academic – it has practical implications for how we design and implement climate policy. This requires innovative tools and methods to capture the complex interactions in the Earth system.

As Anne Olhoff describes in her chapter, "Where Are We 10 Years After the Paris Agreement? And What Will Happen in the Next 10 Years?," we have seen continuous progress within global climate policy. Even though a significant gap remains between current progress and the targets set in the Paris Agreement, we have seen an improvement in temperature forecasts in recent years. More than 82 percent of global greenhouse gas emissions are now covered by net zero targets. It is clear that there exists a considerable degree of unused potential to reduce emissions in the coming years, but in order to fulfil that potential, there is a need for an unpre-

cedented level of political will and more investments in green technology and in the green transition. As Olhoff concludes, we cannot afford to ignore the urgent need for action if we are to reach the long-term goals we have set for ourselves.

But what about our progress? In her chapter, “Sisyphus and the Climate Struggle,” Connie Hedegaard describes some of the advances and setbacks we have faced over the years, and she considers what we can learn from them. She argues that we must find ways to accelerate climate action even if decision makers face many immediate challenges. It is essential that we cultivate an understanding of the relationship between geostrategic independence and the necessary transformation of our energy systems. This also requires us to take a critical look at how we regulate and manage our climate policy. A simplification of our regulatory tools, such as the Omnibus package proposed by the European Commission, could form a part of the solution, and we must be adept in linking the green transition with digital possibilities.

Although we have seen both progress and setbacks, there is reason to be optimistic. Hedegaard emphasises that, in the coming period, we will need to highlight both the opportunities and challenges of the transition process to a wider audience, so that we can engage society in the necessary transformation towards a sustainable, climate-neutral society. This shows us that climate policy, despite its challenges, is not a hopeless Sisyphean task, but rather a journey in which we are, on balance, moving forward towards net zero.

Together, Richardson, Olhoff and Hedegaard’s contributions show that climate policy requires integration across disciplines and policy areas as well as a strong degree of coordination between different actors. If the climate policies of individual countries and regions are to have a global impact, there is a need for cooperation across borders. This naturally leads us to the role of the European Union in climate policy. Can EU climate policy serve as an engine for innovation and transformation, allowing us to exchange knowledge and resources that can accelerate the necessary transition towards a more sustainable future?

The EU’s role in climate policy

Europe has a crucial role to play in global climate policy. This is a role that is especially important in light of pressing climate changes. In her chapter, “From Combatting Climate Change to Paving a Prosperous European Future: A Just and Necessary Energy Transition,” Ditte Juul Jørgensen highlights the fact that the

transition to clean energy is not just necessary in order to address climate change, but also to ensure Europe's security and competitiveness. The current geopolitical situation – including Russia's attack on Ukraine and its use of energy as a weapon – has highlighted the need to reduce our dependence on imported fossil fuels. The REPowerEU plan, launched in response to this crisis, contains a series of measures for energy savings, decarbonisation, and the diversification of energy sources.

No nation can combat climate change alone – climate knows no borders. For this reason, today global and European cooperation are more important than ever. The EU's goal of becoming the first climate neutral continent by 2050 is not only an ambition for Europe's resilience, but it is also a step towards leading global decarbonisation. Juul Jørgensen stresses that many Europeans are losing confidence that governments can deliver a green transition that is fair and effective. In order to restore confidence in the belief that our democracies can deliver on climate policy, there is a need for such policy to be fair, capable of ensuring economic growth and providing both good jobs and security of energy supply, and it must be affordable.

Rick Smith's chapter, "The Value of International Cooperation: The Canadian Climate Institute and the International Climate Councils Network," emphasises the importance of international cooperation around climate policy. He points out that good climate governance systems are closely linked to better climate policy results, such as the reduction of emissions and the development of cleaner economies. This internationally recognised relationship provides a solid foundation for the strengthening of cooperation between countries and for learning from each other's experiences.

Building upon this, in her chapter entitled "The Role of National Climate Councils in European Climate Policy," Corinne Le Quéré examines how climate action is underway, but has not yet delivered the results needed at the pace required. She points out that national climate councils have proven to be invaluable in translating international climate commitments into national action plans. These councils provide independent, evidence-based advice that helps governments to identify both ambitious and feasible climate policies. According to Le Quéré, the role of Climate Councils will become even more central in an era of fragmented global policy. They will contribute to the depoliticisation of climate action and create a clear and simple narrative of climate policy as a desirable and necessary path forward.

In their chapter entitled "Climate Governance Procedures: Lessons learned from Denmark," Elin Lerum Boasson and Mette Undheim address how effective climate governance procedures can lead to greater levels of political consensus and

better results in climate policy. They argue that involving more actors in climate policy can reduce conflicts and promote the development of sustainable solutions. Boasson and Sandstad conclude that Denmark's comprehensive climate policy and governance structure can serve as a model for other countries but, at the same time, they also note that more research is needed in order to understand how these governance systems affect emissions reduction strategies.

In her chapter entitled “Climate Policy in a European Perspective,” Jette Bredahl Jacobsen adds that there are significant differences between EU climate policy and national climate policies, such as the climate policy in Denmark. For example, the EU does not collect taxes, and this tightens the demands on how climate policies are designed. Bredahl Jacobsen emphasises that the holistic approach taken in Denmark – which looks across sectors and also considers the welfare economy – can serve as a model for the EU but that, at the same time, there is a need for common policies that can make it cheaper for the EU as a whole to achieve its climate goals.

In summary, these various chapters show how EU climate policy is characterised by both challenges and opportunities. The complex structure of EU decision-making requires a balanced approach that both respects national differences and promotes common goals. Denmark's climate policy can serve as an inspiring example of how to integrate social, economic and environmental considerations into a holistic climate policy. At the same time, the EU must continue to develop and implement common policies that can support the efforts of Member States to reduce emissions and promote sustainable development.

From the experiences gained in the EU and the innovative approaches taken by national climate councils, we can see how cross-border cooperation and dialogue are key to achieving our climate goals. This sets the stage for the next section, in which we dive into Danish climate policy from the perspectives of different stakeholders. How do the government, businesses, organisations and citizens engage in the transition towards a sustainable future? What challenges and opportunities do they face in their efforts to contribute to Denmark's climate policy?

Perspectives on Denmark's climate policy

A number of different actors play a central role in Denmark's climate policy. These include the Danish Parliament, the government, businesses, organisations, citizens, and researchers at Denmark's universities. These actors contribute different

perspectives and experiences to overall climate policy, and this is crucial to creating an integrative approach to the challenges of climate change.

The Climate Dialogue Forum, established pursuant to the 2020 Climate Act, consists of 40 organisations and assists the Danish Council on Climate Change in various different ways – for example, by discussing the Council’s recommendations in its annual *Status Outlook* report. In order to ensure the independence of the Danish Council on Climate Change, the Climate Dialogue Forum does not have the authority to issue instructions to the Council, but rather it can publicly share its views, concerns and proposals – and this is important for ensuring that all voices are heard in the political process. The Forum has also had the opportunity to assess and inform the work of the Council via several reputation analyses. The latest analysis was published in 2024 and is available on the Council’s website.

It has not been possible to invite all members of the Climate Dialogue Forum to contribute to this anthology, but efforts have been made to give different stakeholder groups a voice. This includes young citizens through the Danish Youth Climate Council, businesses through the Confederation of Danish Industry, the Danish Agriculture & Food Council, and Green Power Denmark, as well as NGOs such as the 92 Group and the think tank CONCITO.

The Danish Youth Climate Council has contributed a chapter entitled “Ten Years of the Climate Act – But How Long Before We Can Believe in a Safe Future?” In this chapter, they demand system changes and real power for young people to influence decision-making processes. They are frustrated that Denmark has not made sufficient progress towards climate justice and they warn that if democracy cannot deliver the green transition, it risks losing an entire generation.

In her chapter entitled “The Role of Business in Danish Climate Policy,” Anne Højer Simonsen illustrates how Danish companies have played a key role in the development of climate solutions. She reflects on how the business sector inspires, innovates and implements climate solutions in collaboration with the political system. Højer Simonsen points out that it is crucial that the experiences from the green transition be translated into action, as it is now crunch time for the business sector and for climate policy – both nationally and internationally.

In “Agriculture and Food Production: The Green Transition Must Be Considered Globally,” Morten Boje Hviid addresses the challenges of biological emissions from agriculture. He argues that Denmark should focus on global cooperation and action rather than pursuing ambitious reduction targets on its own. Hviid empha-

sises that agriculture has the potential to become a key player in the global climate transition, and this will require the Council's recommendations to pursue a global transition rather than a narrow, national approach.

Conversely, in their chapter "Consumption-Based Climate Targets?" Mogens Fosgerau and Frikk Nesje argue that Denmark should focus on territorial emissions rather than consumption-based targets. They argue that a frontrunner country should support the Paris Agreement, which coordinates the global climate effort. A central principle of the Paris Agreement is that responsibility for emissions follows territorial accounting: that each country is responsible for the emissions occurring within its territory. Therefore, Denmark's climate efforts should focus on our territorial emissions, not on consumption. For the same reason, Danish climate policy should focus on supporting efforts within the EU.

In the chapter "Ten Years After COP21 in Paris: The Green Transition Gains Momentum," Kristian Jensen describes how Danish electricity has become greener, with carbon emissions being halved between 2015 and now. Jensen points out that Denmark must now focus on refining and further developing its energy transition, especially with regard to renewable energy sources such as wind and solar.

In "Together for the Climate – Knowledge and Cooperation in the Green Transition," Christian Ibsen discusses the political willingness to act that has historically existed both in Denmark and internationally. He points out that climate, environment and nature have been among the top priorities of voters for many years, and this has led to a climate policy that enjoys broad support. Ibsen emphasises the importance of cooperation and support from all actors in society to ensure that progress is made in climate policy.

In "Civil Society, the Climate Act and the Council on Climate Change – A Crucial Collaboration for Denmark's Climate Transition," Troels Dam Christensen highlights the necessity of an active civil society that can push for political action. He describes how civil society, through its role as a critical actor, has helped shape the current Climate Act, and he emphasises that the Danish Council on Climate Change has played a significant role in securing Denmark's climate transition. Christensen emphasises that the dynamics between civil society and policy-makers are essential to driving forward a rapid green transition.

In "Financing the Green Transition," Signe Krogstrup and Marcus Mølbak Ingholt address the importance of ensuring sufficient financing for green investments. They emphasise that, even though funding has increased, there is still a need for

more support than what can be obtained under market conditions as a result of numerous market failures. Krogstrup and Ingholt emphasise that CO₂ taxes and quotas are essential tools for increasing financing. Their focus on sustainable financing and a stable economic framework supports the guiding principle of the Climate Act which sets out that the Danish Council on Climate Change must also consider the financial aspects of climate policy in order to ensure that political measures are both economically sustainable and long-term.

The role and development of the Danish Council on Climate Change in its first ten years

The Danish Council on Climate Change was established in 2015, under the Danish Climate Act of 2014, as an independent advisory body with the aim of supporting the Danish government in its climate policy. The Council's mandate includes the monitoring of Denmark's progress in relation to national climate targets and international commitments, and the provision of advice on necessary measures.

In 2020, the Danish Council on Climate Change was further strengthened both legislatively and financially through the 2020 Climate Act and the 2020 Appropriation Act. These acts established 'guiding principles' for climate policy, which were designed to ensure that societal considerations would be involved in the decision-making process. Such considerations included, among others, cost-effectiveness, competitiveness, employment, social balance, cohesion, carbon leakage, the need for sound public finances, Denmark as a frontrunner, and the long-term green transition. This has provided the Danish Council on Climate Change with a solid foundation from which it can act as an objective, systematic and independent adviser.

Following on from these social considerations, Jørgen Grønnegård Christensen describes, in his chapter entitled "The Heavy Climate Burden of Politicians," how our elected representatives must navigate a complex reality in which many different considerations need to be weighed against one another. The Danish Council on Climate Change has played an important role in making sure that decisions have been made on a solid informational basis and that they support the democratic legitimacy of politicians. Grønnegård points out the constant balancing act between short-term and long-term goals, and highlights that the Danish Council on Climate Change has contributed towards ensuring that relevant data and information are taken into account in decision-making processes.

As Minister for Climate, Energy and Utilities, Dan Jørgensen negotiated the new Climate Act in 2019. In the chapter entitled “What Good Will It Do? – How a Small Country Can Make a Big Difference,” Dan Jørgensen describes how difficult the target of a 70 percent reduction seemed at the time. It was a task that was not made any easier by the fact that the Danish Council on Climate Change was mandated to review and criticise the government’s efforts. But the result of the ambitious goal has created a place in the world for Denmark as a frontrunner country. Denmark can therefore make a difference, not only through concrete reductions in CO₂, but especially by serving as a source of inspiration, developing solutions and influencing other countries.

Peter Birch Sørensen, the first Chairman of the Danish Council on Climate Change, highlights in his chapter, “The Early Years of the Climate Council – From the Chair’s Perspective,” how the Council’s recommendations have played a role in shaping Denmark’s climate policy. The Council’s early reports, including its recommendations for green taxes and the regulation of biomass consumption, have had a direct impact on how Denmark has adapted its climate policy to meet the established targets for the reduction of greenhouse gas emissions.

In his chapter entitled “The Danish Council on Climate Change in an Ecological Democracy – Thoughts from Environmental Sociology,” Anders Blok focuses on how the expert advice of the Danish Council on Climate Change is essential for promoting a sustainable transition. He stresses the need for the Danish Council on Climate Change to continue to focus on core issues that can promote sustainable development and he posits that the role of the Council should be strengthened and democratised to ensure that all voices are heard.

Denmark’s climate policy in the context of a global crisis

This anthology examines our climate policy in an era characterised by interconnected crises that constitute the so-called *wicked circle of risks*: the climate crisis, the innovation crisis, the security crisis, and the information crisis. Denmark’s climate policy and the Danish Council on Climate Change can play central roles in addressing these challenges. By combining ambitious national targets with the EU’s collective efforts, Denmark can contribute towards driving forward sustainable innovation, improving energy security and innovating climate policy. We have already seen this to be the case with the Tripartite Agreement (*Agreement on the Im-*

plementation of a Green Denmark). Through its independent and evidence-based advice, the Danish Council on Climate Change can provide credible information and advice at a time when misinformation threatens decision-making processes.

It is through greater cooperation and dialogue, both nationally and internationally, that we can navigate our way towards a sustainable and secure future. The Danish Council on Climate Change wishes to play a key role by ensuring that political discussions are based on solid facts and by promoting solutions that integrate economic, social and environmental considerations.

We would like to thank all of the contributors who have enriched this anthology with their valuable insights and helped to deepen our understanding of Denmark's climate policy within a global context. Thank you also to our readers for your interest and engagement in these vital questions. We hope that this anthology will inspire continued dialogue and action for a sustainable future – both for Denmark and the planet. We can all contribute to globally responsible climate action.

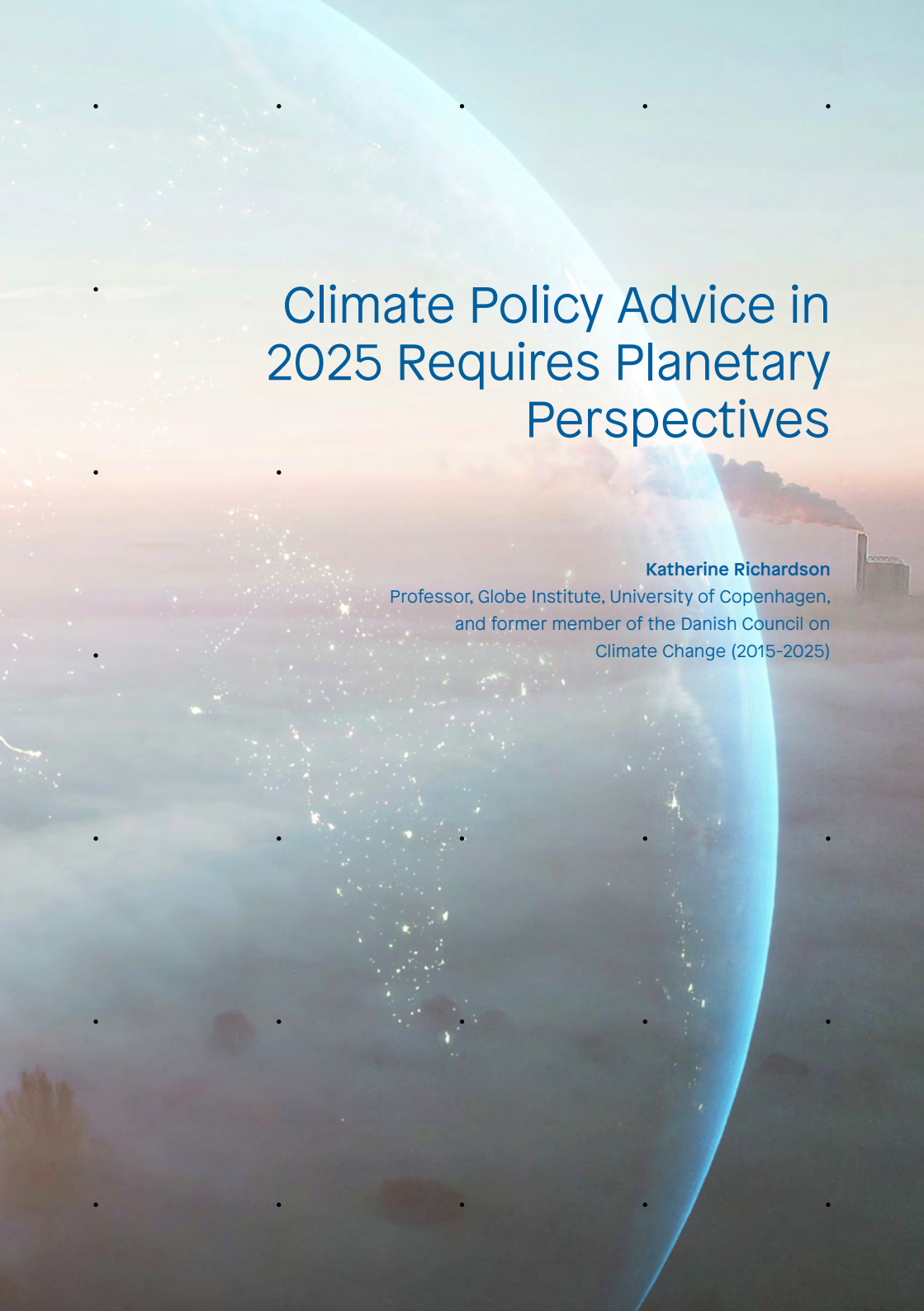
The Danish Council on Climate Change was established in 2015 and consists of:

- **Peter Møllgaard (Chair)**, President of and professor at Copenhagen Business School
- **Bente Halkier (Vice Chair)**, Professor of Sociology at the University of Copenhagen
- **Bo Jellesmark Thorsen (Vice Chair)**, Dean of the Faculty of Science and Professor of Applied Economics at the Department of Food and Resource Economics at the University of Copenhagen
- **Brita Bye**, Senior Researcher at Statistics Norway
- **Per Heiselberg**, Professor at the Department of the Built Environment at Aalborg University
- **Marie Trydeman Knudsen**, Professor at the Department of Agroecology at Aarhus University
- **Marie Münster**, Professor of Energy System Analysis at the Technical University of Denmark
- **Marit-Solveig Seidenkrantz**, Professor and Head of the Department of Geoscience at Aarhus University
- **Christina D. Tvarnø**, Professor of CBS Law at Copenhagen Business School



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Climate Policy Advice in 2025 Requires Planetary Perspectives

Katherine Richardson

Professor, Globe Institute, University of Copenhagen,
and former member of the Danish Council on
Climate Change (2015–2025)

The expectations and therefore also the requirements placed on climate policy advice have changed over the ten-year lifetime of the Danish Council on Climate Change, as there has been a growing recognition that the climate challenge cannot be addressed in isolation from the other ways in which humans impact the global environment. Both researchers and the general public are increasingly aware that the Earth behaves in the manner of a complex system. The interactions between the various components of the Earth system and human influences on that system must therefore be considered in climate policy advice. This means that contemporary climate policy advice cannot be limited to human influence on the climate alone. This more 'systemic' approach to managing society's climate impacts challenges the traditional model of policymaking and legislation. However, tools are being developed to support the growing demands placed on climate policy advisory work.

Demands on climate consultancy have changed over time

In 2024, the Danish Council on Climate Change issued a report on future land use in Denmark¹, and in its *Status Outlook 2025*,² the Council argued in favour of adding biodiversity and environmental considerations to the framework conditions for national climate action in a future revision of the Climate Act. Both of these things would have been unthinkable when the Council was established in 2014 and when the framework conditions ('Guiding Principles') for climate action, set out in the Climate Act, focused only on socio-economic conditions. Just a decade after the Council's establishment, however, it now seems just as unthinkable to consider man-made climate change without concomitantly addressing other environmental challenges.

For more than 2000 years, from the time of Aristotle until the mid-19th century, people considered themselves to be above nature. During all of that time, it was believed that nature existed on Earth for the sole purpose of meeting human needs. Charles Darwin challenged that mindset in 1859 when he published *On the Origin of Species*, in which he put forward the idea that we humans – like all other organisms – are a product of evolution. We are not above nature – we are a part of nature. We did not evolve from monkeys, but rather we share a common ancestor with them. Darwin's ideas shook society, and it took decades for the theory of evolution to become widely accepted. Today, few people question the idea that we belong to a species that has evolved in the same way as all other organisms.

Pictures from space

Societal thinking is currently undergoing a similarly prolonged shift in our understanding of our relationship with the world around us as the shift that took place when we realised we have evolved in the same way as all other organisms. The current shift in thinking probably started when the Apollo astronauts took pictures of the Earth from space in the late 1960s. David Attenborough, who at the time worked for the BBC, describes the moment when the world's inhabitants first had the opportunity to look at their home from a distance³:

"On the 23rd of December, the global viewership had grown to an estimated one billion people – by far the biggest audience in history. Borman began with a proud announcement: "Hello, Houston; this is Apollo 8. We have the television camera

pointed directly at the Earth now" Yet, even though the Earth was slipping and sliding across the television screen, the fact was that a quarter of humankind was watching itself. You hardly dared blink. That was the Earth that held the whole of humanity - apart from the three men in the spacecraft who were taking the picture. With that one image, at Christmas in 1968, television enabled humankind to understand something that no one before had been able to visualise in such a vivid way – perhaps the most important truth of our times – that our planet is small, isolated and vulnerable."

Twenty years later, the Brundtland Report⁴ compared the influence of those images on social thought with that of Copernicus' discovery:

"In the middle of the 20th century, we saw our planet from space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the Earth is not the centre of the universe. From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils. Humanity's inability to fit its activities into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognized - and managed."

As the authors of the Brundtland report suggested, it is difficult, when looking at the images of the Earth from space, not to get the feeling that we are part of something greater than our socioeconomic system. One can say that we – like all other organisms – belong to an ecosystem, for in biology, an ecosystem is defined as a collection of organisms that are in contact with one another within a physical environment. Having a global economy means that, today, we are indirectly in contact with humans and other living organisms across the globe, and so the boundary of the ecosystem to which we belong can be regarded now as being the entire Earth.

That humans belong to a global ecosystem has not always been the case. In the past, when the population was much smaller, people lived in isolated groups with local economies. Then, humans were a part of many different smaller ecosystems. Within these isolated ecosystems, people were in immediate contact, through their interactions, with the rest of the ecosystem, and therefore they had no option but to relate to these interactions or impacts on their ecosystem. When contact with local resources gave rise to conditions that could threaten the further development of society, these societies established 'rules' for how the resources

should be used and protected – for example, where one should relieve oneself, how hunting should be conducted, and to what extent hunting would be allowed. Via these rules, people ‘managed’ their relationship with the local environment. This management was carried out with the purpose of ensuring the continued development of society. What the climate and biodiversity crises tell us today is that managing human interactions with the global environment has become a prerequisite for the continued welfare of society, and it is in this light that the action of the Danish Council on Climate Change must be seen.

Earth system science

At about the same time as the Brundtland Report was published, researchers developed methods to ‘read’ the climate history of the Earth. By analysing the relationship between different oxygen isotopes, researchers were able to reconstruct a temperature history of the Earth using Greenlandic, and later Antarctic, ice cores. The analysis of gas contained within the air bubbles of ice cores made it possible to map out the concentration of carbon dioxide and other greenhouse gases in the atmosphere at the time the air bubble was formed, and this could then be compared with the temperature at the time of its formation. In this way, scientists working towards the end of the 20th century could see that in the later history of the Earth – that is, since before our species emerged – there has been a linear relationship between the concentration of carbon dioxide in the atmosphere and the temperature of the Earth. The more carbon dioxide there is in the atmosphere, the warmer the air around the Earth and vice versa.

At that time, it was well known that the concentration of carbon dioxide in the atmosphere was increasing. The revelation that there was a close correlation between Earth’s temperature and the concentration of carbon dioxide in the atmosphere (as well as the discovery in the 1970s that human emissions of so-called CFC chemicals were breaking down the Earth’s ozone layer) spurred on the development of the relatively young scientific domain known as *Earth system science*⁵. The starting point for Earth system science is that the Earth behaves as a complex adaptive system, within which the interactions between physical, chemical, and biological processes, as well as human activities, determine the system’s overall state – i.e., the planet’s overall environmental condition.

Planetary boundaries

The Earth's climate is the result of its energy balance – i.e., how much heat energy it receives from the sun, how much of that heat is stored close to the surface of the Earth, how that heat moves around, and what it comes into contact with. All of the planets that receive heat from the sun have a climate, but what makes Earth unique within our solar system is that there is life. We don't know what life is, but we know what it does: It transforms and transports the Earth's elements, and it is this processing of the elements that releases the energy that in turn supports life. Since life originated about 3.5 billion years ago, the overall environmental conditions of the Earth have been shaped by the interaction between life and the climate (the Earth's energy balance).

The growing awareness of the importance of these interactions has led the Danish Council on Climate Change, and others, to realise that the climate and man-made climate change cannot be considered in isolation from other processes within the Earth system. At some point, probably around the middle of the 20th century, human activities became so extensive that they began to affect the natural interactions between life (biodiversity) and the climate, thereby risking changes to Earth's overall environmental conditions. Everything associated with modern civilizations has emerged over the past approximately 12,000 years, during which time the Earth's overall environmental conditions have been very stable. In fact, the average air temperature, until recently, varied by only ± 0.5 degrees throughout the entire period. We therefore know with certainty that our civilizations can thrive under the global environmental conditions that have prevailed here for about the last approximately 12,000 years. However, we do not know whether they will be able to do so under substantially altered global environmental conditions. It is therefore in society's interest to limit humanity's impact on the Earth system to a level at which there is no significant risk of this influence causing major global environmental changes.

With a view to developing a governance framework for limiting human impact on the global environment, an international group of researchers has identified nine processes within the Earth system that are both critical to the establishment of the Earth's overall environmental conditions and which are also significantly influenced by human activities^{6,7,8}. Using the available Earth system science analyses and data, the group has proposed limits – so-called *Planetary Boundaries* – for the extent to which we should allow human activity to impact upon these processes. If human influence remains within these boundaries – i.e., within a so-called safe operating space – it is considered that there will be only a minimal risk that human

influence will lead to substantial changes in global environmental conditions. The more we exceed the boundaries, the greater the risk that the impact of this may cause a change in global environmental conditions.

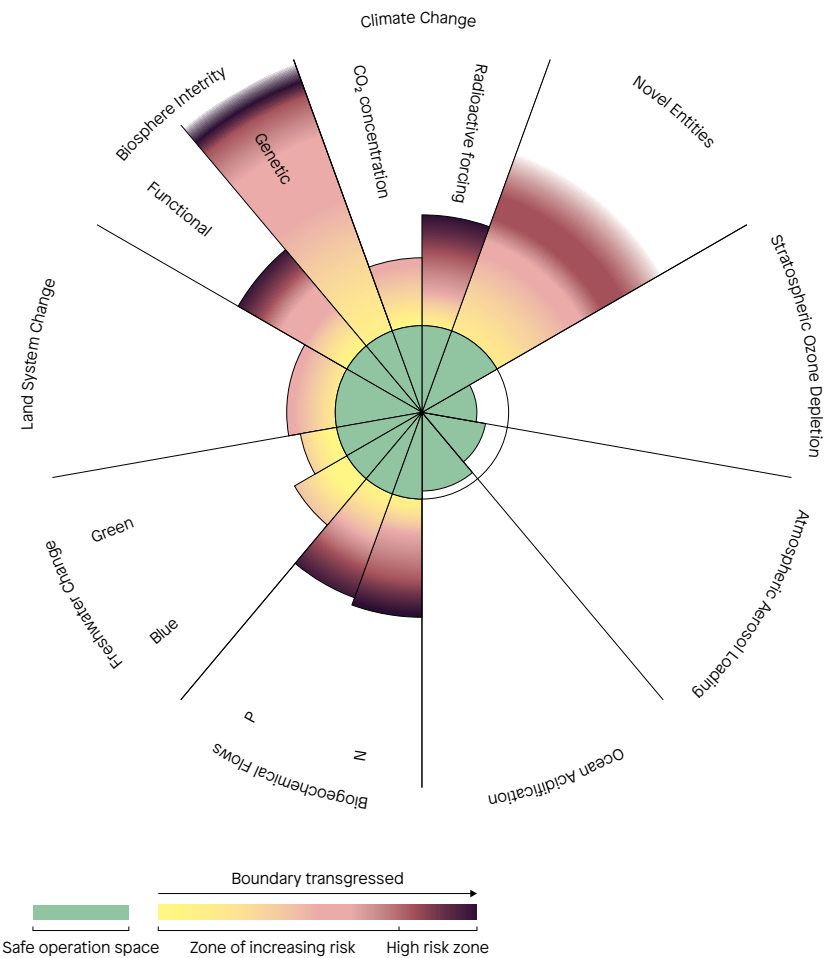


Figure 1 Six of the nine planetary boundaries have been transgressed

Note 1: The degree of human influence of the nine planetary boundaries. The proposed boundaries are at the edge of the green area in the centre.

Sources: Richardson, Katherine, et al., 2023. Earth Beyond Six of Nine Planetary Boundaries Science Advances. 9.⁸

Today, researchers believe that we are on the wrong side of the planetary boundary for six of the nine highlighted processes (Figure 1). Exceeding a planetary boundary, however, does not mean an inevitable environmental disaster. The researchers have calculated that the planetary boundary for human influence on the Earth's ozone layer was either transgressed or very close to being transgressed in the 1990s. Today, thanks to the adoption of international political agreements, human impact on the ozone layer is once more back within the safe operating space. Exceeding a planetary boundary thus means there is an increased risk that the resulting impact on the global environment could lead to significantly altered global environmental conditions. Science can only describe and attempt to quantify the risk of human influence destabilising the Earth's overall environmental conditions. It is up to society to decide how much risk it is willing to take when it comes to changing the living conditions on Earth.

It is unknown whether society will respect the placement of the planetary boundaries proposed by scientists, but common to all nine processes for which scientists have identified boundaries is that we have an intuitive understanding that there *must* be a limit to how much human impact each process can endure before it begins to compromise our living conditions. It is not difficult for most people to understand, for example, that there is a limit to how much climate change our society will be able to adapt to, how much pollution (the introduction of novel entities to the environment) we will be able to tolerate, and so on. We can debate whether or not there is enough data available today to be confident about where the planetary boundaries should be set, but what we do know is that there must be a limit to our influences on the Earth system and its components/processes. Seen in that light, one of the key messages from the work that has been undertaken to map out the planetary boundaries is that, with the exception of our impact on the ozone layer, increasingly greater levels of pressure are being placed on all of the identified processes. Thus, there remains a long way to go before humankind will have brought its impact on the global environment under control.

A systemic approach to climate policy

In complex systems, interactions between system components and processes are crucial to the overall state of the system. Within the Earth system, the interaction between life (the biosphere or biodiversity) and the climate (energy balance) plays an especially important role in establishing the overall state of the environment. The latest article⁸ in the 'series' on planetary boundaries presented an analysis which shows that it will be difficult, maybe even impossible, to meet the goals

of the UN Paris Agreement, which are aimed at limiting anthropogenic climate change, unless global deforestation is stopped.

The recognition that the Earth behaves as a complex system, with all of its interactions and human influence, means that contemporary climate advice cannot limit itself to human influence on the climate alone. The high demand for biomass in both Denmark and the rest of the world – as a replacement for fossil fuels for energy and for other purposes – has an obvious link to ongoing global deforestation. Since the degree of deforestation has a feedback effect on climate development, climate policy advice not only needs to address the use of biomass as a substitute for fossil fuels, but also the global environmental consequences of using biomass. The use of biomass for energy purposes thus appears less attractive as a response to human-induced climate change when viewed from a systemic perspective than when it is considered in isolation, and it is far from the only climate measure that loses its shine when viewed from a systemic perspective.

The capture and storage of carbon dioxide is often promoted as a method of reducing the volumes of carbon emissions that remain in the atmosphere. This approach is particularly interesting when carbon dioxide is generated by burning biomass because, in principle, it could enable 'negative emissions' – that is, the drawing of carbon dioxide out of the atmosphere. The problem, however, is that biomass is made from plant photosynthesis, and there is only a limited amount of photosynthesis that takes place on Earth each year. While the amount has been increasing over the last few decades as a result of the high levels of carbon dioxide in the atmosphere, it nonetheless remains limited. All living organisms on Earth that cannot do photosynthesis themselves, including humans, receive vital energy from the products that plants make through photosynthesis. Burning biomass for the purpose of storing carbon dioxide will therefore reduce the nutritional base for living organisms and play a role in further aggravating the biodiversity crisis.

Systemic considerations can also raise alarm bells when it comes to some of the geo-technical 'climate solutions' that are being proposed. In principle, for example, it may be possible to 'cool' the Earth by using mirrors or particles in the atmosphere to reflect the sun's heat away from the Earth. The Earth's temperature would likely drop, but the concentration of carbon dioxide in the atmosphere would remain high, causing ocean acidification with major consequences for biodiversity.

Earth system science and our growing understanding of the interactions between the Earth's components/processes thus call for a more 'systemic' approach to global environmental management, including the management of anthropogenic

climate change. A more systemic approach, however, will require societal changes, including changes in our legislative traditions and in how we organise administrative units. Denmark has a Climate Act and the country is currently working on a nature or biodiversity bill. These laws will probably be administered within various different ministries. It is thus unclear how the interactions between the climate and biodiversity should be managed in the future. In reality, there is a need to incorporate considerations relating to both climate and nature/biodiversity into all legislation in order to reduce the impact of human activities on the global environment. In this light, the establishment of the Ministry of the Green Transition constitutes an exciting development, as it brings together interactions between certain business activities and global/local environmental governance within the same administrative unit.

The conventional socio-economic approach to evaluating political initiatives is also challenged by a more systemic approach to governance. Taking the effects of all social activities on the Earth system into account in reality means taking into consideration what have so far been referred to as ‘externalities’. A system approach means it is not possible to disregard any interactions within the system. In addition, we are accustomed to economic analyses being based on so-called *cost-benefit* analyses, where the costs of an activity are balanced against the social benefits of said activity. Costs in the form of global environmental impacts are difficult to price, and thus are difficult to constrain within our conventional economic models.

The development of systemic climate policy advice and legislation thus represents a major challenge, but the move from sector to system thinking currently underway in society dictates that both advisory work and legislation must move in that direction. For thousands of years – from Aristotle’s time up to quite recently – societal thinking has been characterised by the belief that the Earth and its resources had no value until they were used by humans, and that all resources were on Earth solely for the pleasure of humans. Those pictures of the Earth from space helped to change that understanding. Advances in Earth system science have pushed us towards a growing societal recognition of the fact that the resources and environmental conditions that support the development of human societies on the Earth are limited. Just as our ancestors realised that managing local environmental resources was a prerequisite for continued societal development, we can now see that managing our relationship with the global environment is also a prerequisite for the continued development and wellbeing of society. The progress made in recent years in our scientific and societal understanding of the Earth as a system – an *ecosystem* to which our activities can potentially cause drastic changes – means that contemporary climate policy advice has to contend with far more than just our direct impact on the climate.

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2



Where Are We 10 Years After the Paris Agreement? And What Will Happen in the Next 10 Years?

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This year marks ten years since the signing of the Paris Agreement. At the same time, all countries must now put together their new climate plans with targets for greenhouse gases in ten years from now (for 2035). The world is far from being on track to meet the long-term temperature targets of the Paris Agreement, but progress has nonetheless been made in the last ten years. Temperature forecasts have fallen compared to ten years ago, more than 82 percent of global greenhouse gas emissions are covered by net zero emissions targets, and there is a huge level of unused potential to reduce emissions over the next decade. This will require an unprecedented level of political action and a shift in green investments globally, but do we have an alternative?

Ten years ahead and ten years back

It is not just the Danish Council on Climate Change and Denmark's first Climate Act that are celebrating their ten year anniversaries. This year also marks ten years since the Paris Agreement was concluded. At the same time, all countries must now complete their new climate plans this year, and these must include greenhouse gas reduction targets for 2035 – i.e. 10 years from now. In this article, we will therefore look at where we are after the first ten years of the Paris Agreement and consider what will need to happen in the next ten years if the world is to get closer to reaching the agreement's long-term goal of keeping the global temperature rise well below two degrees Celsius – while simultaneously striving to limit the temperature rise to 1.5 degrees Celsius compared to pre-industrial levels.

It is hardly a surprise that the world is far from being on track to meet the long-term temperature targets of the Paris Agreement. The latest Emissions Gap Report¹ states that, overall, the upcoming national climate plans will need to reduce global greenhouse gas emissions by 37% over the next 10 years from 2019 levels if the world is to get back on track and succeed in limiting global warming to below two degrees. In order for the target of 1.5 degrees to be possible, emissions in 2035 must be 57% below 2019 levels.

Nevertheless, progress has been made in a number of areas over the past ten years. In this article, we will focus on the following three key areas, for which we also outline guiding benchmarks for the coming decade:

- Global warming projections have fallen over the last ten years
- Since 2015, many countries have set net zero emissions targets
- The development of renewable energy and other technologies continues to exceed predictions

This article is primarily based on the Emissions Gap Reports that have been published annually by the UN Environment Programme (UNEP) since 2010. The reports are published ahead of the annual climate negotiations under the UN Framework Convention on Climate Change – the so-called COP meetings – as an independent scientific contribution to these negotiations. They provide an annual update on the emissions gap – that is to say, the difference between the global greenhouse gas emissions projected under national climate targets and the level that the science tells us is in line with the long-term temperature goals of the Paris Agreement.

In addition, the reports also place focus on the development and emission targets of the G20 countries, as this group accounts for about 77% of global greenhouse gas emissions, and they also look at how the world can accelerate both climate ambitions and actions to close the emission gap.

What is the thermometer showing?

Projections of average global warming over the current century are based on different scenarios and assumptions. Back in 2015, the Emissions Gap Report estimated that the average global temperature rise over the course of the 21st century could reach around four degrees Celsius, with a minimum probability of 66%, if climate action linked to the policies in place at the time were to continue unchanged.² If, on the other hand, it was assumed that all countries fully delivered on the climate targets they had just committed to under the Paris Agreement – and maintained similar levels of effort thereafter – the projected temperature increase would instead land somewhere between 3 and 3.5 degrees.

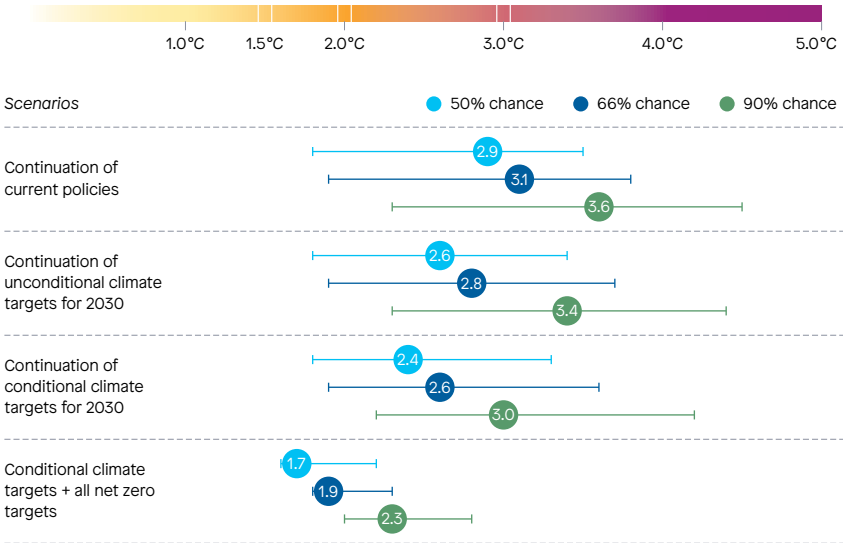
Since then, there have been a number of steps forward – both in terms of policies and climate ambitions – and projections now show that temperatures are not expected to rise quite as much as earlier forecasts had indicated. The latest Emissions Gap Report estimates that the continuation of climate action associated with current policies will lead to a maximum warming in the 21st century of 3.1 degrees Celsius – which is to say, policy projections are now almost a degree lower than they were 10 years ago. If all countries fully implement their current climate targets and then maintain a similar effort thereafter, it is estimated that the maximum average temperature rise over the 21st century will be between 2.6 and 2.8 degrees Celsius – and this too represents a significant decrease compared to estimates 10 years ago.

The range between 2.6 and 2.8 degrees depends on whether countries only fulfill the climate targets they have set unconditionally, or whether they also deliver on those targets that are conditional – such as those requiring financial and technical support.³ Figure 1 shows maximum temperatures over this century relative to pre-industrial levels for the four scenarios assessed in the Emissions Gap Reports. The figure shows that there are significant uncertainties associated with temperature projections, and that the maximum temperatures vary depending on the probability assigned – which is to say, depending on how confident one wishes to be in a given temperature forecast.

Above all, Figure 1 shows how crucial it will be for us to accelerate the reduction of global greenhouse gas emissions in this decade. If the world can move from a scenario that is based on the continuation of current policies to a scenario that is based on the fulfilment of the conditional 2030 climate targets, about half a degree of maximum global warming would be cut over this century. There is thus a need for us to accelerate national emission reductions while simultaneously supporting developing countries that have set conditions for their most stringent climate targets so that these can be met.

Accelerating emissions reductions in this decade will also make it possible to set more ambitious climate targets for 2035 in the new climate plans that countries must complete this year, and it will improve the chances of reaching net zero emissions later in this century (see next paragraph). Figure 1 shows that the most optimistic scenario – in which all of the most stringent climate targets currently proposed by the countries are fully met – will reduce global warming by a further half a degree over this century. This is also the only scenario included in the Emissions Gap Report in which the world still retains a chance of limiting global warming to 1.5 degrees – and in which it has a strong likelihood of keeping global warming below two degrees.

Maximum temperatures over the 21st century (°C) relative to pre-industrial levels



The probability that warming will exceed a specific temperature limit (%)

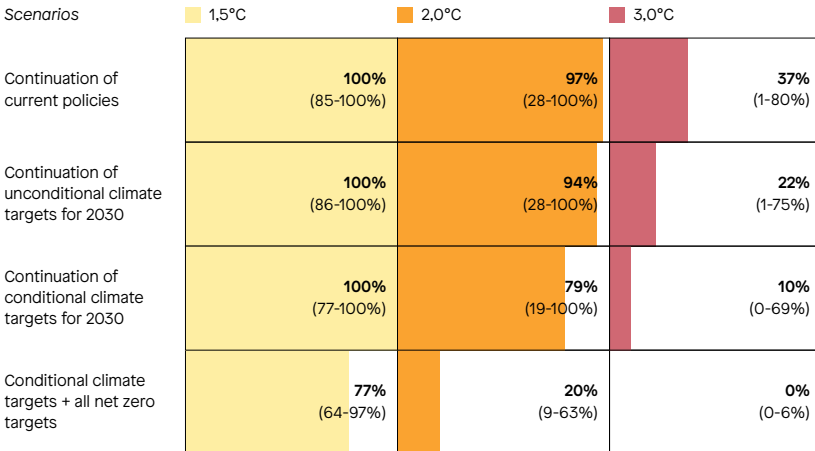


Figure 1 Global warming forecasts under scenarios assessed in the Emissions Gap Report

Sources: UNEP (2024)

How is it going with the net zero targets?

Net zero emissions have been mentioned above and they are a central concept in climate science. This term refers to a state in which the total volume of greenhouse gases released into the atmosphere over a given period of time is equal to the total volume removed from it. From a climate perspective, it is important to make a distinction here between carbon emissions and all greenhouse gas emissions. When net zero carbon emissions are achieved, global warming is stabilised at a given level, whereas achieving net zero emissions for all greenhouse gases is what is necessary in order for warming to peak and then begin to fall.^{4,5}

When the Paris Agreement was signed, no G20 member had set a goal of achieving net zero emissions later this century. Today, all G20 members have set such goals. In total, 108 countries, which together account for more than 82 percent of global greenhouse gas emissions, have set net zero emissions targets which have either been established by law, set out in a policy document (such as a climate plan under the Framework Convention on Climate Change) or announced at a high political level.

Ambition means nothing without action, and considerable progress will be needed over the next ten years if we are to boost confidence in the belief that net zero goals can be achieved. The important things here are to strengthen the legal status of the targets, to develop high-quality implementation plans, and to ensure that short-term plans for, and developments within, greenhouse gas emissions are consistent with net-zero targets. The G20 members have a special responsibility in this regard as they account for 77% of global greenhouse gas emissions. For those G20 members whose emissions have already peaked, it should be examined whether the short-term ambition can be raised to reduce the total volume of greenhouse gas emissions – and to slow the pace at which subsequent decarbonisation must occur in order to meet a net zero target. In the case of those G20 members whose emissions have not yet peaked, this should be brought forward by as much as possible, and concrete plans for subsequent rapid decarbonisation should be put in place simultaneously.

Is there potential to reduce the emission of greenhouse gases and has progress been made?

There is no doubt that the world is facing an unprecedented challenge if global warming is to be limited to a level consistent with the long-term temperature targets of the Paris Agreement. However, it is equally clear that there are numerous opportunities to accelerate climate action, and that it is possible to reduce greenhouse gas emissions in a way that also enables the achievement of urgent development goals.

One of the areas where development has been especially strong is in solar and wind power. Over the past 10 years, the costs of solar energy have dropped by 90%, onshore wind energy by 70%, and batteries by 90%.⁶ At the same time, investments in green energy have increased by 60% over the same period.⁷

At the same time, this also remains the area with the greatest potential for reducing greenhouse gas emissions. The latest Emissions Gap Report highlights that the technological and economic emissions reduction potential (up to \$200 per tonne of CO₂ equivalent) is theoretically sufficient to bring the world back on track to meet the long-term temperature targets of the Paris Agreement. It emphasises that if the reduction potential through solar, wind and forest-related initiatives is fully exploited over the next 10 years, this will be sufficient to put the world on the right track to keeping the temperature rise below two degrees. This involves established, low-cost technologies, and there likewise exists a range of opportunities within demand-side measures, energy efficiency, electrification, and changes in fuel type, particularly within the areas of transport, buildings and industry.

Fulfilling these reduction potentials – even partially – will require swift and extensive political action on a global scale. It will also be essential to do this in a way that meets development and climate adaptation goals, and it will demand a step change in investment levels as well as dedicated financial support for developing countries.

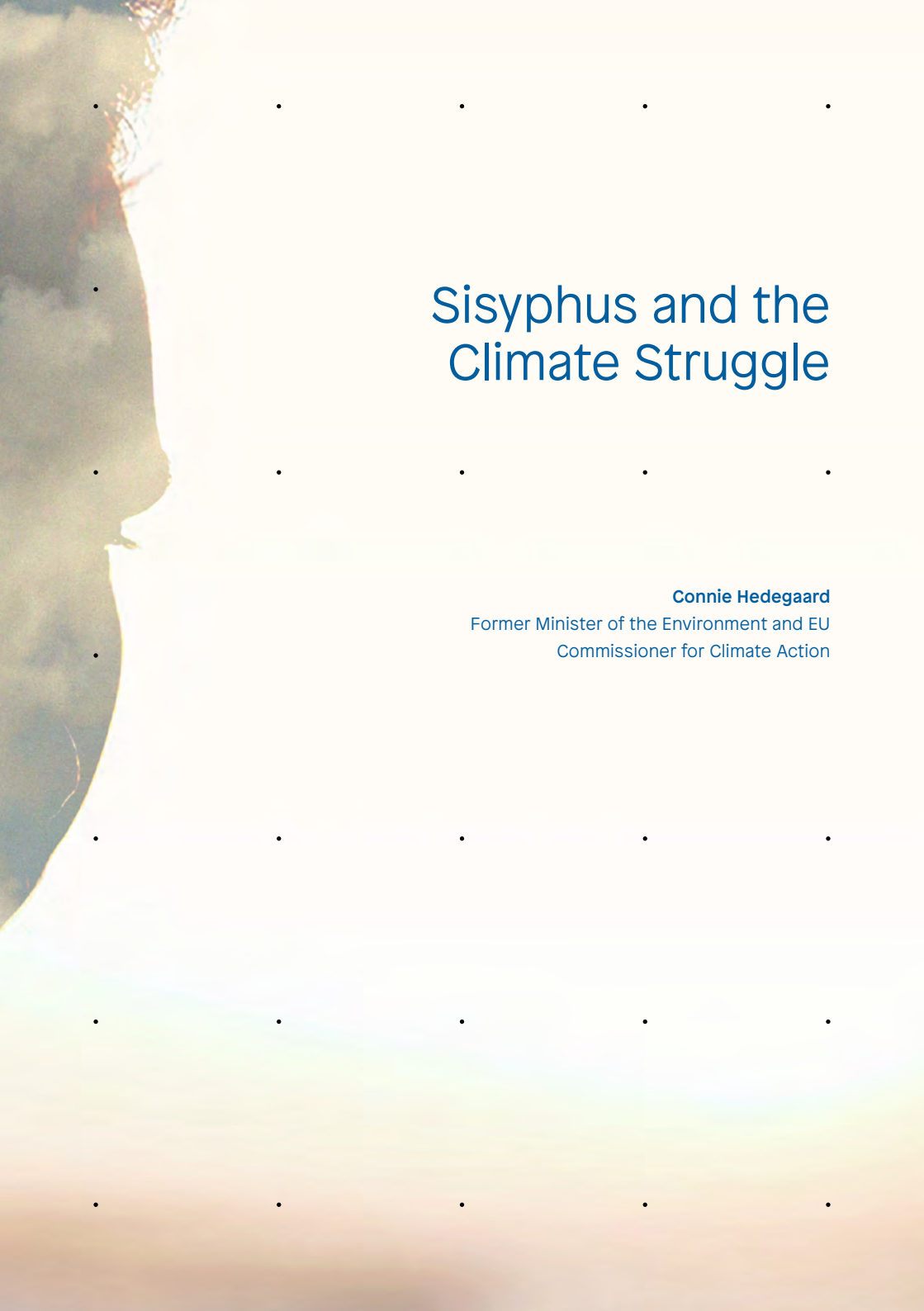
The opportunities are there, and we still have a chance to move closer to the goals of the Paris Agreement.

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3





Sisyphus and the Climate Struggle

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After many years of working on the issue of climate change, it is easy to start feeling like Sisyphus, but we must also remember to celebrate the victories. Progress is being made, but the pace and stride length must increase. Among other things, we need a new narrative in which the climate is considered together with security, and energy policy - and state aid - is Europeanised. In addition, there is a need for genuine green tax reform and much better dialogue, including on behavior and consumption.

Sisyphus never reached his goal...

When you have worked on climate issues for many years, you might identify with Sisyphus. According to the myth, Sisyphus was condemned to push a boulder up a mountain for eternity, and every time he was just about to reach the top, it rolled back down to the foot of the mountain, and Sisyphus had to start all over again.

I suspect everyone who has worked on climate change is familiar with this feeling. Every time we are juuust about to get the world on the right track, then, BAM, the boulder threatens to roll backwards again. When, before COP15 in Copenhagen in 2009, we had finally managed to mobilise the whole world to take climate change seriously – including, for the first time, around 100 heads of state and government – then, BAM, the financial crisis hit.

After that, it took years for countries to lick their wounds before, in 2015, the world finally managed to pull itself together and adopt the Paris Agreement and, in addition, the agreement on the 17 Sustainable Development Goals. Then, BAM! The following year, Trump was elected as the 45th President of the United States and announced on day one that he would withdraw the US from the Paris Agreement.

There, too, wounds had to be licked before we could move forward, but the good news was that, among others, China and India – who had previously refused to commit unless the US did so – announced in a joint statement that 'we stay'. The global framework and direction of climate action thus remained in place and, once again, states, cities and municipalities, as well as businesses, investors, and citizens, began to act and make concrete changes.

And then, BAM, came the pandemic. Everything shut down, inflation rose, and treasuries were depleted, because suddenly billions had to be spent on healthcare and compensation for the shuttered business sector. But we survived that, too. In the beginning of 2022, Denmark's prime minister sounded the all-clear on COVID-19 and announced that the focus should now be fully on the green transition. Then, three weeks later, BAM, Putin invaded Ukraine and suddenly war and security were at the top of the agenda.

This also meant that energy independence came into focus – understandably so in the EU, which suddenly had to take a hard line on its dependence on Russian gas, but also in the US, where President Biden's Inflation Reduction Act allocated hundreds of billions of dollars into the energy transition and green innovation. Finally, a US administration was giving serious priority to climate policy, and big

business began to take action, while investors prioritized greater investments in green and sustainable initiatives. But then, BAAAAAM, Trump came back again and is now trying to reverse everything.

So, yes, it's easy enough to get discouraged.

We will succeed – remember to celebrate the victories

Still, there is an important difference to the myth of Sisyphus. For while the boulder of Sisyphus rolled all the way down the mountain each time, forcing him to start over again, we – despite bumps in the road and now actual setbacks in the fight against climate change – have never had to start all over again. Seen over time, the boulder is clearly on its way up the mountain.

It's moving too slowly, yes, but the direction is clear. Renewable energy, electric cars, electrification, a circular economy mindset, material optimisation, new economic models ...

Maybe we should get better at celebrating the victories: I remember, for example, back in the 2000s, when you couldn't have a climate debate without climate skeptics like Bjørn Lomborg being invited into the studio: WAS there even a climate problem, or did it not exist? We are no longer discussing this.

Then, there were the many years when the Ministry of Finance clearly preferred to buy cheap quotas abroad – especially in Eastern Europe, where there was plenty of 'hot air' available at low prices (because the internationally agreed base year, 1990, coincided with the industrial collapse of Eastern Europe). This was much cheaper than doing something at home, the economists in the Chancellery claimed. That argument is rarely heard these days, as it is widely accepted – even among leading economists – that the green transition in Denmark and in the EU is the path to innovation, increased competitiveness, and greater geostrategic independence from powers we do not wish to be dependent on. There is also a growing recognition that it is costly, year after year, to rely solely on purchasing reductions from other countries, since everyone must work toward climate neutrality and net zero.

And more victories: not only did Denmark get its independent council on climate change, we also got a Climate Act with binding targets. The EU did the same. It

is difficult and cumbersome to get this kind of thing passed. But it is almost even more difficult to overturn it once it has been passed by broad consensus.

There was also a time when, after years of keeping a low profile on climate issues, the Social Democrats and the Liberals began competing over who could come up with the highest figure for the number of electric cars in 2030 and were criticised for their 'completely unrealistic' goals. Today, everything indicates that even the most ambitious goals will be surpassed.

In 2024, half of all new cars sold in Denmark were electric. In February 2025, that number was two out of three, and both vans and, gradually, trucks are starting to move in the same direction.

There are many more examples. For example, even the opponents of renewable energy must acknowledge that solar and wind are now cheaper than fossil alternatives, and that the future is electric. We got the EU's emissions trading system and thus a market-based approach as the foundation for European climate policy. Here in Denmark, we got the Green Tripartite Agreement.

But the length of our strides must increase

Yes, there are many examples to show that the fight against climate change is getting somewhere. That words and targets actually change things, and that a transition is possible. But the boulder is still far from the top, and so the length of our strides needs to increase accordingly.

But how do we do that? How do we accelerate climate action at a time when decision-makers in both government and executive offices are experiencing an overload of big here-and-now challenges? And how do we deliver action that truly makes a difference, without losing the goodwill of the public?

First of all, the connection between geostrategic independence and a climate-friendly transition of our energy systems must be made understandable to more people. The choice is not between security or climate. These two things are interlinked. The key term must be to create resilience – that is, resilient and robust societies. There is simply a need for an updated narrative.

The risk is that a few too many voters see climate as something that is undoubtedly 'important,' but also as something that can take a backseat when urgent issues –

such as rebuilding the military – demand attention. But while Trump may be able to threaten and pressure his way into deals on everything from tariffs to territories, not even an American president can strike transactional deals with the climate. Climate change does not stop because climate-change deniers come to power. And when political leaders in both Denmark and the EU say that we have five years to build the necessary deterrent defence capacity, then an integral part of that task must be knowing what it is we want to defend and protect. Because if deterrence succeeds, there should be a good and safe society to live in five years from now – which is why, in this light too, it must be a priority to both prevent and adapt to the climate changes that loom over us. Climate action is therefore an important component when it comes to creating safety and security for citizens – and thereby also countering tendencies toward dangerous polarisation.

Secondly, we must work hard to get the EU's so-called *Competitiveness Compass* implemented.

The analysis of the clear link between the green transition and Europe's competitiveness has already been laid out in the Draghi and Letta reports of 2024, respectively, and the proposal put forward by the European Commission in February 2025 showed that the Commission fundamentally maintains that the green transition is both a clear opportunity and a driver of innovation in Europe. But this requires, on the one hand, that we become better and far more effective at pooling our efforts and exchanging best and worst practices. On the other hand, it requires significantly greater investment into research and development – as well as targeted state support. The latter is still a dirty word in many circles, but when we're up against powerful forces both east and west of the EU that support our competitors widely and systematically, then new ways of thinking are necessary and essential. To prevent an outrageously expensive and unreasonable state aid hell, state aid must be limited to areas of clear strategic interest to the EU – and a good principle could be to always accompany state aid with a sunset clause.

But state aid is, of course, only a supplement. The key must be a price signal that truly makes an impact and provides a real incentive to shift from business as usual to a climate-friendly future. As long as the countries around us continue not to impose a real price on emissions and pollution on their companies, there is a political limit to how much we can/ dare to burden our own businesses. But since 'money makes the world go around,' it will be central in the coming years to rethink the entire Danish tax system with the green transition in mind. This applies to personal taxes and fees as well as VAT rates and corporate taxes. A genuine green tax reform is urgently needed. At the same time, there are significant advantages in Europe-

anising state aid so that, within the EU, we don't end up competing over who has the largest treasury. This again means that funding must be available – within an already strained EU budget – and this is why the debate over the EU's own sources of revenue from, among other things, CO₂ and environmental taxes will be an important part of the negotiations over the EU's next seven-year budget. Here, Denmark has significant opportunities to influence thinking via its EU Presidency during the six-month period in which the pieces of the major budget puzzle will be defined.

Thirdly, the regulatory toolkit needs to be critically examined. There are examples where regulation has become too detailed and too descriptive, and the danger is that this will turn more people against climate measures rather than encourage further action. It therefore makes sense that, both nationally and at the European level, critical attention is now being directed at the need for simplification. The Corporate Sustainability Reporting Directive (CSRD) is an easy first target, and this is something which the European Commission now intends both to simplify and, in part, postpone. But we must be careful not to throw the baby out with the bathwater and turn regulation itself into a villain.

When 27 states need a single market to function, regulation and common standards are a useful tool – and far preferable to 27 separate sets of rules. An example: Every time ambitious targets for car emissions have been adopted, the industry has fought hard and lobbied for weaker targets. The regulation that forced car manufacturers to accelerate the development of electric vehicles – if they wanted to avoid hefty fines – is no exception to this. But regulation did help. Manufacturers stepped up to the task of innovation. And yet, even so, they were overtaken, predominantly by Chinese competitors. Why is that? According to a senior representative from ACEA, the car manufacturers' interest organisation, the answer is: 'because we dragged our feet for too long. We took too long to move.' Exactly. And yet we see the same pattern repeating itself over and over again. Sector by sector. The reluctance of the agricultural sector is another illustrative example.

The point is that not all regulation is bad. Poor regulation is bad. Over-regulation is bad. But when we are aiming for a single market with fair competition – where everyone, and not just a few frontrunners, contributes to tackling our shared environmental, climate, and resource challenges – it is simply common sense to ensure that doing nothing, being an outlier, doesn't pay off. Therefore, the task must be to ensure good and smart regulation and to get out of old and outdated regulation. Finding the right balance here is a key task, and it needs to be addressed now. Both at the national and European levels. The EU does not share the

values of American libertarians, for whom all regulation is evil.

Fourthly, we must be world champions in connecting the green transition to digital opportunities. Used correctly and strategically, there are enormous possibilities to kill several birds with one stone – also economically. But again, this will require significant investments at a time when there is fierce competition for money. It must therefore be a requirement that climate change and climate risk, among other things, are consistently integrated into the economic models and projections used by politicians, investors, and businesses – so that co-benefits in areas such as biodiversity, water and resources are clearly visible to those making decisions. Here too, the Danish Council on Climate Change made an exemplary and important contribution, but this integrated approach should not be the exception, but a new norm for everyone.

Finally, perhaps the most important task in the challenging time ahead is to make both the opportunities and the difficulties involved in transitioning to a sustainable, climate-neutral society visible to more people – and crucially, to do so in a way that inspires them to get involved and contribute. It's not only among decision-makers in politics and business that an uncomfortable sense of overload is dampening people's capacity to engage further. For this reason, it is important to present solutions and promote genuine dialogue around concrete, creative, smart and socio-economically sound approaches – ones that people can see themselves in and that they will want to be a part of. People need to see that the future is not just a postulation, but that it quite tangibly encompasses attractive possibilities – smart homes, intelligent consumption on which you can save money, side benefits for nature, the environment, air quality – but there must also be honesty about the fact that the road to those goals will involve some difficult choices. In public, collective discourse, more emphasis must be placed on genuine dialogue and opportunities for involvement. Among other reasons, because in our affluent part of the world, we cannot avoid discussing our behaviour and consumption. It is a sensitive topic. Here too, decision-makers need qualified, expert input on how best to bring about change with popular acceptance and support.

Powerful forces are working to create division and polarisation in our societies, and the climate is one of the areas where external actors are also targeting Europeans. This is a real threat. Not just to climate action, but to Europe's ability to become independent of fossil fuels and regimes we do not want to support, and to our ability to create new industrial strengths and thus sustainable growth and prosperity through a strong and forward-looking climate policy.

The answer must be to work together even more. Through a Europeanised energy policy, for example. This will, in key respects, change Danish climate and energy policy as we work to bridge the gap between a historically national approach and a more European one for the future. How can this best be achieved when Denmark also wants to be at the forefront because we have seen the enormous opportunities that this position offers? This is just one of the many questions where society needs the Danish Council on Climate Change's serious and knowledge-based approach, which provides decision-makers with professional input to enable them to make better-informed decisions.

The council's input – and pushback – hasn't always been met with enthusiasm from the government and the civil service. But that shows just how necessary the institution is. And in the next decade, when far-reaching decisions and changes of direction must be handled in short timeframes to keep up with an accelerating climate challenge, there will be a greater need than ever for a council with integrity and expertise.

4



A photograph of a wind turbine in a field at sunset. The sun is low on the horizon, creating a warm, golden glow. The turbine's blades are visible against the sky. The foreground shows a grassy field and some trees in the distance.

From Combatting Climate Change to Paving a Prosperous European Future: A Just and Necessary Energy Transition

Ditte Juul Jørgensen
Director-General of DG ENER European Commission

Europe and the world are increasingly impacted by climate change. The upended security situation on the continent accelerated efforts to decarbonise and to diversify energy in line with the EU's long-term climate ambitions. The acceleration of the energy transition will contribute to the decarbonisation of the European energy system and competitiveness and reduce the security risk linked to dependencies on imported fossil energy. More than ever, the EU's objective of climate-neutrality is aligned with and has become essential to its security and resilience, competitiveness and energy affordability.

Transforming the EU's ambitious climate goals into global impact

Like every other continent, Europe is already directly impacted by climate change. Transitioning to clean energy is not an option but a necessity – for our climate and our future, but here in Europe also for our security and our competitiveness. Most Europeans agree: more than nine in ten Europeans (93%) see climate change as a serious problem¹. At the same time, a recent study shows that many Europeans are losing faith in the ability of governments to deliver a transition that is effective and fair². We can only restore trust in government and our society model by delivering a just transition, one that leaves nobody behind, ensures energy security, economic growth and good jobs, and is affordable. For the European Union, combatting climate change to strengthen societal resilience, reinforce our security and protect people and prosperity is at the heart of the policy agenda.

Energy policy plays a key role: producing and consuming energy accounts for more than 75% of the EU's greenhouse gas emissions. At the same time, the EU's share of global emissions was 6.1% in 2023³, and climate action must therefore be anchored in and help drive international cooperation. For Europe, it is an opportunity to demonstrate that decarbonisation efforts come with benefits for all, thereby leading global efforts. Only through global efforts can we reduce the impacts of climate change and adapt to those impacts that are unavoidable.

The EU already led the way at the 28th Conference of Parties (COP). The parties agreed on tripling the world's renewable energy capacity and doubling energy efficiency improvements by 2030. They also committed to transition away from fossil fuels and to reduce global emissions by 43% by 2030. At COP 29, the EU cooperated with international partners to transform commitments into concrete actions. This included scaling up investment and following up on the UN Secretary-General's Panel on Critical Energy Transition Minerals. The EU also enabled clean energy access by preparing the "Renewable energy for Africa" campaign, announced by President von der Leyen at the G20. This engagement continues to guide us as we prepare for COP30 to deliver on the objectives of "global tripling and doubling".

In parallel to the COP process, President von der Leyen announced a Global Energy Transition Forum. This Forum is a coalition of governments, international institutions, banks, companies, and philanthropies committed to accelerating a just and clean energy transition. Each country has a unique context and a different

starting point, so the Forum will be flexible and inclusive, fostering cooperation and aligning our efforts. Delivering on our goals will require frank discussions and positive engagement. The Forum will bring together and amplify existing initiatives, ensuring synergies and coherence in the global energy transition drive.

Rising challenges in a changing geopolitical landscape

While Europe is at the forefront of global cooperation on climate change, new challenges have come our way. Three years ago, Russia attacked Ukraine and used Europe's energy dependence on Russian fossil fuels as a weapon. This upended the continent's immediate security situation, but it did not alter the EU's long-term climate ambitions. The focus remains on achieving carbon neutrality by 2050. We will present a clear milestone for 2040 by revising the EU's climate law this year.

As we have learned from the energy crisis, saving energy and decarbonising at high speed requires diversified access to clean technologies and an approach that ensures an affordable transition. More than ever, the EU's objective of climate-neutrality is aligned with and has become essential to its security and resilience, competitiveness and energy affordability, as also set out in the Competitive Compass.⁴

Security and resilience

The Commission responded to Russia's attack against Ukraine and its weaponisation of energy supplies with the REPowerEU Plan. This was a package of energy-saving, decarbonisation and diversification measures. As the EU's strategy to phase out Russian fossil fuel imports, it accelerated our transition to a cleaner, more efficient and more renewables-based energy system. The EU has also been striking back with 16 packages of sanctions. These include bans on coal and seaborne oil imports from Russia, a price cap on Russian oil and the prohibition of reloading cargoes carrying Russian liquefied natural gas to third countries in EU ports.

The EU has achieved a remarkable reduction of gas imports from Russia of about two-thirds between 2021 and 2024. Most recently, the import of Russian gas to Europe through Ukraine came to an end on January 1, 2025. The EU was well-prepared for this change, which had no impact on the Union's security of supply.

Today, the share of Russian gas in overall imports is below 15% and work continues to phase out the remainder. At the same time, the EU significantly accelerated the installation of renewable energy capacities. In 2024 wind and solar have risen to new highs, overtaking fossil fuels in our electricity mix for the first time ever. Renewable energy sources in general accounted for 48% of our electricity generation in 2024, up from 37% in 2021, and way ahead of coal (11%) and natural gas (13%). In 2025, we expect around 87 GW⁵ of new wind and solar representing a combined 13% increase in the capacity of those technologies.

The EU's dependence on fossil fuels is not the only threat to our security. Recent attacks on critical infrastructure underscored the need to further protect our energy system from hybrid threats such as sabotage and cyber-attacks. These multifaceted threats are increasing in significance and in frequency. They also remind us of the importance of international cooperation for our security, such as the EU-NATO joint task force on critical infrastructure. The recent completion of the Baltic Synchronisation Project represented a significant milestone. It demonstrates our shared commitment to Europe's energy security and supports the integration of renewable energy into our systems.

Every crisis is an opportunity, as the saying goes. This clearly applies to the energy crisis, which was turned into a chance to speed up the transition to a cleaner and more resilient European energy system.

Competitiveness

Dependence on imported fossil fuels, notably from Russia, constitutes a risk and has brought high and volatile energy prices in the EU. Europe should avoid replacing fossil fuel dependencies with new ones. This is notably the case of critical raw materials for the technologies that we need for industrial transformation. Competitive markets are our best tools to boost European energy-intensive industries, the clean-tech sector and the efficient use of materials.

The electrification of industry and households holds massive potential for the continent's competitiveness and decarbonisation. By utilising our abundant renewable energy sources more efficiently, it reduces our dependence on fossil fuel imports and lowers our energy bills. Progress has stagnated in recent years, however, with the EU still sourcing less than a quarter of its energy needs from electricity. Electricity is also about 3 times more expensive than gas in many European countries. The Commission will therefore launch an Electrification Action Plan to

support measures that minimise energy system costs and that promote access to competitive and affordable electricity.

There are already inspiring examples of how the energy transition can lead to competitiveness on the European continent. The Danish electrical grid and clean tech ecosystem play a key role in the electrification and deployment of renewable energy. The Danish grid facilitates the connection of offshore power and provides interconnections between Central Europe and the Nordic region, enabling the transmission of low-carbon energy across Europe. Thanks to a long-term strategy, Denmark was one of the first countries to invest heavily in renewable energy. It supported the world's first offshore wind park in 1991 and built a strong clean tech industrial ecosystem.

Europe has the innovation, talent, and industrial base to compete at the highest level. To enable this, industry needs to be supported in its transition. The Clean Industrial Deal will mobilise over €100 billion to support EU-made clean manufacturing. Europe will address existing barriers to investment and the required policy support, for instance through the Innovation Fund, Strategic Technologies for Europe Platform and the upcoming Clean Energy Investment Strategy. Financial guarantees provided by InvestEU will also be increased to support investments in clean tech. It is estimated that a combined private and public annual investment of €660 billion is required between 2026 and 2030 to meet the EU's 2030 energy targets.

Europe must lead in next-generation energy solutions from hydrogen to battery storage and smart grids. The EU therefore adopted legislative tools such as the Net-Zero Industry Act (NZIA), which aims to strengthen resilience across clean technology supply chains by scaling up EU manufacturing capacity. Flanked by an implementing act on renewable energy auctions, the EU has a firm framework to boost clean tech manufacturing and attract investments to Europe.

Affordability

Industrial competitiveness will ultimately benefit citizens in the long term, but we must take action to enhance the energy affordability of households today. Energy poverty affects more than 46 million Europeans, with a disproportionate impact on vulnerable groups. The only sustainable path to net zero in 2050 is an equitable one, where energy policy tackles the concerns of households along the way.

The recently adopted Affordable Energy Action Plan presents measures to lower energy bills in the short term, to accelerate the implementation of cost-saving structural reforms and to prepare the energy systems against future price shocks. It aims to reduce the costs of energy production by promoting the uptake of long-term electricity supply contracts, accelerating permitting procedures, and by reinforcing grids and boosting flexibility. It also contains measures and recommendations to lower the energy bills that consumers ultimately face by addressing taxes and network charges. It takes steps to complete a genuine Energy Union by supporting a fully integrated energy market. It empowers consumers through energy communities and energy sharing, so they can actively participate in a changing energy system.

The Commission will also present a Citizens Energy Package to deliver a transition that is both effective and fair. The objective is to alleviate energy poverty and to empower the public throughout the energy transition. The package will propose concrete measures to build the trust of consumers and of the public in the energy markets. It will empower them to play a more active role and to make markets more dynamic and innovative. It will also make it easier to establish and join an energy community as a way of reducing energy costs. The package will enhance consumer rights and ensure that the most vulnerable are protected from disconnections and from distributional impacts of the transition.

Conclusion

Nobody can fight climate change on their own. Climate change knows no borders and has unequal impacts across the globe. This makes global and European co-operation more important than ever. The EU should therefore double down on its ambitious objective of becoming the first climate neutral continent by 2050 – not only for our resilience and energy independence, but also to lead global decarbonisation. The stakes are simply too high for inaction. This is the decisive decade. If we share the work, we will share the rewards of a secure and sustainable future for people and our planet.

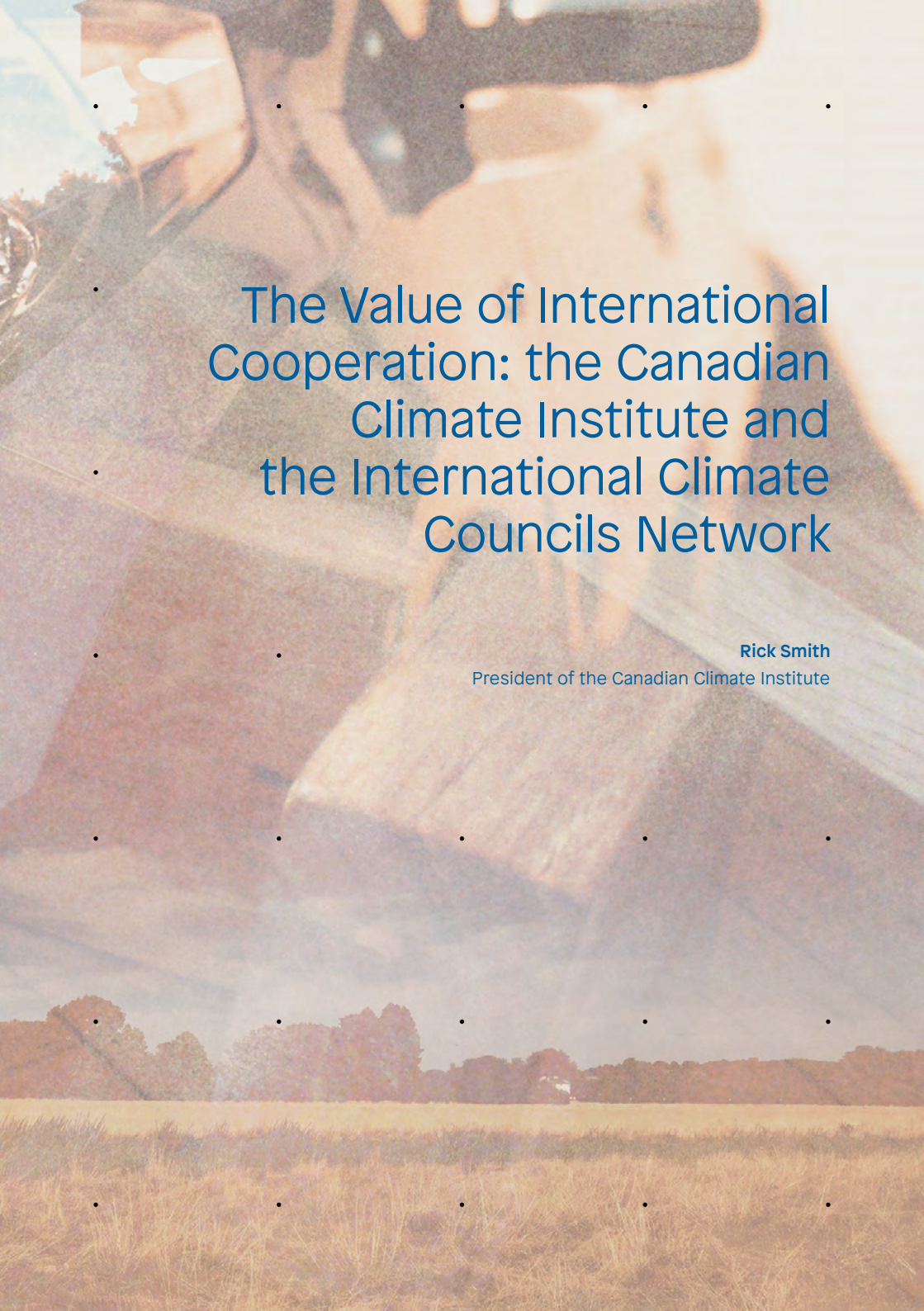
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5





The Value of International Cooperation: the Canadian Climate Institute and the International Climate Councils Network

Rick Smith

President of the Canadian Climate Institute

The Canadian Climate Institute (CCI), launched in 2020, provides independent, expert advice on climate mitigation, adaptation, and clean growth. Its research has shaped Canada's climate strategy and contributed to recent emissions reductions. CCI collaborates with governments, Indigenous Nations, and the Net Zero Advisory Body, and plays a key convening role across sectors. Internationally, CCI is a founding member of the International Climate Councils Network (ICCN), which connects climate advisory bodies to share best practices and strengthen global governance. Together, CCI and ICCN advance credible, science-based policy to support an effective, cooperative transition to net zero.

Though the climate change discussion, in every country in the world, remains extremely challenging, substantial progress is happening.

One of the most significant steps forward in the past fifteen years has been the recognition that good climate change governance is linked to better outcomes such as reducing emissions, building cleaner economies, and preparing for the impacts of extreme weather.

Since the creation of the UK Climate Change Committee in 2008, nearly thirty national governments around the world (with more being added each year) have now launched expert, independent, advisory organizations to render good climate change advice, track progress, recommend policy improvements, and increase social solidarity around solutions.

Creation of the Canadian Climate Institute (CCI)

The Canadian experience with improved climate change governance is comparatively recent.

In October 2018, the Canadian federal government released a request for proposals to create an “arm’s-length, policy-oriented organization focused on clean growth and climate change” similar to independent advisory bodies in other countries, such as the UK Climate Change Committee, the French *Haut Conseil pour le Climat*, and Denmark’s *Klimarådet* (Danish Council on Climate Change).

A consortium of more than 20 organizations—including universities, environmental groups, and research institutes—came together to develop and support the proposal establishing the research direction, budget, and governance structure for what became the Canadian Climate Institute (CCI). The Canadian federal government accepted the proposal and signed a contribution agreement to fund CCI as a not-for-profit charity. Publicly launched in January 2020, the Institute’s stated mission is to “generate, communicate, and mobilize independent and trusted information, policy advice, and best practices to Canadians, governments, and stakeholders across key areas related to clean growth and climate change (including mitigation, adaptation, and clean growth), based on highly credible and inclusive research, analysis and engagement with leaders, experts, and practitioners across Canada.”

As an independent charity, CCI is governed by an eminent Board of Directors

and supported by its staff across the country. Our work is structured around three permanently constituted expert panels that bring together the top climate change researchers in the country. Our thinking and our research is also influenced, and dramatically improved, by advice generated by our advisory council, which is populated by key industrial organizations (such as the national aluminum and cement associations) and other key stakeholders (such as the Federation of Canadian Municipalities).

Under the Canadian Constitution, Indigenous Nations have strong guarantees and control over natural resources and CCI has recently launched a dedicated Indigenous research team to ensure strong content relevant to Indigenous peoples in all of its work.

Unique to Canada's climate change governance is that the Canadian federal government has created not one but two independent entities to provide it advice. CCI works closely with the second climate council established by the Canadian government, the Net Zero Advisory Body, which has a statutory mandate laid out in the Canadian Net Zero Emissions Accountability Act of 2021 (the Canadian law enabling the country's Paris Agreement obligations). Our two organizations have signed a memorandum of understanding and cooperate on a range of activities including the co-hosting of a major annual climate change conference in Ottawa every autumn, and programming for Canadian delegates to COPs.

CCI's focus and contributions

Since the CCI's public launch, we have made an outsized impact on the conversation surrounding Canada's climate policy progress and priorities. Across all three of our research areas (mitigation, adaptation and clean growth), in different parts of Canada, and in both of the country's official languages, our work is well-respected and influential.

After five short years, the Institute is now one of the most cited sources of trustworthy climate change research in the country. Those who rely on our analyses include key government agencies, the media, academic researchers, businesses and key stakeholders.

A selection of these significant contributions, include:

- First research modelling credible paths to net zero emissions by 2050 for Canada.¹
- First to analyze the relative impacts of individual climate policies in driving down emissions.²
- First to model the macroeconomics of climate change extreme weather impacts on Canadians and the economy.³
- First to quantify the economic impacts of climate change in northern Canada.⁴
- First to assess Canada's economic prospects in the face of accelerating global market shifts responding to climate change.⁵
- Published the first independent assessment of the federal government's Emissions Reduction Plan in 2022.⁶
- Created the Early Estimate of National Emissions, which provides an estimate of total annual greenhouse gas emissions in the country before official data is available through the federal government's National Inventory Report.⁷
- Created Canada's first comprehensive data portal tracking progress on emissions and policy trends.⁸
- First to estimate the risk to new housing in Canadian communities from climate-change driven flooding and wildfires.⁹

Until recently, Canada was the only G7 country for which GHG emissions were increasing rather than decreasing. This embarrassing state of affairs has finally been turned around: by CCI's calculations Canadian GHG emissions in 2023 were approximately 8% reduced versus 2005 levels. Many of CCI's Net Zero policy recommendations have shaped this new, and more effective, Canadian approach.

With respect to adaptation, Canada now has – for the first time – a national adaptation strategy: another key CCI recommendation. The effective implementation of this strategy cannot come soon enough. With grim predictability, many parts of the country each year are being subjected to terrible climate-driven extreme weather phenomena such as flooding and massive wildfires. The Insurance Bureau of Canada estimated that the summer of 2024 was the most expensive on record in terms of insured losses: in excess of CAN \$8 billion, with many incidents of flooding or fire – such as the burning of the world-famous mountain resort community of Jasper, Alberta – linked to climate change.

Lessons learned along the way

We have learned some valuable lessons in our work over the past few years, some of these specific to the Canadian context, and some more broadly applicable.

The first is that, given the federal nature of Canada's structure, it's important not to be overly focused on the climate policies of one level of government over others. Over the past decade in Canada, climate change advocates have focused almost exclusively on the effectiveness, or the lack thereof, of climate change policies at the national level. Meanwhile, the policies of provincial and territorial governments, and municipalities, have been relatively unexamined. Over the next couple of years, CCI will be trying to rebalance our approach.

Another learning has been that it's important to try and keep space in the national discussion for the full range of necessary climate change policies, as opposed to having a single policy dominate. In Canada's case, the consumer carbon price – only comprising, by CCI's measure, perhaps ten percent of the solution by 2030 – has come to occupy the majority of the climate change discussion. As a political lightning rod, it has drawn attention away from other policies that are both far more effective and far less contentious, such as industrial carbon pricing.

Finally, it's clear that the push for climate change progress is a marathon and not a sprint, and the discussion will remain contentious for many years to come. CCI's convening function – whereby we bring together different elements of Canadian society to focus on solutions – is only going to get more important in subsequent years rather than less.

Coordinating internationally – the International Climate Councils Network

As a relatively young organization, CCI has benefited immeasurably through our association with international colleagues through the International Climate Councils Network (ICCN).

Indeed, CCI and ICCN have essentially grown up together.

Launched at a high-energy event in the UK pavilion at COP26 in 2021, ICCN was created as a forum for climate councils to establish collective strength, presence, and influence by collaborating on key agendas and challenges. The Network aims to use international cooperation to strengthen and expand councils' capabilities, and to amplify the role that climate councils can play in effective global climate governance.

The ICCN membership is made up of national-level advisory bodies with a mandate to provide expert, science-based advice to governments on mitigation and/or adaptation. The ICCN Steering Committee handles strategic coordination of the network, internal and external communications, admission of new members and administrative issues. It is made up of representatives from three councils that rotate on an annual basis. The current Steering Committee members are Canada, South Africa and Denmark, with ongoing involvement from the UK. The ICCN membership currently meets twice a year in virtual plenary meetings and comes together in monthly working groups that highlight thematic discussions and bilateral exchanges. In addition, the Network works to make a positive difference at United Nations COP gatherings, holding events at COP26, 27, 28 and 29 and occasionally publishing joint letters to the UNFCCC Executive Secretary and COP President in advance of these summits.

The future of the ICCN

It's a testament to the value-add that ICCN provides that it has grown rapidly and organically and that its extremely busy members – many of whom have onerous statutory responsibilities to their respective national governments – are increasingly enthusiastic participants.

Though there are national particularities to the climate change discussion, ICCN members face many of the same challenges and opportunities and the ability to learn from each other has proven invaluable. Some of the recent topics on which we have had useful exchanges include the relative merits of different adaptation policies, approaches to setting 2035 emissions reduction targets under the Paris Agreement, and how to ensure the effectiveness and resilience of climate councils through the ups and downs of succeeding electoral cycles.

Over the past year ICCN has raised enough revenue to hire a full-time Secretariat based in London, and has started to formalize and professionalize its operations.

In the next two to three years, the ICCN will be focused on a few goals, which the CCI fully supports:

Development of network activities: we want the Network to meet in person at least once a year. This would allow councils to fully explore opportunities for collaboration and partially address the logistical issues some councils face in engaging virtually. We want to explore the potential for inter-council secondments and

joint research and analysis. We will continue and expand our program of working groups, thematic discussions and workshops. The Network will have a yearly presence at COPs, hosting events and producing work where relevant.

Network expansion: the Network currently has 25 members spanning North America, Latin America, Europe, Africa and Asia. The current membership is skewed towards the Global North and most of our expansion opportunities lie in the Global South. We are currently, for example, speaking with potential new member councils in Brazil and Pakistan. Our plan is to continue building awareness on the potential benefits of climate councils as part of wider climate governance structures. The ICCN is well-placed to lead and contribute to international discussions on climate governance and how accountability can aid delivery as we transition towards net zero.

Increased visibility: as the Network develops, we want the ICCN to become cemented as a network of climate experts who can provide unique insight on both mitigation and adaptation as well as climate governance. Internationally, we want the ICCN to have the same reputation for excellence that many of our councils have at home. The ICCN can help to normalize the need for effective climate governance and highlight best practice.

Meeting today's challenge

The road ahead on climate progress will never be easy. But it's never been more important that countries around the world have strong, independent climate councils established to provide oversight and guidance for the energy transition that is already well underway. We need to demonstrate that good policy advice and governance are critical to making sure countries can adopt effective ways to meet this increasingly urgent global threat. Strengthening our international network of independent councils to push forward a positive model of cooperation and multilateralism will be a critical pillar for progress in this new global environment.

It is a great pleasure working with Danish colleagues in this important collective endeavour and I wish the DCCC a very happy 10th Anniversary. Tak for dit kritiske arbejde! Jeg ser frem til mange flere år med at gøre fremskridt med klimændringer sammen.

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6





The Role of National Climate Councils in European Climate Policy

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Climate action is now firmly set in motion, but it is not yet delivering at the scale and pace needed. More than 20 countries are succeeding in reducing their emissions while growing their economies, providing extensive experience of effective climate policies. Leading countries have shown that good governance and structured climate action can go a long way to maintain progress over time. National Climate Councils have emerged as important entities that provide insights on how to translate international climate commitments into country-level plans. Climate Councils provide independent, evidence-led advice helping governments identify feasible but ambitious climate action. They lend credibility to climate policies, strengthening the public trust. Climate Councils now need to find ways to help countries continue decarbonising regardless of the increasingly fragmented global political context. This must include helping to ensure climate action remains de-politicised, and to create a clear and simple narrative for climate action as a feasible and desirable path, that will protect but also benefit countries.

As a climate scientist, I have had the privilege to work at the science-policy interface for over two decades. I am among the longest-serving members of the UK Climate Change Committee, was until 2024 the founding president of the French High Council on Climate, and I contributed to the founding of the International Climate Councils Network. I share here my unique experience of advising governments through Climate Councils.

Climate and energy policy work to decrease national emissions

Nearly 10 years after the adoption of the Paris Climate Agreement and 20 years after the Kyoto Protocol entered into force, climate action is now firmly set in motion. The extent to which we succeed to limit climate change will depend on our collective capacity to organise and implement further climate actions, both nationally and globally, regardless of the political context. There has been remarkable progress so far, on which we can build.

Clear decarbonisation leaders but insufficient progress to meet climate objectives

More than 20 countries have succeeded in reducing their fossil CO₂ emissions while growing their economies^{1,2}, including Denmark and 14 other European countries (including Norway, Switzerland, and the United Kingdom) but also Jordan, New Zealand, South Korea and the United States (Figure 1). Research has shown that the displacement of fossil fuels by renewable energy and decreases in energy use are common factors that explain the decreasing emissions, with countries having the largest number of energy and climate policies also delivering the largest cuts in emissions². These climate and energy policies have led to a 3 fold reduction in global CO₂ emissions growth³, which were rising at 3% per year in the 2000s and less than 1% per year since the 2010s on average. Policies have focused so far on reducing emissions from fossil fuels, particularly in the energy supply sector, with far fewer policies targeting emissions from the land sector³.

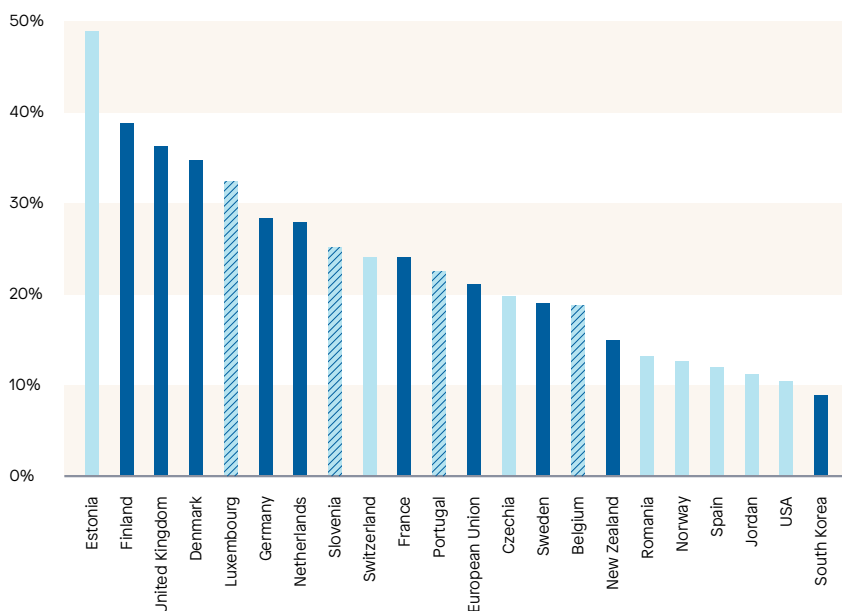


Figure 1 Decrease in CO₂ emissions of fossil origin over the past decade (2013-2023) for countries that succeeded in decreasing their emissions while growing their economies. Countries with an independent Climate Council are in dark blue if they are members of the International Climate Council Network (ICCN), and in hatched blue if not.

Source: Global Carbon Budget 2024¹.

Despite much progress in tackling climate change, the global emissions trajectory is still a long way from that needed to meet the objectives of the Paris Climate Agreement of limiting warming well below 2°C and pursuing efforts to go further. Meeting those climate targets would require global emissions to be cut by at least a quarter by 2030 compared to 2019 levels⁴. The much more modest reduced growth in global emissions observed in recent decades is far from this trajectory. While it avoids the worse projections of climate change this century, with warming above 4°C now unlikely⁵, the current emissions trajectory and implemented policies are still aligned with global warming levels close to 3°C at the end of the century⁶.

Continuity helps accelerate actions and support households and industries

Accelerating the pace of climate action at the national level requires structured developments, continuity and visibility for households and industries. For leading countries already reducing their emissions, accelerating trends can be achieved by broadening climate action across the economy well beyond the energy supply which have dominated recent trends in most countries, while still maintaining priority on carbon-intensive activities⁷. This is helped by the increasingly clear role of electrification as an accessible and affordable alternative for a range of technologies, particularly road transport but also heating in the building and industry sectors⁸. The penetration of climate action in turn raises multiple issues of capacity and fairness, considering uneven access to key low-carbon technologies, and requires an important level of investment in social and physical infrastructures. Climate actions involve complex interactions among policy, society, and technology that require careful attention to avoid backlash such as the Yellow Vests protests in France that were triggered by a rise in carbon tax⁹. Detailed monitoring and careful policy design are needed to identify and remove obstacles to action, and ensure minimal costs and maximal opportunities for society. National climate councils are demonstrated ways to help with these¹⁰.

Country exchanges help reduce costs and increase effectiveness

Accelerating the pace of climate action globally requires that more countries succeed in decarbonising their existing infrastructures and that prosperity is increasingly based on renewable and other low-carbon forms of energy. The >20 countries already decarbonising their economy for over a decade provide a rich collection of experiences that can help guide actions elsewhere. Past experiences and investments have triggered rapidly decreasing costs in a range of low-carbon technologies, including solar and other renewable energy, battery storage and electric vehicles, and heat pumps. Structured exchanges of expertise on climate actions among countries can also greatly help accelerate the effectiveness of the global response to tackling climate change. Such exchanges can be facilitated by the presence of national climate councils, and their federation, building on existing political structures such as differences in parliamentary representations between the UK and Denmark¹¹, and differences in policy priorities and hierarchy between Germany, France and the Netherlands¹².

International structures provide the framework for national action

International structures greatly help to coordinate and support the developments of governance and exchange needed, but they have limits. The United Nations Framework Convention on Climate Change (UNFCCC) provides a platform to negotiate and agree collective climate objectives, and organises the monitoring and reporting and guidelines. The Intergovernmental Panel on Climate Change (IPCC) assesses the scientific and technical evidence, and clarifies consensus, including on effective responses to climate change. These bodies operate at the international level. There is a big gap between information and insights produced by the UNFCCC and the IPCC, and the relevant elements useful to orient climate policy and actions at the country level at any given time, and to monitor progress. National climate councils can help fill this gap by providing country-specific monitoring and advising on effective national actions.

Climate councils help fill the gap between global objectives and national actions

Europe has played a leadership role in tackling climate change. European countries have been increasingly pro-active in introducing national climate and energy laws to translate their international commitments into legal ones. Early examples of such laws include France's law on energy policy choices of 2004 (POPE law) and the UK Climate Change Act of 2008. National actions have been facilitated by the early development of the European Trading System of 2003 and successive laws, which culminated recently in the European Climate Law of 2021, the Green Deal strategy, and their articulation through the extensive Fit for 55 policy package.

European countries as leaders in effective climate governance

European countries have also been leaders in climate governance. The UK's Climate Change Act, established as a cross-political party legislation in 2008, has been a keystone of UK climate action¹³. The Act includes four pillars:

- A long-term goal for emissions level in 2050,
- A pathway, determined by successive carbon budgets set 12 years ahead,
- A requirement for government to bring forward policies, and
- A monitoring framework.

The UK Climate Change Committee (CCC) is the central part of this monitoring framework. The CCC advises UK governments on emissions targets and report to Parliament on progress made to reduce emissions and adapt to climate change. The CCC has been credited as having an extensive influence on UK climate policy: its analysis is used by all major political parties, with frequent mentions in Parliament (averaging 200 mentions per year), and it is seen as trusted source of policy information¹⁴. The UK cut its greenhouse gas emissions by 44% since 2008, and 54% since 1990 (based on the UK government provisional 2024 data). The effectiveness of the UK's climate policy framework has inspired other countries to set up similar laws, with national versions of independent climate councils (Table 1). The CCC wrote a series of briefing notes on its approach to support others, detailing how they monitor progress and provide advice on targets¹⁵.

The concentration of climate councils is particularly important in Europe (Figure 2), as expected given the historical leadership of the EU in tackling climate change. Notably, the European Scientific Advisory Board on Climate Change, established within the European Climate Law of 2021, also serves as independent advisory body to the European Union, mandated to provide independent scientific advice on climate targets. Most countries have set up their Climate Councils following the clear steer provided by the Paris Agreement of 2015, with Finland (2012) and Denmark (2014) preceeding this, in addition to the UK (Table 1).

Although a direct causal link has not been made between the presence of Climate Councils and success in decreasing emissions, leading countries in tackling climate change tend to also be those leading in establishing formal climate governance¹⁶ (Figure 1). An extensive analysis of the uptake of the CCC's 700 policy recommendations over 2009-2020 suggests that broad, cross-sectorial recommendations were more likely to be accepted by the UK government compared to sectorial-focused ones, and that repeated recommendations were more likely to be accepted¹⁷. By enhancing the visibility of climate action, Climate Councils also lend credibility and legitimacy to government climate policies. For example, the goal of reaching Net Zero emissions was first recommended by the CCC, before being adopted by the UK government. Had it been a government proposal, it is not at all obvious that it would have been adopted.

Country	Climate Change Council	Start Year	ICCN Member
United Kingdom	Climate Change Committee	2008	✓
Finland	Finnish Climate Change Panel	2012	✓
Denmark	Danish Council on Climate Change	2014	✓
Ireland	Climate Change Advisory Council	2016	✓
Sweden	Climate Policy Council	2017	✓
France	High Council on Climate	2018	✓
Iceland	Icelandic Climate Council	2018	✓
Greece	Special Scientific Committee for Tackling Climate Change	2019	✓
Germany	Expert Council on Climate Issues	2020	✓
Luxembourg	Climate Policy Observatory	2021	
Slovenia	Climate Council	2022	
Netherlands	Scientific Climate Council	2023	✓
Belgium	Scientific Climate Council	2024	
Portugal	Climate Action Council	2024	
Ukraine	Green Transition Office	2024	✓
EU	European Scientific Advisory Board on Climate Change	2021	✓

Table 1 Climate Councils in Europe that provide advice on the implementation of climate actions for reducing emissions, and year when their activities started.

Note 1: Some Climate Councils also focus on adaptation actions only (not listed here).

Note 2: The year activities started can differ from the year when the Councils were set in law.

Source: Primarily International Climate Council Network (ICCN).

Not all Councils incorporate all five principles. Many focus only on mitigation or on adaptation only, and some are not tasked with stakeholder engagement. In contrast, all Councils share a robust grounding in evidence-based analysis, most having also broad inter-disciplinary expertise, including from practitioners. Councils also differ in their mandate, with some focusing more on advising on targets, others on monitoring progress. This diversity can be at least partly explained by the existence of other governing structures within Governments¹⁸.

Decarbonising countries regardless of the political context

Progress in tackling climate change in the past does not guarantee continued progress in the future. On the one hand, climate and energy policies have driven a rapid fall in price of key low-carbon technologies, and several new low-carbon markets are now competitive with conventional ones. This is the case for solar energy, offshore wind, and very nearly for electric vehicles. On the other hand, uncertainty around long-term policy support undermines the investments needed to go further.

Narrative of Net Zero pathways: the UK's CCC 7th Carbon Budget advice

One important role that can be played by Climate Councils is to enable the emergence of a country vision for tackling climate change. The independent voice of Climate Councils can help raise public awareness of necessary climate action, and increase their trust in subsequent governments policies and measures¹⁴.

The UK's CCC just published its advice to the government regarding the emissions level for its 7th carbon budget period (2038-2042)⁸. The detailed analytical work contained in this 394-page report also provided a narrative of the path towards Net Zero greenhouse gas emissions in 2050, by identifying the solutions that have emerged as optimal in the UK context, and the options that must be kept open until a specific path emerges. This narrative is as follows:

- Electrification and low carbon electricity is how we (the UK) decarbonise. Renewables, electric vehicles, heat pumps, industrial electrification together account for 60% of the emissions reductions to 2040.

- With proper support, households will benefit with cheaper and less volatile energy bills. Government needs to enable this, for those unable to meet the upfront costs and by making electricity cheaper.
- New woodland creation and peatland restoration increasingly offset the residual emissions from agriculture to reach Net Zero in the land sector by 2050, supported by adoption of healthier diets aligned with current trends.
- Aviation is kept at today's level until technology develops, which is expected around 2035. The aviation industry is responsible for the costs of developing technologies and for strengthening actions to support its own decarbonisation. If technology does not deliver (sustainable aviation fuels and permanent engineered removals), more demand management will be needed to limit emissions from aviation.

The positive reception of the report, despite grounds for fertile push back, bodes well for continued climate action in the country.

Remaining independent and audible amidst politicisation of climate change

Climate action is primarily a mechanisms to protect households and businesses against severe impacts and risks of multiple kinds¹⁹. Climate action protects against deep, pervasive and potentially extreme weather and climate impacts, which affects all countries in one way or another. Climate action also helps businesses and industries to position themselves in a low-carbon future, and limits exposure to volatile fossil fuel prices. In this context, it is particularly important for Climate Councils to ensure the need for climate action is understood primarily as a protection mechanism.

Climate Councils can play an important role to de-politicise climate change and all its associated dimensions, to help avoid or limit its instrumentalisation by political parties which would necessarily slow down progress. How we implement climate action can and should be subject for debate. However, to ensure continued and accelerated progress, the need to tackle climate change must not be politicised. In addition to remaining independent, Climate Councils can help by:

- Ensuring clarity in positioning, with Councils providing advice but elected governments making choices and decisions.
- Clarifying the elements where choice is available, for example how costs are distributed between the public and private sectors, or to identify preferred

choices between different types of low-carbon technologies.

- Strengthening their role in engaging with a range of Stakeholders, to ensure those that need to implement actions are part of the solutions.
- Generally ensuring the advice can be applied regardless of political affinities, with modulations or compromises where needed, in the general spirit that suboptimal progress is sometimes better than risks of blockages provoking serious delays and sometimes irreversible damage.

The path of least resistance for tackling climate change has and will evolve along with society, technology, and politics. The context that led to the adoption of the Paris Agreement, a collaborative agreement at its heart, has passed. The global context today is much more fragmented and divisive, but technology has advanced tremendously creating new dynamics and opportunities. Climate Councils, through their deliberative, evidence-based nature, can help to identify new avenues to ensure continued progress in tackling climate change and help broaden and accelerate its effects, regardless of the political context.

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7





Climate Governance Procedures: Lessons learned from Denmark

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Many countries have elaborate climate governance procedures, and Denmark has been in the forefront of this development. In this chapter, we specify how such procedures can work, especially when it comes to facilitating broad participation in climate policy developments. We identify four key governance procedures, *Emissions Monitoring, Reporting, Evaluation, and Innovation*. We argue that the effectiveness of these procedures for climate action is improved when they are characterized by high levels of *inclusion, transparency, and routinization*. High scores on these aspects facilitates broad participation and reduces the chances of political stalemate. Denmark's climate governance system performs well on all these aspects, although there is still room for improvement. The Danish Council on Climate Change is crucial for most of the procedures we assess. Even though this is an expert committee with narrow participation, we argue that it contributes to mobilize more actors into climate governance processes. This chapter does not examine how effective the Danish climate governance procedures are in practice. Rather, it presents arguments that can be tested in future research.

Introduction

Climate mitigation is a long problem, characterized by uncertainty, changing interests and shifting political coalitions. Getting to net-zero greenhouse gas emissions represents an unprecedented governing challenge. This transition challenges entrenched power structures in all countries, and across all sectors of society (Colgan et al., 2021). Dealing with this requires governance procedures that mobilize a broad array of actors, and that spur experimentation, iterative learning and dynamic change patterns. Practitioners and policy makers across the globe have realized this, but scientific discussions about climate policy and governance is lagging. Despite lack of scientific guidance on how to set up well functioning climate governance procedures, policymakers, politicians, civil servants and scientists have invented and tested a range of climate governance procedures. This chapter first presents some early efforts to describe how governments may organize their climate governance, and second, we use this framework to assess the case of Denmark.

It has been clear for a long time that the political-administrative structures we have inherited are stacked against effective governance of the climate transition (Hale, 2024). There is no lack of empirical studies of how politicization and entrenched conflict has stalled national climate policy developments (Boasson and Tatham, 2023). However, few have studied whether or how certain ways of designing climate governance procedures can help to overcome these challenges.

In this chapter, we argue that four governance procedures are crucial: *Monitoring*, *Reporting*, *Evaluation* and *Innovation*. Drawing on organizational approaches to public governance and experimental governance literature, we specify varying *inclusion*, *transparency* and *routinization* patterns that may characterize these four processes. Since the early days of political science, we have known that public '[o]rganization is the mobilization of bias' (Schattschneider 1974, p. 69). In this paper, we go back to this insight, first formulated in the late 1950s, by the pioneering Elmer Eric Schattschneider. We argue that broad participation, and high levels of transparency and routinization, tend to activate many diverse actors. Such broad activation hinders emergence of detrimental conflicts that tends to stall climate governance, and creates better conditions for experimentation, deliberation and learning. Elsewhere, we have compared the Danish climate governance procedures to procedures in other countries, and the Danish procedures gains comparatively high score (Boasson and Sandstad, unpublished). Whether this is also related to Denmark being successful when it comes to cutting emissions is still not assessed.

We will now first assess state of the art in climate governance research, before we move on to discuss why it is important to open climate governance processes to more actors. Lastly, we discuss the varying climate governance processes in more detail, and examine how Denmark scores with respect to inclusion, transparency and routinization patterns. The analyses are based on a comparison of the climate governance systems in Denmark, Norway and Sweden (Boasson and Sandstad, unpublished).

Organization of climate in political-administrative structures matters

Governance is ‘a process spanning several phases of actual decision-making, from agenda-setting via policy development and formal decisions, to implementation practices and learning, although not necessarily sequentially ordered’ (Egeberg and Trondal, 2018, p. 4). We cannot expect countries to meet their climate targets unless the governance process ensures ‘that adequate attention, problem solving capacity and expertise are assigned to desired policies at various levels of government’ (Egeberg and Trondal 2018, 130).

Climate governance differs from governance in other issue areas. It deals with a time paradox; we will need to act swiftly to turn emissions downward while also planning well for the long process of getting to net-zero (Hale, 2024). To succeed, we need to combine long-term stability and endurance with a capacity for continuous adjustments and improvements. Further, climate mitigation is rife with uncertainty, in particular because of disagreement among experts (Sabel and Victor, 2022). Given that no country has succeeded in getting to net-zero, we do not know exactly how to get there. At the same time, we know that people ‘are terrible at getting things right the first time’, and ‘in order to succeed, we have to ‘try, learn, and do it again’ (Flyvbjerg and Gardner, 2023, p. 60). In this situation, successful problem-solving requires experimentation (Sabel and Victor 2022, p. 12). In order to steer climate governance, goals, which play a profound role in climate governance, must have a degree of endurance (Hale, 2024). Goals that credibly endure long into the future, have the potential to anchor actors’ expectations over time. Crucial to this, is development of official procedures and time-lines for setting and revising goals, but also for delineating more concrete sub-targets and time-tables (Hale, 2024, 106).

After 2015, we have seen a proliferation of new climate organizations within and

in connection to national governments. For instance, 25 countries have councils that are members of the International Climate Councils Network (ICCN, 2025) and some countries also have dedicated climate agencies (Zwar et al., 2023). Charles Sabel and David Victor have argued that governments and other organizations will fail to meet challenges relating to climate change if they ‘do not rapidly develop capacities for experimentation and learning’ (Sabel and Victor 2022, p. 48). In this article, we examine how governments can design their governance procedures to achieve this. Further, Julian Limberg, Yves Steinebach, and Jacob Nyrup (2024) have shown that introducing a dedicated climate ministry lowers carbon emissions substantially. Levin and colleagues’ conceptualization of climate change as a ‘super wicked problem’ has inspired scholars to explore how to ensure positive path-dependencies and feedback effects that could accelerate climate action (Levin et al., 2012). This has led to interesting debates, for instance about sequencing of economic carrots and sticks (Meckling et al., 2017). Cornel Ban and Jacob Hasselbalch have a broader focus, arguing that state-led decarbonization requires a type of ‘green economic planning’ where the state designs and implements structural complementarities between macro-financial architectures, industrial policy and private sector incentives (Ban and Hasselbalch, 2024).

On this backdrop we can conclude that organizational structures and procedures matters, but for this research to become useful for policy makers we need more research on which designs that works best. Further, we need a better understanding of the governance procedures. We present some initial ideas about this in the following.

The importance of opening up climate governance

Back in the 1950s, Schattschneider argued that ‘[t]he outcome of any conflict can be predetermined by confining it so narrowly that the balance of forces is known in advance. By far the most effective device is the effort to keep conflicts wholly outside of the public domain.’ (Schattschneider, 1957, p. 941). He also argued that ‘whoever decides what the game is about decides also who can get into the game’ (Schattschneider, 1974, p. 102). The scope of conflict is also important in the sense that every addition to the number of participants changes the conflict. Public administration studies have later repeatedly confirmed that all governance systems will inevitably evoke some types of conflicts and downplays others (Egeberg and Trondal, 2018). Hence, it is important to pay attention to how procedures

influence which actors that take part in decision making. Which political conflicts that are mobilized follow from which actors are activated, and what they are tasked to do (Boasson, 2015; Boasson et al., 2021; Hochstetler, 2020). Moreover, the organizational anchoring of the climate governance processes will influence how it is designed, and how it functions (Egeberg and Trondal, 2018).

Activation will result from three aspects of the governance procedures: *which actors are included in the various processes, the transparency of the procedures and how routinized the procedures are*. When we talk about inclusion, we refer to actors that are invited into taking active parts in the procedure. Transparency relates to the publics’ ability to be informed about the specific procedure, and routinization relates to how predictable and repetitive the procedure is. The higher the score on these three aspects, the easier it will be for a broad variety of groups to take part in climate governance. Other factors, such as distribution of resources and variation in interests are crucial for actual decision-making, but this chapter focuses narrowly on procedures and not all factors that shape climate governance developments over time.

Monitoring, Reporting, Evaluation and Innovation procedures in Denmark

Denmark has procedures for emissions *Monitoring, Reporting, Evaluation* and *Innovation*. In the following we will present the four procedures and assess how well Denmark is doing with respect to inclusion. As we will see, the Danish Council of Climate Change plays a key role in most of the four procedural elements¹.

	Monitoring	Reporting	Evaluation	Innovation
Inclusion	Medium	Medium	Medium	Medium
Transparency	Medium	Medium	Medium	Medium
Routinization	High	High	High	Medium

Table 1 Activation aspects of Danish Climate Governance Procedures

First, emissions *monitoring* is the process of gathering, assessing and presenting Greenhouse Gas Emissions data. Accurate, reliable and readily available data provides the bedrock for all other types of climate governance. Emissions data are often reported in relation to targets and emissions trajectories. A crucial characteristic with goals and targets is that they enable benchmarking (Hale, 2024). Performance management will work best when the emission targets are easy to operationalize. Ambiguous climate targets make this task intrinsically harder (Tørstad and Wiborg, 2024).

In Denmark, the emissions numbers are published yearly, in a report made by the Ministry of Climate, Energy and Utilities. The ministry oversees the process, but public sector organizations, as well as universities and research institutions participate. Inclusion is medium, since only governmental and scientific organizations take part, and others do not give input to the process before publication. It is made clear how emissions numbers have been calculated, but only after the report has been published. Moreover, the The Danish Council on Climate Change regularly assess the quality of the monitoring. Thus, the transparency is medium. Because the report follows a similar template each year and is published at the same time and place yearly, routinization is high.

Moving on to *reporting*, this is overviews of exactly what the government is doing when it comes to policy instruments but also governance more broadly, and how this has changed over time. Ideally, the government should also report on the relative effects of the various governance aspects, but governments rarely have exact knowledge about this. Good climate reports should facilitate discussion about whether current governance is sufficient in the short and long run. It is especially important to report regularly on performance in relation to agreed indicators (Sabel and Zeitlin, 2008).

Denmark does quite well with respect to reporting. The Climate Act requires Denmark's government to annually publish a climate status report. This report contains emissions data and estimated effects of future policies. The Ministry of Climate, Energy and Utilities is responsible for the report, but various other actors in both the public and research sectors contribute with content. The Danish annual report is transparent about how the emissions scenarios are calculated. This report is open to public consultation each year, but the government has considerable leeway in determining how to respond to the written feedback. Both inclusion and transparency are thus at a medium level, while the routinization is high.

Lastly *evaluation*, is important because it underpins open deliberations and learning. Governance approaches relying on objectives and targets, ranging from Management-by-Objectives to Experimental Governance, give emphasis to evaluation (Larsson and Hanberger, 2016; Sabel and Zeitlin, 2008). As all other aspects of life, climate governance processes are never perfect and can always improve, and evaluation is crucial in this respect.

The Danish Council on Climate Change is mandated to evaluate Danish climate governance and performance each year. This evaluation is based on the government's climate status from the latter year and the report is published at the same time every year. Thus, routinization is high. The Climate Council regularly has meetings with stakeholders and civil society actors. Although the main purpose is dissemination from the council, information can also run the other way. The dialogue is strongest with the 40 organizations that are members of their dialogue forum, but they also have regular contact with other actors. Hence, inclusion is medium. The score would have been higher if they had procedures for receiving information and critique from social society and had resources to relate more to the general population. Transparency is *medium* because these reports are openly communicated, but the council is not open about its process during the writing of the report.

Lastly, climate governance scholars have increasingly given emphasis to the importance of policy *innovation* (Jordan et al., 2015). Policies that worked well in the early phases of the transition are not effective at later stages, and sectors that are included in the transition at later stages may require new types of policies to successfully change. Further, as the climate transition progresses, actors' preferences and problem structures will change, and thus changing coalitions will promote (and obstruct) climate transition (Hale, 2024). Some policies that would not be accepted a few years back can be accepted, but enacted policies may also be met with increasing of intermediate resistance. Innovation should be both encouraged and coordinated (Sabel and Victor 2022, p. 3). Governance innovation can become routine if permanent attention and sufficient organizational resources are allocated to this purpose (Egeberg and Trondal 2018, p. 142). These efforts will be strengthened if actors with varied backgrounds are involved (Egeberg and Trondal 2018, p. 143).

With respect to innovation, the Danish Council on Climate Change is mandated to suggest new policies and climate governance procedures that could strengthen the overall climate action of Denmark. The Council go about this this in varying ways: it publishes ad-hoc reports on issues it wants to raise, and it includes proposals for

new measures in their yearly report, alongside the evaluation of previous action. Routinization is medium because this is done on a regular basis, although not all reports are scheduled well in advance. The stakeholder group is clearly informed of the contents before the report is published, but they are not necessarily included in working out the contents of the report. Thus, inclusion and transparency are at a medium level. Note that innovation as an activity that may thrive on deliberation between people with radically different background and often also involved significant levels of conflict. Hence, lack of high levels of inclusion and transparency can be particularly problematic in this issue area. Thus, this is maybe the most important area for improvement for Denmark.

We note that the Danish Council on Climate Change plays a crucial role for three of the four processes: reporting, evaluation and monitoring. The activities of the council contribute to give Denmark higher score on inclusion, transparency and routinization in all these three processes. While the Council is an expert body, with a very narrow representation, its activities contribute to open climate governance for more actors. This finding runs counter to salient arguments about expert involvement in the literature (Boasson and Tatham, 2023).

Conclusions

In this chapter, we have specified how climate governance procedures can work, especially when it comes to facilitating broad participation in climate policy developments. We argue that the more actors that take part in climate governance procedures, the less likely it is that high levels of conflicts will hinder climate policy development. Climate governance will work best when there are procedures for emissions monitoring, performance reporting, evaluation and innovation, and when all these procedures are inclusive, transparent and routinized. It is however an empirical question whether countries with high scores on these dimensions will tend to produce more effective policies and deliver steeper emissions reduction trends than other countries.

We show that Denmark has an elaborate governance system, that scores medium or high on inclusion, transparency and routinization. Denmark's climate governance system performs well on all these aspects, although there is still room for improvement.

This chapter does not examine how effective the Danish climate governance procedures are in practice. As Denmark is among the most successful countries when

it comes to reducing domestic emissions, one may expect the governance system to play into this. However, domestic climate transitions are shaped by many factors, such as political economy and implementation of EU policy. Further, Denmark succeeded in reducing emissions also before it developed encompassing governance procedures. More research that examines climate governance, and the causal relationships between governance and emissions reduction trajectories, is needed. Better knowledge about such relationships could help countries to improve their climate governance.

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8



The background of the cover features a silhouette of a forest of tall, thin trees against a light, hazy sky. In the lower-left foreground, the dark silhouette of an industrial facility is visible, including two prominent tall chimneys and various building structures. The overall color palette is muted, with soft blues, greys, and a hint of yellow from the sky.

Climate Policy in a European Perspective

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This article looks at climate policy from a European perspective and reflects on how it differs from Denmark's climate policy. Both in relation to how decisions are made and in relation to the challenges that exist. This presents some other challenges, but also opportunities for impartial expert advice.

It is well known to most that the climate challenge is global: No matter where greenhouse emissions occur, they affect the entire atmosphere. Similarly, climate change also affects individual countries, regardless of how much that country has actually emitted. The agreements made internationally under the auspices of the UN are therefore central to addressing the climate challenge. The core of these agreements is that each country is responsible for the emissions that occur in its territory. This may seem strange in a globalised world in which goods are produced in one place and then consumed in another. Are we not responsible for how the goods we buy from abroad are produced? An important reason for national responsibility is that it is at the national level there is democratic legitimacy to legislate and regulate greenhouse gas emissions. Furthermore, countries earn money from the production that takes place within their borders. One could therefore argue that the amount of polluting production a country chooses to allow is the responsibility of that country.

However, taking responsibility for a global problem at the national level is not without its challenges: It can be difficult to attain political support as even large countries are small in the global context. The United States, for example, is the world's largest economy, but in 2024 it accounted for just about 13% of the world's GDP¹. The advantage of taking the lead is, to a large extent, minimal: There may be an economic benefit to being the first to adopt new technologies. But as the European Scientific Advisory Board for Climate Change points out, behavioral changes are also needed if we are to achieve our ambitions. This is harder to see as an earning opportunity. And it is also hard to sell politically.

Because it is not necessarily an advantage to be at the forefront in combating climate change, there is an increasing awareness within international politics of the need for more decisions to be made internationally. As far as Denmark is concerned, this will largely mean decisions at the EU level. The 2021 European Climate Act establishes the framework for a common European climate policy. It contains a joint binding goal of net zero emissions by 2050 and a 55% reduction target by 2030.

The European Scientific Advisory Board for Climate Change was also established under this act in 2022. This body has been modelled after a structure similar to that of the corresponding councils in the United Kingdom and in Denmark. Its mandate is to provide independent, science-based advice. The Advisory Board has a total of 15 members from different EU countries, all with very different scientific backgrounds. Several have experience from the IPCC or national climate councils. Not all European countries have national climate councils, but they are becoming

more and more common. There are also climate councils outside of the EU – in the Philippines, South Africa, Canada and Chile to name just a few. Internationally, the different climate councils meet regularly (online) to exchange experiences. Although the Advisory Board is built on a similar model as the Danish Council on Climate Change, its scale and composition nonetheless present other opportunities, and also challenges, in relation to independent science-based advice.

EU policy differs in many ways from Danish policy, and this also influences how climate policy is shaped and how independent advice is provided. First and foremost, the differences between EU countries are significantly greater than the internal differences within Denmark, and this makes it more difficult to pursue a common climate policy in the EU. For example, there are differences relating to urban/rural demographics, income, infrastructure and types of production. These differences are expressed both within the individual countries and between them. This means that if climate policy is to be just – as stated in the European Climate Act – there is a need to address these disparities to a considerable extent. Not least because redistribution in many European countries is not as centralised as it is in Denmark. It may be necessary to address specific aspects of inequality that are not necessarily related directly to income. Energy poverty is one such example. Energy infrastructure is not evenly distributed (as we know in Denmark from the discussion around district heating, for example), and the incentive to make energy-saving investments is not necessarily present in, for example, rental housing – if it cannot be reflected in the rent. Such factors contribute to considerable energy inequality in parts of Europe². And if, at the same time, there is a lack of central registration, it becomes difficult to implement support schemes during times of crisis for citizens who are particularly affected – as we saw during the energy crisis, for example. This can be a challenge for climate policy, which is long-term in its perspective. For this reason, at an early stage in the energy crisis, the European Scientific Advisory Board for Climate Change issued a number of recommendations on how to maintain a long-term perspective when responding to the short-term crisis³. And an important recommendation here was that support should not remove the incentive to save energy. Although the recommendation came later than many policies, it is nevertheless interesting that Denmark, to a large extent, maintained a long-term perspective (even if the details are certainly open to debate). For example, support was provided to low-income groups using gas as a heating source in the form of a fixed lump sum – regardless of how much energy they used. This meant that the incentive to save energy was retained.

Another important feature of European policy is that the EU does not collect taxes. Climate economists often suggest two approaches to regulating greenhouse

gas emissions – taxes or quotas. And because the EU does not collect taxes, only the quota system - The European Emission Trading Scheme (ETS) - remains. Today there is a fairly well-functioning ETS in place which includes emissions from energy production and larger industries. As long as there is political determination to set the number of quotas in line with political ambitions, and provided that the level of uncertainty is not too great, such a system can function well. However, there are many national measures within the ETS as well. Direct and indirect support is provided for the development of wind energy or the development of CCS installations, for example.

Among other reasons, this support is offered in order to create concordance with national targets and often also as a business policy project. But it poses a challenge, especially in the case of subsidies, because it distorts the ETS price. The coordination of these policies is therefore an important challenge for Europe.

One of the very big challenges in EU climate policy is greenhouse gas emissions from agriculture. These emissions are now regulated nationally, yet the EU has a common target for reductions from the agricultural sector. A good argument for national regulation is that there are many side effects, both positive and negative, and these often hold more local significance. These might be effects on the aquatic environment or on biodiversity⁴, for example, but they could also relate to other targets, such as goals for regional development. This poses a challenge at the European level. Total emissions in the sector have reduced very little since 2005⁵. There is therefore a need for a coordinated policy, so that if one country implements a policy to reach its objectives, this will not result in emissions simply happening elsewhere (leakage), but also so that the actions of other countries do not become political obstacles to reaching agreements in one's own country. An example of this is that Germany, at one point, raised its diesel tax and, as a result, a significant amount of heavy traffic subsequently chose to refuel in Denmark instead. This made it more difficult for us in Denmark to reach our climate targets, instead bringing more money into the state treasury – until taxation was raised in Denmark as well. A more recent example is the corresponding tax in the fishing industry, which politicians chose to abolish just a few weeks after it came into effect, because – quite predictably – it led some to choose to land their fish elsewhere. Interestingly enough, a similar argument has for several years meant that the Norwegians have been reluctant to introduce a similar tax⁶. There is a clear need for coordination, and this includes a form of coordination that can ensure local interests to be safeguarded. If we are to meet our climate policy ambitions, then this local interest cannot simply be that the burden should be shouldered elsewhere. Transparency about local interests and openness about what specifically is at their

core is, in my view, absolutely central. Next comes a political decision about what is to be given the highest priority.

The last example I will mention where European coordination is required is with regards to so-called *carbon dioxide removals* – i.e. the capture of carbon dioxide from the atmosphere and its subsequent storage. Both Danish and European policies aim towards negative emissions. This means that we must capture more carbon dioxide than we emit. It is necessary for us to slow down and also reverse climate change. At the same time, this can also help us to achieve the last emission reductions. As Figure 1 shows, there are considerable volumes to be removed – and these exceed what can be achieved through natural processes alone. This requires infrastructure and common frameworks to ensure that things actually happen when we say that they will, and that there is an incentive for this to happen. There are several possible technologies that can be used, from those based on plant photosynthesis to those that directly capture carbon dioxide. It would be wise to consider from the very beginning how this will be done across the EU. The European Scientific Advisory Board on Climate Change proposes common targets for CCS, and suggests that these be set separately for permanent and non-permanent storage⁷. It is also proposed that the targets be kept separate from ambitions for emission reductions. From an economic perspective this might seem strange – because why not simply do what is cheapest? The reason for this is to prevent uncertainty around the technologies and implementation from disrupting the existing ETS system. In other words, it is a recognition of the fact that there are many unknown factors around the actual cost – for example, whether there are sustainability aspects that are not sufficiently included in the costs.

Removing carbon dioxide from the atmosphere is not directly related to a specific product. The ‘polluter pays’ principle, which is often argued to be reasonable, is thus difficult to apply. Removing carbon dioxide from the atmosphere is a shared responsibility and not free of cost. The European Scientific Advisory Board on Climate Change points out that there is a need for both private and public funds if this is to succeed. They also point out that it may be worth looking at the possibility of a so-called *extended polluter principle*, whereby the companies that continue to produce emissions must pay for the carbon dioxide to be removed later. How the cost is to be distributed is of course a political choice, but there is a debate which says that politicians must act quickly if CCS is to play a considerable role.

As the examples above show, there are many local aspects at stake, even though climate change is global. Because greenhouse gas emissions are part of so many of our activities, they affect almost everything. One of the things that we here in

Denmark, in my opinion, are relatively good at, is looking across sectors (although improvements could still be made in relation to this). The EU has a multitude of different climate policy sub-objectives, and they are not always well-coordinated. The fact that we in Denmark now have a greenhouse gas tax across all sectors – and that in determining the level of this tax, arguments have been made in favour of reasonability in relation to other sectors – demonstrates a willingness to consider how we can achieve climate policy goals in the most cost-effective way for society as a whole. Of course, this naturally has consequences for distribution policy which have been addressed via various different political agreements – with which one may agree or disagree. And there are also parts of the agreements that can be criticised from a welfare-economy perspective. Nevertheless, I believe that the way we incorporate holistic thinking and welfare economics is worth viewing as a model example within the EU.

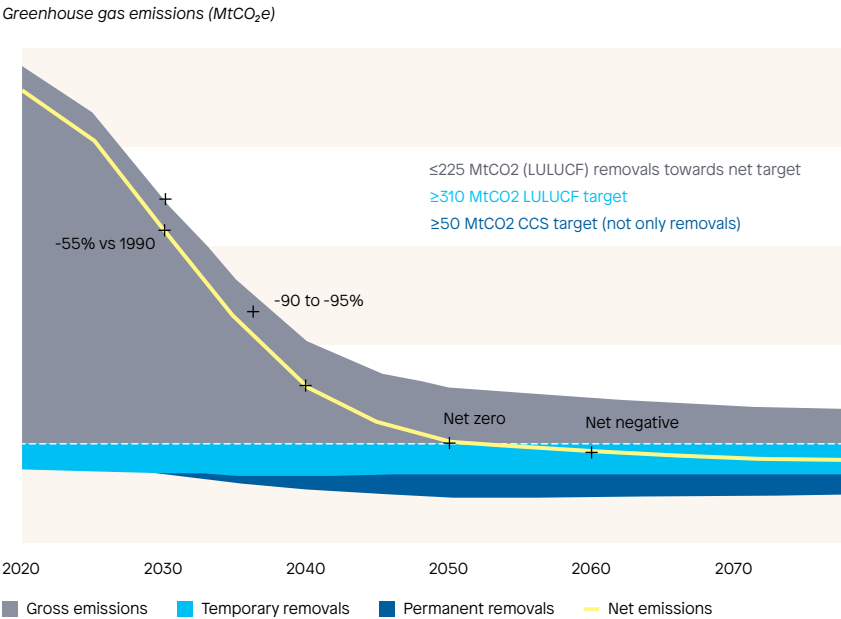


Figure 1 The EU's climate targets and an example of a scenario that will bring us over the line.

Sources: Figure from the European Scientific Advisory Board, 2025.

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9

The Heavy Climate Burden of Politicians

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Office-holding politicians face the difficult task of balancing a wide range of considerations against one another. This is a prerequisite for the democratic legitimacy of public policy. The task at hand involves a continuous balancing of short-term and long-term considerations and of divergent interests that have both positive and negative impacts on the consequences of policy. There is a risk that short-term considerations will outweigh long-term ones, and that decisions will be made on a basis that fails to consider relevant information about the state of the problem and the consequences of the policy. It raises the question of how to institutionally reinforce the knowledge base upon which politicians make their decisions – without simultaneously undermining the position of elected politicians. Ultimately, they do hold power – but it is power that is difficult to use. The Danish Council on Climate Change plays an important role in relation to this.

Honourable, demanding and thankless

It is difficult to imagine a more honourable duty than that of the elected politician. They enjoy such great trust among their fellow citizens that they have been elected to Parliament. Some go even further and become ministers, and thus political leaders in charge of a ministry and members of the government. The threads of power are gathered in their hands, and their careers culminate in a task that does not resemble any other occupation.

If they are to continue, they will need to once again receive enough votes in future elections to outperform their competitors from other parties – and indeed, from within their own party as well.

The task of the politician is one that requires both men and women. They must cover an unlimited scope of responsibilities. Year after year, they must deal with an infinite number of questions about how to solve social problems. When determining their own position and that of their party, they must balance very different considerations against one another, and there is no algorithm that can handle this task on their behalf. Climate policy illustrates this very well.

None of this is new. Things have been this way ever since the fragile birth of democracy a little over 175 years ago. But the situation has gotten more difficult. Today's society is more complex than the agrarian society of the 19th century. We place more demands on politicians than we did then – even than we did 75 years ago when the constitution was last revised. Legislation regulates many more matters today than in the previous centuries. The public sector is larger and more complex. And at the same time, things are developing more quickly. This also applies to politics. Politicians must continually consider whether what they have recently passed should continue to apply going forward.

Finally, the task of the politician is also a thankless one. Even when politicians are capable, fortunate and when they win re-election, they do not automatically enjoy the trust of their fellow citizens. Regular surveys show that politicians, compared to people in other professions, sit at the bottom of the pile alongside other poorly regarded occupational groups like journalists and used-car dealers. This is difficult to interpret, but many people seem to view politicians as people in power who say one thing and do another, until they later change their attitudes and behaviour again. It's a harsh depiction, and it's hardly reassuring that it's essentially built into the brief job profile above. In many ways, it is good that politicians are not trapped in old dogmas, and that they are instead able to adapt to changing situations and

weigh different considerations against each other accordingly.

The Danish Climate Act illustrates what is at stake. As with other pieces of current legislation, it is based on a political agreement between the government and a broad circle of other parties. On the one hand, the 2020 agreement and the Climate Act establish a number of politically binding targets for emissions that are harmful to the climate. On the other hand, they also establish a list of the multiple considerations that politicians must make when they are to politically enforce the agreement. The agreement states the following:

Denmark's climate targets must be achieved in the most cost-effective way possible, taking into account the long-term green transition, sustainable business development and Danish competitiveness, healthy public finances and employment. Danish business must be developed, not dismantled. Denmark must show that we can implement a green transition while simultaneously maintaining a strong welfare society without harm to cohesion and social balance. The measures we need to take to reduce greenhouse gas emissions must bring about real domestic reductions, but we must simultaneously ensure that Danish measures do not simply move all greenhouse gas emissions outside of Denmark's borders.¹

There are three things to consider here:

- The parties – or some of them – commit the government, including future governments, to not wriggle out of the obligations that they have agreed to and which the law legally requires them to implement.
- The parties – or some of them – commit the government, including future governments, to implement the reduction targets without prejudice to a number of other essential social interests.
- This is what the law requires. How do we ensure that future climate action can politically and administratively meet the climate objectives of the law while also respecting the restrictions that balance climate policy against other political considerations?

That is the question. It is neither trivial nor academic. This was demonstrated when the government, in early February 2025, launched its strategy entitled *A New Course for Danish Fisheries*. This postponed the carbon tax on fisheries, which would otherwise have entered into force on 1 January 2025, by another five years.²

The Council on Climate Change is a part of the answer. The Council is a political creation that emerged during the negotiations in which active climate policy first

began to take shape. The Council's mission is to ensure that the politicians who have determined the long-term and general objectives of climate policy do not lose sight of those objectives under the pressure of the moment. This is a real and well-known problem. Part of its mission is also to help politicians in the trade-offs involved in prioritising between the lofty goals of the future and the political costs of the present.

Classic implementation

New policies have effect only when they are implemented into managed practices. This is a simple matter on paper.

But it is not that simple in practice. This has long since been known. It has been expressed in the publication written by two American administration researchers, *Implementation*. This book has a rather long but meaningful subtitle – *How Great Expectations in Washington Are Dashed in Oakland; Or, Why It's Amazing that Federal Programs Work at All, This Being a Saga of the Economic Development Administration as Told by Two Sympathetic Observers Who Seek to Build Morals on a Foundation of Ruined Hopes*.³ The book's message is somewhat less compelling than the title, for the smooth implementation of a decided policy remains a mirage: It is threatened by uncertainty about the content of the agreed objectives, the rationale on which they are based, doubts about the effectiveness of the adopted measures, organisational inertia, and persistent tensions between interests that are both positively and negatively affected by the consequences of the policy.

For politicians and officials, there is nothing surprising in this. Therefore, a large part of the policy laid down in legislation and public grants is in fact only a political framework of subsequent negotiations at the local and/or sectoral levels which are to translate the policy decided at national level into delivered policy. This happens when new policies take the form of enacting legislation, which the responsible minister must execute in the form of administrative powers. This is also the case when the implementation measures of the ministries set the stage for implementation based on negotiations between national authorities, municipalities, and affected industries and civil society organisations, as has long been the case in the environmental field.⁴ And this is also what is envisaged in the political agreement from 2024 on the limitation of agricultural emissions.⁵

The classic implementation occurred within the clearly defined framework of ministerial governance. Contained in that was the principle that a single minister –

such as the Minister for the Environment – was responsible for the formulation of the policy and the law, and thereafter responsible for its implementation through a negotiated practice with both the implementing authorities and the stakeholders affected within the law's specialised area of application. At the same time, the model also provided a framework for the minister, the ministry and the local authorities to implement the policy adopted, but without legislatively binding the future policies of the minister and government.⁶

Things are different these days, especially within the area of climate policy.

Contractual government and programmatic policy

Contemporary Danish politics are largely based on consensus parliamentarianism based on contractual government. This is a parliamentary practice that is built around political consensus (or compromise), which is to say, around 'informally binding legislative coalitions, which obligate the parties to vote for the agreed law or law package in the Danish Parliament, and which grants all parties in the agreement circle the right to veto any changes to the agreed-upon legislation.'⁷ It is a practice with historical roots in Danish parliamentarianism. Since the turn of the millennium, a very large part of the policy adopted has been based on compromises and political conciliations that the current government has concluded with a wide circle of parties in Parliament. This is especially true in the area of climate and energy policy, in which the government in 2022–23 alone concluded 17 different agreements relating to climate and energy policy and which all stem from the overall political agreement from 2020 on which the Climate Act is based.⁸

That's one thing. Another is that the compromises and agreements that governments enter into with parties in the Parliament eliminate the classical distinction between politics and implementation, and they also often cut across several different ministerial domains. Thus, they break the boundaries of ministerial governance, as they rest on a political premise of coordination across several different ministerial policy domains. This is reflected in the opening quotation from the 2020 Climate Agreement, and climate policy in particular embodies this cross-sectoral character. This is also reflected not only in the proposal of the Minister for Fisheries, but also in the joint initiative by the Minister for Climate and the Minister for the Environment to postpone the carbon tax on fuel used in the fisheries sector. Ministers from the three governing parties act here jointly and on

behalf of the government. Climate policy thus largely consists of initiatives whose implementation must take place, at times, within one political-administrative setting, and at other times, within another. This is, at the same time, both the defining feature and the great challenge of climate policy.

These two factors both have far-reaching consequences. They imply that policy is not defined when a political agreement has been reached and Parliament has passed the legislation that sets out the agreement. There is a subsequent process in which the incumbent government and the parties to the agreement must negotiate supplementary and elaborative agreements that further implement the original agreement framework.

This occurs within the circle of signatory parties to the agreement, which functions as a political steering group for the gradual implementation of the policy set out in the original agreement. At the same time, the model also means that several ministers – each within their own policy domain – hold stakes in the overarching policy, and this must subsequently be translated into sector-specific policies. The process doesn't stop there, as the organisations representing the affected stakeholders – such as industry, municipalities and regions, and civil society organisations – are routinely invited to participate in negotiations at which the political implementation of the framework agreements is determined.

This is a general phenomenon, but it has a particular weight in the field of climate and energy policy, where legislation is based on broad objectives. Of course, it is also an enabling piece of legislation, with powers so broad that 'the basis, insofar as possible,' is expected to be 'usable for the implementation of ... future political agreements.' In other words, policy can be changed if the government and the parties behind the original agreement agree to this – and such changes can be made without having to involve the Parliament and the legislature. That's remarkable.

Principles of the game

This political practice depicts a political-administrative system which, through gradual adjustments, is able to cope with changing demands and which has built up a considerable capacity to decide on and politically implement very far-reaching reforms. This is a process of adjustment that has come about step by step and which has not been the subject either of a principle-based discussion or an impact assessment. It has emerged through changing situations, and because it has proved politically useful, it has been transferred to more and more areas.

It raises problems of principle. They are strongly linked. One is fundamentally democratic. This arises because the political practice of reaching compromises and agreements, whose implications for citizens and companies are gradually unfolded through new political negotiations and agreements, breaks with the ideas of parliamentary governance within which the basis of action for the authorities is determined through legislation adopted by Parliament.

The second problem concerns the credibility of the goals set by governments and parties to the agreements – goals that are subsequently subject to gradual and politically negotiated implementation, which must balance cross-sectoral considerations against one another. This problem puts politicians in a dilemma: Can they, in a representative democracy, bind their successors to pursue a policy that was agreed upon under different circumstances – and perhaps even under a majority that no longer exists? Or are elected politicians rather captive to the political impulses of the moment that they are unable to commit to the realisation of long-term political goals if the political climate suddenly shifts in another direction?

These are questions that the politicians must answer themselves. One answer is that the democratic legitimacy of politicians stands and falls with their ability to make decisions that, in the present moment, enjoy the support of citizens – and particularly of the stakeholders affected. This is the logic laid down in the explanatory notes to the legislation cited above. Another answer is that politicians must tie themselves to the mast, so that any temptation to give in to the political impulses of the moment is kept in check. That is the logic behind the establishment of independent central banks, which are not subject to direct political control, and to which politicians have delegated the responsibility for conducting monetary policy.

The question then is how broad a mandate the bank should have. Should it be limited solely to keeping inflation under control? Or should it also extend to other aspects of economic policy? That question comes up from time to time. We saw it in the wake of the financial crisis when it was asked to Jens Weidmann, then President of the German Bundesbank. His clear answer was no, because ...

The more central banks move into the domain of fiscal policy, the more pressing the questions become regarding their democratic legitimacy – and the stronger the demands grow for increased parliamentary oversight. This is understandable, for the independence of the central bank can be justified in a democracy only if its mandate is clearly defined and limited ... It does not serve politics well if politicians delegate too many tasks to central banks and cede to them the authority

*to interpret political questions.*¹⁰

This was a wise answer. It was spoken not only by a talented economist. It came also from a person who, as a civil servant, had worked as the right-hand man of the federal chancellor on the issue of economic policy. Weidmann's reasoning was that, while there should indeed be limits to politics, it is the politicians themselves who must define what these are, and, for the sake of democratic legitimacy, those limits should be so narrowly drawn that they do not pave the way for technocracy.

Striking a difficult balance

It is difficult to strike the right balance within the confines of the political-administrative system. It is built up in parliamentary democracies around a political-led administration, whose officials are subject to the requirement of being politically responsive to provide professionally based assistance and advice to the current government. There is also a democratically legitimate expectation that politicians do their bit to advance the policy of the sitting government, even when this suddenly changes in response to the political situation. There is no objectively correct policy. Rather, there is a form of policymaking in which the task of officials is to ensure that policies are formulated on an informed basis, while simultaneously taking into account the political costs involved when policies in areas such as the climate must be weighed by politicians against other politically unavoidable and democratically legitimate considerations.¹¹

This creates a need to supplement the professional, expert advice, which is integrated into the ministerial organisation, with knowledge-based advice from outside the ministerial and government-led hierarchy. The problem is not a lack of expert or technical competence among ministerial officials, but rather their dual obligation to provide integrated political and expert advice that supports the demands and immediate wishes of ministers and the government.

The creation of the Council on Climate Change in 2015 and the strengthening of its competence and independence via the Climate Act of 2020 show how this can be done. But this is also the result of a political process. The history of the Council's creation exemplifies this. There was an arm-wrestling match between forces seeking to preserve maximum room for manoeuvre for the political actors of the moment, and others striving to bind today's and tomorrow's decision-makers to the pursuit of long-term climate policy goals. The latter therefore wanted to prevent the objectives being subject to ongoing negotiations. The result is a model

that allows for politically flexible interpretation which, from case to case and situation to situation, also considers the political transaction costs involved in realising ambitious climate goals.

In the Danish context this is a rare but not unique model. It is known from the Economic Council, the Environmental Economic Council, and the Productivity Council – the first of which has a history dating back to 1962. Interestingly, the chairmanship of the Economic Council has since had its responsibilities expanded to function as a legally mandated fiscal watchdog, to monitor productivity developments, and to review the calculation principles that are used by the central administration when estimating the behavioural effects of new policy initiatives.¹² In both the case of the Council on Climate Change and the Economic Councils, these are independent advisory institutions with mandates that span very broad areas. But the model is also applicable to specific policy areas. Thus, the Fisheries Commission has proposed the establishment of an independent maritime council.¹³ However, such a body is not in the government's proposal for a new fisheries policy. Similarly, the Liberal Alliance, a political party in parliament, has likewise proposed the introduction of a Bureaucracy Act with binding targets for reducing the volume of regulation, in which 'an independent watchdog, similar to the Council on Climate Change, should pressure-test whether the government is meeting the targets ...'¹⁴

The government's reluctance should not come as a surprise. Independent advisory bodies make it harder to be a politician. That is their task. They are created to produce impact and status analyses on a transparent basis, even if this is not necessarily convenient for the politicians who make decisions, nor for the organisations representing the stakeholders concerned. Such bodies can, without themselves being political actors, shine a light on the broader social and long-term consequences of decisions in cases where politicians might be tempted by short-term political calculations.

And there is one more thing they can do. Their publicly accessible analyses can shift the balance point between political attentiveness and professional expertise among the officials in the ministerial departments and agencies who provide professional and political advice to ministers and the government. They face a difficult dilemma in balancing the requirement of this political attentiveness to ministers and the government while simultaneously performing what is a most often a vaguely defined expert role for the same political leadership.¹⁵ A legally mandated publication of reports and memos that are relevant to policy – and produced by an independent expert council – encourages officials to incorporate this

input into the integrated professional-political advice they provide to ministers and the government, thereby compelling the latter to address it. It thus becomes a stronger component in the obligation to provide politically responsive advice that anticipates the challenges facing ministers and the government.

The first 10 years of the Council on Climate Change show how an independent monitoring body has a significant capacity of influence when, in its role as a monitoring body, it helps hold politicians accountable to their own goals. However, it is by no means certain that the Council on Climate Change has found, or can find, a solid footing when it comes to governments, politicians, and vested interests translating them into politically sustainable action. The situation is no different than it is for the Economic Councils. This requires a different political-administrative arrangement, as the negotiations around the recent green tripartite agreement on the regulation of harmful discharges from farming have shown. The conclusion, then, is that the Council's success depends on its legally mandated mission as a monitoring body, which grants it legitimacy through the interplay between institutional independence and the professional expertise gathered within the council at any given time. And note here that it takes a considerable degree of political diligence from the Council itself to safeguard that status.



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Note: Thank you for your helpful comments, Peder Andersen, Marius Ibsen and Peter Bjerre Mortensen.

The image features a large, bold, blue number '10' centered in the upper half. The background is a photograph of a power substation during sunset or sunrise. The sky is a mix of orange, yellow, and blue. In the foreground, there are several white ceramic insulators and metal structures of the substation, some of which are silhouetted against the bright light. The overall composition suggests a theme related to power, energy, or a decade (given the number 10).

10



The Early Years of the Climate Council – From the Chair's Perspective

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The Danish Council on Climate Change was established pursuant to the Climate Act of 2014. The Council had a stormy start due to disagreements between the Minister for the Climate and the Council regarding the interpretation of Denmark's climate targets. The Council's first main report from 2015 outlined the principles that would guide its work in the following years and pointed to ways of achieving the goal of the then parliamentary majority, which was to reduce Denmark's greenhouse gas emissions by 40 percent by 2020, compared to 1990 levels. The following three main reports presented proposals for future green taxes, stricter regulation of Denmark's biomass consumption, and cost-effective transition elements towards 2030. The Council also took part in the debate on the EU's emissions trading system and the financing of support for renewable energy. The line taken in the Council's work in the early years has largely been followed since then.

Introduction

Denmark's first Climate Act was passed by the Danish Parliament on 11 June 2014. In accordance with this act, an independent Council on Climate Change was established to provide advice on Denmark's transition to a low-emission society. From 1 December 2014, I became the first chairman of the Council for a four-year term, and in March 2015, the other six members of the first Council joined. In this article, I will discuss what we can learn from the experience of the early years of the Council on Climate Change. What issues did we address and what insights did we gain?

The first Climate Act

The main contents of the Climate Act of June 2014 were the provisions on the establishment of the Council on Climate Change and the description of its role. Section 1 of the Act states: "The purpose of the Act is to establish an overarching strategic framework for Denmark's climate policy with a view to transitioning to a low-emission society by 2050 – that is, a resource-efficient society with an energy supply based on renewable energy and significantly lower greenhouse gas emissions from other sectors, while also supporting growth and development. The Act shall furthermore promote transparency and public access regarding the status, direction and progress of Denmark's climate policy."

Section 2 then set out the provisions for the Council on Climate Change, which was to be an independent expert advisory body tasked, among other things, with assessing Denmark's progress in meeting national climate targets and international climate commitments, analysing possible transition pathways toward a low-emission society and potential instruments for achieving greenhouse gas reductions, formulating recommendations on the design of climate policy, and contributing to the public debate. According to Section 2, the Council on Climate Change was also required to consult and involve relevant stakeholders in its work, in part through the establishment of a stakeholder group comprised of representatives from relevant interest organisations, industry associations, NGOs, municipalities, regions and others. At least once a year, the Council would submit and publish recommendations to the Minister for the Climate on climate action: 'so that this can be conducted cost-effectively and in a manner that takes account of growth, competitiveness, employment and scientific recommendations on the necessary climate action,' as stated in the text.

Section 3 of the Act laid down the rules for the appointment of the members of the Council on Climate Change, and Section 4 stipulated that the Council was to be assisted by a Secretariat headed by a Head of Secretariat who would be appointed by the Minister for the Climate on the basis of a recommendation from the Chair of the Council.

Section 5 of the Climate Act required the Minister for the Climate to prepare an annual climate policy report to the Danish Parliament. The report should include an account of historical greenhouse gas emissions broken down by sector, projections for future emissions, planned climate initiatives and instruments along with their expected future impact, a description of and a status update on the fulfilment of national climate targets and international climate commitments, an overview of the Council's recommendations to the Minister for the Climate, and a statement of the Minister's position on those recommendations.

The Act did not, however, impose an obligation on the Minister to take action if the Council's analyses indicated that climate efforts were not on track to meet the climate targets. Nor did the legislation contain quantified targets for reducing Denmark's greenhouse gas emissions.

A stormy start for the Council on Climate Change

The political circumstances surrounding the work of the Council in its first years were special. The Climate Act of June 2014 was passed by a parliamentary majority consisting of the governing parties, the Social Democrats and the Social Liberal Party, with support from the Socialist People's Party, the Red-Green Alliance, and the Conservative People's Party. However, after the general election in June 2015, government power passed to the Liberal Party, which had voted against the Climate Act in 2014. Among other things, the Liberal Party had campaigned under the slogan 'Green Realism,' which signaled an intention to slow down the pace of Denmark's green transition. The party justified its opposition to the Climate Act by pointing to the explanatory notes to the bill, which referenced the then parliamentary majority's goal of reducing Denmark's domestic greenhouse gas emissions by 40 percent by 2020 compared to 1990 levels. The Liberal Party opposed this target, fearing that it would lead to a green transition at a pace that could undermine the competitiveness of the Danish economy.

However, after the general election in June 2015, there was still a parliamentary majority in favour of the national goal of a 40 percent greenhouse gas reduction by 2020. In the Council on Climate Change, before the election we had planned to publish our first main report in the autumn of 2015. As mentioned above, one of our main tasks under the Climate Act was to assess the status of Denmark's fulfillment of its climate targets and to point out ways to meet them. Our interpretation was that, since the 40 percent target was explicitly mentioned in the explanatory notes to the Climate Act proposal, and given that there was still a parliamentary majority supporting this target, it was relevant to assess the status of the target in our first main report and to outline how it could be achieved.

The new government, however, believed that it was not the Council's role to address the 40 percent target, since the government was opposed to that goal. The Minister for the Climate's view was that the Council's sole task was to advise on how the government's own climate policy objectives could best be achieved. The Council on Climate Change, on the other hand, interpreted the Climate Act to mean that the Council was to serve as an advisor to both the Danish Parliament and the government, and that it was legitimate to address a national climate target that had been formulated by a parliamentary majority.

These differences in the interpretation of the Climate Act led to a confrontation between Minister for Climate Lars Christian Lilleholt and myself in connection with the publication of the Council's first main report in November 2015. It also did not help relations between the Minister and the Council that, shortly before the publication of the main report, the Council had released an analysis of the decoupling of greenhouse gas emissions from economic growth in Denmark and a number of comparable countries. The analysis showed that, since 1990, Denmark had not been any better at decoupling emissions from GDP growth than a number of our neighbours, contrary to the widespread domestic belief that Denmark was far ahead of other countries in relation to the green transition¹.

The turbulent course of events surrounding the Council's first report highlights the value of explicitly incorporating key climate targets into the Climate Act – as was done with the inclusion of the 70 percent target for 2030 in the new Climate Act of 2020 – so there can be no ambiguity regarding which climate goals are to guide policy. The course of events may also illustrate a more fundamental challenge for a Council that is tasked both with advising the government and, at the same time, serving as a watchdog with a duty to sound the alarm to the public if the government's climate efforts are deemed insufficient: If a government repeatedly finds itself being criticised by the Council for not 'doing enough,' its psychologi-

cal counter-reaction may be to disregard the Council's recommendations on the grounds that these are just noise from the usual 'complainers'.

The first main report of the Council

The first main report of the Council on Climate Change, entitled *Omstilling med Omtanke* [Converting with care] did not only address the 40 percent target². The report also presented a set of basic principles for climate policy, which would guide the Council's work and recommendations in the following years. The first principle was a recommendation to ensure clarity around the climate policy framework through clear climate targets, in order to reduce uncertainty for the investors who are to invest in the green transition. The second principle was a recommendation to maintain a focus on a balanced transition, to ensure that the transformation across different parts of the economy is developed in a coordinated manner – for example, that the expansion of renewable energy is accompanied by increased electrification of energy consumption and more flexible electricity use.

The third principle called for maintaining a steady pace in the transition, in order to enhance the credibility of long-term climate policy goals and to avoid postponing the necessary investments in the transition for too long – in other words, it was a warning against following a 'hockey-stick strategy.' The fourth principle was a recommendation to use technology-neutral climate policy instruments, taking into account the significant uncertainty surrounding future technological developments. At the same time, however, the report emphasised that special support may be necessary for the development of new, immature technologies that are important for the interaction between sectors.

The report also included a discussion of the long-term challenges in Danish climate policy and outlined what a future fossil-free energy system could look like. At the same time the report pointed to a number of pressing short-term issues in the transition, including the problematic tax incentive for the use of biomass through its exemption from energy taxes, the over-taxation of electricity that was hindering the electrification of heat supply, and the need to accelerate the expansion of renewable energy.

The most detailed part of the report consisted of a quantitative analysis on how Denmark could meet the target of a 40 percent greenhouse gas reduction by 2020 compared to the 1990 emission level. The report described two concrete ways to close the reduction gap of two million tonnes of CO₂e, which was needed to meet

the target. The 'cost minimisation package' included a range of instruments that were estimated to close the emissions reduction gap at the lowest possible socioeconomic cost. Overall, we estimated that the package could yield a socioeconomic gain of approximately DKK 1.1 billion through beneficial side effects in the form of a cleaner aquatic environment resulting from reduced nitrogen leaching and ammonia evaporation in agriculture. Today, the awareness of these side-benefits of climate action in agriculture is fortunately greater than it was in 2015. The report also presented an alternative policy 'package' that illustrated the consequences of exempting the agricultural sector from contributing to closing the emissions reduction gap. This package was estimated to entail socioeconomic costs of approximately DKK 150 million per year. A key message, therefore, was that the 40 percent target could be achieved at a low – or even negative – socioeconomic cost. At the same time, the report's macroeconomic analysis showed that the two climate policy 'packages' would boost employment in the short and medium term, as the economy would be stimulated by increased investments in the green transition.

Subsequent reports: Taxes, biomass and the transition ahead of 2030

The Council's second main report from 2016 focused primarily on how the Danish system of indirect taxation could be restructured to promote the green transition, while also taking into account other political objectives of tax policy³. Among other things, the Council proposed lowering the tax on electricity used for heating in order to promote the transition to heat pumps. We also proposed introducing a 'battery deduction' in the base for the registration tax on electric vehicles. These recommendations were followed by the government and by parliament. Later, in 2018, the Council on Climate Change published an analysis of the energy tax system, including proposals for a more comprehensive restructuring of energy taxes aimed at ensuring a uniform taxation of carbon emissions across sectors⁴. These recommendations largely anticipated the carbon tax reform adopted by the Danish Parliament in June 2022, following preparatory work by the Expert Group on Green Tax Reform. The Council's second main report was also followed by a 2016 analysis of how a greenhouse gas accounting system could be designed for individual agricultural holdings⁵. This became a significant source of inspiration for the recommendations of the Expert Group on Green Tax Reform, which, in 2024, led to the Danish Parliament's adoption of the world's first greenhouse gas tax on agriculture, to take effect from 2030.

The Council's third main report focused primarily on Denmark's green transition ahead of 2030, with a particular emphasis on the transition in the non-ETS sector⁶. The report introduced the distinction between elements of the transition and climate policy instruments – a distinction that the Council has used in several subsequent reports, and which has also since been adopted by the government. A transition element is a change in production or consumption processes, such as the introduction of electric heat pumps into the heat supply, the broader use of electric vehicles in transport, the energy renovation of buildings, climate-friendly handling of livestock fertilizer in agriculture and other similar changes. A transition element can typically be implemented through different instruments such as taxes, grants or via direct regulation. While there may be political disagreement about the instruments of implementation, the report aimed at creating greater consensus regarding which transition elements were most cost-effective in the transition ahead of 2030.

In its fourth main report, the Council addressed the controversial issue of using solid (wood-based) biomass in the green transition⁷. The report concluded that since biomass is a scarce resource, Denmark's large consumption of solid biomass cannot be considered sustainable from a global perspective. The report pointed out that biomass consumption was being 'artificially' stimulated by the energy tax exemption for biomass and it recommended that this tax exemption be abolished. The report also highlighted that biomass consumption is not necessarily climate-neutral due to the time lag between the uptake of carbon dioxide by the biomass and the carbon dioxide emissions released during combustion. The report therefore proposed the introduction of more stringent sustainability criteria for solid biomass in the Danish regulation. According to the report, biomass that did not meet these criteria should be subject to a carbon tax. This report largely laid the foundation for the critical attitude toward Denmark's high consumption of wood-based biomass that has characterized many subsequent reports and recommendations from the Council on Climate Change.

Debate around the quota system

During the first years of the Council, there was considerable debate about the Danish national state aid for renewable energy expansion in the part of the economy that is covered by the EU's carbon emissions trading system (ETS). Among others, the Danish Economic Council argued that this aid was ineffective, as increased renewable energy expansion in Denmark would simply release carbon allowances from Danish emitters, thereby enabling higher carbon emissions in other parts of

the EU.

In the Council on Climate Change we disagreed with this criticism, and we justified our position in an analysis based on a newly developed simulation model for the ETS⁸, which was later published internationally⁹. The model was based on the rules of the ETS at the time. As a consequence of those rules the number of carbon allowances issued significantly exceeded actual emissions from the system during the 2010s, resulting in a very low quota price. Our model simulations showed that, due to the large surplus of emission allowances, a Danish expansion of renewable energy would have a positive effect on the climate – either by permanently reducing total carbon emissions from Europe or, at the very least, by postponing emissions far into the future, thereby helping to buy us more time to combat climate change.

The analysis also argued that expanding renewable energy within the ETS sector in Denmark and other EU countries – thereby pushing down the quota price – could incentivise EU policymakers to reduce the supply of allowances in order to keep the price at an acceptable level, and this would ultimately lower emissions in the long term. And indeed, in 2018, the EU adopted a significant tightening of the quota system, which has meant that allowances are now permanently removed from the system when the surplus exceeds a certain threshold. This supported the Council's hypothesis about the political trade-offs that determine the supply of carbon allowances.

The PSO tax controversy

The debate in the mid-2010s about the role of the quota system in climate policy was closely intertwined with the controversy over the PSO levy – that is, the then surcharge on electricity prices earmarked to finance support for renewable energy. PSO stands for Public Service Obligation. One of the arguments against the PSO levy was that the support for renewable energy was ineffective due to the functioning of the quota system, but this argument was refuted by the Council's analysis mentioned above. Another argument was that the increase in electricity costs due to the PSO levy hindered the electrification of energy consumption. The Council, on the other hand, maintained that the PSO aid was part of the socio-economic cost of renewable electricity production. If state support for renewable energy were not reflected in the electricity price, the private economic cost of electricity consumption would be lower than the societal economic cost, and this would encourage overconsumption of electricity¹⁰.

However, the PSO scheme faced a challenge in that its then design conflicted with the EU's state aid rules, because the PSO levy was imposed on all electricity consumption, including imported electricity, while PSO aid was only granted to domestic renewable energy producers. The Council pointed out that this problem could be addressed by reserving a small portion of the PSO aid for the installation of renewable energy facilities in other EU countries. However, the end result was that the Danish Parliament decided to abolish the PSO system. Thus, an important source of funding for the future expansion of renewable energy was lost.

Old problems and new frameworks for Danish climate policy

The position of the Council on Climate Change on the PSO scheme was largely motivated by an expectation that, for a number of years to come, continued state support would be necessary to ensure a sufficiently rapid transition to renewable energy. For a few years from the late 2010s, however, it appeared that the future expansion of wind and solar energy could actually be carried out without subsidies, thanks in part to continued declines in technology costs and historically low interest rates. Now, in the mid-2020s, however, interest rates have returned to more normal levels, and the prices of a wide range of key materials for the green transition have risen noticeably. In addition, the electrification of energy consumption has not been able to keep pace with the increase in the supply of renewable energy from solar and wind. As a consequence, the earnings of renewable energy providers have come under pressure, as energy storage technologies are not yet sufficiently developed to prevent extremely low electricity prices during periods with a lot of wind or sun.

These developments suggest that some state aid will continue to be needed in the coming years in order to sustain the green transition. The energy system is critical infrastructure and there are significant risks associated with renewable energy investments. A substantial part of these risks concern uncertainty about the future climate policy regulation, and so it is natural that the state show a willingness to share some risk with private investors. In an analysis made in 2017, the Council described a model for such risk sharing that eliminates the regulatory risk for private renewable energy investors, but retains the incentive to minimise costs and pursue forward-looking investment planning. This model was used in the tender for the Thor offshore wind farm¹¹.

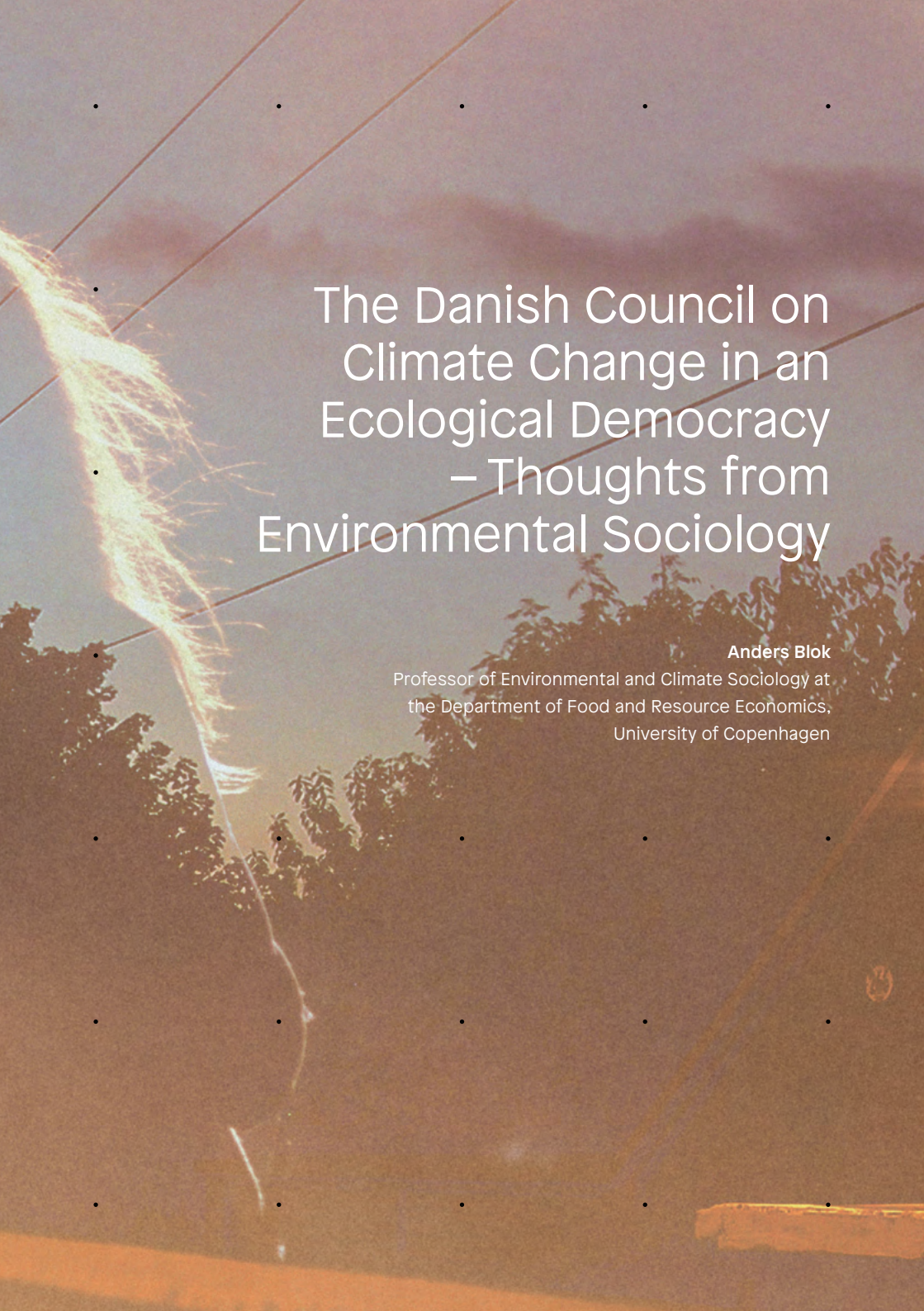
The external framework for climate policy has changed in recent years. The EU has set more ambitious climate targets, introduced an emissions trading system for transport and buildings, and geopolitical and industrial policy considerations have also gained greater importance in climate policy. But basically, the task for Denmark as a frontrunner is the same as when the Council was started: To demonstrate to the outside world that it is possible to establish a fossil-free energy system that is based on renewable energy, and which is compatible with both a high security of supply and affordable energy prices, without an excessive use of biomass, and that it is possible for agriculture to make the transition to a sustainable, climate-friendly form of food production. There's still a long way to go.

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11





The Danish Council on Climate Change in an Ecological Democracy – Thoughts from Environmental Sociology

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From an environmental sociological point of view, the green transition is about nothing less than the creation of a well-functioning ecological democracy in a sustainable state that is still under construction. Expert advice such as the advice provided by the Danish Council on Climate Change is one of the essential elements of this social change. In this text, I will begin by taking a look at the past 10 years of experience of the Danish Council on Climate Change in relation to its circumstances as a contributor to a sustainable transition. I will then go on to outline some environmental sociological suggestions relating to core issues that must be given more attention in the future if the transition is to result in a sustainable state and social development. Finally, based on this foundation, I will offer some proposals for further strengthening and democratising the Danish Council on Climate Change as one way to promote the development of a more ecological democracy moving forward.

The conditions for the kind of expert policy advisory role that Denmark's Council on Climate Change has now been practising in the best way for the last ten years are themselves the subject of ongoing research activity. This applies to my own research field, environmental sociology, as well as adjacent fields such as science and technology studies (STS) and interdisciplinary climate policy research. One of the core ideas here is that robust and responsible expert advice on climate policy is a cornerstone of a well-functioning ecological democracy¹.

Based on this broad starting point, I will now present some environmental sociological reflections on Denmark's green transition process and the conditions for the role played by the Danish Council on Climate Change within this. The tone is intended as a blend of tribute to the undeniable contributions the Council has made during its 10 years of existence and a reflection on the challenges of the decades to come. The main emphasis here is on describing a reinforced green transition effort towards what I and others have termed a sustainable state². In relation to this, the need for expert contributions in support of democracy will only grow.

The 2020 Climate Act – An adequate framework?

It is no secret that from its establishment in 2014 until the adoption of the new Climate Act in 2020, there was considerable controversy surrounding political interference in the activities of the Danish Council on Climate Change. In that light, one of the well-known benefits of the 2020 Climate Act is that the Council's independence was strengthened, while its climate policy mandate was simultaneously expanded. It is, after all, essential for public trust in the Council's advisory role that its guidance be rooted in impartial and research-based assessments, rather than in the shifting political benchmarks of successive governments.

That being said, the type of bridging between climate expertise, parliamentary policy and public climate debate that the Council is tasked with carrying out continues to present diverse democratic dilemmas. In a report from May 2020 published by the Climate and Transition Council (KOR) – of which I am one of the initiators – we focused on a number of these dilemmas³. Here, I will briefly outline three of them, as a way to approach an environmental sociological view on the challenge of green transition.

Opportunities for strengthened expert advice?

Firstly, there is a debate within international research about the importance of climate policy advice that is based on a broad and diverse understanding of relevant climate expertise⁴. In this regard, it can be noted that the Danish Council on Climate Change, in recent years, has expanded its palette quite a bit beyond the economic expertise that was previously its mainstay. The issue, however, remains pertinent, as key areas of expertise – such as transition management, political science, environmental history and environmental ethics – continue to be better represented in, among others, the Swedish and Finnish Climate Councils, than they are in the Danish one. The provisions of the Climate Act are, moreover, unclear on this point and could benefit from being clarified, so that the Council is better able to ensure a diversity of expertise.

Secondly, seen from the outside, it may appear that the explanatory notes to Paragraph 2.3 of the Climate Act, on the way in which the assessments of the Council must take account of growth, competitiveness and employment, constitute a challenge to expert impartiality (even though the Council often adopts a more balanced approach in practice). In the form of so-called ‘leakage,’ concerns about competitiveness are often raised as arguments *against* an ambitious Danish climate policy – but such assessments themselves depend on expectations regarding other countries’ climate policies, which are difficult to substantiate from a strictly technical-expertise standpoint. Moreover, major branches of ecological economics, among others, are increasingly raising well-founded doubts about ‘growth’ as an indicator of social development.

Thirdly, it is characteristic of the state’s environmental regulatory complex that its institutions largely perpetuate an environmental silo principle. Climate, biodiversity, the aquatic environment, chemical contamination etc. are handled in accordance with separate procedures and considering different types of expert advice. These divisions are increasingly being challenged – particularly as land use and the Green Tripartite Agreement gain prominence. Even so, however, it remains uncertain whether, in ten years’ time, we will still have separate councils for climate change and biodiversity, or if we might instead have a single, consolidated umbrella body – which we might well call the Council for Planetary Boundaries.

Simply put, because the type of expert advice provided by the Danish Council on Climate Change is central to a well-functioning ecological democracy, there is an ongoing need for continued discussions about how it might be further strengthened. This applies to ensuring diversity of expertise, to questioning entrenched

(growth) ideologies, and to assessing society's overall ecological footprint and room for maneuver. And these matters are particularly important in light of the environmental sociological understanding of the broader transition challenge, which I will now attempt to outline.

What is at stake in the transition from an environmental sociological perspective?

From the technical-economic climate literature, an outsider like myself might get the impression that climate change is fundamentally understood as a market failure – one that must be addressed by internalising the market's negative externalities. An initial environmental sociological comment on this would be that society, in this context, risks being reduced to a market – lacking a systematic analytical perspective on the roles of the state and civil society. From a sociological perspective, however, all three domains must be considered if we are to understand why the climate problem has arisen and what a green transition means.

In terms of exactly how this should be done, there are a number of different suggestions, seen from various theoretical points of view and across the micro, meso and macro levels of society. Throughout, emphasis is placed on the so-called sociological imagination⁵. This means the ability to analyse the relationship between the individual and society in a specific historical epoch such as our own. At the same time, it also refers to our ability to draw on historical experiences, other cultures, or perhaps even literary insights to ask how today's society might be imagined to change in the future – in the direction of greater sustainability.

I myself have contributed to an analysis of the sustainable state that draws on such a sociological imagination⁶. Here, we argue that the interaction between four cross-cutting factors – factors which cut across the state, market and civil society – will be crucial to whether or not we manage to create a truly sustainable state. By this we mean a state that, in line with the preceding points, is capable of orchestrating a societal development that keeps Denmark's overall ecological footprint within a fair share of the planetary boundaries. We note that this is by no means the case at present – not even in the area of climate, where greater levels of ambition are needed to reduce, in particular, consumption-based emissions (a point that the Danish Council on Climate Change has also been adept at highlighting in several contexts)⁷.

Cross-cutting factors in sustainable state development

The first factor is what we call ecological citizenship. Broadly speaking, we are referring here to the ideals and practices of engagement, participation, debate and critical judgment that the green transition calls for from the population as a whole. Compared to earlier ideals of citizenship, the key focus here is on capacities, motivations, rights and duties to exercise ecological consideration and care, and to do so to a degree that has the potential to link local nature experiences with global sustainability. Nurseries, schools, and universities play important roles in such socialisation – as does civil society with its communities of shared commitment.

The second factor concerns civil society in a more organized sense – moving towards what sociologists refer to collectively as social movements. It is generally accepted within political science research that pressure from green NGOs and the new youth-driven climate activism played a central role in turning the 2019 parliamentary election into a so-called ‘climate election.’ And therefore, also in making the 70-percent target the focal point of a new and more binding Climate Act⁸. Looking ahead, it will be equally crucial for maintaining momentum in the green transition that civil coalitions – comprised of green NGOs, trade unions, development organisations, and others – are able to exert pressure on market and state institutions in order to raise sustainability ambitions.

The third factor points more directly to the state’s own institutions, where there is a continuous need to make cross-cutting sustainability considerations more central to governance ambitions and decision-making processes across policy domains. Currently, discussions are being held in relation to whether a so-called green constitutional amendment – through which everyone is guaranteed the rights to a healthy environment, diverse nature and a safe climate – could help propel such a process forward. Similarly, in recent years, there have been many attempts to strengthen and render more binding the involvement of citizens and stakeholders in local and global climate policy decision-making processes – with the potential to yield more robust solutions.

Finally, the fourth factor returns to the point about economic ‘growth’, in that it concerns how economic governance and development can be rethought within the framework of the planet’s ecological boundaries. One compelling proposal in this area is the so-called doughnut model, which shifts the goal from exponential economic growth to the pursuit of maximum sustainable well-being, both social and environmental⁹. Many cities around the world have gained experience in recent years in translating this model into economic planning. At the enterprise level, it is

reasonable to think that increased co-ownership among employees and customers – through a revitalised cooperative mindset – could help set similar socio-ecological objectives across sectors.

As mentioned, the ideas presented here must be seen as an expression of an environmental sociological imagination that analyses current trends and obstacles to the transition, and contributes to debate and visions for more ambitious initiatives. An ecological democracy, I would say, needs such imagination in its efforts towards a sustainable transition. And, of course, this applies not only to sociologists. On the contrary, a well-functioning ecological democracy will seek to cultivate the imagination of sustainability broadly across the population – including as a task for expert bodies such as the Danish Council on Climate Change. This point leads me to the last part of my contribution.

The Danish Council on Climate Change in a strengthened ecological democracy?

I wrote previously that the Danish Council on Climate Change plays an important role in bridging climate expertise, parliamentary politics, and the public climate debate. And that considerations relating to diversity of expertise, ideological independence and holistic sustainability assessments call for ongoing reassessments of the Council's mandate and composition to be made. However, in light of the above environmental sociological analysis of the true scope of the transition challenge, I would nevertheless like to conclude with a more fundamental reflection on how the Danish Council on Climate Change might be thought of as a driving force behind a strengthened ecological democracy. And, in connection with this, what it might mean to democratise the Council itself.

Within the field of Science and Technology Studies (STS), it has long been suggested that the so-called 'democratisation of climate expertise' should be seen as a counterpoint to both technocratic and populist climate policy¹⁰. Technocratic tendencies are linked to the fact that the climate is a technically complicated policy area. There may be a temptation here to think that the verdict of experts should be the final word – even though such a notion suffers from a democratic deficit.

As a counter-reaction to this, we are also seeing the emergence of various populist climate currents, in which experts and expertise are sidelined in favour of a notion of 'the people's common sense.' At home, such discourse is known, among other

things, from the debates around nuclear power and the green transition of agriculture. Seen in relation to widespread democratic ideals of a reason-based public dialogue as a source of legitimate political decisions, these tendencies are troubling.

Three proposals for the democratisation of the Council's expertise

The democratisation of climate expertise, on the other hand, concerns ways in which we can strengthen relationships and binding dialogue between expertise, politics and the public. This serves both as a way to elevate the public's climate-related engagement and knowledge, and as a means to hold climate policy decisions and expert advice on climate accountable in relation to the public debate.

Let me therefore conclude with three proposals for the (further) democratisation of the Council's expertise which, in my view, can simultaneously serve to strengthen ecological democracy in Denmark more generally. The proposals are intended for further consideration and discussion. They are also put forward with due consideration to the fact that, in practice, they will require a substantial boost of the Council's financial and organisational strengths. As such, they are more about opportunities that could be pursued across the political spectrum, rather than initiatives that the current Danish Council on Climate Change could implement on its own. Even so, I will allow myself to flesh out the proposals a bit – and in so doing, to bring the thought experiment to life.

To begin with, it seems to me that there is ample opportunity to significantly strengthen the Council's public-facing communication efforts. A central forum for such strengthening lies in the many citizen climate assemblies that have been launched in recent years, where citizens are equipped for climate policy discussions via engagement with relevant climate expertise. This is a process that serves as a catalyst for ecological citizenship, and through which citizens, inspired by the experts, are able to end up imagining more ambitious sustainability measures than what we find in local and national policies.

It is striking in this regard that one recommendation from Denmark's National Citizens Climate Assembly (Klimaborgereting) was that *all* Danes, in the spirit of public education, should actually have the opportunity to undergo such a learning process¹¹. One could perhaps concretely imagine a kind of Climate Council Travel Task Force, linked to 98 municipal citizen climate assemblies, within which the Council's recommendations would form the basis for ongoing discussions of local climate policy initiatives. Representatives from the Council would be available

here for clarification and discussion. This would contribute to a process that could be called local socialisation of climate science.

Secondly, it would presumably enhance the Council's ability to have its expert advice involved in parliamentary processes if its institutional anchoring were to be broadened beyond the Ministry for Climate, Energy, and Utilities. Developing on my previous ideas around a possible Council for Planetary Boundaries, one might imagine that the recommendations of such a Council would be made binding not only for the Climate Act process, but for *all* parliamentary resolutions with implications for sustainability. In this way, knowledge about environmental impacts would probably gain a more central place not only in legislative processes, but broadly in the political debate in Denmark. And this would, if nothing else, force greater public transparency in cases where considerations to matters such as the climate or biodiversity are overlooked.

Thirdly, however, the ideals of ecological democracy suggest that such expansions of the role of expert advice in climate and sustainability policy should be accompanied by increased citizen involvement in the formation of that very advice. The sociologist Ulrich Beck formulated this rather precisely in his book *Risk Society* from 1986: Expert assessments are crucial when it comes to making informed decisions – but the experts cannot make decisions on the public's behalf in relation to what risks we, as a society, are prepared to take¹². Here, one possible channel for the stronger democratisation of climate knowledge could be permanent citizen panels that closely follow the advisory and assessment processes. The Council's reports could, if so desired, be concretely expanded with a section on how a representative segment of citizens weighs the risks and opportunities contained within the Council's recommendations. This, in turn, would be used in the further political dialogue.

Summing up: What have we learned from the past ten years?

To sum up, let me repeat that the above proposals, as well as this contribution as a whole, are written in the double spirit of both commending the efforts of the Danish Council on Climate Change over the past 10 years, while also looking ahead to new challenges. Such a duality seems to me to be the best way of insisting on the simple insight that, although we may have come a long way with green transition over the last ten years in a country like Denmark – the biggest challenges remain ahead.

In this text, I have highlighted an environmental sociological contribution to this common recognition. Alongside a series of proposals for how the Danish Council on Climate Change can become an even stronger driving force for an ecological democracy that strives towards a genuinely sustainable state and societal development. These proposals must of course also be seen in the light of the significant development and learning processes that the Danish Council on Climate Change, and the rest of society, have already undergone over the last ten years of reform measures.

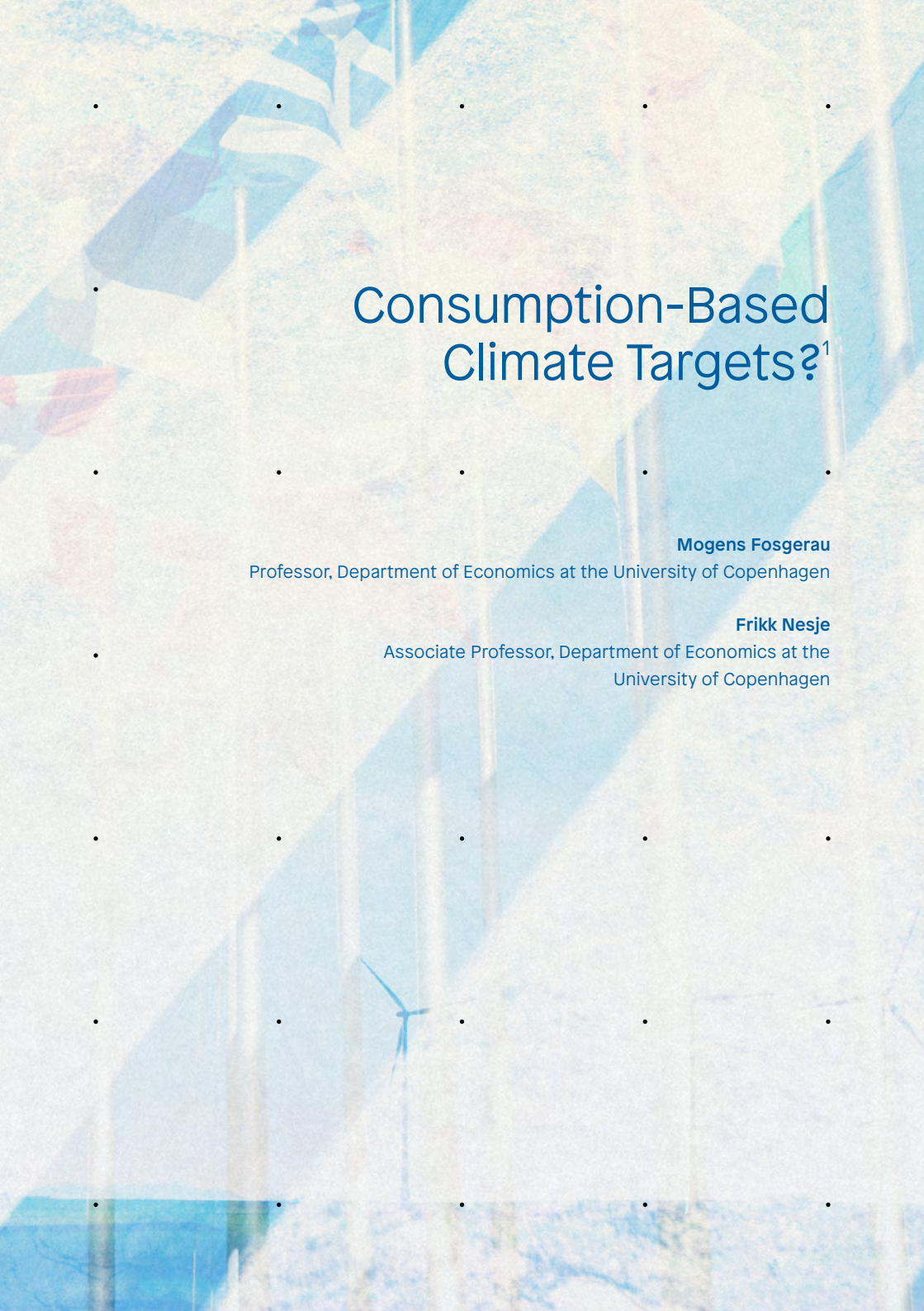
I *hope* that, in ten years from now, I will be invited by the Council for Planetary Boundaries to write about the process through which the Danish state and its societal development embarked on a new and more genuinely sustainable course. Whether I also *believe in* this is a slightly different matter, and I would need at least a whole other chapter to expand on that.

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12



The background of the slide is a photograph of several wind turbines. The turbines are white with three blades each. The image is taken from a low angle, looking up at the towers and blades, which are silhouetted against a bright, hazy sky. The overall color palette is light and airy, with soft blues and whites.

Consumption-Based Climate Targets?¹

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A frontrunner country not only needs to take the lead – it must also take the right path: The path we want all other countries to follow.

The Danish Council on Climate Change has recommended that Denmark, as a frontrunner country, establish “benchmarks” for its consumption-based climate footprint as a supplement to the existing territorial climate targets. In this article, we review the Council’s arguments for this, and we find there are several problems.

We argue that a frontrunner country, with ambitions to set an example for the other countries of the world, should seek to support global coordination, not least by taking the same path that all should follow. A frontrunner country should therefore focus on supporting the Paris Agreement as this is the mechanism we have for coordinating global climate action. A central principle of the Paris Agreement is that responsibility for emissions is based on a territorial inventory: Each country is responsible for the emissions that occur within its own territorial borders. Denmark’s climate action should therefore focus on our territorial emissions and not

on consumption. For the same reason, Danish climate policy should focus on supporting EU efforts.

Introduction

In the Danish debate, consumption-based climate targets are often proposed as something that can supplement the existing targets for territorial emissions. For example, the Danish Council on Climate Change recommends that Denmark, as a frontrunner country, introduce consumption-based climate targets as guiding “benchmarks”.² However, the argument does not seem to go deeper than saying that if we can reduce Denmark’s total consumption-based climate footprint, then we should do so. It also seems the Council has little confidence in the climate policies of other countries, and consequently in the Paris Agreement as such.

The most substantial discussion on the subject seems to be in a background note, which lists a number of advantages and disadvantages of setting targets or benchmarks for a consumption-based footprint.³ Among other things, this note mentions that changes in consumption at a global level are necessary if we are to limit temperature rises; that a one-sided focus on territorial emissions risks reducing these emissions at the expense of emissions in other countries (i.e. a reference to carbon leakage); and that two other countries have similar considerations.

In this chapter, we will try to introduce a little more substance into this discussion. This will lead us to recommend that Denmark should not set any targets or benchmarks for its consumption-based climate footprint, but that it should instead concentrate on strengthening the Paris Agreement, which is the agreed mechanism through which the world’s countries seek to coordinate global climate action. We will provide examples of how Denmark, as a frontrunner, can strengthen its efforts in a way that also supports the principles of the Paris Agreement.

The fundamental global climate policy problem

There is broad agreement that the coordination problem, known as the tragedy of the commons, is the fundamental global climate policy issue. The issue is that it is very difficult to coordinate the interests of the different countries so that we can achieve the common good. The costs of limiting greenhouse gas emissions fall mostly on those countries that take action to limit emissions, while the benefits via the climate are distributed across the globe, across all countries. All countries thus have an incentive to let the rest of the world bear the costs, while the benefits will fall to all countries, regardless of whether they have reduced their own emissions or not.

It is the global total emissions that matter. Therefore, climate policy in Denmark and the EU must relate to the fundamental problem of global coordination and thus to the overall impact of our climate policy. For this reason, it is of crucial importance whether a given Danish or European climate policy strengthens or weakens global coordination. It is not sufficient to demonstrate that our climate policy leads to an immediate reduction in Denmark's climate footprint.

In the following, we argue in favour of addressing the climate problem by reducing our climate impact as directly and efficiently as we can, while simultaneously supporting the global coordination of climate action by being an example that we want other countries to follow. As we will argue, this does not address consumption directly. As we tackle the climate problem, it will subsequently become clear how consumption is affected in Denmark and elsewhere. Limiting consumption is not an end in itself.

The territorial inventory

The Paris Agreement is unambiguously based on the territorial inventory, which assigns each country responsibility for the emissions from within its own territory. Here, we thus have a division of responsibilities that the countries of the world agree on in the UN. This territorial inventory also has a number of crucial advantages that justify why the world's countries have chosen to coordinate on this principle.

Responsibility for individual emissions lies basically with the nation that emits.

It is quite easy to calculate how much a country emits, because we have a very good handle on how much oil is being burned. (The exception is emissions from non-fossil sources, such as agriculture and the like, which are somewhat more difficult to measure).

Because we have good control over the emissions in the territorial inventory, it is also quite straightforward for a country like Denmark to regulate them. They can be hit squarely with a tax or quota on fossil energy that is proportional to CO₂ emissions. By hitting the mark precisely, we can achieve the greatest possible CO₂ reduction at the lowest possible societal cost. This is a fundamental economic principle.

There are very compelling reasons to implement regulation at the lowest possible societal cost. As a society, there are plenty of things we would like to use our

resources on. We can do less if we waste our resources by making climate policy more expensive than necessary. In addition, there is also the fact that political resistance to climate policy is partly driven by the costs, and this provides an additional reason to keep them down – even for those who do not care so much about costs in the first place.

The Paris Agreement entails that all countries should take responsibility for their own territorial emissions. We can keep our own house in order by meeting our climate targets for territorial emissions – but how do we motivate other countries to do the same? One answer to this question is the climate tariff that the EU is currently working to introduce. In the EU, we have decided to impose climate tariffs on imported goods from countries that do not regulate their own CO₂ emissions. This instrument has the very elegant feature that, for example, China can avoid our climate tariff and keep the revenue for itself if it introduces a carbon tax or another regulation that matches the EU's. In this way, the climate tariff helps coordinate global climate policy around the territorial inventory.⁴

Climate policy based on the territorial inventory thus has many advantages in practice. It is in line with the agreements in the UN, we can target emissions with precision through taxes and similar instruments, and we can do this in a way that allows us to contribute to solving the fundamental problem of global coordination. This can also be supplemented by a number of other policies. We will provide examples of this later.

One problem with the territorial inventory is the emissions that occur in international territories and which therefore cannot be uniquely attributed to any particular territory. The obvious answer here is to maintain the territorial inventory principle, but to extend it to include these emissions as well. This is also the path we have chosen to follow within the EU. We already take responsibility for international traffic within the EU. For shipping into and out of the EU, we have assumed responsibility for half of the emissions. A similar principle is probably on the way for air traffic.

Consumption-based climate footprint

The consumption-based climate footprint, on the other hand, is problematic as a basis for climate policy, even if it is only a supplement to territorial targets. First and foremost, because it collides with the basic principles of the division of responsibilities agreed upon by the world's countries in the Paris Agreement and the

previous agreements in the UN, in particular the Kyoto protocol.

If Denmark acted alone and introduced a benchmark for its consumption-based climate footprint, the effect would be limited, as Denmark is a very small country. But the point of being a frontrunner country is, of course, that the rest of the world should follow. If many other countries follow the recommendation of the Council on Climate Change and set targets for their consumption-based climate footprint, we risk spending just as much effort on the pursuit of those targets – and these are not the targets of the Paris Agreement. These are efforts that the world's countries could use to pursue the targets of the Paris Agreement, but which are now being diverted elsewhere instead. Therefore, a frontrunner country should not set benchmarks for its consumption-based climate footprint. A frontrunner country should support and not counteract global coordination around the Paris Agreement.

There are inventories of Denmark's total national consumption-based climate footprint. These are *top-down* calculations based on national accounts for the world's countries and on foreign trade statistics. This is a reasonable inventory that likely gets the total more or less correctly, but it lacks precision in the details. Only 163 sectors are distinguished, and it is difficult to say anything about the CO₂ content of specific goods. The numbers are thus crude averages that it is difficult to act meaningfully on.

While the territorial inventory makes it possible to precisely target CO₂ emissions via taxes and other regulations, the consumption-based calculations only provide a rough overall picture. Any regulation of consumption-based emissions will therefore be just as rough and imprecise as the calculation of the climate footprint of individual goods. The social costs of this regulation will therefore be high.

By regulating Denmark's consumption-based climate footprint, we would in practice merely be imposing an overly coarse restriction on our trade with the rest of the world. This would not hit CO₂ emissions squarely. As mentioned already, it is essential for the global transition that we make it as painless as possible. That means we should use incentives that are as precise as possible.

The most important thing is that we remember what we are trying to achieve. In order to meet the global climate targets, we need to get most countries in the world on board.

It may be more than difficult to convince countries like China that it is a good idea

for us to start regulating Denmark's consumption-based climate footprint – and thereby, China's emissions. This would function as a restriction on imports from China – a country that already has committed to peaking its emissions by 2030.

The EU's climate tariff is similar to a regulation of our own consumption-based climate footprint in that it targets CO₂ emissions from outside the EU. The big difference, however, is that a country like China, for example, could avoid our climate tariff by introducing their own regulation of territorial emissions. In this way, the climate tariff supports the global coordination of climate policy, and this makes it suitable for a frontrunner country. A possible Danish regulation of our consumption-based climate footprint would instead counteract global coordination and it is thus not suitable for a frontrunner country.

The Council's arguments

As we have shown above, targeting the consumption footprint leads to climate policy that is less direct, requires more information-intensive, and is more expensive. Not least, it contradicts the principles of the Paris Agreement. It is therefore relevant to examine the Climate Council's argumentation for why Denmark should use the consumption-based climate footprint as a supplement to the territorial inventory. However, we find that the Council provides very little argumentation as to why this is a good idea.

The Council sets out six criteria for assessing possible actions:

1. Potential for reductions
2. Need for incentives for action
3. Methods for monitoring
4. Definition of long-term direction
5. Clear definition of the target
6. Degree of control over development

Only one of these criteria, 'need for incentives for action,' addresses whether it actually is a good idea to regulate the consumption-based climate footprint. The closest we come to a real argument is the following paragraph:

'Climate regulation in other countries, however, also plays a role. If the regulation in the producer country is compatible with the Paris Agreement, this can reduce the climate footprint of imported goods sufficiently, and otherwise changes in

consumption in Denmark are needed. At the moment, however, it does not appear to be the case that the climate policies of the world's countries are aligned with the temperature targets of the Paris Agreement. This applies both to the 1.5 and 2 degree targets. The United Nations Environmental Programme (UNEP) has analysed the climate targets registered by the different countries – known as Nationally Determined Contributions (NDCs). If the countries from which we import do not pursue a more ambitious climate policy, Danish measures will be needed in order for Denmark's consumption-based climate footprint to be consistent with the Paris Agreement.'

One should note the shift that occurs in the last sentence, which introduces the premise that Denmark's consumption-based climate footprint needs to be consistent with the Paris Agreement. On this, it must be noted that the Paris Agreement, as mentioned above, is based on the basic principle that responsibility for emissions is distributed between the countries according to the territorial inventory. It is therefore not possible to invoke the Paris Agreement as justification for Denmark regulating its consumption-based footprint.

What one can reasonably say is that *if* we supplement the Paris Agreement's allocation of responsibility with another allocation of responsibility based on a consumption-based inventory – and *if* Denmark's climate targets, according to a consumption-based inventory, are to be consistent with a 1.5 or 2 degree temperature target – *then* Denmark would need to set targets for its consumption-based footprint.

However, these are two very large ifs. As mentioned above, there are very strong reasons why the Paris Agreement is based on the territorial inventory. Similarly, there is no basis for believing that the climate policies of the world's countries would become 'aligned with the temperature targets of the Paris Agreement' if we were to switch to a consumption-based inventory. Finally, it is by no means a given what Denmark's climate goals should be in a consumption-based calculation.

We are left with the conclusion that the Council wants Danish consumption-based climate targets because they do not have much faith in the climate policies of other countries and thus believe that the Paris Agreement will fail. We believe that a better response is to seek to strengthen the Paris Agreement.

Table 3 of the Background Note, 'Denmark's Consumption-Based Climate Footprint', presents the Council's view on the pros and cons of establishing a supplementary target or benchmark for the consumption-based footprint. Here, we

provide some detailed comments on the advantages listed by the Climate Council.

The first point is that ‘Denmark’s consumption-based footprint is high. Changes in global consumption are necessary to limit the rise in temperature.’

From the context, the reader must understand that this is to be interpreted as an argument for using the consumption-based climate footprint as a guiding principle. But that does not follow from the premise. Based on the Paris Agreement, we regulate emissions where they actually occur. This approach can and will lead, among other things, to changes in consumption, but that is an indirect consequence of the more direct policy. The Council’s argument shifts from the idea that consumption changes are a necessary consequence of regulation to the idea that it is consumption itself that must be regulated. The argument presupposes the conclusion and is therefore essentially devoid of content.

The next argument reads ‘A one-sided focus on territorial emissions risks reducing these emissions at the expense of emissions in other countries.’

This is a leakage argument. This argument is flawed if one assumes that the Paris Agreement will, by and large, succeed. If sufficiently many other countries pursue territorial targets, then there is no need to be concerned with leakage. As previously described, it is an implicit premise of the Council on Climate Change that the Paris Agreement will fail. In this situation, it is difficult to see how a Danish target for our consumption-based climate footprint should help.

The third argument is ‘A climate target or benchmark can create an increased level of political focus on reducing the consumption-based footprint for which there are currently no political targets.’ This presupposes that the reader has been convinced that it is a good idea to steer actions on the basis of a consumption-based footprint, but as demonstrated, a convincing argument for this has yet to be put forward.

Fourth, ‘Denmark can be a frontrunner in this field by reducing its consumption footprint. Internationally, work is already being pursued on this subject in both Sweden and the UK.’ As we have said, we believe that the concept of a frontrunner country not only means leading the way - it also means heading in the right direction. The Council therefore once again assumes that which is being established – namely that it is a good idea to use the consumption-based footprint as a supplementary basis for policymaking. We have already given examples of what a frontrunner country can do instead in order to strengthen the Paris Agreement.

Other examples where mechanisms exist to coordinate with other countries include technology transfer and the financing of climate initiatives outside the EU.

Fifth, ‘A climate target or benchmark for consumption could send a signal to consumers and companies, potentially motivating these actors to take greater climate considerations into account.’ That is true, but the argument does not support the idea that a consumption-based target is a good idea. Territorial reduction targets can lead to positive effects for other countries, for example by lowering abatement costs for other countries or by providing information on how costly the measures are.⁵

Sixth, ‘If the consumption-based footprint is too general due to the top-down method, the product groups can be refined over time. In addition, the statistics can be supplemented with indicators for products with an especially large impact.’ We do not understand how this can be mentioned as an advantage of the consumption-based footprint. As mentioned above, it is clearly the case that calculating the climate footprint is highly uncertain and imprecise at the product level. Consequently, using the consumption-based footprint as a basis for policymaking will create similarly distorted incentives, which increases the social costs of climate policy.

Seventh and finally, ‘At the moment, however, it does not appear to be the case that the climate policies of the world’s countries are aligned with the temperature targets of the Paris Agreement. This applies both to the 1.5 and 2 degree targets. That is why Danish action is needed.’ Here we return to what appears to be the Climate Council’s core idea behind using the consumption-based climate footprint as a basis for policymaking – namely that Denmark, as one of the world’s smaller countries, should take over the task from the Paris Agreement.

Conclusion

Overall, it is difficult to see any advantages to the proposal of introducing Danish climate benchmarks for the consumption-based climate footprint. The Council’s suggestion is based on the idea that climate policies in other countries are failing and that Denmark therefore must do more.

In response, we would state that our climate policy should aim to reduce the world’s total emissions as much as possible. In this regard, we have to acknowledge that not only Denmark, but also the EU are small actors in the large global context.

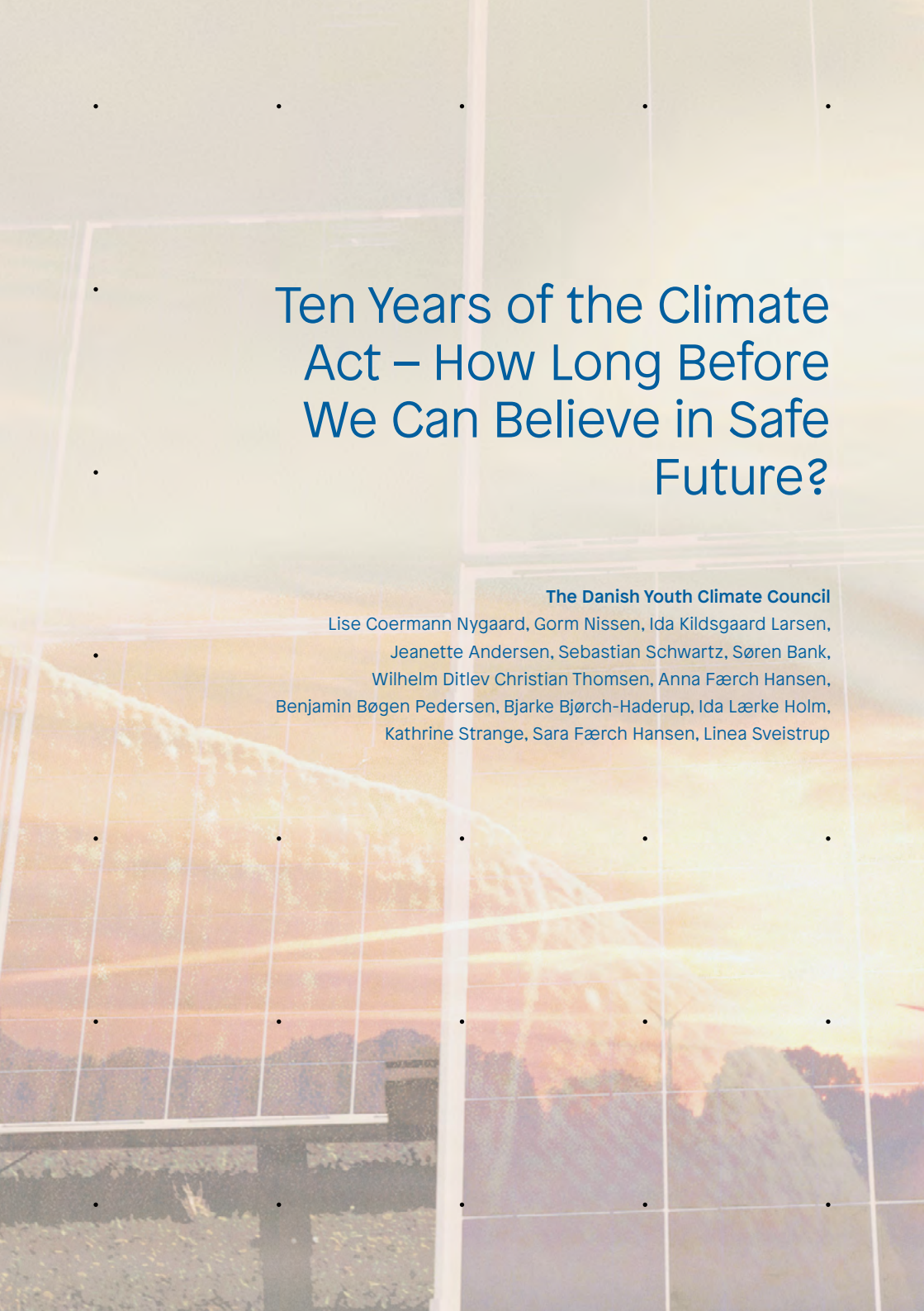
It is therefore necessary for us to address the global coordination problem. The Paris Agreement is the best and only real means through which we can do this. Our approach should therefore be to support the Paris Agreement. A policy based on the consumption-based climate footprint does not contribute to that.

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13



Ten Years of the Climate Act – How Long Before We Can Believe in Safe Future?

The Danish Youth Climate Council

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Ten years after Denmark's first Climate Act, we are still caught up in talk rather than action. As young people, we can see our future fading as politicians celebrate milestones that have not brought us closer to real climate justice. We don't have time for more toasts and speeches – we demand system change.

Denmark's climate action is filled with blind spots. We move our pollution abroad and we pat ourselves on the back. We let the market dictate while the financial sector continues to pump money into fossil fuels. We are expected to resolve the crisis through personal choices, but the truth is that the system is designed to reward overconsumption.

We've had enough of half-solutions. Young people must have real power in decisions. If democracy cannot deliver the green transition, then it risks losing an entire generation. Will Denmark be a pioneering country – or a climate policy lie?

Ten years can feel like an eternity

Denmark's first climate act is now 10 years old. As a young person, ten is a person's age. And yet not enough has happened. We have moved forward, but not quickly enough, not deeply enough, not bravely enough. The future we once imagined still feels distant, while the present presses on with its wildfires, storms and droughts.

Ten years is a whole generation. A whole childhood, a chapter of someone's life story. For a nation, it is the blink of an eye, but for young people who see our adult lives taking shape in the shadow of the climate crisis, it feels like an eternity. What has happened in those ten years? What dreams have been fulfilled and which ones have been left in the dust of political compromise? Why do we keep talking about what we need to do instead of actually doing it?

We are growing up in a world where the climate crisis is not a distant dystopia, but an all-encompassing reality. We aren't dreaming of unattainable utopias, but of a world where we can breathe without fear. Where we shouldn't have to watch as nature fades away before our eyes. Where we do not have to explain to future generations that we knew but chose to do too little. The Danish Climate Act was a milestone in 2015. But it wasn't enough. The new Climate Act in 2020 was a milestone, too. But it's not enough either. The question is no longer whether we should act, but how we can ensure a transition that is fair, systemic and visionary. Ten years have passed. We can't afford a second more without action.

Consumption-based emissions: An overlooked blind spot

Ten years ago, we believed that technology alone could save us from the climate crisis. That carbon taxes, innovative land acquisitions and green investments would bring us to the goal. Denmark's territorial emissions have decreased, but our overall climate footprint has not followed. Why is that? Because our transformation is built on the transition to a knowledge society, with the production of our primary supplies having been moved overseas. A transition that has benefited Denmark and in part also the climate, but which other countries will not be able to follow. For our high level of consumption must be produced somewhere.

Our imported food, our smartphones, our travel around the world, our cheap clothes from Temu and Shein – all of these things draw on the planet's resources

and release greenhouse gases into the atmosphere. But because the emissions occur outside of Denmark's borders, we pretend they are not our problem. That the trees felled in other countries to heat our homes are not our responsibility. This is a global shifting of responsibility – a systematic denial of reality. We buy our way to a clear conscience, while production lines abroad emit carbon dioxide in over drive. The reductions we report to the UN cover our territorial emissions because these are the ones that are easiest for us to monitor, manage and act on. And so it must continue to be. But our responsibility is far, far greater than that.

Young people are often made scapegoats by the older generations. We're accused of being the ones who are driving demand for cheap products. In the same way, us young people are often quick to blame older generations for leaving us with a world that is falling apart. But who has the power to shape the markets we live from? Who levies taxes and duties in such a way that labour is expensive, but resources are almost free? Who makes it more expensive to repair a computer than buy a new one? Who has created an economy in which products are deliberately made obsolete, so we constantly have to buy more?

But it is not the individual's responsibility to solve structural problems. We need policies that dare to tackle the root of the problem:

- We need a national strategy for the circular economy that makes it cheaper to repair than to buy new. The circle must be closed tighter and the circle must be made longer.
- We need a ban on the planned obsolescence of products.
- We need a high, uniform carbon tax and tariff wall at the EU level.

Imagine a society in which things are built to last. In which a mobile phone isn't designed to become obsolete after two years, but is maintained, updated and repaired. In which clothes are not disposable, but valuables passed down through generations. Imagine an economy in which the value of a product isn't measured by what it costs, but by how long it can be used.

Think about the cities of the future: Neighborhoods filled with green roofs, community gardens, solar panels, circular material cycles, where resources are reused continuously. Imagine a world in which owning something doesn't mean wearing it out, but caring for it, looking after it, passing it on. We have the technology, we have the opportunity – but we lack the political will. If we mean it seriously, if we truly want to change our consumption patterns, this will require a shift in how we think about values. It will require a farewell to the illusions of disposable culture

and a hello to a future in which we build to preserve, not to discard. It is for this reason that we urge the Danish Council on Climate Change to continuously assess how far Denmark has come in reducing its consumption-based emissions – and to integrate this perspective into the Climate Act, so that we can no longer ignore the part of our responsibility that lies outside the borders of the country.

Our priorities must change. On a planet with many people and limited resources, we will have to take account of the fact that we cannot consume more and more if others are to continue to live good lives. The change must happen within our individual norms, but also in the rules and goals that guide our institutions.

From individual responsibility to structural change

For decades, we've been told that the climate crisis is our personal responsibility. We must eat less meat, fly less, shop sustainably, and measure our personal carbon footprint. But how many reusable coffee cups does it take to compensate for a global economy that still pours billions of tonnes of carbon into the atmosphere? How many vegetarian meals can offset the fact that fossil fuels are still massively subsidised by the world's governments?

We cannot consume our way out of a crisis created by a system that rewards consumption. We cannot save the climate just by taking shorter showers and turning off the lights, while industry still prioritises short-term growth over the survival of the planet. The climate crisis is not the sum of individual choices – it's the result of political and economic structures that actively oppose a sustainable future.

But we can create social tipping points. History shows that societies change when norms, values and behaviours shift collectively.¹ The climate crisis demands more than individual efforts – it calls for a cultural revolution, with sustainability becoming the norm, not the exception. We must move away from a mentality of isolation and individualisation to an awareness that we create change together. We must change course so that the norms and rules we organise ourselves around steer us toward a sustainable future for all. For this reason, it is crucial that the systems around us support communities rather than work against them. If we want a circular economy, we will need legislation and financial incentives that make it easier to share, repair and reuse. If we want to change our transport habits, we must not only appeal to our individual consciences, but we must also ensure that public

transportation is cheaper, easier and faster than driving. If we want to change our food habits, we must ensure that healthy, climate-friendly choices are the cheapest and most accessible.

We must create a future in which it is not only normal to own, but just as normal to share. In which resources circulate in communities, and in which sustainability is not a personal sacrifice, but a collective gain. Communities have always been the driving force behind major social changes. It was not individuals who created the labour movement, women's suffrage, or the civil rights movement – it was communities that, together, pushed society to its tipping points. The climate struggle is no different. It is for this reason that we urge the Danish Council on Climate Change to also measure our progress in mobilising the population – and to make recommendations on how we can get more people involved in the necessary social change. This will strengthen the role of the Council so that it not only focuses on technical solutions, but also on the social and cultural shifts needed to change norms, values and our ideas of what constitutes a good life.

The financial sector: A blind passenger in the transition

Money runs the world. Capital determines which solutions are realised, which companies survive, and which visions die in the shadow of short-term profit. If we really want a green transition, we have to start by asking: What do we actually fund? Right now the answer is devastating. Our own money – our pension savings, our bank accounts – feed an industry that's destroying our future. Pension companies and banks continue to invest heavily in fossil projects.² They finance new oil wells, coal-fired power plants, and gas pipelines, while assuring us that they're working towards a greener future – and towards ensuring we receive a good pension. But a future that relies on fossil fuels is not green. It is carbon black – and it has enormous implications for how our lives will look once we retire.

It makes no sense for us, as young people, to save up for a pension we may never get to enjoy, because the climate crisis will have made our living conditions unsustainable. The fact that pension companies, which are supposed to secure us a stable future, instead gamble our savings on a dying industry, is not just irresponsible – it's absurd.

We demand:

- a halt to investments in new fossil projects by Danish financial institutions.
- a 70 percent reduction in financed emissions by the financial sector by 2030.
- increased transparency requirements around climate investments by pension companies and banks.
- a financial sector in which lending to green projects is the norm, not the exception.

It's not enough to stop investing in the wrong things – we also need to start investing in the right ones. Green finance is not a niche, it is a necessity. We need a financial system that rewards long-term stability over short-term speculation. A system that prioritises investments in renewable energy, nature-based solutions, circular economies and climate-friendly infrastructure. Imagine a future in which money no longer works against us, but for us. In which banks do not finance climate disasters, but sustainable solutions. In which investment becomes a means to build a better world, not to hollow it out. Our generation will not accept our future being gambled away in an endless chase for returns. We demand a financial sector that takes responsibility – not just for profit, but for the planet. We therefore urge the Danish Council on Climate Change to also evaluate, going forward, developments within the financed emissions of the Danish financial sector – and to work towards making this an integrated part of the overall assessment of Denmark's climate efforts.

Denmark as a pioneering country: From nice words to the export of real solutions

Denmark loves to call itself a green pioneering country. We talk about our wind turbines, our climate partnerships and our ambitious goals.³ But are we really a pioneering country if others can't follow us? If we do not export real solutions that can be used elsewhere, but only our good-news stories? Being a pioneering country does not just mean setting ambitious goals for ourselves – it means enabling others to follow. This means that we measure our success not only by our own territorial carbon reductions, but also by the global difference we create. And right now we're not ambitious enough. We talk more than we act.

We need to take our responsibilities seriously. This means:

- expanding producer responsibility so that companies not only sell products, but take responsibility for their entire life cycle.
- fighting for holistic solutions at the EU level, which do not have a narrow focus, but rather can be applied globally – so that the transition doesn't have to yield time and time again to other crises and considerations.
- ensuring that our green solutions not only benefit us, but also support the global south in their climate struggle.

Imagine a Denmark that not only celebrates its own climate goals, but is measured by the difference we make globally. A country that not only exports green technologies, but also the legislative structures that make a green transition possible. A country that is not only a symbol of the green transition, but a real driving force behind it. If we really want to be a pioneering country, we must dare to make the difficult choices. Not just for ourselves, but for the world.

Trust in democracy is crucial for the green transition

If democracy does not deliver a green transition and a future that we, as young people, can see ourselves in, we risk losing faith in it. And if we lose faith in democracy, we also lose the green transition. This is a death spiral in which the foundations of our society are crumbling, and in which younger generations no longer see any reason to engage with a political system that fails them.

Right now we are experiencing this in real time. 56% of young people feel powerless, and only 17% trust politicians on climate issues.⁴ This is not just a sad statistic – it is a warning signal. If our political system is unable to deliver the change necessary to secure our future, then what should we believe in? Why should we engage with a system that is unable to solve the most existential crisis we're facing?

Democracy is not a static entity – it's something we create together. If we want a democratic green transition, we must rebuild trust. And for this to be possible, young people must have real influence. Not symbolic involvement, not empty promises to 'listen to the youth,' but real power to shape the political decisions that will determine our future.

This means:

- Young people must have a seat at the decision-making tables – not as observers, but as real decision-makers.
- Climate action must not be something that is traded away in political horse trading, but rather it must be seen as a fundamental precondition for all policy.
- Youth engagement in climate and democracy must be supported through education, institutional frameworks and real influence on legislation. For example, by establishing a permanent Youth Biodiversity Council that makes recommendations that the Danish Minister for the Environment must continually follow up on.

If we really want a sustainable future, we need to understand that democracy and climate action are two sides of the same coin. The green transition cannot be top-down – it must grow from the ground up, from communities, from people who see themselves as part of the solution. But if the system doesn't support that engagement – if it doesn't take young people's demands seriously – then it falls apart.

But it's not only among young people that trust in the green transition is wavering. In the Danish context, fierce battles are ongoing about how the land should be used. We need more green energy, and it has to happen fast. But when you're running fast, it's easy to overlook the fact that you've stepped on someone's toes. If we overlook the views of Danes, the process slows down. More people need to join, and that requires us to look at the transition in a whole new way:

- Citizens must be involved early on as active participants in a well-informed and structured dialogue.
- Further acceptance must be fostered through economic co-ownership, compensation and/or municipal projects that are tailored to the local context.
- Young people must be included to create counterbalance and driving force. With local youth climate councils and follow-up groups, young people's perspectives can become an integrated part of work in areas such as land use and new green initiatives.

If we fail at this task in the transition, we will not just be failing the climate. We will be failing democracy itself. And we will risk leaving behind a generation that no longer believes the system is worth fighting for. So the question is not just whether we can save the climate. It's about whether we can save trust in democracy before it's too late.

Responsibility must be anchored with us all

We don't have time for more hesitation. No more time for half-solutions, no more time for excuses. If we don't act now, we'll be the generation that has to tell our children that we knew – but chose to look away. What will we say when they ask us why we let it happen? That it was too much trouble? That someone else should have done it?

The climate fight cannot be passed on to the next government, the next summit, the next generation. It's a burning responsibility that we all must take part in. We can choose to be a pioneering country, but this requires action, not more empty speeches. We can choose to free ourselves from fossil fuels, stop overconsumption, and build a new economy based on sustainability and community. But we must dare to make the difficult choices. We have to break the old structures.

And for this, we must all take responsibility. In the youth club, the community hall, at the workplace, in the household, and at the negotiation table. Not tomorrow. Not when it's convenient. But now. For the planet, for the future, for us young people who will have to live with the consequences of today's decisions.

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Financing the Green Transition

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Although the financing for green investments has increased in recent years, more financing is needed than what is provided on market terms. This is due to various market failures. The most important policy tools to boost green investment financing are CO₂e taxes and emission permits. In addition, sustainable finance can contribute. We describe what policy tools authorities can use to promote sustainable finance and what role Danmarks Nationalbank plays in this. The main contribution of Danmarks Nationalbank is to ensure stable economic and financial conditions that support long-term planning and investment in the transition.

Recent years have seen an increase in weather-related natural disasters, underscoring the importance of the green transition. The economic literature on climate change finds that it is less costly over the long run to mitigate climate change than to adapt to its consequences. A global green transition today would therefore spare the planet substantial economic and human costs in the future.^{1,2} Denmark cannot take on this challenge alone, as our emissions account for only a small share of the global emissions. Nevertheless, Denmark can promote the transition globally by taking the lead, developing solutions and inspiring other countries to transition. How we decarbonise in Denmark is therefore paramount.

The Council on Climate Change plays a crucial role in the debate on how Denmark should achieve its climate objectives. The Council provides high-quality input to Danish climate policymaking. This is something that affects all of us. At Danmarks Nationalbank, we have closely monitored the Council's analyses and recommendations, incorporating them into our work to assess the impact of the green transition on the Danish economy.³ We extend our warm congratulations to the Council on its anniversary and thank them for their efforts to create a more sustainable future!

Our contribution to this anniversary publication offers perspectives on two topics: sustainable finance and Danmarks Nationalbank's climate-related work. We focus on sustainable finance because the green transition requires substantial investments, which must be financed, and because Danmarks Nationalbank is at the centre of Denmark's financial system. In addition, climate change and the green transition affect our objectives of stable prices and financial stability in Denmark.

Market failures inhibit the green transition

Market forces alone cannot deliver the green transition, as the problem of greenhouse gas emissions (CO₂e) arises from market failures. Market failures occur when free market mechanisms do not lead to a socially optimal allocation of resources and distribution of activity, in this case CO₂e emissions. In this section, we outline key climate-related market failures and explain why CO₂e taxes and emission permits are the most important policy tools for achieving a cost-effective transition. In the following sections, we turn to sustainable finance as a complementary, albeit secondary, policy tool for addressing market failures.⁴

Consumers and firms do not pay for climate costs when emitting

Despite climate objectives being adopted in many countries, global emissions continue to rise. This is partly due to increasing consumption of fossil fuels, see Figure 1. In Denmark, we have managed to reduce emissions from domestic production, but we are still a long way from meeting the 2050 climate neutrality target set out in the Climate Act. Moreover, Denmark’s consumption-based emissions have not declined at the same pace as its production-based emissions, reflecting increased emissions from products produced abroad and consumed in Denmark.⁵

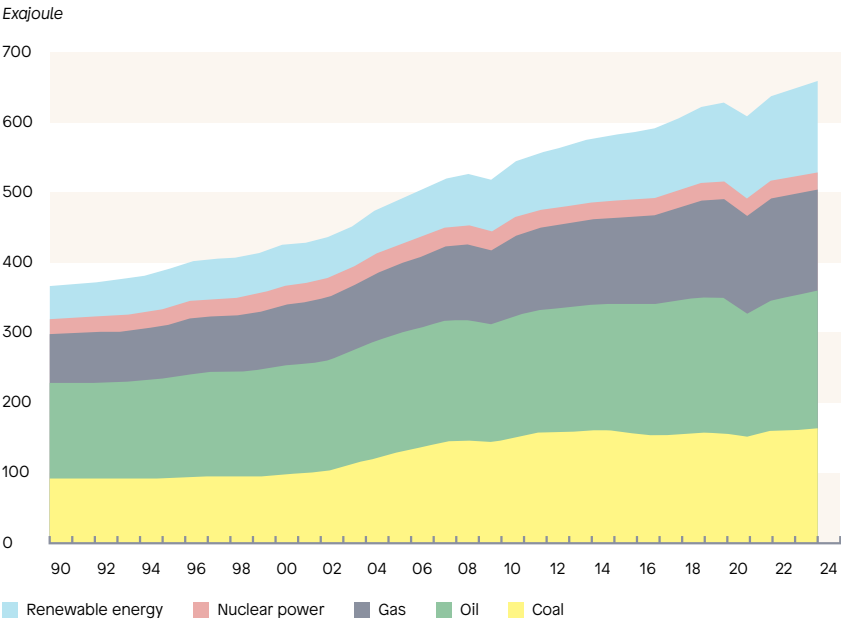


Figure 1 Global energy consumption continues to rise

Note 1: The figure shows global annual energy consumption across primary sources.

Sources: Macrobond.

The fundamental climate-related market failure is the externality of emissions: consumers and firms do not pay for the emissions caused by their consumption and production choices, even though these emissions impose costs on the global com-

munity in the form of climate change. The absence of a price on emissions implies that global emissions are above the optimal level when trading off the benefits and costs of emitting at a global scale.

The best solution to this market failure is to tax emissions. Notable examples of CO₂e taxation include Denmark's CO₂e taxes and the EU Emissions Trading System. When taxes and emission permits raise the price on emissions, the goods and services that generate emissions become more expensive, dissuading consumers from choosing them and encouraging a shift towards greener consumption. At the same time, taxes and emission permits help prevent firms that invest in green technology from being outcompeted due to the associated higher costs of green technologies.

However, schemes that attach a significant price tag to emissions remain limited in scope and effect. This is reflected in the average global price of emissions, which is approximately USD 6 per tonne of CO₂e. For comparison, the IMF estimates that a price of USD 75 will be necessary by 2030 at the latest to limit global warming to below 2 °C above the pre-industrial level.⁶ At the same time, fossil fuels – and thus the cost of emitting – remain heavily subsidised, with global subsidies amounting to approximately USD 7,000 billion, or 7.1 per cent of GDP, in 2022.⁷

Financial market failures inhibit the financing of green investments

According to the European Commission, 764 billion euros were invested in the green transition on average each year in the EU in 2011–2020, see Figure 2. This represents 5.1 per cent of the EU's GDP in 2023. The amount comprises public and private investments, with approximately three-quarters of the investments being made in transport.⁸

The Commission estimates that investments in the green transition must increase by EUR 477 billion annually, equivalent to 3.2 per cent of the EU's GDP by 2023, if the EU is to meet its 55 per cent reduction target by 2030. The majority of the additional investments are needed in green transport and energy renovation of buildings. Additionally, the need for investment increases further if climate adaptation is factored in. Similar conclusions are presented in the Draghi Report, which, among other things, asserts that the transition is crucial for the EU's competitiveness, as it can provide the EU with a leading position in green technologies and reduce dependence on external energy sources.⁹ Although there is uncertainty around the estimates of the investment need, and while other organisations

mention different figures, this does not change the main conclusion: the transition requires massive amounts of additional investments.¹⁰

Investments by consumers, firms and the public sector into green consumption and production require financing. Financing of private investments typically comes from household and firm savings, which are channelled through banks, pension funds and other financial institutions in the form of loans and capital contributions into investment projects domestically and abroad. Financial commitments are usually based on an assessment of expected return, risk and time horizon of the investments. In Denmark, savings levels are high, so there is gene-

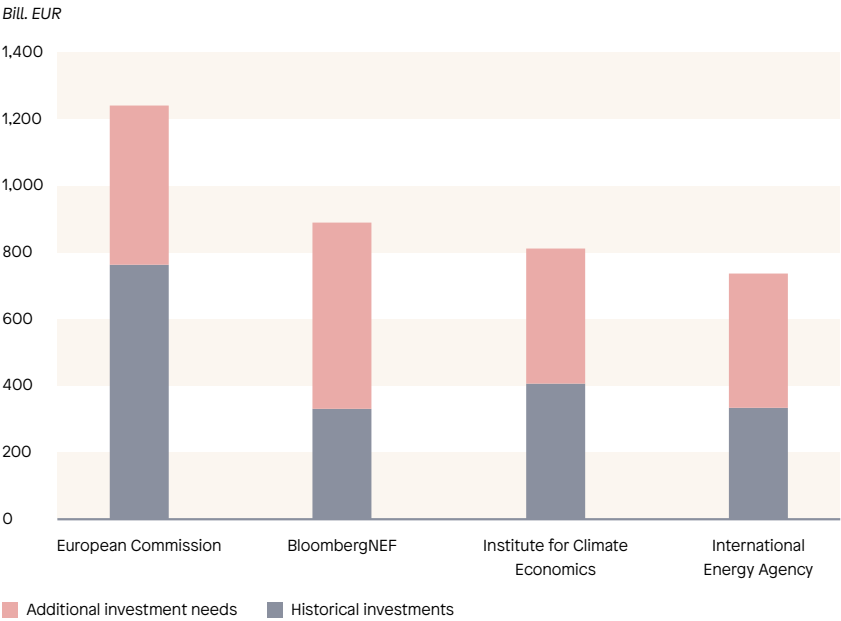


Figure 2 The green transition requires considerable investments

Note 1: The figure shows the total annual investment need in the EU, i.e. the sum of historical investments and additional investment needs. Historical investments refer to annual averages: European Commission (2011–2020), BloombergNEF (2023), the Institute for Climate Economics (2022) and the International Energy Agency (2021–2023).

Sources: Carolin Nerlich et al. 'Investing in Europe's Green Future: Green Investment Needs, Outlook and Obstacles to Funding the Gap', *Occasional Paper Series*, No. 367, European Central Bank, 2025.

rally no shortage of financing. Green investments – like other types of investments – should therefore, in principle, be able to obtain financing, provided they offer a competitive return, i.e. a return similar to that of other investments with comparable riskiness and time horizon.

However, the absence of a price on emissions frequently implies that green investments do not yield a competitive return, as the additional costs of green technologies do not match up with the saved costs for the individual consumer or firm in the form of lower emissions. The consequence is that the return on green investments does not reflect the socioeconomic benefit in the form of reduced emissions. As a result, these investments end up being underfinanced. CO₂e taxation can make green investments more competitive and improve their return, thereby increasing interest from banks and investors in financing green projects. CO₂e taxation is therefore the most important policy tool for financing green investments.

Financial market failures can nevertheless inhibit households and firms from financing green investments, even with a socially optimal CO₂e tax in place. These market failures are additional to the absence of a price on emissions, and they result in underfinancing of green investments. Below, we highlight three financial market failures that are often mentioned in connection with the financing of green investments. The market failures are not specific to green investments, as they also occur in other types of investment.

- Inadequate data about green investments can result in *asymmetric information*, hindering banks and investors from assessing the risks of these investments. For example, inadequate data about firms' emissions make it difficult to assess the return to investing in greener value chains, e.g. if CO₂e taxes are expected in the future. In addition, many green investments in technology start-ups are made without historical data and financial records, which complicates the risk assessment of these investments.
- Banks and investors tend to operate with *short-term return requirements*, whereas green infrastructure investments – e.g. power grids and wind turbines – require longer timeframes. If there is a lack of long-term banks and investors, this could result in a mismatch between financing and investment needs, even when investments are assessed to be profitable over the long term.
- *High start-up costs* can deter banks and investors from financing otherwise profitable investments because the risk associated with these investments is considered too high. This is especially true in the case of infrastructure investments where the initial financing needs are high.

Does sustainable finance lead to more green investments?

Sustainable finance is typically defined as finance that impose requirements related to the *environmental and climate, social or corporate governance (ESG) conduct of the consumer or firm* investing, in addition to requirements for the financial return.^{13,14,15} Climate-related sustainable finance can be interpreted as a correction of climate-related market failures and can thus increase the financing of green investments. Below, we describe the market for sustainable finance. We explore how financing remedies market failures as well as the limitations to sustainable finance.

Sustainable finance presents opportunities and challenges for investors

The global market for sustainable finance grew rapidly from 2018 to 2021, see Figure 3. This expansion reflects an increasing desire among savers – households, firms and funds – to contribute to the green transition. Savers typically have different intentions with supplying sustainable finance, leading to different strategies and criteria for their involvement. Table 1 presents examples of strategies for climate-related sustainable finance.¹⁶

The market for sustainable finance presents both opportunities and challenges for investors. On the one hand, investors have the opportunity to align their investments with their philanthropic wishes and support sustainable activities. On the other hand, differences in ESG measurement methods and inadequate data make it difficult to assess whether a security truly meets a given sustainability objective, resulting in an opaque market.^{17,18,19}

Since 2018, EU reporting requirements have sought to enhance transparency about securities' emission financing and contribution to the green transition. This is achieved through legislation such as the Corporate Sustainability Reporting Directive (CSRD), the Sustainable Finance Disclosure Regulation (SFDR) and the Taxonomy Regulation (TR). These requirements lead to better data about green investments and make it easier to evaluate their return. In principle, the requirements should reduce the degree of asymmetric information and increase the financing of green investments.

There is an ongoing debate about the balance between transparency and the bur-

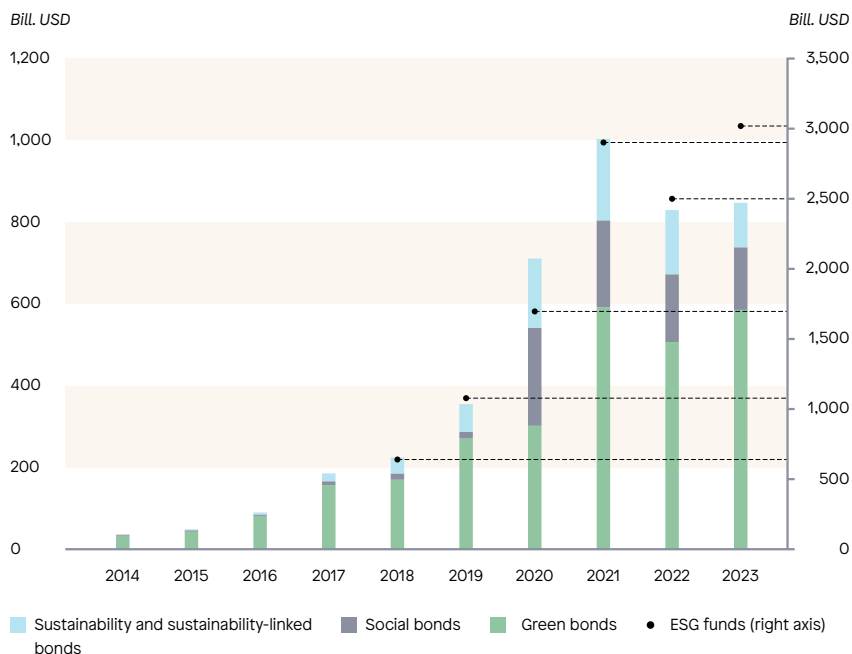


Figure 3 The market for sustainable finance grew from 2018 to 2021

Note 1: The columns show green, social, sustainability and sustainability-linked bond issuances since 2014. The dots show the market value of assets managed by investment funds with explicit mandates for sustainable investment.

Sources: Climate Bonds Initiative (bonds) and Carolin Nerlich et al., 'Investing in Europe's Green Future: Green Investment Needs, Outlook and Obstacles to Funding the Gap', *Occasional Paper Series*, No. 367, European Central Bank, 2025 (ESG funds).

Strategy	Description
Green bonds	Bonds issued to finance typically larger green projects, e.g. development of solar and wind energy
Green loans	Loans targeting green projects in households and firms, e.g. energy renovations or the purchase of EVs
Exclusion / negative screening	Exclusion of investments in companies that do not meet climate-related criteria, e.g. concerning the extraction and use of fossil fuels
Positive / best-in-class screening	Investment in firms that perform best in their industry on environmental and climate criteria
Active ownership	Direct engagement with companies to influence their sustainability strategies and reduce CO ₂ e emissions
Impact investing	Investment in firms to generate both financial returns and a measurable positive climate impact
Blended finance	Combination of public and private financing, where the public funds reduce the risk and make green investments more attractive to private investors.

Table 1 Examples of climate-related sustainable finance strategies

Sources: Organisation for Economic Co-operation and Development, 'OECD Business and Finance Outlook 2020: Sustainable and Resilient Finance', 2020 and Network for Greening the Financial System, 'Sustainable and Responsible Investment in Central Banks' Portfolio Management', 2024.

den of reporting requirements. Specifically, the discussion focusses on whether the benefits of more robust data and transparency align with the administrative costs of reporting.²⁰ The outcome of this debate will impact future reporting requirements.

Sustainable finance can remedy financial market failures and amplify the impact of CO₂e taxation

Sustainable finance can remedy financial market failures in different ways, depending on the market failure in question. Since financial market failures are not unique to green investments, there are already public and private institutions

that support such investments. The financing of green investments, which CO₂e taxation makes profitable, increases when financial market failures are remedied, amplifying the effect of the taxation.^{21,22}

Public authorities can finance large start-up costs and prioritise long-term returns over short-term return requirements in public-private partnerships, such as green infrastructure investments. Similarly, *public funds* and *development banks* can reduce the risk for private banks and investors in green investments, e.g. by financing start-up costs through loans, guarantees, capital contributions and blended finance. This absorbs part of the initial risk of the investments and makes it more attractive for private actors to participate in the financing.²³ Examples of funds and development banks include the Export and Investment Fund of Denmark and the European Investment Bank.

Private pension companies also have the potential to finance green investments with large start-up costs and long-term returns. Pension companies themselves have long-term obligations to their customers, since they must secure pensions for decades in the future. In addition, *private venture capital* and *impact investors* can improve access to financing for green technology start-ups that struggle to attract capital due to insufficient historical financial records and high technological risks. Green venture funds specialise in investing in innovative firms with considerable growth potential, even when traditional banks and investors assess the risk as being too high. Similarly, impact investors may be willing to accept more riskiness if the investment has a positive climate impact.

Finally, it is worth noting that public authorities can support green infrastructure investments through means beyond finance. For example, the expansion of offshore wind farms was underpinned by guarantees of a minimum settlement price over a number of years.²⁴ Similarly, the development of power-to-X technologies relies crucially on public initiatives, including the establishment of hydrogen infrastructure that facilitates exports to, among other countries, Germany.²⁵

Sustainable finance can partially emulate the effects of CO₂e taxation

In addition to remedying financial market failures, sustainable finance can incentivise the green transition if it makes the financing of green activities cheaper or increases the cost of financing polluting activities. The difference in financing conditions between green and polluting activities will, in principle, emulate the effect

of CO₂e taxation by encouraging consumers and firms to reduce their emissions to obtain better financing conditions.

However, it remains uncertain whether conventional strategies for sustainable finance in practice create sufficiently large differences in financing conditions so that this, in itself, promotes green investments. Sustainable finance is often implemented by excluding loans and investments in high-emission firms, such as coal and oil firms. In principle, this should lead to lower financing costs for green activities and more expensive financing for polluting activities. Research suggests, however, that it is uncertain whether sustainable finance generally achieves this to an extent that can drive the transition.^{26,27,28,29,30} For example, if a pension fund sells shares in a polluting firm, other investors who are focused solely on returns may purchase the shares at roughly the same price, merely resulting in a change in ownership that does not affect the firm's incentives.

What tools can promote sustainable finance, and can green monetary policy play a role?

Authorities can promote the supply of sustainable finance through various fiscal, tax and business policy tools.³¹ For example, the 2020 Green Tax Reform introduced greater tax deductions for corporate green investments.³² Turning to industrial policy, the 2025 Entrepreneurship Agreement increases the amount of capital available for the Export and Investment Fund of Denmark to invest in green start-ups.³³

It is important to take state aid rules and industrial policy into consideration if authorities wish to promote sustainable finance. Since green energy and infrastructure projects often have an international dimension, it may be appropriate to coordinate public sustainable finance with other countries. In recent reports, the IMF points out that strategic finance should be targeted to specific market failures and that it should be temporary in order to avoid market distortion and ensure fair competition.^{34,35,36} Similarly, the EU's Competitiveness Compass emphasises that strategic investments in green technology must be balanced with the aim of an open and competitive market.³⁷

Danmarks Nationalbank ensures stable economic and financial conditions for the green transition

The most important contribution of Danmarks Nationalbank to the green transition is to ensure stable economic and financial conditions for the transition. Danmarks Nationalbank's objectives are to contribute to stable prices, secure payments and financial stability in Denmark. Reaching these objectives provides consumers, firms and policymakers with the stability to make long-term plans and investments into a greener future.

For several years, climate change has been a key issue at Danmarks Nationalbank, just as it has been for other European central banks. This is because climate change and the green transition may challenge the objectives of price and financial stability. We therefore investigate climate-related losses and risks to the economy and financial system. The purpose of this work is to provide recommendations to relevant authorities and the financial sector on how to manage the losses and risks. Since 2021, a key recommendation has been that the transition can be achieved in a cost-effective manner, and with the lowest level of risk to price and financial stability, in the Danish economy through a uniform CO₂e tax.³⁸ This recommendation is in line with recommendations from the Council on Climate Change and the Economic Councils.^{39,40}

Furthermore, Danmarks Nationalbank – acting in its role as government debt manager – contributes to the market for sustainable finance by issuing green bonds on behalf of the Ministry of Finance. The proceeds from the sale of these bonds cover green government expenditures. As government debt manager, these issuances serve two purposes: First, the issuances contribute to developing financial markets by setting a standard for the Danish green bond market. Second, the issuances contribute to maintaining a broad and diversified investor base in the Danish government bond market.

It should also be noted that, since 2021, Danmarks Nationalbank has taken climate factors into consideration in its foreign exchange reserve when investing in equities and corporate bonds through exchange-traded funds (ETFs). This decision aligns with our guidelines for responsible investing, which stipulate that we do not buy shares and bonds in firms and countries that are systematically and substantially involved in activities that Denmark dissociates itself from through international guidelines, declarations, conventions, etc. This includes, among other things, Denmark's accession to the Paris Agreement. The approach for equities and corporate bonds is in line with recommendations of the Network for Greening the

Financial System regarding the climate-related investments of central banks.⁴¹

Green monetary policy has been suggested as a policy to promote sustainable finance. The policy could involve Danmarks Nationalbank offering higher interest rates on deposits to banks that extend green loans to consumers and firms, serving as an incentive to promote green lending. This would imply a differentiation of Danmarks Nationalbank's interest rates to banks based on climate-related targets for bank lending. As we describe below, such a policy would not offer any benefits over CO₂e taxation or public subsidies for sustainable finance. Moreover, the policy can have negative consequences. For this reason, neither the European Central Bank nor any other central bank in countries we normally compare ourselves with, provide green loans to banks. Likewise, we do not believe that a green monetary policy would be appropriate in Denmark. The negative consequences apply in various areas:

First, green monetary policy is equivalent to subsidies and taxes on banks in its impact on the government budget and banks' incentives, hence should be subject to an open political process. If Danmarks Nationalbank were to provide better loan terms for particularly green banks, this would constitute a form of subsidy. The cost for Danmarks Nationalbank will impact the profit that Danmarks Nationalbank transfers to the government. Similarly, if Danmarks Nationalbank were to provide worse terms for banks that lend to high-emission projects, this would be a punitive taxation of these banks. In both cases, the policy would have the same consequences for the government budget – and thus for taxpayers – as direct subsidies or taxes on banks. Since such subsidies and taxes equal fiscal and tax policy, they should be enacted as such by elected politicians and reflect transparent political priorities that are communicated to the public. For example, a public investment fund would be able to implement the subsidies with the same effect, but with full transparency regarding decisions and costs.

Second, the fixed exchange rate policy limits the ability of Danmarks Nationalbank to differentiate its monetary policy interest rates. Danmarks Nationalbank's interest rates are currently set solely to ensure a stable exchange rate vis-à-vis the euro. It is incompatible with the fixed rate policy to substantially adjust interest rates to achieve climate objectives. Any such policies would therefore need to be limited in scope, and it would require a costly administration and willingness to risk disrupting the foreign exchange market.

Third, green monetary policy may compromise the credibility and independence of Danmarks Nationalbank. There is no widely accepted and objective definition of

green activities. Support for green investments has distributional consequences. And there are different political views on whether the green transition should be supported and which parts of society should bear the cost. Green monetary policy can therefore lead to political pressure to influence Danmarks Nationalbank's decisions. History shows that central banks operating independently of political interests are the best safeguards of a stable economy.⁴² That is precisely why the principle of independent central banks is enshrined in the Treaty on the Functioning of the European Union.⁴³

Conclusion

The climate crisis has been described as 'the greatest market failure the world has ever seen'.⁴⁴ Economists typically focus on the absence of a price on emissions when describing market failures. However, there are also financial market failures present, as this chapter describes. In addition, research describes how political and economic dynamics prevent sufficient CO₂e taxation from being adopted.⁴⁵ Together, these factors counteract the green transition globally.

Financial market failures are caused by asymmetric information on green investments, short-term return requirements in the financial sector and the high start-up costs of green investments. Sustainable finance can address these market failures by offering targeted financing for green investments, although sustainable finance cannot fully replace CO₂e taxation.

Since 2018, the market for sustainable finance has grown, and authorities can further promote its supply through fiscal, tax and industrial policies. The most important contribution of Danmarks Nationalbank to the green transition is to ensure stable economic and financial conditions that support long-term planning and investment.

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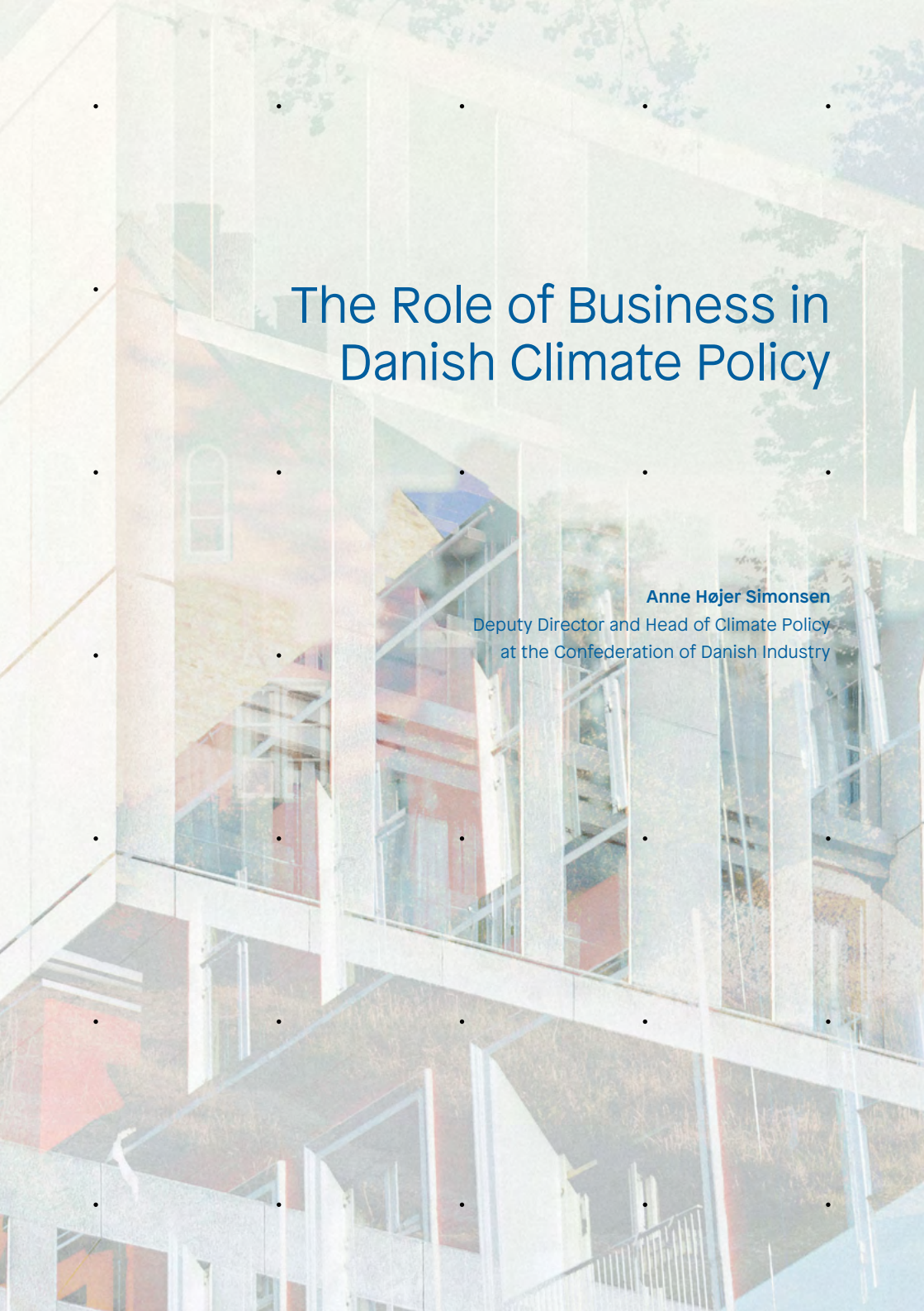
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The background is a complex, layered composition. It features a grid of small black dots arranged in a 5x5 pattern. Overlaid on this are various geometric shapes, including triangles and rectangles, in shades of blue, green, and orange. A large, bold, blue number '15' is centered on the page. The overall effect is a modern, abstract design.

15



The Role of Business in Danish Climate Policy

Anne Højer Simonsen

Deputy Director and Head of Climate Policy
at the Confederation of Danish Industry

Where and when did Danish climate policy begin? Was it with the signing of the Climate Convention in Rio de Janeiro in 1992? Or when the Kyoto Protocol was adopted in December 1997, back when Svend Auken was Minister of the Environment and Energy? Was it when Anders Fogh Rasmussen went green, 10 years later? Or was it when Lars Løkke Rasmussen started ‘banging the hammer’ at COP15 in Copenhagen?

Nobody really knows exactly, but we know that a lot has happened on the climate agenda since all of that, and that Danish companies have played a key role along the way. The Danish business community inspires, innovates, installs, demands, exports and implements climate solutions in plans and in practice – all as part of a complex but effective interplay with the political system, ministries and society in general. Both nationally and internationally.

We might ask ourselves how the leap between politics and business – and back again – has gone, and how we can maintain traction going forward. Decades of green transition in Denmark – and in recent times, also in the EU – have

been an education in how states, businesses and industry have different roles to play in the development of solutions and technologies. Everything in its own time – and precisely that sense of timing has been a Danish strength.

My main point is that it is now crunch time for business and climate policy – in Denmark, in the EU and globally. It is now that the experiences gained must be transformed into action and put to the test in headwinds – for the benefit of competitiveness, energy security and the climate.

Introduction

My ambition with this chapter is to contribute some perspectives on the development of the role of business in Danish climate policy. In relation to this, a disclaimer is in order: I have been sitting on both sides of the table, for years as an official in the climate ministry area and, since 2020, as the Head of Climate Policy at the Confederation of Danish Industry. My contribution can never be fully comprehensive, so I'll be pleased if readers come away with a sense of the dynamics and challenges from their reading.

A difficult beginning

It is difficult to imagine today, but once there was no climate ministry in Denmark. It was first created in 2007. The first Climate Act was passed in 2014. Once there was no Commissioner for Climate Action in the EU – this came about in late 2010, and the EU's first Climate Act came in 2021. Now both Denmark and the EU have significant climate councils that follow policy and goals on a continuous basis.

In the meantime, the COPs have evolved globally and occasionally, they succeeded in delivering major breakthroughs. The 2015 Paris Agreement is probably the clearest example of this, although COP28 in Dubai also produced great results when countries of the world for the first time agreed to transition away from fossil fuels, triple the installed capacity of renewable energy to at least 11 terawatts (TW) and double global energy efficiency improvements from about two percent to four percent on an annual basis ahead of 2030. The COPs are major annual gatherings in which politicians, national negotiating delegations, NGOs, other organisations, and – not least – businesses take part. There has been ongoing progress, and today it's increasingly actors other than nation-states who are showing ambition and a willingness to act – with cities, states and businesses now pushing forward.

The institutional setup and political focus have grown – and so has our understanding of the impact that climate change has on life across the planet. Fewer people – but still some – challenge the IPCC's assessment, compared to where we were just ten years ago. That is progress.

Since 1992, carbon emissions and our trade relations have also changed. The EU and the US are emitting less while China/Asia are emitting more carbon dioxide. Emissions have moved and new countries have grown dramatically. That is why global climate negotiations face a different dynamic today – most recently influen-

ced by the announcement of the United States that it will withdraw from the Paris Agreement.

So, are we succeeding in doing something about our greenhouse gas emissions? Yes, we are – but we aren’t doing enough. Figure 1 shows EU and global emissions from 1990 to the present day. It is clear that, in the EU, we have managed to break the upward curve of emissions, but we have not yet been able to reach a lasting reduction globally. That is the task that lies ahead of us. Denmark is a small player in a big game, but we have an ace up our sleeves – our companies. And we need to play this card as best we can!

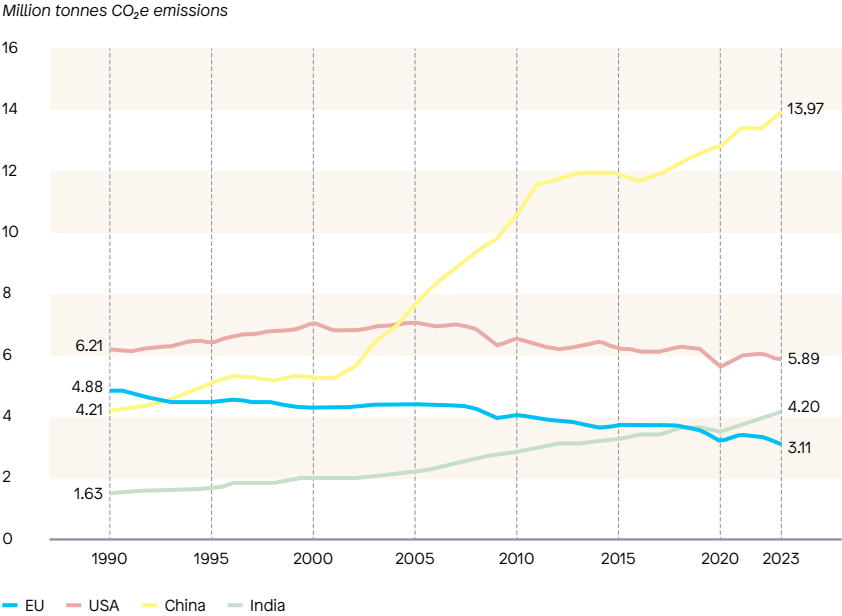


Figure 1 As emissions in the EU fall, carbon emissions rise at the same time in China and India

Note 1: CO₂e emissions among the largest economies in the world from 1990 to 2023.

Note 2: Graph shows only territorial emissions.

Source: Our World in Data

EU companies covered by the EU’s emissions trading system have contributed in the form of massive reductions. This can be seen in Figure 2 below.

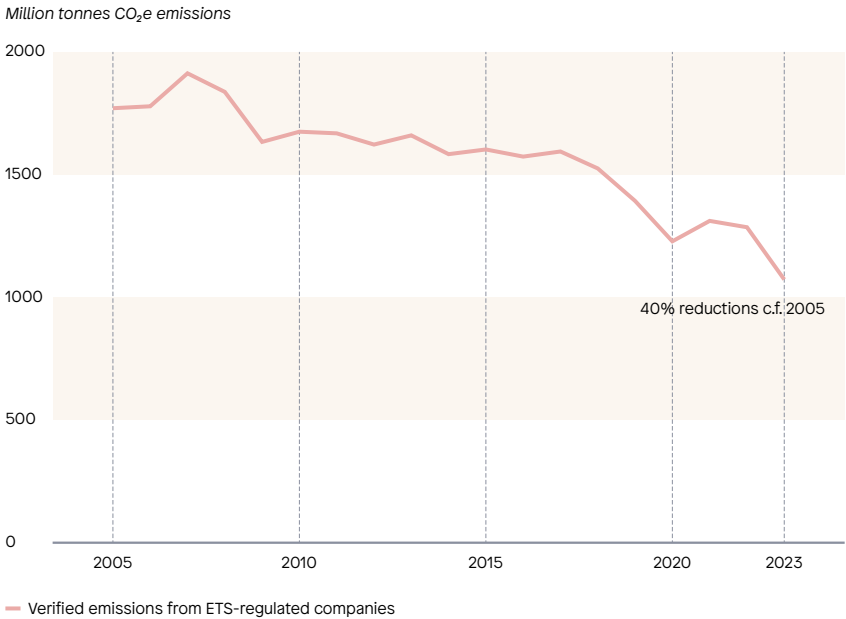


Figure 2 ETS companies deliver carbon reductions

Note 1: Carbon emissions from ETS-regulated companies in the EU 2005–2023

Note 2: The ETS was introduced in 2005 and this is why the graph begins in this year.

Source: European Environment Agency

This has contributed significantly to the decline in the per capita emissions in the EU since 1990 – as can be seen in Figure 3:

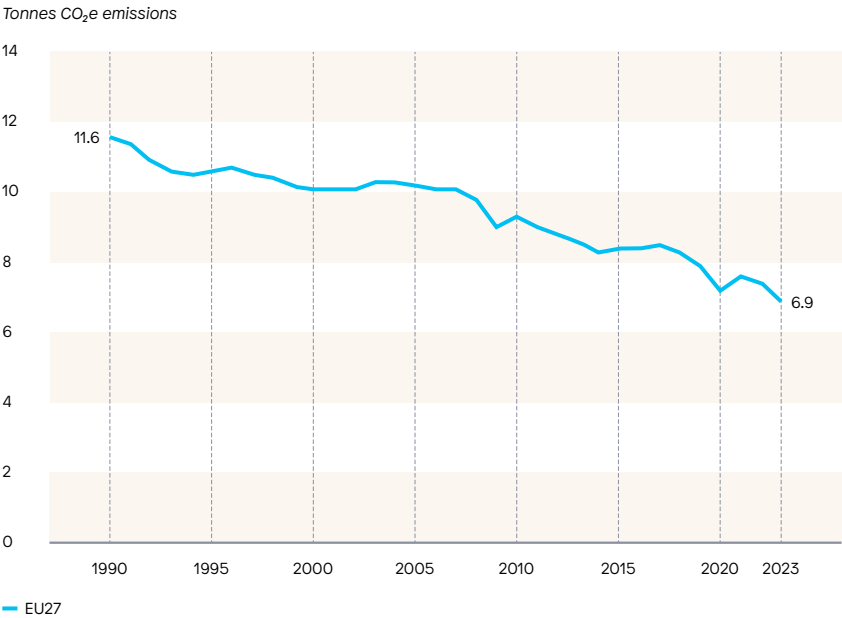


Figure 3 Emissions per capita in the EU have decreased by 41 per cent in relation to 1990

Note 1: CO₂e emissions per capita in the EU27 from 1990 to 2023

Note 2: Graph shows only territorial emissions

Source: Our World in Data

This has occurred alongside noticeable economic growth:

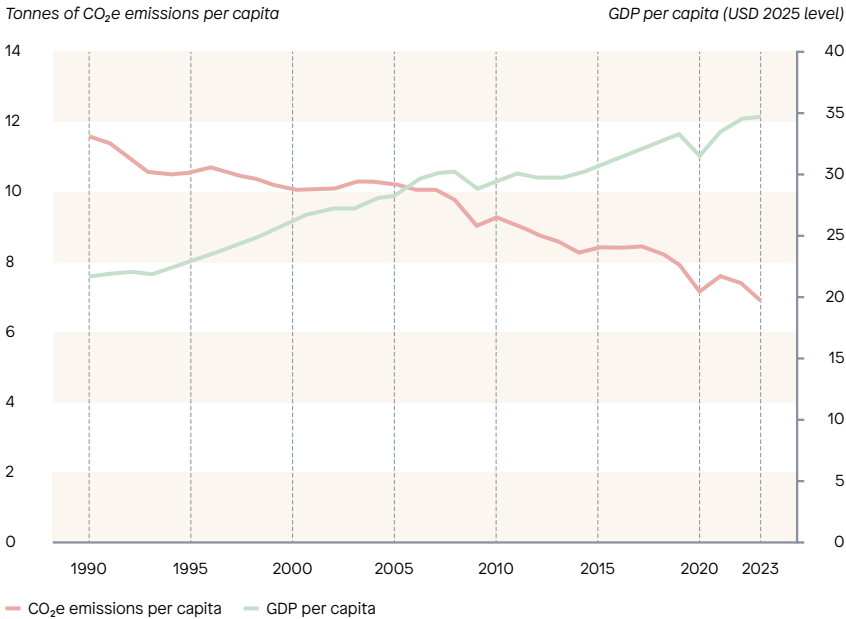


Figure 4 Carbon reductions go hand in hand with economic growth in the EU

Note 1: The left axis shows CO₂e emissions and the right axis shows GDP per capita from 1990 to 2023

Note 2: Graph shows only territorial emissions

Source: Our World in Data

It will be crucial for the EU and Denmark to maintain that progress in a world that is currently becoming more polarised, and in which cooperation around both the climate and economic/trade prosperity is under significant strain.

What is happening outside the kingdom?

There is great interest in the Danish way of doing things when it comes to the climate. We have had visits from delegations on energy technology solutions, the Green Tripartite Agreement, the GrønREFORM modelling framework, the state of the industrial climate levy, and more. We have played a larger role than our size would suggest.

In order for this to continue, we need to be able to solve things together, concretely and efficiently, at home – and to be a unifying force in the world. We can only do this if we can actually demonstrate that we are able to make the solutions work in practice. Denmark's approach to partnerships, Public Private Partnership for Climate Action, is an export product in itself. This includes, among other things, the work carried out through the 14 Danish climate partnerships, which were established back in 2019 across various sectors. The aim of these partnerships was to propose ways in which the business sector could contribute to the government's goal of reducing carbon emissions by 70 percent ahead of 2030, and to make recommendations for necessary policy decisions to support this. The partnerships strengthen cooperation and trust between public and private actors by creating a bridge between those who shape climate policy and those who are tasked with implementing it. We also see this partnership mindset in the COP collaboration, where the public and private sectors jointly present Danish green solutions and technologies to the world. The unique cross-sector collaboration in Denmark is something the rest of the world observes with curiosity – and something worth safeguarding.

Companies, both large and small, are employers as well as business entities – and they are entirely dependent on competitiveness, energy security and bankability in order to drive transformation. That's where the balance is: if Denmark is to take the lead on its ambitions, targets and instruments, companies must be provided with balanced, predictable and timely frameworks for their efforts. The partnership mindset applies here too.

In the future, the EU will play an increasingly important role. Because:

- we are in an entirely new geopolitical, trade and security situation.
- the population is increasingly affected by climate change and its costs.
- the hardest steps lie ahead of us.
- we need to mobilise cross-border solutions.

This calls for the partnership to be renewed and to address the greatest uncertainties and challenges of our time. This is what the European Commission is doing – looking closely at the great uncertainties and changes in the world around us.

At home: Political agreements do not implement themselves – objectives and means must go hand in hand

Here in Denmark, for the first time, we are in a situation where the Danish Council on Climate Change assesses that it is clear how we will achieve our national 2030 target of a 70% reduction in CO₂ emissions compared to 1990 levels. That is something worth celebrating! But not for long – because we cannot rest on our laurels. There are a lot of investments, implementations and transformations to be implemented in practice.

There is a need for a sharp focus on the conditions of businesses. That applies to both the policy measures that have been promised, and those that can – and must – be brought into play, because the world around us is changing at a drastic pace. With the EU's growing role, policymakers must keep EU initiatives in mind – and maintain the balance between national and international measures so that companies can carry out the green transition and deliver solutions to society, both within Denmark and beyond its borders. And this is to be done under more difficult circumstances than when the targets and political agreements were originally made.

It is now that the partnership must stand up to the test. Companies must be able to rely on the political agreements that have been reached so that they can plan their transition accordingly. At the same time, the implementation of political agreements must prioritise supporting companies in their transition.

Looking ahead, here at the Confederation of Danish Industry, we support climate neutrality by 2045, along with a 2035 target to guide the way. In relation to this, it's important that we establish the connection between goals, instruments and the financing of political requirements and initiatives in one go. Uncertainty about future framework conditions is toxic for businesses – especially when it comes to national policies that don't apply to competitors in neighbouring countries.

We can observe a shift from the decision on the 70 percent target back in

2019/2020 – when the narrative was that we didn’t know how to achieve this, and that is what made it ambitious – to the recent political agreements, such as the Green Tripartite Agreement, for which all of the necessary elements (targets, instruments, financing) are in place. Because we’ve learned that if we want to be ambitious and truly demonstrate pioneering potential, we need to know exactly how we will achieve our ambitions in practice. Otherwise, we’ll shoot ourselves in the foot.

This figure provides an illustration of the significant efforts already made within the manufacturing and construction sectors of the business community, and how they will continue to substantially reduce their greenhouse gas emissions through to 2035.

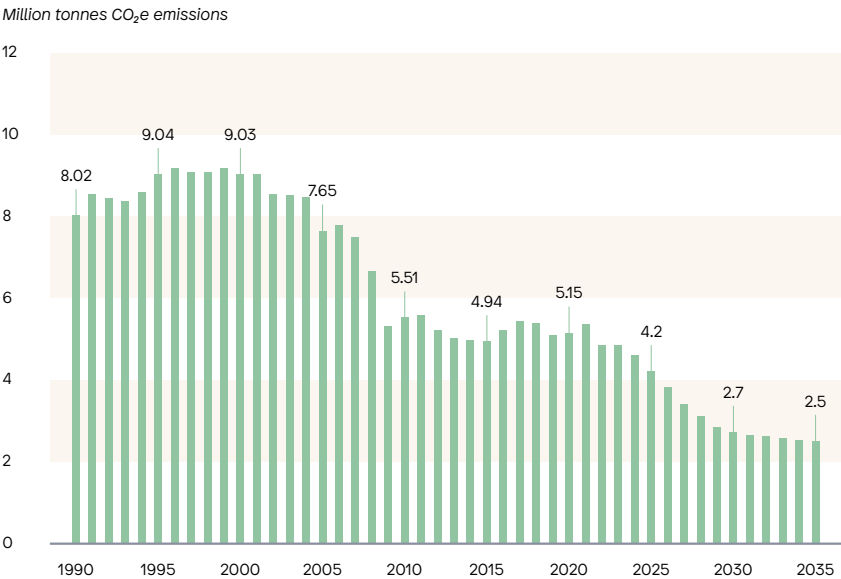


Figure 5 Greenhouse gas emissions from manufacturing and construction, million tonnes CO₂e

Source: Ministry of Climate, Energy and Utilities. 2024. Denmark's Climate Status and Outlook 2024.

Business in a climate-neutral future

And now to my main point: It is crunch time for business and climate policy in Denmark, the EU and globally.

From my perspective, there is good reason to be specific and transparent about what different approaches and ambitions mean in practice for companies, sectors and societies. Future ambitions and initiatives should therefore be grounded in what there is a genuine willingness to implement and fund – both in Denmark and in the EU. Political climate ambitions should begin with carbon-reducing instruments. The ambition is climate neutrality by 2045, and that is why decisions must now be made to ensure we stay on course beyond 2030 – and to provide companies with certainty about the future framework conditions. Given the major transition already underway, we have deep insight into which sectors can contribute to future climate ambitions. It therefore no longer makes sense to debate higher target percentages without anchoring the discussion in concrete instruments and the necessary political financing. At the same time, it is also crucial that we remain fully focused on establishing and implementing the agreed climate measures ahead of the 2030 target. It's hard to have confidence in bold new steps if we don't trust or have a solid grip on the framework for what we've already decided on and are in the process of implementing.

If we are to have a strong and value-generating business sector in a climate-neutral future, we must agree on simple and transparent principles that will ensure continued support for, and trust in, climate policy goals and actions. This means that decisions must be made now to maintain the pace of the green transition, and that all sectors must contribute to a fairer transformation. At the same time, it must be a core principle that the green transition strengthens – rather than weakens – the competitiveness of both Denmark and the EU. Otherwise, we risk seeing our fine words being thrown out the gate in a time of global uncertainty, geopolitical challenges, faltering competitiveness and competing agendas.

That doesn't have to happen, because a balanced climate policy is a cornerstone of an economically resilient, secure and competitive society – just as the European Commission has stated in connection with the Clean Industrial Deal:

“Europe has set out an ambitious framework to become a decarbonised economy by 2050. It will stay the course, including through the intermediate 2040 target of 90% net greenhouse gas emissions reduction. This framework can drive competitiveness, as it gives certainty and predictability to companies and investors alike.

This will be achieved by nurturing competitive manufacturers who drive decarbonisation through innovation, create quality jobs and contribute to our open strategic autonomy, fully respecting and applying the principle of technological neutrality for Member States as appropriate."

The Confederation of Danish Industry is unwavering in its support for a robust climate policy in a changing world – this is ambitious in itself and something that must, and will, contribute to the competitiveness of businesses and to our security of supply: That calls for a steady hand at the wheel, and a clear vision for what the EU can do – and what we must address domestically, both in 2035 and with a view to climate neutrality by 2045.

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16



Agriculture and Food Production: The Green Transition Must Be Considered Globally

Morten Boje Hviid

CEO of the Danish Agriculture and Food Council

Emissions from biological processes in agriculture are difficult to manage. But the agricultural sector is ready to deliver – and together with the rest of the food cluster and research institutions, our experiences and the inspiration from the Green Tripartite Agreement can now be used to secure a position for Denmark as a frontrunner in the climate field. We should lead through action, and not by going it alone with ambitious reduction targets.

There is – and there will continue to be – a strong demand for food. This underscores the need to think far more globally than what we do today, so that agricultural production can be carried out in the most climate efficient way possible – and to ensure that it is carried out in the places where farmers can attain the lowest climate footprint possible.

Beyond food production, agriculture will play a significant role as a producer of biogenic carbon to replace fossil carbon. This makes it all the more important to take good care of agriculture – both at home and globally – so that the green transition happens through development, not dismantling.

The role of the Danish Council on Climate Change in the agricultural sector could benefit from shifting direction – placing greater emphasis on a global perspective, and ensuring that its recommendations promote a global transition rather than a traditional, national, siloed mindset and the use of a toolkit that often includes production-limiting measures.

Agriculture & Food Production: The Green Transition Must Be Considered Globally

Food production as a whole, and agriculture in particular, leads to greenhouse gas emissions. It is indisputable that complex biological processes cannot occur without the release of methane, carbon dioxide and nitrous oxide. It is equally indisputable that there is – and will always be – a need to produce food for a large and growing population, and this means that climate-neutral food production, in isolation, is not a viable option. This means we must work in a targeted manner to minimise the climate footprint of agricultural production as much as possible, and to incorporate the uptake and storage of carbon into operations so that, overall, agriculture becomes climate-neutral, and perhaps one day may even help to reduce atmospheric carbon dioxide concentrations.

Danish agriculture has every opportunity to be a central part of the solution. The entire food cluster – from individual farmers to food companies, the research community, technology companies, and all other players – hold a strong global position, and we have outstanding natural conditions for the running of agricultural production that is both efficient and climate-friendly.

In this chapter, I will try to describe the opportunities and challenges that are present in leading agriculture through the green transition. What is the fiscal room for manoeuvre, and how can we ensure the development – not dismantling – of the industry? I will also try to outline how future climate legislation – nationally, in the EU, and globally – should develop so that the necessary reductions are achieved, while simultaneously meeting the need for quality, healthy food and a strong security of supply.

The time has passed for merely talking about higher and more ambitious reduction targets and rigidly, by all means, following a predefined reduction pathway – we must ensure stable frameworks and support the green transition through action. The Green Tripartite Agreement, followed by a broad political agreement, is a shining example of how it is possible to initiate movement in the right direction when guards are lowered a bit and all good proposals are heard. In that context, we've reflected on how the Danish Council on Climate Change could take on a new, more proactive and forward-looking role than is the case today.

Agricultural emissions are complicated to measure and manage – but that must not hold us back.

As mentioned at the outset, many biological processes in agriculture are difficult to manage. It is difficult to understand and quantify the formation and conversion of greenhouse gases – whether in the field, in the barn, or in connection with manure management. A wide range of factors govern these processes, and so it is difficult to transfer results from one type of field or livestock facility to another, from one region of the country to another, or from one season to the next. In addition, as many like to say, it is not possible to electrify a cow or a pig. The transition options within complex biological systems are therefore not comparable to those in energy supply, industry, and transport, where it is more feasible to replace fossil fuels with renewable energy sources.

Fortunately, Danish research communities are working intensively to increase the level of knowledge, and our understanding continues to improve. We will likely never be able to attain our goals in this area to such an extent that we can cross them definitively off the list – but there is no doubt that, in many areas, we are undeniably at the forefront when it comes to university research into the climate impact of agriculture. This strong position hasn't come about on its own, and it's by no means guaranteed that Denmark will remain at the forefront. The prerequisite for this is that there continue to be a strong and development-oriented agricultural sector, where research and the testing of new methods can take place.

Even though knowledge will always be lacking, that must not prevent us from putting solutions into action. We often encounter widespread skepticism – yes, in fact, genuine pessimism – regarding whether it's even possible to do anything about the situation, and whether the various measures are actually capable of delivering results. The result, then, is that the only solution people can imagine pointing to is a reduction in livestock production.

The focus often ends up being on how Denmark, in isolation, can deliver reductions – without regard for the fact that climate change and its solutions must be considered in a global context.

Our call is clear: We must develop both plant and animal production. We need to move beyond our bubble, dare to embrace well-documented solutions, and roll out new, smart approaches as quickly as possible – even if there will always be fluctuations, uncertainties, and a desire to know more. In this regard, we all need to think differently than we do today – this applies not just to those of us working

in agriculture and to scientists and politicians, but also to all other actors who work with and care about the climate. And this also includes the Danish Council on Climate Change.

Since launching our own vision in 2019 for a climate-neutral agricultural sector by 2050, the Danish Agriculture & Food Council has made a clear and unequivocal decision: we must implement all suitable solutions across the board – even if we don’t yet have complete clarity on how we will achieve the final reductions in 15–20 years. In this way, we can achieve a genuine green transformation of agriculture, support the development of new technologies, and help ensure that farms in other countries also see the opportunities and advance the green transition of their agricultural sectors.

We need to pick up the pace, and in that context, it’s important to both recognise and acknowledge that it’s vastly preferable for necessary and in-demand food production to occur, to the greatest extent possible, where the green transition is already in full swing. No matter how you look at it, Denmark is in an incredibly strong position – especially in light of the *Agreement on a Green Denmark* from June 2024, which has laid the groundwork for an ambitious green transition in Danish agriculture for many years to come.

What should we focus on in the future?

In the agricultural sector, we’re ready to secure the necessary reductions in greenhouse gas emissions from biological processes, just as we’re focused on increasing the uptake, utilisation and storage of biogenic carbon.

There is no doubt that the contribution of carbon from agriculture and forestry will become central in the coming decades as the use of carbon from fossil sources is phased out. Carbon of biogenic origin is becoming a sought-after commodity for a wide array of purposes, and agriculture in Denmark – as well as globally – will adapt so that its dominant output is not only healthy food for a growing population, but also biogenic carbon to replace fossil-based sources.

Even though an increasing share of agricultural biomass will gradually be used as building blocks in products such as cosmetics, clothing and paints, a portion will continue to play a role in energy supply – as a green alternative to fossil fuels such as coal and oil. But the key is to use biogenic carbon wisely – and where it can bring the greatest value within the value chain.

There will also be a need to achieve negative emissions – that is, the capture and storage of carbon dioxide from the atmosphere – as this is a fundamental prerequisite for reversing the trend of rising global temperatures.

Several promising initiatives have already been launched, including the buildup of soil carbon stocks through new cultivation systems and plant breeding, as well as the production and storage of biochar, based on agricultural by-products. With the Green Tripartite Agreement, the Agreement on the Implementation of a Green Denmark, and the government's pyrolysis strategy and action plan, alongside supporting research strategies, Denmark is well on its way to becoming a front-runner in the capture, utilisation, and storage of biogenic carbon – with a particular emphasis on cascading utilisation.

There are strong prospects for Denmark to play an even greater role as a front-runner than it does today. And by this, we mean that we can contribute even more toward securing global reductions in greenhouse gas emissions from food production, so that the climate impacts become significant and measurable.

We must contribute through both development and action, so that a green transition in agriculture can take place across the globe. This is far, far more important than continuing down the current path, where being a frontrunner means distancing ourselves from the rest of the EU and the global stage by setting the most ambitious national climate targets.

From where we stand, it's essential to ensure that goals and solutions go hand in hand – the low-hanging fruit has almost been picked clean, so the focus should now be on identifying and implementing the best solutions. In general, it no longer makes sense for us to go it alone and look down on things from our Ivory Tower. Denmark should therefore work to secure shared reduction targets – initially at the EU level – so that we can leverage our foresight, knowledge and capabilities without compromising our strong position within climate-efficient food production and in the research and development of systems, new solutions and technologies.

Denmark can likewise be a frontrunner in the effort to establish effective frameworks for actually kickstarting the green transition of agriculture across EU countries. Once again, we can draw on the valuable experiences from the Green Tripartite Agreement, even though the Danish model cannot be replicated one-to-one in every country. There are vast differences in the size, economics and technological capacities of agricultural sectors in the EU, and the large public

investments – such as those made in the conversion of around 15% of existing agricultural land seen in Denmark – are not realistically achievable in all member states within the foreseeable future.

Nevertheless, Denmark's experiences have much to offer if the European Commission's ambitions for a green transition in agriculture are to become reality. First and foremost, the trust-based approach is something that can be successful. Various models are currently being discussed to make agricultural production in the EU more climate-friendly.

What the various models have in common is a consideration of incentives and voluntariness. Here too, Denmark will be able to contribute experience and instruments that can make climate-friendly production more appealing.

In short, Denmark's role as a frontrunner is more important than ever, and the path to real climate impact lies in developing and disseminating instruments and incentive models, so that many can take part in the green transition and avoid being left behind. For us here in Denmark, this means that we need to develop our strong position within research and implementation. The phasing out and relocation of production will not benefit the climate, and fortunately, the Green Tripartite Agreement has emphasised the importance of leading through development and inspiring others to do the same.

Thoughts on the future role of the Danish Council on Climate Change

A more development and solution-oriented climate policy for agriculture makes it relevant to examine the framework and role of the Danish Council on Climate Change, which is largely defined by the Danish Climate Act. If agriculture is to become significantly more climate-efficient in the short term, the Council could benefit from being given a more proactive and advisory role – focused on dismantling barriers to climate action, promoting development initiatives in all respects, and serving as a bridge between Danish initiatives and the global perspective.

As things are today, we primarily perceive the Danish Council on Climate Change as a kind of watchdog that follows and interprets developments, and if necessary proposes ad hoc adjustments of policy from a classical economic perspective. One example of this approach are the recommendations to introduce carbon budgets with corresponding levers (additional taxes in the case of agriculture), which can

be adjusted up or down over time.

We fully acknowledge the need for the close and independent monitoring of developments and to be ready to adjust course if things don't go according to plan. Unfortunately, the narrow year-to-year national focus often hampers the identification of the real issues, and there is a significant risk of finding conventional – but frequently ineffective and short-term – solutions when reaching into the toolbox.

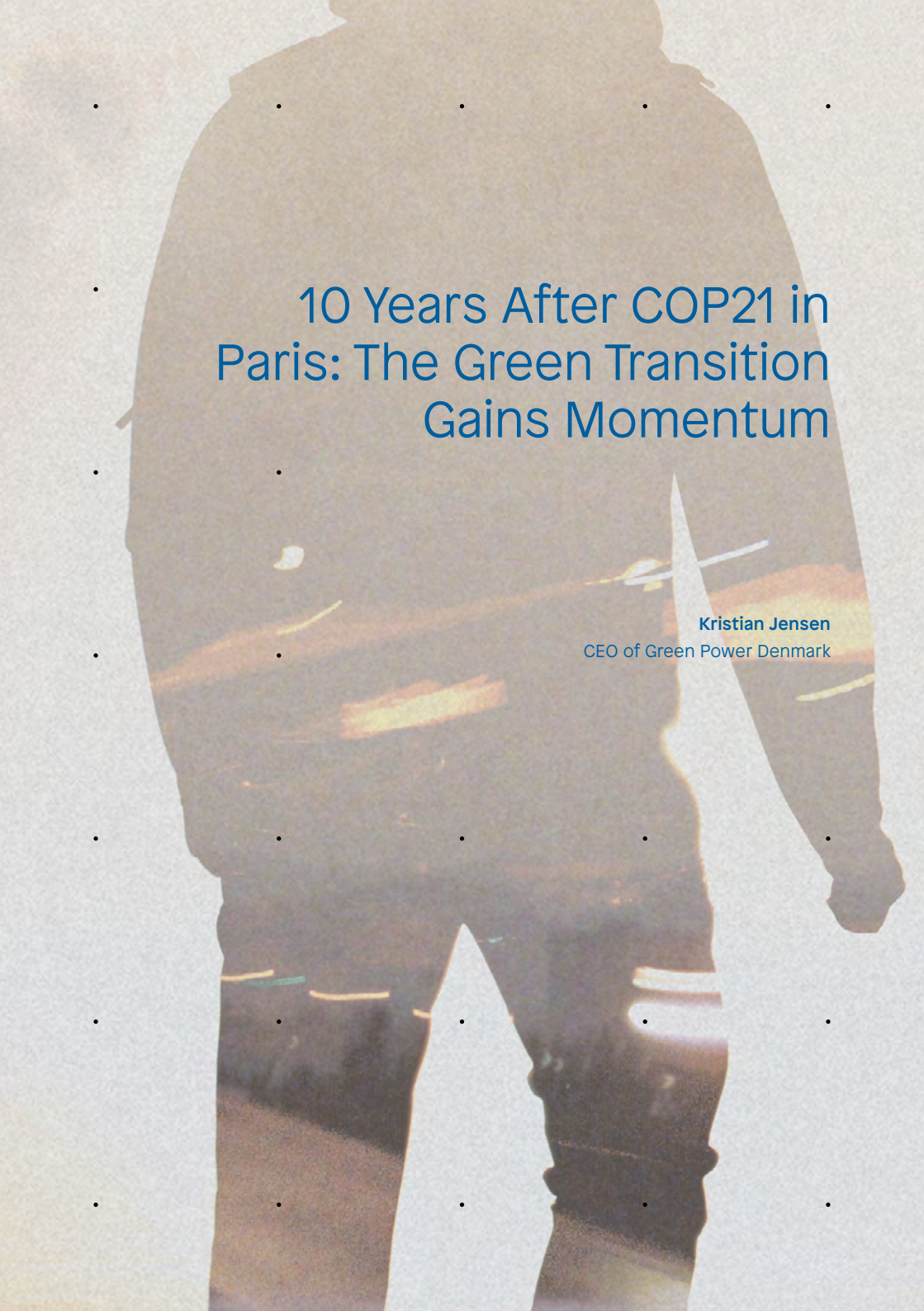
I would urge the Danish Council on Climate Change to focus its attention on how Denmark can increase its green footprint on a global scale. If lofty territorial targets are a prerequisite for calling ourselves a frontrunner, then we've fundamentally misunderstood something about what it means to be a small country. We are a frontrunner when we are able to have ambitious targets AND also maintain production while reducing emissions. It is in principle possible for all countries to stop production and thereby stop producing emissions. If we are to be an inspiration for other countries, we must show how we can do both – and most importantly, we must spread our solutions to ensure climate action globally.

If the Danish Council on Climate Change is assigned the task of incorporating global dimensions – both in terms of how Denmark can contribute by exporting knowledge and solutions that lead to significant reductions in greenhouse gas emissions globally, and in terms of addressing leakage from direct emissions and the 'export' of land use to other countries – then we have strong confidence that the Council can, going forward, support both Denmark and the wider world in accelerating and deepening the green transition in agriculture.

If these thoughts about a new and somewhat different role for the Danish Council on Climate Change are realised to any extent one day, it will of course only be natural to also consider what competencies should be represented in a modern Council. Is the current composition spot-on, or is it time to think in new directions and bring in fresh perspectives?

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10 Years After COP21 in Paris: The Green Transition Gains Momentum

Kristian Jensen
CEO of Green Power Denmark

Danish electricity is getting greener and greener. In 2015, the average emission was 195 grams of CO₂ per kilowatt-hour. That is now down to less than 100 grams per kilowatt-hour. Abundant electricity from wind and solar power combined with batteries, alongside direct and indirect electrification, is the vision that Denmark must refine and live on over the next 10 years.

The green transition is in full swing! That fact gets lost in the debate, in part because many of us, including myself, believe that the transition is going too slowly.

In my book *Kun en dråbe (Just A Drop)*, I have tried to step aside to look at what is happening. In Denmark. In Europe. Globally.

My conclusion is that it is worth taking action for a more sustainable world. That even a small drop can spread like rings in the water, creating great changes in an uncertain world that is facing both climate and biodiversity crises as well as wars in Europe, the Middle East and Africa.

Through the power of example, Denmark's green transition influences the global gears. Granted, we account for only 0.1 percent of global carbon emissions, but through our actions, we can influence governments and businesses across the world.

Globally, investments in green technologies are increasing. From 2022 to 2023, the flow of funds grew by 17 percent according to BloombergNEF, with renewable energy, the electrification of the transport sector, and power grids as the strongest drivers. Globally, nearly 1,800 billion dollars were invested in climate-friendly technologies in 2023, according to BloombergNEF.

My conclusion is clear: We have reached a point of no return.

Much more green electricity

What has happened in Denmark since COP21 in Paris and the establishment of the Danish Council on Climate Change in 2015? First and foremost, greenhouse gas emissions have dropped significantly – while the economy has continued to grow.

Denmark's net emissions have, in round numbers, according to official figures from the Danish Energy Agency, been reduced from 50 million tonnes in 2015 to 40 million tonnes ten years later.

Cleaner electricity production is one of the main explanations for this. Carbon emissions from our electricity and heat production have more than halved – and this trend has continued with the closure in 2024 of coal-fired power plants in

Odense and Esbjerg. We now have only one coal-fired power plant left, the Nordjylland Power Station, and it is scheduled to be shut down by the end of 2028.

Some of the coal-fired plants have been converted to sustainable biomass. The others have been replaced by wind and solar energy, the capacity of which, since 2015, according to Energinet, has increased from 5,900 MW to 11,600 MW.

More is on the way. For example, Denmark's largest offshore wind farm, Thor, will be operational from 2027.

Electrification is underway

The transition from black to green means our kilowatt-hours are becoming increasingly climate-friendly. In 2015, the average emission was 195 grams of carbon dioxide per kilowatt-hour. Now, according to our calculations based on data from Energinet's Energy Data Service, emissions are 96 grams per kilowatt hour ... and still on a downward course.

This means that, in just ten years, we have succeeded in more than halving carbon emissions per kilowatt-hour, while maintaining a supply reliability of over 99.99 percent and offering customers low electricity prices (before taxes).

These increasingly green kilowatt-hours are beneficial for Denmark's electrification. Year after year, buying electric cars and heating homes with heat pumps become increasingly favourable options from an environmental and climate perspective.

Let's take electric cars as an example of how electrification is beginning to take hold:

In 2015, there were almost 3,000 electric cars on the roads in Denmark. Now, according to Bilstatistik.dk, about 400,000 cars in the country are powered by clean electricity.

In addition, even larger ferries such as those on the Helsingør-Helsingborg route, buses in our largest cities and an increasingly greater number of trucks have all gone electric. Motorists and the transport sector are embracing greener mobility, and they are strongly supported by the power grid and charging stations infrastructure.

The transition to electric transport delivers the greatest carbon reductions when oil-powered vehicles are taken off the roads. And this is happening! We're now seeing clear signs in the Danish Energy Agency's monthly oil statistics that oil consumption is falling as drivers increasingly abandon fossil-powered cars.

The consumption of petrol and diesel was 220,000 million litres in 2015. Today, it is under 195,000 million litres.

Strong movement is also underway globally: Sales of fossil-powered cars peaked at about 85 million in 2018 and have since fallen to about 65 million a year.

Electric families save money

At Green Power Denmark new calculations show that an 'electric family' who chooses an electric car and a heat pump saves 21,000 kroner (2.800 euro) annually compared to a 'fossil family' who opts for a petrol car and natural gas heating. When we choose electric over fossil, we not only lower our bills – we also reduce our carbon emissions.

In Denmark in the 80's and 90's we were all told to cut down on electricity consumption because it was dirty and expensive. Now we have to look at electrification in a new understanding. We must still use electricity responsibly, but for the sake of society and the climate, it's unequivocally good news when green electricity replaces oil and natural gas.

Fortunately, this is precisely what is happening: Back in 2015, Denmark's electricity consumption stood at 33.8 TWh. Now, after decades of stagnation, according to Energinet, it is up to 38.4 TWh (2024).

Increased electricity consumption is also on the European agenda as a means to achieve more secure and affordable energy in a time of geopolitical uncertainty – not least due to Russia's full-scale war in Ukraine.

Prompted in part by Green Power Denmark, the European Commission is now drafting an electrification plan. As a starting point, it proposes that the EU-27 set a target of 32 percent electrification by 2030, up from the current 23 percent.

In Denmark, only around 20 percent of our total energy consumption is covered by electricity. Approximately 80 percent comes from other energy sources –

including oil, gas and other fossil sources – so a significant proportion of our energy consumption has to be converted to electricity.

When we electrify, we increase efficiency and at the same time, we reduce overall total energy consumption. It is for this reason that we should cheer on significantly higher electricity consumption in the coming decades: Electricity for transport, electricity for heating and electricity for industry.

In this regard, it makes sense to strengthen the transition by lowering the very high electricity taxes we have on household consumption, by maintaining government commitment to the promotion of electric mobility, and by supporting the transition to electric boilers and heat pumps within industry.

A clear vision of climate neutrality

With the development of modern wind energy and the adaptation of wind and solar power, Denmark is showing the world that it is possible to phase out fossil fuels.

We also have a clear vision that can take Denmark – and many other countries – significantly forward in creating a climate-neutral society by 2045. This vision includes three elements:

- Much more renewable energy (wind, solar, batteries)
- Direct electrification of as much as possible
- Indirect electrification of difficult sectors such as ships and aviation

The green energy sector is often accused of being unable to deliver stable energy production – and thus of being incapable of standing alone without other energy sources. And it is indeed true that both solar panels and wind turbines are dependent on the weather.

Fortunately, there are many elements that can help further develop our robust energy system.

Firstly, we can see that many customers respond to price signals from the market and grid operator tariffs. Reactions from customers with hourly billing lead to reduced consumption when renewable energy production is limited and prices are high.

Secondly, we can observe that offshore wind turbines, in particular, deliver stable output and provide a solid foundation.

Thirdly, we can see from other countries that the combination of solar panels plus wind turbines plus batteries delivers the cheapest energy 24 hours a day. The establishment of battery systems is now also gaining momentum in Denmark.

Fourthly, we can add locally produced biogas as an important energy source. Biogas, which covers 40 percent of Denmark's gas consumption, can be stored and used at times when it adds the greatest value to the energy system.

If we prioritize using biogas in industrial areas where electricity still cannot provide sufficiently high temperatures – as well as for backup capacity at combined heat and power plants – we can reduce dependence on fossil fuels even in sectors where this is difficult.

Cheaper to save the planet

Now in 2025, green energy is cheaper than black. I think that's great! The positive message we can share with our citizens, in this uncertain world, is that it is cheaper to save the planet than to destroy it.

Electricity from renewable energy can survive decades of harsh moves under market conditions, and today we create more jobs by reducing CO₂ emissions than we lose by saying goodbye to coal, oil and gas.

In the energy system of tomorrow, we have the opportunity to live and travel in a climate-neutral way.

Is it all good news? No, the planet continues to break one heat record after another, greenhouse gas emissions still haven't peaked, and atmospheric carbon-dioxide concentration continues to rise ... from 400 ppm in 2015 to over 425 ppm this year. Globally, we use more oil now than we did in 2015.

So, no – the transition of the global energy system is progressing too slowly, and unfortunately, the UN's goal of limiting temperature increases to 1.5–2 degrees is becoming increasingly difficult to achieve. Many other countries are on the same path as us, but the transition requires all countries to join.

The fact that the U.S. government is *disrupting* international cooperation, taking itself out of the Paris Agreement (again!) and writing climate change out of all its documents raises concern. But it must not make us and others lose our courage.

The COP processes remain important for maintaining momentum, exchanging experiences and sharing knowledge about climate developments and the technological and financial solutions that are so urgently needed.

For example, it's hard not to feel outraged that subsidies for fossil energy still exceed support for renewable energy: According to the International Energy Agency (IEA), global subsidies for the fossil fuel sector amounted to \$620 billion in 2023 – up from around \$400 billion in 2015. That is a considerable rise when there is a need instead for elimination.

Good framework conditions in the EU/Denmark

In Denmark, in the coming years we will continue our own transformation by offering good Danish/European framework conditions. Our starting point is strong with an annual export of energy technology and services worth over 100 billion DKK, and with more than 100,000 people employed in the energy sector.

We must, among other things, continue being at the forefront with a highly skilled workforce and dedicated research, development, and demonstration – including at our state-of-the-art test facilities such as LORC in Odense, DTU Risø, Blæst in Aalborg and Østerild.

Our wind turbine manufacturers and their many subcontractors install equipment all over the world, but they develop and produce it here in the country. They do so because we can test and thereby quality-assure the first and most efficient prototypes of new blades, nacelles, and entire wind turbines.

The Anholt Offshore Wind Farm, which was operationalised in 2023, is comprised of 3.6 MW turbines. Siemens Gamesa and Vestas now have 14–15 MW turbines in their ranges, and even larger models may be coming soon.

As the technology grows in both height and breadth, the test facilities must expand to keep up with the development. The expansions also challenge traditional financing models, as long payback periods create uncertainty for investors. We have to solve that.

Need for continued innovation

In the landscape of global competition – especially with state-supported Chinese companies – 'continued innovation' is a matter of life and death for our businesses. Reluctantly, I must acknowledge that state aid for new production facilities may become a necessity – if the European wind turbine industry is not to suffer the same bitter fate as the European solar panel industry.

In total, the wind turbine industry employs around 370,000 people in the EU, 30,000 are employed in Denmark. We thus hold a very large share of this employment in Europe, and many are employed within small and medium-sized enterprises with less than 250 employees. But this also makes our companies especially vulnerable to the unfair competition posed by Chinese state aid.

We've seen that European solar panel production has been squeezed out in a very short time. I fear that if the EU doesn't think carefully and implement anti-dumping rules, we could lose an industry in four years that took us four decades to build.

It would also mean that we would become just as dependent on Chinese goodwill as we once were on Russian gas – a situation we must avoid at all costs.

Alliances in all corners of the world

The world is complex and full of dilemmas, but we must – especially if we are to prevent a runaway climate crisis, and also strengthen our exports – continue building on the alliances that the Danish state has established, from China and Vietnam in the East to South Africa and Mexico in the South and the West.

As foreign minister, I have closely followed some of the 24 country agreements Denmark has made with major players around the world. To me, it's clear that, through the power of example, we hold far more influence than our nation's size would suggest.

Our closest allies remain in Europe, which is also leading the way in a global climate context. The goal of at least a 55 percent reduction in greenhouse gas emissions by 2030 must be followed up with at least 90 percent by 2040.

A separate point is that while Europe is totally dependent on imports of oil and

natural gas – among others from countries whose views on democracy and human rights are far from ours – the USA is self-sufficient and more besides.

According to Eurelectric, Europe imports energy worth 450 billion euros annually. Also, for the sake of Europe's competitiveness and energy security, we must therefore invest in cheaper alternatives which offer the opportunity for us to become self-sufficient in electricity. Wind, sun and batteries.

We need to shift up a gear

The next 10-15 years will be more than busy. One of our strengths in Denmark is that we have meaningful conversations across political parties, constructive business organisations, skilled research institutions, and lively dialogue with civil society and other stakeholders – including Green Transition Denmark and, of course, the Danish Council on Climate Change. The past ten years of work within the Danish Council on Climate Change have contributed to the dialogue on an informed and professional basis.

In some areas – as also highlighted by the Danish Council on Climate Change in its *Status Outlook 2025* – we're currently at a standstill in Denmark, while globally, as mentioned, we're seeing very large investments in green solutions.

Therefore: Denmark needs to shift up a gear and create an intelligent energy system that runs entirely on wind, solar, and batteries – with continued backup from select combined heat and power plants fueled by sustainable biomass, alongside energy exchanges with our neighbouring countries.

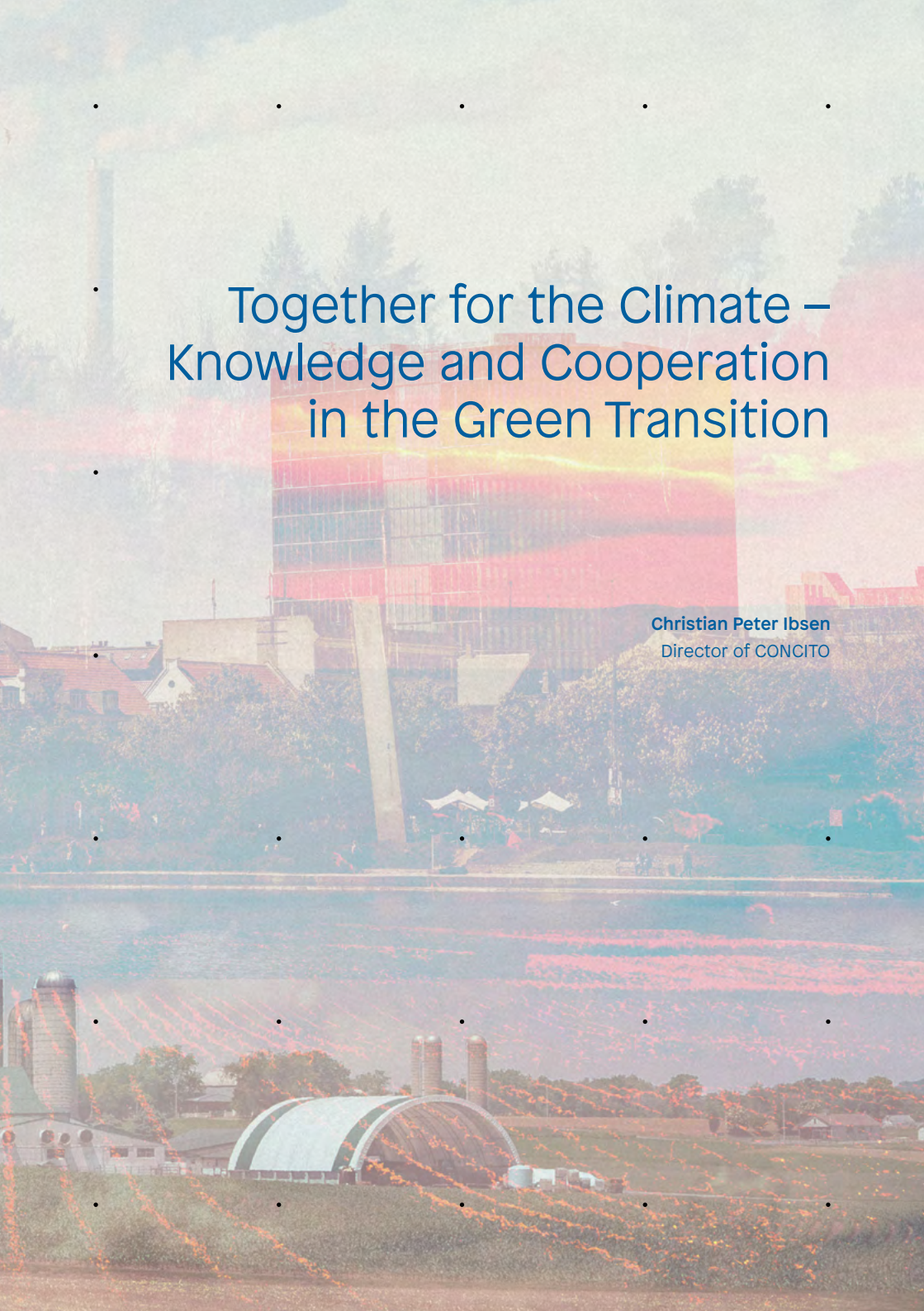
We need to move swiftly forward with electrification, offshore wind, onshore wind, hydrogen pipelines, Power-to-X, carbon capture, storage and utilisation – and much more.

We have proven – and must continue to demonstrate through action – that we can create a richer, greener and better society. With Denmark and Danish companies leading the way in turning green ambitions into reality, our impact on the world is far more than just a drop in the ocean.



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Together for the Climate – Knowledge and Cooperation in the Green Transition

Christian Peter Ibsen
Director of CONCITO

Climate change stands before us – clear and serious – and the global effort is only just beginning to come up to speed, even as we encounter roadblocks and resistance from many sides. At the same time, over the past 10–15 years, we have witnessed a historic political will to act – both in Denmark and internationally – driven not least by strong public opinion demanding swift and ambitious action. In Denmark, climate, environment and nature have ranked among the top three priorities for voters for at least the past ten years and, politically, this has been followed up with a broad-based climate policy. But what is the context within which we should view climate action today? Why is broad support and cooperation important? And what role do we play as actors in ensuring progress and solutions?

Introduction

In a time marked by upheaval, war and increasingly forceful climate change, I will with this article offer a climate perspective on the transition we face – and how we should focus on what unites us and on what is working for us here in Denmark.

In these times, we must frame our climate efforts within the reality we face. In Denmark, in the EU, and in the world. More than ever, we need to join forces and engage in dialogue if we are to succeed in creating a greener and safer world. The new backdrop for all these considerations is whether we in Denmark, and to an even greater extent in Europe and the world, can continue to do so. Namely, to come together. But this is a goal that we must never give up on.

My article should be seen in light of the reflections I've made in connection with the various roles I've played in the climate struggle – both nationally and internationally – in ministries, a municipality and now in CONCITO. Based on that experience, one thing is crystal clear: we succeed when people with deep personal commitment – both within and beyond politics – come together, and when credibility, knowledge and relationships merge into something greater. The Danish Council on Climate Change plays a very important role in this regard with its expertise and input into politics and debate.

What are we facing?

We are in a completely different climate policy reality today than we were ten years ago when the Danish Council on Climate Change was established. Climate policy in Denmark has advanced significantly, an ambitious climate law has been passed, and many major agreements have been made, bringing the country within reach of its goal to achieve a 70 percent reduction by 2030.

At the same time, an ambitious green policy has been adopted in the EU, setting the framework for a comprehensive decarbonisation of Europe. For both Denmark and the EU, however, implementation is slow and difficult: Targets alone are not enough. And the next crucial steps toward full decarbonisation in Denmark and across the EU demand a much broader, wiser and more ambitious approach to climate action.

Unfortunately, it is also clear that climate policy needs to be seen in a completely different context today. Geopolitics, and most recently the American elections,

have opened the door to another world. This also means that climate change can and must be seen in relation to other challenges. This has always been the case, but climate policy can no longer be pursued without including security, industrial policy, social policy and much more.

Climate change is also closely linked and can only be solved in conjunction with other agendas, such as the nature and biodiversity crisis at sea and on land. In this context, it becomes important to deliver solutions and approaches that support both climate, biodiversity, and related concerns – while managing the synergies, as well as the conflicts, that inevitably arise.

Climate realities ahead of us

The increasing effects of climate change over recent years have highlighted the risks the world is facing. These are risks that have already manifested themselves in a number of extreme events in all parts of the world, including heavy storms, precipitation events, floods, forest fires and droughts on virtually all continents. The impacts are especially severe in Africa, but EU countries have also, in recent years, been exposed to massive flooding and widespread drought. Climate change compounds the existing challenges in countries and regions, hitting hardest those who are already exposed or vulnerable.

Climate science increasingly emphasizes the seriousness of the climate changes we face in the coming years and decades – and the importance of reducing emissions rapidly and significantly if the worst consequences are to be avoided. Most recently, the latest insights into so-called “global tipping points” are particularly alarming – thresholds at which we risk initiating processes and changes that will reinforce themselves and the climate changes we’re heading towards. Examples of this include the melting of Greenland and the Arctic, the thawing of permafrost and, most recently, signs of a weakened Atlantic Meridional Overturning Current — which shapes weather systems across the globe.

There is therefore, now more than ever, a need to focus on reducing emissions here and now – using all the technology, regulation, behavioural changes and other smart solutions we have at our disposal. At the same time, the challenge increasingly requires us to understand and support the path towards a deep transformation or transition of our society.

In terms of short-term reductions, it’s encouraging that we can now discern the

outlines of a significant global green transition, especially in the energy and transport sectors, where new green energy production is becoming competitive and is genuinely gaining ground.

However, this is happening at the same time as a completely changed geopolitical context, where the increasing globalisation we saw just a few years ago has been replaced by a geopolitical struggle between China, the United States, the EU and others, with trade barriers and a focus on domestic industrial policy and competitiveness. In that context, it's important to reaffirm that the green transition is – and will remain – a necessary priority and a key competition factor for everyone.

Quick reductions and a deep transition

It is becoming increasingly clear that there is a need to focus on both (1) rapid and smart reductions in all sectors using technologies, behavioural change, regulation and other levers, and on (2) a deep transition of our society in all respects.

Precisely this connection will be a necessary part of climate policy and action in the coming years. The efforts so far have advanced the transition and harvested many of the low-hanging fruits, but the next steps demand deeper emission cuts and a more extensive transition of both production and consumption – and this will inevitably extend into other sectors. At the same time, the transition is becoming closer to citizens and everyday life, making it crucial to establish the framework for a transition that is ambitious, structural, but also meaningful – also for citizens – where a common direction is shaped for the development of things such as our land use, cities, lifestyles and so on.

The latest political agreement – the Green Tripartite Agreement – is an example of how the climate is part of a broader vision and framework for a greener Denmark, with much more room for nature and biodiversity, while at the same time developing a strong green food sector that emits and takes up considerably less space.

From a global perspective, Danish climate action can also contribute to the transition. Denmark is a small country, but, through the development of wind turbine technology, it has demonstrated that even small nations can contribute significantly to the global effort by creating and disseminating climate-related technologies and solutions. Denmark is widely recognised for having pursued an innovation policy in wind energy with a large global footprint¹.

Broad political support for Denmark's climate policy

In Denmark, climate policy continues to enjoy broad political support for its ambitions and initiatives, and public support remains strong – climate is still at the top of the list, along with health, when Danes are asked to rank the most important issues.

A series of political agreements have made a 70 percent reduction in greenhouse gas emissions by 2030 likely, but concrete implementation is lagging and slow – and there is still a risk that the transition of energy and food systems will not proceed as swiftly as hoped.

At the same time, the next steps in climate policy must now be taken, with a revision of the Climate Act in 2025 with a particular focus on a new ambitious target for 2035, in which it will be crucial to link solutions and initiatives much more closely to how Denmark can deliver on the government's targets of net-zero emissions by 2045 and of a 110 percent reduction by 2050. This requires a greater focus on creating broad support for the transition – a transition which everyone must adapt to, but which they must also see as leading to a better and greener Denmark. Moreover, it will be necessary to lift our gaze from the transition within individual sectors, as solutions often need to be considered across sectors – requiring a much more systemic perspective.

European climate policy sets the framework

Climate action in Denmark can no longer be viewed in isolation from the transition within the EU. Ambitious climate and energy policy has been adopted within the EU, and this will propel the efforts of member states in the coming years – and the new Commission maintains a high green ambition, though now framed through narratives about competitiveness, industrial policy, just transition, and the energy security. In addition, the framework for the EU's agricultural policy is expected to shift in a significantly greener direction in the coming years. Taken together, this means that Denmark's ambitions, initiatives and solutions must continuously be viewed in light of EU policy and the implementation of the European Green Deal – as well as, for example, a future green industrial policy and the revision of agricultural policy.

However, the internal EU political landscape has changed significantly – not least due to Trump’s actions on trade policy, security, and so forth – and these collectively cast EU climate policy in a new light. The EU’s climate and energy policy is now being increasingly integrated with industrial and security policy, but this also paves the way for a significantly faster transition of especially energy systems, due to the political will to invest more and at greater speed. At the same time, it is necessary to address the fact that, in some areas, there is growing concern about the socio-economic consequences of the ongoing green transition – and that the transition is coming closer to citizens and to the key industries and sectors that must deliver in order to achieve the EU’s climate targets.

Like other major economies, the EU will need to adopt new climate targets in the coming years, and hopefully the aim will be firmly set on a 90 percent reduction by 2040.

Such a target must necessarily be supported by a deep transition across all economic sectors – and in a manner that brings Europe’s populations along. This effort will pose a tremendous challenge for political leadership, with an enormous need for supporting knowledge, technological development and integration with all other policy areas.

In Denmark, we (often) play together

The last ten years of climate action in Denmark have largely been characterised by broad political support for ambitious goals, supported by a strong public opinion that demanded action. This has created a clear and shared understanding among the many relevant actors involved in policy development – and, not least, in the implementation of the many initiatives. I am absolutely convinced that this is one of the most important cornerstones of the transition we have successfully achieved in Denmark. We fundamentally agree that we must move in the same direction, even when our interests differ. This is absolutely essential for politicians when they have to make difficult choices.

But at the same time, it is also a culture and a way of working that we must protect, as it has served us well and will continue to do so in the future. Especially at a time when the foundation we have lived with for many years is changing. The outside world looks on with envy when we unite around agreements and concrete solutions, and when the transition simply happens faster and more intelligently than it does elsewhere. Broad political agreements naturally play a crucial role, but in

reality, they are merely a part – or a consequence – of a larger whole.

I do not believe that the role of dialogue and cooperation between us, the many actors, can be overestimated. A role that provides the framework for politicians to ultimately make the difficult but necessary choices. Choices that have become easier to make when we, as a society and as actors, try to lean towards each other. My experience is that, even though we, as actors, each play our own role and make our own demands, there is a mutual respect and shared desire for common understandings and solutions to take us the furthest. Here, we have a certain ability as Danes in a small, cooperative country with a democratic society. We must not just hold on to that. We must also work to ensure that this is still the case tomorrow. For as the world shows us, it's not a given.

From my point of view and that of CONCITO, it is clear that we must firmly insist that the green transition is based on relevant knowledge. Knowledge that must be brought into play, so that the right solutions and priorities can deliver the necessary transition. The times and the science demand that this transition be ambitious. Good policy must build on a solid knowledge base, and fortunately this is also a pervasive feature in the dialogue between all actors in Denmark. We make good policy when knowledge and expertise are put front and centre.

Here, the Danish Council on Climate Change naturally plays an absolutely crucial expert role – not only as an advisory body to the government and the Parliament, but also more broadly for Denmark and its people. That the Danish Council on Climate Change continuously analyses and evaluates targets, solutions and transition elements is an invaluable part of the shared foundation that has brought the transition in Denmark to where it stands today. That role will only grow in importance going forward.

Denmark's role in a strong, green Europe

The question, then, is can the “Danish model” for cooperation help push Europe's green transition forward? It must be able to do this, but in the EU, the challenges and the complexities are even more apparent. Considerations relating to nation states and the socioeconomic differences across the EU pose a challenge to the efforts being made to come together. But we must insist that, even within the EU, we can unite around the goal and the direction we want to take as a collective Europe – while recognising that the means and efforts must take account of many, often conflicting, interests.

But if the “Danish model” is to be appealing to the EU, we must also seriously deliver a transition in Denmark that remains ambitious, unifying and wise.

Within a short timeframe, we must deliver an energy system powered primarily by wind and solar, with low energy prices and the widespread electrification of our heating, industry, and transport. A food system in which much more food, and greener food, is produced on much less land, leaving room for nature, biodiversity, and other important considerations. It is becoming inevitable for Denmark to also view itself in a global context and consider the climate impact of our consumption beyond our borders. Further, we must also create a Denmark in which people want to live and thrive, and where we as Danes have created a transition that respects the boundaries of the planet.

The messages that this transition can send to the world around us are manifold. This is a clear example of a climate policy that delivers results. A climate policy that unites, and a climate policy that seeks to extend a hand to those affected.

Together for the transition

Collaboration ultimately requires a willingness to lean towards each other and deliver on a common goal. And it won’t happen on its own, even though we in Denmark like to think it’s ‘built into our DNA’. It requires clear political leadership that is willing to set both a clear direction and to foster followership among citizens, businesses and other key stakeholders. It requires clearly defined frameworks that will ensure the necessary prioritisation of resources, land and much else – and that also, to a much greater extent, ensure that production and consumption shift from black to green.

The green transition will take us to a better place in every way, but it also demands something from everyone. It is not just one party that has to bend. In Denmark, we have particularly strong conditions for solving problems through cooperation and avoiding polarisation. Let us insist that we are all in this transition together.

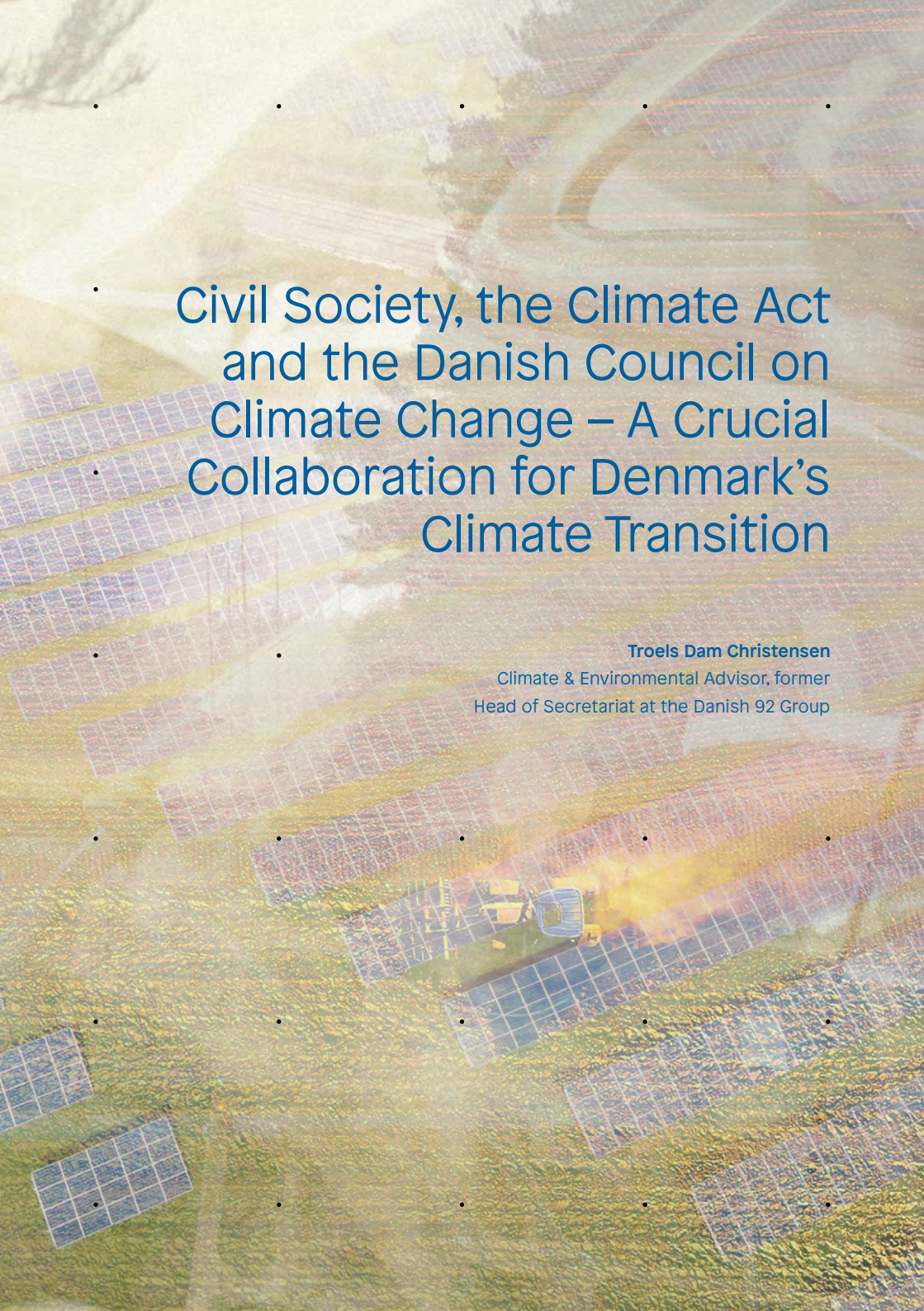
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An aerial photograph of a solar farm with rows of photovoltaic panels stretching across a landscape. In the background, there are trees and a small building. The image has a warm, yellowish tint and a grid of small black dots overlaid on it.

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An aerial photograph of a large solar farm. Rows of photovoltaic panels are laid out in a grid pattern across a green, grassy field. In the center of the image, there is a small, modern building with a blue roof and yellow accents. The background shows a hazy horizon under a bright sky.

Civil Society, the Climate Act and the Danish Council on Climate Change – A Crucial Collaboration for Denmark's Climate Transition

Troels Dam Christensen

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Head of Secretariat at the Danish 92 Group

If we are to succeed in creating the necessary climate transition at both the global and national levels, we will require an active and informed civil society that pushes for political action. This is the experience both internationally and in Denmark. In Denmark, the story of how the current Climate Act came into being, and the significant role of the Danish Council on Climate Change, is a prime example of the dynamic between civil society and the popular and political levels that is crucial for driving the necessary and urgent green transition. The Danish Council on Climate Change has played a decisive role in securing Denmark's climate transition over the past ten years, and especially since the new Climate Act was enacted in 2019. Now that the Council is turning ten, there is good reason to examine the factors that have secured its role – and what we can learn from them – so that Denmark's climate efforts can grow even stronger going forward.

Why we got the Climate Act in 2019 – the role of civil society

During the spring and summer of 2018, something crucial happened for Denmark's climate action. There was a dialogue within the NGO network known as the Danish 92 Group about whether the newly emerged opportunity to submit citizen proposals in Parliament could be used to push for Danish climate goals that align with the UN Climate Agreement from Paris. The reason for this was that, despite the large global climate agreement reached in Paris in 2015, the Danish government had still not, three years later, set Danish climate targets that lived up to the Paris Agreement. On the contrary, several earlier climate targets had been scrapped, and only national Danish climate goals as far away as 2050 had been set – none of which, in the shorter term leading up to 2030, came close to meeting the targets of the Paris Agreement.

The Paris Agreement had otherwise been celebrated as a crucial breakthrough in global climate efforts – also by Denmark. The 92 Group's member organisations had for many years participated in the international climate process under the UN Framework Convention on Climate Change (UNFCCC). From the adoption of the convention at the Rio Summit in 1992, through numerous international negotiations and COP meetings — including the disastrous COP15 summit in Copenhagen in 2009 — to the eventual success of reaching a new climate agreement in Paris in 2015. At this point, the joint commitments in the Paris Agreement were to be translated into national action and targets. But in 2018, Denmark was not on track to set such targets – on the contrary. So, something had to be done.

The dialogue among us in the NGO community culminated over the summer of 2018 in the decision to attempt to submit a citizens' proposal in Parliament stating that Denmark should live up to the Paris Agreement. This would not only propose compatible climate targets, but also be in the form of a Danish Climate Act that would ensure the necessary mechanism to continuously secure the climate action needed from Denmark.

The rest is history. After we launched the citizens' proposal, in January 2019, we managed to collect the 50,000 signatures needed in a record time of only 13 days. A large proportion of Danes had understood the seriousness of the climate crisis and wanted more action from Denmark. This public awareness did not come about on its own, but rather it was the result of extensive and ongoing educational efforts by NGOs, think tanks, and researchers — as well as the Danish media and journa-

lists who had come to be well aware and educated on climate issues in connection with the COP15 summit in Copenhagen.

What do we want? – A Climate Act! – The Climate Election in 2019

Throughout the spring of 2019, civil society actors succeeded in organising several large climate marches with many thousands of people attending, at which the Climate Act became a rallying demand. “What do we want? – A Climate Act! – When do we want it? – Now!” This was the chant of the moment.

At the same time, the Danish NGOs succeeded — through a joint social media campaign leading up to the parliamentary election — in shifting the climate targets of several parties to better align with the goals of the Paris Agreement. Tarjei Haaland, Greenpeace’s renowned climate expert, had previously calculated that a Danish climate target — if we were to live up to the Paris Agreement — would need to be at least a 70 percent reduction by 2030. That target became the shared goal of the NGOs, and through the election campaign and public demand, it was successfully used to shift a large number of parties toward precisely that target — and thus the goal of 70 percent by 2030 was born.

The scene was set for a climate election. After the parliamentary election on the 5th of June 2019, a large majority of the parties in the Danish Parliament supported the idea that Denmark should have a Climate Act with a target of a 70 percent reduction by 2030. And a final political agreement on the current climate target was reached in December 2019, with support from all parties except two, and backed by a total of 167 members of Parliament. This was truly a landslide change in the political action for climate.

The 2019 parliamentary election and Climate Act are therefore a lesson in what an active civil society and an informed public can achieve in a democracy to bring about the necessary transition. This is not to belittle the efforts of the Danish politicians, who have also fought hard for a stronger Danish climate effort over the years. Not at all. But my assessment is that if the public and civil society hadn’t pushed so strongly, we would never have gotten the Climate Act and the climate targets we have today.

The role of the Danish Council on Climate Change – Both advisor and watchdog

If one look at the Climate Act from 2019, it's evident that a very large part of the legal text is devoted to describing the role of the Danish Council on Climate Change. And for good reason. What is crucial about the Climate Act of 2019 is not only that it set concrete Danish climate targets, but equally that it established a regime that continuously holds successive governments accountable for the necessary actions that are required. This happens, in large part, through the Council's role as an assessor which, each year, must assess whether the changing governments have demonstrated that we are on track to reach our climate goals, and whether or not the government is meeting its duty to act.

Thus, the Climate Act has succeeded in establishing a firm and concrete system with a fixed annual cycle, in which the sitting minister and government must report each year on the progress made towards the agreed targets — and, if progress is insufficient, they must increase their efforts. All of this with the Danish Council on Climate Change as an advisory body, but very much also as an independent expert body tasked with assessing whether the effort is sufficient or needs to be strengthened.

The question of independence is important. In connection with defining the Council's role under the 2019 Climate Act, there was a discussion as to whether the Council should have a secretariat placed within a ministry — and thereby be ministerially serviced in the same way as a number of other councils and boards — and also whether the Council's advisory assembly, the Climate Dialogue Forum, should have some form of influence or deciding power on the Council's advice. Fortunately, it was possible — partly as a result of pressure from us on the NGO side and from other actors — to insist that the Danish Council on Climate Change should be as independent as possible, and that its secretariat should therefore be placed separately. And while the Council's Climate Dialogue Forum is indeed advisory and can provide comments, it does not have any right to amend or object to what the Council concludes.

I think this has been important. For the Danish Council on Climate Change should not only be an advisory body, but also a watchdog when it comes to whether Denmark is doing enough. This watchdog role has since occasionally caused some irritation at the political and ministerial level — such as when, during its first four years, the Council concluded in its yearly Status Outlook that the Danish governments had still not done enough to sufficiently demonstrate that Denmark was on

track to meet the targets of the Climate Act.

It probably contributed to the irritation at the political level that the press often somewhat simplistically reported the Council's assessment in terms such as 'the government has failed,' even though the Council's criticism was more nuanced and always technically well-founded. And it's maybe understandable if some civil servants and ministers at times personally felt that they would have liked more recognition for the significant measures that were, after all, undertaken. But again, my assessment is that if it weren't for this pressure for swift and far-reaching action — including through the Council's consistently objective and precise criticism — far less would have happened with Denmark's climate transition.

A climate hockey stick and the greenhouse gas budget

The history of the so-called 'climate hockey stick' is a good example. Right from the start, our position from the NGO side was anchored in the greenhouse gas budget that science — led by the UN's climate panel, the IPCC — has calculated remains globally, if we are to keep the world within the Paris Agreement's target. That was the basis for Tarjei Haaland's calculation of the 70 percent target for 2030, and this global greenhouse gas budget dictates that it's not the emissions in a single year, but the total emissions over the entire period that matter.

Unfortunately, we did not succeed in getting this point about a greenhouse gas budget from our citizens' proposal included in the Climate Act — partly due to nervousness among leading politicians and parties to committing themselves too firmly. If one were to voice any criticism of the Climate Council here, it is probably that the Council initially only argued for point targets in specific years (e.g. 2030 and 2025) and not for a greenhouse gas budget for the whole period. However, the Council has since changed this recommendation to a budget target in the recent 2035 analysis.

The result of only focusing on point targets in specific years is well known — namely, the 'climate hockey stick'. Meaning that the necessary action gets postponed until closer to the target year. We saw, shortly after the Climate Act was passed, a clear tendency towards making use of the climate hockey stick in concrete action. In fact, this was even directly articulated by senior ministers as the chosen approach. It can, of course, be reasonable to have a certain planning period to ensure the right means of action, but when this is combined with an excessive reliance on uncertain measures and new technologies that may or may

not materialise some time in the future, this is a serious weakness that needs to be pointed out. We did this early on from the NGO side — both regarding the hockey stick approach and the excessive reliance on new technologies — and the Danish Council on Climate Change has flagged this consistently as well, including in its most recent Status Outlook from February this year.

Civil society, think tanks, researchers and the Danish Council on Climate Change have collectively pointed out when efforts were insufficient, too uncertain, or too far off in the future. It is precisely the strong public interest — created not least by the efforts made by civil society organisations over the years, the ongoing and objective criticism of the Danish Council on Climate Change as an independent actor, and an active and climate-literate Danish press that has followed up on the issues — that has been crucial in pushing climate efforts up into a higher gear than would otherwise have happened.

The fight for the 2025 target

The risk of the climate hockey stick was also the background for the battle over the 2025 target. Since there wasn't political will to include a greenhouse gas budget in the Climate Act, it became necessary — to avoid the risk of the worst hockey stick scenario — to pursue the next-best option: namely, to have a climate target for 2025, halfway to 2030, written into the Act. Fortunately, there was considerable political support for this, but the actual target of 50–54 percent reflected a compromise, with only the upper end of the target being close to the necessary greenhouse gas budget. Unsurprisingly, it didn't take long before the target that was de facto pursued in concrete political and ministerial planning was the lower end of the range — 50 percent. This serves as a lesson, also for future climate targets under the Climate Act, that interval targets often only result in plans and efforts that, in practice, focus on the lower end of the range.

For a long time, both the Danish Council on Climate Change and the NGOs pointed out that it looked very difficult to reach the climate targets — including even the lower target of 50 percent in 2025 — with the planned efforts. In the spring of 2023, the 92 Group therefore launched a campaign for an 'Emergency Package' of possible means of action in order to ensure the achievement of the 2025 target — preferably at the higher end of the interval. In parallel, the Danish Council on Climate Change and CONCITO also put forward similar proposals for specific instruments, and once again, it was a case of joint pressure for more action.

New reports on emissions from low-lying soils and forests – reliable figures needed

Subsequently, what happened was that due to new, revised calculations of emissions from low-lying soils and forests, we suddenly got much closer to both the 2025 and 2030 targets — without any additional action having been taken. The new figures for low-lying soils and forests have relieved much of the pressure for increased action at the political level in recent years. Even though parts of the political level may have breathed a sigh of relief at being 'saved' by the new calculation figures, this is obviously not a good way to make stable, long-term climate policy — namely, to base it on such uncertain figures from specific sectors. New calculations can, of course, go the other way too — and then what?

A lesson going forward is therefore also that it is too risky to base the overall effort, to such a high degree, on uncertain assessments and figures from specific sectors. For this reason, there is also a need for specific sector targets, just as there is a need to plan reaching the climate goals with a solid buffer. This also follows the large and continued focus on technologies. The problem with too much uncertainty in climate efforts has been continuously pointed out by the Danish Council on Climate Change, think tanks, and NGOs, and it must be addressed both in the efforts to achieve the current climate targets and those beyond 2030.

What next – the Climate Act and the continued role of the Danish Council on Climate Change

What has driven climate efforts forward in Denmark is, therefore, cross-pressure applied by an active civil society, an informed public that demands action, an engaged and climate-literate press, progressive politicians and business leaders and, not least, a Danish Council on Climate Change that possesses considerable technical expertise and the ability to set the agenda. There are therefore good reasons to congratulate the Danish Council on Climate Change on the occasion of its 10th birthday.

But what about the future? Looking out into the wider world — with the accelerating climate crisis, Trump in the USA, and a global climate effort that is being severely challenged by geopolitical conflict and competition — there is an urgent need for countries like Denmark to take the lead as genuine frontrunners.

In that context, there are a number of areas that will be crucial, and within which the efforts of the Danish Council on Climate Change are important.

At this juncture in 2025, new climate targets must be set for 2035, and possibly also for 2045 and 2050. Within this context, there is also the possibility to strengthen and expand the Climate Act in other areas. It is evident here that future climate efforts must increasingly follow a greenhouse gas budget — through which the focus is not solely on point targets in individual years, but on an overall greenhouse gas budget for the entire period. It is good that the Danish Council on Climate Change, which originally argued for point targets, has changed its recommendation to pursuing a budget target in its 2035 analysis.

The new targets for 2035, 2040, and beyond must also be ambitious enough to meet the Paris Agreement, climate developments since then, and the goal of being a frontrunner. In this light it becomes hard to avoid the conclusion that Denmark's net-zero target should be moved forward to no later than 2040 — especially in light of the fact that the entire EU now appears to be aiming for a 90 percent reduction target by that same year. This means that Denmark's target for 2035 should be closer to 90 percent than 80 percent — a view further supported by the climate projection, which shows we'll be close to 80 percent using only the measures already adopted today.

We need a Climate Act 2.0

In connection with the reopening of the Climate Act, Denmark must also take the lead and seriously commit to addressing the climate impact that our consumption and lifestyle cause beyond Denmark's borders. Denmark is certainly not a frontrunner today, with one of the highest climate footprints in the world — and a per capita footprint that is already larger than our domestic emissions. Concrete targets and benchmarks should be set for efforts in this area — including targets for reducing our excessively high consumption of imported biomass, international travel and transport, and overall imports. In this way, Denmark can become the frontrunner it needs to be, with a Climate Act 2.0 that can inspire other countries to take similar action.

In the upcoming reopening of the Climate Act, it is crucial that only reinforcements and improvements to climate efforts take place — not setbacks. Backsliding must not be permitted — just as this is not permitted under the Paris Agreement. This also means that the Council's role as both an advisor and watchdog must be

maintained — and this includes the Climate Act’s annual cycle and the Council’s assessment mandate in that context. After the first ten years of the Council — during which its efforts have been crucial both as an advisor and in maintaining the necessary pressure for political action — it is absolutely essential that this role be preserved. It is an important political responsibility to ensure this.

Integration with nature and environmental considerations — the Climate Act must serve as a model for the new Biodiversity Act

It is crucial that, in Denmark’s green transition, we do not pit climate considerations against those of nature, biodiversity and other environmental concerns. The Danish Council on Climate Change plays an important role in helping ensure that these considerations are, on the contrary, integrated — as was also done in the Council’s report on Denmark’s future land use.

The Climate Act and the Danish Council on Climate Change have been a decisive factor in Denmark’s green transition. A mechanism and a model we must firmly hold on to and develop — and one that should also be applied in other areas, including the upcoming Biodiversity Act for Denmark. The new Biodiversity Act must therefore build on the best elements of the Climate Act — including clear and ambitious targets, both for efforts within Denmark and for our significant consumption footprint on biodiversity beyond the country’s borders — and with a well-funded and independent Biodiversity Council that plays the same role as the Danish Council on Climate Change, as both advisor and watchdog.

A continued strong and independent Danish Council on Climate Change is crucial

As can be seen from the above review, cross-pressure from several factors has been decisive for the green transition that has been initiated in Denmark over the past 10 years. Civil society and public pressure played a decisive role in the creation of the current Climate Act and the role of the Danish Council on Climate Change. It was built on many years of public education efforts by NGOs and an active, climate-literate press, and this, in turn, has led to an educated Danish public that demands action — a demand that truly broke through during the climate election

in 2019. Out of this came the new Climate Act, with concrete climate targets and obligations to continuously set new goals aligned with the Paris Agreement — and, just as importantly, a strengthened Danish Council on Climate Change in the role of continuously assessing whether the efforts are sufficient.

The Council has, to a very high degree, lived up to the great responsibility entrusted to it by the Climate Act — and it has, in a factual, well-substantiated, and widely respected manner, been pivotal to the climate transition that has taken place in Danish society. There is therefore good reason to congratulate the Danish Council on Climate Change on its ten-year anniversary — and to continue the collaboration and efforts with even greater strength over the next 10 years. That is what both we and the planet need.

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What Good Will It Do? – How a Small Country Can Make a Big Difference

Dan Jørgensen

EU Commissioner for Energy and Housing, formerly the
Minister for Climate, Energy and Utilities and the Minister
for Development Cooperation and Global Climate Policy

Denmark emits less than 0.1 percent of all global greenhouse gas emissions. Even so, we can make a big difference in the battle to combat climate change. This is something we have shown ever since the oil crisis of the 1970s, and especially since the so-called ‘climate election’ of 2019. Denmark has reduced its emissions significantly and in a way that makes a difference, and this represents something far greater than just the concrete reduction of the emissions we release into the atmosphere. Within the international context, we lead by the power of example and we are developing new methods – technological, practical and political – that benefit other parts of the world.

The 2019 parliamentary election in Denmark was dominated by the issue of climate change. Never before has this issue taken up so much space in an election campaign or had such a decisive impact on how Danes have voted¹. This was also reflected in the subsequent governmental negotiations, which resulted in parties committing to a reduction target of 70 percent by 2030 (compared to 1990 levels).

At the time, it seemed to many that this was a rather unrealistic goal – a view that is exemplified well by the gift I received from my predecessor in the role of Minister of Climate, Energy and Utilities, Lars Christian Lilleholt, during the ministerial handover. He gave me a Harry Potter figure and said with a smile: ‘You’ll need some magic if Denmark is to reduce its emissions by 70 percent.’

Today we have shown that it is possible – and entirely without the help of metaphysical forces. And that’s good, because it has made Denmark a frontrunner country in a way that is important not just at home, but also beyond our own borders.

In this article, I will describe the underlying rationalities and values that shaped our policy from 2019 to 2024 – from my perspective as the Minister for Climate, Energy and Utilities and then as the Minister for Development Policy and Global Climate Policy.

My basic thesis is that a small country like Denmark – despite the fact we account for less than 0.1 percent of the world’s total greenhouse gas emissions – can still make a big difference for the climate. Because even if the concrete emission reductions we achieve, measured in greenhouse gas particles in the atmosphere, will always be quite modest in a small country like ours, we can still make an impact through our ambition to lead and pave the way.

Firstly, because our position as a frontrunner country comes with a kind of soft power that enables us to influence climate policy in other countries. Secondly, because, in the process of achieving our ambitious goals, we are developing new methods – technological, practical and political methods – which can be used in many other places around the world.

A Green Superpower

Most people, when they hear the term ‘superpower’, think of countries like the USA or China. And that makes sense if you think of power in traditional terms – geographical size, the economy, the military, etc. But there are other forms of power.

In the study of international politics, the term ‘soft power’ is often used to describe the ability of some countries to influence others to do something they would not otherwise have done without the use of force. Soft power is not about gunpowder and bullets or other forms of raw power. It is about exercising influence in other ways. And here, small countries can have as much – or even greater – influence as far larger countries².

For many years, this mindset has – although to varying degrees – formed the basis of Denmark’s climate policy. And it was on the basis of this mindset that we, the Social Democrats, wrote in our 2019 election proposal that Denmark should once more be a ‘green superpower’. In connection with this, we proposed a reduction target of 60 percent by 2030. We thought this was quite ambitious. That it ended up at 70 percent made the task itself considerably more difficult, but it also meant greater chances of making a difference as a frontrunner.

In the Danish Climate Act, this goal was established as one of the most important principles. Paragraph 1, Item 3 reads: ‘Climate change is a global issue. Denmark must therefore be a frontrunner country in relation to international climate action that can inspire and influence the rest of the world’³.

The world’s most ambitious climate act

When we set our seventy-percent reduction target, no one could say how we would reach it. No politician, researcher or official in the country’s central administration could say they had a clear plan. And even so, we adopted the act. Why is that? Because the prevailing view was that the seventy percent was what was needed if we as a country were to live up to our commitments under the Paris Agreement.

Instead of starting with the question: What is possible? – as we had been doing up to that moment, with 60 percent being considered a rather difficult but still realistic goal that could be achieved through existing methods – we were now asking: What is necessary? And the task was then to make the necessary possible.

The first step was to develop a Climate Act that would make the seventy-percent target binding while also affirming a number of principles for how we should reach the goal. These principles are at least as important as the goal itself. They ensure that we work at all times to pursue a balanced policy that does not cost jobs, give rise to inequality or simply offload emissions to other countries instead.

Some will argue that it is too restrictive a set of criteria to lay down an ambitious climate policy. That nothing is more important than the climate, and that one must therefore be willing to live with any negative social consequences as we get serious and ramp up our efforts to cut emissions.

But they're wrong. Partly because we have shown that the costs are not necessary – it is actually possible to achieve a green transition without them. And partly because the prerequisite for being a frontrunner country, that can serve as a source of inspiration for others, is that we choose a path that other countries will also find attractive.

This has led some to think that we took the matter too lightly and that things progressed too slowly. But I disagree with that. In fact, the greatest success of the Danish Climate Act is that we are fundamentally transforming our society in a way that does not harm our prosperity and welfare.

We haven't seen yellow vests on the streets of Danish cities, or protest parties elected to the Parliament on the back of one-sided messages claiming the green transition has gone too far. Had this been the case, we would hardly be a frontrunner country that others can be inspired by.

Soft power in practice

It attracted international attention when our Climate Act was passed – initially because of the ambitious goal, but later because it was also followed up with concrete policies. The government negotiated continuously with both supporting and opposing parties, and these negotiations resulted, literally, in a new agreement on average every 14 days. More than 70 political agreements were concluded to ensure concrete results across all sectors in Denmark – energy, waste, heat, transport, agriculture, etc.

Most of the agreements were – like the Climate Act itself – broadly anchored in the Danish Parliament, which is a tremendous strength. This provides stability and credibility. We have set a course in Denmark that we will not stray from – even if or when power changes hands in a parliamentary election.

The stability we enjoy – and have enjoyed for decades – from big agreements having been granted broad support, especially within the energy sector, is an often overlooked but very important part of the explanation as to why the green transi-

tion has succeeded in Denmark as well as it has. Such a culture of broad political settlement is rare in other countries. It is something we must safeguard.

The Climate Act and the many concrete political agreements achieved have resulted in Denmark repeatedly being highlighted by international researchers, politicians and NGOs. The Environmental Performance Index, published by the universities of Yale and Columbia in 2022, for example, states that: ‘Denmark leads the world in mitigating climate change [...] While Denmark is a small nation, and it cannot significantly reduce worldwide emissions, it serves as an important model for how countries can change while maintaining economic growth and a high standard of living.’⁴⁹

This is of course wonderful for our self-image – but far more important is the way in which this position has given Denmark influence. Being seen as a frontrunner country that others look towards is something that can be converted into influence. And that is precisely what we have done.

We were given access to negotiating tables and forums where Denmark does not normally sit. Since 2021, Denmark has been the annual host of a meeting which serves as an unofficial checkpoint between COPs – the Copenhagen Climate Ministerial. This is a high-level ministerial meeting led by Denmark together with the outgoing and incoming COP Presidencies.

We have also been entrusted with important negotiation tasks by the COP Presidencies in connection with COP26, COP27 and COP28. In the first of these, we helped to ensure that an ambitious decision was taken on the need to phase out coal (this had never previously been mentioned in a COP resolution), and in the last, I was – together with my colleague from South Africa, Barbara Creecy – responsible for negotiations on the so-called global stock take, which concluded with the decisions that the world needs to move away from all fossil fuels, and that we need to triple renewable energy and double energy efficiency efforts ahead of 2030. This is something that was characterised broadly in the world’s media as historic.

Similarly, Denmark has also been involved in meetings between energy and climate ministers at the G20 ever since 2023. We are, of course, not one of the world’s 20 largest economies and, as such, we have no formal access to that circle, but we have nonetheless been invited to share our experiences from the green transition.

In the EU, we were one of the countries that influenced the drafting of an agree-

ment for an ambitious European climate target of a 55 percent reduction by 2030. Not many were in favour of this ambitious goal when it was proposed. But we were among those who pushed the hardest and took on one of the largest national commitments. And it was adopted.

Our position as a green frontrunner has also provided us with access to global media. This gave Denmark a platform – a global megaphone – that enabled us to spread our positive example and to advance the argument that the green transition does not have to come at the expense of the economy and competitiveness. Several Danish media outlets called me the Minister for CNN. And this wasn't meant as a compliment. But I took it as one nonetheless, because a key part of the government's strategy was to communicate extensively on the international stage. It's hard to influence someone by being a frontrunner and leading the way if they don't actually see what you're doing.

This was about far more than just branding our customer for the benefit of our green businesses. It was primarily about influencing public opinion – and thus policy in other countries.

The North Sea Agreement

In addition to the Danish Climate Act, another key topic of discussion within Danish climate policy in those years was the question of the future of oil and gas in the North Sea.

The Danish Council on Climate Change was asked to assess the possible effects of Denmark deciding to cancel a planned eighth licensing round for oil and gas production in the North Sea. The conclusion was that the Council recommended that Denmark cancel the round – not because this act would lead to large reductions in greenhouse gas emissions in itself, but because it was important for someone to take the lead.

The government agreed with that conclusion, and therefore we cancelled the eighth round – and we even took things a step further: We set an end date for the production of fossil fuels in the North Sea in 2050. This was not a small or an easy decision, especially given that we were the EU's largest oil producer at the time.

But it was a decision we took because we wanted to lead the way. The agreement, which achieved broad support in the Danish Parliament, stated the following:

*'It is a basic premise for Denmark's green ambitions that they should not only be measured directly in the number of tonnes reduced within the country's borders. Denmark must take on an international leadership role, and that requires us to inspire and push other countries to accelerate the green transition. The parties agree that a crucial dimension of the agreement on the future of the North Sea is that it should be actively used to generate momentum and progress in the global discussion on the phase-out of fossil production. Therefore, Denmark will take the lead in establishing a new initiative to formalise this work, and it will actively seek new alliance partners in order to ensure the greatest possible climate impact from the decisions laid out in this agreement.'*⁵

This was the start of the Beyond Oil and Gas Alliance – an alliance of countries working towards the phase-out of oil and gas production. The alliance currently has 15 members and is a major contributor to setting the agenda internationally. The organisation plays a role in the COP negotiations, and it also provides concrete financial support to countries seeking assistance in the transition.

Former Vice President and Nobel Peace Prize winner for his work in combating climate change, Al Gore, has said: 'I applaud the Beyond Oil and Gas Alliance for bringing critical focus to a managed and just transition away from fossil fuels.'⁶

Danish solutions for the whole world

When we push ourselves in Denmark to deliver on very ambitious goals, this also has positive effects on innovation. We find new ways to solve problems. This is something we have been doing since the oil crisis in the 1970s, when we first began developing renewable energy and energy-efficiency solutions that are now used worldwide.

This applies to physical solutions: energy-efficient thermostats, pumps, district-heating pipes and insulation solutions. It also applies to the production of energy from wind turbines both on land and at sea. For example, Denmark was the first country in the world to establish an offshore wind farm in 1991. At the time, this was considered a very difficult and really expensive way to produce energy. But today, the technology has advanced so much that offshore wind out-competes coal on price. This is something that started in Denmark. And the wind turbine industry would not be where it is today if we had not been at the forefront back then. And it is not only the technology that spreads. It is also our methods and *knowhow*.

Intergovernmental cooperation

Behind the rather boring name intergovernmental cooperation lies a little-known Danish effort for the world's climate – one which is nonetheless highly effective.

Denmark currently has bilateral cooperation with countries that jointly account for a significant share of global greenhouse gas emissions. Through this, advice is provided and staff are seconded to relevant authorities in other countries. Among other things, this has enabled Danish expertise to help develop the first offshore wind projects in India and Colombia, heating legislation and district heating in Turkey and Scotland, and energy planning and the integration of renewables into the energy system of Indonesia – to name just a few areas of action.

And these are efforts that truly make a difference. Another example is the Danish-Chinese energy partnership, through which Danish experts have helped the Chinese authorities to increase the flexibility of coal-fired power plants. According to the Danish Energy Agency, this has resulted in more green energy in the electricity system – equivalent to the output of nine of the largest offshore wind farms in Denmark's history – and it has reduced carbon emissions by an amount equivalent to 63 percent of Denmark's energy consumption.⁷

The integration of climate and development policy

In recent years, Denmark has sought to build international support for more closely integrating climate and development policy. We have done this by allocating an increasingly larger share of our development funding to climate initiatives – primarily climate adaptation projects and the expansion of renewable energy to those without access to energy.

This is important as climate change is already having a severe impact on many of the world's most vulnerable countries.

An example that shows the value of taking the lead is that we were the first country to pledge a contribution to the Loss and Damage Fund, which is intended to support countries facing severe consequences of climate change. This helped pave the way for the fund's adoption at COP27.

The UN Secretary-General has, on multiple occasions, highlighted Denmark's climate aid and substantial contributions to climate adaptation as examples for other countries to follow.

The role of the Danish Council on Climate Change

Following the adoption of the new Climate Act in 2020, the Danish Council on Climate Change took on new duties and powers. The Council became an institutionalised watchdog of the government, tasked with continuously holding decision-makers accountable for ensuring that Denmark remains on track to meet its goals.

The Council has performed this role well. The annual Status Outlook, in which the government's climate programme is evaluated and assessed, is beneficial to the political process. That the media often oversimplifies the messages being put out – and that, in my view, the Council has pursued a rather strikingly aggressive media strategy – is another matter entirely. Unfortunately, this has contributed to the creation of a public perception that less is happening on the climate front than is actually the case. But so be it. The bottom line is that any sitting Minister for Climate is institutionally tied to a process that involves the Danish Council on Climate Change and the Danish Parliament and which oversees whether Denmark is on the right track. And that's a good thing.

It is especially encouraging that, for the first time this year, the Danish Council on Climate Change was able to conclude that the government has demonstrated that the 2030 target is being met.

If I were to point out any areas for improvement, I don't always believe that the Council has assessed political measures in accordance with the criteria and core principles set out in the Climate Act. A one-sided focus on technological developments and potential emission reductions – without incorporating equally rigorous expert analyses of whether a given policy, for instance, will lead to inequality or a loss of competitiveness – is in line with neither the letter nor the spirit of the Climate Act.

All in all, there is every reason to extend congratulations on this anniversary and to take pride in the influence of the celebrant. Danish climate policy has many fathers and mothers – the country's citizens, civil society, politicians, business – and yes, the experts. And they can be found, among other places, within the Danish Council on Climate Change.

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