

DANISH EXPERIENCE IN COMBATING CLIMATE CHANGE THROUGH PUBLIC-PRIVATE PARTNERSHIPS: IMPLICATIONS FOR UKRAINE

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Abstract. Recently, the fight against climate change has become particularly *topical* on the international agenda, as protracted discussions have finally led to the development of specific mechanisms and plans for decarbonisation in most countries around the world. Today, Ukraine is suffering from a large-scale Russia invasion, which naturally raises questions about Ukraine's ability to meet its international climate commitments on time, given the ongoing hostilities and the destruction of many industrial and infrastructural assets. At the same time, the prospect of structural transformation of the economy during post-war reconstruction provides additional opportunities for Ukraine to meet its climate commitments and achieve a green transition. *The purpose* of this article is to generalise the Danish experience of introducing one of the most fruitful collaborations between business and government in the field of meeting government decarbonisation targets. *The object* of the study is the Danish system of public-private partnerships, embodied in sectoral climate partnerships created to develop recommendations for improving national climate policy and developing green transition roadmaps for each sector. The study is based on the application of a set of general and specific economic *research methods*, such as systemic and structural analysis, to identify and argue for specific areas of Danish PPPs in the climate sector that could be useful for application in Ukraine. The *research results* in a recommendation to create a climate platform on the basis of the Association of Employers of Ukraine. The article describes the structure and objectives of this platform, its main differences and similarities with foreign equivalents, taking into account domestic peculiarities.

Key words: climate partnerships, greenhouse gas emissions, carbon neutrality, decarbonization, energy efficiency, green transition, climate platform.

JEL Classification: O52, Q54, Q58

1. Introduction

For years, Denmark has been integrating the environmental agenda into economic policy and promoting a green transition (OECD, 2015). The central government is setting increasingly ambitious targets to reduce greenhouse gas emissions, while local authorities are developing and implementing circular economy strategies. Danish companies are increasingly looking for opportunities in the circular economy as a means to increase efficiency and international competitiveness. Denmark's leadership in the fight against climate change rests on two pillars: the proactivity of Danish society, which has cultivated a high level of environmental awareness

for years (Denmark has one of the most ambitious commitments among other EU members to increase the share of renewable energy and reduce GHG emissions), and a complex system of stakeholder interaction in the green transition, which enables effective and rapid implementation of relevant initiatives (Lund et al., 2012).

Public-private partnership (PPP) has been an extremely important element of Denmark's success in climate policy. Since the 1970s, Denmark has maintained a tradition of reaching agreements on energy and environmental policy with broad consensus. This has helped to achieve the political stability that is essential to ensure continued

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investment and ambitious long-term environmental targets (Hansen & Enevoldsen, 2022). In this respect, the PPP has proved to be an effective way of developing and implementing mechanisms to address sustainable development issues. The Danish PPP model aims to utilise the strengths of all participants in the process, while coordinating the different interests inherent in this type of cooperation. An effective PPP model provides the Danish government with broad and active support for business climate initiatives and thus for their effective implementation in industry (Lindegaard et al., 2021).

The current PPP model is based on the Climate Act, which was passed in 2020 by 167 of the 179 members of the Danish Parliament. It commits the incumbent government to work towards reducing Denmark's greenhouse gas emissions to 70% below 1990 levels by 2030 and to net zero by 2050 at the latest. The Climate Act is a major revision of Denmark's previous environmental policy (Batini et al., 2020). It requires the government to set and regularly revise ten-year interim targets towards the ultimate goal of carbon neutrality. The law also obliges the Danish government to develop annual climate action plans that should include specific measures to reduce greenhouse gas emissions for all sectors of the economy: energy, energy efficiency in buildings and utilities, industry, transport, agriculture and forestry (Pedersen, 2022).

In order to ensure effective implementation of the Climate Change Act, the Danish government, together with the private sector, has established 14 climate partnerships representing key sectors of the economy. The idea behind these partnerships is that the business community plays a central role in the green transition and that the government should work closely with it on practical solutions to climate problems, while maintaining a balance between the pace of the green transition and maintaining a high level of competitiveness in the Danish economy. The aim of the article is therefore to examine this experience of establishing fruitful public-private cooperation in the field of achieving national climate targets.

2. Climate Partnerships

The Danish Climate Partnerships are a combination of a discussion platform and working groups in which leading representatives from each industry have been tasked with formulating proposals for their contribution to reducing CO₂ emissions and a roadmap for achieving the respective targets in a way that contributes to maintaining the competitiveness of the Danish economy, boosting exports, creating new jobs and increasing prosperity.

The Climate Partnerships aim to develop two types of proposals: action plans that industry could

implement itself to reduce its GHG emissions (in particular, optimising supply chains, developing new goods and services, using energy-efficient technologies, introducing business models that support the green transition); and proposals for government to remove barriers and improve the regulatory and institutional framework to facilitate climate investments (Mathiasen, 2021).

The Climate Partnerships are led by a representative from a leading private company, with deputies representing other influential bodies and private partners in industry. The chairpersons of all partnerships were appointed by the Danish government. Business organisations acted as secretariats, providing organisational, information and analytical support for holding meetings and developing proposals. Public sector participants in the partnerships were representatives of ministries related to the challenges of the green transition in industry (mainly the Ministry of Industry, Business and Financial Affairs and the Ministry of Climate, Energy and Utilities). The number of stakeholders involved varied from partnership to partnership due to different structures. Recommendations and proposals were developed through open discussion with companies and associations in the relevant industries.

By the end of 2021, the Climate Partnerships had developed more than 400 proposals and recommendations, most of which were approved by the government and started to be implemented in the national climate policy (e.g., on energy islands, Power-to-X, carbon capture technologies, electrification efforts and new financial models). It should be noted that the proposals from different Climate Partnerships were not coordinated during the preparation process, which is why a number of proposals are repetitive, cross-sectoral and cross-industry. The government was faced with the task of integrating the proposals received into a single plan for modernising the legal and institutional framework.

However, the benefits of climate partnerships go far beyond improving the effectiveness of public policy and lobbying business interests on the green transition. The partnerships have encouraged the private sector to make climate commitments and set long-term climate targets. Discussions crystallised new technological solutions and business models that contribute to the green transition (Barker, 2022). Governments also played an important role, as they were required to provide specific recommendations with clear calculations of the impact of climate decisions on greenhouse gas emission reductions. The publication of the results of the climate partnerships raised the awareness of all economic actors about modern technologies and policies for green modernisation. It also strengthened fruitful

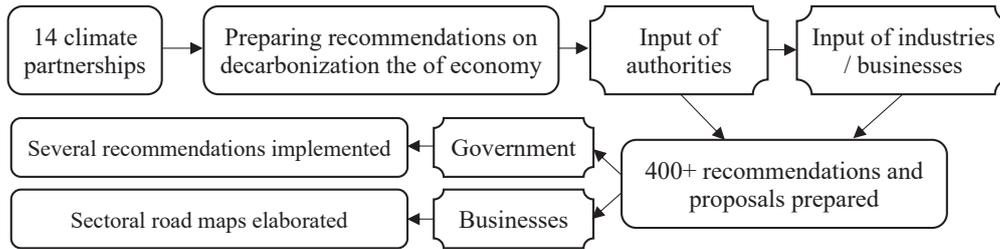


Figure 1. Structure of sectoral climate partnerships in Denmark

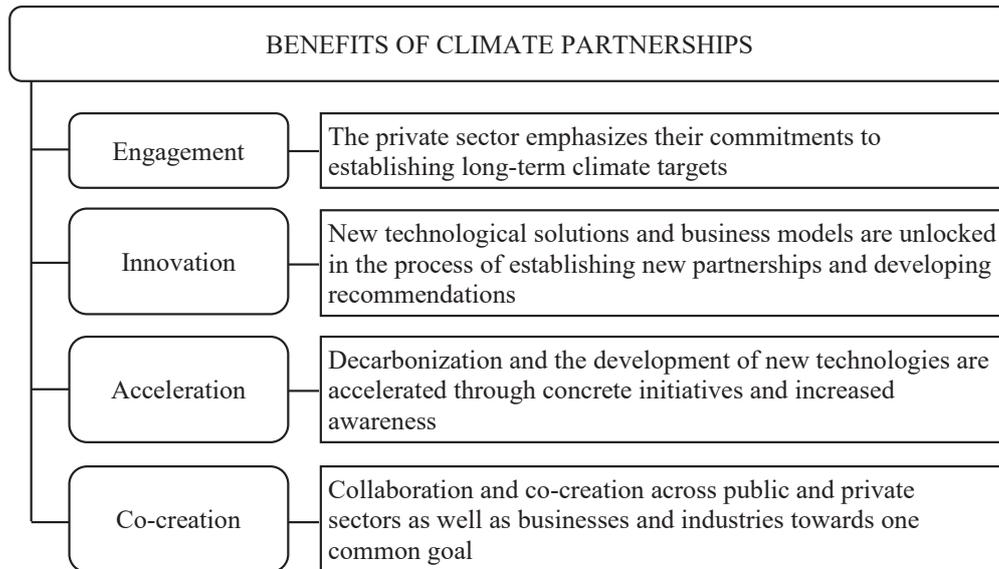


Figure 2. Benefits of Denmark's public-private partnership in the field of green transition (State of Green, 2021)

cooperation at both public-private and intra- and inter-industry levels to achieve a common goal (Ning et al., 2023).

Climate partnerships have been established in the following sectors: aviation; maritime transport ("Blue Denmark"); construction; commerce; defence; energy and utilities; energy-intensive industries (cement, metallurgy); finance; food and agriculture; inland transport; life sciences and biotechnology; manufacturing; services, IT and consulting; waste, water and recycling.

The Danish government required the partnerships to present proposals and recommendations in standardised reports with analytical material developed on the basis of official statistical data. Thanks to this, the range of received proposals and recommendations as well as climate information on industries are easily provided for generalisation and processing by authorities (Nash & Steurer, 2022). The structure of the standardised report includes the following: a) description of the industry, current and historical levels of its GHG emissions, sources of emissions and achievements to date in reducing them; b) description of technological, organisational and other mechanisms for further reducing GHG emissions in the industry, quantitative assessment

of GHG reductions in the case of using these mechanisms, estimation of costs required to apply these mechanisms; c) arguments for government support and reforms necessary to unlock and promote environmental innovation in the industry.

Given that Danish GHG emissions are insignificant on a global scale, the participants in the partnerships were also asked to propose solutions that would contribute to reducing emissions on an international level, especially in the foreign trade of Danish companies (Greaker, Golombek & Hoel, 2019). In addition, according to the intention of the initiators, Denmark's proactive climate policy will serve as a guide and model for other countries, encouraging them to activate climate policy and thus accelerate the transition to a carbon-neutral society on a global scale (Tyas & Prakoso, 2022).

Other mandatory chapters of the Climate Partnership Reports defined by the authorities are: a) Introduction, where partners declare their commitment to the Green Transition idea and pledge to make the necessary efforts to reduce GHG emissions; b) Summary, with key directions and areas of climate action in the industry from the companies' point of view; c) Annexes, with statistical data and methodological approaches used to calculate potential GHG reductions.

Summarising the recommendations of the Climate Partnerships, one of the key mechanisms to facilitate the green transition, according to the Danish private sector, is public procurement. The demand and consumption of the public sector is seen as an effective support for environmentally conscious and climate-friendly industries. Therefore, the partnerships emphasise the need to consider product life cycle, carbon footprint of the value chain and other non-price factors in public tenders. The government should also prioritise the procurement of public transport and green fuel vehicles. Stable demand from the public sector remains critical for private companies to implement ambitious climate initiatives that increase the cost of their products compared to less environmentally conscious competitors in domestic and foreign markets.

The Climate Partnerships are also committed to changing taxes on heating and electricity and improving the collection of taxes on greenhouse gas emissions. Taxation should encourage companies to move away from fossil fuels in favour of renewables, and the funds raised should be used to provide financial support for companies to implement energy efficiency projects and use green technologies. In addition, preferential tariffs or subsidies are expected from the government for green electricity, biogas and other climate-neutral energy sources whose costs are still too high to compete with fossil fuels.

Danish business also sees the state as a (co-)investor in large-scale projects for developing renewable energy capacity, such as energy islands, Power-to-X technologies, integration into existing biogas and biofuel networks, etc. The state is also expected to provide significant funding for R&D related to finding new and improving existing climate solutions. Sectors where the green transition is associated with significant technological risks expect significant financial support from the government. This is particularly true for truck manufacturers and inland transport, where the technical and economic feasibility of using electric vehicles or biofuels has not yet been explored.

Industries that are highly integrated into the global economy, such as shipping, expect the government to work closely with international organisations to develop international incentives for a green transition. These industries need support in the form of radical rebuilding of infrastructure (especially ports), the introduction of environmentally differentiated charges, and government incentives for consumers of their goods and services.

The government is also expected to take steps to increase the involvement of SMEs in the green transition, spread climate awareness by introducing product labelling requirements on carbon footprint and recycled materials, and apply international

standards on the use of secondary raw materials. Private companies, on the other hand, outlined quantitative and time frames for reducing their GHG emissions and defined specific technological and organisational steps along the way.

3. Application of Danish Experience in Ukraine

On 30 July 2021, the Government of Ukraine adopted a new climate target (updated / second nationally determined contribution) to reduce greenhouse gas emissions in Ukraine by 65% by 2030 compared to 1990 levels. At the same time, the Ministry of Environmental Protection and Natural Resources of Ukraine was instructed to develop and approve an action plan for the implementation of the NDC-2 within six months. This action plan must include the following:

- a roadmap defining the key technological, organisational and regulatory changes needed to achieve the new climate target;
- a blueprint for attracting finance from government budgets, private investors and creditors to meet the NDC-2 targets;
- a concept for assessing the compliance of projects and programmes financed from the state and local budgets with the climate targets defined in the NDC-2 (Ivanyuta & Yakushenko, 2022).

The primary tables developed by the Ministry of Environmental Protection and Natural Resources to collect information on measures for NDC-2 implementation clearly indicate that the government has decided to rely primarily on interdepartmental cooperation among executive bodies and interaction with experts, while the business community is expected to be an observer and implementer of state programmes developed by the authorities to promote green technologies in electricity and heating. A ready-made list of transformations and measures in seven sectors will be submitted for public discussion. These sectors are: power and heat, energy supply, industry, transport, buildings, agriculture, waste, land use and forestry (Leshchenko, 2023).

Such an approach alienates the private sector from climate policy, makes the business community and civil society sceptical about the government's climate initiatives, and therefore tends to delay real decisions and steps towards a green transition, leading to Ukraine's failure to meet the NDC-2 deadlines.

It should be noted that the timeframe set by the government for the development of an action plan for the implementation of the NDC-2 has obviously not been met since July 2022. This provides an opportunity to reorganise the process of preparing this plan and correct its main shortcomings in the area of public-private partnership and interaction

between the state, business and civil society. It is considered expedient to urgently apply the key principles of the Danish experience of multi-stakeholder cooperation to implement the green transition, namely to create a system of sectoral climate partnerships that bring together business, government and experts to discuss and develop roadmaps, grassroots initiatives and recommendations for decarbonising the economy.

The Federation of Employers of Ukraine (FEU), as the most influential business association representing the largest sectors of the national economy (iron and steel, machinery, chemical industry, defence, food and agriculture, textile and clothing, IT, media, energy, pharmaceutical production and microbiology, construction, transport, logistics, infrastructure, retail, tourism, utilities, services, etc.), has sufficient potential to become the basis for establishing a public-private partnership on green transition issues. Therefore, it's advisable to set up a climate platform.

The FEU Climate Platform is a platform for discussion, planning and preparation of the most effective strategic mechanisms for the green transition of the Ukrainian economy, taking into account the interests of business, the state and society as a whole. At the stage of developing an action plan for the implementation of the NDC-2, the Climate Platform should act as a secretariat for sectoral climate partnerships (similar to the Confederation of Danish Industry (DI) in Denmark's climate partnerships). In contrast to the Danish experience, where the government itself was the initiator of the establishment of climate partnerships and appointed their leaders, in Ukraine grassroots initiatives by business associations are considered necessary. In view of this, the functions of the FEU Climate Platform as an organiser and secretariat of sectoral climate partnerships should be as follows:

- conducting an information and consultation campaign among FEU members on the challenges related to Ukraine's climate commitments and global (primarily European) trends in climate policy, with the aim of the widest possible, consolidated involvement of the domestic business community in the preparation of the decarbonisation agenda;
- business advocacy in the climate dialogue with government: entrepreneurs are primarily interested in maintaining competitiveness in the green transition process, they are most familiar with the latest technological solutions and know-how for decarbonisation in their industries, and they are in a unique position to provide a clear assessment of the resource and time costs of implementation. Businesses should therefore have the right to develop roadmaps for achieving sectoral climate targets, and government should listen to them;

- involvement of experts, including foreign experts, whose experience is based on effective measures actually implemented in the field of consultancy, accounting and auditing, economic analysis and modelling, to assist entrepreneurs in calculating their current carbon footprint, developing new business models and preparing investment projects aimed at reducing GHG emissions. Among other things, this will enable the private sector to determine what proportion of the costs and at what stage can be met by business at its own expense, and where support from government and/or international donors is required. It will also help to justify specific decarbonisation measures by assessing their economic, social and environmental impacts at all levels;

- preparation of reports and recommendations for sectoral climate partnerships – combining the results of public-private discussions into coherent and meaningful action plans and standardised reports on the achievement of Ukraine's climate goals:

- analysis of greenhouse gas emissions by the industry's enterprises, summary of the key factors that determine the dynamics of greenhouse gas emissions in the industry, description and assessment of the industry's main achievements in the field of decarbonisation;

- presentation of the industry's own vision of the green transition process by 2030, explaining what technological, financial and regulatory means are needed to achieve climate goals;

- a detailed presentation of business initiatives to reduce greenhouse gas emissions in specific production processes of the industry, including implementation costs and an assessment of climate impacts;

- argumentation of regulatory, resource, organisational and other barriers to achieving the industry's climate goals;

- proposals and recommendations for the government to remove the identified obstacles and provide financial and other incentives for the industry on the way to a green transition.

The Climate Platform, as a secretariat organising public-private partnership in the green transition, will provide the business community with an opportunity to formulate an agenda for decarbonisation of the Ukrainian economy, systematically influence the legislative and regulatory environment in this area, and provide the authorities with clear guidelines on the main obstacles to the implementation of climate goals. This will help to agree on directions for overcoming relevant challenges, get an idea of the scope and prospects of the state's participation in financial and other support for business in the implementation of green initiatives.

As approaches to the green transition are constantly developing, changing and modifying, the FEU

Climate Platform will also function as an office that monitors, analyses and disseminates information on current international and national events related to the decarbonisation of the economy. Among the main functions of the Climate Platform Office, the following should be highlighted:

- monitoring and analysing international legislation (primarily that of the EU in the context of Ukraine's membership candidacy) in the area of decarbonisation, assessing the potential impact of legislative changes on competitiveness, market access, and so forth;
- studying approaches to taxation of greenhouse gas emissions in different countries and mechanisms for targeted use of collected budget funds to stimulate the green transition;
- monitoring of national legislation and regulatory initiatives in the area of decarbonisation, with a prompt assessment of the potential impact on the private sector and analysis of effectiveness in the context of achieving climate goals;
- studying best business practices in the field of decarbonisation: green business models; big data, artificial intelligence, digitalisation; interaction with the public sector and international donors; the latest technological solutions and know-how in the field of renewable energy, energy efficiency, circular economy, and the like;
- development and publication of methodological materials on technical aspects of greenhouse gas emissions that assess the economic impact of climate change policies, in particular: standards for converting emissions of various greenhouse gases into carbon dioxide equivalent emissions; standards for greenhouse gas emissions from fossil fuel consumption (coal, gas, oil and petroleum products); assessment of the carbon footprint of goods and services; assessment and simulation of CBAM effects;
- provision of consulting services on decarbonization and green transition;
- gathering and publication of other relevant information on climate policy and decarbonization.

Broad social consensus on the fight against climate change, coalitions to support the implementation of green initiatives and communication with Western partners remain crucial for Ukraine to ensure a green transition. In this regard, the climate platform will also serve as a *forum* for the exchange of ideas and proposals, promotion of climate ideas and networking among all stakeholders. The main functions of the climate platform as a forum are as follows:

- holding meetings, conferences, and discussion clubs on green transition to raise environmental

awareness among businesses and citizens, and to increase public demand for the implementation of a systemic climate policy;

- presentation of successful decarbonisation practices in domestic and foreign companies, excursions to relevant enterprises, and exchange of experience between the participants of the FEU and foreign partners;
- organisation of meetings between business, government and civil society representatives to summarise the interim results of the implementation of the action plan for the implementation of the NDC-2, as well as to discuss changes and modifications to sectoral roadmaps that will inevitably be required for further decarbonisation.

In order to ensure maximum transparency and dissemination of information on climate challenges and decarbonisation of the economy, it is also planned to create and support the official website of the Climate Platform, where (in addition to general information on the nature, purpose and goals of the Platform's activities) basic information on issues of green transition in Ukraine and the world will be provided, online events will be held and their main results will be presented.

4. Conclusions

The article presents the concept of a climate platform based on the Danish experience of achieving national climate targets by organising PPPs in the form of sectoral climate partnerships. Within these Climate Partnerships, representatives of each industry were tasked with formulating specific proposals for their contribution to reducing GHG emissions and with developing a roadmap for achieving climate targets in a way that would help maintain the competitiveness of the Danish economy, boost exports, create new jobs and increase welfare. The Climate Partnerships developed two types of proposals: actions for industry to take to reduce GHG emissions; and recommendations for public authorities to remove barriers and improve the regulatory and institutional framework for tackling climate change. As a result, companies developed their own realistic climate roadmaps and the government received up-to-date recommendations on how to improve policies to support the green transition. As a result, the Danish Climate Partnerships have contributed to the development of more than 400 proposals and recommendations, most of which have become part of government policy.

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