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Justice in Climate Policy

Distributing Climate Costs Fairly

WRR
THE NETHERLANDS SCIENTIFIC COUNCIL FOR GOVERNMENT POLICY

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Preface

This book is a translation and adaptation of the Dutch report *Rechtvaardigheid in klimaatbeleid: Over de verdeling van klimaatkosten*, which was presented to the Minister for Climate and Energy Policy and the Minister of Infrastructure and Water Management in February 2023.[1] In this book, the Netherlands Scientific Council for Government Policy (WRR) argues that all Dutch climate policy should take the just distribution of the costs of climate change into account.

This publication was written by Prof. Suzanne Hulscher (Council Member), Prof. Mark Bovens (Council Member), Dr Annick de Vries (Senior Research Fellow), Gijsbert Werner (Senior Research Fellow), Dr Victor Toom (Research Fellow), and Elsenoor Wijlhuizen, MSc (ex-staff member). Prof. Huub Dijstelbloem (ex-staff member) and interns Ellinore van Driel, Olivier de Vette, Juanita Hernández González, Ivar Tjallingii, and Annemarie de Jong were also involved in earlier stages of the project. Invaluable support was provided by Caroline Buser, Dmitri Berkhout, and Mitra Javanmardi.

Justice in Climate Policy is the product of an extensive study of inter alia the academic literature and policy documents. In addition, we conducted interviews with approximately 60 external experts from the Netherlands, including scientists, politicians, policymakers, regulators, administrators, and representatives of the industry and executive organisations. We are grateful for their contribution to this report.

During the final phase of the project, the various texts were reviewed by Prof. Herman Vollebergh (Professor of Economics and Environmental Policy at Tilburg University, and senior researcher at the PBL), Dr Sanne Akerboom (Assistant Professor of Regulation and Governance of the Energy Transition at Utrecht University), and Dr Mirjam Bult-Spiering (State Council at the Council of State). Specific chapters were reviewed by Prof. Matthijs Kok (Professor of Flood Risk at Delft University of Technology), Prof. Detlef van Vuuren (Professor of Integrated

[1] The original Dutch publication (2023) has been adapted for an international audience but has not been updated.

Assessment of Global Environmental Change at Utrecht University, and senior researcher at the PBL) and Dr Jord Warmink (Associate Professor of Hydraulic Engineering at the University of Twente). We thank them for their comments and valuable suggestions.

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Gijsbert Werner is a senior research fellow at WRR. He was a project coordinator of the team responsible for this study of justice in Dutch climate policy. At the WRR, he also worked on reports on global population ageing and on financially sustainable health care. Previously, he worked as an evolutionary biologist studying social evolution and the evolution of cooperation at the University of Oxford and Vrije Universiteit Amsterdam.

Elsenoor Wijlhuizen (MSc) obtained a research master in Urban and Economic Geography at Utrecht University. From 2021 until 2023, she was a research fellow at the WRR. After that, she worked as a Social Innovation scientist in the Energy Transition Studies department at TNO, a Dutch not-for-profit research organization. She is currently a PhD candidate at the Copernicus Institute for Sustainable Development at Utrecht University. Her research focusses on international regulations for a just transition in agriculture. Her PhD is part of the CROP-XR project that is dedicated to developing climate-adaptive crops.

Victor Toom is a research fellow at the WRR. He holds a PhD in Social Sciences from the University of Amsterdam (2010). He held academic positions in England and Germany (2010–2018). He is an interdisciplinary scholar, with many publications in, amongst others, the *British Journal of Criminology*; *Forensic Science International: Genetics; Science, Technology & Human Values*; *Security Dialogue*; *Studies in History and Philosophy of Biological and Biomedical Sciences*; and *Medical Anthropology*.

Mark Bovens was a member of WRR from 2013 until 2024. He is the co-founder of the Utrecht University School of Governance in the Netherlands where he holds the chair of Public Governance. He studied Law, Political Science, and Philosophy at Leiden University and at Columbia University Law School in New York. He has published more than 20 monographs and edited volumes in the field of politics, government, and public policy.

Suzanne Hulscher is a member of WRR since 2019. She leads the cluster in Marine and Fluvial systems, Department of Civil Engineering at the University of Twente. She studied Theoretical Physics at Utrecht University and received her PhD at the Institute of Marine and Atmospheric Studies, Utrecht University, on work partly done at Deltares. Her work mainly involves rivers, coasts, and offshore areas. Herein she investigates physical processes as well as adaptation measures in these water systems to deal with climate change-induced issues as sea-level rise, extreme weather patterns, and more extreme river discharges. She (co-)authored over 200 journal papers and she has chaired the WRR study on climate justice.

Chapter 1
Distributing Climate Costs Fairly

Contents

1.1 Climate Policy as a Matter of Justice

A major social outcry arose in France in 2018. There were prolonged and violent street protests and unrest. The rise of the so-called *gilets jaunes*, the 'yellow vests', was sparked by a planned climate measure to curb carbon emissions. The French government, led by President Macron, had announced a sharp rise in the carbon tax, which lead to a spike in fuel prices.[1] Large sections of the population thought this was grossly unfair. These included many rural French, who rely on mostly older-model cars to get around due to inadequate public transport. But small business owners were also affected, because they can only afford to run relatively cheap diesel vans and cars. The protesters objected that these groups were disproportionately disadvantaged, and their livelihoods threatened, because they had no alternatives. This was in stark contrast to the wealthy city dwellers, who had access to

[1] Willsher (2018), Grossman (2019), and Leroy (2020).

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reliable public transport and more fuel-efficient cars. The fact that the airline Air France did not have to pay an extra tax for the jet fuel they use, while they cause massive greenhouse gas emissions, only heightened the anger. The case of the yellow vests shows how major social unrest can arise if the distribution of the burden of climate policies is perceived to be unfair. That is the subject of this book.

The climate policy debate has entered a new phase. The debate started with the question of whether the earth was actually warming up due to human activity. The next question was what to do about it. Some answers to those questions have since been formulated. Today, the debate is increasingly about who should foot the bill for climate measures and the effects of climate change. For example, how can the costs of expensive sustainability measures for homes and industries be fairly distributed? On an almost daily basis, we are confronted with headlines like: "*High energy surcharges hurt businesses*" and "*Run on sustainability loans, but not for lower incomes*".[2] But the effects of climate change also cost money, as is becoming increasingly clear. One summer, the question is who will pay for the damage caused by extreme floods. The next summer the same question is raised about the effects of extreme drought.

In this book, we, members and staff of the Netherlands Scientific Council for Government Policy (WRR), consider climate policies in the light of distributive justice. We ask how a society can distribute the costs of climate change in a way that is fair, and we offer recommendations on how to embed distributive justice in its policies.

Although this book is about Dutch climate policy, and the recommendations are addressed to the Dutch government, the findings will also be relevant to policymakers and other stakeholders in many other countries. First, the Netherlands is one of 27 countries that make up the European Union (EU).[3] All these countries have to take account of EU legislation such as the Green Deal and the Emissions Trading System (ETS). Second, many countries are bound to various international treaties, such as the Paris Agreement. Third, climate change is global, and so calls for global climate action. Finally, the case studies presented in this book have parallels with climate policies in other countries. These countries also have to reduce their greenhouse gas emissions, implement measures to deal with a changing climate, and they also face increasingly frequent damage from extreme weather events. The examples presented here for distributing the costs of climate change in the Netherlands thus have much broader relevance, both for countries within and outside the EU, and in the international and transnational context.

[2] Van de Hulsbeek (2022) and Van Weezel (2022).

[3] See the glossary for abbreviations, their definitions and short descriptions.

1.2 Climate Policy and Distributive Justice

This book is about distributive justice in relation to climate policy. We will first explain what falls under climate policy, what costs (and benefits) have to be distributed and what is understood under justice in this context.

1.2.1 Climate Policy in a Broader Perspective

We use the term 'climate policy' in a broader sense than many from the world of policy and governance might use it. It concerns both what in the policy world is called *mitigation and adaptation*, as well as repairing climate damage (Fig. 1.1).

Mitigation policies are intended to limit climate change. They mostly involve measures aimed at reducing emissions of CO_2 or other greenhouse gases. Examples are policies to accelerate the transition to renewable energy sources (such as solar and wind farms), or providing grants for the insulation of houses.

Policies to help us adapt to the negative effects of climate change are known as *adaptation policies*. These policies involve measures to prepare our society for a changing climate, such as increasing the height of dykes or adapting cities to the effects of heatwaves.

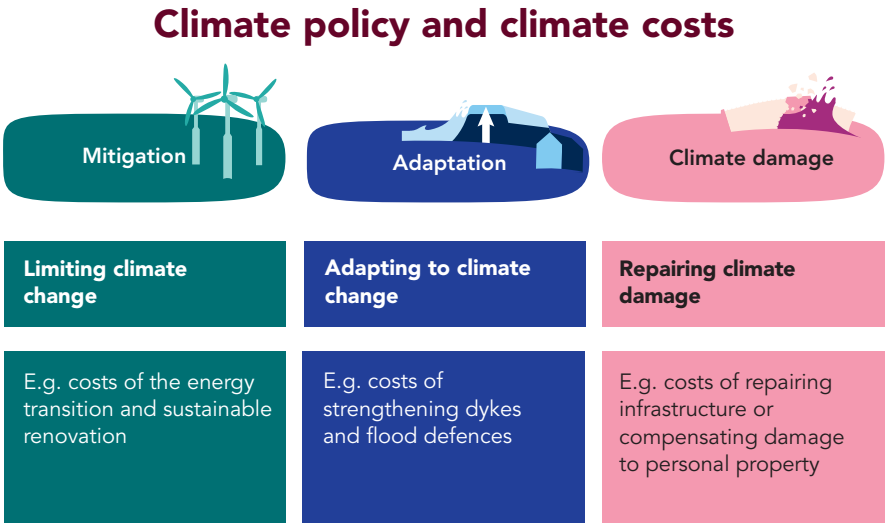

Fig. 1.1 Climate policy in a broader perspective: mitigation, adaptation and repairing climate damage

The third category of climate policies involves measures to repair and compensate for *climate damage*. Despite all our mitigation and adaptation efforts, climate change will continue to cause damage that will often have to be repaired. Examples include repairing infrastructure destroyed by floods and compensating farmers for crops that have failed due to extreme drought.

Most people, when they think of the term 'climate policy', will associate it with mitigation policies, and sometimes adaptation policies. This book emphatically also discusses climate policies aimed at dealing with climate damage. It is, after all, important to consider *all* climate-related costs, and possible policy instruments, when considering how to fairly distribute these costs. This will become all the more important as climate change progresses, its impacts become more visible, and the costs of climate damage increase.

1.2.2 What Costs Need to Be Distributed?

The term *distribution* is the second central concept of this book. A variety of matters are distributed as part of climate policy, the foremost of which are the costs of climate change. But what exactly do we mean by this? In short, it involves the costs to society of implementing the three types of climate policies, i.e., the combined costs of climate mitigation, adaptation and repairing climate damage. Examples are the costs of the transition to a renewable energy supply (mitigation), the costs of strengthening dykes (adaptation), or the costs of repairing damage caused by extreme weather events (climate damage). The total climate costs are expected to be substantial indeed (see Box 1.1).

Box 1.1: The Costs of Climate Policy

How much will it cost to implement climate policies? Is it something we need to worry about? We first look at the expected costs of mitigation policies. Mitigation measures will be costly and involve far-reaching changes to the physical environment. The Netherlands Environmental Assessment Agency (PBL) roughly estimated the cost of meeting the targets of the 2019 Dutch Climate Agreement at more than €3 billion/year until 2030.[4] Converted to 2020 euros, this amounts to about €170 per capita per year. Another estimate puts the total cost of the energy transition between 2015 and 2050 at €350 billion,[5] or almost €20,000 per capita.

(continued)

[4] Koelemeijer and Strengers (2020).

[5] Duyster and Terwel (2021).

Box 1.1 (continued)

In addition to the costs of mitigation, there are also the costs of adaptation policies, such as heat-proofing cities or increasing the height of dykes. The exact costs of the involved measures are difficult to estimate, and depend heavily on the way a section of dyke has to be improved, for example. Many of these plans have not yet been worked out in detail, especially the longer term measures. There are also the costs of other adaptation policies, such as measures for living with heat and drought. For flood risks only, the Delta Fund has earmarked €1.5 billion annually to implement the Delta Programme.[6]

Finally, the cost of climate damage is also expected to rise sharply in the coming decades. Again, the estimates are subject to considerable uncertainty, because the magnitude of climate damage will depend on which emissions scenario becomes reality. Swiss reinsurance company Swiss Re published estimates for various climate scenarios last year.[7] They conclude that, in the worst case scenario for 2050 (3.2 °C temperature rise, high economic sensitivity to climate change), the impact of climate damage on the Netherlands could amount to 7.0% of the country's GDP. Converted to 2020 euros, this would amount to over €3200 per capita every year.[8] If global warming is limited to 2.0 degrees by 2050, the researchers predict the costs of climate damage will be between 2.4% and 5.2%. That amounts to between €1100 and €2400 per capita per year (again converted to 2020 euros).

Clearly, it is not possible to precisely estimate the costs of mitigation, adaptation and climate damage. This is also partly due to the fact that the measures are interdependent: if the world invests more in mitigation, the Netherlands may spend less on adaptation and climate damage. Looking at the estimates, however, there can be no doubt that the three types of climate costs combined will amount to a considerable sum for the Netherlands, and the distribution of these costs has the potential to become a disruptive social issue.

[6] Deltacommissie (2021). The Delta Fund falls under the national budget and has been established for a period of 13 years. The fund is extended every year and thus has a total budget of about €19 billion.

[7] Swiss Re Institute (2021).

[8] Incidentally, the estimate of 7% of GDP for the costs of climate damage in the Netherlands is relatively low. Based on the same assumptions, the costs for the whole world amount to 18.1%, and for Europe to 10.5%, see: Swiss Re Institute (2021).

There are other consequences of climate policies besides costs that also have to be distributed. Examples are the fair distribution of carbon reduction targets (who needs to reduce their emissions and by how much?), the fair allocation of subsidies and grants, and the fair deployment of flood protection measures. Yet another example is the 'spatial footprint' of the climate measures. Many forms of renewable energy, like solar and wind farms, require significantly more land to operate than traditional, 'grey' means of generating energy. That spatial footprint also has to be distributed, which will inevitably be to the disadvantage of some groups. A familiar case in point is the resistance to wind turbines that is voiced in various regions of the Netherlands and other countries. This also involves major issues to do with the distribution of climate costs that will only become more acute as climate change progresses.

1.2.3 Distributive and Procedural Justice

The third key concept in this book is *justice*, or fairness. The central question of this book is how to assure fair distribution in climate policymaking. This is known in the academic literature as *distributive justice*,[9] and concerns the question of whether the proposed distribution of a specific scarce good can be characterised as fair. Clearly, this is not only an issue of climate policy, but also affects other areas such as social security, healthcare and income distribution.

A second perspective on justice discussed in this book is that of *procedural justice*.[10] Procedural justice concerns the fairness of decision-making processes. This is an important concept in law (as for example in procedural law), and in public administration (as in the principles of good governance). But it also an important concept of politics. In fact, it is at the heart of our democracy. It is about the degree to which stakeholders can participate in decision-making, about giving due consideration to all interests and perspectives, and it is about providing reasonable opportunities to voice opinions and object to decisions. Although this book primarily discusses distributive justice, the concept of procedural justice is closely related. Painful decisions involving the sharing of burdens are more likely to be accepted by the public if they feel the decisions were made on reasonable grounds, and that they themselves were treated fairly in the process.[11]

There are also other perspectives on justice, which we will not discuss further in this book. One of these is 'justice as recognition', which concerns respecting citizens and fairly representing their values and interests (e.g. the recognition of minority groups). The concept of justice is also often associated with *retribution* for

[9] Rawls (1971) and Davidson (2021a, b).

[10] See: Jenkins et al. (2016).

[11] Van den Bos (2005) and RIVM Corona Behaviour Unit (2021).

wrongs done, or retributive justice, especially in criminal law (when people think it is fair to punish someone for a crime, for example).

1.3 Why Is Distributive Justice Important?

The increasing costs of climate change are a major source of social concern, which could undermine public support for climate measures. We earlier mentioned the yellow vests in France–a social crisis sparked by the costs of climate policies that was extremely difficult to control. The social unrest led to major delays in the introduction of carbon reduction measures.

There are similar concerns among the Dutch population. For example, a recent study by Statistics Netherlands (CBS) revealed that 76% of Dutch people are concerned about climate change and the associated climate damage, and 42% are in favour of the Dutch government introducing more far-reaching climate policies.[12] At the same time, 50% of the population is somewhat or very concerned about the costs of climate policies.[13] Social debates–and even public outcry–occur with some regularity in the Netherlands concerning the distribution of climate costs. One such example is the opposition to the grant scheme for electric cars, which some scornfully call the 'Tesla subsidy'. Although replacing part of the vehicle fleet with electric cars may well have a positive effect on the climate, many people feel it is unfair that the grant particularly benefits the relatively well-to-do.

The percentages above highlight the importance of giving due consideration to distributive justice in climate policymaking. If the costs of climate change are unfairly distributed, the public's support for climate policies will wane. Several studies have confirmed that the application of distributive justice has a strong influence on public support for climate measures.[14] It is thus a crucial but underexposed component of climate policy (Box 1.2). In this book, we suggest how distributive justice can be given a place in climate policy. Due attention for fair distribution of the climate burden will not make the choices themselves less painful, but it can help to build more support for climate policies. This will in turn contribute to a more effective climate policy. As we saw in the case of the yellow vests in France, if the public do not support a policy, it can lead to social resistance and delay the implementation of necessary measures.

[12] In comparison with 25% who oppose more far-reaching climate policies, see: CBS (2021).

[13] CBS (2021). In Chap. 8, we explain the results of our own research into distributive justice and climate policy, whereby we briefly touch on the public's attitudes towards climate change. Although this was not the main theme of this study, the results reflect those of Statistics Netherlands: 89% of the respondents said that climate change was real, 84% believed that climate change was a serious problem and 76% were concerned about climate change.

[14] We look at this in more detail in Chap. 7.

Box 1.2: The European Just Transition Fund
Much thought has already been given, for example at the European level, to how to assure just transitions, as in the energy transition. The concept of 'just transitions' is now commonly used in both science and government policy-making. One example is the Just Transition Mechanism developed by the EU, which targets those regions, industries and employees that face the biggest challenges in the energy transition. The aim of this mechanism is to ensure that the social and economic consequences of the transition remain bearable for the affected areas and people. Here, the distributed costs of transition policies are eased for the affected area based on the concepts of solidarity and capacity. One of the components is the Just Transition Fund (JTF), worth €19.2 billion. This is a fund for member states with regions with a heavily fossil-based economy, where the majority of people are dependent on the fossil sector for jobs. Member states decide themselves which regions should receive the most support in the transition to renewable energy. In the Netherlands, the regions of Groningen, Zeeuws-Vlaanderen, IJmond, Groot-Rijnmond, West Noord-Brabant and Limburg were selected, based on criteria such as industrial greenhouse gas emissions, the share of the industry in GDP and employment, and the unemployment rate. The province of Groningen was eligible for about half of the total budget of over €620 million received by the Netherlands.[15]

1.4 Scope of This Book

Above we briefly described what this book is about. In this section, we set out the scope of our research, i.e. we explain what the book is *not* about. As mentioned earlier, the central theme is distributive justice, but we also pay attention to procedural justice. The aim of the book is to answer the question of how to fairly distribute the costs of climate change and other costs and benefits ensuing from climate policy, such as emissions reductions requirements and emissions rights.

This means we do *not* discuss, or only touch upon, other important climate justice issues, such as the international dimension of distributive justice in climate policy. Distributive justice in relation to international climate policy has been the subject of much research, for example where it concerns inequalities between various countries. This is a hotly debated theme in the international political arena.[16] For example, countries with historically low emissions are often most at risk from

[15] Parliamentary Papers II, 2020/2021, 21 501-08, No. 817.

[16] For example, the COP27 climate conference in Sharm el Sheikh in November 2022.

climate change. This vulnerability is magnified by a lack of resources and capacity to cope with rising sea levels or increasing drought. This is a very serious global issue and closely connected to the subject matter of this book. However, our scope is limited to distributive justice in relation to Dutch climate policy.

Of course, this is not to say that the international context is irrelevant for Dutch climate policy. The Netherlands is of course party to the Paris Agreement of 2016, and a member of the European Union. This means that the Netherlands' commitments to climate targets are largely set against an international and supranational background. However, the distribution of the associated costs of climate change is a matter of national policy, and so this aspect does fall within the scope of this book.

Climate change and climate policies also lead to inequality between generations. Future generations will face the negative impacts of the carbon emissions produced by the current generations for many decades to come. After all, global warming will not simply come to halt once the transition to a sustainable society has been achieved in 2050. However, the distribution of climate costs between current and future generations is not discussed in this book either. Our research focuses on the distribution of costs under climate policies that effect the households, businesses and sectors of today. In Box 2.3 of Chap. 2, we do discuss *principles* that could be applied for distributing climate costs between current and future generations. Box 7.3 in Chap. 7 (on procedural justice) illustrates one way in which the interests of future generations could be taken into account in current climate policy. The WRR itself previously contributed to a volume on safeguarding the future of young people ("*Jongeren en het zorgen voor hun morgen*") with an essay in which we discuss a fairer approach to dealing with the interests of future generations.[17]

Nor does this book discuss the question of what can be considered *sensible* climate measures. We do not consider how to make our energy system more sustainable, or whether solar, wind, hydro, tidal or nuclear power is the most efficient solution. Nor do we ask whether the Netherlands should increase the height of its dykes or take a different approach to protecting itself against rising sea levels. Other books and institutions have examined these questions; ours focuses on the fair distribution of climate policy effects, and in particular climate costs.

It is also important to clarify that the WRR does not take a position on what *exactly* constitutes fair distribution. We do not give a definition of a uniform system of fair distribution that always works for everyone. To the contrary, climate costs will likely be distributed differently in each situation, and the choice for a particular distribution will be a political one. Instead, we discuss aspects that could be taken into account in cases of distributive justice, and our intention is to suggest *principles* that policymakers and politicians can apply to make well-considered choices. We also examine *how* we can ensure that climate policies pay sufficient attention to distributive justice, today and in the future.

[17] De Vette et al. (2022) and RVS (2022). For further discussion on this topic, see: Krznaric (2020).

So, this book is primarily about distributive justice in relation to climate policy. In many cases, the distribution of the costs of climate change will not be entirely in the government's control. It is not always possible to predict where the most damage will be felt, and so this cannot be completely covered by climate policy. Similarly, when discussing how to share the costs of mitigation and adaptation, it is important to emphasise that climate policy is not only about unwanted costs that we would prefer to avoid if we could. The investments we make today will pay off in the future. First, if global warming is not stopped, the financial damage will soon exceed the costs of the energy transition. Second, the transition will increasingly provide the public with access to renewable and more affordable sources of power such as solar and wind energy. In fact, scientists expect that the investments in the energy transition will actually save the public money in the long run.[18] In addition, there are secondary benefits that are neither financial in nature nor directly related to climate, such as less air pollution and reduced geopolitical dependence on fossil fuel-producing countries. We do not explicitly examine such benefits in this book, but they obviously form an essential factor in political decision-making.

1.5 Guide for Readers

As mentioned, this book is about distributive justice as part of Dutch climate policy. Chapter 2 discusses the theory: what principles could be applied to fairly distribute the costs of climate policy? We identify ten relevant principles, stemming from four aspects of justice. One such category is *capacity and solidarity*. The well-known principle of 'the broadest shoulders should bear the greatest burden', referred to in this book as 'distribution based on capacity', is an example of a distribution principle within that category. To describe these ten principles, we conducted a review of academic literature from the fields of ethics and political philosophy.

In Chaps. 3, 4, 5, and 6 we go on to examine four case studies of Dutch climate policy. We explain how the distribution principles work in each case, as well as the effects of distributing the costs in this way. An important observation here is that these principles are often *implicit* to a given policy measure, while an *explicit* discussion about fair distribution is usually lacking. We will discuss this aspect in detail in this book. The four case studies are:

1. *Sectoral emissions reduction targets*. Here, we take a closer look at the distribution of the emissions reduction targets of the various sectors, for example as established in mitigation policies.

[18] For example, a recent Oxford University study showed that, under reasonable assumptions, a rapid energy transition would likely save thousands of billions of euros worldwide, due to the rapidly falling cost of renewable energy, see: Way et al. (2022) and INET (2021).

2. *Energy transition grants and subsidies for businesses and households*. We look at the distribution of grants and subsidies and how these are financed. This too is a form of climate policy aimed at mitigation.
3. *Flood protection policies.* Here we focus on flood protection policies in a changing climate, and the costs of these policies. These are policy measures aimed at adaptation.
4. *Climate damage policies*. Here, we focus on the distribution of compensation following extreme precipitation events. This involves the third type of climate policy distinguished in this book: policies aimed at repairing and compensating for climate damage.

These four case studies were selected because they represent the different challenges of climate change and involve different ways of distributing the burdens. Some involve national schemes, while others concern policy instruments that are applied to a specific region or group. The involved stakeholders hence also vary, from citizens and businesses to government bodies.

It is important to stress that these case studies are only intended to serve as *illustrations* of issues in Dutch climate policy. Of course, there are also other ways that the costs of Dutch climate policy are distributed. Other suitable case studies involving other aspects of distributive justice include: What is a fair feed-in tariff for solar panels if the costs are partly borne by households without solar panels?[19] Who should pay for heat-proofing cities and who benefits from the measures? These issues of fair distribution are not explicitly discussed in this book, but they could also be analysed in the light of the ten distribution principles.

After analysing the role of distributive justice in current Dutch climate policy using the case studies, in Chap. 7 we go on to discuss the importance of fair *procedures*. We describe ways in which the public can be involved in climate policy, and explain how fair procedures can help to build public support for climate policy.

In Chap. 8, we analyse the Dutch public's perspective of fair distribution in relation to climate policy. We set out to discover which systems of distributing climate costs are considered fairest based on a survey of a representative sample of over 2300 respondents. The survey questions concern the distribution principles discussed in Chap. 2 and are formulated to correspond to the four case studies. The results of the survey provide an insight into the public's perspective of distributive justice.

In the final chapter, we summarise the main findings of our research. The key message is that all Dutch climate policy should take the fair distribution of the costs of climate change into account. In addition to effectiveness and legality, climate measures should also be assessed from the perspective of fairness. Failure to do so could erode public support for climate policy. The most important recommendation

[19] The 'netting scheme' allows households and small businesses to feed the electricity they generate back into the electricity grid and offset it against their own consumption. Households who export more power to the grid than they import from it are paid for the surplus by the electricity company.

is that the fair distribution of climate costs should be explicitly discussed and elaborated during the policymaking process, *before* a policy is implemented. This will also help to make policymakers more aware of potential unintended and unwanted side effects of their proposed policies, and result in a more balanced and transparent political debate. At the end of our book, we offer three recommendations that could help to embed the role of distributive justice in Dutch climate policy.

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Chapter 2
Distributive Justice

Contents

2.1 Principles of Distributive Justice

Distributive justice is an important element of climate policy. Which sector needs to reduce the most carbon emissions? How can you fairly distribute the enormous costs of the energy transition? Or of adaptions to the unstoppable sea level rise? Who will pay for the damage caused by extreme rains or droughts? The concept of distributive justice can be used to find answers to these questions. We can draw on a rich literature to this end, because issues of distributive justice are everywhere in society. Over the past centuries, political philosophers, philosophers of law and ethicists have considered how governments can fairly redistribute burdens among their citizens, and under what principles.

In this chapter, we draw on that rich literature to identify ten principles of distributive justice that are relevant to climate policy. We have divided these principles

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into four categories: ‘greatest utility’, ‘individual rights and freedoms’, ‘solidarity and capacity’ and ‘contribution and benefit’. Because our aim in this book is to introduce a justice perspective to climate policy, in Box 2.1, we briefly discuss some important ethical and political-philosophical schools that discuss this. Although not exhaustive, the distributive principles we describe in this book can largely be traced back to these schools.

Box 2.1: Origins of Distributive Principles[1]

Where do distributive principles come from? There are two lines of reasoning in the ethical-philosophical literature that describe what is ‘just’: deontology and consequentialism. In *deontology*, the question of what constitutes just distribution starts with considering individual rights and duties (the literal translation of deontology is ‘duty’). Duties can be negative–thou shalt not steal or kill– but also positive, for example helping those in need. *Consequentialism* looks primarily at the broad consequences of actions. Central to this thinking are the notions of collective utility and well-being. More specifically from a consequentialist perspective, actions are ‘good’ if they contribute to a common good or general well-being.

A few political-philosophical schools can subsequently be distinguished in Western thought. *Liberal egalitarianism* and *libertarianism* have a deontological starting point. These schools put individual rights at their centre, but differ strongly in their view of the role of government. Liberal egalitarianism accords important roles to the government, such as levying taxes to help lower-income households. Property and wealth, after all, are the result of social cooperation and cannot exist without society. Libertarianism holds that the government is only required to ensure that citizens do not harm each other, and respect each other’s rights. The individual and their freedom are pivotal. This automatically implies an important role for individual responsibility. Libertarian thinkers are critical of egalitarian principles of distribution.

Utilitarianism is the most important consequentialist approach in relation to climate justice. Here, collective outcomes are an important measure of distributive justice. The goal of government intervention and redistribution is not to protect individual rights and property, but rather to maximise the collective benefit.

The above schools of ethical and political-philosophical reasoning are all potentially useful for climate policy. For example, a government that allocates emission rights to stop polluters from harming the climate and environment can base its policy on both utilitarian and liberal egalitarian viewpoints.

[1] For a detailed description of these schools and their application to climate policy, we refer to the WRR Working Paper on “Distributive Justice in Climate Policy” written by Marc Davidson (2021a); see also: Davidson (2021b). The work of Davidson (2021a) was an important body of reference material for the elaboration of the principles in this chapter.

2.2 Four Categories of Distributive Principles

Distributive justice can involve several principles in relation to climate policy. Below we describe four categories of principles.

- *Greatest utility*. Social outcomes are central here. The applicable distributive principle is: the manner of distribution maximises the social benefit. We call this a distribution based on 'greatest utility'.
- *Individual rights and freedoms.* This is all about legal certainty and legal equality. Citizens and businesses must be able to rely on existing agreements and rules, they must be treated equally, and they must be held to their individual responsibility. Relevant for climate policy are the distributive principles of 'per capita', 'based on existing rights' and 'based on individual responsibility'. These three principles focus on existing individual rights, acquired status and responsibilities.
- *Capacity and solidarity.* This is about the effects of distribution systems on the social positions of citizens. These positions must not mutually reinforce each other to the benefit of higher social groups (or in any case not too much); it involves an appeal on capacity and solidarity. Distributive principles in this category are 'based on capacity', 'benefit the least well-off' or offer everyone 'sufficiency'.
- *Contribution and benefit.* Here we focus on citizens' and businesses' contribution to climate change, but also how much benefit they derive from their actions. It therefore concerns both the behaviour and interests of citizens and businesses and includes the principles of 'polluter pays', 'beneficiary pays' and 'sustainability pays'.

Figure 2.1 provides an overview of the four categories. In the next section, we explain these distributive principles in more detail.

Fig. 2.1 Four categories of distributive principles in climate policy

2.3 Distribution Based on Greatest Utility

An important consideration in distributive justice is which measures will bring the policy objective closest. In distribution based on greatest utility, the maximum effect is the measure of success. In climate policy, this benchmark is often the reduction of greenhouse gas emissions. Here, investments may focus on the major polluters, where a lot of emissions can be reduced or prevented. The closer the deadline for meeting the climate targets becomes, the more likely this principle will be the last option available. In practice, this principle is already an important starting point in shaping policies today.

According to this principle, the fairest system of distribution is that with the greatest impact. Only the result counts.[2] The 'greatest utility' principle thus has characteristics of utilitarian thinking.[3] In practice, this principle is often complemented by cost-effectiveness or efficiency–that is, by the relationship between the effectiveness and the cost of a measure. This is often an important parameter in mathematical models used to analyse climate measures.

However, the example at the beginning of this book shows that things are not always so simple in practice. France could claim that increasing the carbon tax was fair from the point of view of 'greatest utility', as it is a very effective measure for preventing emissions. But that does not mean it was perceived as fair by the public, because the negative effects of this policy would mainly be felt by less wealthy citizens and businesses. This also illustrates the general objection to distributive justice based on greatest utility. Only considering the effect on the policy objective–in this case carbon reduction–is to neglect the fairness of the resulting distribution.

2.4 Individual Rights and Freedoms

In distribution based on greatest utility, the rights of individual citizens and businesses may take second place to the interests of the general populace. Furthermore, some citizens or companies may have to bear a much heavier burden than others. This can be difficult to reconcile with important principles of law, such as legal certainty and equality. In the next category of distributive principles, the individual takes centre stage. Below we discuss three principles that take into account individual rights, freedoms and responsibilities.

[2] We define greatest utility here in terms of climate measures with the greatest impact, i.e. we confine utility to a specific policy domain: climate policy. Obviously, there are also broader definitions, such as the greatest good for society in general. This broader definition makes estimating the effects even more difficult.

[3] Bentham (1789), Mill (1863), and Singer (2002).

2.4.1 Distribution Per Capita

The 'per capita' distributive principle involves distributing costs or benefits equally between the citizens of a region or country.[4] Based on this starting point, it is unfair if some groups have to contribute more to carbon reductions, or get more subsidies or emission rights, than others in a similar position. After all, every citizen is equal before the law and has the same rights and obligations as any other citizen.[5] In other words, equal rules for all.

This distributive principle comes into play, for example, in the debate about who owns natural resources. The distribution of the carbon emissions budget is derived from this. According to this principle, the carbon budget should be divided equally per capita[6]; each person is allocated an equal share of the carbon budget.[7]

A per-capita system of distribution is also conceivable for financing the energy transition, where everyone contributes an equal amount. It means people on a narrow budget will contribute as much as those with plenty of money. A variation on this principle is that every household or business contributes the same amount, regardless of the number of people in it.[8] A real-life example is the energy tax relief scheme for Dutch citizens announced in 2021, a response to the rise in gas prices. This general tax measure means that households will spend an average of some €400 less on energy costs annually. This generic measure applies to every household regardless of income or size.[9]

Opponents of a per-capita distribution of climate costs cite two objections. First, it does not take an individual's income or capital into account. For someone on a low income, even a slight increase in their energy bill could be a major drain on their budget. But a per-capita tax relief scheme for energy also benefits people who can easily afford the higher energy bill. So, the rules are not so equal after all.

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[4] See: Bode (2004).

[5] In moderate libertarianism, the basis for this is that everyone has an equal right to natural resources. The costs and benefits must be shared equally between all citizens, see: Otsuka (2003).

[6] Singer (2002).

[7] In practice this encounters difficulties. If every country is allocated a per-capita carbon budget, and also distributes emission rights in the same way, this will mean that countries with low emissions will be left with unused emission rights, see: Davidson (2021a).

[8] Per capita literally means 'per head'. Strictly speaking, a fair distribution system would have to correct for, say, the number of people in a household, or the number of employees of a company. So, a system of equal distribution per household or business is not strictly a 'per capita' system, but such distributions have a similar starting point.

[9] This concerns a generic measure involving additional tax relief on energy bills *and* a reduction of the electricity tax rate. The additional tax relief is €265 including VAT. This is a fixed amount per grid connection (so independent of consumption) that is deducted from the energy bill. The reduction of the electricity tax rate *does* depend on consumption. Both measures combined would mean that a household with average consumption would have to pay around €422 less energy tax per year, see: Rijksoverheid (2021).

Second, per-capita distribution does not take into account citizens' own contribution to climate change. Surely the distribution measures should take account of how much citizens' own behaviour contributes to global warming? This would amount to an incentive to change behaviour, and so make the measures much more effective.

2.4.2 Distribution Based on Existing Rights

Another important principle of law is *legal certainty*: agreements made in the past must be honoured. Citizens and businesses must be able to trust that previous investments will not be devalued simply because the government has decided to change course. So, previously raised expectations, existing practices, positions won in the past, and previously acquired rights all play a role in deciding on a system of just distribution.[10] In other words, according to this principle, existing ownership rights or past investments should play a defining role in the distribution of climate costs.[11]

Existing rights particularly play a role in the allocation of carbon budgets. The current practice is that countries that emitted a lot of CO_2 in the past can count on getting additional emissions rights. An emissions right is the right to emit greenhouse gases, such as defined by the European Emissions Trading System (EU ETS). The rationale behind this is that these countries made costly investments in the past, when climate change was not a big issue, and these investments would otherwise be negated. Conversely, countries with historically low emissions are allocated less emissions rights.

We also see the distribution of compensation based on existing rights in Dutch climate policy. An example is the Coal-Fired Power Generation (Prohibition) Act, passed in late 2019. This act banned coal-fired power, suddenly rendering the costly furnaces of coal-fired power plants worthless. Energy companies such as Vattenfall, the operator of Amsterdam's Hemweg power plant, consequently suffered financial losses. The Ministry of Economic Affairs and Climate Change and Vattenfall eventually agreed on compensation of €52.5 million.[12]

The 'existing rights' principle is at odds with the principle of equality. Some groups are exempted and continue to benefit from the old, less stringent rules. So, not everyone is equal. In this example, four other coal-fired power plants were eventually allowed a transition period of up to ten years. The operators will be able to recover most of their previous investments and in the meantime make their plant suitable for non-fossil electricity generation.[13]

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[10] Knight (2014) and Bovens (2011).

[11] In the literature, a distribution based on existing rights is often called 'grandfathering', see: Knight (2014) and Bovens (2011).

[12] Parliamentary Papers II, 2019/20, no. 019Z24280, ECER (2020), and European Commissie (2020).

[13] Parliamentary Papers II, 2019/20, no. 019Z24280, Nash (2000), Woerdman et al. (2008), Bovens (2011), and Vollebergh (2022).

2.4.3 Distribution Based on Individual Responsibility

In a country based on the rule of law, citizens not only have rights, but also responsibilities. The government cannot solve all their problems for them. This principle assumes citizens and businesses have an individual responsibility to anticipate the consequences of climate change, or to contribute to climate change mitigation. The distributive principle of 'individual responsibility' says that everyone must bear their own burdens and take their own precautions. The individual is key, and responsible for their own actions. Consequently, the costs of climate change must in principle be borne by citizens and businesses themselves. They can do this by taking out insurance against climate risks, for example. According to this principle, a distribution system based on income-dependent levies or compensation would be out of the question. Individual responsibility can also play an important role in other areas of climate policy. For example, under this principle, homeowners are themselves responsible for making their homes more sustainable. And anyone who knowingly builds their house in a flood-prone area will themselves need to take flood protection measures, and also bear the costs if things go wrong.

One area of tension in this principle is how to distribute the costs of climate damage. We can make citizens or businesses individually responsible for insuring or otherwise protecting themselves against climate damage from floods and storms. Or we can make them bear the costs of any damage that occurs themselves under the principle of individual responsibility. But climate damage is by definition at least partly the result of greenhouse gases emitted by others, who cannot be individually identified or held responsible. Is it fair to make citizens and businesses wholly responsible for preventing or bearing the extremely high costs of climate damage, while they do not bear full responsibility for it?

2.5 Capacity and Solidarity

The objection to many of the principles discussed so far is that their application could lead to the disproportionate distribution of climate costs. By disproportionate, we mean that some citizens or companies will have to bear much higher costs, or in fact benefit much more, relative to their financial position. The question then is what constitutes proportionate distribution. The following three principles try to answer this question.

2.5.1 Distribution Based on Capacity

Households vary hugely in their financial situation. Some households are rich, others are less well off. This clearly means they also have varying financial capacity. Where an additional income tax of 10% will have little effect on wealthier households, poorer households may no longer be able to meet their basic needs under it.

A distribution system based on capacity takes account of differences between the economic positions of citizens, or between citizens and businesses. Citizens and businesses with greater capacity will bear a larger share of the climate costs or will receive less grants. In other words, the broadest shoulders bear the greatest burden. The underlying idea is that growing up in a wealthy family, or happening to be very talented, is not something someone themselves has earned. In practice, applying this principle would involve the redistribution of resources from the rich to the poor.

We find this principle in many areas of Dutch life. On the cost side, we see this reflected in progressive tax systems, where higher incomes are taxed relatively more to bolster the government's finances (see Box 2.2). On the benefit side, we see this reflected in income-dependent schemes like the rental allowance, childcare allowance and healthcare benefit.[14]

One objection to a system of distribution based on capacity is that, if it is implemented too rigorously, it can remove the incentive to act. For example, fully compensating people for high energy bills could discourage them from insulating their homes. We therefore also discuss two other distributive principles that have solidarity as their starting point, but retain incentives to encourage people to action.

Box 2.2: Public Funds: Taxation Based on Capacity?

This book frequently refers to the use of public funds for financing measures such as subsidies or compensation schemes. Although some climate measures are paid for with special levies, in many cases these are financed from public funds. To draw a complete picture of the funding system, we will need to take a closer look at it. The effects of distributing levies and taxes to raise public funds also apply to the distribution of climate costs. Does having a progressive tax system automatically mean that climate costs will be distributed based on capacity? The reality is more complex. If you examine the distribution of public funds more closely, the system is less progressive than you might expect. One explanation is that the tax system has several components, such as wage and income tax, sales taxes, VAT and various premiums.[15] By no means all those components are distributed progressively. In fact, a recent policy brief published by the CPB concludes that the net effect of the Dutch tax system is actually slightly degressive, with lower incomes paying proportionally more tax.[16] So hardly a tax system based on the capacity principle.

[14] These benefits were created to help poorer households meet the cost of basic needs such as healthcare and childcare.

[15] For an overview of government revenues, see: Rijksoverheid (2022).

[16] Van Essen et al. (2022). This conclusion applies to taxation; if we look at government spending, for example benefits or welfare payments, the picture changes. Here, the government does spend the most on lower incomes.

2.5.2 Distribution Systems That Benefit the Least Well-Off

A distribution system in favour of the least well-off sets out to ensure that the lowest incomes are in any case not disadvantaged further.[17] There are several ways to distribute climate costs in favour of poorer people. One way is to make polluters pay for their own emissions through a uniform carbon tax, and use the proceeds to finance social policies that improve the lives of the least well-off.[18] A system of progressive taxes on income and wealth can also benefit the least well-off if, for example, if it is used to pay for grants for energy-saving measures which only the lowest incomes can claim.[19] In regard to taxation, however, the extent to which such a progressive system applies in the Netherlands is questionable (see Box 2.2).

One objection to a distribution system that favours disadvantaged people is that the outcome may be at odds with a desired distribution based on greatest utility.[20] For example, lower energy bills and tax exemptions for lower incomes may reduce their incentive to insulate their homes.

2.5.3 Distribution Systems Based on Sufficiency

Under the 'sufficiency' distributive principle, the distribution system ensures that nobody loses out. Every citizen is guaranteed sufficient means and no one falls below the minimum. So, everyone has sufficient financial resources to live a 'dignified life', or everyone is offered sufficient protection, such as protection against floods, for instance. Only then can the differences or inequalities in the distribution of costs be justified.[21]

An example of a distribution system based on sufficiency was the set of measures, introduced in the summer of 2021, to compensate for the exceptional rise in energy prices in the Netherlands. The price rise meant that some households could no longer afford to heat their homes. A term often used in this context is 'energy poverty'.[22] A variety of schemes were introduced to keep energy affordable and prevent or alleviate energy poverty.

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[17] Rawls (1971) and Shue (1999).

[18] Davidson (2021a). Provided it actually improves social welfare, this is in line with utilitarian thinking.

[19] Davidson (2021a).

[20] Davidson (2021a).

[21] See: Frankfurt (1987). A more moderate form of this is 'sufficientarism'. According to this approach, if it is impossible to offer sufficiency, then it must in any case be approached as closely as possible. One objection to pursuing 'sufficientarism' is that other important goals like social welfare may be overlooked, see: Knight (2021). As with sufficiency, the question can be asked here: when is enough enough? Is that when the position of all the least well-off has improved to the subsidence level?

[22] Middlemiss et al. (2020) and Mulder et al. (2021).

This principle also faces objections. For instance, there are households living well below the subsistence level and there are those that live near it. Sometimes, alleviating the burden of the small group of people in real poverty will achieve more than improving the situation of the larger group who already live around the subsistence level. There is also the risk that pursuing a level of sufficiency could make other distributive principles seem redundant, while for people living above this level there will also be many distribution issues that require continuing attention.[23]

2.6 Contribution and Benefits

Climate change is happening fast and it is caused by humans. Systems for distributing climate costs could therefore logically take into account whether citizens and businesses themselves have contributed to climate change through their behaviour. They could also take into account these citizens' and businesses' direct interests in a measure. Many people will think it only fair that citizens and businesses contribute to resolving the climate issue by changing their behaviour, or that the distribution system takes account of who will benefit from a measure. There are various distributive principles that take account of individual behaviour and own interests, three of which we discuss here.

2.6.1 The Polluter Pays

If you damage something, you have to pay for it, and if you make a mess, you have to clean it up. These principles can count on broad public approval. Pollution is also a form of damage, and the 'polluter pays' principle is therefore often applied to environmental and climate measures.[24] It means you are responsible for your own waste, i.e. 'clean it up yourself, or pay someone else to do it'. In climate policy, this means distributing climate costs such that those who produce the most emissions also have to pay the most.

'Polluter pays' is generally considered a basis for effective climate policy. After all, it creates an incentive for behavioural change, and is therefore often relatively effective and efficient. Perhaps the most obvious example of polluter pays is the direct tax on carbon emissions, for example through the EU ETS (see Boxes 3.1 and 3.2). Both instruments put a price on every tonne of greenhouse gas emitted, creating incentives for companies to reduce their emissions.[25] Other examples include

[23] Temkin (2003a, b), Casal (2007), and Holtug (2010).

[24] Sometimes it is also called 'you broke it, now you fix it', see: Singer (2002). For a detailed discussion of this principle, see: Vollebergh (2022).

[25] The distribution of the revenues of these instruments is another issue, often based on yet other distribution principles.

waste collection levies, fossil fuel taxes, and laws requiring polluters to clean up or compensate for the damage they have caused. It is a simple principle and intuitively appealing.

However, this principle sometimes meets major objections in practice. Low-income earners, who often live in poorly insulated homes, are disproportionately affected by taxes on fossil fuels. For them, the 'polluter pays' principle can lead to energy poverty. It is therefore often suggested that it should be combined with the capacity principle.[26]

Moreover, 'polluter pays' is sometimes difficult to put into practice. Much of today's pollution was produced in the past. The polluters cannot always be held responsible–let alone made to pay–because they may no longer exist. An additional issue here is the extent to which past emitters could be expected to be aware of the harmful effects of their emissions. Many people advocate applying 1990 as the cut-off point: from this point on, polluters can no longer claim 'ignorance', because after this time the negative effects became public knowledge.[27]

2.6.2 Distribution Based on Beneficiary Pays

Most people think it is fair to pay extra for something that benefits you. This is because there is a direct link between the money you spend and the use of the service or product.[28] Under the 'beneficiary pays' distributive principle, the costs are distributed in proportion to the benefit citizens and businesses derive from the measures in question. You could say that someone who benefits from, say, a dyke or a road, can also be expected to pay for the protection or convenience it provides. The Dutch motor vehicle tax is based on this principle. In climate policy, benefit-based distributions are often applied in adaptation policies. An example is the 'water system tax' that residents pay to Dutch water boards to help finance the flood protection measures. Large landowners such as farmers or nature reserve owners are taxed more heavily because they benefit more from the measures.

The beneficiary pays principle cannot be separated from the moment the benefit is enjoyed. You could benefit from a particular activity today, in the short term, or further in the future. For example, western countries are enjoying the profits today of the polluting activities they carried out in the past. According to this principle, these countries should now pay for their earlier emissions. The next question is whether these countries should also pay for current and, potentially future, climate

[26] Heyward (2021: 126) and Vollebergh (2022).

[27] This is not a random date; it is the year of publication of the first IPCC report on global warming. However, the link between carbon emissions and climate change had been identified earlier than that, see: Houghton et al. (1990), Bell (2011), Caney (2020), and Heyward (2021).

[28] We have based the description of this principle on the following literature: Shue (1999), Neumayer (2000), Caney (2006), Meyer and Roser (2010), Page (2012), and Barry and Kirby (2017).

damage felt in less well-off countries.[29] This issue of climate reparations figured prominently on the agenda of COP27,[30] the United Nations climate conference held in November 2022.[31]

The principle of beneficiary pays need not only apply to the past and the present; it can also be used for future benefits. For example, our children and grandchildren will benefit from renewable energy that is cheaper and more reliable than what is available today. As adults they will benefit from an infrastructure tailored to a fully-fledged renewable energy sector. However, the investments are being made today. If these costs are to be distributed based on beneficiary pays, our children and grandchildren will be largely footing the bill, whereas under other distributive principles the bill ought to be paid by current generations (see Box 2.3).

Box 2.3: Should Current or Future Generations Pay?

Although the distribution of climate costs between current and future generations falls outside the scope of this book, it is undeniably an issue of growing importance. We are emitting greenhouse gases today that will continue to contribute to climate change for a long time to come. The consequences will be mainly felt by the people of the future: our children and grandchildren. We are therefore directly responsible for the habitability of the world in which they will live. However, if we actively reduce carbon emissions today, this will also benefit future generations. This leads to the question of who should pay for the cost of emissions reductions: us or future generations?

There is more than one answer to this question. For example, if the 'polluter pays' principle is your starting point, then the current generation can be held financially responsible. After all, it is we who are damaging the climate and therefore must bear responsibility for repairing it. But, if you apply the 'beneficiary pays' principle, then the cost of carbon reduction must at least partly be passed on to future generations, as it is they who will benefit from our investments and so they who should pay.[32] This example highlights why distributive principles are so important: there are several options to choose from.[33]

[29] An argument often heard is that we in the West owe our wealth in large part to these past emissions, even though we are not directly responsible for them. Miller (2007) argued that this in effect gives us a 'remedial responsibility,' see: Davidson (2021a). This responsibility can be fulfilled by compensating for the costs of climate policy: we benefit, so we pay.

[30] The 27th Conference of the Parties (COP27). A COP is a decision-making body of all parties to an international convention. In the context of climate policy, it concerns the annual meeting of countries that have ratified the climate agreement. Two such meetings were COP27 and COP28, that were held in Egypt (November 2022) and the United Arab Emirates (November–December 2023).

[31] United Nations Foundation (2022).

[32] Ongering (2022).

[33] Krznaric (2020).

There are several objections to the beneficiary pays principle. It can, for example, be difficult to implement in practice, because it is not always possible to determine who actually benefits. This is relatively simple for adaptation measures: a city, or a typical Dutch government body like a water board, has registered residents who benefit from the measures they implement. However, it gets more difficult when dealing with activities in the past that benefit people today. How much of our wealth today is directly attributable to past emissions? There have been many other past developments that benefit us today, such as the rise of technology and digitalization. It will likely be even more difficult to determine who will benefit from the climate measures we are taking today, and by how much.

2.6.3 Sustainability Pays

When considering the just distribution of climate costs, you could also look at merit, i.e. the extent of someone's commitment to sustainability.[34] Distribution based on the 'sustainability pays' principle assumes that this commitment should be rewarded proportionately. So, climate costs will be distributed differently based on people's 'sustainable merits'.[35] Under this principle, households or businesses who carry out sustainability measures would pay less tax than those who do not, for example. It is based on the widely felt intuition that 'hard work should pay'.

Rewarding positive behaviour typically plays a role in mitigation policies, for example to reduce emissions and encourage the energy transition. Applying the 'sustainability pays' principle is a means of achieving critical mass, so that innovations and interventions will become cheaper and more generally accepted. It is a way of developing best practices that others can follow. This is the reason why those committed to sustainability should be rewarded according to their efforts.

One criticism of this principle is that some citizens have more opportunities than others to 'do good', whereby historical circumstances, chance and money all play a role.[36] Consider the aforementioned debate about whether it is fair to subsidise expensive electric cars while only the highest income groups can afford them. To what extent does 'chance' or simply being 'lucky' play a role in the commitment to sustainability? The risk here involves what is also called the 'Matthew effect': groups in society who already have a lot become even richer, and those that have little become poorer.

[34] This principle is often cited by philosophers associated with liberalism and libertarianism, see: Davidson (2021a). We have based the description of this principle on the 'concept of desert' on the following literature: Kleinig (1971), Milne (1986), Wigley (1988), and Lamont (1994).

[35] Lamont (1994).

[36] A distinction can be made, according to philosopher Milne (1986), between rewards based on success or on commitment, as the two by no means always coincide.

2.7 In Conclusion: Climate Policy Involves Choices

In this chapter, we discussed ten distributive principles and divided them into four categories. The first category focuses on maximizing the utility of a system of distribution. The second is all about individual rights and freedoms; do we take into account existing rights, equality before the law, or the individual responsibility of citizens and businesses? The third category of distributive principles is based on capacity and solidarity. Sometimes it will be fairer to take account of the capacity of citizens and businesses, particularly when climate policies threaten their very livelihood. Finally, the fourth category calls for costs to be distributed based on how much someone contributes to climate change or benefits from a measure. Here, it is fair to make polluters pay, or reward those who are more sustainable, or take into account the benefit citizens or businesses derive from climate measures.

The distributive principles we discussed differ in nature, origin and effect. In the following chapters, we will describe which distributive principles are applied in Dutch policy practice using a number of case studies. As mentioned earlier, these chapters are meant to be illustrative. We do not provide a comprehensive analysis of all distribution systems applied in Dutch climate policy, but rather illustrate the principles applied–implicitly or explicitly–using case studies.

These case studies will reveal that there is much variation in practice, and there are several options to choose from. For example, the 'polluter pays' principle is a more obvious choice for distributing the costs of mitigation policies, but less so (if at all) for adaptation policies. We will also see that some principles are better suited for distributing tax burdens, while others are more tailored to the distribution of grants or compensation for damage.

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Chapter 3
Distributing the Dutch Reduction Targets

Contents

3.1 The Carbon Budget: A Fundamental Issue of Distributive Justice

In 2019, climate activist Greta Thunberg called on the world's leaders to implement more ambitious climate plans. She was concerned by the rapidly declining global carbon budget. During the UN Climate Action Summit, she warned that if we continue at this rate, we will exhaust our carbon budget within eight and a half years. In 2021, the Intergovernmental Panel on Climate Change (IPCC) revised the global carbon budget downwards to 400 gigatonnes of CO_2, applicable as of 1 January 2021, to keep global warming below 1.5 °C (67% probability).[1]

[1] IPCC (2021).

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
https://doi.org/10.1007/978-3-031-59427-4_3

The carbon budget is the total amount of carbon we can allow ourselves to emit if we are to limit the global average temperature rise to a given temperature, based on a given probability, and taking into account emissions of other greenhouse gases.[2] This is the total amount of CO_2 that the combined countries of the world may emit. Carbon budgets are thus a form of mitigation policy. The remaining carbon budget decreases with the passing of time.[3]

Allocating the carbon budget is a fundamental issue of distributive justice in global climate policy, because it lies at the foundation of international climate negotiations about which countries can and must reduce the most emissions. But this issue of distribution also plays out in individual countries' climate policies. At the national level, the carbon budget is often translated into sectoral reduction targets (see Box 3.1). How should the reduction targets be distributed amongst the industrial, electricity, agriculture and land use, mobility, and built environment sectors? Which sectors need to reduce the most carbon emissions if we are to achieve the national targets?[4] This is one of the most sensitive cost distribution issues, because it is riddled with political and economic interests. This book, and this chapter in particular, focuses on the Dutch situation (see also Fig. 3.1). What does a perspective on justice bring to this issue?

The case study used in this chapter discusses a different type of distributive issue than the other case studies, because it is a distribution of a different nature. Here, the CO_2 that is distributed may not actually be emitted and must in fact be reduced. These are not policies aimed directly at groups of households or businesses, but rather they define how the Netherlands' reduction target will be distributed amongst economic sectors. So, the various distributive principles are each interpreted differently. For example, 'polluter pays' as discussed in this chapter refers to an entire sector that has to do more to reduce CO_2 than other, less polluting, sectors.

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[2] Carbon budgets are calculated using climate models and recorded observations, but the work is complex and the results are uncertain, because they are based on assumptions about the development of, for example, average air and soil temperatures. Much is still unknown, such as the exact moment tipping points occur, and their effect on temperature rise–and therefore on the remaining carbon budget.

[3] As of 1 January 2020, the carbon budget is 500 gigatonnes of CO_2. According to the latest calculation, with this budget there is a 50% probability of staying below 1.5 °C. According to IPCC (2021) calculations, the carbon budgets for staying below 2 °C are 1150 gigatonnes of CO_2 (67% probability) and 1350 gigatonnes of CO_2 (50% probability). However, focusing on carbon emissions is too simple, because other greenhouse gases also cause global warming. CO_2 does cause the vast majority of emissions, in part because it has been contributing to global warming for centuries, unlike methane (CH_4) or nitrous oxide (N_2O). However, if these two greenhouse gases were also included in the carbon budget and expressed as CO_2, the budget would increase or decrease by some 220 gigatonnes.

[4] This chapter follows the sector classification used in the 2019 Dutch Climate Agreement, see: Rijksoverheid (2019).

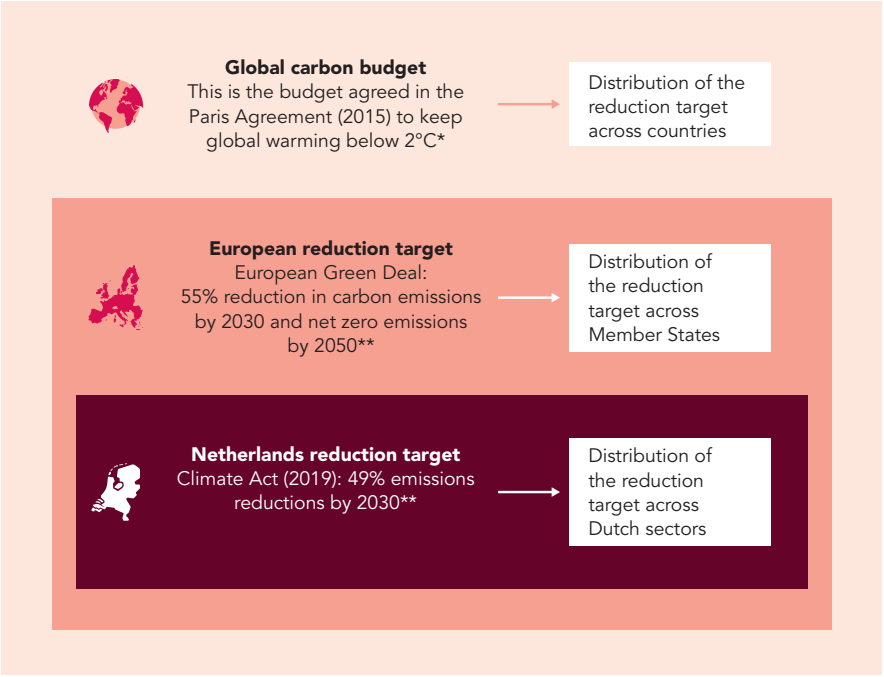

Fig. 3.1 Case study focus

We start with a brief discussion of the international context underlying the Dutch reduction target. Agreements at both the global and European level set the frameworks within which the Netherlands must reduce a given amount of carbon emissions. We then consider the distribution of the Dutch reduction targets across the sectors, as set out in the 2019 Dutch Climate Agreement. This Agreement defines how the various sectors are expected to contribute to reducing Dutch greenhouse gas emissions.

We see in this chapter that the 'greatest utility' principle is dominant in this issue. Reduction targets are distributed using model calculations that are based on cost efficiency. This leads to a distribution in which the sector that can reduce emissions the most cheaply is allocated the highest burden. This dominance of a single principle in the models means that other distributive justice considerations get much less attention. We conclude that the discussion on the distribution of reduction targets could benefit from involving other distributive principles in the models.

3.2 Context: Carbon Budgets and Reduction Targets

The distribution of carbon budgets plays a role at the global, European and national levels. Whereas the global and European discussions concern the distribution of the budget between various countries, at the national level the debate concerns the reduction targets of specific sectors of the Dutch economy. To fully understand how this works, we first briefly discuss this distribution at the global and European level before focusing on the Dutch context.

Box 3.1: The Difference Between Carbon Budgets and Reduction Targets

Dutch climate policy has to distribute both carbon budgets and emissions reduction targets. Both instruments aim to reduce emissions, but are based on different systems, which we will briefly explain here.

A carbon budget assumes a predefined amount of CO_2 that may enter the atmosphere before a certain date to limit global warming to between 1.5 and 2 °C. Once the maximum CO_2 emissions have been established, a yearly budget can be drawn up. Because the budget decreases each year, governments and businesses are forced to emit less and less greenhouse gases. In Box 3.2, we elaborate on the European Union's Emissions Trading System, the EU ETS.

There is a different system for reduction targets. These targets are defined by the percentage that emissions must be reduced by, say, 2030 or 2050, compared to a reference year. For instance, the target in the current Dutch Climate Act is 95% less greenhouse gases by 2050 compared to 1990. An intermediate target has also been formulated to encourage a gradual transition: 49% less greenhouse gas by 2030.[5] So, reduction targets offer more flexibility than carbon budgets.

One problem with reduction targets is that only the final result counts, and not the accumulation of CO_2 in the atmosphere. Reduction targets involve a *relative* decrease in emissions compared to a given year. A carbon budget, on the other hand, sets a maximum amount of CO_2 that may be emitted. This means a reduction target provides less certainty. For example, a country or a business could continue producing the same emissions until the target year, say 2029 or 2049, and then terminate the activity.

[5] In 2015, the Urgenda climate lawsuit led to an additional intermediate target of 25% less CO_2 equivalent emissions by 2020 compared to 1990. This judgment was upheld following both the 2018 appeal and the 2019 cassation appeal, and hence became irrevocable. This target has since been achieved: in 2020, Dutch greenhouse gas emissions (measured in CO_2 equivalents) were 25.5% lower than in 1990, see: CBS (2022a). The Climate Act is currently being amended in response to a more ambitious target, established in the coalition agreement of 2021, of at least 55% less CO_2 emissions by 2030.

3.2.1 Global Carbon Budgets

At the global level, the question of which country may emit how much CO_2 is determined by the amount of greenhouse gases that may be emitted globally to limit warming. Various economic and political interests come into play in this discussion. As higher emissions go together with economic activity, they also lead to more prosperity. Moreover, the countries that emit the most are generally less directly exposed to the risks of climate change, such as floods and hurricanes.[6] For developing countries, the exact opposite is true. Negotiations therefore include discussions about which countries should bear responsibility for the greenhouse gases in the atmosphere, to what extent countries can afford the cost of the required measures, and what scope countries have for further development.[7]

These discussions played a role in treaty negotiations such as those in Rio de Janeiro in 1992 and in Paris in 2015.[8] Whereas the parties to the Rio de Janeiro conference only expressed an *intention* to stabilise the concentration of greenhouse gases in the atmosphere, the Paris Agreement set a more concrete goal: to keep global warming below 2 °C, and preferably 1.5 °C. The specific emissions reductions of the various countries are not formally defined in this agreement, but it instead refers to 'nationally determined contributions' (NDCs). Countries are required to contribute to achieving the targets based on the principle of 'equitable contribution'. So, the Paris Agreement does not explicitly distribute carbon budgets between member states. Countries determine their own NDC and record it in their 'pledge target'. To date, the sum of these pledge targets is not ambitious enough to achieve the Paris Agreement goals, so this is a recurrent theme of annual climate negotiations.[9] Currently, all national policies combined will lead to global warming of 2.4–2.6 °C by 2100.[10]

[6] Chancel (2020).

[7] Gardiner et al. (2010) and Vanderheiden (2011).

[8] The United Nations Framework Convention on Climate Change (UNFCCC) was signed in Rio de Janeiro in 1992. The goal of the UNFCCC was "to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system", see: Verenigde Naties (1992: 9). Nation states are called upon to "protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities." The basic principles that underlie the treaty are intergenerational justice and international solidarity.

[9] Conference of the Parties (COP). A COP is a decision-making body of all parties to an international convention. A COP on climate policy is held every year, one of which led to the UNFCC, under which the Kyoto Protocol and the Paris Agreement were agreed, see, for example: United Nations Climate Change (n.d.).

[10] United Nations Environment Programme (2022).

3.2.2 *European Reduction Target*

In line with the Paris Agreement, the EU Member States agreed to reduce greenhouse gas emissions by 49% by 2030 and 95% by 2050 (compared to 1990 levels), and to limit the temperature rise to well below 2 °C compared to the pre-industrial era, and preferably no more than 1.5 °C. Policy initiatives to meet that target fall under the European Green Deal.

On 14 July 2021, the European Commission presented the 'Fit for 55' package of legislative proposals to increase the targets for 2030 and further reduce Member States' emissions by 55% by 2030 (compared to 1990). That increase is intended to achieve net-zero greenhouse gas emissions by 2050.[11] This is the reduction target for the entire EU. To achieve this goal, a climate and energy package was adopted with reduction targets per sector *and* targets for renewable energy and energy saving. These are the 'pillars' by which all sectors are asked to contribute to achieving the reduction targets (see Box 3.2). The details of the relevant legislation for this Fit for 55 package still need to be negotiated and voted on.[12]

Box 3.2: The Three Pillars of European Climate Policy
In the EU ETS, the European Commission allocates a specific carbon budget specifically for the heavy industry and electricity sectors. That carbon budget is translated into a number of emissions allowances. One allowance is equal to one tonne of CO_2. The price of a tonne of CO_2 is driven up by the fact that only a limited number of allowances are allocated. Companies pay a direct fee for their emissions ('polluter pays'). The ETS thus provides a financial incentive to become more sustainable, because at some point the investment will pay off more than buying emissions allowances. The ETS generates income for both national governments and the European Union. For example, Dutch ETS revenue in 2022 amounted to €1.13 billion.[13] Under the ETS, the emissions of some 400 companies in the Netherlands are recorded by the Dutch Emissions Authority (NEa). In 2021, the European Commission proposed introducing emissions trading systems for the built environment and mobility sectors.[14]

(continued)

[11] Net-zero carbon emissions means that any CO_2 still emitted must be offset by, for example, carbon capture and storage (CCS). These are also known as negative emissions, see: European Commissie (n.d.).

[12] For progress on negotiations in the Netherlands, see: Parliamentary Papers II, 2021/2022, 22172139.

[13] https://www.emissieautoriteit.nl/actueel/nieuws/2023/01/24/nederland-verdient-voor-het-eerst-meer-dan-1-miljard-euro-aan-verkoop-co2-rechten. Some of the proceeds also go to the European Union, see: ICAP (2022). As of November 2021, the ETS price was between €75 and €90 per tonne of CO_2, a historically high price that is expected to rise even further in the coming years, see: Trading Economics, 2022; NEa, 2022. This brings the price close to the carbon price of around €100 required to keep the global temperature rise below 2 °C, see: Drissen and Vollebergh (2018a: 27, 2018b).

Box 3.2 (continued)

The European Commission's Effort Sharing Regulation (ESR) adopted in 2016 imposes a nationally binding target on EU Member States. This is a reduction target specifically for the built environment, mobility, agriculture and small industry sectors, i.e. sectors that fall outside the EU ETS. The European Commission distributes ESR targets between countries based on their financial capacity, so wealthier countries are imposed higher targets, although these are adjusted for cost efficiency.[15]

Land Use, Land-Use Change and Forestry (LULUCF) is another pillar of European climate policy and focuses mainly on carbon capture in soils and forests. The starting point is the 'no-debit rule': each Member State must achieve net-zero emissions (compared to a reference period) for the various land-use categories in its own territory. If a Member State manages to store more carbon in soil and forests than it emits, the excess carbon budget can be offset against the targets of the other sectors.[16]

3.3 Distributing Reduction Targets: The 'Greatest Utility' Principle

The global and European context is important for the Netherlands, because the goals set at that level partially define the commitments that need to be made in this country. Initially, this involves a 95% reduction in greenhouse gases by 2050, with an intermediate reduction of 49% by 2030 (both compared to 1990). These targets are set down in the Dutch Climate Act. The main issue of distribution underlying the Netherlands' commitment is: *Which sectors need to reduce their emissions and by how much?* The manner of achieving the 2030 reduction target has been established in the Dutch Climate Agreement.[17] The reduction target will be distributed between various economic sectors, being electricity, industry, the built environment, mobility and agriculture.[18] A package of policy measures has been agreed to implement the target per sector. But how is the target for each sector determined?

The focus of this case study is the distribution of the reduction target between the economic sectors of the Netherlands. This distribution served as the starting point for the 2019 Dutch Climate Agreement, and remains a key pillar of Dutch climate policy. So, we will not be examining additional measures that have been taken on

[14] European Commission (2021).

[15] Hekkenberg et al. (2021).

[16] Hekkenberg et al. (2021).

[17] Rijksoverheid (2019).

[18] Land use is not included as a sector in the Dutch Climate Agreement, but is included in the Dutch government's 2017 coalition agreement, where it is classified under agriculture. Because this case study focuses on the 2019 Climate Agreement, we have followed the same classification.

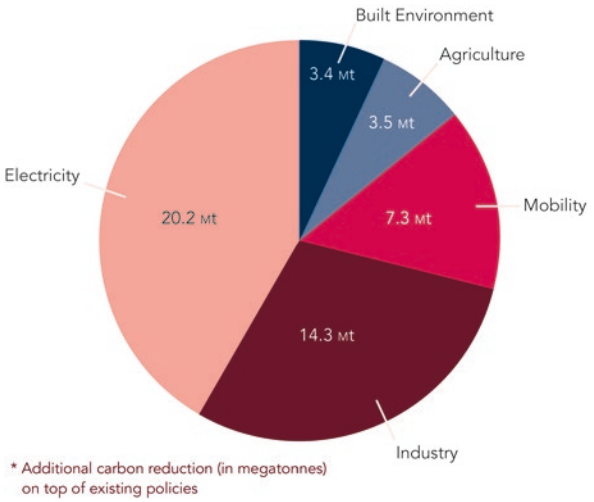

Fig. 3.2 Distribution of the 2030 target across Dutch sectors (in megatonnes (Mt) of CO_2) in the 2019 Climate Agreement (The target of 49% CO_2 reduction by 2030 (compared to 1990) implies an additional target of 56 Mt of CO_2 in 2019 compared to the situation with no policy change. This additional target is distributed across the sectors, see: Rijksoverheid, 2019). (Source: Rijksoverheid, 2019; CBS, 2022b)

top of that.[19] The Climate Agreement described how the target of 49% CO_2 reduction by 2030 (compared to 1990) was to be reached. In preparation for the Climate Agreement, businesses, non-governmental organizations and government bodies met at 'sector tables' to negotiate which measures they would take to meet the target.[20] The carbon reduction targets were distributed between the five sectors prior to these negotiations. This distribution is displayed in Fig. 3.2.

The distribution of the emissions reduction targets appears to have been based primarily on the 'greatest utility' principle. The main criterion of this principle is the effect of the chosen distribution on the policy goal–in this case reduction of CO_2 emissions. So, the reduction targets are distributed with the aim of reducing emissions as much as possible. We often see this principle combined with a cost-efficiency consideration: the measures should cost as little as possible cost per tonne of CO_2 reduced. In fact, the distribution in the Climate Agreement was calculated based on a technical reduction potential expressed as costs per tonne of avoided CO_2. In other words, the distribution of the reduction target is designed to achieve the greatest reduction at the lowest possible cost. A distribution system along these lines was already mentioned earlier in the 2017 Dutch coalition agreement, which described an intention to establish a climate agreement, with, amongst other things, "a cost-efficient climate package (…) to achieve emissions reductions."[21]

[19] One example is the more ambitious target in response to the Fit for 55 package of at least 55% reduction by 2030 (compared to 1990), which amounts to an additional Climate Agreement target, see: Hekkenberg et al. (2021) and VVD et al. (2021).

[20] Truijens et al. (2021).

[21] VVD et al. (2017: 38).

Following the presentation of the draft climate agreement, the Netherlands Environmental Assessment Agency (PBL) calculated the reduction potential and costs of the proposed measures per sector.[22] This brought the actual effects of the measures in the Climate Agreement more into focus. In conclusion, the distribution of the reduction target appears to have been something of a mathematical exercise, guided by the idea of greatest utility at the lowest possible cost.

3.4 Distributing Effects: Most Ambitious Targets for the Sectors with the Most Reduction Potential

In Dutch climate policy, the distribution of reduction targets follows the principle of 'greatest utility at the lowest possible cost'. As the electricity and industrial sectors have the greatest potential to reduce CO_2 efficiently, they are allocated the most ambitious targets. This is because a distribution based on greatest utility focuses on the outcome of the distribution. We do not see other principles of distributive justice in this distribution.

To illustrate the potential added value of a perspective of justice, we will do a thought exercise whereby we consider how the category of 'contribution and benefit' could play a role in this issue of distribution. We will use the 'polluter pays' principle as an example. If we decided that the biggest polluting sector should have the most ambitious target (and the least polluting sector the least ambitious), a different distribution would emerge. To illustrate this, Fig. 3.3 displays a possible

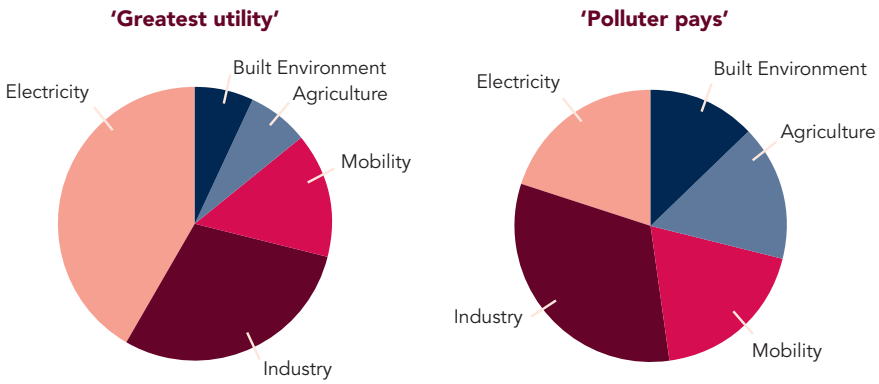

Fig. 3.3 Distribution of the reduction targets based on 'greatest utility' and 'polluter pays'. (Source: Rijksoverheid, 2019; CBS, 2022b)

[22] Hekkenberg and Notenboom (2019).

distribution based on CO_2 emissions for the year 2020. This is compared with the distribution based on 'greatest utility at the lowest possible cost'–the distribution in the Climate Agreement we saw earlier (Fig. 3.2).[23] The result of a distribution in which the sectors are allocated targets proportionate to the pollution they produce, in line with 'polluter pays', is a very different distribution of reduction targets.

The emissions target of the electricity sector would be lower than in the current Climate Agreement if it was based on a 'polluter pays' distribution. However, the industrial, built environment and agriculture sectors would face higher targets. So, if we take a sector's contribution to pollution as the starting point, instead of the effect of the intended measures, a different distribution will result. This is a simplification of the reality, and above all a thought exercise, but it does illustrate how issues of justice play a role in the distribution of the reduction target.

We could conduct similar thought exercises to illustrate the impact of justice principles on policy choices. For example, the categories of 'capacity and solidarity', and 'individual rights and freedoms' give a different picture. This might involve a distribution where the strongest economic sector is allocated the most ambitious target (distribution based on 'capacity'), or a distribution where sectors with historically high emissions are allowed to continue 'business as usual' (distribution based on 'existing rights').

3.5 Academic and Public Debate: More Attention for Justice Principles

Institutions such as PBL use energy and climate models, which are mathematical computer simulations that predict the longer-term effects of policies.[24] The models produce various climate scenarios for the different policies, with the primary aim of determining which policy measures will lead to the most CO_2 reduction. This involves trade-offs between the costs and effectiveness of the measures and helps policymakers to understand the potential impacts of their policies, and subsequently identify which measures will be the most cost-effective.[25] Such mathematical models have many uses. For example, they allow policymakers to compare various scenarios for mitigation policies.

This case study shows that the models used by PBL to calculate the reduction targets already have a distributive principle 'built in', namely the principle of 'greatest utility'. But this perspective of distributive justice hardly comes up, if at all, in the social and political debate.

[23] CBS (2022b).

[24] Van Vuuren et al. (2011).

[25] Van Beek et al. (2022) and Weyant (2017).

Some in the academic community criticise such models for this reason. Particularly relevant to this book is the academic discussion about the specific implications of these models for distributions and distributive justice. This is linked to the fact that climate models assume aggregate outcomes; the cost-effectiveness of policy measures is calculated in the same way for an entire area and for all actors.[26] However, this calculation may neglect the different ways in which different groups of people could be affected by climate policy costs, including over time, because the current models are not constructed to take this into account.[27]

The academic community questions whether the current climate models are suitable pillars of climate policy, for example for distributing reduction targets. Some argue that efficiency should come first, and then the question of justice. An outcome of such a distribution could be that, while one sector is given the most ambitious reduction target (because they can reduce emissions the most cost-effectively), the costs of achieving that target will be partly or wholly borne by other sectors. This leads to two separate issues: after the 'greatest utility at the lowest possible cost' has been calculated, there may also be a discussion about the fairness of the distribution of the costs.

However, this discussion on distributive justice is being neglected in the social debate. This is reflected in the way the Climate Agreement negotiations were structured. In their analysis of these negotiations, Truijens et al. argue that they focused on the 'how', but that the actual contribution that each sector was required to make (the 'how much') had already been politically established.[28] So, although theoretically you can separate the question of 'how to efficiently achieve emissions reductions' from the question of 'who should pay the costs', in practice that second question is not always given sufficient attention.

3.6 In Conclusion: A Justice Perspective Leads to a Broader Perspective

This case study examined how the reduction target for 2030 has been distributed amongst the various economic sectors in the Netherlands. This reduction target stems from international agreements, and the resulting reduction targets in the Dutch Climate Agreement of 49% by 2030 and a 95% by 2050. The question is how these reduction targets should be distributed amongst the affected economic sectors: industry, electricity, agriculture and land use, mobility, and the built environment.

[26] Jafino et al. (2021) and Vecchione (2012).

[27] Jafino et al. (2021) and Stanton et al. (2009). The CPB has been commissioned to examine the impact of certain measures on different groups of households to be able to base policies on more than only the aggregate outcome of an efficiency measure, see: Rijksoverheid (2022).

[28] Truijens et al. (2021).

The distribution of the target across the Dutch sectors was based on calculations carried out by PBL. The models used for this purpose determine who gets the most ambitious reduction target. This distribution is based on the principle of 'greatest utility' in combination with the lowest possible cost: who can reduce the most CO_2 for the least amount of money?

This implies that a position on distributive justice has already been taken. The result is that there is less room in the debate to consider other distributive justice categories, such as 'capacity and solidarity' and 'contribution and benefit'. How can we give more attention to other distributive justice considerations? Below we consider two alternatives that focus less on 'greatest utility'.

3.6.1 Change the Models

The first alternative is to change the models themselves. There is already debate in the academic community about the use of the current climate policy models. That debate includes general criticisms of these models, for example concerning transparency and the variables used.[29] But more relevant for the subject of this book, researchers are also questioning the role of distributive justice in climate models. These researchers argue that the dominance of cost efficiency effects the application of distributive justice. They argue that other distributions could be possible if other justice considerations are included in the models.[30] Van den Berg and colleagues show that applying other principles in a model (such as 'per capita', 'based on existing rights' or 'capacity') leads to a different distribution of reduction targets between different countries and continents.[31] For example, if income distribution is taken into account, Europe will face a much higher target than if the distribution is based on cost efficiency or existing rights.[32] So, if other justice considerations are included in a climate model, this may lead to other distributions of the reduction targets. However, researchers do not yet know how to integrate other justice principles in the models.[33] Moreover, such research is time-consuming, because it can take a very long time to prepare and run the various model simulations.[34] So more research is required into how to incorporate different distributive principles in climate models.

[29] Gambhir et al. (2019).

[30] Jafino et al. (2021) and Van den Berg et al. (2020).

[31] See, for example: Van den Berg et al. (2020). This article dovetails with the extensive international literature on 'effort sharing', which we also referred to in the global context description earlier in this chapter. The issue here is not only which country should reduce how much CO_2, but also who should pay for it. For example, the West could pay for reductions in India if considerations of distributive justice warrant it.

[32] For an overview of the different distributions, see: Van den Berg et al. (2020: 1815).

[33] Jafino et al. (2021).

[34] Tjallingii (2021).

3.6.2 Interpreting Models

The second alternative involves changing the way model outputs are interpreted. Herein lies a task for policymakers and politicians. Model calculations are extremely valuable, because they inform policymakers about the estimated effects and cost-effectiveness of policy measures. However, instead of taking these estimates as our starting point, the calculations could also be analysed in the light of distributive justice. First, policymakers and politicians need to be aware of the implicit existence of distributive principles in climate models. A more nuanced discussion about distributive justice will then be possible. How do the categories of 'capacity and solidarity', 'contribution and benefit', or 'individual rights and freedoms' affect the model outcomes and the resulting distributions? If different distributive principles are given more consideration, there may be more understanding for policy decisions resulting from climate models and discussions on this subject.

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Chapter 4
Energy Transition Subsidies

Contents

4.1 The Netherlands' Biggest Construction Challenge

A major project is being developed to capture and store carbon emissions in empty gas fields under the North Sea. The project is called 'Porthos' and was awarded €2.1 billion in subsidies by a government scheme (SDE++) in 2022.[1] It aims to capture and store a total of 37 megatonnes of CO_2 over 15 years. Emissions contributors include Shell, ExxonMobil and producers of industrial gases and

[1] Porthos stands for Port of Rotterdam CO_2 Transport Hub and Offshore Storage, see: www.porthosco2.nl

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
https://doi.org/10.1007/978-3-031-59427-4_4

chemicals. Scania, a manufacturer of trucks and buses, was awarded an SDE++ subsidy of over €641,000 in 2020. This company used the money to install an industrial heat exchanger and heat recovery units. Since commissioning the plant, Scania has saved 151,000 m^3 of gas annually, or the average annual gas consumption of 125 homes.[2]

These are just two examples of subsidies awarded to speed up the energy transition. This acceleration is necessary, because the energy transition is a huge challenge. The Netherlands must be carbon neutral by 2050, with net-zero greenhouse gas emissions. The challenge is enormous, because the vast majority of plants that currently burn fossil fuels will have to be replaced by CO_2-free plants. This means extensive electrification of almost all Dutch plants, while some industries will have to convert to hydrogen-based production. Energy suppliers will need to switch to renewable sources that are often dependent on the weather. Grid operators will need to expand the capacity of their grids. Meanwhile, households and other small energy users will have to convert their gas-fired central heating systems to renewable alternatives such as heat pumps or district heating.[3]

This transition is also referred to as "the Netherlands' biggest construction challenge since World War II". It is going to cost a lot of money. Some calculations have predicted that the energy transition will cost businesses and households in the Netherlands an average of €20 billion a year between 2015 and 2050.[4] Various amounts circulate for the costs of sustainably renovating homes, ranging from €23,000 to €52,000 per home.[5] The government offers financial assistance to businesses and households to cover the high costs of the transition. This aid is a form of mitigation policy. The underlying idea is that the support will enable and/or accelerate the energy transition, thereby avoiding greenhouse gas emissions.

In this chapter, we take a closer look at the distributive effects of three energy transition subsidies in the Netherlands: the 'Incentive scheme for sustainable energy production and climate transition' (SDE++) for the industry, the 'Sustainable energy investment subsidy scheme' (ISDE) for households, and a specific grant for energy-saving measures (SPUK[6]) to encourage energy efficiency in the home (Table 4.1). As in the previous case study, our aim is not to provide a complete overview of *all* distributive effects of Dutch energy grants and subsidies. Various other schemes

[2] Unica Building Services (2021).

[3] The transition the built environment faces is often referred to as the heat transition. For the sake of readability, in this chapter we have grouped all these processes under the energy transition.

[4] Vergeer et al. (2017: 38). This is averaged over the years 2015–2050; the annual investment in 2015 was estimated to be €5 billion, in 2050 it is estimated to be €40 billion.

[5] Schellekens et al. (2019: 10), Schilder and Van der Staak (2020: 33), and Aedes (2018).

[6] The SPUK is paid by the state to a municipality or province for investing in a specific domain such as air quality, sports policy or healthcare policy. In this chapter, the SPUK is specifically the grant scheme for energy-saving measures, established in October 2021.

Table 4.1 The SDE++, ISDE and SPUK subsidies and the ODE tax explained in more detail

Abbreviation	Name	Objective	Funding source
Subsidy schemes			
SDE++	Incentive scheme for sustainable energy production and climate transition	Subsidy scheme for larger companies who wish to make their operations more sustainable.	The subsidy is largely paid for by the ODE tax[a].
ISDE	Sustainable energy investment subsidy scheme	A subsidy available to households to encourage sustainable renovation.	The subsidy is paid for by the ODE tax[b].
SPUK	Grant for energy-saving measures	A grant available to minimum wage earners for renovations to reduce heat loss and energy consumption in the home.	The subsidy is paid from public funds.
Tax measure			
ODE	Levy for Renewable Energy and Climate Transition	Energy bill tax created to fund the energy transition.	The tax is levied via the energy bill and is used to pay for the SDE++ and ISDE subsidies.

[a]'Largely' because the SDE++ subsidy is funded through the ODE tax. However, on Budget Day in 2022, an additional budget was allocated to the SDE++ scheme and paid from public funds to ensure that households would not face extra costs due to higher energy bills
[b]Warringa et al. (2021), Parliamentary Papers II, 2021/22, 35 925 XIII, no. 1: 131

exist to encourage the energy transition.[7] These three schemes serve to *illustrate* how distributive principles are currently being applied in Dutch climate policy, be it implicitly or explicitly. We chose these three schemes because they each target different groups: businesses, homeowners and minimum wage earners.

Table 4.1 provides a general overview of the three subsidies, and we also describe an important tax that was created to pay for the subsidies: the renewable energy and climate transition levy (ODE). The issue of distributive justice discussed in this chapter is who should *pay* for these subsidies and who should *receive* them.

It should be noted that this chapter describes the SDE++ and ODE schemes as they applied until the end of 2022. As of 1 January 2023, the SDE++ and the ODE were uncoupled and the ODE was merged with the energy tax (ET). The rules for allocating the SDE++ subsidy are also changing.[8] The changes implemented from 2023 onwards have not been applied to the analysis presented. In this chapter, we first discuss how the various subsidies work and how they are funded. We then consider which distributive principles we can identify in these three schemes.

[7] For example, the following schemes exist for the industrial sector in addition to SDE++: DEI+ (subsidy for testing innovative techniques), VEKI (subsidy to accelerate climate investments), TSE industry studies (subsidy for feasibility studies), EIA (energy investment credits), MIA and VAMIL (tax exemptions for environmental investments). See: Parliamentary papers II, 2021/2022, 29 826, no. 135.

[8] Parliamentary papers II, 2022/23, 36 200, no. 2: 179; see also: Van der Lugt (2022), Rijksoverheid (2022), Parliamentary Papers II, 2021/22, 32 813, no. 846.

We explain how other distributive justice considerations and principles could also have been deployed. The key message of this chapter is that a justice perspective offers an important dimension to the distribution of both revenues and costs.

4.2 Context: Energy Transition Subsidies

The Dutch energy transition will cost many billions of euros between today and 2050. Various grants and subsidies are available to encourage businesses and households to make sustainable investments.[9] Each subsidy is intended for a specific goal and serves a specific target group. We distinguish three types of grants and subsidies: for large companies (SDE++), for households alone (SPUK), and for households and small businesses (ISDE). We then explain how these subsidies are funded (ODE tax, public funds). Figure 4.1 shows how the instruments are related.

4.2.1 Subsidy: Incentive Scheme for Sustainable Energy Production and Climate Transition (SDE++)

The SDE++ scheme provides subsidies to cover the excess costs of sustainable technologies. These excess costs are the difference between the market price of renewable energy and the costs of generating that energy (the requested grant) (Fig. 4.2).[10]

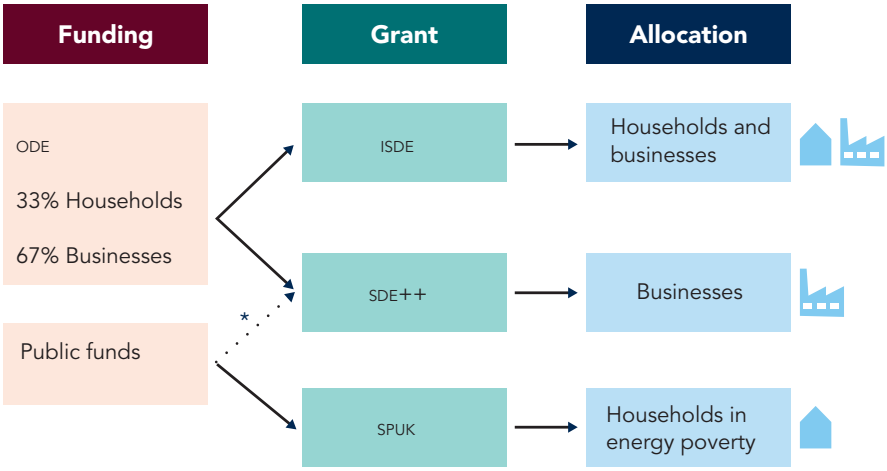

Fig. 4.1 Overview of subsidies and funding sources

[9] Rijksoverheid (2019) and Van Geest (2021).

[10] This is technically called the 'subsidy intensity'.

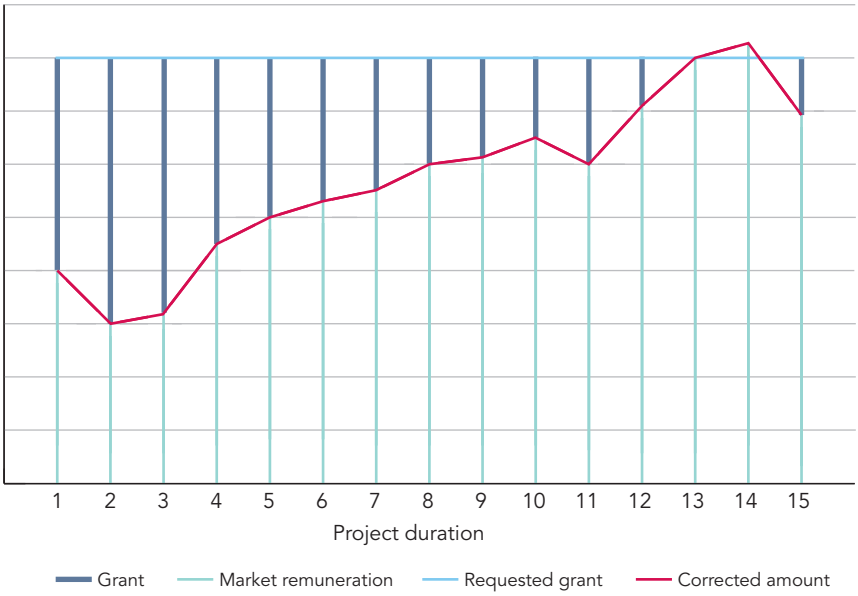

Fig. 4.2 Example contribution from the SDE++ scheme for excess costs of a sustainable technology. (Source: RVO, 2022)

The SDE++ scheme has five rounds with an increasing subsidy per tonne of CO_2 reduced.[11] For example, in the first round, applicants can request a subsidy for excess costs of up to €65 per tonne of CO_2 reduced. In the final round, that amount could increase to maximum €300 per tonne of CO_2 reduced.[12] In other words, precedence is given to the projects that can reduce CO_2 at a lower cost.[13] The idea is to encourage the cost-effective reduction of carbon emissions.[14]

4.2.2 Subsidy: Sustainable Energy Investment Subsidy Scheme (ISDE)

The 'Sustainable energy investment subsidy scheme' came into force on 1 January 2016.[15] This scheme is funded from the proceeds of the ODE (see Table 4.1). Only homeowners can claim this subsidy for installing a sustainable heating system (such

[11] The PBL annually calculates the cost price of renewable energy and other technologies important for the energy transition. The recommended SDE++ subsidies are based on these prices, see: Lensink and Schoots (2022).

[12] For the 2022 round, a subsidy of up to €300 per tonne of CO_2 reduced can be applied for, see: RVO (2022: 4).

[13] Parliamentary Papers II, 2021/22, 35 925, no. 2: 121.

[14] Parliamentary Papers II, 2021/2022, 31 239, no. 340; Parliamentary Papers II, 2021/22, 35 925, no. 2.

[15] Staatscourant (2015) and Linders et al. (2020).

as a heat pump), insulation or ventilation, a connection to a district heating network, or solar panels. Provided at least two of the above measures are taken, 30% of the investment will be reimbursed. Applications for a single measure are reimbursed 15%.[16] Unlike the SDE++ scheme, this subsidy is independent of how much carbon is reduced.[17] The homeowner pays for the work out of their own pocket and receives the subsidy afterwards. This means that the homeowner must be able to find the money to pay for this, for example in the form of savings, or a mortgage or other form of loan (see Box 4.1).[18]

Box 4.1: The 'Sustainability Subscription' and the Energy Savings Loan
Carrying out sustainable renovations on a home is expensive and requires the homeowner to have some organisational talent, which acts as a barrier to sustainable renovation. Several schemes have been created to make sustainable renovation easier.

One such initiative is the 'Sustainability Subscription'.[19] This is a privately funded scheme which aims to make it less complicated to carry out, and easier to finance, sustainable renovations. A key principle of this scheme is that the costs of servicing the mortgage or other loan taken out, or the increased rental, may not be higher than the amount saved on the energy bill thanks to these renovations. The Sustainability Subscription is funded through subsidies such as the ISDE and provincial or municipal fees, loans and crowdfunding.[20] The subscription runs for up to 15 years, depending on the investment made. Renovations can be subsidised up to 100%, as long as it concerns a homeowner and they have sufficient borrowing capacity. This means the Sustainability Subscription is not for everyone.[21]

The National Heating Fund is a government agency established to make sustainable renovations less complicated and more accessible to a wider range of people.[22] Homeowners can take out an Energy Savings Loan on favourable terms (on condition that they live in the relevant house themselves). The aim is to offer interest-free loans to citizens with little or no scope to finance the renovations themselves, without driving these people into debt,[23] and so enable these households to sustainably renovate. Applicants who do have financial means are required to pay part of the costs themselves.

[16] Parliamentary Papers 2021/2022, 29 826, no. 135; RVO (2017).

[17] Steenbekkers et al. (2021: 74).

[18] The application must be accompanied by evidence, including invoices and proof of payment, proof of installation or commissioning, and photos.

[19] The '*woningabonnement*', see: www.woab.nl

[20] WOAB (2021).

[21] VNG (2018).

[22] Nationaal Warmtefonds (2022).

[23] Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2022: 5–6).

4.2.3 Subsidy: Grant for Energy-Saving Measures (SPUK)

Energy prices have been rising since the first half of 2021, and the war in Ukraine drove these prices up even more from early 2022. More and more households in the Netherlands are struggling to pay their energy bills. On 15 October 2021, the government created a specific grant for these households so they can carry out energy-saving measures, the SPUK. A total of €150 million was made available for households in energy poverty.[24] The main predictors of energy poverty are high energy bills, a poorly insulated house and a low income.[25] Both tenants and homeowners can claim a grant for energy-saving measures under this SPUK scheme, provided they are officially in energy poverty. The SPUK grant can be used to carry out minor energy-saving measures in a home, such as installing draft strips, radiator foil, LED lights or insulating window film. It can also be used to obtain advice about energy saving measures.[26] The aim is that these measures will decrease energy bills. Such minor interventions lead to limited, but for these households still significant energy savings, and of course also contribute to achieving the national climate targets.

The SPUK grant is paid from public funds and implemented by the municipalities. In January 2022, the Dutch government distributed the SPUK budget among the municipalities, based on the estimated number of citizens in energy poverty (these are typically households that spend more than 13% of their income on energy bills).[27] Municipalities with more households in energy poverty received a higher share of the SPUK budget. The budgets were based, among others, on TNO's estimate of more than 556,000 households in energy poverty in the Netherlands.[28]

4.2.4 Revenue: Levy for Renewable Energy and Climate Transition (ODE)

The SDE++ and the ISDE schemes are fully or partially paid for through the 'Levy for Renewable Energy and Climate Transition' (ODE). The ODE was established in 2013 as a separate energy consumption tax. This levy is included as an item on Dutch energy bills so households and businesses can see exactly what their contribution is.[29] The ODE is a fixed amount per m^3 of gas or kWh of electricity.

[24] Parliamentary papers II, 2021/2022, 29 023, no. 272.

[25] Mulder et al. (2021: 2).

[26] Parliamentary papers II, 2021/22, 29 023, no. 272; VNG (2021). The government based the distribution of this specific grant for energy-saving measures on a TNO publication, see: Mulder et al. (2021).

[27] Mulder et al. (2021: 2). Gas prices have continued to rise since the end of 2021, but the numbers and percentages quoted here do not take this into account.

[28] Mulder et al. (2021).

[29] IBO (2021) and Warringa et al. (2021).

This is a degressive tax, so households and other small energy users like small and medium-sized enterprises (SMEs) pay a higher levy per unit of energy purchased than large users. In 2022, there were huge differences in the ODE tariffs per unit of energy purchased. Small energy users (households and SMEs) paid 3.7 times more ODE tax for every m^3 of gas than the largest users, and 61 times more ODE per kWh of electricity.[30] Some energy-intensive companies are exempt from the ODE levy.[31] On the one hand, this is to protect the international competitiveness of Dutch companies, on the other, to take account of the fact that many energy-intensive companies already pay for their carbon emissions, for instance through the EU ETS discussed earlier.[32]

ODE revenues are used to pay for the SDE++ (since 2013) and ISDE (since 2016) schemes. When the ODE scheme first came into force, households and businesses each paid half of the ODE revenues through their energy bills. Since 2020, the scheme has been redistributed so that businesses contribute 67% and households 33% of the revenues. The reason for this redistribution at the expense of the business sector was that the government no longer considered the 50/50 distribution to be fair, as the business sector causes some 82% of the Netherlands' carbon emissions.[33] To achieve this new distribution, the ODE tariffs for large energy users were increased more than the tariffs for small energy users, and the tax credit for households was increased.[34]

The ODE also includes a budget reserve. If the SDE++ and ISDE schemes cost less than budgeted, the remaining ODE budget is retained in a 'renewable energy budget reserve'. If there is an ODE shortfall at a later date, then money can be drawn from this reserve.[35]

Besides the ODE, public funds also pay for part of the SDE++ scheme and the full SPUK scheme.[36] The effects of distributing levies and taxes to raise public funds also apply to the distributions resulting from these two measures. These effects are briefly discussed in Box 2.2.

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[30] Belastingdienst (2022).

[31] For example, ironworks and the cement industry are exempt, see: Warringa et al. (2021: 10).

[32] Warringa et al. (2021: 10).

[33] Parliamentary papers II, 2018/2019, 32 813, no. 307: 1; Rijksoverheid (2019: 104). This is a rough estimate that distinguishes between households and businesses and is based on figures from Statistics Netherlands. Household emissions are largely caused by home energy consumption (heating, hot water, food preparation, electrical appliances) and mobility. Houses fall under the built environment sector. This sector emitted 21.8 Mt. of CO_2 in 2020, of which households contributed 71% (approx. 15 Mt). The mobility sector emitted 30.6 Mt in 2020, about half of which (approx. 15 Mt) was produced by private cars (the contribution of public transport is not specified). So, as the total amount of CO_2 emissions was 164.4 Mt, and household emissions combined amounted to about 30 Mt, households contributed about 18% of the total CO_2 emissions in the Netherlands in 2020, see: CBS (2022b).

[34] Warringa et al. (2021).

[35] See: Warringa et al. (2021: 21). The amount in the budget reserve was €100 million, spread over 2020 to 2022, see: Parliamentary Papers, 2019/20 35 300, no 16; Parliamentary Papers II, 2021/22, 35 925, no 2: 123–124, 131.

[36] In 2020 and 2021, the budget for the SDE++ scheme was €5 billion, but for 2022 this was increased once off to €13 billion. This was paid from the budget reserve and public funds, see: Rijksoverheid (2022).

4.3 Distributing Subsidies

What distributive principles can we identify in these subsidies and the ODE scheme?

4.3.1 SDE++

The SDE++ scheme is intended to finance those projects that can reduce CO_2 at the lowest cost.[37] This is determined based on a 'subsidy intensity' calculation,[38] after which the applications are ranked. Projects with a low price per unit of CO_2 reduced are more likely to be considered than those with a higher price. So, the cost-effectiveness of the measures to be subsidised is the central criterion of this instrument.[39] The distribution of the subsidy budgets is based on the 'greatest utility' principle: they are allocated to achieve the maximum CO_2 reduction per euro spent.

4.3.2 ISDE

The ISDE scheme aims to encourage the use of renewable energy in private homes, and relatively small-scale renewable applications for small businesses.[40] Unlike the SDE++ scheme, it does not take into account the amount of CO_2 reduced, so the 'greatest utility' principle does not apply here. The ISDE reflects the 'sustainability pays' principle of the 'contribution and benefit' category: applicants are awarded a subsidy for their contribution to sustainability. They get more than one benefit from this contribution: they can recuperate part of the investment through the subsidy, and they also have lower energy bills. If they install solar panels, they can also claim compensation for feeding electricity back into the grid.[41] Because their home consumes less fossil fuel, they also pay less ODE tax.

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[37] Parliamentary Papers II, 2021/22 session, 35 925 XIII, no. 2: 121.

[38] RVO's SDE++ brochure (2022: 4) contains two calculations for the subsidy intensity: (*requested subsidy [€/kWh]—long-term price [€/kWh]) / (emission factor [kg CO_2/kWh] / 1000*); and (*requested subsidy [€/tonne CO_2]—long-term price [€/tonne CO_2]) / (emission factor [kg CO_2/tonne CO_2]/ 1000*).

[39] Vergeer et al. (2021).

[40] In 't Veld et al. (2019: i).

[41] This is the net metering scheme, which the government plans to phase out by 2025, see: Milieu Centraal (n.d.).

4.3.3 SPUK

The SPUK funds are distributed based on the number of residents in energy poverty in each municipality.[42] Each municipality receives a fixed amount per household in energy poverty, which it distributes among these households.[43] At the level of the individual household, the distribution focuses on households in energy poverty. These tend to be households with relatively low incomes, with poorly insulated homes and/or with high energy bills.[44] This distribution is therefore in line with the principles of 'sufficiency' and 'benefitting the least well-off' (the funds are used to benefit the least well-off and ensure that energy poverty does not leave them unable to meet their basic needs).

4.3.4 ODE

As mentioned, the SDE++ and ISDE schemes are paid for by the ODE, a degressive tax. This means that small energy users pay more ODE per unit of energy than energy users with a large carbon footprint. The lower tariff for large users is to ensure they can maintain their competitiveness and production intensity. This is in keeping with the 'based on existing rights' distributive principle we saw in Chap. 2 (companies' existing production processes are taken as a starting point). Companies whose competitiveness is compromised by the ODE tax are promised compensation by the government.[45] As such, the government respects the expectations and existing practices of the industry.

4.4 Effects: Laggers Face Higher Costs

In the previous sections we saw that different distributive principles apply to both the funding and allocation of energy transition subsidies. For example, the ODE tax that pays for the ISDE and SDE++ schemes is 'based on existing rights'. To protect their competitiveness, large users pay less tax per unit of energy than households and SMEs.

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[42] Mulder et al. (2021).

[43] Parliamentary papers II, 2021/22, 35 925 VII, no. 50.

[44] Parliamentary papers II, 2021/22, 29 023, no. 272.

[45] For example, the government promised to compensate for the relocation of business activities or job losses as a result of the redistributed ODE tax burden (from 50/50 to 67/33 in favour of households), see: Rijksoverheid (2019: 106).

SDE++ subsidies enable businesses to invest in technologies that generate renewable energy or otherwise achieve CO_2 reductions. Technologies that achieve the most reductions at the lowest possible cost are given priority. So here, the 'greatest utility' principle is central.

The SDE++ subsidy was funded from ODE revenues.[46] The effect of this distribution is that the subsidies granted to (larger) businesses are largely paid for by small consumers such as households and small businesses.

The ISDE scheme works differently. It follows the principle of 'sustainability pays': people who make their home more sustainable benefit. But there are differences between the eligible homeowners, and those differences have distributional implications. For example, the ISDE scheme is only available to homeowners who can afford to carry out sustainable improvements, and there are also differences between these households. Wealthier households can pay for sustainable renovations out of their own pockets, saving additional costs such as the interest on a loan. So, these households benefit more from the scheme than households that need to take out a loan to renovate. The net effect of this from the perspective of distributive justice is that households with relatively lower incomes and no borrowing capacity will be unable to carry out sustainable renovations, so they will be stuck with high energy bills *and* they will not be applicable for the grant.[47]

What would the situation be if the ISDE scheme was designed to achieve maximum CO_2 reductions, or encourage renewable energy generation (i.e. the 'greatest utility' principle)? The funds would then be deployed to homes that would benefit the most from sustainable improvement; in practice, the most poorly insulated homes, including in the rental sector. These are typically not only the people with the highest energy bills, but also with lower incomes. If the ISDE grant was distributed on the basis of greatest utility, the scheme would be designed so that it would also (or predominantly) benefit these households.[48] This demonstrates how different underlying distributive principles can lead to very different outcomes.

The net effect of the way the ODE tax and the SDE++ scheme currently work is that households that are lagging behind in the energy transition face relatively higher costs than those who can afford to invest in sustainability. This is because the ODE tax is based on the consumption of fossil energy, with the intention of encouraging sustainability. So, the group that pays for the ODE tax will become smaller as more households become more sustainable. However, the costs the ODE tax covers are increasing due to the increasing SDE++ budget.[49] This increases the tax burden that has to be distributed between a smaller and smaller group of people.[50] And these

[46] As of 1 January 2023, the SDE++ and the ODE were uncoupled and the ODE was merged with the energy tax (ET). Since 2023, SDE++ subsidies have been paid from ET revenues.

[47] Kluizenaar and Flore (2021).

[48] Investico (2021). The question remains how this can be achieved in practice.

[49] RVO (2012).

[50] Parliamentary papers II, 2021/2022, 31 239, no. 340: 24.

are the very households who cannot claim the subsidies, because the SDE++ scheme is only available to businesses, and only those who can afford the initial investment can claim an ISDE grant.[51]

So, the revenue raised through 'existing rights', and spent through 'greatest utility' and 'sustainability pays', results in a group of households that faces high costs but cannot access the subsidies. These are the households that are lagging behind in the energy transition. This conclusion is supported by a National Ombudsman report,[52] which warns that the measures to enable people to structurally reduce their energy bills are not reaching the people who need them most. Low-income homeowners often do not have the financial means to pay, or obtain loans for, expensive sustainable improvements.[53]

Low-income households, including those in rentals, can sometimes claim a SPUK grant, which does not have to be paid back, so that they do not fall below the subsistence level. However, the energy savings they can make are limited compared to the much more drastic energy-saving measures enabled by the ISDE scheme.

4.5 Academic and Public Debate: Households Under Pressure

The pressure that the current system puts on those lagging behind in the energy transition is the subject of debate in Dutch politics. Immediately after the national Climate Agreement was published, several opposition parties contested the agreed distribution, because they said it spared the industry too much.[54] Studies conducted by the climate organisation Milieudefensie and the organisation representing the Dutch SME sector also highlighted the wide disparities between those who receive subsidies for sustainable measures and those who pay for them. These studies revealed that the schemes to make the heavy industry more sustainable are being paid for from ODE revenues raised by SMEs.[55]

There is a perception among the public that the costs of sustainability are being unfairly distributed. In a 2021 survey of nearly 2400 respondents by the Netherlands Institute for Social Research (SCP), two-thirds of respondents said they think the

[51] Vollebergh (2022).

[52] The National Ombudsman represents the interests of citizens and helps government agencies to improve their services.

[53] Nationale Ombudsman (2022).

[54] The parties were PvdA, PvdD, SGP and GroenLinks, see: NOS (2019). See also: GroenLinks and PvdA (2022). Even before publication of the Climate Agreement, the interest group for the business sector (*ONL voor Ondernemers*) and the network for sustainable businesses (*MVO Nederland*) informed the minister of their concerns. They were worried about the fact that SMEs are being made responsible for financing the energy transition of the larger companies, see: MVO Nederland (2019).

[55] Milieudefensie (2020) and MKB (2021).

costs of climate measures are unfairly distributed between small energy users (such as households and SMEs) and energy-intensive companies, and also between individual households.[56]

So, the distribution of the costs and benefits of subsidies for the energy transition has been met with social criticism. The most frequently mentioned change that is suggested to distribute the costs of the energy transition differently is less differentiation in the price of carbon emissions. Fairer carbon prices could be achieved by, for example, making the ODE tax less degressive, as was proposed by the Interdepartmental policy research committee (IBO), among others.[57] To this end, it is suggested that the ODE and energy tax rates be made more equal, and that existing exemptions be removed. This amounts to a proposal to redesign the ODE tax to reduce the influence of the 'based on existing rights' principle. This would provide a more efficient incentive to large companies to invest in sustainability, and could potentially improve support for the ODE tax among the public and other small energy users.

4.6 In Conclusion: Long-Term Effectiveness of Distributions in Doubt

The Dutch energy transition is a complex and costly undertaking. There is a multitude of instruments aimed at achieving sustainability, including a variety of subsidy schemes. We looked more closely at subsidies for the industry (SDE++) and households (ISDE). We also discussed a grant that helps households in energy poverty to make sustainable home improvements (SPUK). Finally, we examined the ODE tax that pays for the ISDE and SDE++ schemes.

We saw that the principle of 'greatest utility at the lowest possible cost' is reflected in the way subsidies are granted under the SDE++ scheme. Essentially, it means that projects that can reduce CO_2 at the lowest possible cost take priority over more expensive projects. The ISDE scheme encourages households to become more sustainable and is granted based on an investment: if a household is able and willing to invest in sustainability, it can apply for the subsidy. Here we recognise the principle of 'sustainability pays'. The ODE tax that pays for these subsidies is 'based on existing rights'. We see that households that are lagging behind in the energy transition are facing relatively higher costs. The SPUK scheme does successfully encourage energy saving measures and helps keep poorer households above the subsistence level.

[56] Kluizenaar and Flore (2021: 82).

[57] IBO (2021: 71).

So, the issue of distributive justice has two sides: who receives the subsidies and who pays for them? From the perspective of justice, it is important to consider both these sides together. If we do not, we risk ending up with a disproportionate distribution, for example where a group has to pay for a subsidy but does not benefit from it. In this case study, these are the households who are lagging behind in the energy transition. The principle of 'sustainability pays' applies, but these households have little opportunity to do so. And, with the 'based on existing rights' principle being applied on the tax side, it is precisely these households that face relatively high costs to maintain the competitiveness of the industry.

These dynamics have led to doubts about the long-term effectiveness of the system.[58] They also reveal how the distributive effects of a funding structure can change over time. This illustrates the importance of giving *timely and continuous* attention to the distributive effects of climate policy, and to the distributive principles that can be applied in the process.

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Chapter 5
Flood Protection Policies

Contents

5.1 Flood Protection: Spearhead of Adaptation Policy

The Netherlands is famous for its excellence in water management and water expertise. The country's best-known waterworks are the *Oosterscheldekering*, *Afsluitdijk* and *Maeslantkering*. Foreign visitors marvel that about a quarter of the country is below sea level. Despite this, the Dutch delta is the safest in the world. But this does not mean there are no risks. Sea levels are rising due to global warming. While scientific knowledge about sea level rise is evolving, and there are still many uncertainties, it is clear that the risk of floods will only increase in the future. This also means that the costs associated with flood protection will increase, not only because the Netherlands' primary defences need to meet the new standards by 2050, but also because those standards may well be raised even higher in the future.[1] The challenges continue to mount up.

[1] The Flood Protection Programme (HWBP) was established to upgrade the primary flood defences to meet the applicable standards by 2050 (as established in 2017). The HWBP is a partnership between the water boards and Rijkswaterstaat, the Government's infrastructure arm. In 2023, the Minister of Infrastructure and Water Management will report on the results of a first round of assessments of the dykes and other defences for compliance with the current standards. This will result in a plan for improvements needed to meet the standards by 2050.

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https://doi.org/10.1007/978-3-031-59427-4_5

In this chapter, we look at Dutch flood protection policy. On the one hand, this involves the distribution of flood protection measures: where will flood protection measures be reinforced and who will benefit from them? On the other, we look at the distribution of the costs involved, for example for constructing, managing and maintaining the flood defences.[2] Who benefits from investments in flood protection, and who pays for them?

Distributive justice in relation to flood protection is not often a topic of discussion.[3] Discussions on justice in relation to water management are usually limited to water scarcity in times of drought. This is certainly an important part of adaptation policies, but there are also other important aspects of distributive justice in relation to water.[4] Our key message is that distributive justice is too often overlooked in flood protection policy. We reveal that in the current system, people in the Netherlands pay different prices for different degrees of flood protection. As the importance of flood protection increases, the question is whether the current system will remain acceptable from the perspective of distributive justice.

Like the other case studies in this book, our discussion of flood protection policies is intended to illustrate a point. Whereas the previous two case studies (carbon reduction targets and energy transition subsidies) involved examples of mitigation policies, flood protection is all about adaptation. The goal is to adapt to climate change, not to mitigate the effects. Of course, climate adaptation policies do not only concern flood protection, and may include measures against heat, drought and salination. These measures also involve distributive issues. For example, the dry summer of 2022 provoked a renewed debate about how to deal with water scarcity and water consumption taxes: who had the most right to use the scarce water available? We do not explicitly consider distributive aspects of adaptation policies like these in this chapter, but they involve similar distributive principles.

5.2 Context: Flood Protection in the Netherlands

The threat of floods has also had benefits for the Netherlands during the past two centuries. It has led to an effective system of coastal protection and other defensive waterworks, and far-reaching expertise in water management.[5] This has brought the country international recognition and commercial opportunities. The construction of flood defences, such as dykes, dams and storm surge barriers, has ensured a high level of protection against high water levels and floods. Primary defences protect

[2] Flood defences include dykes, dunes and dams. In this chapter, we use these terms interchangeably.

[3] Doorn (2012).

[4] Doorn (2012) and Kaufmann et al. (2018).

[5] Examples of three major infrastructural waterworks are the Nieuwe Waterweg and the North Sea Canal, the Zuiderzee Works and the Delta Works, see: Van der Geest et al. (2008).

Table 5.1 Common concepts in flood protection

Term	Explanation
Basic protection or basic safety	Protection that ensures that the probability of death from flooding is no more than 1 in 100,000 per year. This takes into account the availability of evacuation options.
Standard of protection	The standard for a dyke section required to provide basic protection. This standard determines the strength and height of a dyke, i.e. its capacity to retain water.
Probability of flooding	The probability that the water-retaining capacity of a dyke will fail such that the area it protects is flooded. This results in fatalities or substantial economic damage.
Primary flood defences	Primary defences that protect the Netherlands against floodwater from the North Sea, the Wadden Sea, the major rivers, and the IJsselmeer and Markermeer lakes.
Regional flood defences	Regional defences that protect the Netherlands against water from lakes, smaller rivers and canals.

Source: Rijksoverheid (n.d.)

against floodwater from the North Sea, the Wadden Sea, the major rivers, and the IJsselmeer and Markermeer lakes. Secondary or regional defences protect against water from lakes, smaller rivers and canals.[6]

The starting points of Dutch flood protection policy are embedded in the Water Act, established in 2009. This Act stipulates that the level of protection must be determined based on the degree of flood risk. Determining the flood risk involves estimating both the probability of floods occurring, and the consequences if they do (Table 5.1).[7] The greater the probability of flooding and the greater the consequences, the greater the resulting flood risk. The first component is defined by the maximum acceptable probability of flooding. The second, quantifying consequences, involves such parameters as the risk of injuries and deaths. This takes into account the region affected and the availability of an effective evacuation plan, as well as the fact that a flood that has many victims will have a greater impact than a minor flooding incident. The potential economic damage also plays a role in the level of protection, and thus the distribution of risks.[8]

The 'protection standards' calculated based on this approach took effect in 2017. The starting point of this flood protection policy was that "a human life is worth the same everywhere".[9] This means that the government is required to ensure a

[6] Rijkswaterstaat (n.d.-a).

[7] Under the 'old' flood protection standards, a flood defence had to protect against a given water level. This focussed on the probability of a higher water level occurring than a section of dyke was built to withstand ('overtopping probability'), and not on the probability of flooding, i.e. a dyke section breach that actually leads to flooding of the area behind it, see: Zwaneveld and Eijgenraam (2011).

[8] Social cost-benefit analyses by the CPB and Deltares played an important role in the development of new standards, see respectively: Zwaneveld and Eijgenraam (2011) and Kind (2011).

[9] Stive and Veerman (2008).

minimum level of flood protection everywhere, *and* ensure that the level of protection is not too unfairly distributed between various regions. So, the whole of the Netherlands must be guaranteed 'basic protection', and it is not permissible for some areas to be much less protected than others. 'Basic protection' means that the probability of death from flooding for people who live behind a 'primary dyke' is no more than 1 in 100,000 per year. Additional protection is provided in places with a higher risk of large numbers of victims, major economic damage, or damage to vital infrastructure.[10] We will return to this later in this chapter.

Flood protection measures are expensive. Dykes need to be maintained and reinforced. This maintenance is paid from the 'dyke budget', which is in turn financed by the Delta Fund (Box 5.1). The Flood Protection Programme (HWBP) is paid from the dyke budget. This is a major programme aimed at ensuring that primary dykes and defences meet the required standards by 2050.[11]

The dyke budget is funded by two different types of organisations. Rijkswaterstaat, an implementing body of the Ministry of Infrastructure and Water Management, is the first. Second are the water boards. The first water boards (*waterschappen*) were established as early as the thirteenth century. There are 21 water boards in the Netherlands today. Each water board is tasked with managing the water in a specific region. Rijkswaterstaat provides half of the funding for the dyke budget and the combined water boards the other half. For the water boards, this is simultaneously their largest cost item.[12] This is a relatively new situation; the water boards were only made responsible for 50% of the budget in 2011. Before then, these costs were paid through public funds, the idea being that everyone in the Netherlands should contribute, because floods affect everyone.[13]

Box 5.1: The Delta Fund

The Delta Act for flood protection and the freshwater supply includes agreements on the national Delta Programme, the role of the 'Delta Programme Commissioner' and the Delta Fund. The Delta Programme Commissioner oversees the implementation of the Delta Programme, which includes measures and provisions to protect the Netherlands from flooding, and measures to improve water quality and the freshwater supply. These measures and provisions are paid from the Delta Fund. The Fund provides financial security for these measures, including in the longer term, and also finances PR and other forms of information communication, as well as research programmes.

(continued)

[10] De Bruijn et al. (2010) and Deltacommissie (2020).

[11] In the HWBP, the water boards and Rijkswaterstaat are committed to reinforce at least 1300 km of dykes and 500 locks and pumping stations until 2050, see: Unie van Waterschappen (2020).

[12] Deltacommissie (2021).

[13] Mostert and Doorn (2012).

Box 5.1 (continued)

The Delta Fund is managed by the Minister of Infrastructure and Water Management and has a dedicated budget, which falls under the national budget.[14] The Delta Fund has access to a total of about €19 billion for the 2022–2035 period, so the average annual budget is about €1.4 billion. Investments in flood protection and management and the maintenance and replacement of infrastructure are the major cost items. In 2022, €232.3 million was earmarked for management and maintenance alone.[15]

The joint water boards' half of the reinforcement bill breaks down as follows: the investing water board (where the relevant flood defence is located) pays 10% 'own contribution' and the remaining 40% is paid through a solidarity contribution borne by all 21 water boards (Fig. 5.1). The solidarity contribution may vary between water boards and is distributed based on an 'equalisation' process. As a result, water boards that receive less from subsidies than they pay in the form of solidarity contributions may effectively be contributing to strengthening other region's flood defences. Furthermore, water boards have no say, in principle, in how their solidarity contributions to the state are spent. The 10% 'own contribution' is intended as an incentive: the idea is that a water board that invests its own money in a project will

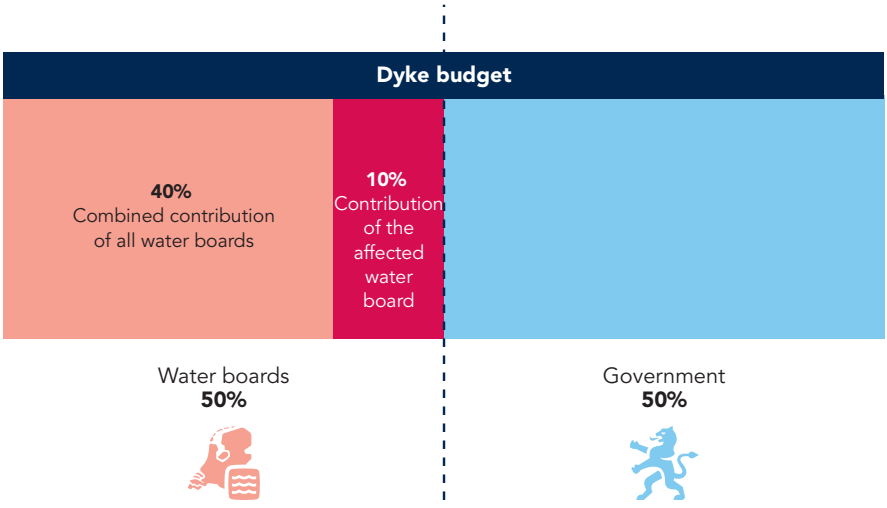

Fig. 5.1 Financing reinforcement of primary flood defences under the Flood Protection Programme

[14] Rijkswaterstaat (n.d.-b).

[15] Deltacommissie (2021).

implement it more efficiently and cost-effectively. Innovation projects are excepted and do not require an own contribution from the water board. The idea behind this, as expressed in the HWBP, is that the water boards and the national government jointly contribute to funding and implementing the improvement of the Netherlands' flood defences, and individual interests do not play a role. The water boards and the state should therefore be equally and jointly responsible for this.[16] Fig. 5.1 provides an overview of how the HWBP is funded.

The Netherlands also has 'national flood defences' which, although maintained and strengthened under the HWBP, are not managed by a water board. These fall directly under the responsibility of Rijkswaterstaat. Examples of national flood defences are the *Oosterscheldekering*, the *Maeslantkering* and the other four storm surge barriers. These flood defences are financed directly by the Delta Fund.[17]

Besides the primary and national defences, there are also regional flood defences. These defences provide regional protection, mostly against high water levels in local rivers and polder systems. This concerns some 10,000 kilometres of defences such as secondary dykes and canal dykes to protect against flooding from inland waters. The provinces and water boards develop standards of protection for these regional flood defences. These standards depend on the potential damage a flood could cause, and so are often lower in rural areas than in urban areas.[18] The water board is responsible for constructing, managing and maintaining regional flood defences, sometimes in cooperation with the provinces and Rijkswaterstaat.

Some people live in areas not protected by dykes. These 'outer dyke' areas are intensively used as nature, recreation, agriculture, and industrial areas, but also for housing. The Rijnmond-Drechtsteden region and some coastal towns such as Scheveningen and Katwijk have the highest numbers of people living in areas unprotected by dykes.[19] More than 60,000 people live in unprotected areas in the Rijnmond-Drechtsteden region alone.[20] More and more people may move to unprotected areas in the future, among others forced by the housing shortage. For example, the number of new houses constructed in the Rhine and Meuse river beds increased from almost 60,000 in 2000 to over 80,000 in 2019.[21] While floods in unprotected areas have different consequences (because these areas are usually higher-lying than the areas protected by dykes), floods here can nevertheless cause a lot of damage and disruption.[22] Local authorities therefore place specific requirements on housing developments in areas unprotected by dykes, such as the degree of protection and the elevation of the building site.

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[16] HWBP (2019).

[17] In 2019, a national flood defences programme was established, funded with over €800 million from the Delta Fund. Some flood defence improvement projects are not covered by the HWBP, such as the *Afsluitdijk*, which has been undergoing renovations since 2018. This project falls under the *De Nieuwe Afsluitdijk* programme, which also includes projects of regional partners.

[18] See: STOWA (2015). As a basic rule, the standard is assumed to be 1/100 in an urban area and 1/10 in a rural area, but this can vary by province and area.

[19] Rijkswaterstaat (2012).

[20] Delta programme (n.d.).

[21] Monster (2021).

[22] Delta programme (n.d.).

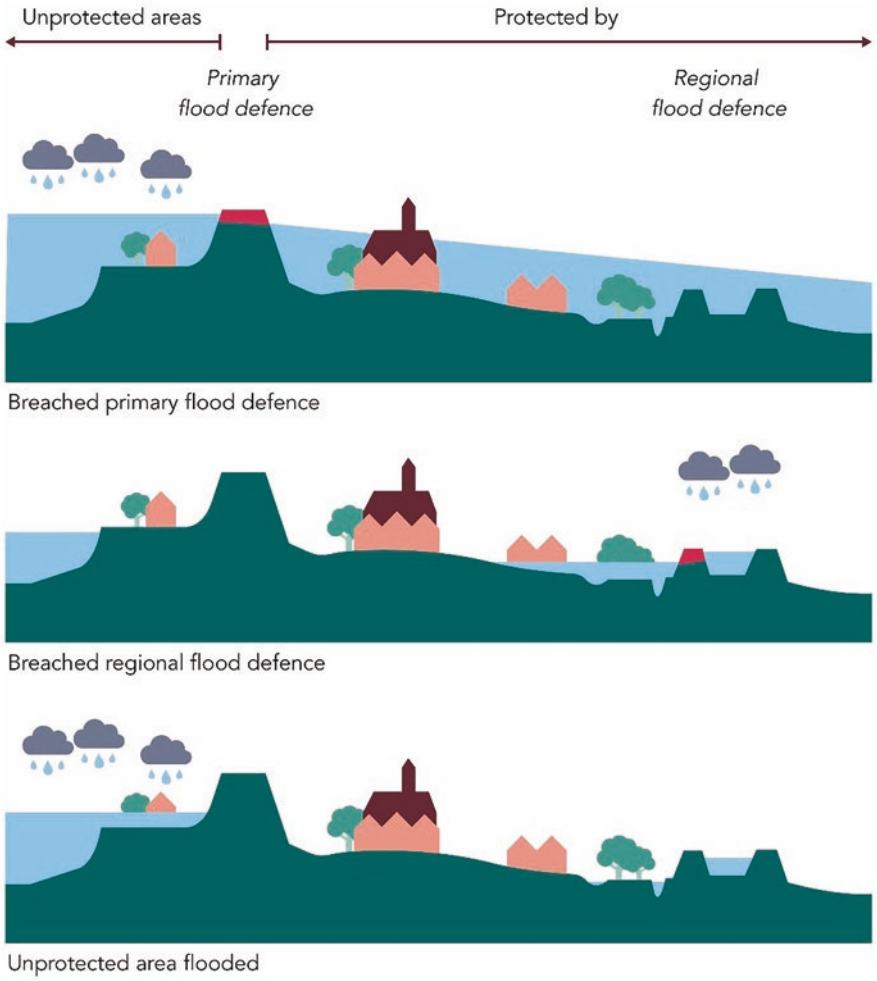

Fig. 5.2 Primary and regional flood defences and unprotected areas: protection against flooding from rivers and the seaSource: Adapted from Royal HaskoningDHV

Figure 5.2 illustrates the difference between protected and unprotected areas, and the consequences for these areas in the event of a breach of a primary or regional flood defence.

5.3 Principles of Flood Protection: Beneficiary Pays, But it Depends on the Location

Who benefits from flood protection measures and who pays for them? In this chapter, we look at the added value of the justice perspective in relation to this question. As we describe below, in practice, different distributive principles can be applied both to the

distribution of flood protection and the distribution of the costs. The type of defence (primary or regional) and the type of area (protected or unprotected by dykes) prove to determine both the distribution of protection measures and the costs thereof.[23]

5.3.1 Just Distribution of Flood Protection Measures

The risk-based approach described above is at the core of Dutch flood protection policy. As a result, flood protection standards are higher in areas with more economic activity and larger populations than in other areas. Below we describe the distributive principles we discern here. We start with the primary defences.

Preventing and protecting against floods caused by a failure of a primary flood defence is based on a minimum standard of protection called 'basic protection'. This is a responsibility of the state and enshrined in the Water Act. The idea here is that it is the government's responsibility to ensure an acceptable level of basic protection against flooding for everyone. This is based on the distributive principle of 'sufficiency'.

But additional degrees of flood protection could be included above this standard of protection, for example in areas with dense populations or with a lot of economic activity. As we saw earlier, the flood risk depends both on the probability of flooding *and* the consequences of flooding. In these areas, those impacts, and therefore the risk, are higher than in less densely populated areas. That is why the dykes in these areas must meet higher standards of protection.

A good example is the Randstad conurbation. This is the urbanised area in the western Netherlands that stretches from Utrecht and Amsterdam to Haarlem, Leiden, The Hague and Rotterdam. This is a densely populated and economically important area, thanks to a large services sector and internationally important hubs such as the port of Rotterdam and Schiphol airport. This region is therefore subject to a higher standard of protection than almost all the other areas in the country, which are less densely populated or generate less economic value.[24] Another example is the Borssele nuclear power plant in the province of Zeeland, whose dykes must meet the highest standard of protection in the Netherlands.[25] So, this standard is partly determined by the number of potential victims in, and the economic capital of, a given area. In terms of distributive principles, this can be seen as a form of 'greatest utility'; the flood protection policy is primarily designed to minimise financial or economic damage.[26]

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[23] Kaufmann et al. (2018).

[24] This higher standard of protection is once every 100,000 years.

[25] Namely 1:1,000,000, see: Atlas Leefomgeving (2020).

[26] There is an important nuance here. In Chap. 2, we formulated 'greatest utility' as a distribution designed to maximise the effect or utility of measures to achieve a collective goal *within* a given policy domain, in this case climate policy. But here we use a different application of this principle, because while it concerns the most effective deployment of measures, it is not necessarily only related to climate policy. This is therefore a broader social application of 'greatest utility' than we apply elsewhere in this book.

If the principle of 'capacity' or 'solidarity' had been guiding, the distribution might have looked different. If the capacity principle were applied, areas with high incomes or much economic activity would not necessarily be more entitled to flood protection, while lower-income areas might well have that entitlement. This is because lower income households are less able to take protective measures themselves, such as investing in flood-proof foundations or taking out insurance.

What principles do we see in relation to regional flood defences and unprotected areas? The combination of the distributive principles of 'sufficiency' and 'greatest utility' can also be seen in the regional flood defences. But the situation is different in the unprotected areas. People generally live here 'at their own risk'. Because the area is unprotected by dykes, there is no basic level of protection. The inhabitants have responsibility for taking measures to protect themselves and their property. So, flood protection here is distributed based on the principle of 'individual responsibility'. One of the practical options for these people is to take out insurance against floods. We will discuss the consequences of this in the next chapter.

To summarise, the distribution of flood protection in areas protected by dykes is determined by a combination of the distributive principles of 'sufficiency' and 'greatest utility', but the minimum standard of protection differs between primary and regional defences. In unprotected areas, no minimum standard applies, but rather the principle of 'individual responsibility'.

5.3.2 Distributing Costs

The improvement of the primary flood defences is carried out under the HWBP, with agreements on implementation and funding laid down in the 'Administrative Agreement on Water Affairs'. As we described above, one of the agreements is that the water boards and the state each contribute 50% of the costs of the HWBP. An important source of revenue for the water boards' half of the costs is the 'water system tax'. This tax is also used to pay for the construction and maintenance of regional flood defences.

Besides improvement, there are also the costs of *maintaining* the flood defences. The water boards have always paid for this themselves and are almost self-sufficient in this respect. They raise the money to pay for their activities through a system of decentralised taxes.[27] The water system tax also plays an important role here.[28] So, this tax directly funds the *maintenance* of flood defences, and indirectly funds the *improvement* of the primary defences, via the dyke budget. The majority of this budget is thus raised by households and businesses.[29]

[27] Dekker and Havekes (2018).

[28] Water boards levy several different taxes to pay for water management. Water management consists not only of ensuring flood protection, but also concerns water quality and quantity. The taxes that generate the most income for the water boards are the water system tax and the purification levy. Another important tax is the pollution levy.

[29] About 72% of the costs of water management are borne by households and about 23% by businesses through the various water taxes, see: Dekker and Havekes (2018).

Traditionally, the water system tax is collected based on the 'beneficiary pays' principle: those with a greater interest in the water board's facilities also pay a greater share of the costs.[30] The question of who benefits most from protection is thus central to the question of who pays.[31]

There are several types of 'beneficiaries' subject to the water system tax: households, building owners, landowners and owners of nature areas.[32] The water system tax has various 'apportionments', or distributions, designed to take into account elements of the 'solidarity' and 'beneficiary pays' principles.[33] Assuming that residents have a general interest in water system management, they have to pay a tariff for their accommodation, regardless of where, how large and how many occupants. The amount of the tax is therefore the same for each accommodation.

But there are also groups with a specific interest: the owners of land, buildings and nature areas. These groups pay a variable component on top of the fixed rate per accommodation, determined by the government valuation of the accommodation or the value of other property such as land (Fig. 5.3).[34] So the amount of water system taxes may differ depending on whether you are a citizen, business or farmer, for example.[35] After all, a farmer with a lot of land usually has more value to protect against flooding than a family living in a terrace house.

The amount of water system taxes also varies between water boards, and depends partly on the location of the property. For instance, the water boards in the western part of the Netherlands manage areas that are mostly below sea level, and they are usually densely populated. This means that these water boards face greater water management challenges than those that lie in the east, above sea level, and are typically more sparsely populated. While the water system tax of the Delfland Water Board in the west of the country is €116.88 per accommodation, in the southeast, the Limburg Water Board levies €66.86.[36]

Residents of areas unprotected by dykes also contribute to the maintenance of dykes and other flood defences via the water system tax, even though they are not directly protected by them. This is because the water system tax is paid by every inhabitant, regardless of where they live. Some water boards give a discount on the variable rate to owners of properties in areas unprotected by dykes. This is the case for water boards in the northern part of the province of Noord Holland, and one water board near Rotterdam.[37] But this is more often not the case. The reason is that

[30] Hoeben (2012).

[31] Kaufmann et al. (2018).

[32] The water system tax is specifically intended for water system management, including maintenance of the flood defences and water quantity and quality. In this chapter we focus on flood defence maintenance.

[33] See: Dekker and Havekes (2018).

[34] The government valuation is arranged under the Valuation of Immovable Property Act. It determines the amount of the various levies and taxes, such as the water system tax, and involves an assessment of the value of the property.

[35] For an ethical discussion of this, see: Kaufmann et al. (2018) and Mostert and Doorn (2012).

[36] https://www.hhdelfland.nl/; https://www.waterschaplimburg.nl/overons/belasting/

[37] These are Noord-Hollands Noorderkwartier and Schieland & Krimpenerwaard water boards.

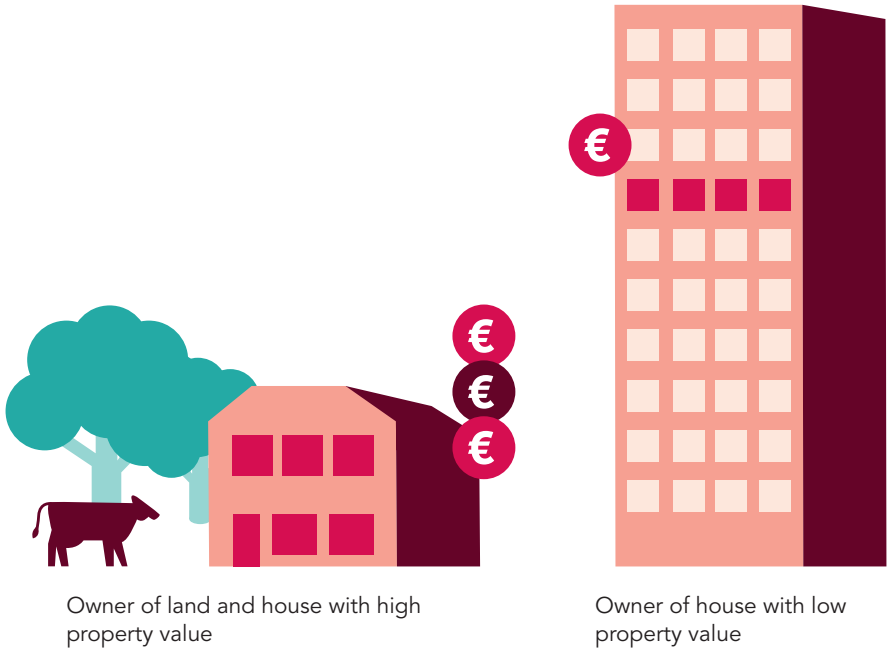

Fig. 5.3 The variable component of the water system tax depends on the value of the home and property

residents in unprotected areas actually do benefit from the dykes and other flood defences, for example when they go to work or school and use the infrastructure. The Delfland Water Board states: "Everyone benefits from the work of the water board, and so everyone contributes to it."[38]

5.4 Effects: Different Costs and Different Standards of Flood Protection

Flood protection is not equally distributed among the Dutch population. There is a minimum standard of basic protection, but the standard otherwise varies. This is not surprising, as it is a deliberate political choice to take a risk-based approach to flood protection. But we also see that the costs are not shared equally. People pay varying rates depending on where they live, work and use infrastructure. However, the protection they get for this also varies. So, the place where you live not only determines the level of flood protection, but also the amount you pay.

[38] Regionale Belasting Groep (n.d.).

The perspective of distributive justice provides some insight into the distribution of costs between water boards and the national government. The *maintenance* of flood defences is paid for by the water boards themselves, through decentralised taxes. As mentioned above, the dyke budget is an important mechanism for funding the *improvement* of the primary defences. Since 2011, water boards contribute 50% of the costs, and the state pays the other 50%. Striking here is that the national government is responsible for setting standards of protection for the primary flood defences. This means that it is the state who largely determines the work of a water board.

This can be a problem for a water board with few inhabitants (and therefore little revenue from water system taxes) and a high flood risk. An example is the Scheldestromen water board, which covers the province of Zeeland. This water board invests heavily in the maintenance of the coastal defences, but is relatively sparsely populated.[39] The question is whether this will be sustainable in the future: can the small water boards continue to pay for increasingly expensive flood protection measures? And what do the residents think of these discrepancies between the rates of the water boards? Such questions illustrate the importance of giving due attention to distributive justice in adaptation policies. However, there has been relatively little public debate about the distributive effects of the transition: from a dyke budget that was fully funded by the state, to the situation where half of it is paid for by the water boards (Fig. 5.4).

As climate change advances, these water boards could call for the return of more or even full public funding of these costs. This would alleviate the burden on those water boards facing increasing flood protection costs. Another alternative could be to establish a 'water board fund' from which flood protection measures are paid, with 'poorer' and 'richer' water boards contributing proportionally.[40] Such a fund exists for distributing costs between provinces and municipalities, but not for water boards.[41] The use of such a fund would shift the distribution of flood protection costs from a 'beneficiary pays' to a 'capacity' based distribution.

5.5 Academic and Public Debate: Dry Feet, But Not at Any Price

The choice of a risk-based approach to flood protection policy appears to be widely supported among policymakers and water experts.[42] But it is also worth noting that, when the flood protection standards were introduced in 2017, there was hardly any

[39] There are also a number of water boards that do not have primary flood defences in their region, but who still contribute to the dyke budget.

[40] Hoeben (2012).

[41] Hoeben (2012) and Mostert (2013).

[42] Bötger and Te Linde (2014).

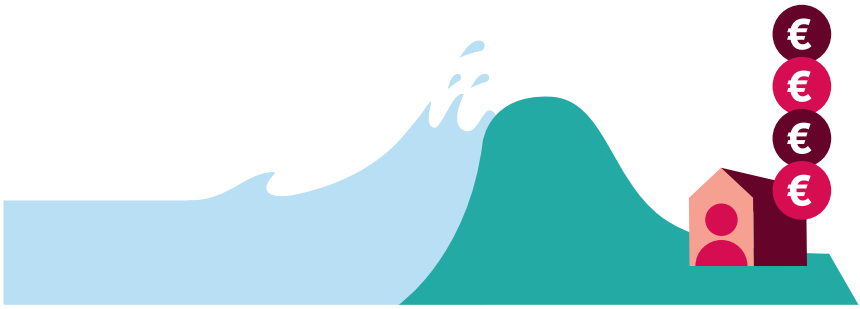

Fig. 5.4 Water boards in high flood-risk areas with few inhabitants have higher per capita costs

discussion about the impact on cost sharing, or to what extent the differentiation of the risks would be considered acceptable in the future, for example.[43] The narrative in which the government ensures that 'everybody can keep their feet dry' has been in the back of the minds of the Dutch people since the great flood disaster of 1953: protection from floods is taken for granted, and the policy can count on wide support.[44]

Much has been written in the academic literature about the acceptance and justification of risks.[45] People decide whether exposure to a risk is fair and acceptable based on considerations like whether it is a free choice, whether the risk is for a greater good, or whether an alternative is available. For example, a farmer may voluntarily settle in an area unprotected by dykes and so be more likely to accept the additional risks. Moreover, farmers may be more likely to take measures themselves.[46] When the flood protection standards were introduced, there was little

[43] Bötger and Te Linde (2014).

[44] Monitor waterbewustzijn in Nederland (2016).

[45] Hansson (2003).

[46] Doorn (2012).

public debate about the acceptance of flood risks, and so the differentiation of the flood protection standards also received little attention.[47] At the time, some water boards warned of sharp local tax increases due to the high flood risks in certain regions, such as Rijnmond-Drechtsteden. But this did not lead to any major debate.[48]

However, there has been debate about the decentralised taxes levied by water boards. This includes not only taxes intended for flood protection measures, but also for other water management responsibilities, such as ensuring adequate water quality and quantity. The debate was partly driven by a 2014 report by the Organisation for Economic Co-operation and Development (OECD) on Dutch water management.[49] The OECD assessed the decentralised funding structure very positively, but also called for a number of improvements. The thrust of this was that stronger economic incentives were required to respond efficiently to 'too much', 'too little' and 'too polluted' water.[50] Specifically for the water system tax, the OECD advocated more effective application of the beneficiary pays principle.[51] Here, it concerns the question of whether the value of buildings, land and nature areas forms a good basis for determining the benefit people get from protection by dykes. The water boards are currently working out a proposal for a model in which costs are distributed based on regional characteristics. The representative of the 21 Dutch water boards (the Union of Water Boards) contends that the benefit for the user can then be more accurately determined.[52]

5.6 In Conclusion: Recognising Bottlenecks

Who benefits from flood protection measures and who pays for them? We clearly see the 'greatest utility' principle applied to the distribution of flood protection above the level of basic protection. In contrast, the distribution of costs through the water system tax is based on 'beneficiary pays'.

There is currently debate about the water boards' decentralised taxes. The Union of Water Boards is drafting a proposal for a legislative amendment. One of its aims is to give water boards more scope to apply the beneficiary pays principle differently. However, the justness of the distributions *between* water boards, and between the boards and the state, is less a subject of debate.

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[47] Bötger and Te Linde (2014).

[48] Bötger and Te Linde (2014).

[49] OECD (2014).

[50] Dekker and Havekes (2018).

[51] For the purification levy and the pollution levy, the OECD advocated more effective application of the 'cost causation' and 'polluter pays' principles respectively, see: OECD (2014) and Dekker and Havekes (2018).

[52] For further details on the Union of Water Boards' proposal for tax adjustments, see: Unie van Waterschappen (2020).

Greater awareness of distributions within flood protection policy is important, because the threat from the sea and rivers will only increase as climate change progresses. As a result, Dutch water managers will need to take more drastic adaptation measures, with increasing costs for the state and the water boards. This means that the importance of distributing these costs fairly will also increase.

Differences between water boards may also widen as the need to adapt to a changing climate increases. In the future, more difficult choices about the degree of flood protection will be faced, possibly resulting in greater differences between risks as well. In the longer term, it is conceivable that a different trade-off will be made between, for example, economic capital and the built environment versus flood protection in low-lying areas.

We mentioned some examples in this chapter that could lead to alternative distributions. We took as an example the water boards with small populations and high flood risks. If principles like capacity and solidarity weighed more heavily than they do now, and the costs were distributed through public funds, this would reduce the disparity in the distribution of costs between the water boards. Or, if a 'water board fund' were established, the water boards that cannot bear the high costs of maintaining their flood defences would be helped by the other water boards. These examples illustrate that a different perspective of distributions can lead to different outcomes. Of course, whether this is desirable is a political consideration. This book is not advocating for major changes to be made today, but instead calls for more attention to distributive justice, so that bottlenecks can be recognised in time.

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Chapter 6
Damage After Extreme Rainfall

Contents

6.1 Extreme Rainfall and Justice

In July 2021, unprecedented precipitation flooded large parts of the province of Limburg in the south-east of the Netherlands.[1] Extreme amounts of rain fell from 12 to 15 July.[2] Statistically, such extreme rainfall occurs once every thousand years on average.[3] It had huge consequences: the Geul river burst its banks and flowed through the streets of Valkenburg and other towns. Basements and streets flooded, but living rooms too, forcing residents to flee from the rising water. Cars and all manner of other objects floated downstream with the current.

[1] Task Force Fact Finding Hoogwater (2021). The cause of the extreme rainfall was a low-pressure area in the border region of the Netherlands, Germany and Belgium, in combination with a high-pressure area over southern Scandinavia and central Europe. The high-pressure area over central Europe hemmed in the low-pressure area, but also fed it with new moisture, see: KNMI (2021).

[2] On July 13 and 14, the Schaesberg precipitation station measured 158 mm of rain, while the Ubachsberg station measured 182 mm, see: STOWA (2021).

[3] STOWA (2021).

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
https://doi.org/10.1007/978-3-031-59427-4_6

The Netherlands actually got off lightly compared to Germany and Belgium. There were no casualties in Limburg, but 184 and 38 lives were lost in Germany and Belgium, respectively.

Once the water receded, the havoc in Limburg was revealed in all its enormity. The total damage in the Netherlands alone was estimated to be between €350 and €600 million.[4] By no means all the damage was insured or insurable. The national government therefore designated Limburg a disaster area and so all uninsured damage was eligible for compensation under the Disasters (Compensation) Act.[5]

This chapter considers distributive issues in policies for compensating climate damage caused by increasingly extreme weather events. Extreme weather already causes much damage today, and it will become only more common as climate change progresses, not only in the Netherlands itself but also in the Caribbean territories (see Box 6.1). In this case study, we specifically examine the damage caused by extreme rainfall, who is compensated for it, and who actually pays for it. We look into the distributive principles behind the current system of compensation, and at what other distributive principles could be applied. Like the other case studies, we will see that not all the distributive principles we distinguished in Chap. 2 apply here. For example, it is often difficult to identify a polluter or other liable party in cases of climate damage, so 'polluter pays' is difficult to apply. This chapter concludes that, in a world facing increasing climate damage, the distributive effects of government compensation for extreme weather events should be debated from the perspective of distributive justice.

Box 6.1: The Caribbean Part of the Kingdom of the Netherlands

When we talk about the climate policy of the Netherlands, many people will associate this with the European part of the Kingdom. But the islands of the Caribbean part of the Kingdom of the Netherlands–the countries Curaçao, Aruba and Sint Maarten, and the municipalities with a special status: Bonaire, Sint Eustatius and Saba (the BES islands)–are also facing climate damage. Curaçao, Aruba and Sint Maarten do not have independent powers to conclude treaties, such as international climate agreements.[6] Due to territorial restrictions, the Kyoto Protocol and the Paris Agreement only apply to the European part of the Kingdom. One consequence of this is that the non-European territories are excluded from climate targets and cannot claim international financial support under these treaties.[7]

(continued)

[4] Task Force Fact Finding Hoogwater (2021).

[5] RVO (2021).

[6] Misiedjan (2022).

[7] Misiedjan (2022) and AIV (2020: 22).

Box 6.1 (continued)

However, climate change will have more far-reaching consequences in the Caribbean than in the Netherlands. Extreme heat, drought and precipitation are on the rise, increasing the likelihood of food scarcity, deterioration of quality of life, and poverty.[8] Hurricane Irma, which swept over Sint Maarten in 2017, revealed how vulnerable the island is. There were dozens of casualties and 91% of the island's buildings were damaged. After the hurricane, the Netherlands established a recovery fund of €550 million. Four years later, only half that amount had been paid out and many houses and other buildings had still not been repaired.[9] Hurricane Irma reveals why carefully thought-out climate policies, including policies for preventing and repairing climate damage, are essential for the entire Kingdom of the Netherlands.[10]

6.2 Context: Flooding and Flood Damage

The climate of the Netherlands is changing. In its climate scenarios, the Royal Netherlands Meteorological Institute (KNMI) warns that extreme rain, heat and drought will become more frequent in the coming decades, with all the risks this entails.[11] Take the likelihood of extreme rainfall: the number of days with more than 50 mm of precipitation increased by 70% between 1951 and 2019.[12] After the floods in Limburg, a group of researchers concluded that climate change will significantly increase the likelihood of heavy rainfall.[13] Such extreme precipitation is normally expected once every 400 years, on average, for the entirety of western Europe and the northern Alps. The probability of this happening will increase as global warming continues.[14]

Adaptation and mitigation measures cannot completely prevent such extreme events from occurring and causing damage to homes, business premises, factories, roads or tunnels, as well as loss of income. So, such damage caused by changing and more extreme weather will only increase in the future.[15] Extreme rainfall alone

[8] AIV (2020: 21).

[9] Hendriksen (2021).

[10] AIV (2020: 22).

[11] The most recent climate scenarios were published in 2023, see: KNMI (2023) and Klein Tank et al. (2015). The scenarios are a translation of the projections presented by the United Nations Intergovernmental Panel on Climate Change, see: IPCC (2021).

[12] PBL (2020).

[13] Shortly after the flood in Limburg, an international team of scientists from World Weather Attribution (WWA), supported by several experts, investigated the causes of the extreme rainfall.

[14] Kreienkamp et al. (2021).

[15] Institutes such as the KNMI and the WWA are conducting important research into the exact causes of different types of weather extremes. Climate change leads to more frequent weather extremes like heat waves, but can sometimes also lead to less extreme weather, such as cold spells. Weather extremes are partly caused by climate change and partly by climate variability (the extent

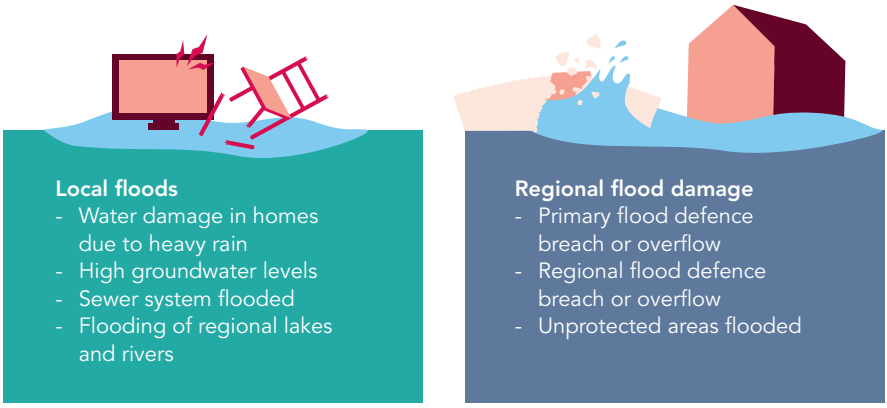

Fig. 6.1 Damage from extreme rainfall: water damage and flood damage. (Source: Kok, 2021)

causes millions of euros per year in damage to cars and buildings, for example. The Dutch Association of Insurers warns that in the KNMI's worst-case scenario, if no measures are taken, damage to personal property caused by extreme precipitation could double in the coming decades.[16] But public spaces and infrastructure will also suffer major damage. The costs for the government will therefore likely be substantial too, as the example of the flood in Limburg demonstrated.

The Netherlands has various mechanisms in place to deal with such damage, the two most important being insurance and government compensation. The type of damage determines which mechanisms are applied. Damage caused by extreme rainfall is legally separated into two categories: *water damage* and *flood damage*. Figure 6.1 illustrates this distinction. Broadly speaking, flood damage is caused by major disasters, such as a breach of a primary flood defence (see Fig. 5.2), while water damage is generally on a smaller scale. We note here that the dividing line is not always clear. Sometimes, situations with severe water damage (such as in Valkenburg) are referred to as flood damage. Whether or not justified, the way damage caused by extreme rainfall is compensated is related to how the damage is legally classified.

An often stated rule-of-thumb is that people should always insure themselves against damage if this is reasonably possible. This is the case if you can buy insurance against such damage. Currently, only a few insurance policies are available in the Netherlands for the *flood damage* category. One reason is that the costs of flood damage can be very high. This is due to 'damage accumulation': because a breach of a primary flood defence often affects an entire area at once, the accumulated costs of the damage can be enormous.[17] Another reason is what is known in the insurance world as 'adverse selection'. This is the phenomenon that only people who face ~~relatively high risks take~~ out insurance (for example, people who live in low-lying

to which the weather fluctuates). The extent of damage will depend on the adaptation measures that are taken in response to the changing weather conditions.

[16] Verbond van Verzekeraars, n.d.

[17] Zwaneveld and Eijgenraam (2011) and Kok et al. (2014).

areas). Insurers cannot offer insurance for these risks because the premiums would be unaffordable. So, as there is no insurance available for the failure of a primary flood defence, the resulting damage is uninsurable.

However, damage caused by extreme rainfall that can be classified as water damage *is* insurable, both for businesses and private citizens. Such damage can also be costly (such as crop damage caused by flooded fields), but is generally less impactful than flood damage. Farmers have more insurance options since the advent of the all-weather insurance policy in 2010. But all-weather insurance is expensive. Although it is partly subsidised by the government, very few farmers have taken this insurance out as yet.[18] This number is expected to increase following the introduction of the insurance tax exemption in 2020 and the sum of €17.5 million that the Netherlands Enterprise Agency (RVO) earmarked in 2021 to make the all-weather insurance policy more attractive.[19] Private citizens can also take out insurance against certain forms of water damage. For instance, most building and contents insurance policies have a 'precipitation clause' that covers water damage caused by rainfall.

In addition to the insurance options, the government may, at its own discretion, contribute financially to compensate for major damage caused by extreme rainfall. It uses public funds to this end.[20] This is also known as 'non-mandatory damage compensation'.[21] That means there is no legal obligation to compensate. The decision is ultimately a political one, and depends on current views about the role of the government and solidarity, for example.[22]

The Disasters (Compensation) Act is an example of non-mandatory compensation for damage. This Act was established in 1998, and in principle applies only to 'not reasonably insurable' damage caused by a flood following the failure of a primary flood defence, or by an earthquake. This Act therefore has more the character of a 'safety net'. The Act can also be invoked in the event of a disaster 'of at least a comparable order of magnitude' to a flood or earthquake. This happens only by royal decree, for example in case of a severe social impact, or if the damage is so extreme that it cannot be borne by those affected. This in turn is based on the government's duty of care for the 'habitability of the country' (Article 21 of the Constitution) and the principle of solidarity.[23] Invoking the Disasters (Compensation) Act is not the only choice the government makes after the fact; the details of what is to be compensated (with possibly a financial ceiling), and who, are also fleshed out only after the disaster has occurred. The government also decides whether the claimants' ability to pay will be taken into account.[24]

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[18] Berkhout et al. (2016) and Brinkman et al. (2017). While the desired participation in the all-weather insurance policies is at least 50%, participation was at 11% in 2021, see: Kok (2021).

[19] Kok (2021).

[20] WRR (2011).

[21] Den Ouden and Tjepkema (2006).

[22] WRR (2011).

[23] Van de Bunt (2016) and Parliamentary papers II, 1996/97, 25 159, no. 3 (MvT).

[24] WRR (2011) and Den Ouden and Tjepkema (2006).

Since its introduction, the Disasters (Compensation) Act has been invoked six times, including after the 2021 floods in Limburg, when the damage was classified as 'equivalent to flood damage'.[25] On 16 July 2021, the government invoked the Act and offered compensation from the public purse for the damage suffered (Box 6.2).[26]

Box 6.2: The Disaster Fund
Besides insurance policies and the Disasters (Compensation) Act, a third way to compensate people for damage is to establish a disaster fund. A disaster fund is established by private initiative, so not by the government, and is independent of application of the Disasters (Compensation) Act.[27] One example is the Limburg flood recovery fund, which was established by the privately operated National Disaster Fund Foundation (NRF) to support severely affected citizens and civil society organisations who suffered damage during the floods. This disaster fund raised over €11 million in four weeks time through donations from individuals and companies. Disaster fund payments are usually made in the form of one-off 'solidarity donations' to those worst affected. We cannot attribute specific distributive principles to such funds, because these depend on the criteria established by each fund, and may coincide with various of the ten principles discussed in this book.

6.3 Distributions: Individual Responsibility and Existing Rights

In cases of damage, the person who caused the damage is principally responsible for repairing or compensating it.[28] But extreme rainfall is not caused by anyone, and so the damage cannot be recovered from someone.[29] The same goes for other causes of climate damage, be it a drought or a heatwave. There are a number of options available to deal with such damage. We could require people to pay for their own damage, for instance by drawing on their own savings. In many cases, however, people

[25] Four of these occasions involved a royal decree, where a disaster of a 'comparable order of magnitude' was declared. Of these, three were caused by extreme rainfall, and one by drought (this was when the Wilnis dyke was breached). The most recent occasion was during the summer of 2021, when the Act was invoked in response to the floods in Limburg. The other two cases involved situations that automatically fell under the scope of the Act, see: Staatscourant (2021), Parliamentary Papers II 2020/2021 3 5 19 379, and Verbond van Verzekeraars (2018).

[26] Staatscourant (2021).

[27] Van de Bunt (2016).

[28] There are examples where a business or municipality has been held responsible for damage to the health of the local population due to air pollution.

[29] An exception would be if a water board failed to meet its responsibility.

will not have enough money to completely restore the damage. In the previous section, we discussed insurance policies and government compensation as the two main mechanisms for compensating such damage. In this section, we elaborate on this from the perspective of distributive justice. What distributive principles are involved and what are the distributive effects? We look at both the distribution of the compensation payments and how these are financed, for example through insurance or from public funds.

6.3.1 Individual Responsibility

In the case of damage caused by extreme rainfall, the current policy of the Netherlands is to first invoke individual responsibility.[30] This means that it is seen as a primary responsibility of citizens and entrepreneurs to take out proper insurance, or take other preventive measures. The government also described this expectation when it established the Disasters (Compensation) Act. In principle, owners who have suffered damage to their land, home or other property are expected to repair or pay for the damage themselves. The situations where this policy can be deviated from depend on the classification of the damage (water damage or flood damage), the extent of the damage, and whether the damage was reasonably insurable. The starting point is that flood damage caused by the breach of a primary defence may be compensated by the government. This is because such damage is often not only very extensive, but also uninsurable.

6.3.2 Distributing Disasters (Compensation) Act Payments

As mentioned, the Disasters (Compensation) Act is seen as a 'safety net': in principle, victims will only receive compensation if no other compensation is available, and if the damage is unrecoverable or uninsurable.[31] The government establishes a separate compensation scheme for each disaster for which the Act is invoked. That scheme determines the compensation rates, maximum payments, threshold amounts (if applicable) and the precise categories of damage eligible for compensation. This means that the exact details of a scheme are a political choice that can be reconsidered for each new disaster.[32] The damage suffered is generally

[30] Parliamentary papers II 1996/97, 25 159, no. 3 (MvT).

[31] Van de Bunt (2016).

[32] In practice, there appears to be only limited variation between disasters where the Disasters (Compensation) Act is invoked, and similar choices are made as for the 2021 floods in Limburg discussed in the main text. This is because the payments and the bases of calculation are derived from a system that was developed based on the schemes implemented under the Act in response to the 2003 and 2011 floods of the river Meuse and the 2003 Wilnis dyke breach, see: Staatscourant (2021).

not fully compensated, but is subject to a threshold amount, a compensation rate, and sometimes a maximum payment. For example, following the Limburg floods in 2021, businesses (including farms) were compensated for 65% of the damage and private citizens for 90%.[33] Some types of damage are subject to a maximum payment. In Limburg, 90% of the costs of damage to household contents could be claimed, up to a maximum of €32,400. No maximum applied to damage to the homes themselves, for which 90% could also be claimed. A fixed amount of €2700 was paid for damage to private vehicles. No maximum was applied to damage to businesses.

People with more property usually suffer more damage due to a disaster. If this is the case, these people will, in absolute terms, receive more relief or compensation through the Disasters (Compensation) Act (although a maximum usually applies). The Act does not take account of a claimant's capacity to pay, or whether paying may force them below the subsistence level. So, we really see a mix of different distributive principles in the practical implementation of the Act. The fact that only part of the damage is compensated, and that a threshold amount and a maximum may apply, reflects the principle of 'based on individual responsibility'. After all, all affected parties must pay for some of their own damage. Where a maximum amount applies (as in Limburg for contents damage), this further has the effect that people whose claim is lower than the maximum amount are effectively compensated for a larger share of their damage. These will often be lower income earners, as they generally have fewer possessions and therefore suffer less damage. In absolute terms, however, people who suffer more damage will generally receive more compensation through the Act, because many claims will fall below the maximum amount, and because some damage is not subject to this maximum. This can be seen as a distribution 'based on existing rights'; the amount of property someone has determines the extent of compensation for extreme weather damage.

The mix of the above distributive principles varies in practice and depends on the specific case. Of course it depends on individual circumstances, but also on the details of the compensation scheme that is implemented under the Act. Particularly important here are the percentage of damage that is compensated and the maximum amount. When these amounts are lower, the distribution will lean more towards 'based on individual responsibility', whereby the safety net character of the scheme will play a greater role. When these amounts are higher (under a generous compensation scheme), the distributive effect will lean more towards 'based on existing rights'.

[33] RVO (2021, 2022).

6.3.3 Distributing Insurance Payments

We described above how there are more insurance policies available for water damage than for flood damage, of which the latter is generally uninsurable. People who have insured against water damage can assume that their insurer will reimburse such damage, as it is covered in most building and contents insurance policies. This is a distribution 'based on individual responsibility'; only those who took out a policy and paid the premiums will be compensated, all others will not.

6.3.4 Who Pays?

Above we asked who is entitled to compensation for damage caused by extreme rainfall. The other side of this question is: Who actually pays for that compensation? Here too, we distinguish between insurance policies and the Disasters (Compensation) Act.

The choice to take out private insurance against water damage caused by extreme rainfall is a voluntary one. As with all insurance, this means that this compensation is financed by the insurance premiums of all insured parties. Because they have chosen to do this themselves, we consider this to be a distribution 'based on individual responsibility'.[34]

When the Disasters (Compensation) Act is invoked, the compensation under it is paid from public funds. This means that this compensation falls under the distributive principles that apply to the collection of public funds in general. The Netherlands has a progressive tax system, based on the idea that people with higher incomes can contribute proportionally more to public funds than those with a low income. This implies that the funding of compensation schemes under the Act is based on the distributive principle of 'capacity'. However, it is not at all clear that the Dutch tax system as a whole is actually a net progressive system (see Box 2.2 in Chap. 2).

6.4 Effects: Limited Incentives, Existing Rights and Unpredictable Compensation

The government has decided that compensation for damage caused by extreme rainfall should be based on the principle of individual responsibility. The idea is that people insure themselves as adequately as possible and that the Disasters (Compensation) Act is available as a safety net for uninsurable damage. In practice,

[34] There is a nuance to this 'voluntariness', because most insurers include water damage in their buildings and contents insurance policies. However, the cover for water damage depends on the type of policy chosen.

however, the Act may be more broadly deployed, although exactly how is not predetermined. From the perspective of distributive justice, we see that this mechanism has various effects.

One of these is that this policy may actually reduce the incentive to take 'individual responsibility' in cases that would have been insurable in principle. In fact, in four of the six cases where the Act was invoked, the damage was *not* the result of a breach of a primary flood defence, and at least some of the damage could have been insured. The damage was classified as 'equivalent to flood damage'. In principle, this could reduce the incentive to take out insurance or take other precautions, because people assume they will be compensated anyway. After all, why take out expensive insurance if your neighbours do not have it but still get compensated? This could weaken the effect of the 'individual responsibility' principle.

A second effect of the chosen design of the Act is that it may implicitly lead to distribution 'based on existing rights', for example in the case of compensation for damage to a home (see Sect. 6.3). The implication is that, in many cases, affluent people are compensated more through the Act in absolute terms than lower-income earners, because they generally own more property and so suffer more damage. In other words, people who may well have the capacity to bear the costs of the damage themselves actually get more compensation than those that do not.[35]

Thirdly, the application of the Act can be unpredictable. This is because this is a political choice, made in retrospect, and not mandatory. That means there is no guarantee that similar cases of water damage will be treated equally. From a distributive perspective, this means that compensation for damage cannot be taken for granted: while one case of flood damage is compensated, another disaster with similar damage may not be if a different political choice is made. This is not in keeping with the widely shared moral intuition that like cases should be treated alike.

6.5 Academic and Public Debate: Flood Damage a Recurring Issue

The public and academic debate about damage caused by extreme rainfall has focused on the notion of insurability, and in particular on making *flood damage* insurable. Insurers are said to have little influence on the insurability of flood damage due to the phenomena of damage accumulation and adverse selection.[36] The obvious conclusion is that the responsibility for such damage should therefore be largely shifted to the government.[37] This is an important conclusion in light of the expectation that climate change will only make such damage more common in the future.

[35] As mentioned earlier, although capacity *could* be a criterion for compensating damage under the Act, this is not usually the case.

[36] WRR (2011).

[37] Faure and Hartlief (2006) and WRR (2011).

Several attempts have been made in the past to counter this shift and make flood damage more insurable, and so make the costs of such damage more of an individual responsibility. One way to increase insurability is to make insurance for flood damage mandatory for everybody.[38] This would avoid adverse selection and spread the costs of claims over a larger group of insured parties, lowering the premiums. One possible form of this is a compulsory public flood insurance scheme, or a flood fund paid from public funds. A variation of this approach is a mandatory additional premium on top of a common insurance policy, such as fire or home and contents insurance, or a mortgage fee. One objection to such compulsory schemes is that they deny freedom of choice.[39] In this context, the Authority for Consumers and Markets (ACM) rejected a proposal for mandatory flood damage insurance submitted by the Dutch Association of Insurers in 2013.[40]

Besides the above options, setting a maximum on the coverage payable by insurers could also make flood risks more insurable. The insurance industry could develop and sell such policies, whereby the government could act as reinsurer if the costs of a specific event cannot borne by the insurers.[41] A proposal for a 'proportionate additional premium' for flood damage in building and contents insurance policies, with a possible role of the government as reinsurer, was also submitted after the floods in Limburg in 2021.[42] This option had also been discussed earlier, including by the Borghouts Committee in a 2004 report with advice on how to regulate non-mandatory damage compensation.[43]

The flood disaster in Limburg brought renewed attention to the debate on the predictability of compensation under the Disasters (Compensation) Act. For example, it could help to establish clearer criteria for application of the Act and the associated rules on the amount of compensation. Not only would this give individuals and companies more of an incentive to take individual responsibility, it would also put insurers in a better position to develop suitable insurance policies.[44]

What would the implications be for distributive justice in relation to the costs of climate damage? If new government policy was to lead to new insurance policies for damage caused by extreme rainfall, this would relieve the burden the Act places on public funds. This could potentially bring us closer to the distributive principle of 'individual responsibility' for the costs of such damage than is currently the case. It could also encourage citizens and businesses to do more to prevent damage compared to the situation where the government acts as an implicit (albeit unpredictable) safety net. In this respect, the precise effects will obviously depend on the details of the policies developed to enable such an insurance market.

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[38] This is basically the same as compulsory health insurance. Again, due to adverse selection, such insurance is only feasible if it is mandatory for everybody.

[39] Van de Bunt and Tjepkema (2016).

[40] Van de Bunt (2016) and Bruggeman and Faure (2018).

[41] WRR (2011).

[42] The Dutch Association of Insurers made the same proposal in 2020 in their Position Paper on flood insurance, see: Verbond van Verzekeraars (2020).

[43] Formally known as the 'Disaster and emergency relief committee' (CTRC); see: CTRC (2004).

[44] Bruggeman and Faure (2018) and Kok (2021).

6.6 In conclusion: Distributive Effects Need Reconsideration in the Light of the Increasing Costs of Climate Damage

This chapter started with the question of who gets compensated after extreme rainfall and who ultimately pays for that compensation. We have shown that this depends on how the damage is classified: as water damage or as flood damage. It also depends on whether such damage will be compensated through the Disasters (Compensation) Act, and on the details of the compensation scheme applied.

In principle, private insurance policies are responsible for insuring water damage and they determine the policy conditions and the compensation. This means only people with insurance will be reimbursed for all or part of their losses. This is the distributive principle of 'based on individual responsibility'. The situation changes if the Act is invoked. In principle, this is the case only if a primary flood defence is breached, but as we have seen, in practice it is applied in a broader range of situations, for example after the 2021 floods in Limburg. The actual effect of the Act corresponds to the distributive principle of 'based on existing rights', although 'based on individual responsibility' continues to play a role.

As climate change advances, extreme weather events will be responsible for increasing damage, and so we need to consider how to distribute the associated costs, for example between citizens and governments. We also need to carefully consider the distributive effects, i.e. where the costs and benefits of government schemes to mitigate climate damage should fall. For example, it is quite conceivable that, with increasing climate damage, governments may want to encourage citizens and businesses to try to prevent such damage, or to pay for it themselves. The current relationship between the Disasters (Compensation) Act and the insurance market may impede this, as only certain forms of water damage can be insured and the government acts as a safety net in case of larger disasters.

In a rapidly changing climate, that safety net may be called upon more frequently. It is therefore desirable to establish clearer criteria for the application of the Disasters (Compensation) Act. The WRR earlier advised the development of a vision with principles for non-mandatory damage compensation.[45] This could reduce the public pressure on the government to compensate uncovered damage. Another effect would be that people–provided they are made aware of the scheme–would not be faced with unexpected high costs if they have to pay for damage themselves. And they would be more encouraged to prevent such damage or insure against it. At the same time, however, behavioural researchers have shown how difficult it is for people to take precautions against rare and unpredictable events such as major floods.[46] This will need to be taken into account if a larger role is accorded to private initiatives and individual responsibility. The relevant schemes will have to be designed such that they are feasible for 'ordinary people'.[47]

[45] WRR (2011).

[46] WRR (2017).

[47] WRR (2017).

A carefully elaborated government vision on non-mandatory damage compensation could put insurers in a better position to develop and offer flood risk insurance policies. The extent to which such insurance could provide broad coverage needs to be investigated further, with other countries possibly serving as examples (see Sect. 6.5). For example, should flood insurance be made compulsory? Such an obligation would have distributive implications that will need to be thought through. Should minimum wage earners be compensated for not being able to afford such insurance, as is currently the case through the healthcare benefit? From a distributive perspective, this could be seen as an application of the 'sufficiency' principle, or perhaps 'for the benefit of the least well-off'. This illustrates why distributive principles must play an important role when considering the implications of increasing climate costs. From the perspective of distributive justice, this should be an ongoing discussion.

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Chapter 7
Procedural Justice and Distributive Issues

Contents

7.1 From the Yellow Vests to a Broad Public Consultation

In 2018, the French government decided to introduce a carbon tax, which was followed by a sharp spike in diesel prices.[1] We saw in Chap. 1 how this helped spark the protests by *les gilets jaunes*, the yellow vest movement. One of the grievances was that the French government had not considered the effects of the carbon tax on French citizens who lived outside the city and drove diesel vehicles to get to work. It was not just the rising prices themselves that were contested. Many also felt a great sense of injustice, because sweeping decisions had been taken on how to respond to the climate crisis without considering their views. The people who actually had to pay the additional tax had not been consulted first.

President Emmanuel Macron decided to organise a major national debate in response to the protests: the *Grand Débat National*. From January 2019, thousands of meetings were organised throughout the country, both physically and online,

[1] Grossman (2019) and Willsher (2018).

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
https://doi.org/10.1007/978-3-031-59427-4_7

where citizens could have their say on the energy tax and broader issues such as climate change and purchasing power.[2] Macron himself attended a number of these meetings. *Cahiers* were opened in 16,000 French municipalities where people could submit complaints and suggest solutions, and 10,000 municipal debates were organised. Forty-one thematic conferences were also organised with numerous interest groups, such as businesses, trades unions and associations.[3]

The yellow vest protests in France also led to the creation of the *Convention Citoyenne pour le Climat* in 2019. This convention consisted of 150 randomly selected citizens who came together to consider how France could meet the 40% emissions reduction target by 2030 without losing sight of social justice. The composition of the members was meant to reflect the diversity of the French population. The French government thus tried to include the various interests in the country in its climate policymaking processes, with the aim of developing a fairer climate policy. Macron said in 2020 that he would adopt almost all of the 149 proposals that emerged from the *Convention Citoyenne pour le Climat.* Incidentally, the carbon tax that caused the yellow vests to take to the streets was not part of these proposals. It was agreed beforehand that Macron could block a maximum of three proposals, which he subsequently did.[4] Another 23 proposals were voted down by the French parliament, who also watered down 78 of the plans. The rest have been or are going to be implemented.[5]

The example of the yellow vests in France shows that a just climate policy is about more than the fair distribution of costs and benefits. The way policies are made is also a matter of justice. In this chapter, we examine the theme of procedural justice, and in particular the justice of the policymaking process. We pay special attention to how citizens are involved. Is a major national consultation always the best way, as in France? Or are there other ways?

7.2 What Is Procedural Justice and Why Is it Important?

7.2.1 What Is Procedural Justice?

Procedural justice in distributive issues concerns whether the process of distribution has been conducted in a fair manner. It is not the outcome of the distribution that is key, as in distributive justice, but rather how it was arrived at. This involves questions such as:

[2] Le Grand Débat National (2022a).

[3] Le Grand Débat National (2022b).

[4] Hendriks et al. (2021).

[5] Dekker (2021). The *Convention Citoyenne pour le Climat* was not without its critics. For instance, the composition of the convention was said to be less representative of French society than it pretended to be. The convention also lacked a clear political foundation; the legitimacy of the outcome of the citizens' assembly was not established by law, leaving room for several proposals to be watered down or voted out, see: Hendriks et al. (2021).

- Were all relevant stakeholders, such as citizens and businesses, involved in the process?
- Were their interests fairly weighed?
- Were all sides given the opportunity to make their case?
- Did all stakeholders have access to the same information?
- Was an impartial decision reached?[6]

In this chapter, we focus specifically on generic decision-making in distributive issues to do with climate policy. This involves procedures for agenda-setting and decision-making based on generic rules: In what situations should we invoke the Disasters (Compensation) Act? Should we impose a general tax on diesel? Should we subsidise solar panels and electric vehicles?

Of course, procedural justice is also very important for the implementation of policies, when administrative bodies need to make concrete decisions about individual cases based on the established rules: Should we pay compensation for damage to a house due to extreme rainfall? Should we subsidise an individual citizen for installing solar panels on their roof? In individual cases, procedural justice is primarily a matter of good governance. Did the administrative body, or the judge, give sufficient reasons for their decision? Was the decision reasonable and proportionate?[7] Were all sides given the opportunity to make their case?

However, this book is primarily about distributive justice in relation to generic climate policy. In this phase, procedural justice is mostly a matter of participation and representation. This also applies to generic decisions taken by provinces, water boards and municipalities. Have the interests and views of all stakeholders been adequately addressed? Have relevant citizens and stakeholders been given a place at the table? Is there a level playing field? Several studies show that when citizens are involved in a policy process, and also feel they can influence it, they consider the process more just.[8]

7.2.2 Why Is Procedural Justice Important?

There are at least two reasons why procedural justice is important for distributive issues in climate policy. The first is for intrinsic reasons. Procedural justice is an important value in itself and a pillar of the democratic rule of law. This is why criminal and administrative law both pay extensive attention to how the government treats its citizens, which has culminated in a balanced system of legal protection in

[6] Young (1990).

[7] Grootelaar (2018). Behavioural research reveals that acceptance of an outcome is strongly related to the perceived fairness of the procedure. If citizens feel that an administrative body or judge has taken them seriously and showed an interest in them, they will be more satisfied with a decision, even if it to their disadvantage, see also: Brenninkmeijer et al. (2012) and Grootelaar (2018).

[8] Blackstock et al. (2007), Kim and Mauborgne (2003), Reed (2008), and Richards et al. (2004).

criminal procedure and a system of principles of good governance and standards of conduct in administrative law. The parliamentary system is also a form of procedural justice. The constitution and regulations of the Senate and House of Representatives set out parliamentary procedures and describe how minority rights are guaranteed in political decision-making.

But there is a second reason that has specifically to do with climate policy, but also other distributive issues. As we have seen in the previous chapters, in many cases there is no objective or generally accepted measure of what constitutes a just distribution. Various outcomes are defensible on the basis of various principles.[9] So, just distributions within climate policy are open to debate. As we saw in the case studies in the previous chapters, different outcomes are possible depending on which distributive principle is implicitly 'built into' a policy instrument.

In such situations, procedural justice is even more important for the perceived fairness of the distribution.[10] Van den Bos argues that in these situations, the fairness of the procedure is what ultimately determines how people judge the fairness of the outcomes.[11] He calls this the 'fair process effect'. If the decision-making process has been fair and careful—that is, if everyone's interests have been taken into account and all information has been fairly and carefully considered—then people will be more likely to conclude that the outcome must therefore be fair.[12] The fairness of the procedure is then an indicator of the fairness of the outcome.

So, you could defend the thesis that, in situations where there are no unambiguous and universally accepted standards of distribution, procedural justice is actually a *prerequisite* for just distribution. Indeed, both Walker and Schlosberg argue that a system of procedural justice that recognises the diversity of interests will *by definition* lead to a just distribution.[13] Procedural justice can then be seen as a means of achieving distributive justice. After all, if all relevant facts, views and opinions have been carefully and properly considered in a proceeding, then we can trust that all relevant intuitions and principles concerning the fairness of the distribution have also been included. The result is an 'all things considered' judgment that best expresses how all these things should be balanced and considered. So, the fairer the procedure, the fairer the outcome.

7.3 Public Participation in Distributive Issues

Involving citizens in the decision-making process is an important element of procedural justice in climate policy. After all, citizens are the main stakeholders in this policy. The French example shows that this is also an important condition for

[9] Davidson (2021).

[10] Van den Bos et al. (1997) and Van den Bos (2005).

[11] Van den Bos et al. (1997) and Van den Bos (2005).

[12] Van den Bos et al. (1997) and Van den Bos (2005).

[13] Walker (2012) and Schlosberg (2007).

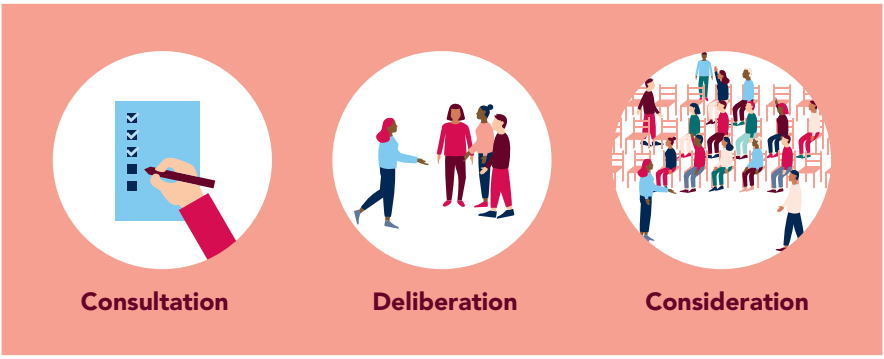

Fig. 7.1 Three ways to organise public participation

gaining public support. In this chapter, we discuss three different ways the government can involve citizens in establishing just climate policy: through public consultations, public deliberations and participation councils (Fig. 7.1). They differ in how and to what extent citizens are involved in the policymaking process. In each situation, the most appropriate way will depend on the purpose of involving citizens in the process (see also Box 7.1).

Box 7.1: Public Participation in the Literature

There is an extensive body of literature on public participation in policymaking. Many studies have demonstrated the benefits of public participation, both theoretically and empirically.[14] Examples of such benefits include access to local knowledge, enriching democracy and strengthening communities.[15] The literature also discusses in which situations public participation has been successful (or not), and in what form it can best be carried out (for example through a public consultation or deliberation, or a participation council).[16] The degree of direct influence citizens have on the policy process depends on the form chosen.[17]

Which form of public participation best suits the issue, and how much direct influence citizens should have, depends on the purpose of involving them in the process.[18] This purpose can be roughly divided into three categories: enabling citizens to participate in democracy, legitimising decisions, and developing knowledge about complex problems.[19] Bryson et al. provide an

(continued)

[14] O'Faircheallaigh (2010).

[15] Stewart and Sinclair (2007) and Michels and De Graaf (2010).

[16] Akerboom (2018) and Uittenbroek et al. (2019).

[17] Arnstein (1969) and Michels (2011).

[18] O'Faircheallaigh (2010), Ianniello et al. (2018), Michels (2012), and Wesselink et al. (2011).

[19] Hisschemöller and Cuppen (2015).

Box 7.1 (continued)

overview, based on academic literature, of various goals of public participation and which form best suits which goal.[20]

It is important to choose the right form for public participation to be effective, but other conditions must also be met. It is difficult to establish fixed criteria for successful participation in any context. Key themes that always play a role are[21]:

- inclusiveness and representativeness
- equal access to information and resources
- consultation over time
- clear delineation and political embedding of outcomes

7.3.1 Public Consultations

Of the three forms of public participation we distinguish here, public consultations are the 'light version'. Central to this form is that policymakers can obtain information from citizens. Unlike public deliberations and participation councils, no direct conversation takes place between policymakers and citizens, or between citizens among themselves: the flow of information is bottom-up. Techniques that can be used to ensure that various perspectives are aired include citizen panels, opinion polls, internet consultations and surveys. An example where this has been done in relation to Dutch climate policy is the Participatory Value Evaluation (Box 7.2).

An advantage of public consultations over public deliberations and participation councils is that they are scalable and so many stakeholders can be involved. They are also relatively easy and cheap to organise. Moreover, research in the field of political science has revealed that citizens are not always keen to actively participate. It costs time and energy to attend participation meetings in community centres or council chambers. Many people feel uncomfortable or intimidated when discussing politics.[22] People need to feel comfortable enough to show their (political) colours and speak up to explain their position. Some citizens do think it important that their views and interests are taken into account in policymaking, but do not necessarily feel the need to participate in the debate themselves. A public consultation is a way for all these people to bring their perspective to the policy process. The risk of this form of public participation is that ultimately little or nothing is done with the information that is collected from the citizens.

[20] Bryson et al. (2012).

[21] Bell and Carrick (2017), Reed (2008), and Ianniello et al. (2018).

[22] Mansbridge (1980), Mansbridge et al. (2012), Hooghe (1999), Theiss-Morse and Hibbing (2005).

Box 7.2: Participatory Value Evaluation

A good example of a public consultation is the climate consultation that Mouter et al. organised to involve citizens in climate policy.[23] The result of their Participatory Value Evaluation (PVE) was that Dutch citizens were able to advise the government about a variety of climate issues.

More than 10,000 citizens completed the evaluation form, in which a range of policy issues were presented and the respondents were asked to make choices and assess various options. Citizens were given information about the pros and cons of the various policy issues and the constraints involved, such as a limited budget. They were also informed about the consequences of each choice (for example, that closing large polluting factories reduces a lot of carbon but also involves job losses). The aim of such PVEs is to make citizens more aware of the dilemmas facing the government. Respondents make their own choices based on this information and also give their reasons in writing. Based on the responses, Mouter et al. drew up a number of conditions that climate policies must meet if they are to gain public support.

This form of consultation goes further than an opinion poll or referendum, where citizens are often asked to consider isolated issues and can often only respond with a 'yes or no'. A PVE does not focus on an individual issue, but rather tries to enable citizens to make well-considered choices by presenting policy issues in their context. There is, however, no direct interaction between the public and the policymakers. The outcomes of the PVE serve as a guide for policymakers, because they reveal how the public perceives the situation. So, this is primarily a form of public consultation that allows the policymaker to collect information from the public.

7.3.2 Public Deliberations

Deliberations in public participation do involve a conversation between citizens and policymakers, and also between citizens among themselves. In public deliberations, the stakeholders in a decision have the opportunity to have their say.[24] The perspective of a particular interest group is represented by a member of that group, and not by an external representative. This means there is more interaction between people with differing interests than in a public consultation. The aim is to seek consensus in a conversation in which the involved parties exchange arguments and reflect on their own position. The decision is ultimately made by the relevant public administration, but with more direct citizen involvement than in more traditional forms of representation.

[23] Mouter et al. (2021).

[24] Dryzek (2009).

An important aspect of a deliberative policy process is that it provides an opportunity for stakeholders to speak freely, and there is room to change opinions.[25] In his research, Niemeyer argues that deliberative policymaking processes are ideally suited to climate issues.[26] Because of the often complex issues at stake in climate policy, it is important that citizens have some understanding of the issue so they can come to an informed opinion. His research shows that citizens develop a better understanding of a given climate issue if they are deliberatively involved. One reason is that the deliberative process is a 'learning process': stakeholders are informed about an issue and form opinions through interaction with other stakeholders and administrators.[27] Deliberative forms of public participation are usually at a smaller scale, such as community meetings or workshops. For example, many Dutch municipalities organise community meetings to discuss the transition to gas-free neighbourhoods and which heating alternatives best suit the homes and people in the neighbourhood.

One problem with this form of public participation is its scalability. Interaction normally takes place between citizens and administrators at a local or regional scale, and is more difficult to organise at the national scale. However, this can be done by separating the policy process into smaller units so that smaller groups of people can consider sub-topics of it.[28]

Besides scalability, the issue of inclusivity also plays a role. Research into interactive policymaking reveals that it is mainly the people who are already politically engaged that are likely to participate.[29] In his research, Hooghe calls this the 'cultural hegemony' of deliberative policy processes, where people with educational and cultural privileges are more likely to be heard than others.[30] The perspectives of these others subsequently take a back seat. Interactive policymaking thus leads to more political inequality, known in academia as the 'participation paradox'.[31] One very important group that cannot be directly represented in deliberative processes are future generations. This is particularly a problem in the case of climate change, because the consequences will fall mainly on these generations. Initiatives are therefore being taken to include the 'voice'—or at least the interests—of future generations (see Box 7.3).

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[25] Dryzek (2009).

[26] Niemeyer (2013).

[27] Uittenbroek et al. (2019).

[28] Mansbridge et al. (2012).

[29] Verba and Nie (1972), Reed (2008), and Tiemeijer (2011).

[30] Hooghe (1999).

[31] See: Verba and Nie (1972). The mechanism behind the participation paradox has also been confirmed by other researchers, see: Bozbey and De Bie (2013) and Van der Meer (2018).

Box 7.3: Public Deliberation Involving Future Generations

Climate justice is also an intergenerational issue. There is a generation gap between those who are causing climate change and those who will be most affected by it. Greenhouse gases emitted today will remain in the atmosphere for many decades to come, and this could have dire implications for future generations. However, those future generations do not have a say in how we deal with this today. So, how can the interests of future generations be represented in the current debate? One way is to safeguard the interests of future generations in institutions or in certain policymaking processes. Below we give two examples, from Wales and Japan.

In Wales, the interests of future generations have been secured since 2016 in the form of a 'Commissioner for Future Generations'. The commissioner advises on sustainability and protects the interests and welfare of future generations. Public institutions are required to follow the commissioner's advice, provided it is reasonable. The position of commissioner was established following the enactment of the Well-being of Future Generations (Wales) Act.

Japanese researchers have developed the 'Future Design Method',[32] which involves splitting a diverse group of citizens in two, asking one group to imagine themselves as the future generation and the other as the current generation. The WRR organised a pilot to examine to what extent this method could also work in the Netherlands. This pilot is discussed in an essay, published in 2021, on a fairer approach to dealing with the interests of future generations.[33]

7.3.3 Participation Councils

One way to overcome the participation paradox is to randomly select participants to a participation council. This ensures the participation of people who were not already engaged beforehand. In addition, public participation processes based on the selection of a random sample are easier to scale up to the national level, because the participants selected are representative of society. We see this reflected, for example, in Fishkin's ideas on 'deliberative polls', where the aim is to ensure deliberation and political equality simultaneously by actively selecting participants.[34]

[32] Saijo (2019) and Hara et al. (2019).

[33] De Vette et al. (2022). This essay can be found in a volume edited by the Council of Public Health and Society (RVS) on safeguarding the future of young people and is also available online on the WRR website (only available in Dutch).

[34] Fishkin (2009).

Deliberative polls are carefully designed. Participants are asked to complete a survey on the relevant topic during a short interview and then invited to participate in a deliberative policy process. Between the interview and the deliberative process, participants receive information on the topic from both scientific and policy perspectives. For example, they are asked to consider various policy proposals, after which they discuss these under the supervision of trained moderators. The purpose of deliberative polling is to ensure that participants adopt informed, deliberate and reasoned positions.[35] Citizens are given more say and are more directly involved in the policy process in this form of public participation than in public consultations and deliberations.

In participation councils, the participating citizens are asked to discuss specific issues and formulate concrete policy proposals.[36] The *Convention Citoyenne pour le Climat* and the *Grand Débat National* are examples of participation councils. We discuss a Dutch example of such a council in Box 7.4.[37]

The 'Advisory Committee on Public Participation in Climate Policy' published a report which examines the extent to which participation councils could ensure more involvement of Dutch citizens in climate policy.[38] Based on their research into instruments to increase public participation, they conclude that a citizen forum (a form of participation council) would be suitable for this purpose. This would not only involve citizens more in climate policy, but it could also reduce polarisation in society around this issue, as people with different opinions engage with each other. However, the committee warns, such a forum must meet five conditions:

1. The question must be clearly formulated.
2. The group of participants must be representative.
3. The political foundation must be clear before the process starts.
4. Adequate support must be provided throughout the process.
5. It must be clear what will be done with the proposals the process produces.

These preconditions are also reflected in a collection of essays on national citizens' forums which describe the potential of these forums as a democratic instrument in the Netherlands.[39] The authors argue that a citizen forum is not a 'democratic panacea', but that with the right design it could complement representative democracy.[40]

[35] Fishkin (2009).

[36] Adviescommissie Burgerbetrokkenheid bij klimaatbeleid (2021).

[37] The example we discuss in Box 7.4 is not the only example of a participation council in the Netherlands. For example, the G1000 foundation is organising various participation councils where citizens, employers, politicians, civil servants and others come together to seek agreement through dialogue. What is special about the G1000 is that it is a citizen initiative, and not organised by the government, see: https://g1000.nu/

[38] Adviescommissie Burgerbetrokkenheid bij klimaatbeleid (2021).

[39] Hendriks et al. (2021).

[40] Hendriks et al. (2021: 4).

A carefully planned participation council can help foster greater support for difficult decisions or settle drawn-out discussions. According to a recent SCP study on public support for citizen forums, the Dutch think that climate change comes second only to housing policy as a suitable topic for a citizen forum.[41] In June 2023 it was announced that a citizen forum on climate and energy policy will be established.[42]

Finally, it is important to communicate clearly about such forms of public participation, including informing those people who will be represented, though not directly involved. This can help to reassure people that their voices are actually being heard, even if they themselves are not at the table. The *Convention Citoyenne pour le Climat* and the *Grand Débat National* in France have special websites for this purpose which provide information about the participants, the process and the topics discussed.

Box 7.4: Amsterdam's Participation Council

In September 2021, the City of Amsterdam announced its intention to work with its residents to reduce the city's carbon emissions and meet its climate targets. One hundred Amsterdammers were chosen from a draw to participate in a participation council. Led by former National Ombudsman Alex Brenninkmeijer, the council met five times. The participants were split into different groups and provided with information on the theme.

The aim of the participation council was to come up with concrete proposals on how the municipality could reduce its emissions. A consulting firm was on hand to calculate the impact of the suggested measures on carbon reduction. Twenty-six proposals emerged from the council meetings, including the creation of a new 1000-hectare forest and optionally connecting homes to geothermal energy.[43]

Besides the concrete proposals, the participation council was also able to state their expectations of how the city council would implement them. The city council has indicated it is willing to adopt the proposals provided they are in line with prior agreements.

7.4 In Conclusion: Procedural Justice Is Important

In the previous chapters, we saw various distributive principles at work in the case studies. There is no single right answer to the question of what is the most just distribution in climate policy. It is ultimately up to the political arena to make a choice.

[41] Den Ridder et al. (2021).

[42] Rijksoverheid (2022) and Parliamentary papers II, 2021/2022, 22231704.

[43] Brenninkmeijer et al. (2021).

This is no easy choice, as no objective or generally accepted criteria exist for determining which principle is preferable in which situation. This is why procedural justice must also be taken into account to ensure that climate policies are developed in the fairest possible way. As research has revealed, if the process is fair, people will be more likely to consider the outcome fair, and so be more likely to support it.

In this chapter, we discussed the premise that the existence of procedural justice is indicative of distributive justice. If all relevant facts, views and opinions have been carefully and properly considered in a proceeding, then we can trust that all relevant intuitions and principles concerning the fairness of the distribution have also been included. So, the fairer the procedure, the more likely the outcome of the distribution will also be fair.

An important part of procedural justice is the inclusion of the public's perspective. After all, any climate measures may have far-reaching consequences for citizens and businesses. Policymakers behind their desks do not always have an overview of all possible consequences and interests. The introduction of the carbon tax in France is a good example. The policy officials and politicians in Paris were insufficiently aware of the major impact an increase in diesel prices could have on blue-collar workers in rural areas. They only found this out—much to their own detriment and embarrassment—when people took to the streets en masse. The public was finally involved in climate policy through the *Convention Citoyenne pour le Climat*, but it caused major delays in the implementation of the climate measures. Ensuring public participation at an early stage can lead to broader and more balanced consideration of all relevant interests.

A subsequent important question is how to further institutionalise the public's perspective in generic climate policy. Is a major national debate always the best way, as in France? Or are there other ways? Research in the field of political science has revealed that large parts of society are actually not all that keen on being asked to participate all the time. It is more important for them to feel that their views and interests are being taken into account. In this chapter, we have shown that there are also 'light versions' of procedural justice that can help to understand the views and interests of broad groups of citizens, such as through public consultations. In the next chapter, we set out to demonstrate how this could work by asking the public what they themselves think are just distributions in climate policy.

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Chapter 8
Public Perspectives of Distribution Issues

Contents

8.1 What Distributions Do Citizens Think Are Just?

In the previous chapter, we concluded that it is important to involve the public early in the climate policymaking process. In this chapter, we elaborate on this conclusion and examine what citizens themselves consider to be just distributions of climate costs. We do this in two ways. Section 8.2 first discusses the existing research on this topic, whereby we confirm that fair climate policies are an important precondition for public support. We also discuss which climate policies citizens consider to be 'fair' based on the available studies.[1]

[1] The studies we discuss often refer to 'fair' rather than 'just' policies. In keeping with the terminology used in these studies, we have also used that term in the text of this chapter, so the terms 'fair' and 'just' are used interchangeably, in the same sense of 'just' as defined in the rest of the book.

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
https://doi.org/10.1007/978-3-031-59427-4_8

In Sect. 8.3, we present the results of our own research into public perspectives of distributive justice. To this end, we commissioned the pollster I&O Research to conduct a survey of over 2300 respondents.[2] We investigated the extent to which citizens see the different distributive principles as just, and which of the distributive issues central to this book they think are just. A key finding is that more than three-quarters of respondents consider fair burden sharing to be important; often more important than reducing carbon emissions. However, this is not yet adequately reflected in current climate policy. Although people's perceptions of just distributions depend on what exactly is being distributed, in general, most would prefer to see distributions that take capacity and solidarity into account.

This chapter thus serves two purposes. First, it provides an example of how the public can participate in distributions by means of surveys. Second, the results of this particular survey provide an indication of Dutch people's preferences for various types of distributions. In Sect. 8.4 we conclude with a reflection on both the literature and our public survey.

8.2 Distributive Justice in Climate Policy: Existing Studies

8.2.1 Just Climate Policy a Prerequisite for Public Support

What, according to the literature, do the public think are just climate policies? Several studies have revealed that fairness (or justice) is an important condition for public support of climate policies. For example, a study by the research organisation TNO on public support for climate and energy policies revealed that citizens will be more likely to support a measure if they perceive it to be 'fair'.[3] TNO presented respondents with a questionnaire with various policy measures to do with climate policy. These measures involved legal or financial instruments or public information campaigns. Respondents were asked to indicate the extent to which they were for or against each of the measures (most of which were in the Climate Agreement). They were also asked to what extent they thought the measure was fair and effective. The measures with the most support were those that were considered to be the fairest, such as a carbon tax for businesses.[4] Conversely, respondents felt that waiving road taxes and purchase taxes for electric vehicles was unfair, and so this measure was supported much less.

[2] For the full report, see: I&O Research (2022).

[3] Dreijerink and Peuchen (2020).

[4] In this study, a regression analysis was conducted with the 'level of support' as the dependent variable. The independent variables were 'fairness', 'effectiveness', 'personal values' and 'concern'. The regression analysis revealed that fairness is the strongest predictor of support, with a beta of 0.6.

This finding is consistent with another study by TNO on support for policy measures as proposed in the report 'Destination Paris'.[5] The authors of this study (that was commissioned by the government) analysed the questionnaire and found that the extent to which a measure is considered fair is the main reason why it is supported (or not). Effectiveness and concerns about climate change also played a role, but to a lesser extent.[6]

The PBL confirmed this picture in its study into public support for transition policies, including the energy transition.[7] The researchers presented respondents with concrete policy measures on waste recycling and energy saving. They were first asked to what extent they thought the measure should be introduced, and then asked to score the measures for eight parameters, including fairness, efficiency and feasibility. The PBL report concluded that the fairness component was most strongly associated with support, and that this applied to all the interventions presented to the respondents.[8]

Besides these quantitative studies, qualitative research has also been conducted that reveals the relationship between the fairness of a climate policy and support for that policy. In this research, which involved asking 14 focus groups with 128 citizens about their opinions and concerns related to climate policy, the researchers found that fairness is an important prerequisite for public support.[9]

8.2.2 What Do the Public Think Are Fair Distributions?

It is clear from the above Dutch studies that the level of public support for climate policy is related to the extent to which that measure is considered fair. Research has revealed that people are more likely to consider climate policies to be 'fair' if the costs of these policies are distributed fairly.[10] But what do the public think are fair distributions?

The final report of the climate consultation provides insight into what Dutch citizens think might be fair distributions (see Box 7.2 in Chap. 7).[11] The respondents

[5] Van Geest (2021).

[6] In this study, a regression analysis was conducted with the 'level of support' as the dependent variable. 'Climate change concerns', 'effectiveness', 'fairness', 'relevance', and 'environmental identity' were included as independent variables. The regression analysis revealed that fairness is the strongest predictor of support, with a beta of 0.54.

[7] Vringer and Carabain (2019).

[8] In this study, a correlation analysis was conducted to determine the degree of support for a rule, and to what extent it was considered fair. The outcome of the study gave a positive correlation (Spearman's r = 0.38). This means that the more a measure is considered fair, the more support it has.

[9] Van Schaik et al. (2022).

[10] Dreijerink and Klösters (2021), Van Schaik et al. (2022), and Steenbekkers and Scholte (2019).

[11] Mouter et al. (2021).

said that the gap between rich and poor must not widen, that lower incomes must be protected from rising costs, and that polluters must pay for their own emissions. A policy measure can count on more support if these conditions are met.

The qualitative study discussed earlier also identifies aspects of cost sharing that are important for that support, such as that climate policy must remain feasible and affordable for all.[12] Subsidies must also be available to lower incomes, and vulnerable groups must not be even more disadvantaged. These findings are also reflected in a major OECD study. Their survey among of 40,000 respondents in 20 countries revealed that people are more supportive of climate policies if they do not come at the expense of lower-income households. Policies that take into account a cost distribution based on the principle of 'capacity' thus can count on more support.[13]

A TNO study into public support for climate policy revealed that citizens often view high climate costs as particularly unfair. People also think that polluters should pay for their own emissions. However, other studies are less specific and conclude only that citizens think cost distributions should be fair, without describing exactly what 'fair' involves.[14]

The studies discussed all show that, according to the public, fair cost distribution is one of the most important prerequisites for just climate policies, and this influences their support for such policies. However, these studies were not focused on exploring the public's perspective of just cost distributions in climate policy, so what exactly constitutes 'fair' remains unclear. They occasionally touch on a number of distributive principles, such as 'polluter pays' or 'sufficiency', but as we have seen, many other distributive considerations than these are conceivable. To understand this better, we will now discuss the results of our own public survey.

8.3 Distributive Justice in Climate Policy: The WRR Survey

8.3.1 The Survey

The WRR commissioned I&O Research to conduct a survey in May 2022 into what the public considers just distributions of climate costs. The survey was based on a questionnaire which aimed to achieve two goals:

1. First, we wanted to find out which distributive principles the public generally prefers the most. More than 2300 respondents completed the survey, allowing us to develop scores for the distributive principles. The respondents could indicate the extent to which they supported various distributive principles, that were presented in the form of propositions.

[12] Van Schaik et al. (2022).

[13] Dechezleprêtre et al. (2022).

[14] Dreijerink and Peuchen (2020) and Kluizenaar and Flore (2021).

2. Second, we wanted to know whether the extent to which a particular distributive principle is considered just (or not) is related to the type of distributive issue, such as 'flood protection' or 'the energy transition'. Would perceptions of fair distributions change if we focused on the specific distributive principles in one of the case studies? To find out, we adapted the propositions about the principles to apply to a specific case study.

The survey design took into account the time it takes to complete a questionnaire, the complexity of the questions, the possibility of comparing the case studies, and the translation of abstract concepts into situations the respondents could relate to. The respondents were asked questions about distributing the costs of climate policy. We used a 9-point scale, where 1 meant 'strongly disagree' or 'strongly against' and 9 meant 'strongly agree' or 'strongly support'. The respondents could also answer with 'don't know'.[15]

Although we formulated a total of 10 distributive principles in Chap. 2, the respondents were actually presented with 11 principles, because the 'greatest utility' principle was used twice. In the first instance, 'greatest utility' was applied in the sense of spending the money as effectively as possible, as we described in Chap. 2. This principle could obviously expect to have high support. The second variant presented to respondents was 'greatest utility (context)'. This variant also described a possible consequence of the principle, namely that effective cost distribution could mean that some people would have to pay more than others.[16] We mentioned this objection to this principle in Chap. 2 (just as we also mentioned pros and cons of other distributive principles). We presented this principle twice, because during the qualitative interviews conducted before the questionnaire, we found that people scored 'greatest utility' very differently depending on if it was presented with or without consequences: if the principle was presented in context, the support for it dropped significantly (as revealed in Fig. 8.1, average support dropped from a score of 6.9 to 5.7).[17]

[15] For the sake of readability, the possible answers have been grouped and can be interpreted as follows:

- 1 + 2: 'strongly disagree' or 'strongly against'
- 3 + 4: 'disagree' or 'somewhat support'
- 5: 'neither agree nor disagree' or 'neutral'
- 6 + 7: 'agree' or 'support'
- 8 + 9: 'strongly agree' or 'strongly support'

[16] 'Greatest utility' was described as follows in the survey: "The costs of climate policy must be distributed so that climate change is prevented as effectively as possible." The 'Greatest utility (context)' principle was formulated as follows: "The costs of climate policy must be distributed so that climate change is prevented as effectively as possible, even if that means that some people will have to pay a lot more than others."

[17] In this case, the respondents scored the 'greatest utility' principle mainly for the part after the comma (see the immediately preceding note), and unanimously considered this principle to be less just than when only the first part of the sentence was presented. This is why we decided to present the principle to the respondents twice, both with and without the second part of the proposition.

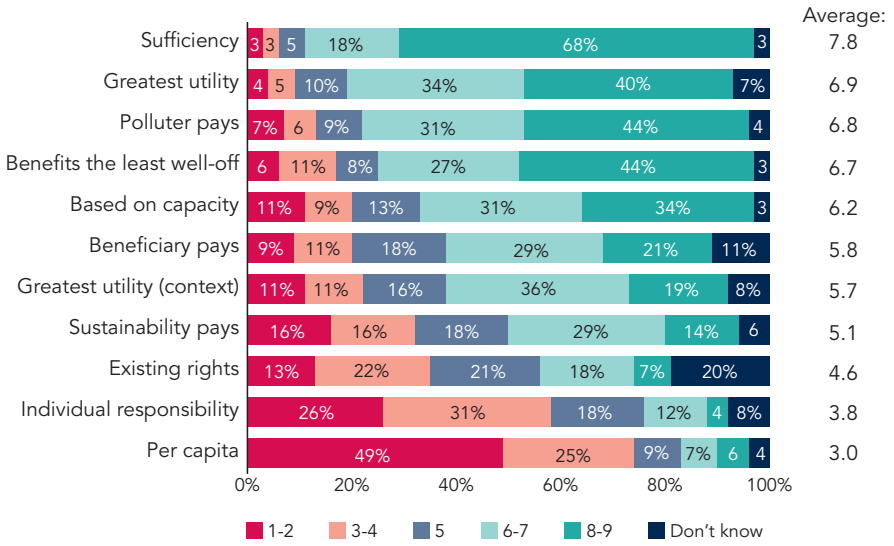

Fig. 8.1 Support for distributive principles in climate policy in general

The respondents were also asked to express their views on certain contradictions, as we encountered in the public debates around the case studies. We also see the distributive principles reflected in these contradictions. Examining both sides of these contradictions provides a clearer picture of what the public think are just distributions. In this section we discuss the main findings of the survey.[18]

8.3.2 Key Findings

More than 2300 respondents completed the questionnaire. The answers clearly show that most Dutch people (89%) believe climate change is happening. The vast majority of respondents (84%) believe climate change is serious or very serious. Three quarters (76%) say they are concerned about the climate and climate change. Most respondents (84%) believe that climate change is caused by human activity.[19] A majority agreed that they (60%) or their children (63%) would be affected by climate change. These percentages were higher among younger respondents (up to 26 years): 78% and 76%.

[18] For the full report, see: I&O Research (2022).

[19] We see a similar picture in an SCP study into climate change and climate measures. This study by Kluizenaar and Flore (2021) revealed that 76% of respondents are concerned about climate change to some extent. About a quarter of people (27%) are very concerned. So, the results of this SCP study are consistent with our own findings.

The attitudes to climate change differ between various groups, which we discuss briefly here. Highly educated respondents are more likely to be very concerned about climate change (54%) than respondents with only a secondary school (35%) or primary school (40%) education. Political preferences were found to correlate strongly with viewpoints on and concerns about climate change. Interestingly, the majority of voters across the entire political spectrum agree that climate change is happening, but the degree of concern about this varies greatly. More than 90% of voters of progressive parties like GroenLinks and D66 are concerned about climate change. For voters of the populist-oriented Forum for Democracy, this is 30%.

As we wrote earlier in this book, implementing climate policy involves major investments that must ultimately be borne by households and businesses. Climate policy must therefore always involve the question of who exactly will pay the bill for those investments, so the question of justice is prominently on the table. Our public survey clearly reveals that citizens see just distribution as important: 77% believe that the costs of climate policy should be distributed as fairly as possible. However, about half of the respondents say this is currently not the case.[20] Moreover, when asked to choose between justice and the lowest possible carbon emissions, most respondents chose the former.[21]

In terms of distributive principles, our public survey revealed that Dutch people have a clear preference for certain types of distributions. We discuss these findings further below.

8.3.3 Support for General Distributive Principles

The respondents think it is important to distribute the costs of climate policy fairly. But what do they consider fair distributions? Figure 8.1 shows how the respondents scored the various distributive principles in relation to climate policy. The distributive principles are listed in order from ‘most just’ to ‘least just’.

The respondents reveal a clear preference for a number of principles: the ‘sufficiency’, ‘greatest utility’ and ‘polluter pays’ principles score highest.

There is less support for the second version of ‘greatest utility’. So, policies need to be effective, but if that means some people have to pay more than others, then the principle becomes less attractive. We already discussed this nuance in Chap. 2. As a result, other considerations play a role in what is seen as a just distribution.

[20] This finding is consistent with the SCP’s study on climate change and climate measures (Kluizenaar & Flore, 2021). In this study, a majority of respondents (60%) said they thought that the costs are currently shared unfairly between citizens and businesses. Almost half (45%) said these costs are also shared unfairly between different groups of citizens.

[21] I&O Research concluded that four in ten Dutch people (42%) think justice is more important than the lowest possible carbon emissions, while three in ten (29%) think the opposite. The rest were unsure or neutral.

The principles of 'capacity', 'beneficiary pays' and 'sustainability pays' were given average scores. Two of these principles fall into the 'contribution and benefit' category, which deals with the behaviour or interests of citizens and businesses (such as whether they cause a lot of pollution or do their best to become more sustainable). 'Based on existing rights', 'based on individual responsibility' and 'per capita' are largely considered the least just distributive principles (scoring 4.6, 3.8 and 3.0 respectively). These principles fall into the category of 'individual rights and freedoms'.

8.3.4 Support for Distributive Principles by Case Study

The above tells us something about how the respondents score distributions of climate policy costs in general. But does that change when respondents are asked about their preference for a distributive principle in one of the four case studies (Fig. 8.2)?

Principle	General	Reduction targets	Energy transition grants	Flood protection	Extreme rainfall	Maximum difference
Sufficiency	7.8	6.0	7.7	7.7	7.6	1.7
Greatest utility	6.9	6.9	6.5	7.5	6.3	1.2
Polluter pays	6.8	6.9	5.4	5.9	6.1	1.5
Benefits the least well-off	6.7	5.9	6.8	6.8	6.8	0.9
Based on capacity	6.2	5.7	6.2	6.1	5.7	0.5
Beneficiary pays	5.8	5.8	5.7	3.7	5.5	2.1
Greatest utility (context)	5.7	6.3	5.6	5.5	5.4	0.9
Sustainability pays	5.1	5.2	5.5	4.5	5.3	1.0
Existing rights	4.6	2.8	4.6	3.7	6.2	3.4
Individual responsibility	3.8	5.1	4.1	4.7	5.4	1.3
Per capita	3.0	5.0	3.4	4.0	3.8	1.6

Score of +0.5 or higher compared to overall score for distributive principle
Score of -0.5 or lower compared to overall score for distributive principle

Fig. 8.2 Support for distributive principles in climate policy in general and per case study

The left column shows the overall scores (from 1 to 9). The four columns in the middle show the score per principle in each case study. The column on the far right shows the maximum difference between the lowest and highest scores. The higher the maximum difference, the greater the variation in the score for a principle between the case studies.

The 'based on existing rights' distributive principle catches the eye here. The respondents gave this principle the lowest score overall (4.6). With a variation of 3.4 points between the scores, the 'based on existing rights' principle is the most variable in this study. In the case study on damage caused by extreme weather, this principle was considered to be more or less 'just' (6.2), while it was considered 'very unjust' (2.8) in the case study on the sectoral reduction targets. So, while respondents think it is unfair that companies that have caused a lot of emissions in the past should be allowed to continue to do so in the future, many also think it is fair that a person's property determines how much compensation they receive. The extent to which existing rights are considered a just basis for distribution therefore depends on the case under study, and so also on what is being distributed: emissions allowances in the case of reduction targets, and compensation payments in the case of extreme weather.

Another principle that is valued differently in the case studies is 'beneficiary pays'. For the case studies on the energy transition, extreme weather damage and sectoral reduction targets, the scores for beneficiary pays were similar to the general opinion on this principle, but there was little support for it in relation to flood protection (3.7).

The variation in the scores for the other distributive principles was smaller for the case studies. The principles 'for the benefit of the least well-off', 'based on capacity' and 'greatest utility' vary the least by case study. This suggests a certain constancy in how these principles are scored.

8.3.5 Support for Distributive Principles in Dutch Policy

How do these case study scores relate to the principles as they are currently applied in policy practice? A number of results stand out that we will briefly discuss here.

For the sectoral reduction targets, the respondents consider 'polluter pays' and 'greatest utility' to be the most important and just distributive principles. In Chap. 3, we saw that these reduction targets are currently distributed according to the principle of 'greatest utility'. So, here we see agreement between what citizens think is just and actual policy practice. According to the public, 'polluter pays' is a useful additional consideration for the distribution of sectoral reduction targets.

Chapter 4 revealed that energy transition subsidies are based on various principles, but that 'sustainability pays' plays an important role in the allocation of ISDE subsidies. Most respondents scored this principle as only somewhat just (5.5).

The 'sufficiency' (7.7) and 'for the benefit of the least well-off' (6.8) distributions are reflected in the SPUK subsidies and considered more just by the respondents.[22]

The 'polluter pays' principle for energy transition subsidies was given a low score by the respondents (5.4). This low score was related to the way the question was formulated. The focus of the questionnaire was the energy transition in people's homes, and not the energy transition in the business sector. 'Polluter pays' in this case means that households that pollute more should also pay more for their emissions, and thus contribute more to funding the energy transition. This proposition has little support, which can be explained by the fact that the 'sufficiency' and 'for the benefit of the least well-off' distributions scored the highest among the respondents. Most respondents think that 'polluter pays' conflicts with these two principles, because people who live in poorly insulated homes and have less money face higher costs if that principle is applied. However, if we focus on the energy transition of the business sector, we see a different picture. The respondents were presented with the following proposition: "Companies that emit the most CO_2 must also contribute the most to the energy transition." The respondents overwhelmingly endorsed this statement (86%).

For flood protection, the respondents scored the principle of 'sufficiency' highest, just as the other principles in the 'capacity and solidarity' category. The low scores for the principles in the 'contribution and benefit' category is striking. The 'beneficiary pays' principle actually plays an important role in the current distribution of the costs of flood protection policies.

In the case study on damage caused by extreme weather, we described how the starting point of the policy was individual responsibility, but that this has only partially been achieved. The respondents also gave this principle a low score (5.4). This result also emerges for the conflicting propositions. The proposition that the government should pay for damage caused by extreme weather is endorsed by more people (52%) than the proposition that people should pay for their own damage (19%).[23] So, there is agreement between how the public scores this distribution and actual policy practice (where the government often bears the costs).

In short, there is some agreement between what the public considers just and actual policy practice. This mainly applies to the 'greatest utility' principle, which plays a major role in the distribution of energy transition subsidies, flood protection measures and sectoral reduction targets. The respondents considered this principle just in all these case studies. At the same time, in some case studies, the principles we see at work actually stand in contradiction to what the public considers to be just, such as the important role of the beneficiary pays principle in flood protection policy.

[22] The questions in the survey focussed on how the energy transition is financed by households, and not businesses, hence the results of this survey are less applicable to the allocation of SDE++ subsidies.

[23] The remaining respondents were neutral (22%) or unsure (7%).

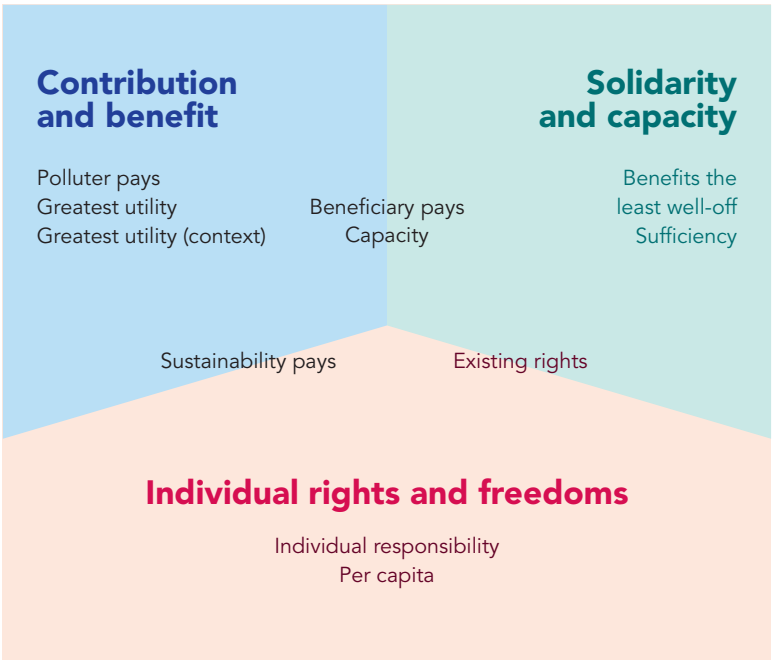

Fig. 8.3 Clustering based on the factor analysis
The principles 'based on existing rights', 'based on capacity', 'based on sustainability pays' and 'based on beneficiary pays' are statistically related to several categories in the factor analysis. In Fig. 8.3, the colour of the text gives the category that scored highest for those principles

8.3.6 Clustering Distributive Principles

Above we discussed the distributive principles in the case studies. A final result of our public survey relates to how distributive principles can be divided into smaller units. The theoretical subdivision into four categories in Chap. 2 of our study proves to correspond to the statistical clustering resulting from a factor analysis of survey data (see Fig. 8.3). The difference lies in the principles of 'greatest utility' and 'greatest utility (context)', which are both grouped in the statistical cluster 'contribution and benefit', but which we grouped under a separate category in Chap. 2.

This factor analysis led us to an important conclusion. When we look at the scores for the various distributive principles (see Fig. 8.2), we see that the principles in the statistical cluster 'capacity and solidarity' get particularly high scores. These are the principles of 'based on sufficiency', 'for the benefit of the least well-off' and 'based on capacity'. Support for the 'greatest utility' principle varies strongly depending on the context. The respondents clearly think it is important for policies to be effective, as the principle scores high if no context is given. But when faced with the potential consequences of applying this principle, people decide that it is fairer to distribute the costs based on 'capacity and solidarity'.

Principles belonging to the ‘contribution and benefit’ cluster (‘polluter pays’, ‘sustainability pays’ and ‘beneficiary pays’) score poorly. The lowest scores were given to principles in the ‘individual rights and freedoms’ category: ‘based on existing rights’, ‘based on individual responsibility’ and ‘per capita’.

8.4 In Conclusion: Distributive Justice Matters

Our public survey reveals that respondents consider fair burden sharing important; often more important than reducing carbon emissions. The literature clearly reveals how important justice is to the public. But the same literature is unclear about what the public actually thinks is ‘fair’ or ‘just’. We have provided more insight into this by asking the respondents in our survey what they consider to be just distributions.

Our survey shows that the Dutch public believes that climate policies should be just, and that they think that current policies are insufficiently just. The most important finding of the survey is that the public think the principles in the ‘capacity and solidarity’ category are the most just. The principles in this category involve distributions that are ‘based on capacity’, ‘benefit the least well-off’ or offer everyone ‘sufficiency’ (i.e. sufficient means). The principle of ‘greatest utility’ is also considered just, but not if it involves disproportionately distributing the costs among the public.

There were high scores for the justice principles in the ‘capacity and solidarity’ category, but the scores for these principles also depend on what distributive issue is being discussed. An example of this variation between the distributive issues is where respondents usually consider the ‘based on existing rights’ principle to be ‘unjust’ or ‘very unjust’, except in the case of damage caused by extreme rainfall. In this case, they think it is just to be compensated based on how much property was damaged.

The ‘polluter pays’ principle gets high scores when applied to sectoral emissions reduction targets and the energy transition of sectors and companies. However, many respondents considered this principle to be less just when applied to the energy transition at home, combined with higher costs for lower-income households. These examples reveal that the way people score distributive justice in relation to climate policy depends on the context. So, the context of a specific distributive issue must be taken into account when preparing, making and implementing policies.

Including the public perspective in decision-making on climate policy distributions is a way to engender more support for the decisions. As we showed in Chap. 7, this is only one component of procedural justice. The perspectives of other stakeholders must also be taken into account, for example. This study clearly involves a ‘snapshot in time’; public opinion about what is ‘just’ could change. If the danger

presented by climate change becomes more real, with the water literally spilling over the dykes and lapping at their doors, the public may come to think that the 'greatest utility' principle is more just. This is why considering the public perspective on climate policy should be a matter of course in policymaking.

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Chapter 9
Distributive Justice in Climate Policy

Contents

9.1 Insufficient Attention for Distributive Justice in Climate Policy

We started this book by reflecting on the protests by *les gilets jaunes*, the yellow vests, in France. It was an example of how major social unrest can arise if a large group in society perceives injustice in climate policy. It also illustrates the importance of distributing the costs of climate change fairly; if people think the costs of a climate policy are unjustly distributed, the policy will not be supported, and so its implementation may be jeopardised.

Climate policy covers a wide range of aspects, from mitigation policies to limit climate change (such as subsidies for insulating houses or installing solar panels), to adaptation policies to adapt to the negative effects of climate change (such as reinforcing dykes, or adapting cities to deal with heat stress). There are also policies aimed at repairing and compensating for climate damage, for example restoring damaged infrastructure following a flood.

All three components of climate policy involve high costs and other issues related to fair distribution. As climate change progresses, the costs will likely rise a lot further yet, with more and more drastic measures being required over the coming decades. These measures are not only needed to achieve the energy transition and implement adaptation policies, but also to deal with the damage caused by extreme

A. de Vries et al., *Justice in Climate Policy*, Research for Policy,
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weather. Everyone–citizens, businesses and governments–will be faced with the consequences.

This book is about just distributions in climate policy, and what considerations and principles underlie them. We have focused on the Netherlands, and come to the conclusion that there is currently insufficient systematic attention to distributive justice in Dutch climate policy. Often, the justness of a policy is only considered after the decision-making has already taken place, for example because it has led to social unrest. This means various distributive principles are often overlooked in policymaking.

The key message of this book is that all climate policy should take the fair distribution of climate costs into account. In addition to effectiveness and legality, climate measures should also be assessed from the perspective of justice. Failure to do so could erode public support for climate policy, and so delay or even prevent the implementation of the policy measures. In this final chapter, we summarise the main findings of our research, and conclude with three recommendations.

Although we have focused on Dutch climate policy, the case studies will be familiar to other countries too, as they also face increasing climate costs and the need to give due attention to the just distribution thereof. So, the recommendations we provide in this chapter can be applied to other countries as well.

9.2 Findings: Attention for Justice–Too Little, Too Late

The previous chapters produced the following findings:

1. We distinguish four categories of justice considerations, with each category containing different distributive principles.
2. Which distributive principle is relevant in a given situation depends on the type of issue.
3. There is often little attention for distributive justice in policymaking.
4. Just distribution principles are in fact already built into policy instruments, regulations and models.
5. Because there is no fixed standard for just distributions, the application of procedural justice is all the more important.
6. There are sometimes discrepancies between what the public thinks is just and distributions in actual policy practice.
7. It is important to distribute climate costs fairly. Failure to do so will come at the expense of public support for climate policy.

Finding 1
We distinguish four categories of justice considerations, with each category containing different distributive principles.

Fig. 9.1 Four categories of just distributions in climate policy

Various distributive principles can play a role in distributive justice in relation to climate policy. We describe four categories of justice considerations from the philosophical literature and distinguish ten distributive principles within them. These four categories and ten principles are depicted below in Fig. 9.1. More background information can be found in Chap. 2.

The first category, *greatest utility*, focuses on social outcomes. The manner of distribution maximises the social benefit. In the context of climate policy, this means a distribution focused on achieving the specific goals of that policy (such as reducing carbon emissions), regardless of any other effects this may have.

The second category involves *individual rights and freedoms*. These distributions take account of existing agreements or citizens' or businesses' individual responsibility for their actions, for example.

The next category emphasises *capacity and solidarity*. These are distributions where, for example, the capacity to pay or the interests of the least well-off are considered most important, or where the distributive principle aims to ensure that citizens do not fall below a minimum subsistence level.

The last category focuses on *contribution and benefit* and includes distributive principles based on the behaviour or interests of citizens and businesses. These distributions take people's own contribution to climate change into account, for example by making polluters pay for their own emissions, or rewarding people for carrying out sustainable renovations. Or they might in fact take into account the benefit citizens or businesses derive from climate measures.

Finding 2
Which distributive principle is relevant in a given situation depends on the type of issue.

There is no 'one size fits all' solution for distributive justice in climate policy. This is evident not only from the various case studies we analysed (Chaps. 3, 4, 5, and 6), but also from our survey of the Dutch public (Chap. 8). The context and nature of the distributive issue determine which distributions are just. In some cases, a particular distributive principle will be a more obvious choice than another.

In climate policy, for example, people often call for 'polluter pays' to be applied. Emissions trading schemes or carbon taxes are examples of mitigation policies based on this distributive principle. However, 'polluter pays' is difficult to apply to the distribution of the costs of adaptation policies or climate damage, at least in a national policy context, because there are usually no concretely identifiable 'polluters' who can be held accountable for the climate damage suffered or the costs of adaptation. So, Dutch flood protection policy–which is a form of adaptation policy–is based on a different distributive principle, namely that of 'sufficiency' (Chap. 5). The policy aims to ensure a basic standard of flood protection everywhere in the Netherlands, including in the face of climate change, and distributes resources for strengthening dykes and other flood defences on this basis.

While no single 'most just' distribution can be identified for climate policy in general, as climate change progresses, the 'greatest utility' principle is likely to come increasingly to the fore. This is because there will be a more urgent need to reduce emissions and implement adaptation measures to mitigate the effects. The impacts of the measures will play an increasingly important role, and the associated negative distributive effects are more likely to be accepted: 'the end justifies the means'. As a result, all other justice considerations will fade into the background. This highlights the importance of effective climate policy, because ongoing climate change will limit the leeway for politicians and administrators to accommodate a broad palette of distributive principles in it.

Climate measures often involve multiple distributive issues and so are based on various and interacting distributive principles. This makes it difficult to identify the net distributive effects of the involved climate policies. For example, businesses receive subsidies for the energy transition (mostly following the 'sustainability pays' principle), but at the same time often have to pay for their emissions through a carbon tax or the European Emissions Trading System ('polluter pays'). In the case of flood protection policies, it is not only about distributing the funds for dyke reinforcement among the various regions, but also about how to raise the money for this. Distributions based on 'beneficiary pays' play an important role in such policies in the Netherlands. For example, large landowners have more to protect and so have to contribute more, because they also benefit more from the flood protection measures.

It is therefore important to consider both individual measures and the climate policy as a whole when estimating the overall effects of distributions. What exactly is being distributed? What distributive principles might be applied? And what is their effect? Often this is not explicitly considered, neither in the preparatory phase nor in the implementation of climate policies.

Finding 3
There is often little attention for distributive justice in policymaking.

There is only limited attention for distributive justice in policy design, and often only in retrospect, when the effects have already been felt. For example, in its review of the draft 2022 Climate Memorandum, the Council of State's Advisory Division warned that it was unclear what distributive principles underpinned the policy, and that it was important to clarify this to foster support for the policy.[1] Often, attention for the justness of the measures comes only after the policy choices have been made. Distributions that are considered unfair can lead to social criticism, and require the government to find a 'quick fix' for the undesirable effects in retrospect.

An example is a case study we analysed in this book involving various subsidies intended to encourage the energy transition (Chap. 4).[2] These subsidies were partly funded through a tax on fossil energy consumption, which was adjusted in early 2023.[3] The outcome of the chosen system was that large, energy-intensive companies had to pay relatively little for it (in line with the 'based on existing rights' distributive principle). Meanwhile, households that had not carried out sustainable renovations (often because they lacked the financial means) were not eligible for the subsidies. The net effect was that these relatively less affluent households were hit twice: by high energy bills and by rising taxes.[4] This illustrates how the distributive effects of a measure can change over time as new circumstances arise. If other distributive principles had been central to funding and distributing the energy transition subsidies, the effects would have been different. If the 'greatest utility' or 'for the benefit of the least well-off' principles had been applied, the scheme would have been designed such that precisely those relatively poor households with high energy bills would have benefited. The lesson here is that, if various distributive principles had been discussed more explicitly in the decision-making process, this choice might have turned out differently, and maybe met with more public understanding.

We also see limited attention to distributive justice in other case studies. A good example is the flood protection policy (Chap. 5), which has undergone major changes over the past decade. In 2011, a change was made to the public funding of primary flood defences: water boards–and the people who live in their catchments–must now bear half of the costs of dyke reinforcements in preparation for climate change (these costs were paid entirely by the state before then). This change could

[1] Raad van State (2022). The Advisory Division of the Council of State was established as a climate policy monitor under the Dutch Climate Act. For more information, see: https://www.raadvanstate.nl/talen/artikel/

[2] In this book, we looked specifically at the SDE++ (for businesses) and ISDE (for households) schemes.

[3] This is the ODE, which was made part of the energy tax as of 1 January 2023.

[4] As the energy transition progresses, fewer and fewer businesses and households will burn fossil fuels, and so a tax such as the ODE has to be raised by an increasingly smaller group.

lead to large disparities between those water boards who face major flood protection challenges and those less exposed to climate change, and subsequently social unrest at this perceived unfair distribution. The fairness of the resulting distributions was in fact hardly a subject of discussion.

So, despite little explicit attention for distributive justice in climate policy, implicit distributive choices are still being made. Indeed, such choices are being made all the time, for example about government compensation for flood victims, or the extent to which major polluters should contribute to carbon reduction. But the distributive principles which determine who benefits from the measures and who pays for them are often not clearly discussed or properly justified.

Finding 4
Just distribution principles are built into policy instruments, regulations and models.

Principles for distributive justice are often implicitly built into policy instruments and regulations (or the underlying calculations), but this is often overlooked during the decision-making process. An example are the Dutch sectoral emissions reduction targets (Chap. 3). These targets determine how much carbon must be reduced by the various economic sectors, such as the built environment, agriculture and electricity. The distribution of the emissions reduction targets in the 2019 Climate Agreement was based on models that calculate how these can be achieved most cost-efficiently. In other words, we focus on measures that save as much carbon as possible as cheaply as possible. This policy choice implicitly applies the distributive principle of 'greatest utility', in this case the 'big hitters' that achieved the most tonnes of carbon reductions.

Other potentially just distributions took a back seat in the policymaking process, but could have led to substantially different outcomes. For example, a (hypothetical) distribution of the Netherlands' emissions reduction targets based on 'polluter pays' rather than 'greatest utility' would result in a completely different outcome (Fig. 9.2). In this case, the agriculture, built environment and industry sectors would have been given more ambitious reduction targets, with the electricity sector required to reduce significantly less. Other distributive principles would have given other, very different, outcomes, be it 'based on capacity' (economically stronger sectors are given more ambitious targets) or 'based on existing rights' (sectors that have always produced high emissions may continue doing so). So, there are a lot of choices to be made. This is an important reason why politicians and administrators need to explicitly include distributive principles in the policymaking process, rather than indirectly building them into policy instruments, regulations and models. This could start with explicitly considering the justice perspective in the preparatory phase of policymaking.

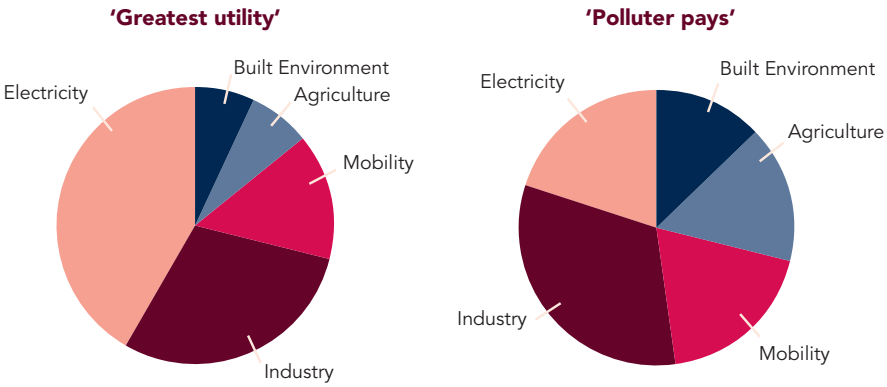

Fig. 9.2 Hypothetical impact of various distributive principles on the distribution of reduction targets

Finding 5
Because there is no fixed standard for just distributions, the application of procedural justice is all the more important.

Procedural justice is an important pillar of climate policy. Because there is no fixed standard for distributive justice, it is all the more important that the procedures to arrive at a distribution are just–and perceived as such.

If the procedures are fair, the public will be more likely to perceive the outcomes as fair. After all, if all stakeholders have been able to voice their interests, and all relevant information has been carefully considered and weighed, then people will be more likely to consider the result of the process equitable. Among other things, procedural justice requires involving stakeholders, ensuring everyone has access to all information and has an opportunity to be heard, and impartial supervision (see Chap. 7).

It is also important to listen more carefully to public perspectives on the fair distribution of costs in policymaking. There are various ways of doing this. An intensive form of public participation is a participation council. Such councils are ideal for involving the public at the local level, but can also be deployed at the national level. A 'light' version of public participation in policymaking is the public consultation, such as an internet poll.

Finding 6
There are sometimes discrepancies between what the public thinks is just and distributions in actual policy practice.

Distributions in climate policy practice do not always reflect what the public thinks are just distributions. This was also revealed in our survey on public perspectives (Chap. 8). For example, 'beneficiary pays' is an important distributive principle built into flood protection policies, but the respondents to our survey did not think it was very just. They preferred to see such distributions based on the 'capacity' principle.

The public survey further revealed that distributions in the 'capacity and solidarity' category generally enjoy the most support (Fig. 9.1). Dutch people generally consider the principles in this category most just. The average respondent considered the principles in the 'individual rights and freedoms' and 'contribution and benefit' categories to be less just. One exception was the 'polluter pays' principle, which the Dutch score highly in general and particularly when applied to businesses with high carbon emissions.

The practical implementation of climate policy distributions sometimes corresponds to these public preferences, but sometimes less so (Chap. 8). An example of the latter is the distribution of energy transition subsidies. The 'sustainability pays' principle is central to the distribution of subsidies for sustainable renovations (Chap. 4), but this is not how the Dutch would like to see it. This principle involves encouraging citizens to insulate or otherwise improve their homes using their own money by 'rewarding' them with a subsidy. But the Dutch would prefer to see principles that guarantee 'sufficiency' or 'benefit the least well-off' at play here. These are both principles that explicitly take household income or wealth into account. Another example of a difference between policy practice and Dutch people's preferences is the 'polluter pays' principle. The Dutch think this principle should be applied to sectoral reduction targets and energy transition measures in the industry, but this is rarely the case in practice (Chaps. 3 and 4).

That there is sometimes a difference between the public's perception of just distributions and what is implicitly built into policy practice needs to be taken into account if we want to build more support for climate policy.

Finding 7
It is important to distribute climate costs fairly. Failure to do so will come at the expense of public support for climate policy.

A just climate policy is an important precondition for support. Several studies show how the distributive aspects of climate policies determine the extent to which the public considers climate policies to be 'fair' (Chap. 8). So, problems may arise if there is too much discrepancy between what citizens perceive as just distributions and what they see happening in practice.

The challenge for the flood defences of the Netherlands forms a good example. We expect the challenges and the ensuing damage will only increase. As a result, the costs for the inhabitants of various areas may well diverge, because the 'beneficiary pays' principle plays an important role in their distribution. In the current policy

system, inhabitants of areas with a relatively high flood risk contribute more than residents of relatively low-lying regions (Chap. 5). Attention to the distributive principles of the various flood protection schemes and their effects can help to identify potential sources of social unrest in time.

Disregarding distributive justice can erode support and lead to social discontent, as we saw with the example of the yellow vests. Our public survey shows that citizens think the just distribution of climate costs is important, often even more important than rapid emissions reductions, but that they do not always see this reflected in practice.

9.3 Recommendations: Systematic Attention for Distributive Justice Needed

Key Message
Justice as an independent perspective of climate policy.

There is currently insufficient attention to distributive justice in climate policy. This may be to the detriment of support for these policies. The key message of this book is that justice should be considered an independent perspective of climate policy, in addition to the more widely applied perspectives of efficiency and legality. By systematically including distributive justice in climate policymaking, we can ensure that the various distributive principles are explicitly taken into account at an early stage. This applies to all three types of climate policies: adaptation policies, mitigation policies and climate damage policies. Change is needed for distributive justice to become a systematic part of policymaking. Figure 9.3 outlines what this change could look like.

To facilitate this change, the WRR has formulated three concrete recommendations:

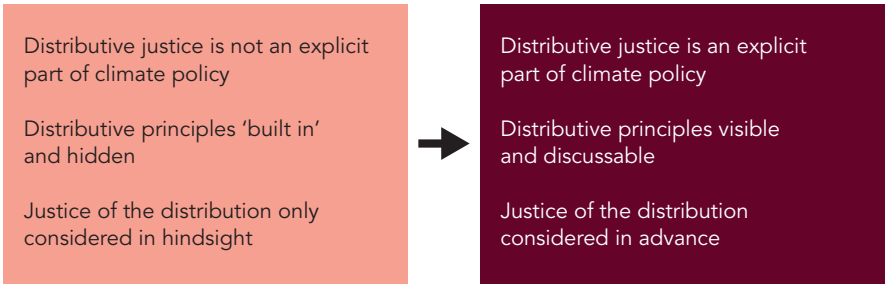

Fig. 9.3 Towards the just distribution of climate policy costs

1. Broaden the scope: treat climate policy as an issue of distributive justice.
2. Procedural embedding: emphatically include distributive justice at an early stage in the procedure and explicitly substantiate the chosen distributive principles.
3. Institutional assurance: ensure that attention to distributive justice is assured in the policy process.

1. Broaden the Scope
treat climate policy as an issue of distributive justice.

Distributive justice is an important element of climate policy and must be treated as such. In this book, we have shown that this applies not only to mitigation policies, but also to adaptation policies and climate damage. There is a wide range of distributive issues at play here. It does not only concern distributing the costs of climate change, but also emissions reduction targets, subsidies, damage compensation and the scarce space available in the Netherlands. The WRR recommends applying the ten distributive principles in this book to encourage a discussion about distributive justice (Fig. 9.1). These principles offer concrete instruments for explaining the starting points of climate policies in the public and political debate. They show that there are more options for distributing climate costs than only the more familiar principles like 'polluter pays' or 'based on capacity'. They provide a framework for broadening the debate on just distributions in climate policy.

2. Procedural Embedding
emphatically include distributive justice at an early stage in the procedure and explicitly substantiate the chosen distributive principles.

Climate policymaking requires early, explicit and targeted attention to the principles of justice. This must not be an 'afterthought', or something that only 'offers an interesting perspective', after the important decisions have already been taken. Distributive justice should be given a central place in policy preparation, additional to the perspectives of legality and efficiency. This could be achieved by structurally and explicitly including a number of questions about distributive justice issues to be answered early in the policymaking process (Fig. 9.4). Policy choices should be substantiated based on the distributive principles, with a clear explanation of why a given distribution was chosen.

The public's perspective is required to be able to reflect on the justness of distributions. There are 'light' versions of public participation for this, such as public consultations, but also more intensive methods, such as participation councils. These can help to avoid blind spots from the perspective of justice in policymaking.

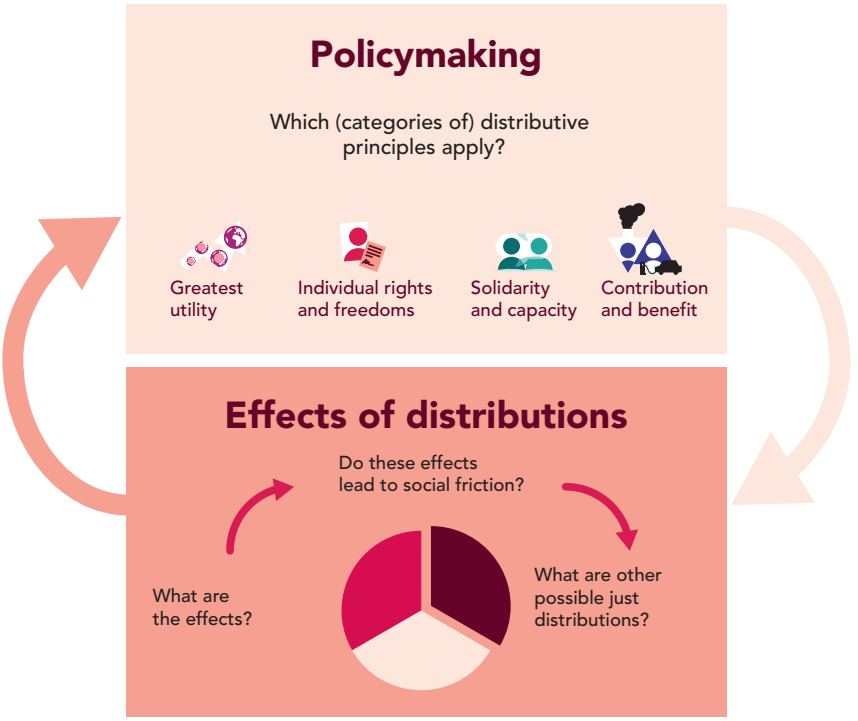

Fig. 9.4 Justice perspectives in policymaking

What constitutes a just distribution is not set in stone; opinions on this may change over time. We have also seen that what is considered a just distribution for one measure will not necessarily be seen as just for another. So, we need to be aware that conceptions of justice depend on the type of issue, on what exactly is being distributed, and on the social context. The justice question must be considered for each climate measure, and may also need to be revised over time, for example because opinions have changed, or because the distributive effects of a policy measure have changed under new circumstances. This ongoing focus on distributive justice must also be procedurally safeguarded.

3. Institutional Assurance
ensure that attention to distributive justice is assured in the policy process.

Distributive justice must also become part of the system of checks and balances in climate policy. Even if policymakers are willing to carry out early and targeted analyses from the perspective of justice, these may still remain underexposed because there are so many other issues that require attention. This is why it is

important to assure attention for just distributions in the relevant institutions, for example by establishing an independent body to oversee this.[5]

In Scotland, for example, a *Just Transition Commission* has been established to advise on the interpretation of the justice principles formulated by law.[6] The commission is an independent body and has published two reports, among other things with advice on the government's transition plans. One important recommendation is to involve those most affected by the energy transition. Thanks to this commission, the justice of the energy transition has gained widespread attention as a policy concept in Scotland.

The Netherlands actually has such a body for climate policy too: the Council of State. Under the Climate Act,[7] the Advisory Division of the Council of State monitors the Dutch Climate Plan based on a predefined assessment framework.[8] We recommend that this assessment framework be expanded to include explicit questions on the distributive effects of climate policies and the justness of these distributions, so that the Council of State can assess whether different distributive principles have been systematically considered as part of the plan.

In addition to this monitoring by the Council of State's Advisory Division, a role for the Scientific Climate Council could also be considered. The decision to establish this Council was made in October 2022, and came into force in April 2023. The Council provides (mostly strategic) independent scientific advice to the government in the preparatory phase of policymaking. The work of the Scientific Climate Council complements that of the Council of State. The Scientific Climate Council focuses on public support for climate policies, among others.[9] The link to distributive justice is clear.

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[5] The suggestion to establish an independent body (or oversight body) is based on an OECD report into how the government can systematically increase the quality of policy and legislation, see: Council of the OECD (2012).

[6] Scottish Government (2022).

[7] The 2019 Climate Act states that the government must develop a Climate Plan. The first Climate Plan covers the period between 2021 and 2030 and sets out the general policy by which the government intends to meet the targets of the 2019 Climate Act. The plan also considers the latest scientific insights on climate change and the economic implications of the policy, among others. The Climate Plan is revised every five years based on the latest insights. A new Climate Plan will follow after ten years, see: Rijksoverheid (2022).

[8] That assessment framework currently consists of four sections with specific questions. In the section on 'economic considerations', the Advisory Division not only looks at the total costs and cost-effectiveness of the measures in the Climate Plan, it also assesses whether due attention has been given to the distribution of the costs and the impact on the financial situation of households, businesses and public administrations.

[9] Decree of 29 October 2022, no. 2022002344, establishing the Scientific Climate Council.

9.3.1 In Conclusion

Climate change is relentless. The world must continue to invest in measures for preventing global warming, adapting to a changing climate, and preventing and compensating for damage caused by extreme weather. Everyone will be affected by this.

In this book, we have argued why systematic attention to distributive justice in climate policy is needed. We have shown what a justice perspective on climate policy can contribute to the debate. Climate policy is about more than only the efficiency and legality of the distributions involved; they also need to take account of justice.

Distributive justice is an important pillar for fostering public support for climate policies. By giving the justness of distributions early and explicit attention, we can ensure that this pillar is more firmly underpinned, and safeguard our climate policy for the long term.

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Glossary

Abbreviation	Term	Description
GDP	Gross Domestic Product	
BES	The Caribbean islands of Bonaire, Sint Eustatius and Saba.	Municipalities with a special status in the Caribbean Netherlands.
BWV	All-weather insurance (*Brede weersverzekering*)	An insurance product for farmers.
CBS	Statistics Netherlands (*Centraal Bureau voor de Statistiek*)	CBS' statutory task is to compile statistics on a wide range of topics that are important to society and to make the outcomes publicly available.
CO_2	Carbon dioxide	CO_2 is the most commonly occurring greenhouse gas released by burning fossil fuels.
COP	Conference of the Parties	Decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC) aimed at reaching international climate policy agreements.
CPB	Netherlands Bureau for Economic Policy Analysis	An independent research institute that provides policy-relevant economic analyses and projections.
CTRC	Disaster and emergency relief committee (*Commissie Tegemoetkomingen bij Rampen en Calamiteiten*)	Sometimes also called the Borghouts Committee, in 2004 this committee provided advice on how to deal with non-mandatory compensation for disaster losses.
ET	Energy tax	A tax on electricity and natural gas aimed at encouraging more economical and efficient energy consumption.

(continued)

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Abbreviation	Term	Description
ESR	Effort Sharing Regulations	European policy framework for achieving the national reduction targets for the built environment, mobility, agriculture and small industry.
ETS or EU ETS	European Union Emissions Trading System	System for registering and trading CO_2 emissions rights.
EU	European Union	
HWBP	Flood protection programme (*Hoogwaterbeschermings-programma*)	A 30-year programme of the 21 Dutch water boards and Rijkswaterstaat focused on flood prevention.
IAM	Integrated Assessment Models	Models aimed at simulating interactions between socio-economic and geophysical systems to study their potential impacts.
IBO	Interdepartmental policy research committee (*Interdepartementaal beleidsonderzoek*)	IBOs are commissioned by the government to develop policy plans for key areas, which plans are carried out by interdepartmental working groups.
IPCC	Intergovernmental Panel on Climate Change	United Nations body for assessing the science related to climate change.
ISDE	Sustainable energy investment subsidy scheme (*Investeringssubsidie duurzame energie en energiebesparing*)	A subsidy available to households (and small businesses) to encourage sustainable renovation.
KNMI	Royal Netherlands Meteorological Institute (*Koninklijk Nederlands Meteorologisch Instituut*)	
LULUCF	Land Use, Land-Use Change and Forestry	EU climate policy regulation on land use and forestry.
MEP	Environmental quality and electricity production subsidy scheme (*Subsidieregeling Milieukwaliteit Elektriciteitsproductie*)	The predecessor of the SDE, SDE+ and SDE++ schemes.
SMEs	Small and medium-sized enterprises	
Mtonne	Megatonne	Commonly used unit of greenhouse gas emissions. One megatonne is one billion kilograms.
NDC	Nationally determined contributions	The national climate targets under the Paris Agreement.
ODE	Levy for Renewable Energy and Climate Transition (*Opslag Duurzame Energie- en Klimaattransitie*)	An additional tax on the consumption of electricity and natural gas that was used to fund the SDE++ scheme. The ODE was merged with the ET as of 1 January 2023.

(continued)

Abbreviation	Term	Description
OECD	Organisation for Economic Co-operation and Development	
PBL	Netherlands Environmental Assessment Agency (*Planbureau voor de Leefomgeving*)	The national institute for strategic policy analysis in the fields of the environment, nature and spatial planning.
Porthos	Port of Rotterdam CO_2 Transport Hub and Offshore Storage	A major project to capture and store greenhouse gas emissions in empty gas fields under the North Sea.
RVO	Netherlands Enterprise Agency (*Rijksdienst voor Ondernemend Nederland*)	Implements various government schemes and allocates the associated grants and subsidies to Dutch entrepreneurs and other parties.
SCP	Netherlands Institute for Social Research (*Sociaal en Cultureel Planbureau*)	Government agency which conducts research into the social aspects of all areas of government policy.
SDE++	Incentive scheme for sustainable energy production and climate transition	Subsidy scheme for larger companies who wish to make their operations more sustainable. Successor to the MEP, SDE and SDE+ schemes.
SPUK	Grant for energy-saving measures (*Specifieke uitkering voor energiebesparende maatregelen*)	A grant available to minimum wage earners for renovations to reduce heat loss and energy consumption in the home.
TNO	Netherlands Organisation for Applied Scientific Research (*Nederlandse organisatie voor toegepast-natuurwetenschappelijk onderzoek*)	TNO's mission is to generate innovative solutions with demonstrable impact to achieve a safe, healthy, sustainable, and digital society and boost the earning power of the Netherlands.
UN	United Nations	
WRR	Netherlands Scientific Council for Government Policy (*Wetenschappelijke Raad voor het Regeringsbeleid*)	Independent scientific advisory body for the Dutch government.
Wts	Disasters (Compensation) Act (*Wet tegemoetkoming schade bij rampen*)	Legislation that can be applied in case of disasters, such as the flood in southern Limburg during the summer of 2021.

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