The Politics of Formulating and Implementing Climate Policies in the Netherlands

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Introduction

As a high-income country in the European Union, the Netherlands comprises a bloc of resource-endowed nations that is relatively dedicated to combating climate change. The European Union reduced greenhouse gas emissions by 24% between 1990 and 2019, and has set a goal to further mitigate climate change's effects by reducing emissions by 40% by 2030.[1] The European Climate Law passed in 2021 outlines a continental plan for adaptation and climate neutrality. However, the Netherlands faces unique challenges when examining the downstream effects of policymaking to address climate change. The Netherlands is particularly vulnerable to flooding as 26% of the country is below sea level, with these areas housing 70% of the population. The country's current nitrogen emissions crisis also poses political and ecological challenges for mitigating the effects of climate change.

The Netherlands can be categorized as a country with relatively high readiness to address climate change but also has modest vulnerabilities. According to the Notre Dame Global Adaptation Initiative, it has one of the highest readiness to adapt to climate change in the world, but is the most vulnerable country in Western Europe.[2] Additionally, many regions of the Netherlands risk large damages to the built environment should climate disasters occur.[3] Thus, while the country has taken large steps to prevent extreme climate events such as flooding, its geography remains fairly vulnerable.

Despite the vulnerabilities, the Netherlands has physical and political infrastructure that allow it to be prepared for the effects of climate change. The Netherlands has undertaken the construction of dikes and other storm surge barriers since the 1950s in order to prevent major flooding. Politically, addressing climate change and acknowledging its dangers appear not to stifle progress as much as in other industrialized

[1] https://climate.ec.europa.eu/eu-action/climate-strategies-targets/progress-made-cutting-emissions_en
[2] https://gain.nd.edu/our-work/country-index/rankings/
[3] https://xdi.systems/gross-domestic-risk-dataset/

democracies. Unique to the Netherlands is the political organization of pro-agrarian interests that hope to continue agricultural production despite large nitrogen emissions. Current policies to address the nitrogen crisis have effectively halted all construction projects, including those to insulate against climate change, creating highly salient political cleavages that pit conservationist interests against those advocating for the development of more pro-climate or climate-neutral infrastructure.

1 Locations

1.1 Mitigation Locations

Within the Netherlands, there are two types of mitigation locations to discuss. The first are industrial emissions installations, regulated by the European Union's Emissions Trading System (ETS), a continent-wide cap-and-trade system. The second are nitrogen emissions locations, many of which are agricultural and form the basis of the country's nitrogen crisis.

As will be detailed further below, the ETS regulates carbon dioxide, nitrous oxide, and perfluorocarbon emissions from factories, power stations, and other installations in the electricity and heat generation, aviation, and other energy-intensive sectors. Installations in these sectors are required to purchase permits to emit greenhouse gases. As of 2022, the ETS has regulated almost 18,000 installations across Europe, with about 700 of them located in the Netherlands. Figure 1 plots the locations of all ETS-regulated installations in the Netherlands. While emissions activities take place all across the country, installations are highly concentrated in South Holland (NUTS2 region NL33) and North Holland (NUTS2 region NL32) on the east coast.

The European Union Transaction Log (EUTL)[4] records all transactions that take place within the ETS's carbon market and also verifies emissions from each installation. According to the EUTL, the combustion and steel sectors comprise the greatest share of Dutch emissions. The following table shows the highest-emitting installations in 2022. The largest emitter is Tata Steel, an Indian multinational firm with two plants in the Netherlands. Their primary facility, the IJmuiden plant, has effectively had its emissions subsidized, even running a surplus of allowances every year. That is, since the inception of the ETS in 2005, the Dutch government has allocated the plant enough permits to continue operations without Tata Steel needing to purchase permits to pollute (see sections below on the allocation of permits within the ETS). This means that the plant has had little pressure to reduce its emissions. The EUTL data shows that, between 2005 and

[4]See euets.info for processed and compiled data from the EUTL.

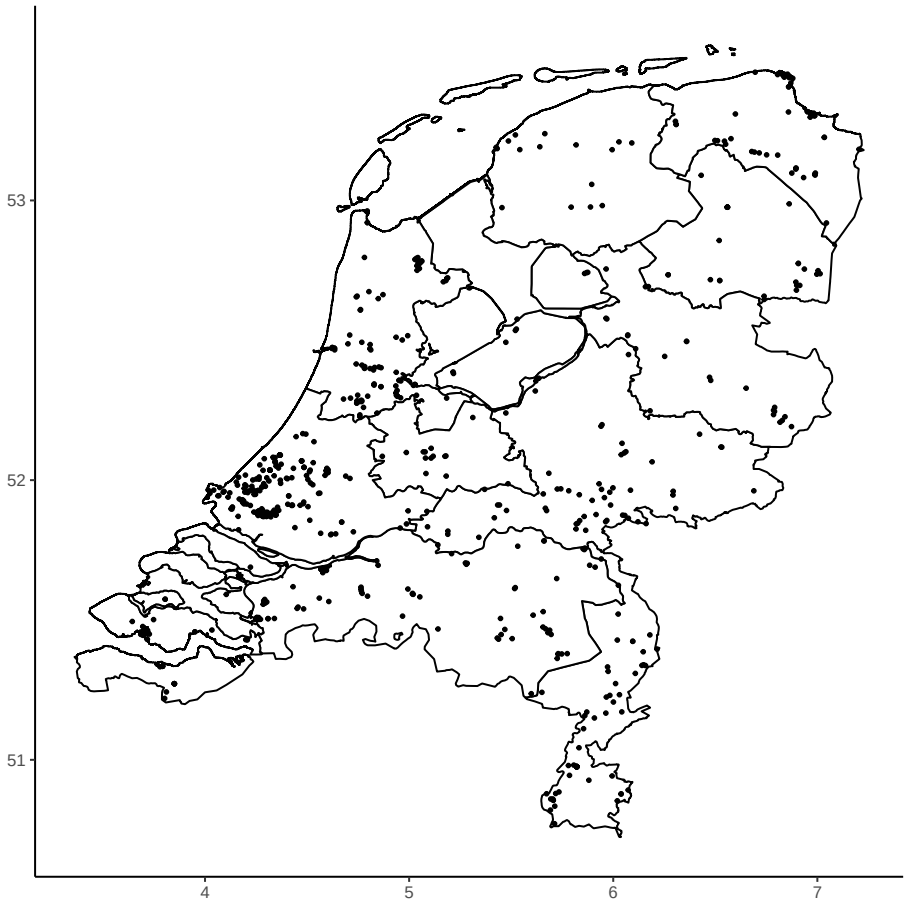

Figure 1: Installations Regulated by the ETS in the Netherlands

2022, the IJmuiden plant's emissions remained relatively stable, and their verified emissions were always less than the number of free allowances allotted to the installation.

Installation	Emissions (Tons)	Sector	NUTS2 Region	Province
Tata Steel IJmuiden bv BKG 1	5822618.00	Steel	NL32	North Holland
RWE Eemshaven Centrale	4717756.00	Combustion	NL11	Groningen
Shell Nederland Raffinaderij B.V.	4143614.00	Oil Refinery	NL33	South Holland
Vattenfall Power Velsen	3911507.00	Combustion	NL32	North Holland
Chemelot BKG 01	3870419.00	Combustion	NL42	Limburg

Table 1: Highest-Emitting Installations in the Netherlands in 2022

Historically, the province of Groningen in the north of the country has been a source of major emissions as it is home to the largest natural gas field in Europe. The field was discovered in 1959 and quickly became central to the country's supply of energy. However, beginning in 1986, gas drilling led to earthquakes in the region. In 2012, the Huizinge earthquake reached a 3.6 on the Richter scale, the largest magnitude registered above the field, which prompted local politicians to call for the gas field's closure. Plans to phase out extraction were drawn up in 2014, with a target closure date of October 1, 2023.

Beyond carbon emissions from energy-intensive industries, the Netherlands faces mitigation challenges with respect to the emission of nitrogen. The country's nitrogen pollution has spurred a legal, political, and ecological crisis in 2019 that will be detailed further below. In the Netherlands, 46% of nitrogen emissions come from the agricultural sector, with farms being primarily located in Gelderland and Noord-Brabant in the west and southwest of the country. The initial reason that nitrogen emissions have become politically contentious in the Netherlands is because nitrogen pollution has infected areas known as Natura 2000 zones, areas designated by the European Union as biodiverse locations that must maintain a minimum threshold of ecological conservation. The attempt to address this issue is ongoing: the extant policy program that regulated nitrogen pollution and the conservation of Natura 2000 zones was rendered invalid. Current policy proposals include the closure of up to 30% of Dutch farms in order to address these mitigation challenges.

1.2 Adaptation Locations

In terms of adaptation issues, many areas of the Netherlands are susceptible to coastal or river flooding. Approximately 17% of the Netherlands's land is itself reclaimed from the ocean. Hoeksema (2007) finds that about 65% of the country would be underwater at high tide if it were not for the existence and the country's use of dikes, dunes and pumps.[5] According to the XDI measures of climate damage risk, Zeeland,

[5] onlinelibrary-wiley-com/doi/10.1002/ird.340

the westernmost and least populous province of the Netherlands, is susceptible to some of the largest climate damage in the world.[6] Overall, the southwest of the country, including Zeeland and parts of the neighboring province of South Holland, appear to have received some of the greatest investments to protect against flooding.

The Delta Programme, the Netherlands's overarching adaptation effort to prevent flooding, divides the country into several different regions, each with its own water challenges.[7] While each region of the Netherlands does face its own challenges, a series of construction projects have been implemented in the southwest in order to insulate against flooding. These projects, known as the Delta works, began in 1954 and finished in 1997 and consist of a variety of dams, sluices, dykes and storm surge barriers. Notably, the Maeslantkering is a storm surge barrier that automatically closes if the city of Rotterdam is threatened by a flood. Currently the Delta Programme continues to reinforce existing structures and monitor and manage flood risks; while many threats have been stabilized through the construction of these dikes, annual upgrades are required in order to keep up with rising sea levels.[8]

2 Actors

2.1 Supranational Actors

As a partially federal structure, the European Union (EU) commands considerable policy leeway when determining the trajectory for climate policy across the continent. On environmental and climate issues, the EU and its member states have "shared competence" over policymaking, which means that member states can only legislate to the extent that the EU has not. This endows the European Commission and the European Parliament, the EU's executive and legislative branches, with large responsibilities in setting climate policy initiatives. These supranational structures determine continent-wide legislation and then harmonize with national governments in order to implement them.

The EU has advanced two major policy initiatives to address climate change. The first is the Emissions Trading System (ETS), which launched in 2005. The ETS functions as the world's largest cap-and-trade system that is intended to regulate the quantity of emissions by energy-intensive installations. The EU sets a constraining limit, the cap, on the total quantity of emissions allowed. In the initial phases of the program –

[6] https://xdi.systems/gross-domestic-risk-dataset/

[7] https://english.deltaprogramma.nl/documents/publications/2022/09/20/brochure-outlines-delta-programme-2023-english

[8] https://english.deltaprogramma.nl/documents/publications/2022/09/20/delta-programme-2023-english---print-version

phases I (2005-2007) and II (2008-2012) – each country was allotted its own cap based on National Allocation Plans submitted to the EU. For example, the Netherlands was given a cap of 95.3 million tons per year in the first phase; the Dutch government requested a cap of 90.4 million tons per year during the second phase and ultimately received a cap of 85.8 million tons per year.[9] Beginning with the third phase in 2013, the EU set a market-wide cap rather than assigning country-specific limits.

The cap is partitioned into a set of permits to be acquired by polluters. Each year, the European Commission monitors the compliance of regulated plants through reports submitted by plant operators. The data for a given year must be verified by an accredited verifier by March 31 of the following year. Once verified, operators must surrender the equivalent number of permits by April 30 of that year; failure to surrender the requisite permits leads to a penalty of 100 Euro per ton.[10]

Permits to pollute under the ETS can be acquired through auctions and trades with other companies at a market price, or as handouts known as "free allowances." Free allowances comprised 95% and 90% of allowances in the ETS's first two phases.[11] It was understood that the initial use of free allowances functioned as a political price of ensuring participation in the ETS at the expense of greater abatement.[12] To this end, it was national governments who disbursed free allowances to specific installations and could be provided to any allocation at the government's discretion; each country submits a list of installations under their purview and the annual proposal of free allocations to the EUTL.[13]

However, with the initiation of the third phase of the ETS in 2013, auctioning was phased in as the primary mechanism to allocate allowances to installation operators. Notably, plants in the electric industry were required to receive all permits through auctioning. Other industries continue to receive free allocations according to centralized EU rules based upon the industry's international competitiveness and the possibility of carbon leakage. For example, the manufacturing industry received 80% of its allowances for free in 2013. This proportion will decrease gradually year-on-year, down to 30% in 2020.[14] Governments still provide free allowances to installations, but must do so within with each sector's benchmarks.

It is notable that the ETS's attempts to regulate emissions, while in practice are relatively lax on some of the worst emitters (for example, the Tata Steel plant discussed above), places the onus on industry to adjust

[9] https://ec.europa.eu/commission/presscorner/detail/en/IP_07_1614

[10] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en

[11] https://www-journals-uchicago-edu/doi/10.1093/reep/rev014

[12] https://www.routledge.com/EU-Emissions-Trading-Initiation-Decision-making-and-Implementation/Skjaerseth-Wettestad/p/book/9780754648710

[13] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021D0728(01)

[14] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/allocation-industrial-installations_en

their behavior. While the EU's climate policy is often broad, giving member states considerable discretion in implementing policies to enact the continent's emissions reductions goals, the ETS specifically serves to coordinate a reduction in industrial emissions rather than place restrictions on, say, consumer behavior. The ETS thus provides a supranational framework, but with clear local implications about where reduction goals should materialize.

The second supranational initiative is the European Green Deal, which comprises several policy goals to make the EU climate-neutral by 2050. The European Green Deal was approved in 2020 and codified in the European Climate Law. In the short term, the objective of the European Green Deal is to reduce Europe's emissions by 55% by 2030 compared to 1990 levels.[15] While the EU leaves countries to determine the specifics for themselves, the Green Deal serves as an overarching framework with which domestic governments draft national climate plans that will implement policies downstream in accordance with the reduction goal. At the supranational level, the Green Deal includes the creation of the Carbon Border Adjustment Mechanism, which levies tariffs against imports from countries with less ambitious climate standards, and apportions funds through the Sustainable Europe Investment Plan to support workers and citizens of the regions most impacted by the energy transition.

2.2 National Actors

To implement the supranational goals set by the EU, and to potentially set their own, more ambitious, benchmarks, domestic governments draw up national climate plans. These National Energy and Climate Plans include how the EU countries intend to address the 5 dimensions of the energy union: decarbonization, energy efficiency, energy security, internal energy market, and research, innovation, and competitiveness.

The Netherlands submitted their NECP to the EU in 2019 with revisions completed in July 2023. Within the country, this process is managed by the Ministry of Economic Affairs and Climate Policy, whose minister holds a cabinet position within the current government. In the initial NECP submitted in 2019, the Netherlands had committed to a 49% national reduction in emissions by 2030, which was in compliance with the original EU target of a 40% reduction by 2030.[16] However, the EU has since tightened its 2030 to reducing emissions by 55%, requiring the Netherlands to update its plans. In the revised NECP, the Dutch government hoped to reduce emissions by 60% by 2030 in order to coordinate with EU-wide targets.[17]

The two relevant national ministries for setting climate policy are the Ministry of Economic Affairs

[15] https://climate.ec.europa.eu/eu-action/european-climate-law_en
[16] https://energy.ec.europa.eu/system/files/2020-03/nl_final_necp_main_en_0.pdf
[17] https://commission.europa.eu/system/files/2023-07/EN_NETHERLANDS%20DRAFT%20UPDATED%20NECP.pdf

and Climate Policy and the Ministry of Infrastructure and Water Management. The Ministry of Economic Affairs and Climate Policy is responsible for overseeing the Netherlands's energy transition and ensuring sustainable economic growth. This ministry formulates the country's mitigation policies by determining the trajectory of energy policy. The Ministry of Infrastructure and Water Management supervises the network of infrastructure constructed to prevent floods and ensure the quality of water in the country. This ministry oversees the Delta Programme and other flood-related adaptation risks that the Netherlands faces. These ministries both have posts in the current government's cabinet and therefore extend the incumbent's climate policy.

These ministries oversee the implementation of national goals but also communicate with supranational frameworks. As mentioned, the Ministry of Economic Affairs and Climate Policy updated the national NECP, thereby managing the status of the Netherlands's implementation of climate policy and coordinating such efforts with the EU. These ministries also jointly determined the initial plan for free allocations within the ETS in the first two phases (2005-2013).[18] There is also the Dutch Emissions Authority, a national authority independent from the formation of the government that compiles information on installation emissions. This agency maintains data on Dutch emissions internally and corroborates with the EUTL to provide Dutch data from ETS-regulated sites supranationally.

The Dutch Supreme Court in its 2020 *Urgenda* ruling also became a prominent player in the advancement of mitigation policy as it became the first judicial body across the world to order a state to reduce its greenhouse gas emissions. The Urgenda Foundation is a climate activist group that sued the national government in 2013, arguing the state must commit to a reduction of carbon dioxide emissions of 40% by 2030 or a minimum of 25% by 2020, bound by Dutch and EU law. The District Court ruled in June 2015 in favor of Urgenda, claiming that "The state should not hide behind the argument that the solution to the global climate problem does not depend solely on Dutch efforts. Any reduction of emissions contributes to the prevention of dangerous climate change and as a developed country the Netherlands should take the lead in this."[19] The state appealed to the Supreme Court, which rejected the appeal in 2019, maintaining the 25% reduction requirement. The Supreme Court declared that climate change mitigation fell under the purview of the European Court of Human Rights's requirement that the state has to take "appropriate steps if there is a real and immediate risk to persons and the state [...] is aware of that risk." The Supreme Court wrote, "this constitutes a 'real and immediate risk' [...] and it entails the risk that the lives and welfare

[18] https://climate.ec.europa.eu/system/files/2016-11/nap_netherlands_en.pdf

[19] https://www.theguardian.com/environment/2015/jun/24/dutch-government-ordered-cut-carbon-emissions-landmark-ruling

of Dutch residents could be seriously jeopardised. The same applies to, inter alia, a possible sharp rise in the sea level, which could render part of the Netherlands uninhabitable."[20] The case represented important legislation not just for its impact on climate litigation but also because it forced the government to accelerate its mitigation plans. While the case did not specify how the target should be achieved, the government took steps like shutting down the Hemweg coal power plant in 2020, four years earlier than expected, as a direct result from the ruling.[21]

2.3 State and Local Actors

Local actors have some role to play in facilitating policy in the Netherlands, particularly when it comes to the management of water. The country has 21 regional water boards that operate independent of other administrative governing bodies at the provincial or municipal level and are solely in charge of managing issues related to water. The water boards manage the polder systems that implement the system of dikes to prevent flooding, for example. Water boards are directly elected in elections (there is even a party, Water Natuurlijk, that only contests water board elections), and are intended to represent the interests of local residents, industry (factories and industrial buildings), municipalities (urban areas), farmers and landowners of agricultural land, and nature conservation parks.

Regional authorities have limited roles in creating their own policies, as all policy must be compliant with the Dutch Climate Law in accordance with the EU Climate Law. The central government does rely on regional authorities like municipal governments to determine how best to ensure that each municipality transitions to renewable energy. The Dutch NECP outlines the Regional Energy Strategy, in which "municipalities, provinces and water authorities to work together at a regional level to carry out integrated trade-offs on the generation of renewable electricity, the heat transition in the built environment and the related storage and infrastructure."[22]

3 Policies

It is important to note that leaders are not bound by public opposition to climate change policy as in some other advanced democracies (e.g., the United States). According to a 2023 Eurobarometer survey, 80% of Dutch respondents agreed that climate change is a "very serious problem," but only 21% of respondents

[20] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7487283/

[21] https://www.reuters.com/article/us-netherlands-energy/dutch-to-close-amsterdam-coal-fired-power-plant-four-years-early-rtl-idUSKCN1QO1JE

[22] https://commission.europa.eu/system/files/2023-07/EN_NETHERLANDS%20DRAFT%20UPDATED%20NECP.pdf

said that the government was doing enough to address it, implying that Dutch citizens are willing to take action against climate change.[23] Therefore, while leaders of different parties may differ in their policy approaches to addressing climate change in the Netherlands, the issue of implementing policy is "how," and not "whether." It should be additionally noted that in the 2022 Coalition Agreement that formed the incumbent government, the government's top two priorities are "combating climate change" and "tackling the nitrogen pollution crisis," demonstrating the high salience of climate issues in the Netherlands.[24]

Both mitigation and adaptation plans that the Netherlands has were codified in the 2019 NECP and updated in a 2023 draft. These plans are policy commitments submitted to the EU and outline actions that the country plans to take to address climate change between 2021-2030 (much of which is speculative or identifies areas in which the government hopes to address climate policy in the coming years). While the EU remains relatively agnostic as to how emissions targets are achieved, any national-level policy implementation will have domestic, downstream consequences. We discuss some of these policy proposals here.

3.1 Mitigation Policies

Given the constraints set by the EU, the Dutch government must determine how to enact mitigation policies and transitions to green energy. The Netherlands itself has imposed a national goal of reducing emissions by 60% by 2030 and by 95% by 2050. The energy transition is particularly salient given the push to close the Groningen natural gas field.[25] At present, the Netherlands's energy consumption is skewed highly toward natural gas; the household energy mix for heating, cooking, and hot water is 86% natural gas and just 14% electricity.[26] The Netherlands's energy transition requires a significant shift away from natural gas and toward electricity.

Beyond the impending closure of the Groningen natural gas field, the Netherlands's energy transition ramped up with the passage of the Act on the Prohibition on Coal, which entered into force in January 2022. This legislation outlaws the use of coal to generate electricity by 2030. In addition, the Netherlands plans to increase its reliance on nuclear energy. There is a nuclear power plant in Borssele, and the country plans to construct two more nuclear power plants by 2035. Moreover, by 2030, the Netherlands hopes to achieve a 30% share of renewable energy as a part of their green transition. In 2020, this share was only 11.5%.[27] The

[23] https://climate.ec.europa.eu/system/files/2023-07/nl_climate_2023_en.pdf

[24] https://www.government.nl/binaries/government/documenten/publications/2022/01/10/2021-2025-coalition-agreement/2021-2025+Coalition+agreement.pdf

[25] https://www.sciencedirect.com/science/article/pii/S0301421521002433

[26] https://pubs.geoscienceworld.org/ssa/srl/article-abstract/90/3/1071/569204/The-Groningen-Gasquakes-Foreseeable-Surprises?redirectedFrom=fulltext

[27] https://commission.europa.eu/system/files/2023-07/EN_NETHERLANDS%20DRAFT%20UPDATED%20NECP.pdf

government envisions this would be achieved by further rolling out offshore wind and solar on rooftops, and scaling up innovative technologies such as hydrogen and green gas. In 2020 and 2022, permits were granted for the construction and operation of three new wind farms, with a total installed capacity of approximately 2.2 gigawatts.

The energy transition has already generated political division in the Netherlands. Voeten (2022)[28] documents the effects of the 2013 Energy Agreement that proposed to increase taxes on natural gas and redistribute the revenues as subsidies for renewable energy investments. These energy taxes were regressive, with subsidies primarily going to homeowners who could finance solar panel installations, energy saving measures, and electrification of heating and cooking equipment. Voeten documents that voters who were more affected by the change in household energy prices became six to seven percentage points more likely to vote for far-right parties that are opposed to taking action to address climate change. Additionally, he highlights that Dutch center-right mainstream parties like the VVD, the party of Prime Minister Mark Rutte who has run the country from 2010 until his resignation in July 2023, opposed amendments that would have shifted a larger share of the cost to businesses and higher income individuals.

The implementation of the ETS also contributes to the Netherlands's mitigation goals. To obtain an emission permit, for each installation a monitoring plan must be drawn up and approved by the Dutch Emissions Authority, the agency that manages the implementation of the ETS within the Netherlands. This agency handles the disbursement of free allocations to new applicants when they register an installation with the ETS. Other national measures complement the ETS as well. The 2022 Coalition Agreement that formed the fourth Rutte Cabinet (which subsequently fell in July 2023) introduced extra incentives for companies to make their operations more sustainable by increasing the marginal levy charged in addition to the price stipulated in the ETS.[29] The carbon levy began nationally at the start of 2023 at a price of 30 Euro per ton of carbon dioxide, to be increased to 125 Euro per ton by 2030.[30] This ensures that, even with price fluctuations for the purchase of permits within the ETS, industry still incurs a price for emitting carbon. However, vague language in the 2023 update of the NECP leaves flexibility for top emitters. The government offers the 10 to 20 largest industrial emitters in the Netherlands the possibility of the so-called "tailor-made" approach. This makes it possible to offer tailor-made support for sustainability in the Netherlands and to achieve the additional greenhouse gas reduction above the carbon dioxide levy in 2030. If a company is willing to make an additional effort as part of the tailor-made approach to achieve the Dutch climate goals,

[28] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4215909

[29] https://www.government.nl/binaries/government/documenten/publications/2022/01/10/2021-2025-coalition-agreement/2021-2025+Coalition+agreement.pdf

[30] https://environment.ec.europa.eu/system/files/2021-10/The%20Netherlands.pdf

achieve nitrogen reduction and improve other aspects of the living environment, the government would like to see if it can also do any extra work to facilitate the projects concerned. With the tailor-made arrangements with the largest industrial emitters, the government intends to declare 3.5 megatons in 2030 in relation to the carbon levy.[31]

3.2 Adaptation Policies

As part of the European Green Deal, the EU also released a continent-wide adaptation strategy in 2021. These plans hope to make Europe climate-resilient by 2050. Within the Netherlands, the 2016 National Adaptation Strategy, Delta Programme, and forthcoming 2026 updated adaptation strategy outline national contributions to this goal. The 2016 NAS[32] describes challenges such as heat stress or damage to agricultural crops that climate change poses, but does not really pose a comprehensive policy agenda to address these issues beyond commitments to be climate-resilient and water-resilient by 2050. The primary adaptation strategy in the country is the Delta Programme, which focuses on mitigating the effects of climate change related to the water system, such as a rise in sea levels, the increase of prolonged rainfall and the resulting increase in river discharge and flooding in regional water systems, peak rainfall, drought and heat (as well as a combination of these elements). The Delta Programme is a large-scale, inter-administrative program in which central government, the provinces, water boards and municipalities work together under the leadership of the Delta Commissioner.[33]

The July 2021 floods in Limburg catalyzed the incumbent government to actively discuss more climate adaptation measures. In the 2022 Coalition Agreement, the government hoped to invest more into the Delta Fund that allows for the maintenance of the structures put in place through the Delta Programme to protect the country from flooding. The total estimated annual budget of the Delta Programme is on average 1.5 billion Euro between 2023 and 2036, 55 percent of which are dedicated to new investment and the rest for maintenance, upkeep, and management.[34] The government also plans to carry out more flood risk assessments in consultation with regional water boards.[35]

A report by the International Monetary Fund from 2023 claims that "the planned level of protection is adequate to deal with expected flood risks at least until 2050 but the country needs to plan carefully to

[31] https://commission.europa.eu/system/files/2023-07/EN_NETHERLANDS%20DRAFT%20UPDATED%20NECP.pdf
[32] https://klimaatadaptatienederland.nl/publish/pages/125102/2016_12_02_nas_netherlands_4.pdf
[33] https://energy.ec.europa.eu/system/files/2020-03/nl_final_necp_main_en_0.pdf
[34] https://english.deltaprogramma.nl/delta-programme/delta-fund
[35] https://www.government.nl/binaries/government/documenten/publications/2022/01/10/2021-2025-coalition-agreement/2021-2025+Coalition+agreement.pdf

upgrade the protection to address the evolving risks from climate change."[36] Such measures do not appear to be politically contentious. However, faster than expected sea level rise can potentially lead to more flooding, saltwater intrusion, coastal deterioration, and loss of habitats. Effectively, because Dutch society has always risked major floods and put in place the Delta Programme many years ago, the country's challenges rely on maintaining these defenses against flooding and sea level rise, as well as the inherent uncertainty of how severe these challenges will become.

4 Mechanisms

4.1 Nitrogen Crisis and Farmers' Protests

The largest contemporary political debate in the Netherlands surrounds nitrogen emissions. Nitrogen pollution is relevant nationally and supranationally. The Netherlands has national emissions reduction targets for ammonia and nitrogen oxide that it seeks to achieve, as with other pollutants like carbon dioxide. Additionally, nitrogen emissions are under scrutiny because of EU regulation to conserve biodiverse areas known as Natura 2000 sites. In 2015, the Dutch government introduced the Integrated Approach to Nitrogen (PAS), a policy to reduce nitrogen pollution and preserve the Natura 2000 sites while simultaneously managing economic growth. A notable feature of the policy was that initiators of new economic activities were required to apply for permits to emit nitrogen within the vicinity of Natura 2000 sites. Some projects did not have to apply because emissions were limited, and could suffice with a notification of the calculated nitrogen load instead.[37] However, in 2018, the European Court of Justice further elaborated upon the terms of the Habitats Directive, the regulation that established the Natura 2000 sites, determining that EU regulation superseded the PAS's laxer permit requirements.[38] By 2019, the Administrative Jurisdiction Division of the Council of State, the Netherlands's highest judicial authority, ruled that the PAS's permit system was invalid and that the policy would not meet the country's stated reduction targets for ammonia and nitrogen oxide. The repeal of the PAS halted approximately 18,000 construction projects until conservation measures are taken.[39] This includes the expansion of farms, construction of roads, or even the development of new infrastructure projects to combat climate change.

Since 2019, the Dutch government has released several proposals to address the nitrogen crisis, most of which involve substantial cuts to the agricultural sector. In September 2019, government party Democrats

[36] https://www.elibrary.imf.org/view/journals/018/2023/022/018.2023.issue-022-en.xml
[37] https://www.sciencedirect.com/science/article/pii/S1617138116302138#fn0005
[38] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62017CA0293
[39] https://www.ad.nl/wonen/huizenbouwers-wakker-geschud-door-stikstofcrisis-het-kan-anders~a2920a65/

66 floated the proposal to half the amount of livestock, which triggered immense farmers' protests across the country.[40] Farmers mobilized against any attempts to bring about change, and the Dutch farmers' union LTO called upon its 14000 members to begin protesting in October 2019.[41] While protests slowed at the onset of the COVID-19 pandemic, demonstrations reemerged by summer 2021.

In June 2022, the government announced a new plan to cut nitrogen emissions by 50% by 2030, to comply with EU regulations on nitrate pollution. In the Natura 2000 areas, emissions cuts of 70% or more may be required. The Dutch farmers' union estimates that, if adopted, the plan could require the closure of up to 30% of Dutch farms in order to meet the targets.[42] Negotiations with the LTO were underway in 2023 to reach an agreement with the agricultural sector, but these talks collapsed in June 2023 without reaching conclusions.[43] The farmers' protests have continued into 2023 as the government revises and develops new plans to meet the nitrogen goals. In the process of attempting to address the nitrogen crisis, the Dutch cabinet instated three different Ministers of Agriculture between 2022 and 2023, demonstrating the political instability that the protests caused.

The farmers' protests sparked the creation of a new political party, the Farmer-Citizen Movement (BBB), to enter the Dutch political landscape in 2019. The BBB is broadly a populist, center-right party but is primarily concerned with agrarian issues. The party has called for a Right to Agriculture Act, which would allow for farmers to have more say on agricultural expansion matters. Notably, the BBB opposes the government's proposal to crack down on farmers' nitrogen emissions. Their platform explicitly argues against changes to animal feed and further steps to preserve Dutch nature.[44] The BBB contested its first elections in 2021, winning one seat in the Dutch House of Representatives, the lower house. However, in the 2023 provincial elections, the BBB was the largest party and garnered the most votes in every Dutch province. This victory allowed the BBB to become the largest party in the Dutch Senate, the upper house.

The nitrogen crisis remains unresolved and constitutes a significant barrier to progress in the Netherlands. The organization of the farmers, both as protesters and at the polls, has launched new political interests into the Dutch legislature. Coincidentally, the Dutch government collapsed in July 2023 because the coalition parties could not agree on immigration policy; most incumbent government politicians have announced that they will not stand for reelection in the November 2023 elections.[45] Should the BBB win the election, the

[40] https://nos.nl/collectie/13799/artikel/2304207-deze-boeren-leggen-uit-waarom-ze-demonstreren-ik-zit-muurvast-door-dit-beleid

[41] https://nos.nl/artikel/2306007-weer-een-week-vol-boerenprotest-een-overzicht-van-de-acties

[42] https://www.fwi.co.uk/news/environment/dutch-farmer-protests-against-emissions-cuts-spread-across-eu

[43] https://www.nu.nl/politiek/6268973/landbouwakkoord-definitief-van-tafel-kabinet-kondigt-zelf-maatregelen-aan.html

[44] https://boerburgerbeweging.nl/verkiezingsprogramma/

[45] https://www.euronews.com/2023/07/10/mark-rutte-the-longest-serving-pm-in-dutch-history-announces-retirem

nitrogen crisis could continue to persist as the party rejects regulations on agricultural activity.

4.2 Effects of the ETS and Free Allocations

Whether or not the ETS "works" has been subject to both casual criticism and academic research. Martin et al. (2016)[46] thoroughly synthesize the effects of the ETS on emissions abatement. They review sector-level studies showing that emissions across all regulated sectors (energy and industry) declined by around 3 percent in phase I and during the first 2 years of phase II, relative to estimated business-as-usual emissions. Recently, Dechezleprêtre et al. (2023)[47] document a reduction in carbon emissions of about 10% between 2005 and 2012 based on national pollution registries from France, Netherlands, Norway and the United Kingdom. Colmer et al. (2023)[48] also find that regulated French firms reduced emissions by 14% during phase I and by 16.3% in phase II.

However, despite these reductions, conventional wisdom assessing the effects of the ETS lambasts the excess supply of free allowances as a barrier to progress. This dissatisfaction began as early as 2006, when nearly all permits were allocated for free, and permit prices collapsed to zero because the cap set actually exceeded emissions in regulated sectors. In addition, the excess supply of free allowances has allowed some firms to realize windfall profits rather than incur costs to abate emissions. Not only were these firms subsidized to continue emitting, since they received allowances for free, but they had more allowances than they needed, which could then be sold on the permit market. The free allocation has led to companies profiting from the EU carbon market by up to 50 billion euros between 2008-2019.[49] In 2011, Sandbag Climate Action, a London-based think tank, compiled a list of firms that had the most excess allowances after surrendering the requisite number of permits to emit; these "Carbon Fat Cats" come primarily from the iron, steel, and cement industries.[50] Indeed, Tata Steel, the largest emitter in the Netherlands in 2022, ranked as the third largest "fat cat." Additionally, some polluters pass the costs of emissions allowances onto consumers, effectively forcing individuals to bear the costs of the externality. These actions allow the largest emitters to circumvent the consequences of emissions while exploiting market forces.

The use of free allowances has nontrivial consequences. Compare the experiences of the electricity sector and the industrial sector. In 2013 at the start of phase III, the power plants no longer qualified as recipients of free allowances. Subsequently, emissions from electricity and heat production have dropped sharply over the

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[46] https://www.journals.uchicago.edu/doi/full/10.1093/reep/rev016

[47] https://doi.org/10.1016/j.jeem.2022.102758

[48] https://cep.lse.ac.uk/pubs/download/dp1728.pdf

[49] https://carbonmarketwatch.org/wp-content/uploads/2021/06/Phantom_leakage_WEB.pdf

[50] https://sandbag.be/project/carbon-fat-cats-2011/

past decade, by nearly 45% since 2011. However, emissions in heavy industry only decreased 1.3% between 2013 and 2019. In phase III, industrial installations still received about 90% of their allowances for free, clearly showing the absences of incentives to abate.[51] The example of Tata Steel above is a case in point: their IJmuiden plant received more than enough allowances in 2022 to completely subsidize their emissions.

To address the overallocation of free permits, the ETS has been reformed several times. In 2013, ETS rules slightly reduced the amount of free allocation to industry, and the overallocation ceased to generate such large profits for certain sectors.[52] This was free allocation now depended upon centralized, EU-determined benchmarks. What is more, the Market Stability Reserve began operating in 2019, and seeks to control the supply of allowances in circulation by sucking out excess supply into a reserve to be reintroduced later in trading phases.[53]

5 Data

The European Commission publishes the figures from all European businesses and aircraft operators which participate in the EU ETS on its website and the European Union Transaction Log (EUTL).[54] This data includes information on installation emissions, compliance, and freely allocated and surrendered allowances. The Dutch Emissions Authority publishes the Dutch data at the same time. Preliminary emission figures are released in April and the definitive emission figures are released in May.[55] These reports, while they have not been updated nationally since 2014, provide a benchmark for assessing progress on emissions reductions in sectors regulated by the ETS. In general, the EUTL data can be used to track yearly progress on verified emissions and compliance with international regulations within the Netherlands (and across Europe more broadly).

To measure adaptation progress, one could look at the budget of the Delta Fund, which funds the Delta Programme. As of November 2022,[56] the Dutch government reported that an average 1.25 billion Euro per year had been allocated to the Delta Fund up to 2032, an approximately 11.25-12.5 Euro investment beginning from 2022-2023. It is expected that about 55% would be invested into new measures, while 45%

[51] https://carbonmarketwatch.org/publications/eu-ets-101-a-beginners-guide-to-the-eus-emissions-trading-system/

[52] https://carbonmarketwatch.org/publications/eu-ets-101-a-beginners-guide-to-the-eus-emissions-trading-system/

[53] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en

[54] See euets.info for processed and compiled data from the EUTL. Several other dashboards exist for viewing the ETS data. For example see https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1.

[55] https://www.emissionsauthority.nl/topics/reports-and-figures-ets/emission-figures-ets

[56] Date obtained through inspecting webpage's source to determine when these figures had last been updated.

would be used for restoration and maintenance of pre-existing structures.[57] However, as of September 2023,[58] another Dutch government website claimed that the Delta Fund is expected to have 27.4 billion Euro until 2050, falling short of the projected 30.8 billion Euro needed to fund the program.[59] The government is required to update the Delta Programme every year and confirm allocations as a separate budget item line, so tracking this over time could be a way to determine whether the government is sufficiently investing in adaptation.

Conclusion

The Netherlands possesses strong and prepared infrastructure to address the present and future effects of climate change. The Delta Programme has been a robust feature of the country's history that continues to guard against flood risks. This puts the Netherlands in a less vulnerable position than anticipated to adapt to climate change (although one of the more vulnerable countries in Europe despite having some of the highest adaptive capacity in the world).[60] In addition, the Netherlands is bound by EU regulations committing Europe toward a climate neutral future. Policy tools like the ETS attempt to bind the continent's largest emitters and contribute toward lower emissions (despite institutional flexibility from free allowances).

The biggest obstacle that the Netherlands faces in attempting to address climate change is the uncertainty over how to implement policies to solve the nitrogen crisis. It remains to be seen how the government will address this important mitigation issue and revive the country's persisting gridlock on infrastructure projects. Upcoming elections in November 2023 will determine whether pro- or anti-agrarian interests enter government, and if current plans like the closing of up to 30% of Dutch farms could be implemented.

[57] https://www.government.nl/topics/delta-programme/delta-programme-flood-safety-freshwater-and-spatial-adaptation

[58] Date obtained through inspecting webpage's source to determine when these figures had last been updated.

[59] https://english.deltaprogramma.nl/delta-programme/delta-fund

[60] https://gain.nd.edu/our-work/country-index/rankings/