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Just Transition in Belgium

Concepts, Issues at Stake, and Policy Levers

Scientific Report
on behalf of the High Committee for a Just Transition

for the Belgian Federal Minister for Climate, Environment, Sustainable Development and Green Deal

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Preface

On behalf of the High Committee for a Just Transition, we are extremely happy to present you this report, and the related policy memorandum of the Co-chairs, that are the result of numerous discussions and draw upon the broad, interdisciplinary expertise of the High Committee. Aurore Fransolet and Josefine Vanhille have compiled and significantly contributed to this scientific report. We would like to warmly thank them for their impressive work, all their effort to carry out this work with us. It has been a challenging task for all of us, not only due to the relative novelty, significant complexity, and societal importance of the subject, but also because of the differences within the High Committee concerning semantics, approaches, and paradigmatic frameworks.

In the academic world, English is the lingua franca for communication of research results, each discipline employing shared templates and their own language repertoires. Communication becomes more complex when addressing societal and political issues, transcending disciplines. Semantics are strongly tied to culture, institutions, and disciplines; words carry different meanings in various contexts. Understanding these differences is essential for effective communication in a different language, especially when researchers aim to reach individuals involved in policy making in Belgium and in the Flemish, French, and German-speaking Communities.

The authors encountered, for instance, a divergence in the interpretation of the term '*welfare state*' a concept commonly used in international literature to characterize the economic and social organisation of industrialized societies. In this report, the term is not employed. The authors instead refer to the '*Social State*' a translation of the French '*État Social*' and the German '*Sozialstaat*'. This choice was made to shift the emphasis from 'welfare' to the social function of the state. The High Committee for a Just Transition has embraced the non-literally translated terms '*Social Ecological State*', '*État Social Écologique*' and '*Sociaal-Ecologische Verzorgingsstaat*' to underscore the necessity to add sustainability functions to the social, economic and security functions of the state. These terms by no means solely imply the responsibility of 'the state'; a just transition must be realised through the engagement of European, national, regional, and local authorities, together with firms, civil society organisations, local community initiatives, households and individuals.

Interdisciplinary research, where researchers with different disciplines and areas of expertise collaborate to comprehend the complex issue of a just transition, is essential but presents significant challenges. Researchers from different disciplines approach problems with their own terminologies, methodologies, and conceptual frameworks, sometimes resulting in contradictory findings and difficulties in comprehending each other's insights. The idea, for instance, that ecological and social progress always reinforce each other is appealing and is often, perhaps too easily, associated with sustainable development. Political scientists draw connections between inequality on the one hand and public support for environmental policies on the other (with the 'Yellow Vests' serving as an emblematic example). However, research in the economic, social policy, and management sciences also indicates trade-offs between the various functions of businesses and governments, and thus potentially between social and environmental objectives. The added value of strong interdisciplinary research lies in critically identifying and delineating synergies, contradictions, and trade-offs, to subsequently contemplate potential solutions.

The High Committee for a Just Transition also had to consider different paradigmatic starting points. Some members start from existing frameworks and institutions at Belgian or European levels, considering that these are the places to start. Others commence from future visions of what needs to be achieved on the long run and derive strategies to get there. Such strategies are, however, not necessarily compatible with the strategies required or feasible in the short run to accelerate the transition, and vice versa In the critical confrontation of research results stemming from different paradigmatic starting points lies the seed of innovative research and new knowledge.

This is the first scientific policy report in Belgium on just transition. We thank Minister Zakia Khattabi for the initiative and trust. Following the example of the Dutch *Wetenschappelijke Raad voor het Regeringsbeleid* (Scientific Council for Government Policy) and the French *France Stratégie*, subsequent reports on the many difficult issues related to just transition should be compiled in Belgium too. This necessitates a substantial increase of the statistical capacity, investment in interdisciplinary research and a consolidation of the available expertise.

In a recent article in Nature, the question was raised "*What scientists need to do to accelerate progress on the SDGs?"*[1]*.* The well-articulated critical response was that "it has proved hard to translate analytical exercises into policy advice because the studies have not always involved policymakers, and the methods and results might remain too high-level or abstract, or unlinked to policy processes".

Institutionalizing the just transition requires a real paradigm shift. We should be clear. We believe collectively that current institutions and frameworks will not be sufficient to implement a just transition. At the same time, there are legal frameworks - many at EU level- that are binding for our country.

The European Climate Law and Green Deal, the European Pillar of Social Rights, and the Aarhus Convention form a tripod of ecological goals, social and participatory rights serving as a guiding compass for the just transition, one that policymakers can and should employ, enhance and reinforce. Their scope and depth are still inadequate, and they have not yet been sufficiently integrated and coordinated. But they have been institutionalized, they already exist in our European polity so they are the starting point to build the strategy which is required for the much needed acceleration of the just transition.

Thanks to these, we must not start from a blank page, they should also allow us to build a broad and strong coalition of actors, with different mindset and objectives. Our experience in the HCTJ show us that building such a coalition is both exciting but also very demanding.

Let's be honest with all of you. We believe that there is no real alternative than building rapidly this joint strategy. This needs to happen if we want to avoid the worst, both at environmental, social but also economic levels. And Belgium should play both an inspirational and leading role. Let's do it.

The just transition must urgently be accelerated now, we have no time to waste.

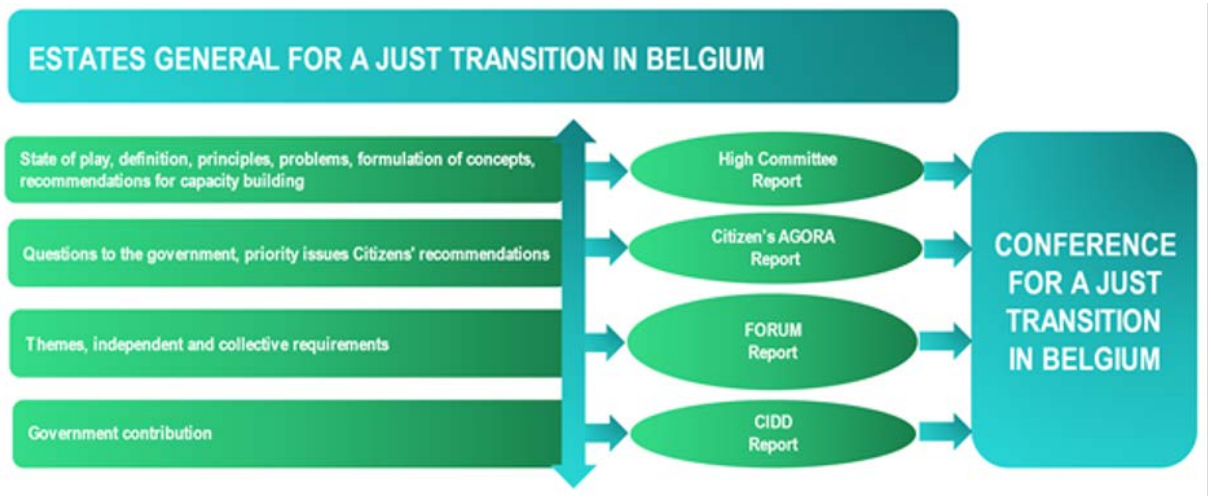
Bea Cantillon & Marek Hudon
Co-chairs of the High Committee for a Just Transition

1 https://www.nature.com/articles/d41586-023-02808-x

The High Committee for a Just Transition

The Belgian Federal Minister for the Climate, the Environment, the Sustainable Development and the Green Deal, Ms Zakia Khattabi, has established the High Committee for a Just Transition in May 2022. This independent academic group was set up as part of the 'Estates General for a just transition in Belgium', a participatory process on just transition in Belgium. Such process involved different types of actors distributed into four panels: academics in the 'High Committee', citizens in the 'Citizens' Agora', civil society organisations in the 'Forum' and federal administrations in the 'CIDD'. The different panels have been invited to formulate positions and recommendations to feed the Conference for a Just transition in Belgium provided for the Belgian federal coalition agreement (see Figure 1).

Figure 1: Estates General for a just transition in Belgium



The High Committee for a Just Transition was composed of 25 academics from different disciplines covering social issues, economics, democratic innovation and earth sciences. The High Committee's composition respects gender and linguistic parity, with equal numbers of members from French-speaking and Dutch-speaking Belgian universities. The process was chaired by two co-presidents and academically supported by two postdoctoral researchers.

The High Committee for a Just Transition was mandated to draft and publish a report for the attention of the Federal Ministers and Belgian institutions in preparation for the National Conference for a Just Transition in November 2023. In this report, the High Committee was invited to address the question "How to organise and institutionalize the just transition in Belgium?". In addition to publishing the report, the High Committee was assigned the mission of advising stakeholders on just transition policy and supporting the placing of just transition on the European agenda ahead of the Belgian Presidency of the Council of the European Union (EU) From 1 January to 30 June 2024.

The present report is the result of a process mainly based on the scientific literature, interdisciplinary dialogue, and experts hearings.

Summary

Introduction

The accelerating ecological degradations, on the one hand, and the persisting poverty and social inequalities, on the other, have so far been treated as separate issues, debated in different forums and placed under the responsibility of different actors. As a result, the ecological transition faces resistance because of fears about its social consequences: It is not seen as an opportunity for improving wellbeing and social justice, but rather as a threat to low-income families, to workers in environmentally damaging sectors and/or to farmers. This can and must change. Designing policies that pursue environmental and social policy goals in an integrated way and ensuring effective participation of social partners, civil society and citizens – including the most vulnerable ones – in decision-making, implementation and evaluation should ensure that the ecological transition will be equitable, more supported and better informed. As a result, it can be more effective and just. If properly conceived, such 'just transition' can in fact become a means for reducing inequalities, while ensuring the satisfaction of social and environmental rights for all within safe Earth system boundaries. It is this conviction that animates this report. Its main claim is that, in order to address the twin social and ecological challenges Belgium faces, the social state needs to evolve into a 'social-ecological state', namely a state designed to address social and ecological challenges in an integrated way, incorporating their interdependences both in policy design and in governance. Conceived as such, just transition belongs at the heart of the societal pursuit of progress and development.

The present report reflects a year of transdisciplinary dialogue and analyses on just transition in Belgium within the High Committee for a just transition. At the request of the Belgian Federal Minister for the Climate, the Environment, the Sustainable Development and the Green Deal, this academic group examined the question "How to organise and institutionalise the just transition in Belgium?". The result is a set of policy levers reflecting the wideness of the array of tools and instruments to be activated by our governments to build a social-ecological state.

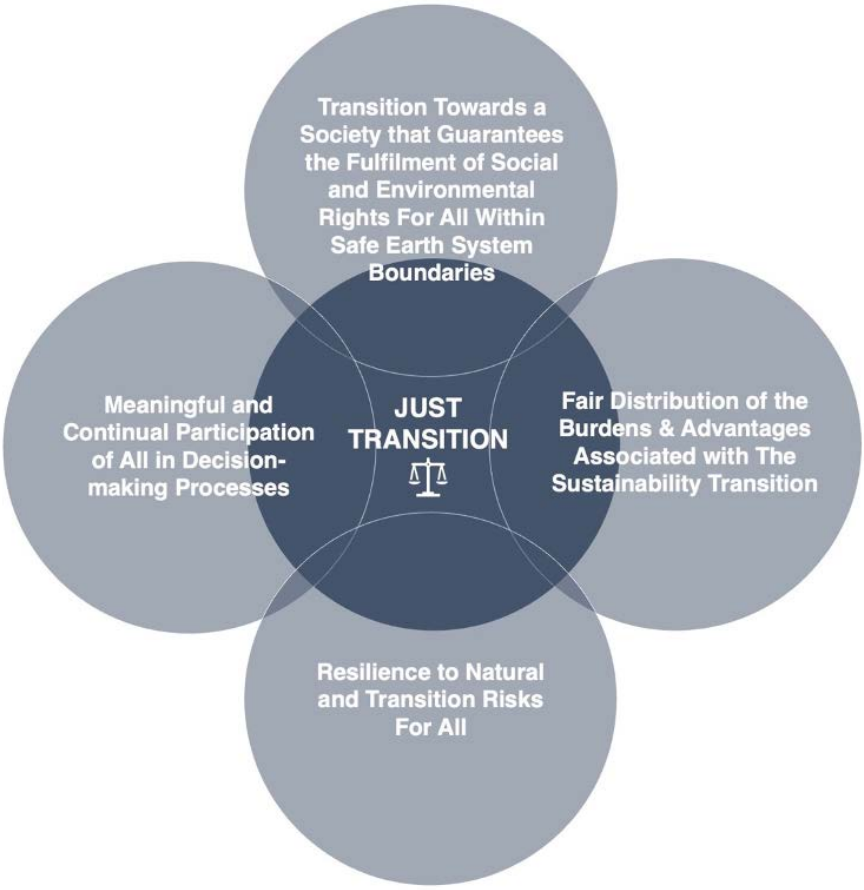
More specifically, this report explores the *what*, *why* and *how* of the just transition in Belgium.

1. The Just Transition

The first chapter focuses on *what* is just transition, a concept, which, despites it increasingly important place in the scientific literature and policy agendas, has currently no established and consensual definition.

Just transition is here defined as a sustainability transition with social-ecological justice as its guiding principle, placing social and participatory rights at the heart of environmental policy. After introducing the main notions encapsulated in this definition, we conceptualize just transition by defining its four main dimensions. These dimensions of just transition are presented in the figure below (figure 2).

Figure 2: The four dimensions of just transition



We conclude this chapter by arguing that the operationalisation of the just transition as defined and conceptualised in this report would provide Belgian society with a 'compass' to move fairly towards a just and sustainable future (see figure 3) and a 'shield' to ensure the resilience to natural and transition risks for all (see figure 4).

Figure 3: Just transition as a 'compass' to move fairly towards a just and sustainable future

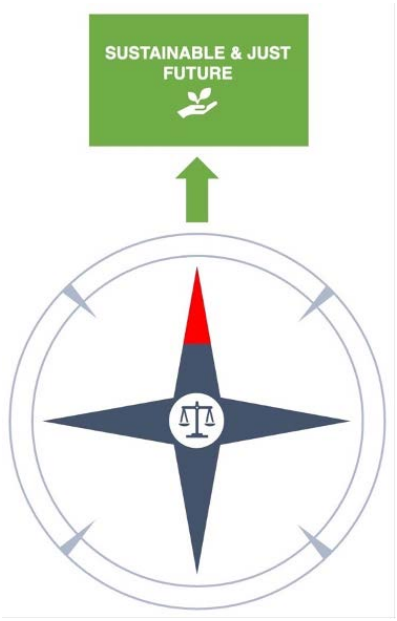
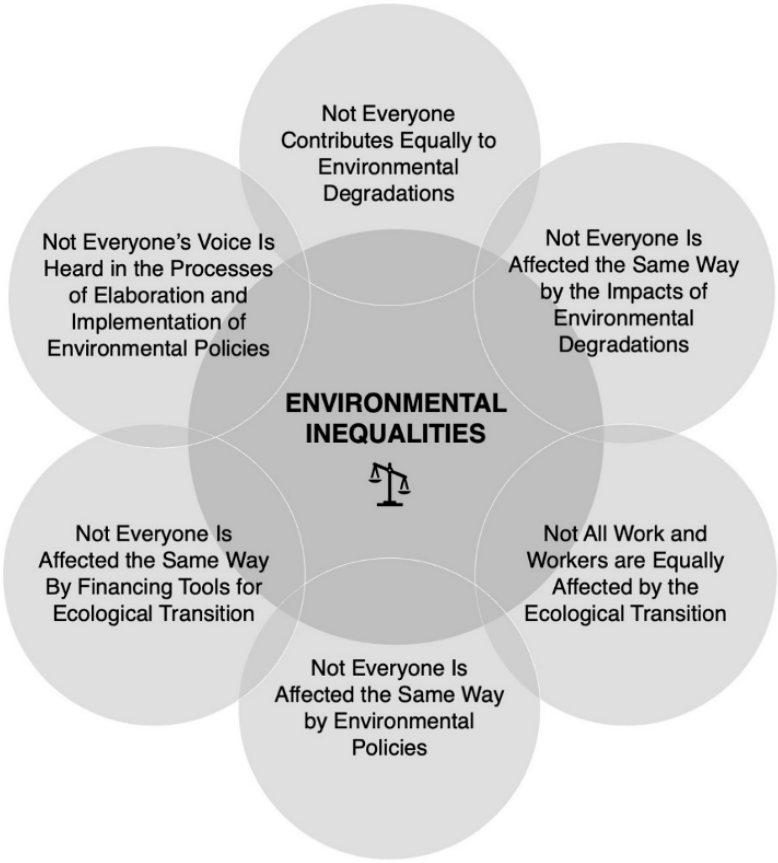


Figure 4: Just transition as a 'shield' to ensure the resilience of all to natural and transition risks

2. The Need for a Just Transition in Belgium

The second chapter looks at the reasons why a just transition is needed in Belgium, starting with the multiple interconnected societal challenges Belgium faces today and for the years to come. We discuss the accelerating ecological degradations – particularly in relation to climate change, biodiversity loss and air pollution – and the persistent poverty and social inequalities. We present such ecological and social challenges as strongly interconnected and we illustrate their linkages through the prism of environmental inequalities. More specifically, we report empirical evidence for Belgium on the spatial and social inequalities in contribution to the environmental degradations, the uneven distribution of the impacts of environmental degradations between regions and between social groups, the unequal effects of various environmental policies on workers and households, and the unequal participation in decisions related to these social-ecological challenges (see figure 5).

Figure 5: The six forms of environmental inequalities documented for Belgium in this report



Considering the inextricable link between social and ecological problems, we argue that these problems cannot been dealt with separately, without considering their interactions. We however show that the established policy frameworks do not enable to achieve the mid- and long-term ecological and social policy objectives adopted at all levels, as they tend to fall short of implementing an integrated approach to social and ecological challenges. Against that background, we introduce the emerging just transition policy framework as a promising framework to further address the integration of social and environmental policy. We discuss the major breakthroughs provided by the EU Green Deal and highlight the need to strengthen, broaden and deploy the just transition policies.

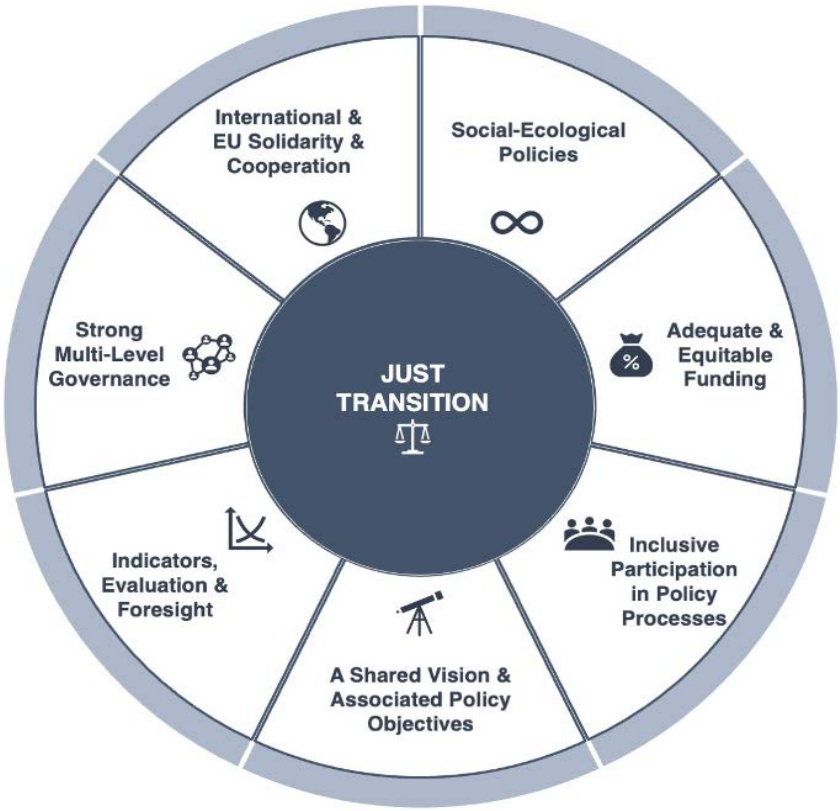
3. Building a Social-Ecological State for a Just Transition in Belgium

Building on our definition of the just transition and the evidence pointing towards its necessity, the third chapter delves into the question for which the High Committee was mandated: "how to organise and institutionalise the just transition in Belgium?".

The main claim here is that, in order to organise and institutionalise the just transition, the current social state needs to adopt the ecological goals and constraints fully within its aims, scope and structures, to evolve towards a social-ecological state. In this way, social and ecological challenges can be addressed in an integrated way, making just transition the pillar of societal development. A social-ecological state needs to be built at all levels of power, from local to European level.

This chapter draws the outlines of such a social-ecological state. More specifically, we define a set of policy levers reflecting the wideness of the array of tools and instruments to be implemented by our governments to build a social-ecological state. These are displayed in the following figure (Figure 6). Together these policy levers form an 'integrated' just transition policy framework. Integrated implies that all these levers need to be used at the same time. A just transition cannot be realised if it is limited to several 'fixes' for socially adverse impacts in single domains. Inherently, it requires acknowledging the interdependences between policy domains and across levels of competence.

Figure 6: The integrated just transition policy framework for Belgium



Conclusion and Perspectives: Towards a New Social-Ecological Pact for 21st Century Belgium

This report was written in response to the question "how to organise and institutionalise the just transition in Belgium?". This question was treated in three steps, exploring respectively the *what*, *why* and *how* of just transition in Belgium. The report thus outlined the concept of just transition, overviewed the issues at stake in Belgium, and pointed at seven broad policy levers for building a social-ecological state in Belgium. Just transition starts with acknowledging the systemic nature of the social-ecological challenges that Belgium is faced with, and thereby requires a systemic policy approach. It cannot be limited to a corrective stance towards frictions, trade-offs or conflicts between social and environmental objectives. Just transition should rather encompass the entire policy framework and its governing strategies needed to ensure that the sustainability transition is both more effective and more just.

The given frame of thinking and working of the High Committee for a just transition meant to focus on how the just transition would need to be grounded into our Belgian institutions over the course of the coming years. We are well aware, however, that upcoming multi-actor institutional discussions run the risk to remain sterile, opposing or technocratic as long as these questions are not embedded in much wider socio-political projects and realities, and the need for a Social-Ecological Pact is embraced by many more societal forces, from policy framework as to the level of their daily life.

The Social-Ecological Pact will face a series of debates which we see are present already today in (parts of) the academic and intellectual world. Sometimes these debates are relatively new and emerging, sometimes the questions raised have been accompanying European societies since at least the beginning of the industrial revolution. Such questions, some of which are identified in the concluding chapter of this report, need now to be led into multi-actor societal debates and discussions, treating root causes of the social-ecological issues at stake, their consequences, concrete policy approaches, and fundamentally, our understanding of what constitutes a good life.

Introduction

The accelerating ecological degradations, on the one hand, and the persisting poverty and social inequalities, on the other, have so far been treated as separate issues, debated in different forums and placed under the responsibility of different actors. As a result, the ecological transition faces resistance because of fears about its social consequences: It is not seen as an opportunity for improving wellbeing and social justice, but rather as a threat to low-income families, to workers in environmentally damageing sectors, to farmers and to the small self-employed. This can and must change. Designing policies that pursue environmental and social policy goals in an integrated way and ensuring effective participation of social partners, civil society and ordinary citizens – including the most vulnerable ones – in decision-making, implementation and evaluation should ensure that the ecological transition will be equitable, more supported and better informed. As a result, it can be more effective and just. If properly conceived, such 'just transition' can in fact become a means for reducing inequalities, while ensuring the satisfaction of social and environmental rights for all within safe Earth system boundaries. It is this conviction that animates this report. Its main claim is that, in order to address the twin social and ecological challenges Belgium faces, the social state needs to evolve into a 'social-ecological state', namely a state designed to address social and ecological challenges in an integrated way and making just transition the pillar of societal development.

The beginning of the 21st Century is marked by accelerating climate change, biodiversity loss, pollutions and other ecological degradations, whose adverse consequences hit the Belgian population hard. Heat waves and floods, which are no longer doomsday scenarios for the distant future in Southern countries, are already causing numerous victims in Belgium. Especially in recent years, the trends are undeniable. The abnormally hot summers of 2019, 2020 and 2022 were only interspersed with the exceptionally wet summer of 2021 that led to the floods of July 14th in the south of the country. The toll from these floods – considered the worst in the modern history of Wallonia – rose to 39 deaths, 100,000 casualties, thousands of self-employed people and businesses affected, 48,000 buildings damaged (including 45,000 housing units), 11,000 cars destroyed, and a cost for Wallonia estimated to 2,8 billion €[1]. Less visible are the fatalities from increasingly intense and frequent heat waves, such as that of the summer 2022 that records an excess mortality of 2,291 people (Sciensano, 2022a). These growing climate risks add to and reinforce other environmental risks, such as air pollution, which in 2020 alone, caused approximately 5530 premature deaths in Belgium (EEA, 2022).

The adverse consequence of accelerating ecological degradations affect the entire population, but in differentiated ways. Extreme climate events, such as floods, tend to affect more the elderly, children, teenagers, disabled people, persons with health conditions, poor or marginalised peoples, minorities, and foreigners (Selsor et al., 2023 ; Bigi et al. 2021 ; Yari et al., 2020; Rufat et al., 2015). In the specific case of the Vesdre Valley flooding, analyses reveal that elderly and poor people were disproportionately affected (UCL, 2023). Regarding the health effects of heat waves and air pollution, elderly, children and people with chronic conditions are, once again, significantly more at risk (Mayrhube et al., 2018; Åström et al., 2015). Poor people and migrant communities in our cities are also particularly affected by ecological degradations, as they tend to live in poorly insulated houses in dense neighbourhoods more exposed to air pollution and heat islands, and with few green areas providing refuge in case of heat wave (de Muynck et al., 2021; 2022 and 2023). Outdoor workers (Bethel and Harger, 2014; Lucas et al., 2014) and homeless persons (Nicolay et al., 2016) are also particularly vulnerable to heat waves. By involving a bundle of intersecting and mutually reinforcing vulnerabilities, environmental risks contribute to exacerbate poverty and social inequalities.

1 Cabinet du Ministre-Président de la Wallonie (2022)

The increasingly tangible impacts of accelerating ecological degradations on the Belgian population highlight the importance and urgency of strengthening environmental policies. Indeed, current environmental policies, mostly based on technological innovation and market tools (Carrosio and De Vidovich, 2023), are not ambitious enough to set us on a transition pathway towards a society respectful of safe Earth systems boundaries. In its last synthesis report, the Intergovernmental Panel on Climate Change (IPCC) asserts that "without a strengthening of policies, global warming of 3.2 [2.2–3.5]°C is projected by 2100" (IPCC, 2023a, p. 12), which far exceeds the limit of 1.5°C set by the Paris Agreement. Belgium is one of those countries that contributes, through insufficient climate policy action, to threaten the achievement of the Paris Agreement's objectives[2]. This exposes present and future generations to unprecedented climate risks with potentially severe, widespread and irreversible impacts (IPCC, 2023a), which would no longer affect only the most vulnerable ones. In order to prevent such risks in and beyond Belgium, today and in the longer term, on the human and the non-human domains of the living world, it is therefore essential to strengthen environmental policies.

The strengthening of environmental policies requires designing policies that pursue ecological and social policy objectives in an integrated way. Until now, the accelerating ecological degradations and the persisting poverty and social inequalities have been dominantly dealt with as separate problems, discussed in distinct fora, and placed under the responsibility of different actors. As a result, environmental policies are prone to remain 'socially blind' and tend to generate regressive effects (Carrosio and De Vidovich, 2023). For Belgium, such regressive effects have, for instance, been highlighted for subsidy schemes for investments in energy efficiency, renewable energy or electric vehicles, which remain inaccessible to low-income groups, or when (price-based) environmental policies would pressure affordability of energy or mobility (see Section 2.2.4). Socially regressive environmental policies are likely to widen social inequalities and poverty, but also to generate resistance that could threaten their implementation and, by extension, the ecological transition (Williams and Doyon 2019). Think, for example, of the prolonged and violent street protests of the 'yellow vests' in response to the adoption of a fuel tax in France[3], but also the protest of Flemish farmers in spring 2023 over the nitrogen plan. To ensure that environmental policies do not exacerbate social inequalities and poverty, and thereby guarantee their social acceptability and effectiveness, it is essential to design policies that pursue ecological and social objectives in an integrated way, here referred as to 'social-ecological policies', but also to involve social partners, civil society and ordinary citizens – including the most vulnerable ones – in the elaboration, implementation and evaluation of these policies. If properly conceived, such social-ecological policies can in fact become a means for reducing inequalities, while ensuring the satisfaction of social and environmental rights for all within safe Earth system boundaries.

The development of policies pursuing ecological and social policy objectives in an integrated way finds a contemporary echo in the concept of 'just transition'. This concept, which has its origins in the trade union movement of the late 20th Century (Eisenberg, 2019; Mazzocchi, 1993), is gaining more and more traction among other actors including environmental (justice) movements, companies, and governments (Córdova et al., 2022; Galgóczi, 2022; Stevis & Felli, 2020; Wilgosh et al., 2022). The imperatives of a just transition are now reflected in the main international climate treaties like the Paris Agreement. At the European level, the Green Deal integrates just transition under the "leave no one behind" headline and operationalises it through the 'Social Climate Fund' and the 'Just Transition Mechanism'. In Belgium, the just transition imperatives can also be found in the main climate policy visions, strategies and plans such as the 2021-2030 National Climate and Energy Plan (NCEP) and Belgium's long-term strategy.

2 Climat.be. Politiques et mesures et projections. https://climat.be/politique-climatique/belge/monitoring-et-communication-d-information/politiques-et-mesures-et-projections

3 This new fuel tax would have made car use 100€ a month more expensive for average French household living in rural area, while in these sparsely populated and on average poorer areas a car is indispensable to cover the increasingly long distances to work or to essential public and private facilities such as shops, schools and hospitals (Leroy, 2020). The French mass protests that followed, with the protesters characteristically dressed in yellow safety vests, spread to several European countries under the demand for more purchasing power and against the broader social, economic and spatial structures that perpetuate and deepen social inequalities.

The present report reflects a year of transdisciplinary dialogue and analyses on just transition in Belgium within the High Committee for a Just Transition. At the request of the Belgian Federal Minister for the Climate, the Environment, the Sustainable Development and the Green Deal, this academic group examined the question "How to organise and institutionalise the just transition in Belgium?". The result is a set of policy levers, reflecting a wide array of tools and instruments to be activated by our governments to build a 'social-ecological state', i.e., a state designed to address social and ecological challenges in an integrated way (Laurent, 2019) and making just transition the pillar of societal progress and development.

More specifically, this report explores the *what*, *why* and *how* of the just transition in Belgium.

Its first chapter focuses on *what* is just transition. After evoking the emergence and recent developments of the concept, it proposes an original definition of 'just transition' and introduces the main notions encapsulated in this definition (Section 1.1). It then conceptualises just transition, presenting and discussing its four dimensions (Section 1.2), as well as its operationalisation as a 'compass' to move fairly towards a just and sustainable future and a 'shield' to ensure the resilience of all to natural and transition risks (Section 1.3).

The second chapter looks at the reasons *why* a just transition is needed in Belgium. It first discusses the accelerating ecological degradations and the persistent poverty and social inequalities Belgium faces (Section 2.1). It then explores the inextricable links between ecological and social challenges through the prism of environmental inequalities, thus highlighting the need to address these challenges in an integrated way (Section 2.2). The chapter further points out the limits of the established policy frameworks that do not enable to achieve the mid- and long-term ecological and social policy objectives adopted at all levels, and which tend to fall short of implementing an integrated approach to social and ecological challenges. It finally introduces the emerging just transition policy framework as a promising framework to further address the integration of social and environmental policy, underlining the major breakthroughs provided by the EU Green Deal and the need to strengthen and expand the just transition policies (Section 2.3).

The third chapter delves into the question for which the High Committee was mandated, i.e.: *how* to organise and institutionalise the just transition in Belgium? The main claim here is that, for ensuring a just transition, the social state needs to evolve into a social-ecological state calibrated to provide an integrated response to social and ecological challenges and making just transition the pillar of societal development. The chapter defines and introduces seven policy levers to build such a social-ecological state: social-ecological policies (Section 3.1), adequate and equitable funding (Section 3.2), inclusive participation in policy processes (Section 3.3), a shared vision and associated policy objectives (Section 3.4), indicators, evaluation and foresight (Section 3.5), strong multi-level governance (Section 3.6), and international and EU solidarity and cooperation (Section 3.7). Together these policy tools and instruments form an integrated just transition policy framework.

Finally, the concluding chapter highlights the report's key messages and defines several more fundamental questions that would benefit from being discussed as part of a broad societal debate with a view to building a new social-ecological pact for 21st Century Belgium.

1. The Just Transition

The concept of 'just transition' occupies an increasingly important place in the scientific literature and policy agendas, but it has currently no established and consensual definition.

In this report, just transition is defined as a sustainability transition with social-ecological justice as its guiding principle, placing social and participatory rights at the heart of environmental policy. It encompasses four main dimensions:

1. Ensuring the transition towards a society that guarantees the fulfilment of social and environmental rights for all within safe Earth system boundaries;
2. Ensuring a fair distribution of the efforts and advantages associated with the sustainability transition;
3. Ensuring the resilience to natural and transition risks for all;
4. Ensuring a meaningful and continual participation of all in decision-making processes.

Through the operationalisation of these four dimensions, the just transition offers a 'compass' to move fairly towards a just and sustainable future as well as a 'shield' to ensure the resilience of all to natural and transition risks.

This chapter discusses the origins and concept of just transition used in this report. It introduces an original definition of 'just transition' and the main notions encapsulated in this definition (Section 1.1); the four dimensions of just transition (Section 1.2) and its operationalisation as a 'compass' and a 'shield' (Section 1.3).

1.1. Just Transition: A Sustainability Transition with Social-Ecological Justice as Its Guiding Principle, Placing Social and Participatory Rights at the Heart of Environmental Policy

Since its emergence in the American trade union world in the 1980 and 1990s, the concept of just transition has occupied an increasingly important place in policy agendas (Ciplet, 2022 ; Abram et al., 2022 ; Stevis and Felli, 2020). The concept was integrated within the Preamble of the Paris Agreement in 2015 and reiterated in the COP 26 Just Transition Declaration in 2021[4]. At the EU level, a just transition – embodied in the "leave no one behind" headline – constitutes one of the elements of the European Green Deal. In Belgium, the imperatives of a just transition are also present in the main climate policy visions, strategies and plans such as the 2021-2030 National Climate and Energy Plan (NCEP), Belgium's long-term strategy and vision for a decarbonised Belgium by 2050[5].

The internationalisation of the concept and its rise in popularity among many actors beyond the trade union world have contributed to the emergence of plural conceptions of just transition[6][7], but also to a broadening of its meaning. Just transition has indeed evolved from a reactive *social* project

4 Preamble, Paris Agreement, U.N. Doc. FCCC/CP/2015/10/Add, 1; Ministerial Declaration "Solidarity and Just Transition Silesia Declaration", 24th Conference of the Parties (COP24) to the United Nations Framework Convention on Climate Change (UNFCCC), on 3 Dec. 2018 in Katowice, Poland.

5 The emerging just transition policy framework is discussed in more detail later in the text (see Section 2.3.2)

6 This plurality of conception of just transition has notably been highlighted for Belgium in a study carried out by researchers from ULB (La Gioia et al., 2023), the main insights of which are presented later in the report (see Section 3.4).

7 Burke, 2022; Cha & Pastor, 2022; Galgóczi, 2022; Jones, 2022; Krause et al., 2022; Stevis & Felli, 2020; Wang & Lo, 2021

aimed at protecting workers in polluting industries from environmental regulations (Abram et al., 2022; Wilgosh et al., 2022) to a broader proactive *social-ecological* project aimed at jointly pursuing ecological and social objectives (Burke, 2022; Bauler et al., 2022; Cha & Pastor, 2022; Ciplet, 2022; Clarke & Lipsig-Mummé, 2020; Krause et al., 2022). This report develops on a comprehensive social-ecological approach to just transition.

The 'just transition' is here defined as a *sustainability transition* with *social-ecological justice* as its guiding principle, placing *social and participatory rights* at the heart of environmental policy. This sustainability transition thus aims to both reduce inequalities that translate into social-ecological injustices, while ensuring the satisfaction of a common base of social and environmental rights for all in any circumstances (as explained in more detail in the box 1 below). In our definition, this common base also covers 'capabilities' and 'basic human needs'. Indeed, as will be explained later, these three notions – i.e.: rights, needs and capabilities – converge in many respects (See Section 1.1.4). The choice of mobilising all three is associated with the co-existence of different disciplines with distinct conceptual foundations within the High Committee. This broad conceptual scope recognizes and reflects this plurality of disciplinary perspectives.

Box 1. The Need to Both Reducing Inequalities and Covering Basic Needs to Ensure a Just Transition

Reducing inequalities on the one hand and covering basic needs on the other constitute two inseparable requirements of a fair and successful ecological transition.

Indeed, an approach based on reducing inequalities is necessary in several respects. Firstly, it helps to ensure the legitimacy and social acceptance of the measures adopted – the 'Yellow vest' phenomenon being an emblematic illustration of the failure of environmental measures perceived as unfair. Next, it responds to a challenge of social cohesion, which is essential if we are to face up to the enormous collective effort required by the ecological transition. Then, as will be explained later (see Section 1.2.1), meeting the essential needs for the billions of people living in poverty while respecting safe Earth system boundaries presupposes a reduction of the level of resource consumption of the richest (Gupta et al., 2023), and by extension, social inequalities. Finally, from a post-growth perspective, reducing inequalities is an important way of financing the guarantee of basic needs for everyone.

However, the reduction of inequalities approach must be underpinned by an ambitious strategy to cover basic needs for all. The accelerating ecological degradations are affecting the very conditions of our existence on the planet. Although it is often the most vulnerable populations that are at risk (and even more so when multiple causes of vulnerability interact, as the intersectional approach indicates), environmental hazards are likely to strike anyone, at any time, more and more often, and more and more severely, as recently illustrated by the floods in New York. Extreme climate events can, in certain circumstances, seriously threaten access to food, water or energy in major cities. An approach based on reducing inequalities will not address the problem of 'scarcity' – of water, food, energy, clean air – which may potentially affect each and every one of us, and which calls for policies to provide appropriate minimum guarantees for each of these needs, firmly based on the framework of fundamental social rights and capabilities. The two strategies are therefore complementary and must be pursued in parallel. If we take again the example of the 'yellow vests', one of the problems many of them were initially facing was actually the lack of an alternative to using the car, for want of accessible and adequate public transport. Consequently, any measure that was aimed at dissuading people from using their own cars, even if it was designed to reduce inequalities and hit the highest income earners the hardest, reduced the possibilities of mobility, including professional mobility, for many people.

This definition of just transition articulates notions from different fields of research, i.e.: 'social-ecological justice', 'strong sustainability', 'sustainability transition', and 'social and participatory rights'. It thus establishes a dialogue between literatures that do not usually speak to each other, including social ecology, ecological economics, sustainability transition studies, law and political philosophy. This multidisciplinary dialogue led to the definition of four main dimensions of just transition. Before venturing into the presentation of these four dimensions (which will be the subject of the next section, i.e.: Section 1.2), it is important to clarify the different notions that make up

our definition of the just transition. This is why, the rest of this section provides the conceptual background for each of these notions.

1.1.1. Social-Ecological Justice

Social-ecological justice is a conception of justice that considers the structural relationship between the social and ecological dimensions. It refers to the "the right of human and non-human worlds to live and flourish together in their environments free from social and ecological destruction and degradation" (Yaka 2019, p.11).

The concept of social-ecological justice is characterised in different ways, but always encompasses several dimensions of which the following five are common ones (Gupta et al., 2022 ; Abram et al., 2022 ; Hazrati & Heffron, 2021 ; Williams & Doyon, 2019 ; Gunnarsson-Östling & Svenfelt, 2018 ; Heffron & McCauley, 2017 ; Forsyth 2014; Schlosberg 2007):

1. **Recognitional justice** focuses on acknowledging the plurality of needs, values and perspectives in the social and political realm and having special consideration for vulnerable groups;

2. **Procedural justice** focuses on ensuring the access to information, decision-making, civic space and courts to enable the real, meaningful and continual participation of all groups concerned**;**

3. **Distributive justice** focuses on striving for a fair distribution of the rights, resources, risks and responsibilities related to environmental degradations and ecological transition;

4. **Restorative justice** focuses on repairing damages caused by environmental degradations and ecological transition as well as preventing future damages;

5. **Cosmopolitan justice** focuses on considering damages caused by environmental degradations and ecological transition beyond our national borders and in a global perspective**.**

These different dimensions of justice apply to the relation between individuals, households, social groups, countries or regions (i.e.: intra-generational justice), but also to those between generations (i.e.: inter-generational justice) and between species (i.e.: inter-species justice). Just transition indeed call to go beyond justice for human within a same generation and to consider justice for the future generations and for the non-human domain of the living world. As explain in more detail in the box below (Box 2), the long-term impact of accelerating environmental degradations and of environmental (in-)action justify the need to consider inter-generation justice. Addressing contemporary ecological problems also presupposes to deconstruct the idea conveyed by modernization that nature is merely a resource at the service of humanity and to adopt conception of justice integrating non-human realms (Yaka, 2019 ; Schlosberg, 2007). These ecological problems and their impacts indeed reveal that human life and society are interwoven with and structurally dependent on the non-human domain of the living world (Yaka, 2019). The concept of social-ecological justice, which "builds on the interconnection between the [environmental justice and ecological justice], between humanity and ecology, nature and society/culture, human and non-human life (…), is an attempt to go beyond the duality of environmental vs. ecological justice—either protecting nature from human society (rights of nature) or protecting humans from environmental hazards and deprivation (rights of humans regarding the environment)—corresponding to the ontological distinction between human and non-human life." (Yaka 2019, p. 11 et 12). It thus considers inter-species justice.

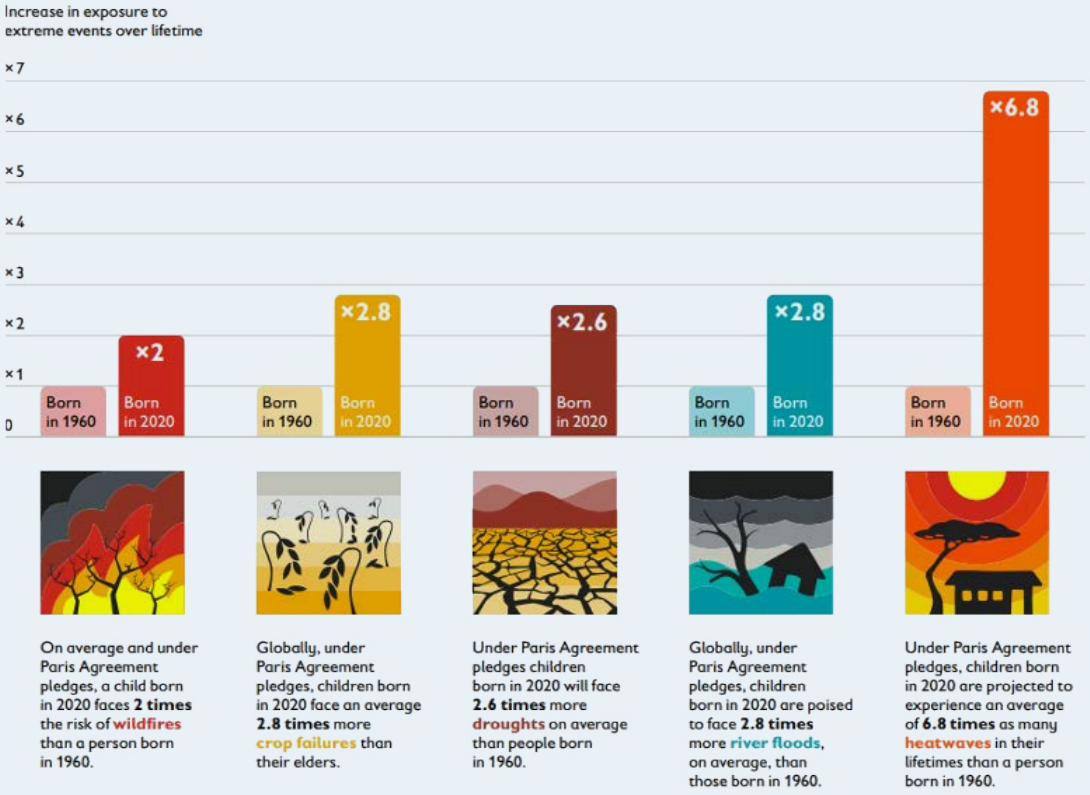
Box 2: Intergenerational Justice

Intergenerational justice or justice between generations refers to the transgenerational respect of rights and duties: the generally acknowledged conception that future generations have legitimate rights implying present generations having certain duties towards future generations (Meyer, 2017).

Many policy areas have effects that last in the future and require talking about responsibilities between generations (i.e. the sustainability of pension schemes, or the level of public debt), but the context of climate change and other ecological degradations makes since long an extensive area of applied intergenerational justice research. It is well-established that the impact of environmental degradation is increasingly severe for the children of today and the generations yet to come. Recognizing the disproportionate burden placed upon young people today and future generations is thereby an essential for a just transition strategy.

Extreme events are expected to increase in frequency, intensity, duration and spatial extent over the coming decades. A research team led by Wim Thiery et al. (2021) demonstrated the intergenerational and inter-regional difference in impact intensities. Analyzing various climate models and considering factors such as life expectancy, population density, and future temperature trajectories, they found that children born in 2020 will experience a two- to sevenfold increase in extreme events compared to those born in 1960 (global average). Three scenarios were examined: two scenarios limiting global warming to 1.5 °C and 2.0 °C above pre-industrial levels, and a third scenario consistent with the current pledges (around 2.6 - 3.1 °C). The lifetime exposure to extreme events under Paris Agreement pledges for children born in 2020, compared to that of a person born in 1960 is represented in Figure 7. If global temperatures would rise by 3 °C (in line with current pledges), these factors become even more pronounced. A six-year old in 2020 would experience twice as many forest fires and tropical cyclones, three times more river floods, four times more crop failures, five times more droughts and 36 times more heat waves, relative to a person living under preindustrial climate. In addition to the global average picture, the researchers looked at spatial variations and at countries grouped by income category. They found that the 2020 birth cohort in the Middle East and North Africa region is projected to experience the biggest multiplication in exposure to extreme events.

Figure 7: Lifetime exposure to extreme events under Paris Agreement pledges for children born in 2020, compared to that of a person born in 1960



Source: Ryan et al. (2021)

These findings establish that the concrete implications of climate change and environmental degradation affect fundamental human rights differently between generations and between world regions. Legal norms and approaches in the domain of environment and climate change are a quickly

developing domain (Bellinkx et al., 2021; Hannum et al. 2023). The case of Duarte Agostinho et al. versus Portugal before the European Court of Human Rights serves as an illustrative example. In this case six Portuguese children have taken legal action against Portugal and 32 other European states for their alleged failure to implement sufficient measures to mitigate the impact of global warming. The plaintiffs not only invoke their right to respect for private and family life (Article 7 of the EU Charter of Fundamental Rights), but also emphasise the ban on discrimination. For a recent example from Flanders, the commission for children's rights urged governments to safeguard children's rights in its advice to the drafting of the Energy & Climate Plans. Children do not bear any responsibility for the current trespassing of planetary boundaries, while they are, throughout their lifetime, most affected by the consequences of climate changes and environmental degradation. The commission characterises the ecological crisis as a crisis of children's rights. Their recommendations include incorporating children's needs into environmental policies, involving them in decision-making, prioritising education and awareness, an ambitious climate and environmental policy phasing out fossil fuels, stimulating circular economy and renewable energy, implementing fair international climate policies, and adequate systems of protection in the case of extreme weather and other disasters invoked by environmental degradations (Kinderrechtencommissariaat, 2023).

These justice dimensions are highly interlinked. For example, distributional choices for the current world population (intra-generational justice) also influence the position of future generations (intergenerational justice). Recognitional and procedural justice also provide the foundations for distributive justices (Ballet et al., 2015; Bouzarovski & Simcock, 2017; Fraser, 1998; Honneth, 1996; Schlosberg, 2007; Young, 1990). Procedural justice shapes the intimate relationship between justice and participation, without dismissing distribution and recognition all together. As Schlosberg explains, "the focus on the *process* of justice, including demands for more broad and authentic public participation, is often seen as the tool to achieve both distributional equity and political recognition" (Schlosberg 1990, 23). For Young, "democratic and participatory decision-making procedures are then both an element of, and a condition for, social justice" (Young 1990, 23). Reverse, vicious dynamic also applies: because inequalities tend to be multi-dimensional, those most affected by environmental degradation and climate change have less power to put their concerns on the table, denounce damage suffered or be heard in the design of alternative policies (see Section 2.2.6).

Although the orthodoxy of distribution, recognition and participation is mostly unchallenged, their reality is complex. This is primarily because the nature of justice cannot be easily isolated as justice claims tend overlap and sustain each other. For instance, workers in carbon intensive industries claim for compensation for employment loss, but they also demand recognition of their distinct social situation and participation in decisions that affect them in order to attain a just climate transition (Stevis, 2021).

1.1.2. Strong Sustainability

Sustainability is here conceived in its 'strong' conceptualization which recognizes that humans and our social communities are first and foremost natural themselves. For a strong sustainability, the living world – whether human or non-human – and the environment more broadly constitute inalienable conditions for the continuation of our human societies and for aspiring a good and fulfilling life for all. By contrast, a 'weak' sustainability conceptualization reflects the idea that environmental objectives such as ecosystem integrity or the atmosphere's capacity to absorb GHGs can (fully/partially/temporarily) be neglected in favour of economic or even social progress. Advocates of this approach consider every natural resource and every natural entity to be entirely exploitable, provided that its exploitation benefits society. They consequently apply a strong hierarchy within the living world and in any case put the human before the natural (Neumayer, 2003). The imperatives of social-ecological justice call for adopting a strong sustainability approach.

Strong sustainability means an unconditional respecting of the non-human world for its intrinsic value, just as we unconditionally respect human life (Daly, 1968). Although the notion of strong sustainability may at first appear to be an imprecise conceptualization of the interaction between society and nature, it has already found its way into our legal frameworks. Examples include the

protection of natural habitats, which sometimes severely limits the destruction of landscapes and ecosystems.

In our current socio-ecological contexts, strong sustainability implies collectively identifying 'critical natural capitals', i.e., elements of nature, resources and ecosystems of critical importance for sustaining a good life in the future. This calls for the identification of the critical breaking points (Ekins, 2003) that must not be exceeded in terms of exploitation to avoid risking an extended and definitive deterioration in the carrying capacity of the Earth's ecosystem. The need to respect the atmosphere's capacity to regulate the climate – and the resulting political and scientific objective of 1.5°C – is a case in point. Another example of these critical breaking points is the notion of planetary boundaries (discussed in more detail in Sections 1.2.1 and 2.1.1).

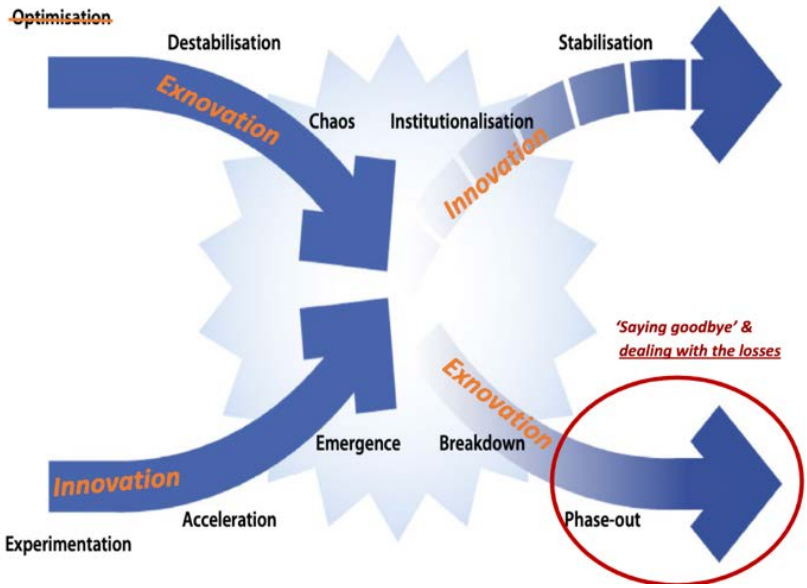
Concretely, and under our definition, a just transition based on a strong sustainability approach presupposes a deprioritisation of purely economic issues when they require us to accept a definitive deterioration of the living world or the over-exploitation of critical resources.

1.1.3. Sustainability Transition

In this report, a sustainability transition is understood as a long-term, multidimensional and fundamental transformation process towards sustainable modes of production and consumption (Markard et al., 2012).

A sustainability transition implies a structural and fundamental transformation of our country and of all human communities more broadly. Literature on sustainability transitions shows that such societal change concerns multiple socio-technical systems (e.g., food, energy, housing, transport, communications constitute systems where social and the technological elements interact and co-evolve), which are interlocking and evolving in an inextricably concomitant manner (Geels, 2005). Driven by systemic changes and innovations – whether technological such as explosive digitalisation or social such as the recomposition of households – the scientific, political, economic, cultural and civic norms that govern our daily lives are being transformed, and new worlds are emerging. While the transformation thus relies on the strong interweaving of actors, infrastructures, cultures, rules and structures, the strong connections between interlocking systems are also at the root of systemic and historical inertia.

Figure 8: The X curve: Innovation and exnovation as the 'yin' and 'yang' of sustainability transitions



Source: adapted by Callorda Fossati et al. (forthcoming) from Hebink et al., 2022

A sustainability transition involves coordinating support for the development and dissemination of sustainable alternatives or 'innovation' with the deliberate exit from unsustainable industries, technologies, business models and practices, here referred as to 'exnovation'[8]. Research on sustainability transitions reveals that both innovation and exnovation play a crucial role in transformation processes. On the one hand, "the maturing of alternatives determines the credibility and timing of policies targeting the exit from unsustainable industries" (Callorda Fossati et al. 2022, p. 7, personal translation). On the other hand, the exit of unsustainable socio-technical configurations enables to make room for the deployment of sustainable alternatives (ibidem). Innovation and exnovation can thus be seen as the 'yin' and 'yang' of sustainability transitions: they act in opposite but complementary ways and are both essential to ensure such transformation processes. The representation of transitions with the X-curve framework (Figure 8) captures these interactions between patterns of 'build-up' (innovation) and 'breakdown' (exnovation) (Hebinck et al., 2022). Importantly from a 'just transition' perspective, considering the X-curve heuristic framework, phase-out appears as a late phase of exnovation. It is characterised by the effective detachment ('saying goodbye') from an unsustainable regime or regime element and by a concern over 'dealing with the losses' which, however, tend to become visible earlier (Callorda Fossati et al., forthcoming). The box below provides additional insights on exnovation as a still little-known facet of sustainability transitions (Box 3).

Box 3. Exnovation: The Other Facet of Sustainability Transitions

Although exnovation receives increasing attention in sustainability transition literature, this concept remains little explored theoretically and hardly Operationalised in the policy arenas (Callorda Fossati & Fransolet, 2021; Kivimaa & Kern, 2016). The research in the field of transition studies has traditionally concentrated on the processes of development and diffusion of innovations (Hebinck et al., 2022). For instance, the seminal "multi-level perspective on transition" framework developed by Geels & Schot (2007) conceptualises transition through the emergence and deployment of innovation niches and their interactions with the socio-technical regimes. In terms of visual representation, we rely then on (sophisticated versions) of the well-known 'S-curve' that depict the diffusion of innovation over time.

The dominant ecological modernization paradigm, which places great faith in technological innovation and market tools, has translated into ecological transition strategies and plans mainly based on economic incentives for supporting the development and diffusion of sustainable innovation among citizens and compagnies (ex.: subsidies for renewable energy production systems or energy-saving devices) (Carrosio et De Vidovich, 2023). Exnovation policies are virtually absent from these plans and strategies, even though a growing number of actors are calling to move away from unsustainable industries, technologies, business models and practices (Callorda Fossati & Fransolet, 2021; Kivimaa & Kern, 2016). These observation echoes psychological research revealing that when confronted with a problem, human beings tend to turn to additive solutions (i.e.: adding new elements) rather than subtractive solutions (removing existing elements)[9]. Such cognitive bias prevents us from thinking beyond innovation in the governance of sustainability transitions.

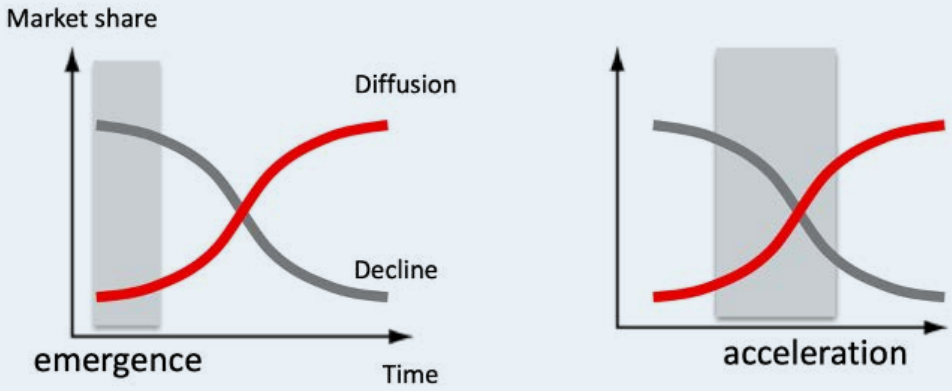
Yet many authors argue that the policy mixes implemented to ensure sustainable transitions should include innovation *and* exnovation policies (Callorda Fossati & Fransolet, 2021; Kivimaa et Kern, 2016). Several empirical works reveal that, without exnovation policies, the diffusion of sustainable innovations is often limited to pioneers and early adopters, and those may encounter difficulties to really emerge and last, because it is difficult to compete with the regime that remains. Moreover, these innovations tend to come on top of the established unsustainable socio-technical configurations without automatically and significatively replacing them. Finally, if the regime does not decline sufficiently in parallel to the emergence of sustainable innovations, there is a risk that overall production and consumption quantities increase, and that objectives in terms of environmental benefits are not met (innovations generating impacts as well, even if lower, different or generated elsewhere). This stacking issue has been observed in the energy domain by the science historian Fressoz, and in some circular economy domains, as investigated by industrial ecologists (Callorda Fossati et al., 2022; Callorda Fossati, E., et al., forthcoming/ABC book).

The crucial role of exnovation policies in sustainability transitions has notably been highlighted through the study of the case of the nuclear and coal phase-out policy adopted as part of the energy transition strategy of the German Government (*Energiewende*). This case study reveals that

8 *Exnovation.Brussels. (2021).*
9 Adams, (2022).

before the adoption of this policy, renewable energies were spreading, notably thanks to support policies, but that the energy mix remained largely based on fossil fuels and nuclear energy. It is the clear announcement in 2011 of the phase-out of nuclear by 2022 that stimulated investments in the renewable sector and made it possible to accelerate its deployment (Rogge & Johnstone, 2017). Against that background, some authors consider the anticipation of phase-out of unsustainable socio-technical configurations as a component of the acceleration phase of sustainable transitions (see figure 9: 'destabilisation' is the other side of 'acceleration') (Markard et al., 2020).

Figure 9: Innovation (red line) and exnovation (grey line) in 1) emergence and 2) acceleration phases of sustainability transitions



Source : Markard et al., 2020, p. 2.

Exnovation is, however, not only about how to move faster (what the concept of acceleration suggests). In line with the issue of stacking, exnovation is also about how to make sustainability transitions happen, rather than 'stackings' or additions (Callorda Fossati et al., forthcoming/ABC book). The German example can also illustrate this stacking issue: "Renewable energy production took off from 1990, to reach around 30% of total gross electricity production in 2016. During this time, electricity produced from nuclear power reduced substantially, but not the one produced from coal and lignite (David, 2017), and electricity generation increased overall (OurWorldinData). As a result, CO_2 emissions resulting from electricity production from 1990 to 2015 decreased by 13.5 % only. (David, 2017 p.138) explains: "whereas the share of gross renewable electricity production has grown considerably over the years, an increasing share of electricity based on coal and lignite is being exported". The diffusion of renewable energy generated additional energy production in the end. As a result, benefits in terms of emissions are not as high as expected, because electricity production based on fossil energy and nuclear power was not reduced to the extent of the increase in renewable energy" (Callorda et al. Forthcoming, in "Missed cannibalisation").

Governing exnovation involves collectively defining the 'unsustainable' modes of production and consumption to abandon and developing exnovation strategies. The repertoire of exnovation policies is wide-ranging and some policies have already been implemented or discussed in Belgium or in neighbouring countries. Kivimaa & Kern (2016) distinguish notably for types of exnovation policies:

1. policies aimed at **putting direct pressure on the regime** (ex.: Carbon tax, low-emission zone, environmental standards for products, import restriction for carbon intensive products, banning of SUV);
2. policies aimed at **reconfiguring the institutional rules** which contribute to *statu quo* or incremental patterns (ex.: reconfiguration of tax system or of public procurement rules according with sustainability criteria);
3. policies aimed at **de-institutionalising existing supports for incumbent regime** (ex.: withdrawal of direct or indirect subsidies to fossil fuels, abolition of the tax advantage for company cars);
4. policies aimed at **rebalancing the power relations** which contribute to maintain the regime in place (ex.: integration of additional actors supporting sustainable alternatives in existing advisory bodies, creation of a permanent citizens' assembly for the climate).

Developing such governance of exnovation requires the establishment of institutions that allow us to go along that path, the adoption of legal dispositions, but also the transformation of the collective narrative on sustainability transitions.

1.1.4. Social and Environmental Rights, Capabilities and Needs

In this section, we present a summary of three normative frameworks – social and environmental rights, capabilities and human basic needs – that address the issue of fundamental social and environmental needs. Although these frameworks come from different disciplines, they converge in many respects, both in terms of the list of needs that should be provided for all and in all circumstances, and in terms of the ways in which these needs can be met and realised. As such, they are all useful and mutually supportive to implement the just transition.

Social and Environmental Rights

The normative framework of fundamental rights is articulated here with respect to both social and environmental rights. We briefly explore their interlinkages at a substantive and procedural level.

Fundamental rights are human rights, guaranteed to all without discrimination as to race, sex, age, etc. The Universal Declaration of Human Rights, which represents the universal matrix of these rights, was designed in the immediate post-war period, at the peak of the industrial era - the 'thirty glorious years' - and has not mainstreamed the ecological crisis and transition concerns.

Social rights are recognized at international, European and national level. Some international and European instruments that recognize fundamental social, economic and cultural rights (e.g., International Covenant on civil and political rights and the International Covenant on social, economic and cultural rights, European Convention of Human Rights, EU Charter of Fundamental Rights, Revised European Social Charter) are binding upon their contracting parties. In practice, and under certain conditions, the international obligations to which Belgium has committed itself (legally binding international instruments) can be invoked by citizens before the Belgian courts, even if Belgium has not implemented them properly. Moreover, Belgium is accountable for these obligations before a series of international bodies and may face condemnation. Other international and European instruments lack binding force, but have strong symbolic value (e.g., Universal Declaration of Human Rights, ILO and WHO Constitutions) or at least the value of a programmatic basis (e.g. European Pillar of Social Rights).

The European Pillar of Social Rights (EPSR) (2017) is a solemn declaration by the European Parliament, the Council and the Commission but, in contrast to the European Charter of fundamental rights, it is not part of the EU Treaties. The 20 principles of the European Pillar of Social Rights are not a formal recognition of individual rights but reaffirms some of the rights already present in the Union acquis and adds new principles that were supposed to address the challenges arising from societal, technological and economic developments. It is conceived as a beacon towards a fairer and more inclusive social Europe and is accompanied by a European Pillar of Social Rights Action Plan, in which the Commission has set out a whole range of concrete initiatives to deliver on 20 principles. The EU Social Pillar is a political declaration that should be progressively implemented by joint effort of EU institutions, national, regional and local authorities, social partners and civil society. *"For them to be legally enforceable, the principles and rights first require dedicated measures or legislation to be adopted at the appropriate level"* (art. 14 Preamble).

Several binding and important directives have, however, emerged from this policy framework in the meantime, such as those regarding minimum wages and work-life balance. Various recommendations also represent significant steps toward implementing the European Social Agenda, including the Council recommendation on access to social protection, adequate minimum incomes, and just transition. All these directives and recommendations explicitly reference the EPSR in various instances. The same applies, among other things, to the regulation of the Social Climate Fund (see Section 2.3.2). Additionally, social monitoring and benchmarking is significantly based on the EPSR. So conceived appears that the EPSR (which the upcoming Belgian presidency aims to take this to the next level), is on its way to becoming the reference framework for the EU's social agenda.

The realisation of fundamental social rights takes a different shape in the context of an ecological crisis than in the 'thirty glorious years'. In the so-called 'developed' countries, during those thirty years of growing prosperity and expansion of the welfare state, the challenge of fundamental social rights consisted mainly of helping those who 'fell through the cracks' of the social security net. In the context of the ecological crisis, the causes and shapes of poverty are becoming more complex: in the course of a day, a significant proportion of the middle class can find itself deprived of the most basic goods and services and fall into extreme poverty (as illustrated during the 2021 floods). Needs that were thought to be met by all – such as access to water, shelter and food – can suddenly be undermined for a large part of the population, even for people who are regularly affiliated to a compensatory social security scheme. As we now know, an epidemic can suddenly paralyse an entire economic, social and political system. It is against this backdrop that we must upgrade the list of fundamental social rights, their content and their implementation.

In this view, some of the social rights recognized by European and international instruments concern workers (e.g., the right to just and healthy conditions of work, a fair remuneration, freedom of association, collective bargaining, vocational guidance and training, social protection etc.). These rights remain essential, but, as part of just transition, must be adopted by social partners to take account of changes in the labour market.

However, by contrast, some other fundamental social rights must be guaranteed to all individuals in all circumstances, including the implementation of the ecological transition and accompanying the extreme events that the ecological crisis will necessarily bring about in the short or medium term. These include the right to a healthy environment, health, adequate housing, energy, water, adequate food, mobility and a series of services essential to daily life. For the most part, these are the rights that determine survival in our societies, and which are threatened by the ecological crisis. The table in Appendix 2 to this report presents these rights, some of their emblematic definitions and a brief description of what they cover. It does not claim to be exhaustive, but aims to illustrate how the international, European and Belgian normative framework of fundamental social rights underpins the need for social policies that address the most vital human needs as a matter of priority.

Although it is not binding in itself and, in terms of content, does not add to existing instruments, it is worth highlighting here the interest of the last principle of the European Pillar of social rights (Principle 20), which is truly innovative and relevant from the point of view of ecological transition: "*Everyone has the right to access essential services of good quality, including water, sanitation, energy, transport, financial services and digital communications" (see Vielle, 2007)*[10]. However, this principle has not yet been the subject of concrete proposals within the framework of the Social Pillar Action Plan.

Complementing the broader normative framework of social rights, environmental rights are a 'regulatory concept' typically encompassing human rights related to the environment and participatory environmental rights (Bogojević and Rayfuse 2018). Human rights related to the environment implement a *substantive* approach to environmental rights, referring to either 1) an autonomous right to the environment of a specific quality or 2) the 'greening' of existing human rights, including the right to life, health, private and family life or property (Bogojević and Rayfuse 2018).

The concept of an autonomous right to the environment finds it origins in Principle 1 of the Stockholm Declaration (UN 1972). However, despite recent developments at international level (non -binding UNGA resolution 76/300 of 28 July 2022, Human Rights Council resolution 48/13 of 8 October 2021) and its explicit inclusion in some regional treaties (e.g. African Charter on Human and Peoples' Rights, Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (Protocol of San Salvador), Arab Charter on Human Rights), there is still no universal recognition of an autonomous right to the environment. It is at the national

10 It may also be relevant to draw a parallel with the notion of "essential services" for which the fundamental right to strike may be restricted, in the ILO Convention on Freedom of Association and Protection of the Right to Organise, 1948 (No. 87) (see Knäbe and Carrión-Crespo, 2019)

level that a constitutional right to the environment is established in most jurisdictions (Boyd 2012). Since 1994, the Belgian Constitution has recognised a right to a healthy environment in its Article 23, as an element of "the right to lead a life in keeping with human dignity. Together with a right to a healthy environment, article 23 also covers

1. *the right to employment and to the free choice of an occupation within the context of a general employment policy, aimed among others at ensuring a level of employment that is as stable and high as possible, the right to fair terms of employment and to fair remuneration, as well as the right to information, consultation and collective negotiation;*
2. *the right to social security, to health care and to social, medical and legal aid;*
3. *the right to decent accommodation;*
4. *the right to the protection of a healthy environment;*
5. *the right to cultural and social fulfilment;*
6. *the right to family allowances."*

This article specifically constitutes the recognition in Belgian Law of fundamental social and environmental rights in an integrated way. Constitutionalising environmental rights is conducive to better environmental and human rights results (Jeffors and Gellers 2017).

The 'greening' of existing human rights refers to the 'reformulation and expansion of existing human rights and duties in the context of environmental protection' (Shelton 1991). This is evident in the European context: while the European Convention of Human Rights does not recognise an autonomous human right to the environment, the environmental case law of European Court of Human Rights has developed on the basis that the existence of environmental harm and exposure to environmental risks can undermine the enjoyment of a series of existing rights guaranteed under the Convention (e.g. right to life, the right to fair trial, right to respect for private and family life and home, freedom of expression / freedom to receive and impart information, protection of property)[11]. This approach goes in some cases in the direction of seeing environmental and social rights as interconnected. Despite its importance, the human right to a healthy environment is still fragile, including in an EU context.

In contrast, participatory environmental rights have shown a more solid recognition as an essential condition for environmental democracy. Participatory environmental rights implement a *procedural* approach to environmental rights. They refer to the rights for individuals and groups to participate in environmental governance, through the right to access to environmental information, public participation in environmental decision-making and access to justice in environmental matters. Participatory environmental rights are explicitly recognised in a number of international, regional and national legal sources. Building on the non-binding Principle 10 of the Rio Declaration (UN 1992), the 1998 UNECE Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters is a pioneering international treaty on participatory environmental rights, setting the procedural legal standard for environmental democracy (UNECE, 1998). The convention focuses on three mutually reinforcing pillars: access to information, public participation and access to justice (further discussed in Box 21 in Section 3.3.3). Environmental democracy emphasises the role of participatory environmental rights for their ability to foster dialogue and consensus, as well as acquire better knowledge and awareness of environmental problems and solutions (Baber and Barlett 2020; Kirk and Blastock 2011).

Although social rights lack the institutionalised distinction between substantive and procedural rights developed in the field of environmental rights, most of the international and European instruments stipulate that social fundamental rights must be accompanied by effective participation. This means ensuring that national stakeholders – including non-state actors such as non-governmental organisations – are meaningfully involved in all phases of programming: assessment, analysis, planning, implementation, monitoring and evaluation.

11 for a review, see for e.g.: European Court of Human Rights, (2023).

Capabilities

The capabilities approach is also relevant to the just transition and resonates with the regulatory approach of social and environmental rights.

In its original formulation developed by Amartya Sen, it focuses on "the freedoms generated by commodities, rather than on the commodities seen on their own" (Sen 1999, p.74). Rather than economic growth, development is defined in a liberal sense as the expansion of human freedom (Bonvin and Laruffa 2018). The two key concepts of this approach are 'functionings' and 'capabilities'. Whereas the first corresponds to what an individual can be (e.g.: being in good health, being adequately nourished) or do (e.g.: travelling, participating in social and political life), the second refers to the freedom or opportunity that this individual can achieve with the set of functionings that she or he values (Robeyns, 2016; Ballet et al.,2015; Holland, 2008). The most important idea of Sen is that identical 'functionings' (i.e. resources) are translated differently by each human being into what he or she thinks are valuable activities. The capability approach emphasises substantive freedom as the yardstick for a valuable life. According to the capabilities approach, a just society ensures that everyone attains a minimum threshold for all the capabilities that are necessary for leading a life in human dignity (Holland, 2008).

Based on an extensive work of cross-cultural discussion, Nussbaum (2000) has developed a 'basic capability' set. This set includes ten fundamental capabilities presented as universal norms of human capability: Live, bodily health, bodily integrity, senses, imagination, and thought, emotions, practical reason, affiliation, other species, play and control over one's environment. These capabilities are presented in more detail in the table in Appendix 3 below.

The 'basic capability' set covers a large part of the fundamental rights discussed above, while adding other elements, some of which are particularly relevant for just transition. As shown in the table (Appendix 3), several of the fundamental social and environmental rights previously presented implement this approach. Beyond these convergences with fundamental rights, the basic capability set covers additional elements, some of which are particularly relevant in a context marked by increasing natural risks. They include notably the ability to engage in various forms of social interaction (i.e.: 'affiliation' capability), which can be threatened by certain natural risks, including zoonosis.

Compared to fundamental rights, the capabilities approach pays particular attention to contextualization in defining the conditions for leading a life in keeping with human dignity. The capabilities approach as proposed by Sen indeed emphasises fundamental social and human diversity (Sonecom et al., 2016). The value placed on specific capabilities may indeed vary from one context or individual to another and over time. Considering that the choice of these vital capabilities is context-dependent and that individuals should have the freedom to determine the capabilities that are required for functioning in their own communities, Sen states that contextual capability sets should ideally be defined through public deliberation (Ballet et al., 2015). An unresolved issue prevails, on what the adequate level of aggregation for the deliberation should be, and what exactly a sufficiently homogenous community is to have it develop its own specific contextualised capability set.

Empirically, capability-sets have been elabourated on as fine-grained as local neighbourhoods or rural communities, but also entire cities or even countries. Probably among the most important, innovative and impacting projects, Sabina Alkire used the capability approach to develop (notably with James Foster) a Multi-dimensional Poverty Index that is at the heart of the Oxford Poverty and Human Development initiative, which issues yearly a planet-wide assessment of poverty at country-levels and as well as assessments within countries. The capability framework, in combination with the theory of human need (Doyal and Gough, 1991), is also employed to develop so called 'reference budgets' or priced baskets of goods and services that illustrate what specific household types need in order to attain a certain living standard (Goedemé, Storms, Penne, et al., 2015). Reference budgets were used to develop needs-based indicators in order to measure the affordability of housing (Haffner & Heylen, 2011; Winters et al., 2018), water (Vanhille et al., 2018), a healthy diet (Penne & Goedemé,

2021), and child-specific needs (Penneet al., 2020), as well as poverty more generally (Goedemé et al., 2022). The reference budgets approach has proven its added value as a complement to other social indicators and is also being considered at the European level, including in the Directive on adequate minimum incomes. It should be noted, however, that the rights-based approach could be, in a sense, more ambitious being not limited to the minimum needs that people require to participate in society.

In the capability approach, democracy also plays an essential role linking this normative framework to participation in the context of social and environmental rights discussed above. Bonvin and Laruffa highlight the importance of deliberative democracy under a capability approach, referring to the concept of 'capability for voice': "First, by giving voice to the people, it allows paying due attention to their circumstances and tackling them in the most appropriate way, thus showing the importance of taking account of people's voices when devising public action with a view to empowering them; second, by taking people's voice seriously, it goes against imposing on them decisions (on ways of being or behaving) made by others, thus emphasizing the importance of recognizing voice when it comes to increasing people's freedom of choice". (Bonvin and Laruffa 2018, p. 217).

Finally, the capability approach considers justice for future generations and other species, which makes it particularly relevant for just transition. More recently, this perspective has also been interpreted as rejecting the identification of social progress with economic growth and calling for less materialistic and productivist understandings of the 'good life' as more beneficial from both an environmental and a wellbeing viewpoint (Bonvin and Laruffa 2022).

Human Needs

The capabilities approach has much in common with the operationalisation of the human needs approach developed by the Chilean Ecological Economist Manfred Max-Neef (1982, 1991).

The essential interest of Max-Neef's approach in a just transition perspective is the conceptual separation that he makes between, on the one hand, the basic 'human needs' that must be met and, on the other hand, the 'satisfiers' of these needs, i.e., how the needs can be met. There is a relatively small number of basic human needs. They have three essential characteristics: 1) they are universal across time and space and evolve only very slowly; 2) they are incommensurable, which means that they are satiable, irreducible and non-substitutable (a deficit in one dimension cannot be compensated for by improving another dimension of needs); 3) they are non-hierarchical. Satisfiers, on the other hand, are historically and geographically situated, and evolve rapidly. In terms of characteristics, they are not universal, they are commensurable, and they are hierarchical (Brand-Correa and Steinberger, 2022).

Based on very extensive empirical work in the 1970s in many different communities through-out the globe, Max-Neef identified nine fundamental human needs: subsistence, protection, affection, understanding, participation, leisure, creation, identity and freedom. Not that far from Sen's functionings defined as 'beings and doings', Max-Neef defines 'satisfiers' as ways of being (personal or collective attributes), of having (institutions, norms, laws, etc.), of doing (personal and collective actions, expression) and of interacting (place, space, time). A richness of means (e.g., different satisfiers) can be operated by people to attain their basic needs. Much like Sen, and in opposition to much of today's basic economic thinking, Max-Neef's approach allows to empirically show that 'having' – e.g., things, commodities – is often not the most effective satisfier to a fulfil a specific need, with the exception maybe of most of the dimensions of the subsistence need (food, shelter...). These fundamental human needs are exposed in more detail in the table in Appendix 4.

In terms of just transition, the fact that satisfiers can evolve rapidly is a major potential lever for change. They allow us to question the ways in which we satisfy a series of (slowly evolving) needs and the changes that these means should undergo so that everyone can lead a fulfilling life (individually and collectively), while not compromising the ecological conditions of possibility.

It was from this conception that Kate Raworth (2012) constructed her 'Donut Theory'. In inviting societies to move away from the objective of GDP growth towards "a just and safe space for humanity", Raworth distinguishes between the fundamental needs that must be satisfied (the 'Social Floor' of the Donut, or inner circle) and the means that our societies have implemented to achieve them: the organisation of production systems, (re-)distribution mechanisms and consumption patterns. The Donut theory involves examining these different 'satisfiers' and the ways in which they are systemically organised in contemporary societies, and reviewing/criticising/improving them in the light of planetary boundaries ('ecological ceiling' of the Donut, or outer circle).

The comparison between the Donut's social floor and Max-Neef's needs proposed in the table below highlights the links between the two approaches (table 1). Where the Donut Theory goes one step further is precisely in no longer separating social imperatives from ecological constraints/ imperatives.

Table 1: Comparison between the Donut's social floor and Max-Neef's needs

Max-Neef	**Raworth**
Subsistence	Water, Food, Energy
Protection	Health, social equity
Affection	Networks
Understanding	Education, Networks,
Participation	Political voice, income and work, networks, Education
Leisure	Networks, Education
Creation	Peace and Justice, Education
Identity	Political Voice, social equity, Education
Freedom	Political Voice, Peace and Justice, Education

1.2. The Four Dimensions of Just Transition

Building on our definition of just transition (section 1.1), a sustainability transition with social-ecological justice as its guiding principle involves that both the normative horizon of the sustainability transition and its process of transformation are just. It is indeed essential that both the destination and the journey are just, i.e., that we seek 'just ends' and 'just means' (Gupta et al., 2023).

To reflect this imperative, a just transition encompasses four main dimensions :

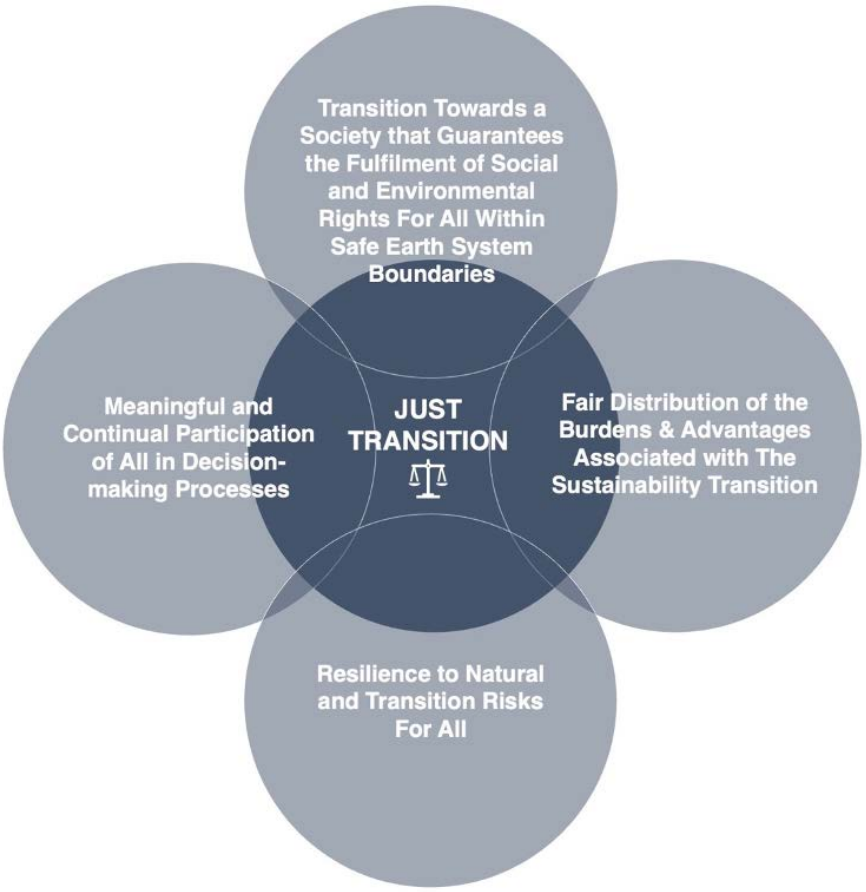
1. Ensuring the transition towards a society that guarantees the fulfilment of social and environmental rights for all within safe Earth system boundaries;

2. Ensuring a fair distribution of the efforts and advantages associated with the sustainability transition;

3. Ensuring the resilience to natural and transition risks for all;

4. Ensuring a meaningful and continual participation of all in decision-making processes.

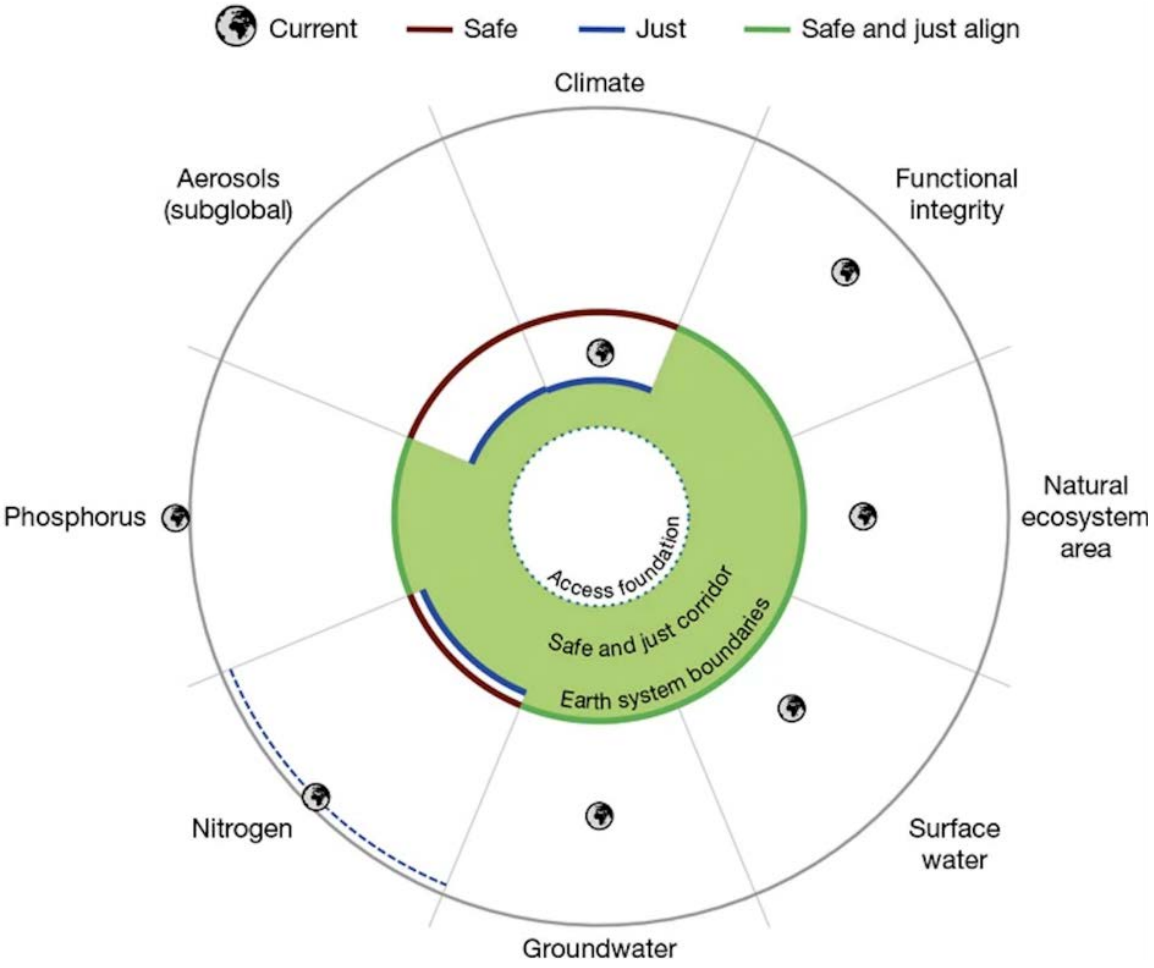
Figure 10: The four dimensions of just transition



1.2.1. Transition towards a Society that Guarantees the Fulfilment of Social and Environmental Rights for All Within Safe Earth System Boundaries

The normative horizon for just transition is defined as follows: a society that guarantees the fulfilment of social and environmental rights for all within safe Earth system boundaries. This normative horizon is based on the concept of "safe and just earth system boundaries" developed by Rockström and his colleagues (Gupta et al., 2023; Rockström et al., 2023). Inspired by the so-called Doughnut Model (Raworth, 2012), the authors reconfigured their original concept of 'planetary boundaries' from 2009 to integrate justice concerns into the biophysical boundaries. Safe and just Earth system boundaries now corresponds to an "an integrated framework that reduces the risks of global environmental change (safe) while ensuring well-being (just) with an equitable sharing of nature's benefits, risks and related responsibilities among all people in the world" (Gupta et al., 2023, p. 2). By integrating justice within the model of planetary boundaries, the new framework has two important objectives: 1) taking present and futures generations as well as nature into account by minimising widespread severe, existential or irreversible negative impacts of environmental changes; this is basically what makes the boundaries 'safe', and 2) drawing attention to ensuring at least minimum access to resources for all for a life in dignity and the reduction of poverty; which makes the boundaries 'just'.

Figure 11: The Safe and just Earth system boundaries framework



Source: Rockström et al., 2023, p. 104

Safe Earth system boundaries need to be defined collectively at all geographical scales and for all Earth systems domains. To make the Earth system boundaries safe for all, it is necessary to consider in their definition the unequal impact of environmental problems in and beyond the territory considered, today and in the longer term, on the human and the non-human domains of the living world. The aim is to avoid widespread or irreversible impacts on ecosystems, regions, communities and individuals, including the most vulnerable ones.

Minimum levels of essential needs to be fulfilled (for example in terms of food, energy, water, housing and transport) are (to be made) compatible with the safe Earth system boundaries and also have to be defined collectively[12]. As shown by Gupta and her colleagues (2023), meeting the essential needs for the billions of people living in poverty while respecting safe Earth system boundaries presupposes a reduction of the level of resource consumption of the richest. This means that a balance has to be found between the fulfilment of essential needs of all and the fulfilment of surplus wants of few (Laurent, 2023a). The need to find this balance is imposed by the limits of Earth's biosphere.

12 The Brussels Region has undertaken an exercise to define planetary boundaries and essential needs as part of the "Brussels Donut" project : https://donut.brussels

1.2.2. Fair Distribution of the Efforts and Advantages Associated with the Sustainability Transition

The transformation process towards a society guaranteeing access to social and environmental rights for all within safe Earth system boundaries has to be just. This implies a just distribution of the efforts and advantages associated with this transition.

The efforts needed to comply with safe Earth system boundaries need to be fairly distributed. This transition involves substantial efforts to improve the ecological efficiency of goods and services, but also to drastically reduce consumption levels. Some have more capacity than others to contribute to these efforts. Today, certain environmental policies mean that lower income households have to contribute relatively more to the efforts needed (see Section 2.2.4). To ensure a just transition, it is therefore necessary to guarantee just effort sharing by applying justice criteria such as equity, (historical) responsibility and capacity to define the magnitude of the efforts expected from different countries or individuals. This implies that those who are the most responsible and/or capable have to put in the most effort (Gupta et al., 2023 ; Laurent, 2023b)[13].

The numerous advantages associated with the transformation process towards a society compatible with the Earth system boundaries also need to be distributed in a just way. This transformation process offers many opportunities to enjoy, for example, urban parks and green spaces, to live in a comfortable energy-efficient home, to eat nutritious local and pesticide-free food, and to achieve full health. However, nowadays not everyone has equal access to these advantages (See Section 2.2.4). It is therefore crucial to guarantee a just distribution of the transition opportunities by making a sustainable lifestyle accessible for all.

1.2.3. Resilience to Natural and Transition Risks for All

A just transition also means ensuring resilience of all to the risks associated with sustainable transition and environmental changes. Resilience is here defined as "the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure as well as biodiversity in case of ecosystems while also maintaining the capacity for adaptation, learning and transformation" (IPCC WG2, 2022c, p.7). Ensuring resilience to risks for all involves preventing these risks by reducing vulnerabilities, but also protecting the entire population by guaranteeing basic needs for all in the face of risks that cannot be avoided.

More specifically, it is necessary to ensure that everyone is resilient to the risks associated with the transition to a society that fits within safe Earth system boundaries. Besides the numerous opportunities, this transformation process generates substantial risks. The 'transition risks' (Sénat, 2022) include the risks associated directly with environmental policies and those not resulting from any proximate environmental policy, such as the risks stemming from reconfigurations of the labour market or changes in the availability and costs of goods associated with ecological transitions. While some are more vulnerable than others (see Sections 2.2.3, 2.2.4 and 2.2.5), no one is immune to these risks. It is thus necessary to anticipate and prevent transition risks by reducing vulnerabilities (for example by means of training and retraining policies) and to protect the population from the risks that could not have been prevented (for example by means of social security).

13 A concrete example of application of equity, (historical) responsibility and capacity criteria for defining the distribution of the remaining carbon budgets by 2050 at the international and national levels has been proposed by Laurent (2023b). The framework he developed could also be applied to allocate the efforts to be made in terms of climate change adaptation and for addressing other social-ecological problems.

In the same way, resilience to increasing natural risks needs to be guaranteed for all. The transition to a society respectful of Earth system boundaries will take place in a context marked by increasingly severe and frequent 'natural' risks (e.g., flooding, heat waves, droughts, pandemic). Indeed, although the respect of planetary limits should enable to prevent risks that could generate irreversible or widespread impacts, some of the natural risks will still materialise. Just like transition risks, natural risks affect everyone, but in a differentiated way (see Section 2.2.2). The prevention of natural risks through a reduction of vulnerabilities (e.g., by improving health) and the protection of all from the unavoidable risks (e.g. with social security or civil protection) are therefore essential and mutually supporting (Laurent, 2020 and 2023).

1.2.4. Meaningful and Continual Participation of All in Decision-Making Processes

Besides distributive justice, procedural justice also has to be ensured. [14] Procedural justice claims are the roots of democratic participation in its multiple possible articulations, graduations and forms (Held 2006).

The key justifications for emphasising participation in decision-making as a key dimension of the just transition are procedural, substantive, and instrumental. These reasons are overlapping but point in turn to the importance of participation for 1) the legitimacy of the decision-making process, 2) the quality of the decision and 3) social acceptance and trust in the implementation of decisions related to the social-ecological transition.

A focus on participatory procedures is inherent in the quest for democratic legitimacy of decision-making processes and their outcomes. Participation in decision-making constitutes a principle of good governance and agency practice. It is a tool to democratically restrain executive power and catalyse transparency and public accountability, while at the same time creating a sense of public 'ownership' of the outcome. From the participants' perspective, engagement in the process is a way to foster critical attitudes and democratic capacity. (Baber and Bartlett, 2004; Dryzek, 2000; Gundersetn, 1995). Through public participation, citizens become more knowledgeable and inclined to challenge policy decisions. Participation generates a sense of 'environmental citizenship' that might catalyse behavioural change and enhance the collective understanding of social, environmental and governance challenges (Dobson, 2007). In this sense, participation absolves an educational function, by stimulating social learning and awareness (Holder, 2004; Fiorino, 1999). This connection between democratic legitimacy and environmental citizenship is crucial for a just transition.

Public participation is as much about the substantive quality of a decision, as it is concerned with democratising the process. Participation by those who might be more likely to be affected by environmental risks and environmental measures leads to better outcomes. Good (environmental) decisions of course depend on problem-solving capacity and require knowledge and information. This substantive rationale for participation implies that environmental decision-making is not a merely technical exercise. It involves political judgement and balance of multiple reasons and values, other than merely technical arguments (Lee, 2014; Armeni and Lee, 2021). Participation provides decision-makers with a richer set of reasons and rationalities, beyond scientific and technical input (Jasanoff, 2003; Sandell, 2013). Local knowledge and non-economic values from a variety of actors (including the lay public and local communities) allow not only to bridge the decision-makers' 'knowledge gap', but also to improve the substantive quality of the decision through better understanding of the problems, their social contexts, alternatives and values. Of course, participants' perspectives are also ambivalent, as they have 'multiple knowledges to draw upon and offer to the decision-making process' (Pieraccini, 2015). But this is an opportunity, instead of a limitation, as it erases 'the fictitious

14 As discussed above, the different notions of justice are interlinked and ensuring procedural justice also ensure recognitional justice claims to be voiced in the process (see Section 1.1.1).

division between the ecological and the socio-economic, between nature and society' (Pieraccini, 2015 p. 66).

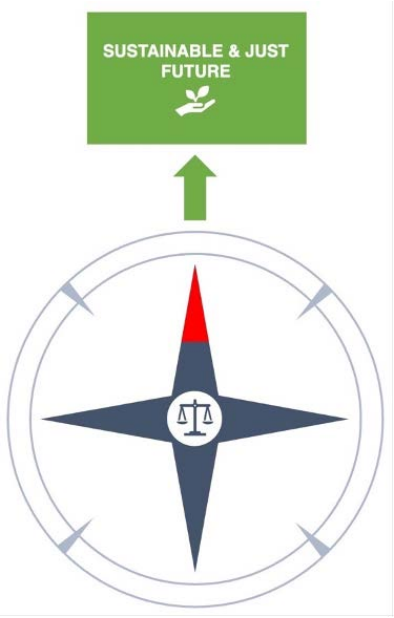
Finally, by reducing conflicts and catalysing behavioural change, participation has the potential of enabling better implementation. By giving a sense of ownership of the outcome, participation encourages compliance and facilitates implementation. According to this instrumental rationale, public participation is presented as a way to improve the acceptability of decisions and speed up their implementation. Broad participation improves credibility and public trust. In this sense, public participation is a tool to provide social intelligence and strategic information 'for the shaping, presentation and implementation of pre-committed policy choices, [and] as guidance on how best to forestall or mitigate negative social reactions' (Stirling, 2005 p. 221). While this is often criticised as a way to simply implement top-down decisions (Lee et al., 2013; Armeni, 2016), this rationale is important for the implementation of the just transition, while still ensuring good decisions and a good process.

1.3. Just Transition as a 'Compass' and a 'Shield'

The definition (Section 1.1) and the four dimensions (Section 1.2.) of a just transition proposed in this report aim to guide collective changes towards a sustainable future (a 'compass') and prepare for anticipated natural and transition risks (a 'shield'). It has Social-ecological Justice as a guiding principle.

Operationalizing just transition as a societal project implies that the Belgian society as a whole turns towards a future guaranteeing access to social and environmental rights for all within safe Earth system boundaries, seizes all the opportunities offered by the transition to this future while guaranteeing that everyone contributes to the transition efforts according to her or his responsibilities and capacities. It thus offers a 'compass' to move fairly towards a just and sustainable future.

Figure 12: Just transition as a 'compass' to move fairly towards a just and sustainable future



Operationalizing just transition also entails the prevention and the protection of the entire population from the risks associated with the sustainability transition and from the increasingly severe and frequent risks linked to the upheavals of the Earth system. This understanding and approach provides a 'shield' to ensure the resilience of all to transition and natural risks.

Figure 13: Just transition as a 'shield' to ensure the resilience of all to natural and transition risks

Just transition as 'compass' and 'shield' thus enables the different members of the Belgian society to "re-appropriate, individually and collectively, the future, [and] become together the architects of a chosen future rather than victims of a suffered future" (de Jouvenel 2004, personal transition).

2. The Need for a Just Transition in Belgium

This chapter focuses on the reasons why a just transition in Belgium is crucial. Belgium faces multiple interconnected societal challenges today and for the years to come.

Here, we discuss the accelerating ecological degradations – particularly in relation to climate change, biodiversity loss and air pollution – and the persistent poverty and social inequalities (Section 2.1).

We present such ecological and social challenges as strongly interconnected and we illustrate their linkages through the prism of environmental inequalities (Section 2.2). In this context, we report empirical evidence for Belgium in relation to the unequal contribution to the environmental degradations, unequal effects of environmental degradation and environmental policies on different groups, and unequal participation in decisions related to these challenges.

The crucial dependence of human wellbeing and societal flourishing upon natural and social conditions is widely recognized and reflected by the adoption of ambitious mid- and long-term policy objectives at all levels. However, these objectives remain far from being achieved, as current policies tend to fall short of implementing an integrated approach to social and ecological challenges, as we discuss in the last section (Section 2.3).

2.1. The Twin Social and Ecological Challenges

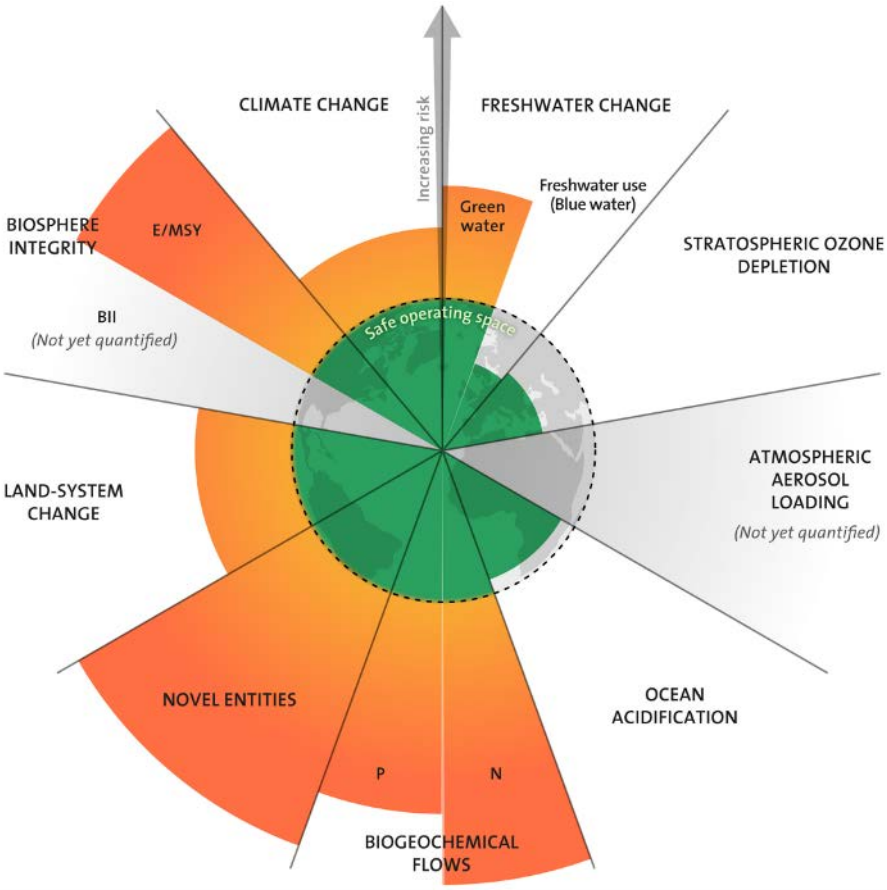
Belgium is facing the twin challenges of accelerating ecological degradations and persisting social inequalities and poverty. This section provides an overview of the magnitude of these ecological and social challenges based on empirical data for Belgium.

2.1.1. Accelerating Ecological Degradations

In 2009, Johan Rockström and colleagues identified nine planetary boundaries that define a safe operating space for humanity with respect to the Earth system that 'must not be transgressed [in order to] help prevent human activities from causing unacceptable environmental change' (Rockström 2009, p. 472) (discussed in Section 1.2.1). The authors showed that 'three of nine interlinked planetary boundaries [had] already been overstepped' (Rockström, 2009).

By 2022 six of them were breached (Wang-Erlandsson et al., 2022). As illustrated in the following figure (Figure 14), exceeding limits today concern climate change, loss of biodiversity, disruption of biochemical cycles of nitrogen and phosphorus, chemical pollution, changes in land use and freshwater use.

Figure 14: The nine planetary boundaries



Source: Wang-Erlandsson et al. (2022)

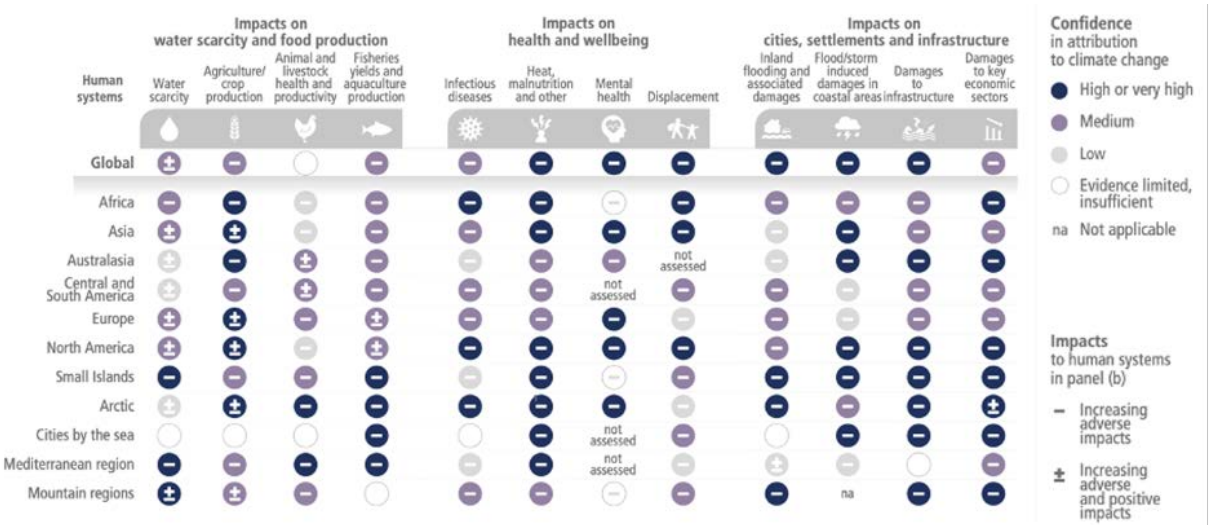
A country-level Earth system boundaries assessment for Belgium is yet to be carried out.[15]

This section focuses on evidence related to climate change and its interactions with loss of biodiversity and air pollution. While these three environmental challenges are not in themselves exhaustive of the variety of causes for the accelerating global environmental changes, they have been selected for three main reasons. First, they are key factors in the current global environmental changes. Second, they are both interconnected between themselves and with key social issues (e.g. health effects, poverty, social exclusions and inequalities) (EEA, 2021, IPCC WG2, 2023 …). Finally, these issues reflect more broadly the expertise represented within the High Committee.

In its last report on the state of scientific knowledge on climate change, the Intergovernmental Panel on Climate Change (IPCC) reiterate that "*human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020*" (IPCC, 2023b, p. 42). Various changes in physical climate conditions such as sea level rise, increase in heavy precipitation, heat waves, droughts and tropical cyclones, ocean acidification and glacier retreat, are already affecting every region of the world. The widespread and substantial adverse impacts, with related losses and damages, are not restricted to natural systems but fundamentally affect humans and societies. Figure 15 below provides an overview of the observed global and regional impacts of climate change on human systems. The figures shows that climate change impact severely on water scarcity and food production, health and wellbeing, and cities, settlements and infrastructures. These impacts are spread across all regions.

15 Examples of country-level planetary boundaries assessments are available, among others, for Sweden, The Netherlands, and Europe (EEA/FOEN, 2020; Lucas & Wilting, 2018; Eriksson 2023). The Complex Risk Assessment Center (CRAC) of the Belgian Federal Public Service Health, Food Chain Safety and Environment will be commissioning this exercise over the course of 2024.

Figure 15: Observed global and regional impacts on human systems attributed to climate change



Source: IPCC, 2022a, p. 10

The available evidence sketches a bleak outlook across the globe: increasing adverse impacts are dominant in all regions of the world, the majority with high or very high scientific confidence. Africa and small Islands States in the Pacific are most profoundly impacted, but all continents are faced with multiple and severe risks in their different geographies (coastal, mountainous) that they encompass (coastal regions, mountain). In Europe's Northern regions, North America and Asia, the increasing adverse impacts are accompanied by positive impacts in crop production, and in the arctic the risk of damages to key economic sectors might become milder than in current conditions. These impacts can be viewed in various ways, for example as loss and damage, which will be a central topic at the COP28 UN climate conference. Loss and damage are the negative effects of climate change that cannot be prevented through mitigation (i.e.: the reduction of greenhouse gas emissions) or adaptation (i.e.: building sufficient resilience). They broadly fall into two categories: economic loss and damage—that which can be assigned a monetary value, such as destruction of buildings or loss of crops—and non-economic, which encompasses both tangible and intangible values that are harder to quantify monetarily such as life and health, heritage, cultural identity, and biodiversity (Ackson et al., 2022). The devastating fires that ravaged communities in Hawaii, submerged Pacific islands, and the alarming loss of biodiversity that poses a threat to both food and economic stability in the Maldives serve as stark examples of the repercussions of failing to mitigate and adapt to climate change. The economic, emotional, and health toll of climate change disproportionately affects communities that have contributed the least to the unfolding environmental crisis. Preparing for loss and damage is, therefore, an issue of justice, and it has been a rallying point for many countries, particularly spearheaded by small island developing states, which arguably face the greatest risks. These nations have been advocating for action through the UN process since as far back as 1991. The 2023 UN climate conference faces the challenging task of addressing numerous unresolved questions concerning the Loss and Damage Fund. These include its place within the broader landscape of existing climate finance institutions, the allocation of financial responsibilities, eligibility criteria for funding recipients, and the accessibility of financing (Issa et al., 2023).

Belgium is not spared by climate change, and its socio-economic impacts are already visible today. In its 2020 Climate Report, the *Royal Meteorological Institute of Belgium* (RMI) shows that the average annual temperature has increased by 2.1°C between the middle of the 19th century and the last three decades, and that the six warmest years observed during this period are all after 2005. Heat waves tend to become more frequent (+0.3 heat wave per decade), longer (+2 days per decade), and more intense (+ 1°C/day per decade). In addition, the annual amount of precipitation has increased slightly (+9%) between the middle of the 19th century and the last three decades, winter precipitation being the ones that have increased the most (+31%). Since 1981, the frequency of heavy daily precipitation in summer tends to increase (IRM, 2020). It seems however important to point out that Belgium is the 18th country in the world affected by water stress (Kuzma et al., 2023).

Finally, the rise in sea level is already observed, with the sea level in Ostend having risen by more than 11cm since 1950 (Climat.be, Observations en Belgique). The societal and economic impacts of these changed climatic conditions are already visible today. They include among other excess mortality during heat waves that will be discussed later in the text (see Section 2.2.2) and the impacts of droughts and heat waves on agriculture. For instance, in 2018, these extreme events caused a drop in production volume by 31% for potatoes, 13% for sugar beet, and 10% for cereals in Flanders. These agricultural yield losses were followed by the submission of claims amounting to 150 M€ to the Flemish Disaster Fund (De Ridder et al., 2020).

Climate change also contributes to exacerbating other global environmental changes, including air pollution. Climate change and air pollution are, in fact, mutually reinforcing. Hot extremes, including heat waves, aggravate air pollution events in urban areas (IPCC WGII 2022, p. 12). At the same time, some studies show that the interaction between temperature and pollutants also aggravates the effects of extreme temperature in already polluted areas (Demoury et al., 2022). Key insights on Air pollution are provided in the box below (Box 4).

Box 4. Air Pollution

While most air pollution components improved or have stabilised over the last decade in Belgium, several EU and most World Health organisation (WHO) target values are still exceeded. The general trend on air pollution is a decreasing one, although air pollution components on the rise include Particulate Matter (PM)2.5 from agriculture and Non-Methane Volatile Organic Compounds (NMVOCs) from residential combustion. Generally, ozone concentrations have continued to exceed the EU target value, especially in warm years. Road transport remains the most important source of air pollution. In Brussels, the European NO_2 limit values were trespassed, but the EU limits on $PM_{2.5}$ and PM_{10} were respected. In Flanders, several monitoring stations exceeded the daily limit value for PM_{10} until 2013, but after implementing the Flemish and local action plans on Particulate Matter (2005), on industrial hotspot zones (2007) and on PM and NO_2 for the City and Port of Antwerp (2008), air quality improved significantly (VMM, 2023a and b) . However, there were still exceedances of the yearly NO_2 limit in 2018 along busy roads and in street canyons in cities with more than 50 000 inhabitants. The Flemish Air Policy Plan 2030 puts forward the aim to resolve them as soon as possible and strives that everywhere in Flanders air quality is in line with WHO targets by 2050 (CCIEP, 2019). In Wallonia, the EU limit values for air quality are respected except for ozone. The European Environmental Agency (EEA) observed in 2023 that, on national reduction commitments under international and EU law, clear progress has been made on the reduction of four pollutants, including in Belgium: SOX emissions by 83%, NOX by 57%, NMVOCs by 34% and $PM_{2.5}$ by 47% (European Environment Agency, 2023).

It must be noted that EU air pollution limits allow for up to five times the pollution level that the WHO adopts in its guidelines, to safeguard health. The WHO has subsequently tightened its guidelines in the face of the now well-established evidence that damage to human health occurs at much lower levels than previously thought. This leaves a large discrepancy between the EU legal limits for air pollution and the WHO's recommendations, with EU limits allowing pollution at levels up to five times higher than what the WHO recommends. With a mean population exposure to $PM_{2.5}$ of 12.7 µg/m3 in 2019, this means 93% of Belgians were exposed to levels above the WHO recommendation of 10 µg/m3 (OECD, 2021d). However, this is an improvement from 99% of Belgian people exposed on average to 16.2 µg/m3 of $PM_{2.5}$ in 2011.

In addition, the health impacts of air pollutants are often unevenly distributed. For example, the EEA[16] estimates that in 2020, exceeding pollution thresholds in Belgium led to 5,530 premature deaths and chronic obstructive pulmonary disease estimated to 47,7 years of healthy life lost per 100 000 inhabitants. Other research also indicates that neighbourhoods with lower income households, more unemployment, more people of foreign origin, more rental houses, and higher residential mobility, are more exposed to air pollution (Verbeek, 2019).

It should also be noted that various air pollutants can elicit distinct effects on health. For instance, NO2 and black carbon (BC) are recognized as pollutants associated with traffic emissions, while $PM_{2.5}$ constitutes a complex mixture of solid and liquid particles. Since traffic-related pollutants account for only a portion of PM exposure, the health effects of PM may vary from those of traffic-related pollutants.

16 European Environment Agency. (2022).

These effects may also differ depending on temperature. For example, a 2022 study by Demoury et al, suggested that air pollutants, including $PM_{2.5}$, NO_2, O_3, and black carbon, might modify the effects of temperature. Specifically, the impact of heat was more pronounced on days with higher levels of O_3 and black carbon, while the cold effect was greater on more polluted days of $PM_{2.5}$ and NO_2. However, the effect of O_3 was found to be lower in cold conditions. These findings underscore the complexity of the interplay between temperature extremes, health conditions, and air pollution, highlighting the need for targeted interventions to protect vulnerable populations.

Climate change also induces species adaptation, migration or extinction and contributes to the establishment and development of exotic species, sometimes at the expense of native species (Portner et al., 2023). Climate change thus exerts additional pressure on biodiversity, which is in Belgium already highly threatened by the degradation of natural habitats caused by fragmentation and urban sprawl, as well as by air, water and soil pollution[17]. The box hereunder provides an overview of the biodiversity loss problem (Box 5)

Box 5. Biodiversity Loss

In 2019, the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) conducted a global assessment of the state of biodiversity and its ecosystem services that confirmed a dangerous and unprecedented decline in nature, with 1,000,000 endangered species and extinction rates accelerating (IPBES, 2019). Ecosystems, species, wild populations, local varieties and breeds of domesticated plants and animals are shrinking, declining or disappearing due to direct and indirect causes, many related to unsustainable production and consumption. This loss poses a direct threat to human well-being in every region of the world. The IPBES qualified the global response to be insufficient and emphasised the need for transformative change to restore and protect the very foundation on which we depend as human beings (Brondizio et al., 2019).

In Belgium, substantial shares of the species are at risk of extinction. Although it is the 5th smallest country in Europe[18], Belgium has a remarkable diversity of species. The total number of species living in Belgium is estimated at 55 000 (RBINS, 2013). According to OECD's 2021 environmental performance review of Belgium, more than a third (35%) of freshwater fish species are threatened with extinction, 28% of bird species, 23% of vascular plant species and 21% of mammal species. The main cause of pressure on biodiversity in Belgium is land conversion (where natural areas are used for urban and industrial expansion, agriculture, infrastructure or tourism). The result is the loss, degradation or fragmentation of habitats. In an OECD-comparative perspective, the Belgian natural landscape is particularly fragmented, a trend that is persisting despite wide recognition of the problems it entails for water management, nature conservation, climate resilience and biodiversity. Land take (i.e.: the process of converting non artificial surfaces to artificial surfaces) outweighs by far recultivation (i.e.: the inverse process), and this for all types of covers (Copernicus Land Monitoring Service, EEA 2023).

The European 'Habitats' Directive (European Commission, 1992) requires an assessment of the conservation status of habitats and species of Community interest on all the national territories of the European Union (Article 17). In the period 2013 to 2018, the share of habitat types of (European) Community interest in favourable conservation status was low (7% in Flanders, 2% in Wallonia). Compared to the previous assessment period (2007-2012), the number of species in an unfavourable conservation status increased in both regions (OECD, 2021).

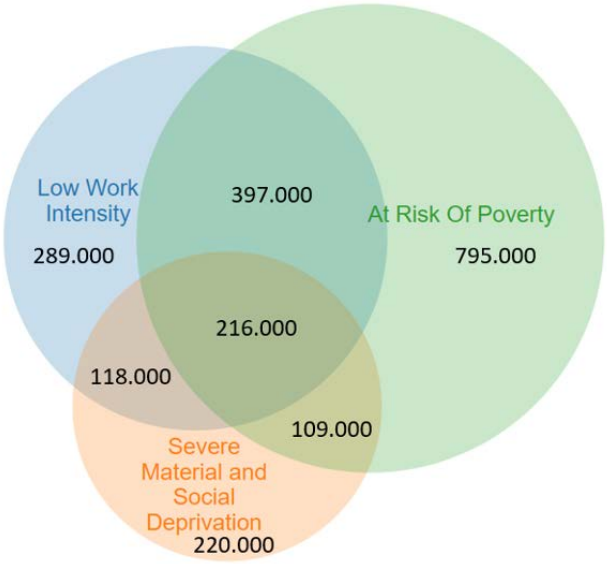
The value of nature and biodiversity is not trivial. As an illustration, researchers from VITO, UAntwerpen and UGent have assessed the economic value of the Natura 2000 network in Flanders (Broeckx et al. 2013). 11 out of the 36 known ecosystem services were assessed for the 168 000 hectares of this network in Flanders, consisting of protected natural habitat types that are identified as core breeding and resting sites for threatened species as well as rare types of natural habitats. The authors estimated, among others, the following benefits: each year, over 34 million tonnes of carbon dioxide (CO_2) are being stored, 4 000 to 8 000 tonnes of fine dust are removed from the air, 16 million cubic metres of water purified, leading to a gain of 2100 years of healthy life years (for approximately 1.8 million people). The authors estimate the benefits at a societal value of 800 million to 1.2 billion euros for Flanders (and consider this to be an underestimate) (Broeckx et al. 2013).

17 Climat.be. Biodiversity Consequences. (n.d).
18 Eurostat. (2023).

2.1.2. Persisting Social Inequalities and Poverty

Within the framework of the European Pillar of Social Rights, Europe monitors the evolution of poverty and inequality in the member states using a portfolio of social indicators. The 'at-risk-of-poverty and social inclusion' indicator comprises three sub-indicators: the at-risk-of-poverty, severe material deprivation and low work intensity. According to this indicator, in Belgium in 2022, 2,144,000 Belgians (or 18,7% of the population) are at risk of poverty or social inclusion, facing at least one of the three situations. Of the entire Belgian population, 13.2% has a disposable income lower than the poverty line (AROP), 11.5% lives in a household with a low work intensity (LWI), and 5.8% is facing severe material and social deprivation. These groups overlap to a significant extent (see Figure 16).

Figure 16: Number of Belgians at risk of poverty or social exclusion (AROPE) according to sub-risks (AROP, SMSD, LWI) – Belgium 2022.

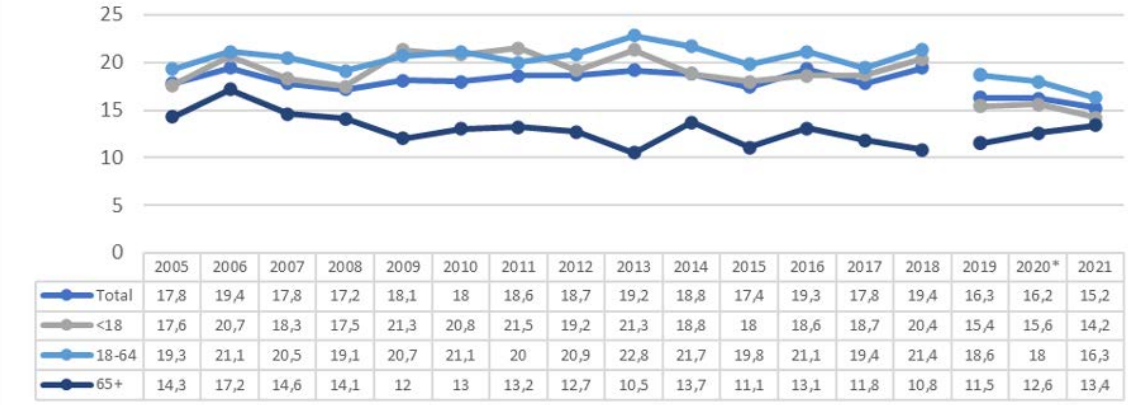


Source: Statbel (2023)

Based on EU-SILC 2021 (incomes 2020), the FPSS concluded that the number of people at risk of poverty or social exclusion had not increased during the first COVID-19 year despite the economic impact of sanitary measures. On the contrary, thanks to substantial government efforts, many households have been safeguarded from large income losses, especially in the lowest income deciles. In the second COVID-19 year there was a slight increase in the at-risk-of-poverty rate (AROP), but this was compensated by a (very) slight decrease in the share of persons in severe material and social deprivation (SMSD) and in (quasi-)jobless households (QJH), keeping AROPE stable. At the same time, strong progress continues to be made on the sub target on child poverty and social exclusion. While the at-risk-of-poverty risk fell slightly among those in work, it increased among those without a job. Quite a few groups with a traditionally already high poverty risk (including members of single-parent families, low-skilled persons and persons with a migration background) saw their poverty risk however increase.

In the longer term perspective, since the 1990s a steady decline in relative income poverty among older persons is observed while poverty among active age individuals generally remained quite stable - also when the country went through economic and employment growth. However, beneath the overall stand-still, there was a steady increase in relative income poverty among workpoor households, lower-skilled individuals, and single parents. (Cantillon & Vandebroucke,2014; Cantillon et.al., 2018; Cantillon, 2022).

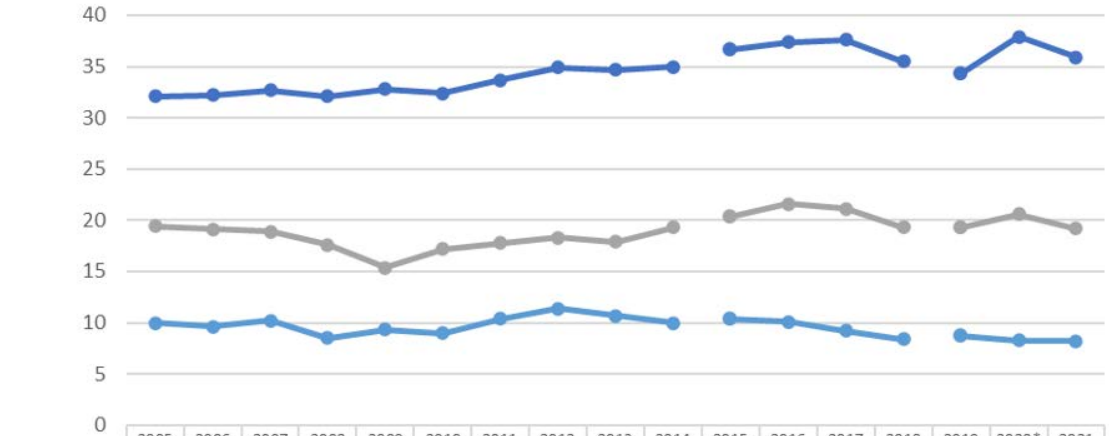
Figure 17: At-risk-of-poverty and social exclusion (AROPE) by age, Belgium, 2005-2021 (%)



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021
Total	17,8	19,4	17,8	17,2	18,1	18	18,6	18,7	19,2	18,8	17,4	19,3	17,8	19,4	16,3	16,2	15,2
<18	17,6	20,7	18,3	17,5	21,3	20,8	21,5	19,2	21,3	18,8	18	18,6	18,7	20,4	15,4	15,6	14,2
18-64	19,3	21,1	20,5	19,1	20,7	21,1	20	20,9	22,8	21,7	19,8	21,1	19,4	21,4	18,6	18	16,3
65+	14,3	17,2	14,6	14,1	12	13	13,2	12,7	10,5	13,7	11,1	13,1	11,8	10,8	11,5	12,6	13,4

Source: EU-SILC, Eurostat, Statbel. Note : break in time series in 2019. FPS Social Security (2023).

Figure 18: At-risk-of-poverty and social exclusion (AROPE)level of education (only for age group 18 - 64), Belgium, 2005 - 2021 (%)



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021
Low	32,1	32,2	32,7	32,1	32,8	32,4	33,7	34,9	34,7	35	36,7	37,4	37,6	35,5	34,3	37,9	35,9
Middle	19,4	19,1	18,9	17,6	15,4	17,2	17,8	18,3	17,9	19,3	20,3	21,6	21,1	19,3	19,3	20,6	19,2
High	10	9,6	10,2	8,5	9,3	9	10,4	11,4	10,7	10	10,4	10,1	9,2	8,4	8,7	8,3	8,2

Source : EU-SILC, Eurostat, Statbel. FPS Social Security (2023).

In its most recent report on the social situation in Belgium the FPSS (2023) point to increases of the at-risk-of-poverty in quasi-jobless households, from 52,4% in EU-SILC 2021 (incomes 2020) to 57,7% in EU-SILC 2022 (incomes 2021); for persons with a non-EU migration background from 29,2% to 32,3%; for members of single-parent families from 25,5% to 30,5%; for tenants from 24,1% to 27,2%; for the low-skilled from 27,4% to 30% and for persons with limitations in daily activities from 20,3% to 21,4%.

When extending the scope above the poverty line, poor, middle-class and rich groups can be distinguished according to thresholds based on median equivalent income. It is clear that households belonging to the most vulnerable groups who are not poor according to the AROP, are still significantly overrepresented in the lower parts of the income distribution (either in poverty or in the lower middle class), and underrepresented in the core and higher middle class, and among the rich (Table 2).

Table 2: Share of the Belgian population by income group, in total and by socio-economic characteristics, 2021

	Total	65+	Single parent	Persons in low work intensity households	Low levels of education
Poor (<60% of MDI) [< 16.388 EUR]	13,2%	17,8%	28%	67,52%	26,2%
Lower middleclass (60-80% of MDI) [16.388-21.851 EUR]	18,6%	35%	35,3%	24,23%	33,0%
Core middleclass (80-120% of MDI) [21.851-32.777 EUR]	36,2%	32,2%	28,9%	6,6%	30,8%
Higher middleclass (120-200% of MDI) [32.777-54.628 EUR]	27,9%	12,2%	6,5%	1,51%	9,2%
Rich (>200% of MDI) [> 54.628 EUR]	4,1%	2,8%	1,3%	0,14%	0,8%
TOTAL	100%	100%	100%	100%	100%

Source: EU-SILC 2022 (incomes 2021) for Belgium. Note: incomes expressed as yearly equivalised disposable income. MDI : median disposable income

Beyond the risk of poverty or social exclusion, social rights assessments from a thematic perspective can highlight specific problems of insecurity or deprivation. We highlight a number of social rights that are relevant to the just transition, namely housing, energy, water, food, health and health care.

For people in situations of poverty and social exclusion, finding affordable qualitative housing is difficult. Eurostat's housing cost overburden indicator shows that in 2022 in Belgium, households living in cities spend on average 12.1% of their income on housing in cities, a large contrast with the 6 and 5% of income spent on housing in peri-urban and rural areas respectively. Behind these average values go large differences, with private renters in lower income brackets being particularly vulnerable. Because of long waiting lists in the social housing sector, many people are renting in the lower layers of the private rental market, where there are major problems of affordability, quality, security, and discrimination (De Sloover, 2022; Dekock, 2023; Wallonie, 2023). At worst, vulnerable families end up in situations of homelessness.

According to the most recent energy poverty barometer of the King Beaudoin Foundation, one in five Belgian households suffers from energy poverty in 2021. According to this indicator a household is considered to be in a situation of energy poverty if it spends more than 10% of its disposable income (after deduction of housing costs) on energy bills (15%), limits its energy use to below-minimally necessary levels (4,5%), or indicate inability to adequately heat the dwelling (3%). Energy poverty mainly affects the lowest income groups, often made up of tenants, single-parent families

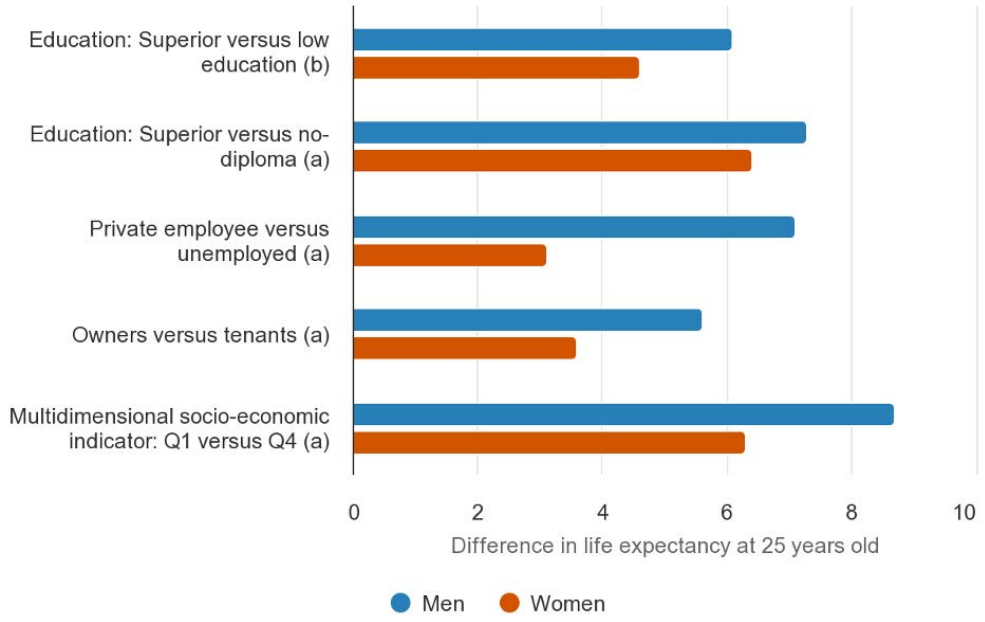
and the elderly. The poorest households spend up to 19% of their income on energy, compared with just 5% for the richest 10% of the population (Meyer & Coene, 2023).

The King Beaudoin Foundation also shows that water insecurity due to affordability issues affected 15,7% of Belgian households in 2020. If water poverty primarily affects low-income households, it also affects the middle class, with 11.2% of households in the 4th and 5th deciles of equivalent income being at risk of water affordability problems. It is estimated that 9.7% of households suffer from both energy and water poverty (Meyer & Coene, 2022).

Large inequalities were also observed in nutrition. According to Sciensano twice more people were meeting the target of consuming 5 portions of fruits/ vegetables per day among people with a high educational level than among the low skilled. Bringing the consumption of fruits/vegetables of all individuals to the one of the high skilled would increase the fruits/vegetable consumption in the whole population by 33.5%. Low skilled individuals were twice more likely to drink daily sugar-sweetened beverages than persons with a low educational level (Sciensano, 2022).

Sciensano documents socio-economic inequalities throughout the whole scope of health indicators, from risk factors to morbidity and mortality among the Belgian population. Whether distinction is made according to education, income, tenancy, or employment status, inequalities between different socio-economic groups are particularly pronounced in life and health expectancy, mortality, mental health, and risk factors such as smoking, obesity, lack of physical activity, and nutritional habits (Sciensano, 2022). Figure 19 measures the difference in life expectancy between social-economic groups, both for men (blue) and women (red). The difference between stronger and weaker social-economic status variables is most pronounced for men, throughout the different categorisations. It can add up to almost 9 years difference in life expectancy for men, and 6 years for woman, between the 25% of the population with a lowest score on the socio-economic indicator and the 25% of the population with the highest score on this indicator (containing.

Figure 19: Difference in life expectancy at 27 years old in Belgium according to different socio-economic variables, census 2011 with 5 years mortality follow up



Source: Sciensano (2022) based on (a) Eggerickx et al. (2018); (b) Renard et al. (2019).

Also the access to healthcare is marked by inequalities. In Belgium, access to healthcare is mainly hindered by costs: in 2019, 1.8% of the population experienced unmet needs for medical care for financial reasons – the fourth highest percentage in the EU (after Greece, Latvia and Romania). Unemployed, single person households, single parents, migrants and ethnic minorities are most

at risk for unmet needs for medical care, despite relatively high public healthcare expenditure in Belgium (Baeten et al. 2020).

2.2. The Inextricable Link Between Social and Ecological Challenges

This section explores the links between the social and ecological challenges discussed above. Looking at this social-ecological nexus is a multifaceted exercise, encompassing different domains, each with different dynamics and mechanisms, in which the ecological and social problems are highly intertwined.

To systematically analyse the links between social and ecological challenges, we have mobilised the conceptual framework of environmental justice[19]**.** Initially developed in the late 1970's in North America for analysing and denouncing the unequal distribution of pollutions, which tended to affect disproportionately the poorest black and minority ethnic (Ballet et al., 2015), the environmental justice framework has since evolved to cover a broader spectrum of inequalities at the intersection between environmental and social problems (de Muynck et al., 2022). This framework intends to identify, document and address the environmental inequalities that translate into social injustices (Laurent, 2023a). Environmental inequality is here understood as "a difference [in the environmental conditions of existence] whose systematic character has been deduced from an empirical device" and social injustice as "a situation in which the well-being and capabilities of a particular population are disproportionately affected by their environmental conditions of existence" (Laurent, 2023a, p.101, personal translation). The environmental justice framework is heuristically fruitful for analysing just transition issues, since it allows us to connect environmental and social problems and to apprehend their interactions and the multiple resulting injustices.

Our approach to environmental inequalities is inevitably intersectional, building on the assumption that the different forms of inequality associated with the social-ecological transition are mutually reinforcing and shape each other. The intersectional perspective to environmental inequalities is describe in more detail in the box hereunder (Box 6).

Box 6. The Intersectional Perspective to Environmental Inequalities

The transition being not only socio-technical but also deeply socio-political, an intersectional perspective on inequality is essential. Inequalities can constitute and persist in low-carbon energy systems; they may not be any fairer, inclusive, or more just than the conventional systems they displace. (Miller, 2013; Ottinger, 2013). The intersectional perspective to environmental inequality recognizes that social categorizations and vulnerabilities are interlinked and impact people's lives in nuanced ways. By understanding these intersections, inequality can be comprehensively addressed, ensuring that no one is left behind. The multiple sources of inequality produce intersectional identities as embodied in the social identities constituted by the different dimensions of sexuality, gender, race, ethnicity, and physical ableness. By applying intersectionality to inequality, we can examine both intersections of disadvantage or intersections of both of disadvantage and privilege (Hurtado, 2018). When applied to environmental issues, it is revealed that environmental inequalities are not uniform; they intersect with social identities, magnifying disparities. Understanding the intersectional nature of inequality and environmental inequality is crucial for an effective transition design leading to more targeted and equitable policy, addressing the specific needs of various marginalised communities.

19 In this section, by mobilising the environmental justice framework, we focus on justice for humans, which doesn't prevent us from exploring a more eco-centric approach to social-ecological justice framework (see Yaka, 2019). Similarly, due to a lack of future-oriented analyses, we focus more on the problems of the present generations than on the problems that future generations may face, although this does not mean that we attach less intergenerational justice issues.

Intersectionality-based Policy Analysis (or IPBA) (Hankivsky et al., 2014) was developed in public health to understand the limitations of existing policy solutions, in order to help design alternatives that recognize and address the complex needs of populations defined by multiple locations and inequity. This approach identifies a few guiding principles including attention to intersecting categories, multiple levels of analysis, and particularities of time and space; concern with power and equity, and respect for diverse knowledge. These are applied descriptively to understand both the contexts in which social problems take place, the implicit assumptions underlying existing policy solutions, and the consequences of these assumptions (Cole & Duncan, 2023). In order to envision alternative policy solutions that promote social justice, IBPA considers how social problems are defined (and from whose standpoint), how groups at different intersecting social locations experience power inequities, and in turn, how these groups may be differentially affected by these problems (Cole & Duncan, 2023). We highlight two transversal perspectives to the analysis of inequalities in this chapter.

First, when an intersectional analysis of the socio-economic reality and perspectives of migrants and citizens with migrant background is lacking, it impedes the integration of a transnational dimension in policies towards a just transition. Since all parts of the global economy are intertwined and interdependent, a transition cannot be driven by one actor or region in isolation. Migration is a highly visible reflection of global inequalities whether in terms of wages, labour market opportunities or lifestyles but also climate policies which tend to impact migrants and citizens with a migrant background disproportionately. In the income distribution, non-EU foreigners are highly concentrated at the lower end: nearly 60% of non-EU citizens in Belgium are in the lowest income bracket. Poverty indicators also confirm this pattern. The at-risk-of-poverty rate among non-EU immigrants is significantly higher than that for the other groups. Compared to native Belgians (12%), 35% of non-EU Belgians have an equivalent income below the poverty line of 60% of national median income. For non-EU citizens, this is as high as 48%. That makes people of immigrant origin three to four times more likely to be poor. There is thus clearly an overrepresentation of non-EU immigrants among the group of poor in Belgium, even significantly more than in other European countries (Corluy, V. & Verbist, G. 2010).

Second, gender also plays a significant role in shaping the outcomes of a transition as it intersects with environmental policies and societal shifts. A just transition requires mainstreaming gender considerations in the design and implementation of policies. Gender-blindness can hinder the achievement of just and equitable transitions. Understanding and addressing gender dynamics can lead to more effective and sustainable outcomes. As Wolfram & Kienesberger (2023) put it, ”Considering its ambitions in terms of societal transformation and sustainability, as well as its rising influence as an inter- and transdisciplinary science and practice domain. However, Sustainable Transition research appears to display a conceptual gap concerning the roles and relevance of gender.” (p.1)

Even so, research emphasises several key points (Allen, 2022; Charbit, 2018; Djoudi et al. 2016; Huyer et al. 2020; Mukhopadhyay & Das, 2020; Pearse, 2016; Rivera-Ferre 2021; Terry, 2009) :

- Climate change **affects genders differentl**y, exacerbating existing inequalities.
- Climate change often amplifies gender inequalities, particularly in vulnerable communities.
- Just transitions involve changes in the workforce. Gender disparities must be addressed to **ensure equal opportunities** and fair treatment.
- Policies sometimes overlook gender dimensions, leading to ineffective strategies. Acknowledging and integrating gender perspectives **enhance policy effectiveness**.
- Considering gender along with other factors like race and class (intersectionality) is crucial for an inclusive socio-ecological transition.
- Gender-inclusive policies empower women, enhancing their participation in decision-making processes vital for sustainable transitions.

Social differentiation and power relations play a crucial role in determining vulnerability and adaptive capacity to climate change as well as the outcome of transition policies. The concept of intersectionality is a tool for analysing the interaction of various social categories, such as gender, race, class, and sexuality, in shaping vulnerability and response to climate change. Yet, equally important is to emphasize the importance of recognizing agency and emancipation in the adaptation process, rather than portraying vulnerability as passive victimhood of women (Djoudi et al. 2016).

Today, the main environmental justice concerns associated with the just transition arise from the following four types of environmental inequalities (de Muynck, 2022; Laurent, 2023a)**:**

1. ***The unequal responsibility of different social groups and individuals in environmental problems.*** This type of environmental inequality refers to the inequalities in ecological footprints (e.g., GHG emissions, consumption of raw materials) (Laurent, 2023a).

2. ***The unequal distribution of the environmental 'goods' and 'bads' between different social groups and individuals.*** From this perspective, "environmental inequality occurs when the costs of environmental risk, and the benefits of good environmental policy, are not shared across the demographic and geographic spectrums" (Schlosberg 2007, p. 56). This type of environmental inequality encompasses inequalities in access to environmental amenities and resources (e.g., green spaces, energy, water) and inequalities in the impact of environmental nuisances and risks (e.g., impacts of climate change, air pollution) (Emelianoff, 2008; Laurent, 2023a).

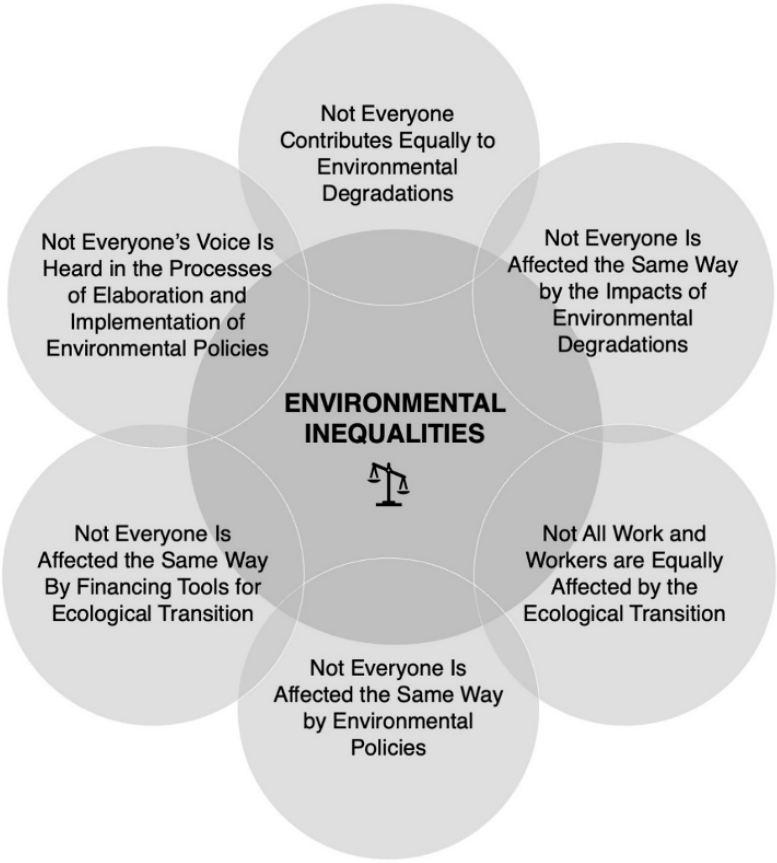
3. ***The unequal participation of different social groups and individuals in environmental decision-making processes.*** This type of environmental inequality corresponds to the inequalities in participation in the different phases of policy processes, from problem definition to policy development and implementation, including *ex-ante* and *ex-post* policy evaluations.

4. ***The unequal distribution of the impacts of environmental policies on different social groups and individuals.*** This type of environmental inequality traditionally covers the distributional impacts of environmental policies (e.g.: carbon tax, environmental regulations) (Laurent, 2023a). It can also include the distributional impacts not resulting from any proximate environmental policy, such as those stemming from reconfigurations of the labour market or changes in the availability and costs of goods associated with ecological transitions (Green & Gambhir, 2020).

In this report, we subdivide distributional impacts of environmental policies into three categories. These categories concern the impact of the ecological transition on work and workers, the unequal impacts of environmental policies on households, and the distributive consequences of the policy instruments used to finance the ecological transition.

As a result, this section concentrates on six types of intersecting inequalities bringing empirical evidence for Belgium (see Figure 20)

Figure 20: The six forms of environmental inequalities documented for Belgium in this report



Although particularly relevant for systematically analysing issues at the intersection between social and ecological problems, the environmental inequalities framework presents certain limits. Indeed, this framework does not enable us to account for the impact of ecological degradations and environmental policies that would affect the entire population. Yet, such widespread impacts are already observed and could intensify in the future. The climate problem, for instance, is affecting the very conditions of our existence on the planet. Although it is often the most vulnerable populations that are at risk, extreme climate events are likely to strike anyone, at any time, more and more often, and more and more severely. In certain circumstances, 'natural' disasters can threaten access to food, water or energy, thus affecting everyone. An analysis of the social-ecological nexus based on environmental inequalities does not enable us to apprehend such problems of 'scarcity' — of water, food, energy, clean air –, which may potentially affect each and every one of us.

2.2.1. Not Everyone Contributes Equally to Environmental Degradations

The extent to which different countries and social groups contribute to environmental problems is most precisely documented for greenhouse gas emissions. At global level but also within Europe, rich countries have much higher per capita emissions than poorer countries. A declining trend in emissions per capita can be observes in North America, Oceania and Europe, while per capita emissions are increasing in Asia, driven foremost by the growing patterns of China. Yet, the emissions of an average Asian are still at about half of those of an average European, and the carbon footprint of an inhabitant of the African continent remains at less than one tenth of the average North-American. Belgian per capita emissions are undergoing a steady decline since 2000, yet remain significantly higher than the European average. Within Belgium, the consumption patterns of higher income groups can be associated with carbon emissions 2 to 10 times higher than those of low-income groups, depending on underlying data, methodology and consumption categories taken into account. These between and within country differentials should be interpreted against a background of how social, economic,

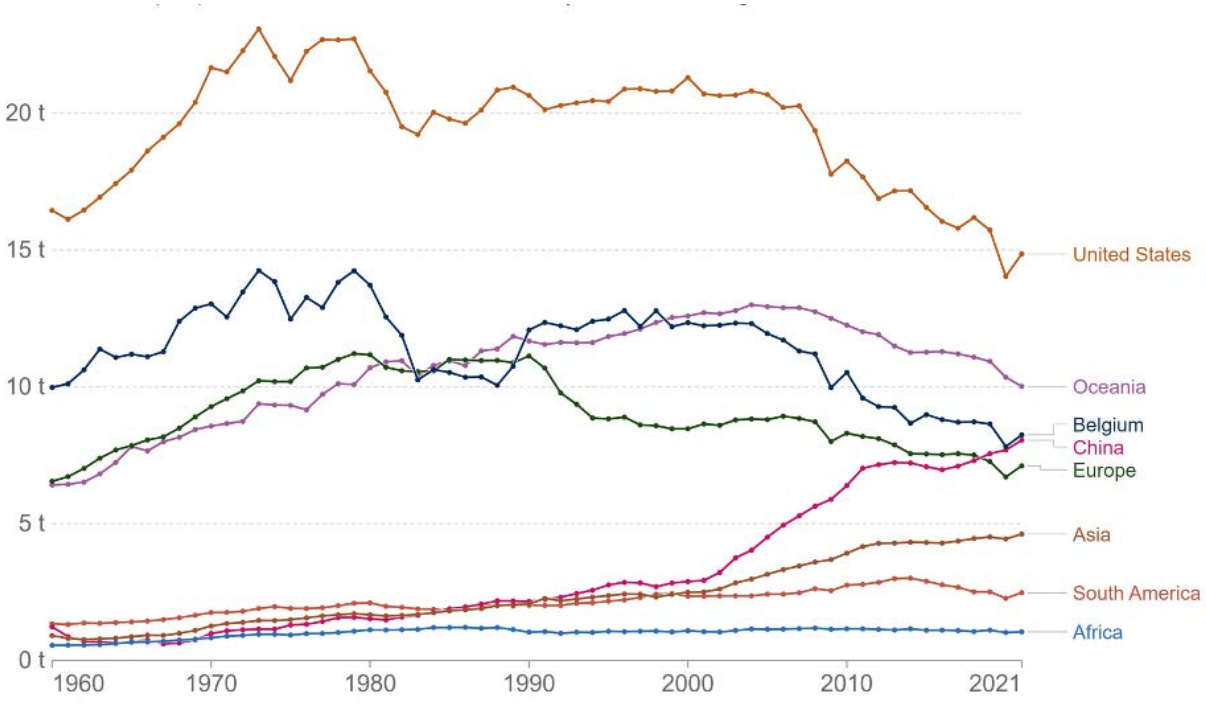
demographic, spatial and cultural elements and configurations shape individual and households' consumption patterns and thereby determine carbon footprints.

Inequalities Between Countries

While the contribution to environmental problems is a multifaceted issue, greenhouse gas emission patterns can be used as an approximation. Of all environmental pollutants, greenhouse gas emissions have the most developed and accurate monitoring infrastructure, leading to detailed and long-time series. Attributing emissions to the country where they are released into the air is the most common way to monitor greenhouse gas emissions, and is termed the production-based perspective to greenhouse gas emissions accounting. It is the standard way of assessing the effort that countries must undertake to reach net-zero emission reduction targets.

This production-based emissions accounting allows to assess inequality between regions or countries' average emissions per capita. Figure 21 presents average emissions per capita from a production-based perspective. While in absolute terms Asia has taken the lead since 2000, on a per capita basis Asian emissions remain limited to about half of those of an average European. We also see a declining per capita trend in North America, Oceania and Europe and an increasing trend that is most pronounced in Asia (primarily driven by China, but also by the Middle East and India), and more limited in Africa and South America. For every year since 1960, the emissions of an average African remained less than one tenth of those of an average North American. One can also observe that CO_2 emissions per capita are higher in Belgium than the European average (12% in 2020), but they have undergone a substantial reduction since 2000.

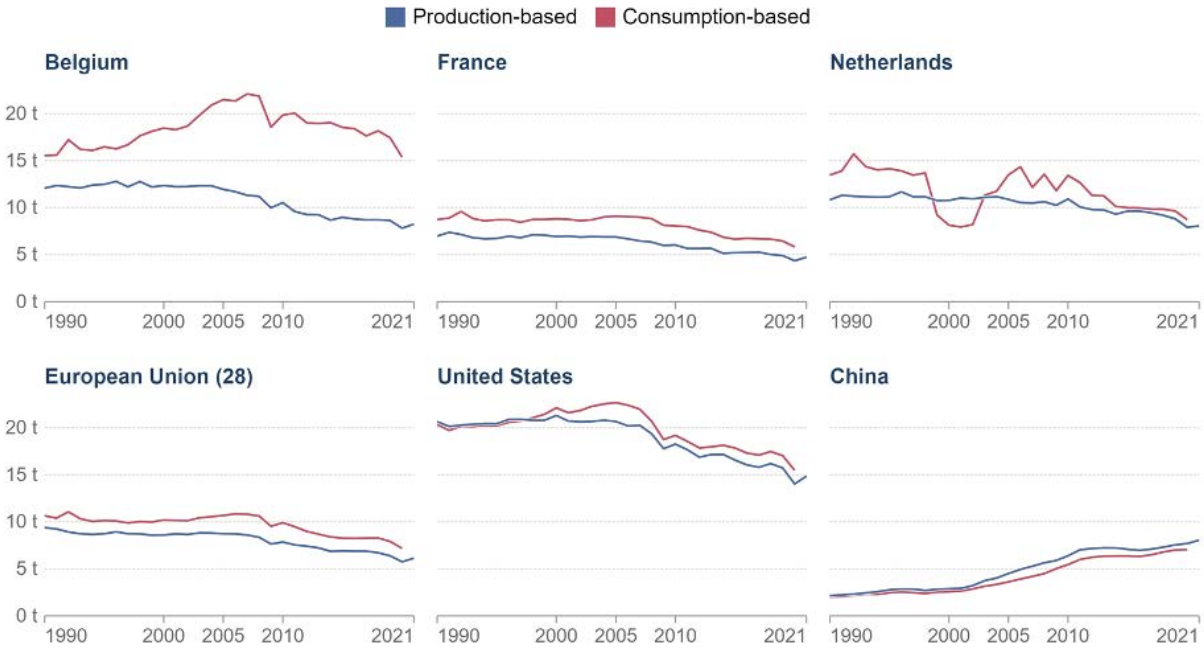
Figure 21: Annual production-based GHG emissions (in CO_2e) per country/continent, expressed per capita (bottom panel), 1960-2020



Source: Global Carbon Project database retrieved from Our World In Data (October 2023).

Consumption-based emissions accounting implies that the environmental impacts generated during the entire production chain and final use of the good or service are estimated and assigned to the final consumer (Davis & Caldeira, 2010; Liobikienė & Dagiliūtė, 2016; Wiedman, 2009).[20] Given that richer countries tend to be net importers of goods produced elsewhere, inequality in average emissions per capita between countries rises slightly when emissions are accounted on a consumption basis rather than a production basis (in Figure 22, per capita emissions in 2021 rise from 8.5t CO_2e/capita from a production-based perspective to 15t CO_2e/capita from a consumption-based perspective). So conceived, Belgian consumption-based emissions are about 50% above the European average. Since 2005, consumption-based emissions have started to decline in Belgium. Together with the production-based pattern in the previous graph, Belgium (just as other countries such as France, Germany and USA) shows that it is possible to reduce emissions without outsourcing these to other countries (Ritchie et al, 2020).

Figure 22: Production versus consumption-based CO_2 emissions per capita



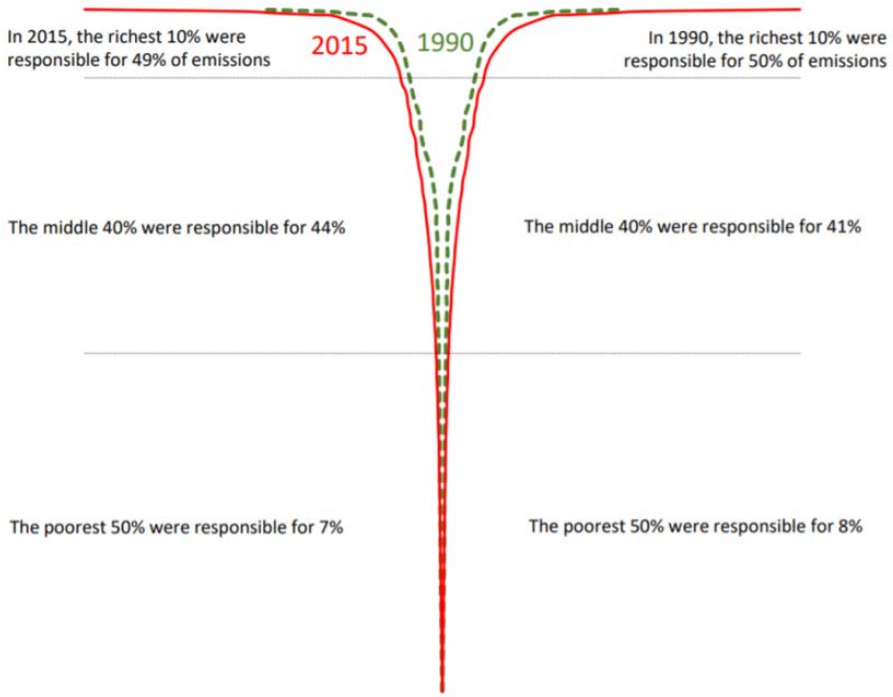
Source: Global Carbon Project database retrieved from Our World In Data (October 2023).

A fine-grained distributional analysis of GHG emissions becomes possible when attributing emissions to households. This approach starts from population-representative information on income and expenditures. By adding the estimates of greenhouse gas emissions associated with different types of consumption expenditures, consumption-based emissions between households, beyond the national averages, both at global level or within-countries. Within or across-country variation can thus be presented along income level, age, household size, education, housing situation or other relevant and available characteristics.

The literature quantifying and analysing consumption-based emissions is unequivocal on the fact that the main determinant of the household carbon footprint is the family's standard of living (measured through disposable income or total expenditure) (Büchs & Schnepf, 2013; Girod & De Haan, 2010; Isaksen & Narbel, 2017; Ivanova et al., 2017; Steen-Olsen et al., 2016). At the global level, ranking households from poor to rich (regardless of where they live) shows that currently (2019 figures) the bottom half (50%) of the world's population is responsible for about 12% of total global greenhouse gas emissions, the middle 40% are responsible for 40% of emissions, and the top 10% of households are responsible for 48% of global emissions (Kartha et al., 2020).

20 Given that different methodologies give rise to slightly different outcomes - depending on what consumption is taken into account and how the environmental pressure coefficients are calculated and allocated to these consumption categories – the discussion here focuses on trends and patterns rather than on the precision of the estimated amounts.

Figure 23: The 'champagne glass' of global carbon inequality in 1990 and 2015, showing the shares of annual global carbon emissions in each year that are attributed to individuals in three global income groups.



Source : Kartha et al. (2020), p.6. The global population is arranged by income vertically, and the corresponding share of annual global carbon emissions is represented horizontally.

Remarkably, these relative proportions remained almost stable over the period 1990-2020. During this period, nominal emissions did increase by 60% (an average growth rate of about 2% per year). This implies that 45% of the total nominal increase in emissions took place in the richest decile worldwide. To put this in perspective, about 44% of Belgians belong to the richest decile worldwide, and about 2,3% of Belgians to the richest 1% worldwide.[21] Beyond the stability of these relative proportions, great shifts occurred nevertheless. Great international differences between countries declined (due to stronger economic growth in a number of formerly poorer countries, especially China), yet they were counteracted by greater interpersonal differences on a global scale because of increasing income inequality within countries.[22]

Inequalities Within Belgium

This internationally observed positive association between household income and emissions also holds true for Belgium. Figure 24 presents the distribution of per capita GHG emissions by equivalised disposable income deciles for a representative sample of the Belgian population. In 2014, Belgian households' carbon footprint ranged from 4.3t CO_2e per capita in the lowest income decile to 16.6t CO_2e in the highest decile.[23] Importantly, the composition of emissions strongly varies across the income distribution. Emissions from 'Food' and 'Energy & housing' together make up 72% of emissions in the first decile, while their share drops to less than 50% in the upper income deciles.

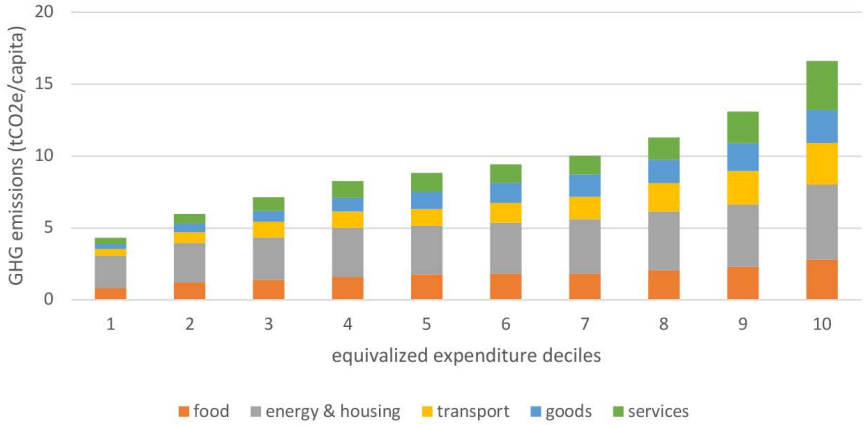
21 Based on World Inequality Database & Eurostat/EU-SILC figures.

22 Chancel (2022) shows that over the course of this time period 1990-2020, the share of global inequality in CO_2 emissions that is explained by within-country inequality increased from 37% in 1990 to 63% in 2020, while the explanatory role of observed inequalities between countries decreased by the same extent.

23 Due to data constraints, this study excludes the carbon impact stemming from government consumption (which is generally assumed to be distributed equally over the population), from dwelling construction, and underestimates the impact from highly infrequent purchases of non-durables, such holiday expenditures, most notably flights.

Conversely, emissions from 'Transport', 'Goods' and 'Services' make up 52% of the household carbon footprints at the top of the distribution compared to about 28% at the bottom.

Figure 24: Distribution of per capita Belgian household carbon footprints over expenditure deciles



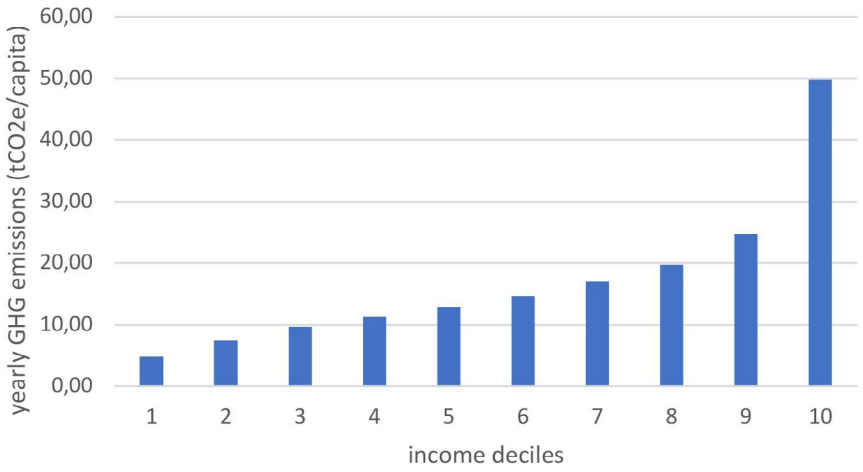
Source: Lévay, P. Z., Vanhille, J., Goedemé, T., & Verbist, G. (2021). The association between the carbon footprint and the socio-economic characteristics of Belgian households. *Ecological Economics, 186*, 107065. Note: Deciles are constructed by equivalising household expenditure using the modified OECD equivalence scale, which assigns the value of 1 to the first adult, 0.5 to each additional adult and 0.3 to each child (defined as a person younger than 14). The weighted sample of households is used for identifying the decile cut-off values.

However, broad survey-based datasets do not capture the extremes at both sides of the income distribution are generally not very well. An alternative methodology consists of using less detailed but more complete administrative data, and then apply an estimated coefficient to these incomes in order to obtain the household carbon footprint. This is the option chosen for the Belgian data in the World Inequality Database (see Figure 25). Based on administrative tax records[24] and using top-down approach to transform gross incomes into carbon footprints[25], the estimated inequality of household emissions in Belgium is higher, mainly because of substantially higher incomes in the top deciles. While different approaches to measurement lead to different numbers, it is clear that the inequalities in the size of household carbon footprints are sizeable.

24 Decoster et al. (2017) documented the corrections they made to comply the Belgian administrative income data with the international standards of the WID.

25 An additional methodological difference consists of Chancel's (2022) choice to attribute environmental pressure coefficients not only to consumption, but also to a 'demand for investments' (i.e., following from savings). The emissions associated with investment are then allocated to households according to their savings capacity and their asset holdings. Because these increases sharply with income level, and because wealth is much more concentrated than income or expenditure levels, the carbon footprints at the top of the distribution become much higher than in mere consumption-based estimates. These differences underline that assumptions made in the attribution exercise can have a major impact on the outcomes.

Figure 25: GHG emissions per capita per year (in t CO_2e) for Belgian household, 2019



Source: *World Inequality Database.* http://wid.world/data

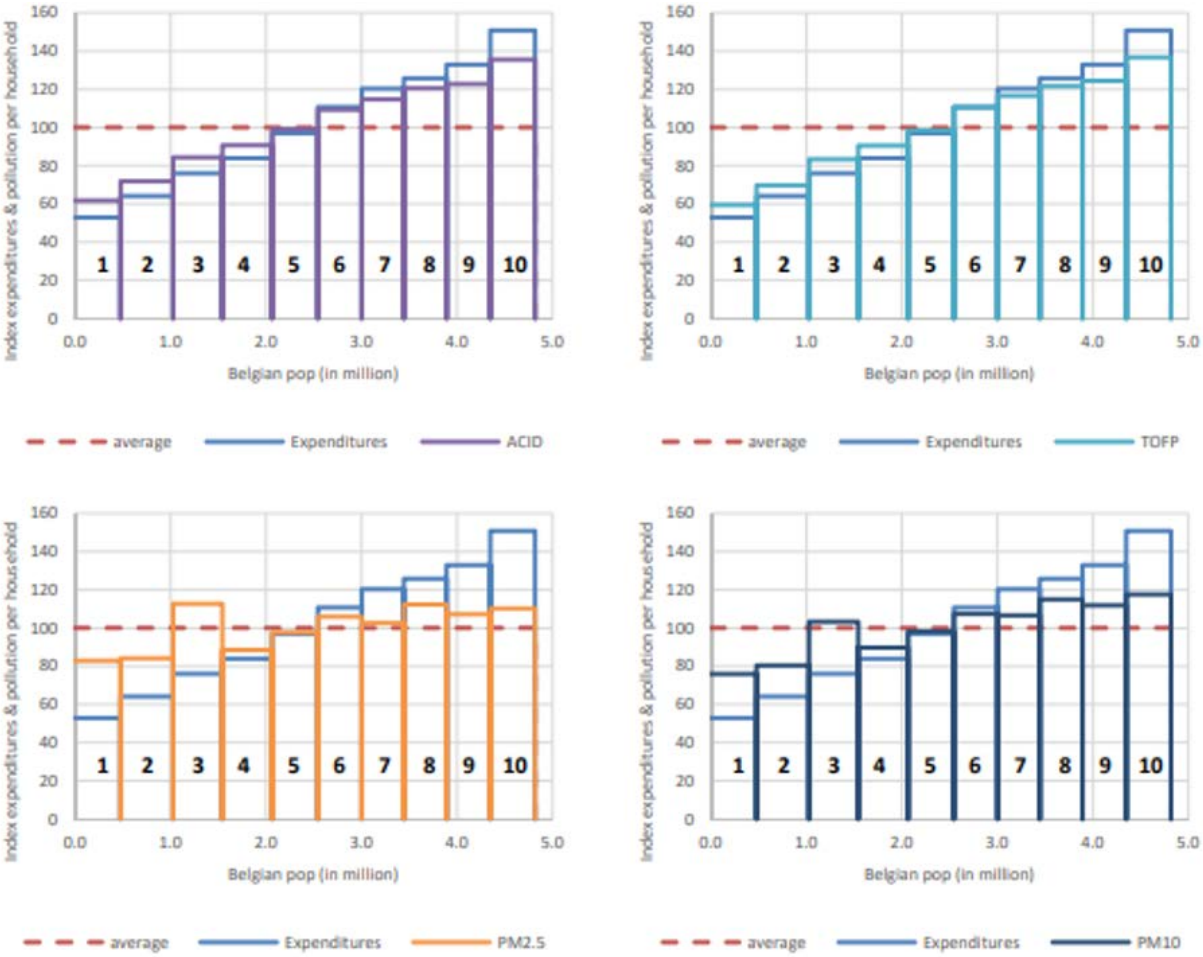
Beyond greenhouse gases, the numerical evidence for Belgium remains very scarce. In terms of material footprints, biodiversity footprints or water footprints, quantitative estimations for Belgium that go beyond average values are lacking. Nevertheless, interesting conclusions can be drawn from the studies that are available.

Material footprints correlate to a significant extent with carbon footprints, but impacts differ at more detailed levels of consumption. Christis et al. (2019) calculated both carbon footprints and material footprints from household consumption in the Brussels Capital Region (BCR), revealing important insights into their correlation. In 2010, the BCR had a material footprint of 31 Mt or 29.5 t/capita.[26] Only a small fraction (2%) of the primary materials used to meet the region's final demand originated within its territory, while around 12% came from Belgium. This implies that the vast majority (85%) of primary materials were sourced from outside Belgium, highlighting the global environmental impact of BCR's local consumption activities. The correlation between the material footprint and the carbon footprint of Brussels households amounted to 0.65, mainly driven by the use of primary fossil energy carriers (mainly oil and gas), which have significant material as well as carbon footprints. The correlation of the carbon footprint with biomass, metals and non-metallic minerals is lower (0.2393, 0.5942 and 0.4186, respectively), indicating that the relationship between material footprint and carbon footprint is not that straightforward when assessing more detailed consumption categories. Implying that the reduction of the material footprint will not necessarily result in a reduction of the carbon footprint, both environmental objectives require specific policy attention. Yet, there is a substantive overlap in terms of the consumption categories that need to be addressed: when the three major consumption categories are combined (food, housing and transport), they make up for 75% of the BCR's households carbon footprint and 70% of the BCR's households material footprint.

For air pollution, the distributive patterns that have been found for the emission of air pollutants is largely similar to that of CO_2 emissions. For Belgium, Cooreman et al (2019) assess 13 pollutants with well-documented relations to health and environmental damage (CO_2, N_2O, CH_4, NO_x, SO_x, NH_3, NMVOC, CO, $PM_{2.5}$, PM_{10}, HFCs, PFCs and SF_6) and 3 indices: Greenhouse gas index (GHG), tropospheric ozone forming potential (TOFP), and acidification (ACID). The graph below (Figure 26) shows the TOFP and ACID indices, as well the two common Particulate Matter air pollution indicators ($PM_{2.5}$ and PM_{10}), which can be among others related to heart disease, stroke, chronic obstructive pulmonary disease, asthma and cancer (WHO, 2021).

26 The composition of the material footprint consisted of 45% non-metallic minerals, 23% biomass, 20% fossil energy carriers, and 11% metals.

Figure 26: Pollution of multiple pollutants and expenditure per household by equivalised income deciles (expressed as a % of the average pollution and expenditure per household), Belgium, 2014



Source : Cooreman, G., Frère, J.-M., Lévay, P. Z., Vanhille, J., Verbist, G., & Goedemé, T. (2019).

More detailed analysis of the distributive dimensions of environmental footprints beyond carbon emissions would allow to draw much more specific conclusions with regard to material use, water use, biodiversity pressure and various components of pollution that is currently possible.

The decile averages presented in this section at the same time conceal the strong heterogeneity within income deciles. While income is found to be the most important determinant of the size of Belgian households' carbon footprint (Levay et al., 2021)[27], it still accounts for only 28% of the explained variance.[28] For Belgium, other important social-demographic variables that co-determine households carbon footprint include:

- Household size: larger households have more emissions on an absolute basis, but less on a per capita basis;
- Age: emissions grow with age up to a certain point, after which they decrease again, but the 'peak' age varies by consumption category[29];
- Tenure status: tenants have lower carbon footprints than owner-occupiers, keeping all else equal;

27 The impact of wealth could not be assessed as it was not available in the data used.
28 The share of total variance that could be explained by the model in this specific study was 62%.
29 For most consumption categories, the 'peak' is after 65 years, while it is at a much younger age in the case of fuel for private transport (43 years), transport in general (46) and goods (53).

- Educational level: households with higher-educated heads have larger carbon footprints, an effect that remains also when controlling for income, age and other available household characteristic[30]
- Professional status: households with a head who is in work can be associated with higher emissions from transport compared to households where the highest earner in the households is not working, while in other categories the role of professional status is modest to non-significant.

After income, characteristics of the dwelling (e.g., number of rooms and dwelling type) are the second most important factor explaining variance in total household carbon footprints (25% of the total), due to their association with domestic energy use. Emissions of households living in semi-detached houses or apartments are respectively 14 and 37% % lower than those of households living in detached houses, *ceteris paribus*. Detached houses tend to have higher heating requirements than other types of dwellings, with larger surfaces and lower energy performance than apartments (VEA, 2019). While the location of the dwelling is not observed in the dataset used, it does (partially) appear through the positive relation between detached housing and emissions from transport. This presumably reflects increased car use due to longer commuting and other travel distances for households that live away from urban centres.

The results described in this section should be interpreted against a background of how social, economic, demographic, spatial and cultural elements and configurations shape individual and households' consumption patterns and thereby determine carbon footprints. The household-level prism used to study the social gradient in greenhouse gas emissions shows that socioeconomic household characteristics is an important determinant, but it is not the sole driver of emissions. Within each decile, emissions display greater variance than between decile averages. Household footprints are always a combination of consumption choices occurring within a certain societal organisation, which includes the economic system, cultural practices, social norms and government policies. Important examples that have direct and large influence over household footprints include for instance the role of the spatial fabric, prevalent heating methods, transport configurations. An analysis of inequality should not overlook their role.

2.2.2. Not Everyone is Affected the Same Way by the Impacts of Environmental Degradations

As evidenced by the last IPCC report, the physical impacts of climate change already affect human societies all over the world (see Section 2.1.1). Moreover, as will be further discussed later (see Section 2.3.1), the climate policies implemented in many countries of the world, including Belgium, fail to contain global warming below 1.5°C and therefore expose current and future generations to severe, multiple, and complex climate risks. On a global scale, it is very clear that the countries that have historically contributed the least to current climate change, including the least developed countries and the Small Island Developing States, are disproportionately affected by its adverse consequences. In Europe, the climate risks are greatest for the southern European countries where footprints are relatively lower and poverty risks are higher. In Belgium, the risks of floods and heat waves associated with global warming vary from one region to another, Flanders being particularly at risk compared to Wallonia and Brussels. This is notably related to its proximity to the sea, its low altitude and its high degree of urbanisation. Within Belgium, the adverse consequences of climate change affect everyone, but in different ways. The socio-economically disadvantaged populations, elderly persons, people with health concerns, children and pregnant women are more threatened because of higher sensitivity, enhanced exposure, and/or reduced capacities to adapt to these risks.

30 The correlation of the size of household carbon footprints with household size, educational level and age has also been documented for Flanders, using a slightly different methodology and not controlling for income and other socio-economic characteristics (Christis et al. 2019).

The experiences of the floods in the Vesdre Valley in July 2021 and that of the remarkable heat wave and associated pollution peaks that hit Belgium in August 2020 have provided ample empirical evidence of these patterns.

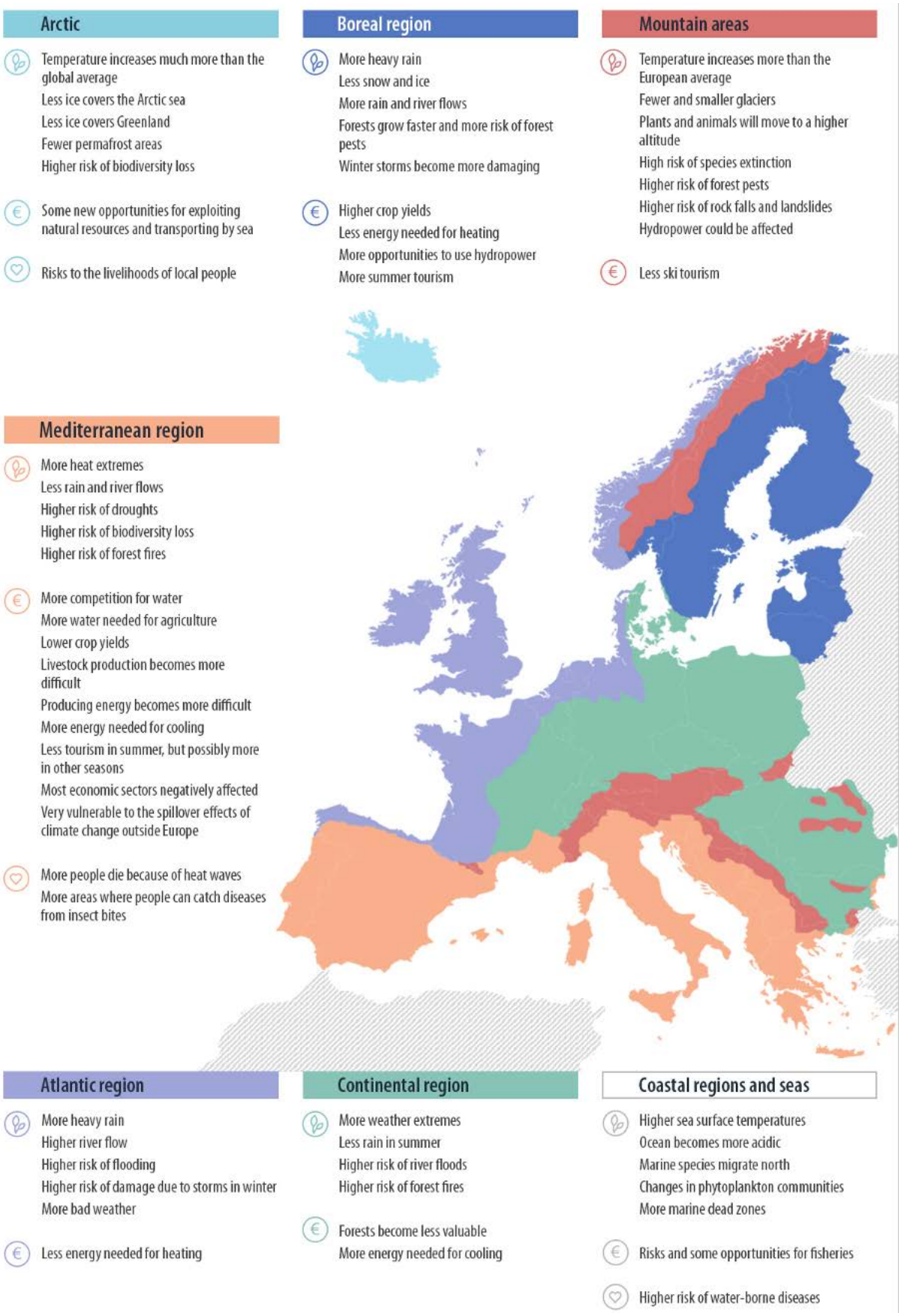
Inequalities between Regions

In its 2023 Synthesis Report, the IPCC reiterates that "vulnerable communities who have historically contributed the least to current climate change are disproportionately affected" (IPCC, 2023a). It is the double climate injustice: those who are the least responsible for the climate problem tend to suffer the most from its impacts. This is notably the case of the least developed countries and the Small Island Developing States, that contribute less to climate problem than the other regions of the world[31], but which are much more affected by its impacts. The report of the IPCC Working Group II indeed reveals that the observed impacts of climate change on food and water security are particularly marked in Africa, Asia, Central and South America, the Arctic, and Small Islands States. The latter are also disproportionately affected by population displacements caused by climate and weather extremes, which exacerbate vulnerabilities (IPCC, 2022a).

Within Europe, Southern European regions are the most affected by climate change. The effects of global warming are already being felt everywhere in Europe (IPCC, 2022a). However, from one European region to another, the impacts of climate change vary greatly, both in their magnitude and in their nature. As shown in the following map (Figure 27), the observed and projected impacts of climate change are unevenly distributed across Europe. There is a clear spatial North-South divide, with the Mediterranean region being the most negatively affected by climate change impacts (Füssel et al., 2017; Navarro et al., 2022; Triollet et al., 2018). An analysis carried out by the European Environmental Agency notably reveals that "The Mediterranean region is a hotspot of climate change impacts, having the highest number of economic sectors severely affected. It is also particularly vulnerable to the spill-over effects of climate change impacts in neighbouring regions, in particular related to disruptions in agricultural trade and to migration flows" (Füssel et al., 2017). This is echoed by the IPCC working group II showing that southern Europe is particularly exposed to the risks of heat-related mortality and morbidity, extreme agricultural droughts, water scarcity, and reductions of hydropower (IPCC, 2022a). Mediterranean countries, such as Greece, Spain and Italy, are even more vulnerable to climate changes impacts as their population face a higher risk of poverty and social exclusion than European average (Eurostat, 2022). Conversely, Northern countries, including Finland and Sweden – which are among the richest in Europe – could benefit, to a certain extent, from the effects of climate change. Climate change does offer some economic opportunities in the boreal region, including higher crop yields and variety, reduction of energy needs for heating, increased potential for electricity from hydropower, development of summer tourism, and enhanced forest growth (Füssel et al., 2017).

31 According to the Working Group III of the IPCC, "the least developed countries and Small Island Developing States (SIDS) have much lower per capita emissions (1.7 tCO_2-eq and 4.6 tCO_2-eq, respectively) than the global average (6.9 tCO_2-eq)" (IPCC, 2022b, p. 13).

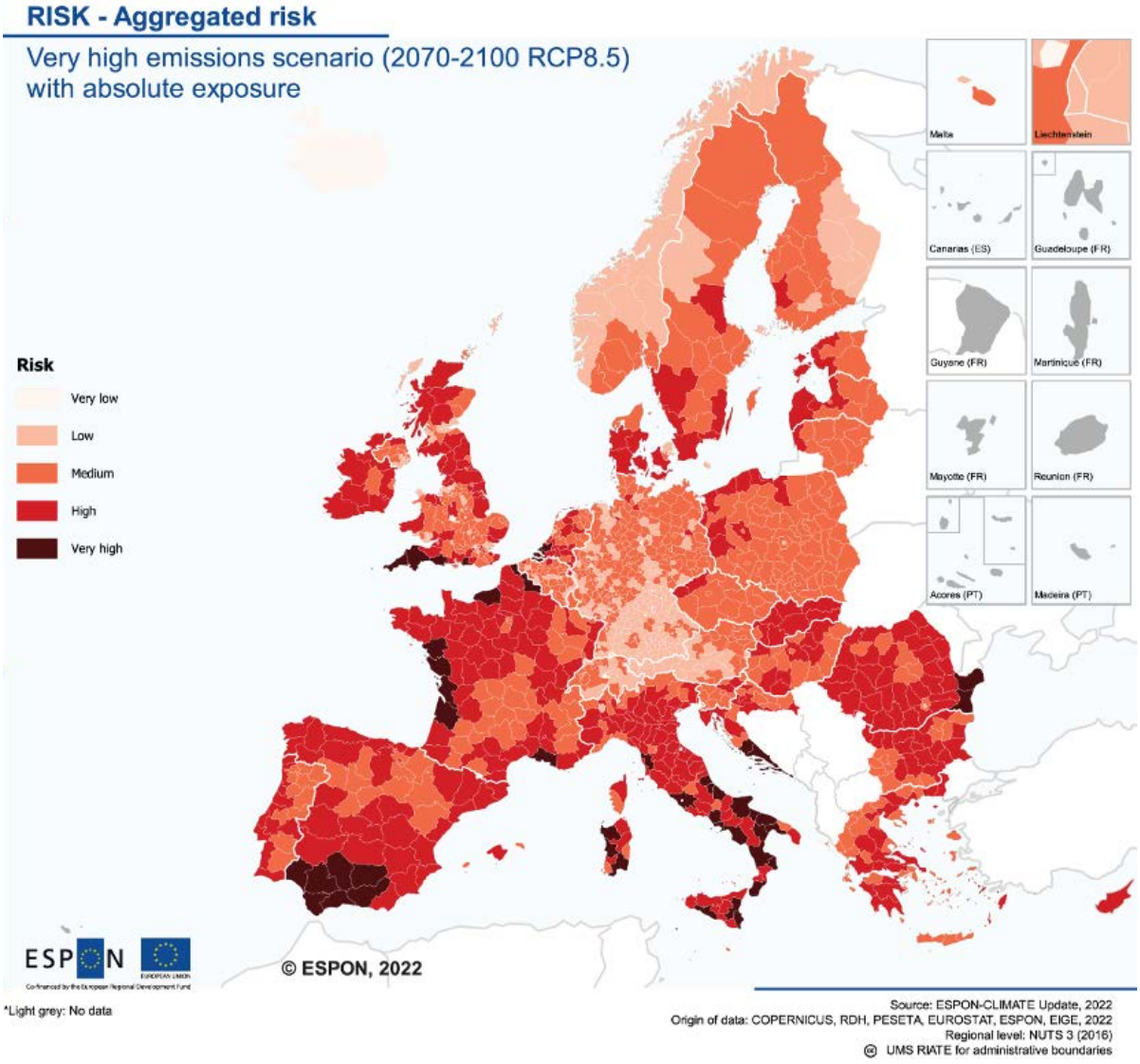
Figure 27: Key observed and projected climate change and impacts for the main biogeographical regions in Europe based on EEA analysis



Source: European Parliament (2023) based on European Environmental Agency (2017)

In the longer term, the very high climate risks that are currently concentrated in southern Europe could, however, extend to a large part of the European territory, and more particularly to coastal regions, including Belgian coast. A spatial analysis of climate risks in Europe under different GHG emission scenarios carried out by ESPON reveals that "*in the very high emissions scenario at the end of the century, risk increases across many countries, with a certain pattern in coastal areas. In other words, it is expected that climate risks typically associated with southern countries will become more widespread in the rest of Europe in the very high emissions scenarios*" (Navarro et al., 2022). The aggregated risk map below displays the spatial distribution of risks associated with the climate change in Europe in a very high emissions scenario (RCP8.5) at horizon 2070-2100 (Figure 28). This map combines multiple indicators of hazard, exposure and vulnerability to different climate risks, including risks of heat stress on population, of coastal or river flood on population, infrastructure, industry and service sectors; of flash floods on cultural sector (e.g., museums and world heritage sites); of wildfire and of droughts on the primary sector). For Belgium, the map reveals that the districts of Ostend and Antwerp are among Europe's high-risk areas.

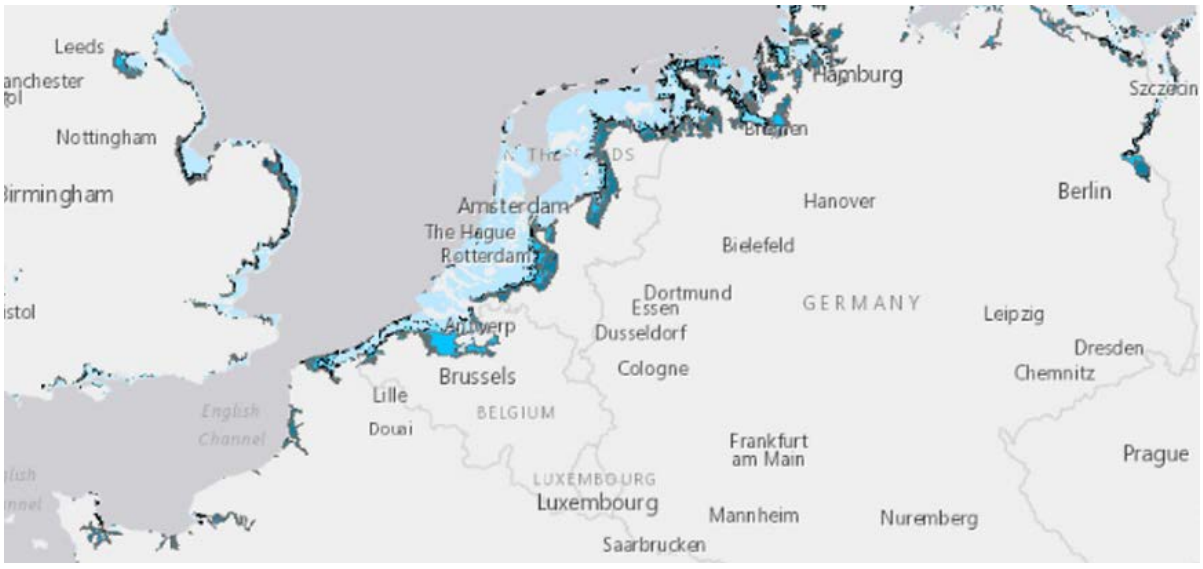
Figure 28: Spatial distribution of risk in Europe associated with the climate change in a very high emissions scenario (2070-2100)



Source: Navarro, D., Lizundia-Loiola, J., Paz, J., Abajo, B., Cantergiani, C., Garcia, G., & Feliu, E. (2022).

Compared to Wallonia and Brussels, Flanders is particularly at risk from climate change, notably due to its proximity to the sea, its low altitude and its high degree of urbanisation. The 2023 Gross Domestic Climate Risk elaborated by XDI ranks Flanders in the Top 100 of the regions of the world with the most capital value at risk from climate change. This ranking compares more than 2600 states, provinces and territories around the world according to the risks posed by climate change on their built environment at horizon 2050 under a very high emissions scenario (RCP8.5). The climate risk on the built environment is estimated through the calculation of the Damage Ratio, which corresponds to "an expression of the Annual Average Loss from extreme weather damage to a property as a fraction of the replacement cost of that property, using a standard archetype. It is expressed as a ratio to enable comparability of physical risk unaffected by exchange rates, inflation and other variables." (XDI, 2023). The Gross Domestic Climate Risk considers risk to the built environment posed by riverine and surface flooding, coastal inundation, extreme heat, forest fire, soil subsidence (in drought), extreme wind (synoptic and tropical cyclones) and freeze thaw. Of the 2637 territories analysed by XDI, Flanders is in 64th position in the ranking based on Aggregated Damage Ratio[32], while Wallonia and Brussels are respectively in 451st and 1665th positions. Considering the Average Damage Ratio[33], Flanders is in 582nd position, Wallonia in the 1976th position and Brussels in 2115th position. The high climate risk of Flanders is notably related to its proximity to the sea combined with its low altitude (15% of the Flemish territory is less than 5 metres above mean sea level[34]), which together expose the region to the risk of flooding associated with the rise in sea level. As shown in the map below, the Belgian coast and cities such as Ostend, Bruges, Ghent, Antwerp and Mechelen are particularly exposed to the sea level rise risk (Figure 29). The high climate risk of Flanders can also be associated with its high degree of urbanisation (Charlier & Reginster, 2018). Compared to rural areas, cities include a higher concentration of built environments and of inhabitants likely to be affected by climate change. Moreover, urban areas tend to be more exposed to certain climate risks such as heat waves. These areas are indeed generally warmer than surrounding natural areas due to the urban heat island effect (Termonia et al., 2018).

Figure 29: Effect of rise of 1 to 6 m (from light blue to dark blue) in sea level in Belgium coast



Source: European Environmental Agency (EEA), 2020

32 Aggregated Damage Ratio corresponds to "the annual sum of damage in a state or province. It adds up (aggregates) damage to all of the buildings. High ranking for this metric reflects states, provinces and territories where extensive built-up areas coincide with exposure to climate change and extreme weather hazards. Larger territories tend to be higher in this ranking because they have a greater extent of built-up areas." (XDI, 2023)

33 Average Damage Ratio corresponds to "the proportion of buildings at risk of damage in a state or province. High ranking for this metric reflects states, provinces and territories where a larger proportion of total built-up area will be subject to damage from climate change and extreme weather, even if the extent of that area may be small. As a result, small territories with fewer buildings but elevated risk from climate change and extreme weather tend to rank highly here." (XDI, 2023)

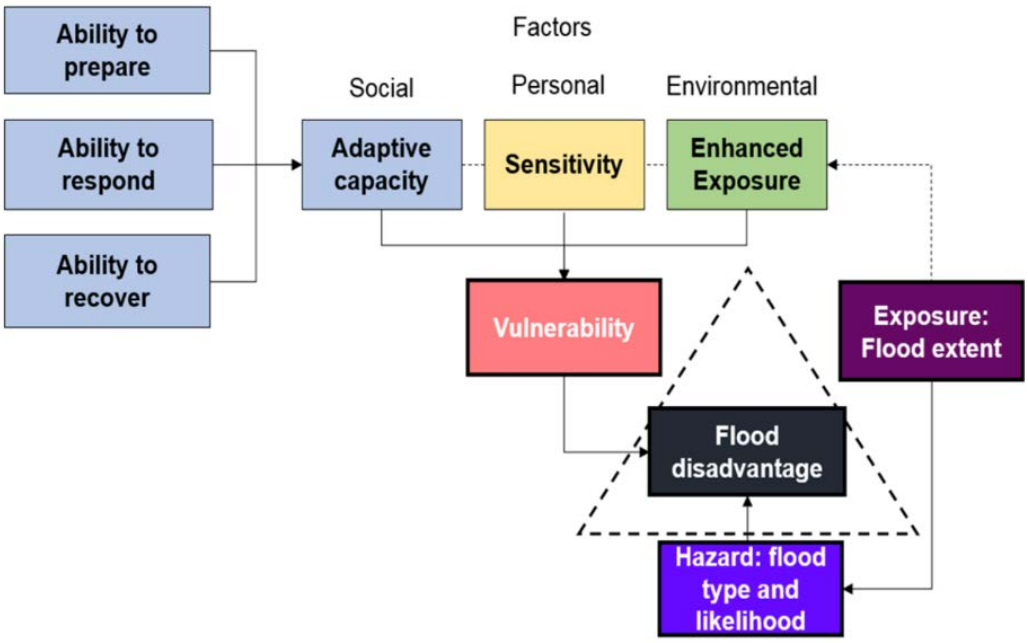
34 Vlaamse Milieumaatschappij. Zeespiegelstijging. Klimaat.vmm.be.

Inequalities between Populations within the Same Regions

Beside inequalities between regions, within the same region, some populations are more affected than others by the adverse consequences of climate change. In Belgium, the inequalities between populations in the face of climate change impacts have become particularly visible in the context of increasingly severe and frequent heat waves and of the unprecedented floods in the Vesdre Valley caused by the intense rainfall of July 2021 (illustrated in Boxes 7 and 8 below).

The unequal distribution of adverse consequences of climate change between populations is associated with a differential of vulnerability to climate risks, which finds its origin in pre-existing social inequalities. The potential for adverse consequences of climate change for a specific human or ecological system is often referred to as 'climate risk'. Climate risk results from the dynamic interactions between climate-related hazards (i.e., the potential future occurrence of climate-related events or trends that may cause loss or damage) and the exposure and vulnerability to the hazards. 'Exposure' corresponds to the physical presence of an individual or ecological system in places and settings that could be adversely affected. 'Vulnerability' refers to the propensity or predisposition of those systems to be adversely affected (IPCC, 2022a). As illustrated in the following figure (Figure 30), the vulnerability of persons or groups (sometimes referred to as 'social vulnerability') results from the combination of sensitivity, adaptive capacity and enhanced exposure (Kazmierczak et al., 2015). In its 2012 Special report on the determinants of risk, the IPCC demonstrated that exposure and vulnerability to climate-related hazards vary between individuals and communities, and that these differences are rooted in inequalities in terms of wealth, education, race/ethnicity/religion, gender, age, class/caste, disability, and health status (Cardona et al., 2012). Pre-existing social inequalities thus act as a 'multiplier' of the harms caused by climate change on human systems (Laurent, 2023a).

Figure 30: The factors of social vulnerability to climate risks with flood risk as an illustrative example



Source: Kazmierczak, A., Cavan, G., Connelly, A., & Lindley, S. (2015).

A differential in vulnerability is notably observed in the face of natural disaster risks, such as floodings, which affect everyone, but in different ways. Many intersecting factors of social vulnerability to flood risks are highlighted through the literature (Selsor et al., 2023 ; Bigi et al., 2021 ; Yari et al., 2020 ; Rufat et al., 2015). Based on a review of case studies of flood disasters, Rufat and colleagues (2015) have identified demographic characteristics, socio-economic status, and health conditions as the main factors of social vulnerability to floods. More specifically, the authors point age as the leading demographic factor of social vulnerabilities to flood. Indeed, because of their

dependent status and physical conditions, the oldest (over 75) and the youngest (under 16) tend to be more vulnerable to flood hazards (Selsor et al., 2023 ; Yari et al., 2020 ; Rufat et al., 2015). For the same reasons, "special needs populations, which include institutionalised people, those with low capacity for self-care, long-term or chronically ill patients needing continued care, and nursing home residents" are also seen as particularly vulnerable (Rufat et al. 2015, p. 474). Race, class, ethnicity and immigration status are further identified as demographic factors of social vulnerability to flood (Selsor et al., 2023 ; Bigi et al. 2021 ; Rufat et al., 2015). Bigi and colleagues explain that "minorities and foreigners are considered more sensitive targets, because they may have different languages and cultural barriers impeding the penetration of warnings and risk awareness. Moreover, since they occupy lower classes in society, they are prone to live in hazardous areas and may experience difficulties in receiving disaster recovery funds" (Bigi et al. 2021, p. 8). Socio-economic status constitutes another key factor of social vulnerability to flood risk: poorer and marginalised populations tend to be more vulnerable than wealthiest ones because they often live in areas more exposed to flood risks, but also due to limited access to structures providing disaster reduction and recovery assistance (Selsor et al., 2023 ; Rufat et al. 2015). Finally, Rufat and colleagues (2015) identify health issues as "both drivers (i.e., chronic illness, etc.) and outcomes (plague, PTSD [ed.: post-traumatic stress disorder], food insecurity, etc.) of social vulnerability to floods" (Rufat et al. 2015, p. 475). Besides demographic characteristics, socio-economic status and health conditions, coping capacity, risk perception, neighbourhood quality of life and land tenure are identified as additional factors of social vulnerability to flood risks (Bigi et al., 2021 ; Yari et al., 2020 ; Rufat et al. 2015).

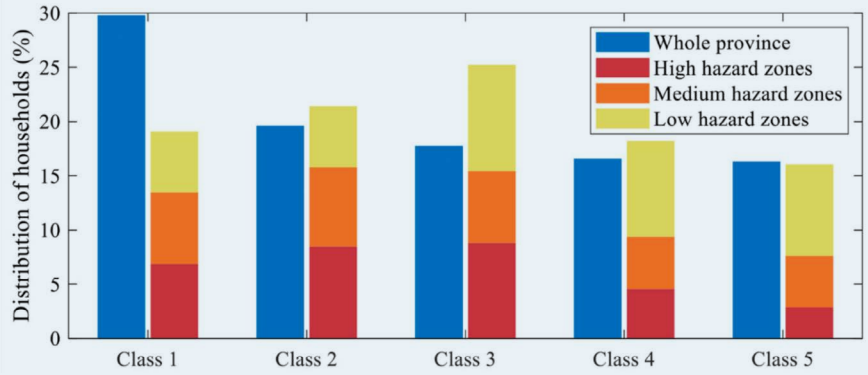
The analysis of the case of the floods in the Vesdre Valley of July 2021 illustrates the unequal impacts of floods. As explained in more detail in the box below (Box 7), socio-economically disadvantaged people and elderlies were the most affected by the disaster.

Box 7. The Unequal Impacts of the Floods in the Vesdre Valley of July 2021

Researchers from the University of Liège carried out an analysis of the exposure of inhabitants of Liège province to riverine flood risk (Poussard et al., 2021). This analysis reveals that "weakest population, in socio-economic terms" tends to be more exposed to flood hazards than the wealthiest (Ibidem, p. 1). Poussard and colleagues (2021) have crossed a map of the flood hazards for the river Meuse and its main tributaries with a map of the population, classified based on an Index of Social disparity (ISD). This index gathers 23 indicators provided at the statistical unit level covering four dimensions: 1) origin and nationality, 2) taxable income level, 3) unemployment and participation rate, and 4) share of households with social security income. Based on this index, the authors distinguish five socio-economic classes (class 1-poorest, class 5-wealthiest households). The cross-analysis of the ISD map with that of the flood hazard shows that the probability of living in a flood hazard zone is higher for the ISD classes 2 and 3 than for the rest of the population. Class 2 and 3 households are indeed the most represented in the danger zones, which is not the case when considering the entire territory.[35] As illustrated in Figure 31, "the distribution of households in the whole province peaks in class 1 (30% of households) and decreases down to class 5 (16% of households). This contrasts with the distribution of the households in flood hazard zones. Indeed, **the distribution of households in flood hazard zones peaks in classes 2 and 3** (21 and 25%, respectively, compared to 20 and 18% for the whole province)" (Poussard et al., 2021, p.6).

35 The authors explain the lower representation of ISD class 1 compared to classes 2 and 3 as follow: "Another mechanism probably at stake is the level of the standards of flood protection used for sizing flood defenses. These standards are higher in densely urbanised areas compared to more rural areas. This may be a reason why the ISD class 1 is less exposed to flood hazard. In particular, the methodology used for determining the flood hazard map considered here is based on flood scenarios with return periods up to 100 years, while the protection standard in the city of Liege is of the order of 300 years. As a consequence, none of the relatively poor neighbourhoods close to the city center of Liege are situated in a flood hazard zone." (Poussard et al. 2021, p. 11)

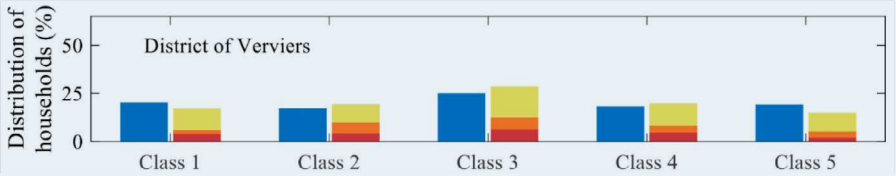
Figure 31: Distribution of households as a function of their Index of Social Disparity class, in the whole province of Liège as well as in flood hazard zones of the province



Source: Poussard et al., (2021), p.7

This observation applies on the scale of the Province of Liège, but also on the scale of the district of Verviers (see Figure 32), which was particularly affected by the flooding of 2021.

Figure 32: Distribution of households as a function of their Index of Social Disparity class, in the whole districts of Verviers as well as in flood hazard zones of the district



Source: Poussard et al., (2021)

The authors explain these observation as follows: "In the case study area like in many places elsewhere, the bottom of the valleys tends to be more densely urbanised. Besides, wealthier population is underrepresented in densely urbanised areas, and vice-versa in more rural areas." (Poussard et al., 2021, p.7). Exceptions are the recently developed peri-urban areas located in the north of the province of Liège in which affluent households tend to be more exposed to flood (Poussard et al., 2021).

The poor and marginalised populations were even more severely affected by the floods in the Vesdre Valley owing to reduced access to insurance. Inequalities in insurance coverage were highlighted as part of the independent analysis on the management of the July 2021 floods commissioned by the Walloon Minister for the Environment (Zeimetz et al., 2021). It is further estimated that nearly 40% of disaster victims in Verviers and Pépinster had no insurance for the contents of their home.[36]

Finally, a more recent study carried out by an interuniversity research team (Guha-Sapir, Hostens and Houon, 2023) has analysed the direct mortality associated with the July 2021 floods. It reveals that among the 39 people who died during the disaster, the majority were people aged over 65 years. It further shows that the persons who died inside a building are mainly elderly women, while those who die outside are mostly young men. The study also demonstrates that "a majority of accidents whose location is known took place in flood zones and that almost all fatal accidents took place in a disadvantaged neighbourhood" [37].

A differential in vulnerability also concerns the growing risks of heat waves to which elderly and chronically ill persons are the most vulnerable (Mayrhube et al., 2018 ; Åström et al., 2015). Based on an extended review of the literature on the vulnerability to heat waves, Mayrhube and colleagues explain that "the highest risk of death during a heat wave was associated with being confined to bed, not leaving home daily and being unable to care for oneself" (Mayrhube et al., 2018, p. 43). They add that "dysfunctional thermoregulatory mechanisms, chronic dehydration, medications and

36 Sudinfo. (2021).
37 UCL. (2023).

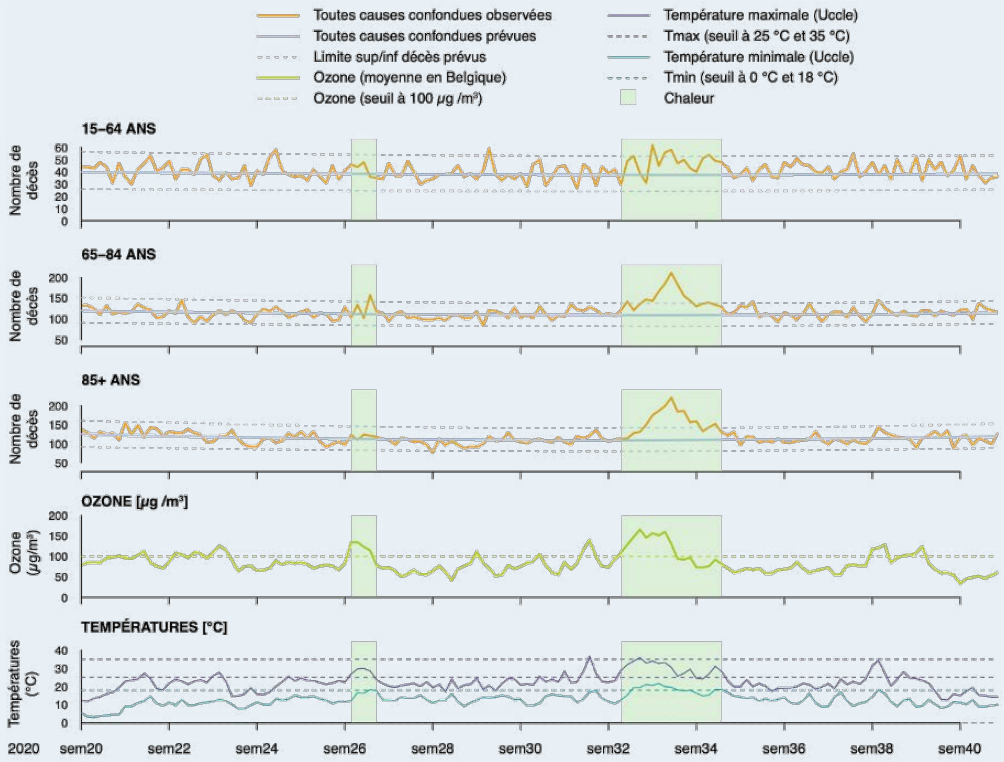
diseases involving the systems that regulate body temperature are further identified risk factors which render elderly and multi-morbid patients such as diabetics more vulnerable to heat" (Ibidem). The authors specify that the pre-existing medical conditions most associated with death during heat waves are psychiatric and cardiovascular illness. While old age and and chronic diseases are widely recognized as the most important factor of vulnerability to heat waves, other factors are identified in the literature. Indeed, children (see Vanos, 2015 ; Xu et al., 2012), outdoor workers (see Bethel and Harger, 2014 ; Lucas et al., 2014), homeless persons (see Nicolay et al., 2016) and people from cultural or lin-guistic minorities (see Hansen et al., 2013 & 2014) are also considered particularly vulnerable. Other research points the intersectional nature of inequalities in the impacts of heat waves, which is seen as an intersection of deteriorated health conditions, marginalisation and built environmen-tal impediments (Mayrhube et al., 2018; Prudent et al., 2016; Werg et al., 2013).

In Belgium, the great vulnerability of the elderly to the risks of heat waves have been highlighted by Scienscano for several heat waves that have hit the country in recent years (Bustos Sierra et al., 2023 & 2022 ; Nganda et al., 2023 ; Sciensano, 2022a). The Box below presents data on the excess mortality of people over 65 years old compared to other age groups during the remarkable heat wave (and associated pollution peaks) of August 2020 (Box 8).

Box 8. The Impact on Elderly of the Remarkable Heat Wave and Associated Pollution Peaks of August 2020 in Belgium

The remarkable heat wave and associated pollution peaks of August 2020 have disproportionately affected the elderly persons, because of their higher sensitivity to health risks. Sciensano states that "*In Belgium, over the entire 2020 summer period, mortality was statistically significantly correlated with $PM_{2.5}$, PM_{10}, ozone, minimum temperatures, and maximum temperatures (in descending order of correlation coefficients)*" and that "*positive correlations were stronger among the elderly*" (Bustos Sierra et al., 2023). During the heat waves of August 2020, which gave rise to 1 555 additional deaths (or + 37,5%), excess mortality is observed in all age groups, but that it is particularly high among people of over 65 years old (see Figure 33). Excess mortality in the 65-84 age group and in the over 85 age group are respectively estimated at 654 (+ 37,6%) and 777 (+ 44,3%) additional deaths, while this figure reaches 156 (+24,9%) for the 0-64 age group (Bustos Sierra et al., 2023).

Figure 33: Evolution of mortality by age group, of temperature and of ozone during summer 2020 in Belgium



Source: Bustos Sierra et al., (2023). Note : Heat wave periods are indicated in green

The ageing of the population and the increase in chronic diseases make Belgians more and more vulnerable to the heat waves, but also to other environmental risks affecting health. The Health Status Report of Sciensano reveals that the prevalence of chronic diseases has increased since 1997, reaching more than one in four Belgians in 2018. The same goes for multimorbidity, which has been increasing since 1997, mainly due to the ageing of the population. Following the COVID-19 crisis, the mental health of Belgians has also deteriorated -especially among young people. Around one in four people was considered to suffer from anxiety or depression in 2022. These worrying health trends makes Belgian population increasingly vulnerable to the environmental risks generating health effects, like heat waves, but also droughts, excessive rains, air pollution or zoonosis (see Box 9). The vulnerability of Belgians to health risks has notably manifested itself during the COVID 19 crisis (OECD/European Observatory on Health Systems and Policies, 2021).

This vulnerability to the health effects of environmental risks is, however, not evenly distributed across the Belgian population, socio-economically disadvantaged social groups being more affected. Sciensano (2023) highlights socio-economic inequalities for all health indicators, both in terms of health determinants, morbidity and mortality. Their study notably shows that the people with low educational levels[38] are more likely to be affected by chronic illnesses, to accumulate health problems and to suffer from anxiety and depressive disorders, compared to people with a high level of education. Sciensano further highlights a significant socio-economic gradient in terms of life expectancy, with a lower life expectancy for people with a low level of education than for more educated people. Such health inequalities make socio-economically disadvantaged populations much more vulnerable to climate and environmental risks than more privileged populations, which contributes to the unequal distribution of adverse consequences of climate change and environmental degradations.

Box 9. The Inextricable Links Between Environment, Health, and Inequalities

The environment, health, and inequalities are inextricably linked. Human health is strongly influenced by the health of ecosystems and biodiversity, as evidenced the clearly established correlation between air pollution and health degradation, the increased risk of zoonosis associated with the loss of biodiversity (Lawler et al., 2021), as well as the numerous adverse consequences of climate change on physical and mental health.

Climate change exerts diverse and far-reaching effects on human health on a global level. Rising global temperatures have led to more frequent and severe heat waves, resulting in heat-related illnesses and fatalities (Watts et al., 2018). Moreover, shifts in climate patterns are altering the distribution and seasonality of disease-carrying vectors, contributing to the spread of diseases such as malaria, dengue, and Lyme disease (Hales et al., 2002). The changing climate exacerbates air pollution, leading to an increased incidence of respiratory and cardiovascular diseases and heightened risks for allergies and asthma[39] (Kinney & Thurston, 2016). Climate-induced shifts in precipitation patterns also threaten water quality, elevating the risk of waterborne diseases like cholera and diarrhoea (Checkley et al., 2000). Climate change's adverse impacts extend to food security, as disruptions in agricultural systems lead to food shortages and malnutrition, especially among vulnerable populations (Myers et al., 2017). Mental health is not immune to the consequences of climate change, with stress and trauma resulting from extreme weather events and displacement affecting mental well-being (Berry et al., 2010). Finally, the increased frequency and severity of extreme weather events, including hurricanes and floods, elevate the risk of injuries and loss of life (IPCC, 2014).

With regards to Belgium, the most prominent climate and environmental risks with potential impacts on health are heat-related events, extreme weather events/disasters, pollution and the degradation of biodiversity and ecosystems. The health impacts associated with these climate and environmental risks disproportionately affect certain social groups.

This is notably the case of extreme temperatures. In Belgium, as in most temperate climate zones, excess heat in particular claims more victims than any other weather-related disaster. For example, Demoury et al. (2022) analysed the association between temperature and natural mortality in Belgium, and found, based on 307,859 deaths from natural causes, a significant cold effect (OR =

38 As explained by Scienscano, "Educational level (in three categories: low, medium, high) was chosen as a marker of socio-economic position to examine inequalities"

39 Air pollution deserves extra attention as it is "second highest risk factor for all noncommunicable diseases" worldwide with a huge cost to society (WHO, 2022)

1.42, 95%CI: 1.30-1.57) and heat effect (OR = 1.17, 95%CI: 1.12-1.21) for overall natural mortality and for respiratory causes. They also found significant effects modifications for some health conditions: people with asthma were at higher risk for cold, and people with psychoses for heat. In addition, people with long or frequent hospital admissions in the year preceding death were at lower risk of temperature-related mortality. When looking at heat wave evolution in Belgium, considerably higher values are observed during exceptional years, such as the year 2003, 2006, 2010 and 2020 with an estimated excess mortality between 1500 and 1800 for Belgium. Due to the urban heat island phenomenon, urban dwellers are exposed to higher temperature extremes, thus adversely affecting future warming levels and the associated human exposure. This warrants due attention, considering the large share of Belgians living in cities, together with the fact that urban residents often present a higher vulnerability profile. Exposure and vulnerability associated with heat-related risks are not limited to physiological health determinants, such as age, underlying health conditions, or place of residence. Another key (but under-investigated) determinant is the physical activity related to labour in domestic care, construction, or agricultural sectors, which mostly employ low-paid and undervalued workers who are racialised and minority ethnic (van Daalen et al., 2022).

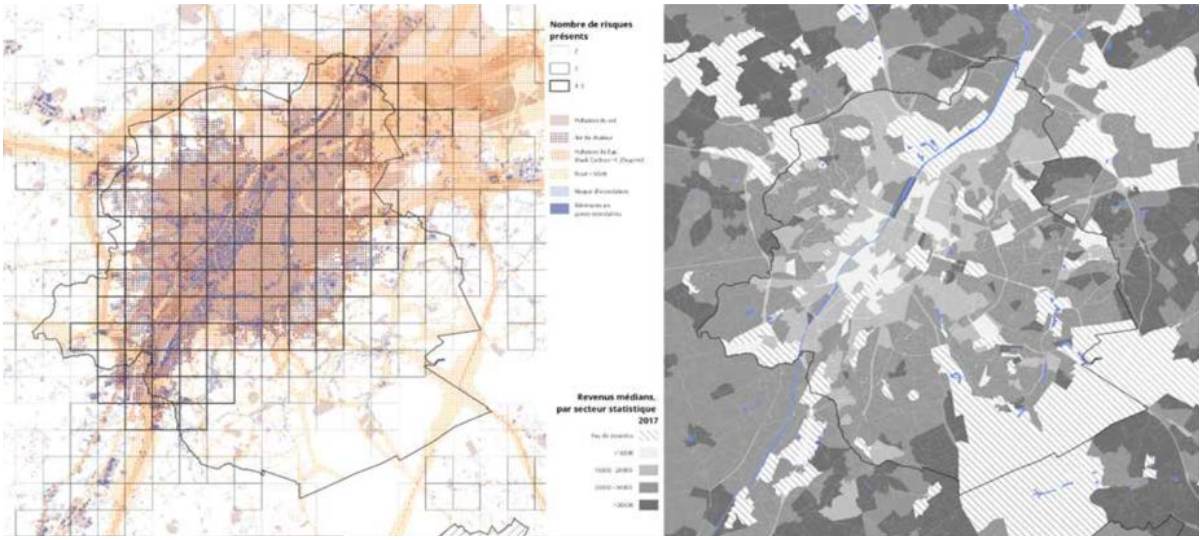
Furthermore, air pollution is a significant public health concern in Belgium, due to its potentially severe health impacts, especially on certain populations, such as pregnant women and unborn new life (EEA, 2018), (again) children, the elderly, and people with pre-existing medical conditions. Exposure to fine particulate matter ($PM_{2.5}$) and other air pollutants has been linked to a wide range of adverse health effects, including respiratory and cardiovascular diseases, cancer, and even premature death. Poor air quality can worsen existing health conditions, such as asthma and Chronic obstructive pulmonary disease (COPD) and can also contribute to the development of these diseases. Disadvantaged social groups also tend to be disproportionately affected by the health impacts of air pollution because of lower average health conditions and higher exposure to $PM_{2.5}$, PM_{10} and O_3 (European Environmental Agency (EEA), 2018). Higher exposure mostly due to the poorer areas of a city usually suffer the highest levels of air pollution, while their habitants are not the biggest contributors to the pollution (e.g.: car use, transport routes). Poorer areas often lack the agency to act against new heavy traffic roads being constructed near their houses (Aerts et al., 2020). Finally, many European cities including Brussels are facing a premature mortality burden due to lack of, and unequal residential exposure to, green spaces. A high mortality burden could indeed be avoided if these cities achieve the World Health Organization (WHO) recommendation for universal residential access to green space (Barboza et al., 2021).

Accelerating climate change is also responsible for severe 'climate anxiety' (or 'eco-anxiety') among more than 10% of the Belgian population, in which women and young people are over-represented. 'Climate anxiety' corresponds to "apprehension and worry about the potential scope of the anticipated impacts of climate change and the uncertainty of their specific nature, timing, and precise location, even among people who have not personally experienced any direct impact" (Heeren et al., 2022, p. 2). Between May and July 2021, researchers from UCL (Heeren et al., 2022) carried out a survey for assessing climate anxiety among 2080 French-speaking persons aged between 17 and 84 years old from eight African and European countries, including Belgium. To do so, they used a 'Climate Anxiety Scale', i.e.: "a 13-item self-report questionnaire wherein participants rate each on a 5-point Likert-type scale, from 0 (*never*) to 5 (*almost always*) (…) [which] includes two subscales: (a) eight items measuring the cognitive and emotional impairments of climate anxiety (e.g., "Thinking about climate change makes it difficult for me to concentrate"; "I found myself crying because of climate change") and (b) five items measuring the functional impairments (e.g., "My concerns about climate change interfere with my ability to get work or school assignments done," "My concern about climate change makes it hard for me to have fun with my family or my friends")" (Heeren et al., 2022, p. 5). This survey reveals that 11,64% of the participants report suffering from climate anxiety more often than "*sometimes*". This proportion corresponds to 10,82% when considering the cognitive and emotional impairments of climate anxiety alone, and 20,72% when considering its functional impairments alone, suggesting that climate anxiety affects the ability to function in daily life of a significant part of the population surveyed. Based on this observation, the authors qualify climate anxiety as "a potential threat deserving a careful audit by the mental health experts" and point the need for governments and mental health practitioners to implement actions to tackle this problem (Heeren et al., 2022, p. 5). While the survey does not identify significant differences in climate anxiety between respondents from African and European countries, it reveals gender and age inequalities. It indeed shows, on the one hand, that women are significantly more affected by climate anxiety than men, and, on the other hand, that young adults are more affected than older ones. The survey further reveals that excessive or severe climate anxiety tend to inhibit pro-environmental behaviours, a worrying phenomenon referred to as 'eco-paralysis' (Heeren et al., 2022).

Finally, some segments of the Belgian population accumulate factors of vulnerability to multiple climate and environmental risks, which increase their propensity to be disproportionately affected by these risks. This has been highlighted for different Belgian regions and municipalities as part of several studies and research projects (see for e.g.: de Muynck, 2022; de Muynck, 2021; Verbeek et al., 2022). A particularly instructive example is the study on social vulnerability to the risks of heat waves, flooding and air pollution in the Commune of Forest carried out by researchers of the Urban Ecology Center and the Université libre de Bruxelles (see de Muynck, 2022). This study based on a cartographic analysis reveals that the inhabitants of the poorest neighbourhoods of the commune accumulate factors of vulnerability to heat waves, flooding and air pollution risks. The urban heat islands, the areas at high risk of flooding and the most NO2 polluted areas of the municipality are all located mainly in the lower part of Forest (Bas de Forest; Laag Vorst). Compared to the Top of Forest (Haut de Forest; Hoog Vorst), this part of the commune is characterised by a greater proportion of low-income households[40], a higher share of old and social housing (which are on average less thermally insulated and ventilated), fewer green spaces and private gardens providing refuge in case of heat wave, fewer tree-lined parks that can reduce heat stress, as well as higher building occupancy rate and soil sealing that can accentuate the effects of heat waves and flooding (de Muynck, 2022). Based on this observation, the authors explain that « *these risk factors, combined with the fact that the poorest households are most often tenants, have fewer financial resources to insulate their dwellings and/or often do not have the same capacity to act and call on public authorities to denounce their situation of multi-vulnerability, de facto placing them in a situation of cumulative environmental inequalities associated with these hazards.*" (de Muynck., 2022, p. 16, own translation). Added to this are the previously mentioned reduced access to insurance and lower average health conditions, which further reinforce the vulnerability of disadvantaged social groups to the health effects of environmental risks. An accumulation of vulnerability factors to several environmental risks has also been observed for the entire Brussels region. As illustrated in the map below (Figure 34), low-income households tend to live in dense urban areas, which are more exposed to multiple environmental risks (soil pollution, heat islands, air pollution, noise, flood risk) (de Muynck, 2021).

40 In the case of the municipality of Forest, the elderly, which as previously mentioned are particularly sensitive to heat waves and associated pollution peaks, tend to live in the neighbourhoods least exposed to heat waves (de Muynck., 2022).

Figure 34: Summary map of environmental risks (soil pollution, heat islands, air pollution, noise, flood risk) in Brussels (left) and map of median incomes by statistical sector in Brussels in 2017 (right)



Source: de Muynck (2021), p. 13

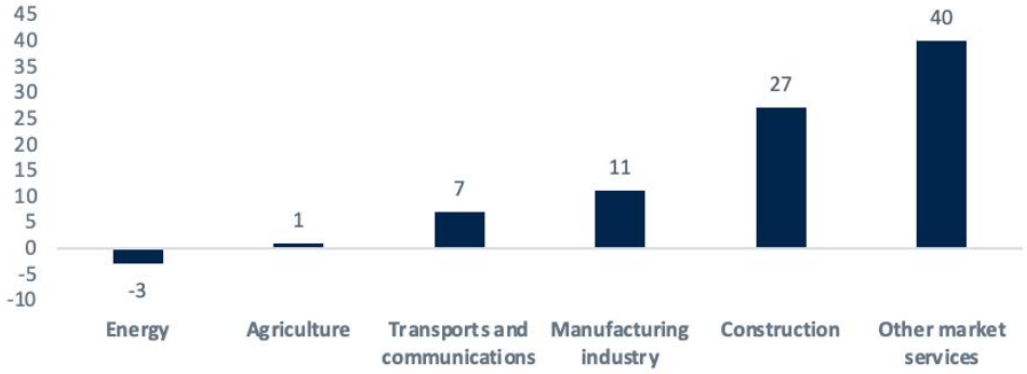
2.2.3. Not all Work and Workers are Equally Affected by the Ecological Transition

The impact of the ecological transition on the Belgian labour market is highly uncertain, especially since it will occur during a period of digitalisation and ageing. The transition should lead to job creation, job transformation and redefinition, job replacement and job elimination. There will probably be major shifts for which people will need to be prepared. Studies on the employment implications of the transition to carbon neutrality in Belgium expect a small net growth of jobs. The employment implications should, however, vary greatly from one sector to another, with the higher potential for job creation in the sectors of construction and market services, and slight net job losses in the energy sector. The job creation generated by the transition should benefit more higher-skilled workers in the short term and lower-skilled workers in the medium term. However, for workers to fully benefit from this job creation potential and for the ecological transition to take place, proactive policies for training, upskilling and promoting quality employment in the sectors supporting this transition are required. Belgium is indeed the European Country with the highest gap between the skills that are available in the labour market, and the skills that are needed for ensuring the transition to a climate-neutral economy. Moreover, some transition jobs in the construction and circular economy sectors that are mainly held by low-skilled workers are not necessarily decent and of quality, which reduces their attractiveness. These issues threaten the achievement of decarbonisation objectives in Belgium and makes low-skilled workers particularly vulnerable to announced changes in the labour market.

The transition towards carbon neutrality should lead to job creation, job transformation and redefinition, job substitution and job elimination (ILO, 2018; Renner et al., 2008; Schröder, 2020). This transition involves profound transformations in the sectors of energy production, buildings, transport, industry, agriculture, forestry, and waste. In the context of decarbonization, some economic activities are set to develop, others to transform, and still others to decline or even disappear. In terms of size, the impact of this ecological transition on the labour market is substantial. In a study commissioned by the Climate Change Service of the Federal Public Service (FPS) Health, Food Chain Safety and Environment and carried out by experts from CLIMACT, ULiège and KULeuven (2023) estimate that half of Belgian jobs are in sectors that are likely to be significantly impacted (indirectly or directly) by the transition to climate neutrality. Some of the jobs in impacted sectors will not be impacted, some may require additional skills, some may be created, and some eliminated. Such transformations impact the Belgian economy through shifts in the labour market and changes in working conditions (Lacroix et al., 2023).

The envisioned labour market effects of transition to a carbon neutral Belgium vary greatly from one sector to another, with on the one hand, the sectors of construction and market services presenting a higher potential for job creation and, on the other hand, the energy sector facing potential job losses. A macroeconomic analysis carried out in 2016 by Lemercier et al. for the Climate Change Service of the FPS FPS Public Health shows that the transition to a low-carbon Belgium could generate a small net job growth estimated to +/- 80 000 additional jobs in 2030[41]. This employment impact could, however, vary greatly from one sector to another, as illustrated in the figure below (Figure 35). The sector with the highest potential for direct job creation is construction (+ 26 500 in 2030). The job growth in the construction sector is associated with an increase in activities engendered by the massive energy renovation wave of the building stock required to ensure the transition to carbon neutrality. The decarbonization should also lead to the creation of jobs in the sectors of manufacturing industry (+ 10 000) and transport and communications (+7 000). Indirect jobs should also be created in the market services sector (+ 40 000). The reduction in fossil fuel demand should, on the contrary, lead to net job loss in the energy production sector (- 3 000). Beyond the differences between sectors, disparities within the sectors are also observed, notably in the sectors of transport and energy production. On the one hand, the net job growth in the transport sector hides job losses associated with a reduction in demand for private vehicle maintenance, and, on the other hand, the net job loss in the energy production sector conceals job creation associated with the deployment of renewable energy (Lemercier et al., 2016).

Figure 35: Employment impact of the low-carbon transition on a selection of Belgian sectors by 2030 (net job impact in thousands of jobs, compared to BAU scenario)



Source: Lemercier et al., (2016)

In Belgium, the transition to carbon neutrality should create job opportunities for workers of all skills levels, though with varying temporalities. A complementary analysis conducted more recently by Lacroix et al. (2023) for the Climate Change Service of the FPS Public Health indeed shows that net employment creation generated by the transition should concern more high-skilled workers in the short term, low- and medium-skilled workers in the mid-term (2030), and again high-skilled workers in the long term (2050). The high potential for job creation for low- and medium-skilled workers in the mid-term, which is notably associated with the development of activities in energy renovation of buildings, waste management and circular economy, could benefit some vulnerable groups on the labour market. This is for example the case of jobs in the social economy that could be created through the development of the circular economy (Lacroix et al., 2023).

However, without proactive policy for training and upskilling in the sectors supporting the transition to carbon neutrality, the job opportunities might not materialise. The skills that are necessary for the transition might not necessarily be available in the working population. A European study on this matter finds for 2017 that Belgium has the highest level of macro-economic skills mismatches across

41 This estimation is based on the "CORE LOW CARBON scenario", a scenario reducing Belgian GHG by 80% by 2050 by balancing "the efforts across the emitting sectors and the type of measures and actions (behavioural vs techno-logical)" (Lemercier et al. 2016, p. 8). This low-carbon scenario is compared to the "REFERENCE Scenario", i.e.: a business-as-usual scenario.

the EU (Vandeplas & Thum-Thysen, 2019, p. 10). This is linked to the poor employment rate of people with a low level of education, but also the lack of attractiveness for some low-skilled professions and the lack of certain skills in individuals. The reported gap points at the importance of a proactive policy with respect to (1) reskill/upskill existing workers through life-long learning programs and (2) adapting training and education curricula so that the right skills are taught (Lacroix et al., 2023).

Moreover, some jobs required for ensuring the transition to a carbon neutral Belgium might not be decent and of quality, which reduces their attractiveness. The study carried out by Lacroix et al. (2023) shows that some jobs in the construction sector are currently of poor quality as they do not guarantee fair income, secure form of employment, safe working conditions, equal opportunities and treatment for all, or prospects for personal development. In this sector, the proportion of foreign workers is significant. However, the authors note that '[f]or foreign workers with a self-employed status, which is as high as 40% for Polish workers, for example, the Belgian minimum wages and working conditions do not apply (de Wispelaere & Pacolet, 2017). This creates an environment for inadequate conditions.' (Lacroix et al, 2023, p 70). The same goes for certain jobs in the circular economy, like servitisation or sharing platforms, that offer bad working conditions notably in terms of job security, social protection, or exploitation of workers. The potential future development of the cyclo-logistics sector in the context of low-carbon transition generates risks of creating non-decent jobs that could lead to a precarisation of workers. Beyond the important issues of well-being at work, the current low quality of the jobs required to ensure the transition to a carbon neutral Belgium reduces the attractiveness of these jobs. This lack of attractiveness scontributes to the previously evoked skill gap (Lacroix et al., 2023). Especially for lower educated workers, the combination of fewer skills, poorer job quality and working conditions, and low wages points at the policy relevance of unemployment traps. All of the above issues require careful policy attention to avoid unemployment traps and related labour shortages (Hoge Raad voor de Werkgelegenheid, 2020).

The study carried out by Lacroix et colleagues is relatively rare in its treatment of the question of access to and quality of jobs created in the context of the transition to climate neutrality. Analyses of more qualitative issues remains scarce compared to analyses quantifying (net) job creation. Other important issues such as agency of workers, gender relations or the post-colonial history of labour are hardly addressed in the literature on the employment implications of the transition to carbon neutrality. This gap is discussed in more detail for the case of the development of circular economy in the box below (Box 10).

More structurally even, most quantitative and qualitative studies on work-related implications of the social-ecological transitions engage with the problem by adopting a standpoint of linear continuation of our how work and employment – and economic activities as such – will evolve in our societies. Obviously however, when shifting from a post-Fordist, economically-determined worldview to a much more diverse and open perspective on the evolution of society, the significance and importance of work, labour and employment itself is shifting too. Current signals of such a shift can be seen in the increasing importance given to work-life balance, for instance. In the long run, whether in Europe we are evolving into a 4 or even 3-days-a-week working rhythm or whether the immediate importance of the socio-ecological challenge will ask us to invest more working time, whether these evolutions will shift our current understanding of remuneration, salary and compensation, is plainly impossible to foresee. That such a discussion has its place in the configuration of the socio-ecological debate is however unquestioned (Ferreras, Battilana, Meda, 2023; Arabadjieva et al. 2023; Gomez-Baggethun 2022; Mair et al, 2020).

Box 10. Circular Economy and Work

The development of circular economy promises to dematerialise the economy, to decouple economic activity from environmental impacts, and to bring lots of green jobs. Regarding the environmental impacts, in Belgium the transition to a circular economy could notably enable to reduce GHG emissions by 32% in 2050 (Lacroix et al., 2023).

A Chatham House Paper published by Patrick Schröder (2020) sheds, however, more nuance on the employment implications of the transition to a circular economy, and on the justice issues they raise. The author indeed states that "*the transition entails a profound systemic transformation of the way the world's economies function. While it is likely that it will generate a net-positive outcome in terms of employment opportunities, many workers, industries and communities could be adversely impacted. Furthermore, the technological change through digitalization, automation and other Industry 4.0 technologies (such as additive manufacturing and smart sensors) that the circular economy will rely on in order to increase resource productivity, optimize production systems and reduce waste can potentially also exacerbate wage inequality and displace workers and jobs. Preparing to reskill a large number of the workforce will be a major challenge in the coming years and decades.*"

In the circular economy literature, the social impact of the circular economy tends to be appraised solely through its (quantitative) impacts on (net) jobs creation, while much less attention is paid to the processes of job substitution, transformation and elimination that labour market shifts entail. Important qualitative issues such as the quality of the job in circular economy or as agency of workers, gender relations or the post-colonial history of labour are hardly addressed in the literature (Laubinger et al., 2019; Guillibert et al., 2022).

2.2.4. Not Everyone is Affected the Same Way by Environmental Policies

Achieving environmental targets will require a significant strengthening and acceleration of associated policies. Both economic production systems and the way that demand is structured can be expected to undergo significant changes. To stimulate and facilitate these processes, governments have a range of policy instruments at their disposal such as regulation, information, subsidies, taxes and infrastructural investments. There are important social issues associated with the use of each of these instruments: who pays the taxes and who receives the subsidies? For whom are the measures financially feasible and for whom do they create poverty traps or lock-in situations? What determines the social acceptability of policy measures? These questions have become part of policy evaluation research. However, for Belgium the scientific evidence remains fragmented and selective. International literature shows how distributional effects can vary between social groups, communities and regions, depending on the policy instrument, its concrete design, and underlying inequalities in the population that is targeted and/or reached. Research also shows that the perceived fairness of a policy measure is found to be a major determinant of its social acceptability. Besides distributional fairness, this also includes considerations of procedural justice and recognition justice.

Distributional Implications of Environmental Policy Instruments

Various aspects play an important role for the distributional implications of environmental policies. These include the type of policy measure, the design of a measure, the way it is financed as well as whether the underlying (unequal) distribution of incomes and resources in the population has been taken into account. More specifically, these aspects or their combination can mean that a policy has regressive (i.e. when lower income groups are more adversely affected by a policy than higher income groups or when higher income groups benefit disproportionately from a policy measure compared to lower income groups), progressive (i.e. the reverse of regressive) or proportional effects (when all groups across the income distribution are affected in an equal way or to an equal extent).

Scientific literature points out that the risk of regressive environmental policies can be substantial (for a review of international research see Markkanen & Anger-Kraavi, 2019; Lamb et al., 2020). This is, in part, because energy expenditures (and thus many taxes aimed at reducing energy consumption) weigh relatively more heavily on low-income households than on high-income households and, in part, because high-income households have a greater capacity to invest in green energy and thus take advantage of subsidy schemes provided by the government to that end. Additionally, despite their larger carbon footprint in absolute terms, wealthier households have on average a lower emission intensity because emission-intensive categories (e.g. food and energy for housing) make up a smaller share of their total budget. As a consequence, they are less hardly hit by measures aiming at increasing in the price of energy.

Existing analyses of how environmental policies translate into (re)distributive effects often highlight only one of these multiple aspects and thus remain insufficiently comprehensive. For Belgium, the empirical evidence remains scarce. This is due to low availability of data combining adequate social and environmental variables at the same unit of analysis (be it the level of the household, neighbourhood, or region) and to a limited institutional practice of policy monitoring and evaluation compared to neighbouring countries. Most available research for Belgium has focused on income aspects when assessing distributional effects. Less is available in the domain of health, and very little research is dedicated to documenting the effects on social equity through the lens of social class and status aspects. Therefore, existing distributive analyses of Belgian environmental policies are complemented with international evidence throughout the remainder of this section.

The four main categories of environmental policy instruments are treated in turn: regulation, taxation, subsidies, and infrastructural investments.

A) **Regulation** refers to the implementation of standards for or the banning of products and services involving a high energy consumption or level of greenhouse gas (GHG) emissions. Examples include: standards concerning the energy efficiency of new buildings and for building renovations, for exhaust gas emissions from cars, speed limits in cities and on highways, the limiting or banning of short distance flights. Regulations can have progressive as well as regressive distributional effects (Zachmann et al., 2018). Standards generate more-progressive effects when wealthier households consume a greater share of the high-emission good addressed by the policy. Examples for this include: the banning of certain emission-intensive luxury products/services such as private jets, super-SUVs or private swimming pools in areas with pressing water scarcity. For goods that are more general, the distributional patterns are less clear. Regressive effects are documented especially when taking account of the differential discount rates that households display (i.e. the finding that low-income households tend to value present consumption more strongly over future consumption than high-income households do). Energy efficiency standards for household appliances with a high up-front cost and a long-term benefit such as refrigerators or washing machines (Sutherland, 2006) but also cars (Davis & Knittel 2019; Levinson 2019) are more prone to generate financially regressive effects when low-income households lack the means to invest in new and more energy-efficient appliances or cars. In contrast, Zhao and Mattauch (2022) find for the case of vehicles that efficiency standards can be more progressive compared to carbon pricing when consumers prefer high-carbon technology attributes.

Box 11: Social Justice Questions in Relation to Low Emission Zones (LEZs)

Low Emission Zones are a policy intervention that followed the increasing awareness of the public health impact of air pollution. The greatest harm of air pollution often falls on the most vulnerable individuals living in urban areas with high pollution concentrations (Clark et al., 2014; Hajat et al., 2015). In Belgium, air pollution is a major environmental threat to health (see Box 4 in Section 2.2.2)

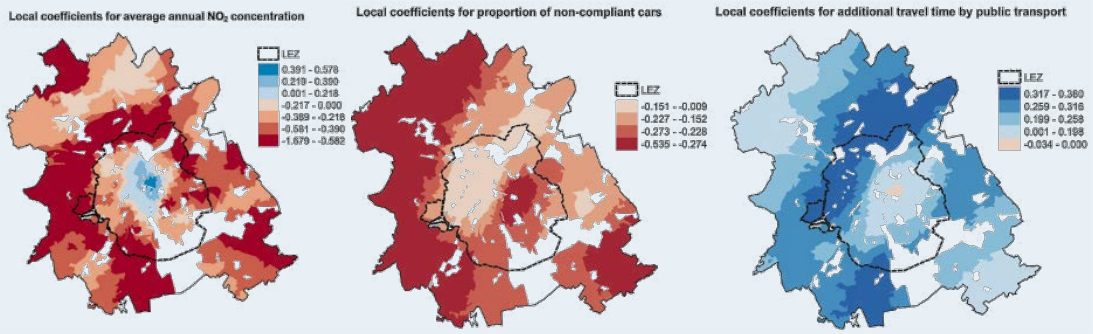
LEZs regulate the access to urban centres based on the emission standards of individual vehicles. This means they restrict access for the most polluting vehicles by either prohibiting them completely or charging an access fee. In public and policy debates, LEZs are a contested instrument with both supporters and critics using arguments of social justice to underpin their positions. Proponents view it as a fair 'polluter pays' instrument that especially benefits more deprived communities who are more exposed and contribute less to air pollution. Critics fear an unequal social impact from the perspective of transport accessibility, placing disproportional financial burdens on disadvantaged socio-economic groups who are not able to finance the newer types of cars and engines that are compliant.

A recent study by Verbeek and Hincks (2022) explores the contested nature of LEZs as an example of the tensions between environmental justice discourses – focusing on the distribution of environmental burdens and benefits – and broader questions of welfare, social rights and economic opportunity, here exemplified by mobility and accessibility. By taking account of the social, economic and ecological factors that shape the patterns of both exposure to air pollution and accessibility in urban areas, the study analyses the LEZs in Brussels and London from these complementary perspectives.

The left panel of Figure 36 shows the relationship between air pollution (NO2) and household income, the middle panel between household income and the proportion of non-compliant cars, and the right

panel the relationship between household income and public transport accessibility, all measured at the average level in each neighbourhood. On the left, the blue areas represent parts of the urban region where there the relationship between household income and air pollution is positive (higher exposure levels for higher-income areas), and the red areas represent an inverse relationship (higher exposure levels for lower-income areas). In the middle, the intensity of the inverse relationship between income and percentage of non-compliant cars is represented (darker red areas have a higher proportion of non-compliant cars in lower-income areas; in lighter red areas the association is less pronounced). On the right, the light colours are areas where there's little correlation between public transport accessibility and income while the darker coloured areas represent a positive relationship (higher income neighbourhoods face higher additional travel time than lower income neighbourhoods).

Figure 36: Association between household income and indicators for environmental justice and accessibility, for the areas within and around the Brussels Capital Region.



Source: Verbeek & Hincks (2022), p. 8.

In Figure 36, the air pollution map (left) shows that the inequality in exposure to air pollution is highest in a concentric ring around the Brussels Capital Region. The dark red areas exhibit the strongest association between having a low income and being exposed to air pollution. By contrast, in the city centre there is a much weaker or even positive association between income and air pollution, meaning that the difference between nearby high- and low-income neighbourhoods is smaller: they bear a similar level of exposure. The second map (middle) reveals that the inverse relation between household income and the proportion of non-compliant cars is strongest in the western and southern Brussels periphery compared to their neighbouring areas, as well as the area just east of the city centre. Results for public transport accessibility (right) show that the darkest blue areas in the north-western and southern edges of the have better public transport for lower-income neighbourhoods compared to the higher-income neighbourhoods in the vicinity.

The findings of Verbeek & Hincks document that – for the case of Brussels – the environmental justice argument in favour of the LEZ (to reduce the unequal exposure to air pollution) largely holds: the most polluted areas of the Brussels urban region are situated within the LEZ, and across the Greater Brussels region there is a clear inverse association between exposure to air pollution and household income, with the poorest neighbourhoods bearing the heaviest burden overall (Figure 1 in Verbeeck & Hinckx 2002; p. 4). The social justice argument against the implementation of a LEZ only partially holds: deprived areas generally have a higher proportion of non-compliant cars (the study does not account for the percentage of households without a car). But these areas are also better covered by public transport.

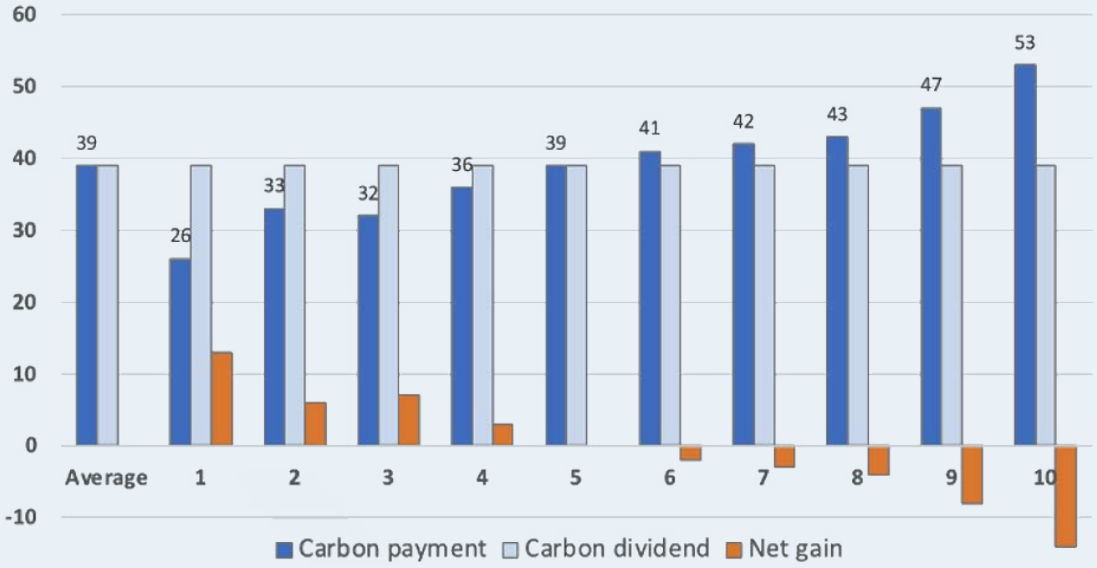
In conclusion, the study suggests that the current LEZ in Brussels – from a social justice perspective – achieves to reduce inequalities through the combination of improving air quality and providing accessible public transport. However, the geospatial analysis suggests that the current LEZ actually covers a slightly too small area because it excludes the urban fringe around the Brussels Capital Region. The most unequal exposure to air pollution occurs in a concentric ring around the city centre, which lies partially outside the current Brussels LEZ. The study shows how a data-driven perspective, simultaneously analysing the unequal exposure to air pollution, the unequal financial capacity to afford new and clean cars, and the unequal accessibility of public transport, can bring nuance and reveal ways forward to the legitimate questions of social justice. By identifying parts of the city where effects are more unequal, customized policy instruments and targeted support can be facilitated, enabling a tailored approach for the many regulatory and compensatory policies that constitute the LEZ-policy, adjusted to the city at hand (Verbeek & Hincks 2022).

B) **Taxes.** This type of price-based instruments mainly refers to taxes on fossil fuels but can also include a tax on emission-intensive products/services, such as red meat or aviation. A different way to achieve the price signal is by using emission trading systems, such as the EU-ETS system. By issuing an increasingly limited number of emission permits which can be traded, the emission price is determined by the market. The imposed quantity restriction then leads to increasing prices, which should incentivise a low-emission consumption pattern. The distributional effect of taxes strongly depends on their design and the targeted product. Where consumers can easily switch from high to low-carbon products, there is hardly any effect. However, for products where no alternative is available, producers can pass on the carbon price to final consumers, which has a regressive effect. The same effect can be observed for several basic needs (e.g. electricity, residential heating) for which it is hard to significantly reduce the consumption ('inelastic demand') and which typically make up a larger proportion of the income and expenditure of low-income compared to higher-income households (Büchs et al., 2011; Flues & Thomas, 2015; Gough et al., 2011; Ivanova & Wood, 2020; Lévay et al., 2021). The latter is partly related to the fact that low-income households are more likely to live in poorly insulated houses, to own less-energy-efficient appliances, and to lack the financial means to retrofit their homes/rent more energy-efficient homes or buy more energy-efficient appliances ('credit constraints'). Other carbon-intensive products/services (e.g. air and maritime transport), which are often not basic needs, are much more frequent among higher-income households (e.g. Christis et al. 2019) and a tax on them is believed to be progressive (Dresner & Ekins, 2006; Leicester & O'Dea, 2008). For several taxes (e.g. on road/motor fuels, Flues & Thomas, 2015; or on carbon-intensive food like red meat or sea food, Zachmann et al., 2018), the effects are disputed and highly depend on their context, design and conditions of implementation.

Box 12. Distributional Impacts of Carbon Taxation Scenarios in Belgium

An analysis carried out by the Federal Climate Service as part of the Belgian National Dialogue on Carbon Pricing shows that a carbon tax without socio-economic adjustment policies tends to disproportionately affect the lower income households. By contrast, a carbon tax combined with a lump-sum redistribution of its revenues to everyone would enable to reduce its social regressivity and would represent a net gain for low-income households (Belgian National Debate on Carbon Pricing, 2018). As illustrated in the figure below (Figure 37), an equal redistribution in the form of dividends in a scenario with 10€/t CO_2 carbon tax would lead to an average positive net gain for households in the first four income deciles and to an average loss in the five highest income deciles. This difference in pattern stems from the fact that nominal carbon tax contributions of the poorest households would be lower than those of the wealthier households, because they consume less energy on average. Beyond the progressive average pattern, wide discrepancies in terms of gains and losses remain, however, within each decile. This is because variation in energy consumption is larger within income deciles than between poorer and richer income groups. The analysis of the Federal Climate Service reveals that lump-sum transfers paid to everyone are not sufficient to compensate all vulnerable households sufficiently, leading to unintended social impacts for small groups with high energy needs. Based on this observation, the Belgian National Debate on Carbon Pricing (2018) states that additional policies targeting households at risk of energy poverty are necessary, for instance through increasing the accessibility to energy-efficient housing, and investments in renewable energy infrastructure.

Figure 37: Average carbon contribution for heating by decile of income with a 10€/tCO$_2$ carbon price and illustration of the impact of an equal redistribution of the dividend in Belgium



Source: Belgian National Debate on Carbon Pricing, 2018

Moreover, by simulating different hypothetical scenarios for a carbon tax in Belgium, Goedemé (2022) draws attention to the fact that in a dynamic context where behaviour and investment responses to a pricing policy are taken into account, it can be imagined that high-income groups are faster in switching to decarbonised technology than low-income groups. This is because the latter often cannot afford these investments and remain locked-in in energy-inefficient homes with a fossil fuel heating system. In this scenario, a carbon tax with lump sum transfers to everyone would again exhibit a (strongly) regressive effect. To avoid this outcome carbon taxes should always be embedded in a comprehensive long-term strategy that, within a tight timeframe, helps all low-income households to reduce emissions from heating and transport by switching to carbon-neutral options.

In that spirit, a more targeted socio-economic adjustment policy was proposed by Berry and Laurent (2019) as part of an analysis of the conditions for implementing a just carbon tax in France. The authors propose to implement a carbon tax (55€/ ton in 2020) of which 25% of the income would be redistributed to low- and middle-income households according to income, household composition and place of living (rural versus urban). This targeted redistribution would allow 50% of the French population to receive more than they pay. The rest of the revenue from the carbon tax (75%) would be allocated to the fight against energy poverty in terms of housing and mobility (Berry & Laurent, 2019). This carbon pricing scheme is a promising policy avenue that would benefit from further investigation. Some crucial questions remain, including the previously-evoked large variation in energy consumption within income deciles, the poverty traps that targeted compensation could induce, as well as the effects of such as policy on tax revenues and thus the financial viability of the policy in case high-income groups would rapidly switch to a low-carbon lifestyle.

C) **Subsidies.** They refer to incentives for investment in and consumption of goods that are more energy efficient or involve less GHG emissions. Examples for such incentives include: tax advantages for the purchase of electric vehicles, para-fiscal instruments such as feed-in tariffs for roof-top solar panels or subsidies in case homeowners decide to renovate their house by insulating it, by installing solar panels or by connecting it to a private or collective heat pump. The issue with many of these incentives is twofold. First, they often reduce the price of goods that are primarily purchased by higher-income households. This means the policy supports people who usually have the (access to) capital to invest in low-carbon assets ('additionality' effect). Additionally, from an economic efficiency point of view, subsidising households also involves a risk of overcompensation. This happens when investments get subsidised while these would also be carried out without the subsidy, leading to inefficient public spending. Second, subsidies are often financed by taxes on consumption that are paid by everyone including low-income households (who

will rarely ever be in the position to benefit from these subsidies). This regressive policy effect applies, for example, to several feed-in tariffs for top-roof solar panels (Grösche & Schröder, 2014) and to subsidies for energy-efficiency investments in the building sector. Where households lack the money to afford own property and are tenants, they often have low influence on investment in new and more energy-efficient technologies. In addition, any investment in such technology can lead to an increase of their rent and increases affordability risks. Further, when comparing different policy instruments, other research (Reaños & Sommerfeld, 2018; West, 2004) concludes that in the case of subsidies for electric vehicles these are even more regressive than fuel taxes.

D) **Infrastructural investments** mainly refer to investments into low-carbon technologies as well as its complementary infrastructures (Vona, 2023). Examples include retrofitting of public buildings such as schools, hospitals or elderly care facilities; public-private partnerships in setting up sustainable heat networks on a municipal level; public means of transportation and its integration with foot-and bike paths as well as with (electric) vehicle sharing opportunities; charging infrastructure for electric vehicles; and urban and rural area design that allows short distances between residential areas, recreation (public parks and playgrounds), work and commercial areas (Litman, 2022). Research suggests that increased public investment reduces income inequality, especially where infrastructure generates productivity gains beyond the sector(s) involved and where investments do not disproportionately benefit higher-income households (e.g. in urban areas where primarily wealthier parts of the population live). Further, the financing of these investments can be the source of increasing or decreasing income inequality. Therefore, the impact of investments is obviously also related to the progressivity of the tax system as a whole, which in Belgium is rather weak (Kuypers et al., 2021).

In sum, reducing adverse social impacts requires careful design of the policy instruments at hand. As outlined above, without incorporating any social considerations into its design, many well-known environmental policy instruments such as taxes and subsidies but also regulation tend to give rise to regressive distributional outcomes. However, the many unknown distributive effects of environmental policies in Belgium also points to the need for more research, to strengthen policy preparation, monitoring and evaluation practices (see Section 3.5)

Poverty, Differential Investment Capacity and Lock-Ins in the Longer Term

People in poverty often lack the levers to become independent from fossil fuels in their energy use, household consumption and transport. While they are more affected by the consequences of climate and environmental change (see Section 2.2.2) and have a smaller ecological footprint because they consume less (see Section 2.2.1), many of the goods and investments that are promoted as environmentally-friendly (e.g. electric vehicles, heat pumps, solar panels, energy-efficient dwellings, etc.) remain largely inaccessible for financially disadvantaged households. This is because these goods are still significantly more expensive than their more carbon-intensive equivalents. Even if these investments generate benefits (e.g. due to lower energy bills from higher energy efficiency, more comfort, better health due to improved air quality), the upfront investment requires a financial capacity that is often out of reach for low-income households.

This 'lock-in' situation forms an important mechanism behind the often-observed regressive effects and relates to the differential investment capacity of households. In the context of the ecological transition, this can be associated with the unequal distribution of the capacity to invest in more carbon-efficient systems or to differential consumption patterns that are overridden by individual choice (for example, the limited availability of public transport in rural municipalities).

Several studies have mapped the redistributive consequences that follow from differential investment capacity in Belgium. For Flanders, the skewed distribution of subsidies for solar panels was documented by De Groote et al. (2016). The large differences in adoption rates of solar panels

over the period 2009-2012 ensured that mainly wealthier households made this investment and gained net benefits thanks to subsidies. Verbeeck (2016) mapped the distribution of tax incentives and subsidies for energy (efficiency) and showed that 58% of the total amount of tax advantages ended up with households with a taxable income higher than 40,000€ per year (the highest tax income category). The study by Albrecht & Hamels (2021) quantifies the investment capacity for the domain of energy renovations in Flanders. Estimating the cost of a 2050-proof renovation towards the A-label, they find that, depending on the assumptions made, 40 to 50 % of the Flemish homeowners do not have, or have access to, - the investment capital that would be needed to bring their house to the level of energy efficiency required in 2050 in Flanders. This is a sizable group that is much broader than the group below or just above the poverty line, and that can – by definition – not be enticed with the current subsidies.

Social Acceptance of Environmental Policies

The distributional implications of different policy instruments described above encompasses also the issue of unequal recognition of different social groups. Transition policies may lead to maldistribution as well as misrecognition (Fraser & Honneth, 2003). Environmental policies aim to promote the ecological transition by attempting to steer citizens towards pro-environmental behaviour through taxes, subsidies, regulations, infrastructures or yet other instruments. Pro-environmental behaviour refers to behaviour of citizens that has a positive impact on the environment. Pro-environmental behaviour can take different forms (Zorell & Yang, 2019) that are partially determined by the socio-economic status of citizens (Geerts et al., 2023). At least four forms of pro-environmental behaviour can be distinguished: curtailment behaviour (e.g. turning down residential heating, reducing the frequency and length of showering), sorting waste (e.g. keeping paper waste separate for recycling purposes), sustainable transport (e.g. using public transport) and pro-environmental shopping decisions (e.g. buying eco-labelled products) (Diekmann & Preisendörfer, 2003). Certain forms of pro-environmental behaviour are more accessible to certain social groups than to others. This means that policy mixes that favour one form of pro-environmental behaviour over others, even if this is more effective from an environmental perspective, may have socially adverse consequences since these measures misrecognizes the capacity for pro-environmental behaviour of social groups with fewer financial means.

From a cultural sociology point of view, pro-environmental behaviour appears a relatively new way through which certain social groups try to differentiate themselves from others and claim social status and esteem in society (Evans & Jackson, 2007). This is especially the case for pro-environmental behaviour that is visible to others (Brick, Sherman, & Kim, 2017). This seems especially the case for sustainable transport and pro-environmental shopping decisions, as opposed to curtailment and sorting waste (Uren, Roberts, Dzidic, and Leviston (2019). On the basis of a Flemish survey, Geerts et al. (2023) found that although less visible pro-environmental behaviours such as sorting waste and curtailment behaviour are more prevalent, probably because it is motivated by financial reasons, when people consciously pursue environmental concerns they tend to engage in the more visible transport and shopping decisions rather than in less visible behaviours such as curtailment and sorting waste.

Precisely because pro-environmental behaviour may carry a symbolic meaning and contribute to reinforce status distinctions, it is important to assess the focus of policy interventions on particular types of pro-environmental behaviour from the point of view of the question "which solutions are recognized as legitimate?" (Kennedy & Givens, 2019, p.647). The often-repeated criticism that ecological transition policies and initiatives are 'elitist' may be rooted in the observation that policies steer towards more visible forms of pro-environmental behaviour that may not be equally accessible to all social groups and through which certain groups distinguish themselves from other social groups.

A recently conducted meta-analysis quantitatively synthesising existing research from various disciplines (Bergquist et al., 2022) concludes that concerns related to social justice – and distributive justice in particular – are the most important determinants of public acceptance of

climate policies. The French yellow vests street protests and the protest by Flemish farmers over the nitrogen dossier can be seen as exemplifying the importance of this dimension. Proactive attention to social aspects is indispensable for public support of policy measures: when perceived as fair, the political feasibility of more ambitious environmental policies grows. In contrast, poorly designed policies that deepen existing inequalities tend to lead to protests and opposition. These legitimate protests may converge into discourses of climate delay by framing a transition as going at the expense of social objectives (Jacques & Knox 2016; Lamb et al. 2020). A thorough assessment of the distribution of short- and long-term costs and benefits is therefore an essential part of environmental policy deliberation and should be carefully addressed.

Regressive policy design cannot easily be 'solved' by selective compensation to spare lower incomes. To mitigate regressive distributional effects, policymakers often turn to flanking compensatory measures with selective eligibility criteria, such as social tariffs for gas, electricity or water, and heating oil fees. Selective measures can spare low-income households or give them greater benefits. However, a number of problems limit the efficacy of these measures. First, adequate targeting is not always possible, because it is very difficult to align eligibility rules with experienced vulnerabilities. Selective compensation schemes cannot take into account or address the multiple causes of lock-in situations that underly households' vulnerability, such as the size and energy efficiency of dwelling, urban–rural differences, and energy contracts. Second, selective measures lead to non-take-up: families sometimes do not claim compensation because they do not know they are entitled to it or face difficulties in submitting the administrative demand in time. Third, selective measures may increase unemployment traps: they discourage employment because an increase in income may be accompanied by the loss of benefits. Selective compensation policies thus encounter limits.[42]

The difficulties to deal with the adverse distributional effects of climate policies point at the importance of paying attention to the underlying distribution, and the need to reduce poverty and social inequalities. The required policy efforts to meet the environmental and climate objectives, thus directly link with the need to strengthen existing systems of social security. For Belgium, this includes the social security system, adequate benefits, progressive taxation and high-performing public services such as education and healthcare (as will be discussed in Chapter 3).

2.2.5. Not Everyone is Affected the Same Way by Financing Tools for Ecological Transition

The financial equation of climate change and environmental degradation has several sides. Although uncertainty is wide, it is clear that climate change and environmental degradation cause severe social and economic damages, already today and even more so in the future. First, this poses direct pressure on the Belgian state finances via different channels: from direct infrastructural dam-ages related to floods, to more indirect economic impacts such as the decrease in economic activity through reduced labour productivity, as well as damages that are more difficult to quantify in monetary terms such as the impact on mortality, morbidity and wellbeing related to extreme weather events or air pollution. Secondly, the policies necessary to reach environmental objectives come with budgetary implications for both public and private actors. Financial resources are required not only to cover the costs and damages, but also for investments: both for mitigating climate change and environmental degradation (e.g., providing the space for nature in order to re-verse

42 These dynamics became visible during the 2022-2023 energy and inflation crisis. Households that had already invested in energy efficiency and renewable energy were over-protected, while low-income households in energy-inefficient homes were particularly vulnerable. The extension of eligibility rules for the social tariff was a necessary measure, yet extending the rate to all lower-income families not only entailed significant budgetary costs, it also created promotion traps higher up in the income distribution (for those with incomes close to the eligibility threshold, it became less attractive to work more hours or pursue higher wages). The design of the measure – a reduced price for the volume consumed - also did not encourage energy saving behaviour (although in practice this happened as a consequence of the high prices and public attention for it).

biodiversity loss, infrastructures without fossil fuel dependence in production, mobility, build-ings, or food systems), and for adaptation, i.e. protection against the harmful consequences (e.g., decreasing the vulnerability of coastal areas or of agriculture). These investments require upfront finance, while most give rise to rather long-term benefits, such as reduced environmental pressure, lower fuel costs, higher energy security, increased comfort, and improved health. The distributive implications of how and at which pace funds are raised, spent and give rise to benefits are mani-fold. The questions of how a just transition can be financed and which role governments take up thus entail important associated questions of social justice, in terms of who bears the costs, who enjoys the benefits, and who decides in the processes of reorienting financial flows towards which societal ends.

The Costs of Climate Change

While there is divergence in the methodologies and thus in exact estimations, the scientific consensus is that the cost of climate inaction (i.e. leaving climate change unaddressed and bearing the consequences) exceeds the cost of climate action multiple times.[43] At global level, the cost of climate inaction is estimated to reduce yearly global outputs (GDP) with a factor between 5-7% at the lower end (Stern, 2006) up to 14% (Kalkuhl & Wenz, 2020).[44] These assessments are necessarily crude and rest on many inherently uncertain presumptions. Many studies only take into account what can be quantified (predictable, direct, economic effects), leaving aside potentially large social, economic and human damages that are uncertain (such as potential catastrophes), indirect (such as non-linear effects, or second order 'cascading' effects) or non-economic (most notably, human health).

The study commissioned by the National Climate Commission that was carried out by VITO, Kenter and Ecores (De Ridder et al., 2020) is one of the only ones to have put numbers on the possible impacts for the Belgian economy.[45] The box below provides an overview of their conclusions on these possible future impacts (Box 13).

Box 13. Possible Future Socio-Economic Impacts of Climate Change in Belgium

Starting from the CORDEX.be high-resolution climate simulations, VITO, Kenter and Ecores (De Ridder et al., 2020) have made sectoral assessments of the possible future socio-economic impacts of climate change that could be expected under the scenario's hypotheses for Belgium.[46]

For the **agricultural sector**, crop production might benefit from CO_2 fertilization due to increased atmospheric concentrations. Average increase in temperature will lengthen the potential growing season, while extreme weather conditions can cause crop damages through extended drought periods, crop sunburn, lethal temperatures, flash floods and hailstorms. By 2050, the VITO, Kenter & Ecores study estimates that for Belgium under the RCP8.5 scenario, the damages due to the altered rainfall, soil water availability and temperature will outweigh the productivity benefits from increased atmospheric CO_2 concentration and the lengthened growing season with a factor 13, yielding a net negative impact of 560M/yr even when not accounting for land loss and/or price changes.

43 when the higher bound of the estimated of the costs of climate action (4% of GDP) are compared with the lower bound estimates of the costs of climate inaction (5% of GDP), the ratio is 1,25; using less extreme estimates, the ratio goes up fast.

44 The Climate Scenarios of the Network for Greening the Financial System NGFS (Bertram et al. 2022) use the methodology of Kalkuhl & Wenz (2020) to map the unequal distribution of the GDP impact between countries, from 0-10% in the northern part of the world up to 23% for most affected countries (Central Africa, Middle-East and Pakistan).

45 The scope of the analysis is limited to Belgium also in the sense that abstraction is made of the socio-economic impacts in Belgium that stem from extreme weather abroad (conceivable examples include crop failures, wildfires, or draught limiting river transport on trade routes that are important for Belgian import/export).

46 Based on the Representative Concentration Pathways (RCP) approach used by the IPCC (in AR5), and more specifically the "business as usual" model RCP8.5, with no additional policies. The pathways should not be interpreted as a prediction, as the IPCC AR5 notes on the Representative Concentration Pathways method: "The goal of working with scenarios is not to predict the future but to better understand uncertainties and alternative futures, in order to consider how robust different decisions or options may be under a wide range of possible futures" (IPCC, Data Distribution Centre, Scenario Process for AR5)

In terms of **health and wellbeing**, the increase in the frequency, intensity and duration of heat waves is expected to increase mortality and morbidity. Already today, heat waves – especially in combination with air pollution - cause significant excess mortality during summer – Sciensano estimated the number of additional deaths during the summer of 2022 at 2,291 (see section 2.2.2) - especially among the elderly and in people with underlying disease. The VITO, Kenter & Ecores study estimates future projections of excess mortality of approximately 1,900-2,800 excess death per year at the end of the century under RCP8.5 under the assumption of no socio-demographic changes and no physiological adaptation. Urban areas are the most vulnerable for mortality, due to enhanced exposure (from the urban heat island effect) and higher population vulnerability in cities.

Increased occurrence, length and intensity of heat waves leads to a multiplication of related illnesses, such as heat exhaustion and heat stroke and aggravates several common cardiovascular and pulmonary conditions. The VITO, Ecores and Kenter study estimates up to 60,000 additional hospital admissions per year related to heat stress during warm summers in the future.

In addition, mental health issues are expected to aggravate, including a higher number of mood disorders, attempts to commit suicide, increased aggression and violence. Other expected health impacts from climate change, such as the expansion of vector-borne diseases, food/water contamination, and increasing incidence of allergenic disease were not quantified.

Infrastructure and economic damages are potentially the most straightforward to quantify. Sea-level-rise related flooding can cause damages that are estimated for Belgium between 2,534 M€/year and 5,590 M€/year in 2100. These estimates do not take into account the increased occurrence of extreme weather events that can lead to pluvial flooding (as experienced in Wallonia in July 2021).

Drought affects the navigability and traffic on waterways, affecting inland shipping. Heat can affect the buckling of railway tracks, melt the asphalt, and damage the electricity network. While direct damages remain modest in comparison with the effects of flooding, indirect costs (e.g. those related to service disruptions and delays) are expected to amount to 153-766 M€/year.

High temperatures and heat waves also adversely affect **labour productivity** of both outdoor (agriculture, construction) and indoor (office) work. These impacts are expected to cost Belgium between 610 M€/year (coolest year in this period) and and 9,000 M€/year (warmest year) in the period 2081-2100.

It remains important to note that these figures are surrounded by high and fundamental uncertainties. The effects will be (much) more modest if world emissions can be reduced following strong policy action scenarios. The future reality is fundamentally determined by the policy choices that are and will be made (IPCC, 2023a).

Even under scenarios with less extreme climate change and environmentaldestabilisation, we know that our economic and social security systems will be under pressure in different ways. An increase in the frequency and severity of extreme weather events affects livelihoods, jobs, economic capital and income flows. The European Commission calculated that a single extreme weather event could impact Belgian public debt by 1 percentage point (1% of GDP) through the cost of uninsured damages and the impact on economic growth alone (European Commission, 2022). The Vesdre floods led to 39 deaths, to 2.2 billion euros of (insured) damages and lost infrastructure,[47] and to many additional costs for emergency relief and assistance (food, energy, housing, psychological assistance), waste treatment, coverage for the non-insured, and economic relance measures. More difficult to quantify – and more long-lasting – are the human impacts on physical and mental health, wellbeing, and economic precarity (e.g. due to interrupted jobs and economic activity, gaps in insurance coverage, or administrative barriers preventing adequate compensation).

Even without considering the many damages that could not be accounted for (e.g. biodiversity losses, tipping points, cascading effects), most recent cost-benefit studies find that the benefits of reduced climate damages through adequate policy and action outweigh the costs of the necessary actions and investments by a factor of 1.5 to 4 (Van Der Wijst et al., 2023).

While more exact amounts will always remain surrounded by large confidence intervals, the impacts and damages from climate change are and will be sizeable for Belgium. Concurrently, the intensity of future damage also depends on the policy decisions today. Both in terms of climate mitigation (to limit the degree of global warming) and climate adaptation (to increase protection against foreseeable adverse effects), adequate policy interventions limit the harm that can be expected.

47 Assuralia (2021)

Investment Needs of the Climate Transition

In comparison to the uncertainties associated with the estimated economic impact of the consequences of climate change, the quantification of the investment needs associated with climate action (mitigation/adaptation) has much smaller margins of error. Estimating the financial need to attain carbon neutrality by 2050 is mostly done by calculating the investment cost of substituting fossil fuel capital infrastructure by its carbon neutral alternatives, including the insulation of homes, carbon-neutral industrial processes, production of renewable energy and infrastructures for collective and electric mobility. However, here too methodological difficulties remain, for instance feedback and network effects[48] are rarely taken into account.

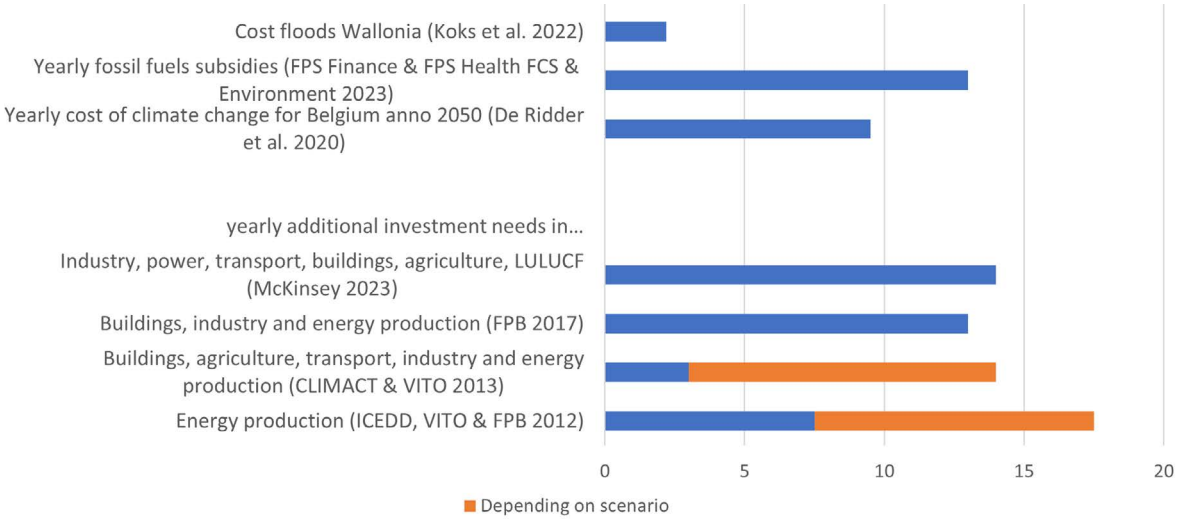
For Belgium, several (partial) estimates are available, estimating the additional investment need to reach carbon neutrality over the time period 2020-2050 between 2 and 3% of GDP.[49] Most studies have assessed sectoral financial needs, e.g. for energy production (Devogelaer et al., 2012; €2,5-4bn€/year or 1 à 1,7% of GDP); for buildings, agriculture, transport, industry and energy production (Cornet et al., 2013; 11bn€/year or 2,3% of GDP but significantly less under a scenario of demand reduction); for buildings, industry and energy production (Devogelaer & Gusbin, 2018; 13 bn/year or 2,5% of GDP and Bekaert et al., 2023; 14 bn/year or 2 to 3% of GDP). The studies are difficult to compare because they differ in terms of sectors, variables, modelled level of ambition, and the timeline they use.

The range of these estimates is in line with the studies for our neighbouring countries. Using different methodologies, estimates of additional investments needed to move towards climate neutrality by 2050 have been in the same range for our neighbouring countries, and for Europe as a whole (Pisani-Ferry & Mahfouz 2023; 2 to 3% of GDP). The reviewing exercise in the 2022 report from the Mitigation of Climate Change Working Group of the IPCC (2022) estimates that the Climate Change mitigation investment needed in developed countries to limit global warming to below 2°C is in total around 2-4% of average 2017-2020 GDP (or 11 to 22 billion euros in current prices).

48 These 'second round' effects arise as a result of the initial investments, and can have positive or negative impacts. Positive feedback occurs when the initial investments lead to additional benefits or cost savings, which, in turn, spur further investments and improvements. A well-documented example is the decreasing costs of renewable energy infrastructure, where initial investments lead to technological improvements and economies of scale, spurring further investments and improvements; negative feedback occurs when the initial investments create unintended consequences that hinder progress or generate additional costs. For example, an exponential increase in the deployment of currently dominant battery technologies can lead to untenable increases in demand for scarce and environmentally impactful resources, such as cobalt and lithium. The social, economic, and ecological obstacles relating to their mining and recycling might ultimately hinder the (speed of) transition. Network effects refer to the phenomenon where the value of a product, service, or technology increases or decreases as more actors adopt it.

49 These estimates concern investments needed to achieve climate mitigation objectives (carbon neutrality), leaving aside climate adaptation and measures necessary to limit the transgressing of other planetary boundaries. Even if there is significant scope for synergetic investments in 'clean' technologies, these dimensions remain much less systematically quantified.

Figure 38: Comparison of estimates of the costs and investments needs with respect to the climate transition in Belgium (in billions of euros per year)



Source: compiled from Koks et al. (2022); FPS Finance & FPS Health and environment (2023), De Ridder et al. (2020); Bekaert et al. (2023); Devogelaer & Gusbin (2017); Cornet et al. (2013); Devogelaer et al. (2012).

The gap between what is currently being spent on climate transition and what should be invested in order to reach the Paris Agreement objective can be termed the 'investment gap'. How and by whom the investment gap should be bridged is a question with many distributive angles. It encompasses adjusting the mechanisms determining how financial resources are allocated, as well as dealing with the resulting shifts in the value of capital. Importantly, it requires addressing the processes of how the allocation of available funds is decided upon, and by whom. The definition of what constitutes a 'transition investment' or even an 'energy investment" is not trivial and can be debated. An encompassing estimation of climate-related investments in Belgium dates from 2013 (Trinomics, 2016) and should be repeated regularly and with refined methodology in order to quantify the investment gap for Belgium.

In addition to investment needs, the climate transition also comes with broader financial implications. Costs that can be expected include, for example, the potential need for compensatory policy, administrative costs of new regulations, or costs of expected and unexpected shifts in the labour market, requiring additional reskilling programmes and/or (temporary) unemployment benefits. No estimates are available of the costs of these programmes. On the benefits side, a reduction in health costs can be expected from reduced air pollution, healthier diets and more active transportation modes, as well as economic benefits from reduced traffic congestion. While quantitative estimation is scattered, these effects appear substantial in size. For Belgium, Vranken et al. (2023) study the link between air pollution, access to green space, and data on doctor visits at the most detailed geographical level, finding direct and significant impact of high concentrations of fine particulate matter on the frequency of doctor visits. Through this single correlation, an avoidable budgetary impact could be quantified at 43 million euros in Belgium (of which 37 million euros borne by health insurance and almost 6 million euros borne by the patient). This finding only concerns the impact on doctor's visits , leaving aside associated costs such as the economic costs of associated sick leave, the financial cost of medication, and the individual and social costs of damaged health. A more encompassing budgetary estimate is provided by Vandenberghe & Albrecht (2018), who estimate the health co-benefits of a carbon tax of 30 to 60€/t CO_2e. It is found to prevent 42,300–78,800 Disability-Adjusted Life Years, save 0.6–1.1% of total health care expenditure and an additional 0.06–0.12% of Belgian GDP. The international literature finds that co-benefits of climate policy are of substantial economic value – sometimes even in the same order of magnitude as the mitigation costs (Karlsson et al. 2020; Vandyck et al. 2020). For air quality, which predominates the literature, the health benefits are sometimes even larger than the costs of the measures to bring air pollution down (Karlsson et al. 2020).

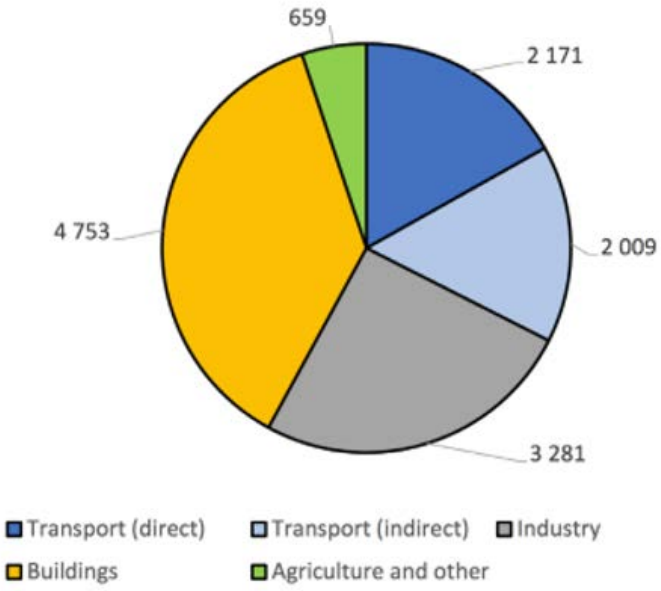
Financial Policy Tools and the Just Transition

Financing the climate transition will require policy measures that channel both public and private funding away from investments that are harmful and towards investments and infrastructures that support the just transition (e.g. renewable energy generation, production methods compatible with Earth system boundaries, building renovations, transport infrastructures).

First, we can expect significant shifts in public budgets. This includes both reorienting public expenditure to social-ecological objectives and scaling up public expenditure to match the required efforts. The reorientation starts with assessing the efficacy of current subsidies and fiscal expenditure (tax breaks and reduced rates). An obligation to evaluate national fossil fuel subsidies is included in the national energy and climate plans that member states submit to the EU as part of the European "Clean Energy for All" agenda.

Fossil fuel subsidies, which can be provided through budgetary spending or tax exemptions, are estimated by the FPS Finance and the FPS Health, Food Chain Safety and Environment at 13 billion euros/year in 2020 (or 2.8% of Belgium's GDP). Most of the subsidies are granted through reduced rates of taxes and excise duties on certain fossil fuels, most notably diesel and gas. Putting the subsidies in a sectoral perspective, fossil fuel subsidies flow to buildings (through the reduced excises on natural gas), transport (directly via the subsidisation of professional diesel, fuel cars, and aviation kerosene; indirectly through the schemes for company cars), industry (through reduced excise and taxation rates), and agriculture (through reduced excise and taxation rates as well as exemptions on intermediate consumption of fossil fuels). Transfers to households are situated within the buildings sector, through the generally reduced rates for natural gas and the heating oil exemptions. Explicitly socially intended subsidies, in the form of social energy tariffs for vulnerable households, represented 165.6 million euros in 2020, or 3.5% of the fossil fuel subsidies in the building sector, and 1.3% of total fossil fuel subsidies. As the authors note, while the lion's share of the fossil fuel subsidies have generally been granted to meet competitiveness objectives (and, to a much lesser extent, social objectives), in their current form they work against decarbonisation and air quality objectives. They keep economies locked into carbon-intensive technologies, undermine efforts to enhance the competitiveness of sectors contributing to decarbonisation, and are often – especially in the sectors of transport and industry – socially inequitable.

Figure 39: Breakdown of subsidies per sector, 2020 (million euro per year)



Source: FPS Finance & FPS Health and Environment (2023)

Most authors points to the need to upscale public investments and expenditure during the transition to bridge the investment gap in the public sector and to support households and businesses to cope with the economic shifts and changes. In the recent France Stratégie report to the French Prime Minister, economists Pisani-Ferry and Mahfouz (2023) estimate that besides the need to raise wealth taxes, increased public debt will be necessary during the climate transition. Given the new expenditure and a temporary fall in revenues due to the potential risk of a slowdown in growth, the report estimates that "the risk to public debt is of the order of 10 points of GDP in 2030, 15 points in 2035, 25 points in 2040" (p.13 Synthesis report), compared to a scenario without the implementation of climate measures. However, they note that delaying the efforts in the name of controlling public debt will only increase the cost to public finances and the efforts required in subsequent years to meet the binding climate targets. Trying to keep the financial pressure on future generations low will thus achieve the opposite: future fiscal manoeuvring room will dampen because of the need to overinvest to make up for their transition delay. Moreover, delaying necessary investments also erodes countries' credibility and attractiveness, making it more difficult to mobilise private investment or to fully finance their public debt (Pisani-Ferry & Mahfouz, 2023).

For Belgium, a clear financial plan for climate investments needs to be integrated in the budgetary paths. For Belgium, the situation is particularly complex due to the already high level of public debt and substantial foreseen social expenditures, in particular related to the ageing population. The report of the Study Committee on Ageing projects the evolution of social spending from 2019 to 2070 for a reference scenario and three other scenarios: one with lower average productivity growth, one with a higher unemployment rate, and one with both lower productivity growth and a higher unemployment rate. Table 3 shows the evolution of social spending and the fiscal cost of ageing. Between 2019 and 2070, the share of social spending in GDP increases, from 24.5% to 29.5%. In the year 2049, the share of social spending in GDP is highest at 29.7%. In particular, spending on pensions (+3.1 percentage points of GDP) and healthcare (+2.8 percentage points of GDP) increase largely as a result of population ageing, but between 2040 and 2050 this trend diminishes due to the more moderate increase in the old-age dependency ratio. Public climate expenditure thus comes on top of a current budget deficit of 3.9% of GDP (in 2022) and will occur during the period when ageing costs will increase most.

Table 3: Evolution of social expenditures and budgetary costs of ageing in the medium and long term according to the July 2022 reference scenario (left panel) and difference compared to the July 2021 scenario (right panel); as a percentage of GDP (left) and as percentage points of GDP (right).

Components of the budgetary costs related to ageing	Reference scenario of the study commission on ageing (july 2022)								Difference with the results of july 2021			
	2019	2027	2050	2070	2019-2027	2027-2050	2050-2070	2019-2070	2019-2027	2027-2050	2050-2070	2019-2070
	In percent of GDP				In percentage points of GDP							
Pensions	10,5	11,9	13,5	13,6	1,4	1,7	0,1	3,1	-0,5	0,2	0,0	-0,3
Employees	5,9	7,0	8,3	8,0	1,2	1,3	-0,3	2,1	-0,2	0,1	0,0	-0,1
Self-employed	0,8	1,0	1,3	1,4	0,2	0,4	0,1	0,6	-0,1	0,1	0,0	0,0
Civil servants [a]	3,8	3,8	3,9	4,2	0,1	0,0	0,3	0,4	-0,2	0,0	0,0	
Health care [b]	7,8	8,8	10,5	10,6	1,0	1,7	0,1	2,8	0,1	0,1	0,0	0,2
'Acute' care	6,3	7,1	7,7	8,1	0,9	0,6	0,3	1,8	-0,1	0,0	0,0	-0,1
Long term care	1,5	1,7	2,8	2,6	0,2	1,1	-0,2	1,1	0,2	0,1	0,0	0,3
Work-incapacity [c]	2,0	2,3	2,1	2,0	0,4	-0,3	-0,1	0,0	-0,2	0,1	0,0	0,0
Unemployment [d]	1,3	1,0	0,9	0,8	-0,3	-0,1	-0,1	-0,5	-0,1	0,0	0,0	-0,1
Family benefits	1,4	1,3	1,1	1,0	-0,1	-0,2	-0,1	-0,5	-0,1	0,0	0,0	0,0
Other social expenditures [e]	1,5	1,7	1,6	1,5	0,2	-0,1	-0,1	0,0	0,0	0,0	0,0	0,0
Total	**24,5**	**27,1**	**29,7**	**29,5**								
Budgetary costs related to ageing					**2,6**	**2,6**	**-0,2**	**5,0**	**-0,8**	**0,5**	**0,1**	**-0,2**
Wages of educational staff [f]	3,9	3,8	3,7	3,7	-0,1	-0,1	0,0	-0,2	-0,2	0,0	0,1	-0,1

a. Including the pensions of state-owned enterprises at the government's expense (in this scheme, the results presented in this report do not take into account the increase in the statutory retirement age) and the IGO (Income Guarantee for the Elderly).
b. Public spending at all policy levels (social security, federal government, local government and communities and regions) for acute and long-term care, including Flemish Health Insurance 0.1% of GDP). Long-term care includes home care, stays in rest homes for the elderly, in rest and care homes, in psychiatric care institutions and in sheltered living initiatives and some expenditure on assistance in daily life for dependent elderly people. 'Acute' care includes other health care.
c. Maternity, primary work incapacity and disability benefits.
d. Includes unemployment with company allowance, time credit and career break.
e. Mainly expenditure on accidents at work, occupational diseases, Subsistence Security Funds, allowances for persons with disabilities, living allowance and bridging allowance for the self-employed.
f. According to the Study Commission's definition, teaching staff salaries are not part of the total budgetary cost of ageing.

Source: Hoge Raad van Financiën, (2022)

In a recent advisory report on Belgian public finance, the Belgian Central Council for Business (CRB/CEE) presses for the need to foresee sufficient room for investment for the climate transition: "The budget path will also need to include reform and investment targets to finance the climate transition. (…) In this context, there is a clear need for a thorough debate on (the future of) public finances, including all Belgian governments and stakeholders." (CRB 2023 p.15)

In addition to redirecting and scaling up public investment, it is crucial to also redirect private capital towards the transition. According to the Climate Finance Report 2021, public investment currently accounts for about 40% of climate finance in Europe, while private actors bear 60% (more precise figures for Belgium are not available). The niche of 'impact finance', which explicitly aims to serve social, environmental or governance goals next to profitability goals, constitutes only a fraction (1.0 to 2.5%; Impact Finance Belgium 2022) compared to the total assets under management by investment funds (for Belgium representing 190 bn euros in 2018) and banks (993 bn euros). Large shares of public and private investments are still allocated to economic activities that are not aligned with the climate targets (CPI 2019). The IPCC (2022) concluded that the investment gap of the transition to a low carbon economy is not due to scarcity of funds, but rather to misallocation of funds.

Private funds currently do not sufficiently finance transition projects, despite the rise of 'sustainable finance' frameworks. The functioning of the financial markets does not align well with the challenges set by the transition, in terms of *time horizon* (there is a need for sustained investments with a high capital cost in the short term, which will only pay off in the long term), *risk* (many of the investments needed are considered risky, or involve technology/research whose commercial application is still uncertain), *return* (some of the necessary investments might not be profitable), *accessibility* (investments are necessary among actors, such as homeowners, which lack access to capital, expertise and incentives to invest), and *market failures* (there are numerous collective action problems that the market cannot solve such as the need for investment in collective research or infrastructure that can also be used by competitors). In this respect, governments remain essential to direct private investment towards the necessary goals.

The Belgian government has several tools at its disposal to make financial institutions anticipate and contribute to the transition to an economy within Earth system boundaries. These include: standards and regulations on lending and investing, increased monitoring and reporting requirements, but also the public subsidisation of financial returns on green investments, or the deployment of resources in public investment companies or banks. Some of these instruments are more difficult to reconcile with the goals of the just transition than others. Using public funds to provide guaranteed returns to private funds in exchange for their availability for 'green' purposes, for example, further increases wealth inequality.

Financing the ecological transition and the role of governments and policy in this process poses important distributional questions, intergenerationally and intragenerationally, nationally and internationally. The choice of which policy instruments can address the financial equation of the ecological transition needs a sharp social-ecological analysis and more public debate. While the observation of the budgetary pressure that climate change and the climate transition pose to the welfare state can entail the risk of increasing competition between different societal objectives over limited public budgets, the different policy tools that governments have at their disposal to reduce these trade-offs and to address the investment gap directly can also be considered in terms of social justice: who pays, who has ownership, who benefits, and who holds decision power in the processes. It also requires increasing the efficiency of public spending, by for instance adopting an integrated perspective to the design of financing policy. The creation of conflicts and trade-offs between social and environmental objectives (either through environmentally harmful social spending or through inequality-increasing environmental expenditure) can and should be avoided. Section 3.2 advocates for the need of adequate and equitable funding of the just transition and elabourates on the potential finance policies tools that can be deployed in this light.

2.2.6. Not Everyone's Voice is Heard in the Processes of Elabouration and Implementation of Environmental Policies

In Belgium, the populations most affected by environmental problems tend to be less represented in the processes of elabouration and implementation of environmental policies. While they are particularly vulnerable to the risks associated with environmental degradations (see Section 2.2.2) and environmental policies (see Sections 2.2.4 and 2.2.5), low-income and low-education populations are less represented in direct and indirect policy development. Their exclusion from processes of elabouration and implementation of environmental policies does, however, not mean that they do not perceive the importance of environmental problems and the necessity of ecological transitions. Inequalities in participation renders the specific needs and circumstances of the vulnerable populations less visible and less known in the policy-making processes. This, in turn, feeds and reproduces the different environmental inequalities documented in the previous sections (see Sections 2.2.2., 2.3.4. and 2.2.5). This mechanism of exclusion and unadjusted policy fuels distrust towards political elites and feelings of non-representation in today's 'representative' democracy among the socio-economically disadvantaged groups. A loss of trust in the power of democracy as they know it, is an often observed outcome, and a rise of interest in the political alternatives, both in the form of less democracy (authoritarianism, strong leader) but also in the form of more democracy (direct, deliberative, and involving a stronger role for old and new social organisations). In contrast, those who currently enjoy relatively easy access to power, given their economic and educational capital, are less willing to consider democratic alternatives. The result is a reproduction of inequalities in terms of participation.

In Belgium, the groups who are most vulnerable to the risks associated with environmental degradations (see Section 2.2.2) and to the regressive effects of environmental policies (see Section 2.2.4 and 2.2.5) are also the least involved in the decision-making organs and processes.

The 5th Belgian national climate survey carried out in 2021 by the FPS Public Health reveals that 73% of Belgians say they are (very) concerned about the environment. The survey further reveals that climate change and biodiversity depletion constitute, for the first time, the two main environmental concerns of Belgians, followed by air pollution. 78% of Belgians say they are (very) concerned about climate change and the extinction of plant and animal species and 75% about air pollution.

The 2022 national questionnaire *Noir, jaune, blues* highlights that 89% of Belgians in a precarious situation[50] agree with the statement that environmental policies are decided by people who do not understand neither their practical constraints nor their financial difficulties. However, the integration of their perspective leads to more robust policies: for example, people who are themselves affected will often have a better view on the broader picture, including financial impacts, health impacts and experienced bottlenecks with existing policies. It is important to distinguish genuine participation from merely informing, or from 'staged' or superficial participation.

In Belgium, this lack of participation sits in a wider and complex context, as the extent to which individuals are able to participate and have their concerns and preferences heard in policymaking processes is shaped by several interconnected and intersectional factors, such as participants' level of education, income or the forms of participation (i.e. institutionalised or non-institutionalised).

It is documented for Belgium that the extent to which people participate in the processes of elabourating or implementing policies is marked by a strong educational gradient. This is notably the case of people with a low level of education in Belgian parliaments. While their underrepresentation compared to the population average has always been the case, the gap is becoming more and more pronounced (Verleden, 2014). After a sharp rise in visibility between 1919 (universal suffrage)

50 Interviewees defined themselves economically. This data refers to 89% of people who indicated their financial situation was precarious.

and 1950, the presence of blue-collar workers in parliament has continuously eroded. Their disappearance occurred simultaneously with the rise and dominance of members of parliament with university degrees. Recent figures show that these developments are not only due to demographic and sociological evolutions. While it holds true that there are less blue-collar workers and more college graduates, the underrepresentation of the former is structural: "In 1981, almost a quarter of the members of parliament did not have a higher education qualification, but by 1999 this had fallen to 5%. The proportion of representatives with a university degree rose sharply to 73% in 2005. Ten years later, in 2015, 81% of French-speaking members of the Chamber and 83.9% of Dutch-speaking members had completed a second cycle of higher education." (Bouteca et al., 2018, p.542-543, own translation). In 2015, the number of people with higher education backgrounds had significantly increased compared to 1981, but they still represented less than 30 % of the overall population.

On top of the underrepresentation, political scientists have shown that the preferences of the higher educated and more well-off systematically preponderate in political decision making.[51] For Belgium, Sevenans & Walgrave (2022) conducted a survey experiment among Belgian politicians showing one specific mechanism that plays a role: that politicians downplay the opinions of the lower-educated.[52] They find evidence for politicians inclination to deem the opinions of citizens who have received vocational education as less thoughtful than the opinions of citizens who followed a general education. In another study comparing citizen priorities with of representatives' perception thereof in Belgium, Canada and Israel, Sevenans et al. (2022) argue that politicians' perceptions are biased towards the preferences of the male, highly educated, and politically interested citizens in all three countries.

This strong educational bias holds true for less formal types of political participation, such as joining a manifestation, signing a petition, or making a donation. A comparative study found that "Non-institutionalised forms of participation tend to strengthen inequalities based on education". Access to non-institutionalised forms appears to be even more strongly biased (Mariën et al., 2010). Belgium has become a prototype of what Dutch political scientists Mark Bovens and Anchrit Wille have called a 'college degree democracy', a democracy in which everyone has the right to vote but where access to power is in practice much easier if you have a college degree (Bovens & Wille, 2011). Citizens who have gone to university are politically more active, know how to express their grievances, have networks to make themselves heard and are structurally more empowered. Whereas aristocracy gave power to the noble and plutocracy to the rich, this type of meritocracy gives it to the educated.

The exclusion of socio-economically disadvantaged populations from the elabouration and implementation of environmental policies contributes to making the specific needs and circumstances of these populations invisible in policy-making processes, in turn fueling distrust towards Belgian political elites. As Mariën et al. (2010, p.206) note: "*If these highly educated groups are more active in getting their voices heard in politics, it is more likely that their interests and preferences will receive more weight in the political decision-making process*". This is exactly what the socio-economically disadvantaged populations indicate when it comes to environmental policies: they are believed to epitomise 'politics from above'.

Income inequalities also affect some groups' participation in processes of elabouration and implementation of environmental policies. As noted by a former Special Rapporteur on extreme poverty and human rights: "When the participation of people living in poverty is not actively sought and facilitated, they are not able to participate in decision-making and their needs and interests are not taken into account when policy is designed and implemented. This exacerbates their exclusion and often perpetuates the privilege of elites who are able to influence policy directly, or of groups such as the middle class who have a considerable voice in the media or other public spaces"

51 This is most elabourately documented for the US (Gilens, 2012), for different European countries see Peters & Ensink, 2015; Rosset 2016; Schakel & Van Der Pas, 2021.

52 This effect can be distinguished from and comes on top of a motivated reasoning effect, i.e. where politicians downplay citizens' opinions more when they personally disagree with them (Sevenans & Walgrave, 2022)

(Sepulveda Carmona 2013, para 14) There is now ample research demonstrating that, even in the best-functioning democracies, the wealthiest groups of the population exercise a disproportionate influence in the political system (Gilens, 2012; Christiano, 2012; Cole 2018). The voice of the socio-economically disadvantaged populations also tend to be less heard in social consultations. The poor and the least educated are not only less present in institutionalised and non-institutionalised forms of participation, they also find it harder to make themselves heard.

In 2022, the OECD stated that "low prospects of accessing [economic] opportunities (or the perception thereof) tends to decrease democratic participation and trust, a concern of particular relevance in Belgium, where trust in government experienced the strongest deterioration among OECD countries since 2007" (OECD 2022a, p. 74).

The Box below sets out the key characteristics and conditions for the effective participation of people experiencing poverty (Box 14).

Box 14. Effective Participation of People Experiencing Poverty

Participation is about sharing power, and about co-constructing solutions: it is not solely about better informing decision-making. The participation of people experiencing poverty should go beyond merely informing people in poverty of policy decisions, and it should go beyond consulting them, using methodologies such as focus groups or online consultations allowing people to provide feedback. It requires that the people affected are involved in the process, ensuring that such involvement leads to a change in how the policy is drafted or enacted. Such participation is essential for at least three reasons.

First of all, by investigating the possible impacts of an intervention with persons who have a lived experience of poverty, the assessment can uncover potential effects – blind spots – that may be overlooked by policymakers, thus improving the design of the intervention. This is particularly important, since comparative research has shown that the indicators relied upon to assess socio-economic impacts (including indicators used in econometric studies) or even human rights impact assessments may neglect certain dimensions of the lived experience of people in poverty (the so-called 'hidden' dimensions) that can only be highlighted and taken into account by involving people in poverty in decision-making (Bray et al., 2019). Moreover, policies that apply to large sectoral areas or to a broad set of contexts may be insufficiently attentive to certain local conditions. Instead, the inclusion of local stakeholders in the policy's consultation provides specific knowledge of the affected group and local circumstances that might otherwise be overlooked (Robb, 2002).

Participation – when conducted as co-construction rather than mere consultation – may also have an empowering effect: by involving persons experiencing poverty in processes of co-designing solutions that go beyond tokenistic participation, their agency is enhanced. This is why participation of people in poverty should be proactively pursued. As noted by a former Special Rapporteur on extreme poverty and human rights: "When the participation of people living in poverty is not actively sought and facilitated, they are not able to participate in decision-making and their needs and interests are not taken into account when policy is designed and implemented. This exacerbates their exclusion and often perpetuates the privilege of elites who are able to influence policy directly, or of groups such as the middle class who have a considerable voice in the media or other public spaces" (United Nations, 2013). There is now ample research demonstrating that, even in the best-functioning democracies, the wealthiest groups of the population exercise a disproportionate influence in the political system (Gilens, 2012). This phenomenon has become worse with the growth of inequalities over the past forty years: a study covering 136 countries for the period 1981-2011 showed that "as income inequality increases, rich people enjoy greater political power and respect for civil liberties than poor people do" (Cole, 2018). While empowering people in poverty is an end in itself, it also is important to ensure the legitimacy and thus social acceptability of the measures adopted: unless the conditions of effective participation are created, any policies that affect livelihoods or even simply disrupt routines may face resistance.

Participation also allows solutions put forward by people in poverty to be taken into account in the range of policy options, thus leading to a broader panoply of answers to policy questions and helping to escape path dependency and to overcome bureaucratic routines. Participatory approaches indeed benefit from the so-called 'wisdom of crowds', that is the ability of heterogeneous groups – that are often profane in one area – to offer 'better' answers to a given problem than individual experts (Surowiecki, 2005).

In conclusion, participatory policy assessments can lead to policy decisions that are better informed,

that are empowering rather than disempowering, and that are more imaginative, enriching the toolbox of decision-makers (Combat Poverty Service et al. 2023).

For participation to be effective and meaningful however, several conditions must be put in place. The participation of citizens, let alone those experiencing poverty and social exclusion, cannot be improvised. Instead, it must result from well-informed and well-planned organisation, which includes active facilitation, mutual trust between participants and policymakers, sufficient time, and an environment attentive to differentials in power and capacity. Without these prerequisites, involving persons in poverty leads to ineffective participation at best, or instrumentalisation at worst.

Among those who are excluded from today's meaningful political participation, some are looking for alternatives to representative democracy in more authoritarian forms of government. Several recent surveys, such as *Noir Jaune Blues* (Scheuer, 2022), *Bye-bye démocratie* (RTBF, 2022), *De stemming* (De Standaard/VRT, 2023) and the Kantar questionnaire (Knack/Le Vif, 2022) have recently observed rapidly growing support for authoritarianism in Belgium, especially among young people.

However, **large shares of the population express their support to more democratic alternatives, including direct and deliberative forms of democracy**. The problem with much social research about democracy is that it reduces 'democracy' to 'representative democracy', so that surveys often document alarming rates of democratic decline, without specifying the limited definition that was used in the first place. However, a growing body of research has documented high levels of support among low-income and low-education socio-economic groups for alternative forms of democracy. A recent study on deliberative citizens' assemblies in 15 Western European countries, including Belgium, found that "the most supportive are those who are less educated and have a low sense of political competence and an anti-elite sentiment. Thus, support does come from the dissatisfied" (Pilet & Sinardet, 2022).

This is in line with an earlier study that focused on Belgium: "One of the most important findings is that respondents with low levels of education attainment are generally more positive of all types of democracy than those who completed higher education." The reason for this observation must be sought in the overall levels of trust in the classical structures: "Those who trust the current political elites and institutions, are likely to support them, and are likely to have doubts about more participatory alternatives. (whereas) the most disadvantaged social categories tend to desire a change of democratic model, regardless of its form." (Caluwaerts et al. 2017).

In Belgium, the past 20 years have been marked by a remarkably rich period of experimentation with deliberative processes on a variety of political levels and policy topics. Between 2001 and 2018, the country has seen 38 randomly-selected citizens' panels, many of which dealt with just transition-related topics such as mobility, nuclear energy, food security, and genetically modified organisms, (Vrydag et al., 2020). Of these 38 panels, 31 were organised by public authorities, with the federal and the regional as the most important actors. These panels typically bring together between 20 and 100 participants for a number of days or weekends. As their participants are randomly selected to maximally represent societal diversity, they can reach socioeconomic groups far beyond typical participants ('the usual suspects'). Guaranteed representation on the basis of age, gender, language and level of educational attainment are often taken into account during the recruitment. In order to increase the participation of target audiences that are difficult to reach, extra measures are taken such as per diems, childcare facilities, and mobility allowances. However, the legal framework for organising these panels and implementing their outcomes still remains underdeveloped and restrictive, provoking conditions of further disenchantment among already disadvantaged groups (Pilet & Sinardet 2023).

To overcome the obstacles of limited uptake and thus participants' and public frustration, a number of public actors in Belgium have decided to go one step further and institutionalize deliberative citizens' assemblies. This has led to some of the world's earliest forms of permanently established citizens' assemblies, giving Belgium a growing international reputation for being "a pioneer with regard to citizens' panels" (De Standaard, 24 April 2023). On the 25th February 2019, the parliament of the

German-speaking community of Belgium unanimously voted the decree establishing a Permanent Citizens' Dialogue. The model combined a standing Citizens' Council with ongoing agenda-setting power and follow-up mechanisms (consisting of 24 members mandated for 18 months), with a series of more topical Citizens' Assemblies (consisting of 25-50 members for a period of 3-5 months). The members of the Citizens' Council are drafted by lot among the former participants of the Citizens' Assemblies, who in turn are drafted from the overall population of residents, from age 16 onwards (Niessen & Reuchamps 2022). Because of its structural insertion of citizens' input into the policy cycle, the model has been described as 'the gold standard' for institutionalised and inclusive citizen participation (OECD 2021).

Meanwhile, the Brussels regional parliament has set up a number of 'deliberative committees', mixing 45 citizens with 15 politicians, to deal with urban challenges, often including social and ecological topics, such as the panels on biodiversity, 5G, homelessness and acoustic pollution. Considerable care is taken to maximise inclusion, most notably through multilingual communication and a buddy-system that allow participants to bring a trusted person with them.

And in January 2023, the Brussels regional government turned Brussels into the world's first city with a Permanent Citizens' Assembly for the Climate. The model that was designed took direct inspiration from the German-speaking Community of Belgium and was precisely created to tackle social and ecological challenges simultaneously: "If the low-carbon vision for 2050 is to be achieved, we believe it is important that it is shared and supported as widely as possible by the people of Brussels".[53] Not surprisingly, the first topic on the agenda concerned housing, the sector that emits the most greenhouse gases in the Brussels region.

2.3. The Current Policy Frameworks

From the international level to the local level, policy frameworks have been established to tackle the social and ecological challenges. They provide valuable policy objectives and instruments, and yet these frameworks are often insufficient to face the major social and ecological challenges described previously (see Section 2.1). Often, environmental and social policies tend to be developed and implemented in parallel, leaving important gaps in addressing the issues at the intersection between social and ecological problems depicted in the previous section (see Section 2.2). At the European level, an integration of the climate mitigation policy framework and social rights principles has been initiated as part of the European Green Deal with the creation of the 'Social Climate Fund' and the 'Just Transition Mechanisms', but this integration remains imbalanced . A widened conception of what constitutes the just transition policy framework is necessary to address the intertwined problems of social-ecological injustices in a comprehensive way.

53 Assemblée Climat Bruxelles. https://www.assembleeclimat.brussels/

2.3.1. Established Environmental and Social Policy Frameworks

This section explores established environmental and social policy frameworks and their limits. With that aim in mind, we focus more specifically on the climate mitigation policy framework[54] and that of the European Pillar of Social Rights. These two policy frameworks are mobilised as illustrative cases. The section therefore does not provide a comprehensive analysis of current environmental as social policy framework.

Climate Mitigation Policy Framework

To tackle climate change, 195 States committed, through the adoption of the 2015 Paris Agreement, to contain the rise in the average global temperature "well below 2°C compared to pre-industrial levels", while continuing "the action taken to limit the rise in temperature to 1.5°C" (United Nations, 2015a, p. 3). With the Paris Agreement, a quantified limit not to be exceeded in terms of global warming has become for the first time a legal obligation under international law. The establishment of this limit puts a concrete objective to the qualitative objective expressed in the United Nations Framework Convention on Climate Change of 1992, namely "to stabilise (…) the concentrations of greenhouse gases in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system" (UNFCCC, 1992, p. 4). Indeed, climate models, including those presented in the IPCC reports, show that an increase in the average global temperature of more than 1.5°C would generate significant risks for ecosystems and human societies. It is clearly established that "risks and projected adverse impacts and related losses and damages from climate change will escalate with every increment of global warming" and that "they are higher for global warming of 1.5°C than at present, and even higher at 2°C" (IPCC, 2023a, p. 15). Indeed, the more the Earth heats up, the more the climate risks become severe, multiple, and potentially a source of cascading effects, irreversible impacts or feedback loops that can accentuate global warming. The climate modelling exercises highlight notably the pressures on human health, security and economic prosperity associated with an increase in the frequency and intensity of extreme weather events, droughts, floods, heat waves, melting ice caps and glaciers, and loss of biodiversity (IPCC, 2023a).

In order to comply with the Paris Agreement's goals, the European Union is committed to the transition to climate neutrality by 2050. The IPCC has indeed demonstrated that climate neutrality or 'net zero emissions', i.e.: a reduction of CO_2 emissions to a level close to zero combined with an absorption of residual emissions present in the atmosphere, should be achieved by 2050 to limit the rise in global temperature to 1.5°C. Climate neutrality objectives are central to the European Green Deal (COM(2019)640FINAL), a package of policy initiatives with "a holistic and cross-sectoral approach", covering the climate, biodiversity, material use, energy, transport, industry, agriculture and sustainable finance – acknowledging all of which are strongly interlinked.. In terms of climate mitigation, the EU has set itself the objectives of aiming for a 55% reduction in GHG emissions by 2030 compared to 1990 levels and to achieve climate neutrality by 2050. The European Climate Law (EU Regulation 2011/1119) makes these targets legally binding on a collective basis, "taking into account the importance of promoting both fairness and solidarity among Member states and cost-effectiveness in achieving this objective". Because the EU Climate Law is anchored in the environmental chapter of the Treaty (I.e.: the legal basis), the level of ambition which is enshrined in the Regulation must be approached as a minimum harmonization, that can be made more stringent at Member State level (see Art. 193 TFEU).

54 The mitigation of climate change corresponds to a "human intervention to reduce emissions or enhance the sinks of greenhouse gases" (IPCC, 2023c). It is notably based on the improvement of the energy efficiency of goods and services, the deployment of renewable energies, and 'sufficiency', which is defined by the IPCC (2023c) as "a set of measures and daily practices that avoid demand for energy, materials, land, and water while delivering human well-being for all within planetary boundaries". Adaptation to climate change refers to "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities" (ibid). Climate adaptation involves strengthening the adaptive capacity of human and natural systems, increasing their resilience, and reducing their vulnerability to climate risks and protect them from climate damage. Adaptation and mitigation policies can also apply to environmental problems other than climate change.

The Regulation on the Governance of the Energy Union and climate action[55] requires, among others, the Member states to produce integrated National Energy and Climate Plans (NCEP) and to report on the progress they make in implementing those plans. The NCEPs cover a period of 10 years – the first period stretching from 2021 to 2030 (see timeline for NCEPs in Figure 40). These plans must integrate five major dimensions of the EU Energy Union strategy: decarbonisation, energy efficiency, energy security, organisation of the energy market, as well as research, innovation and competitiveness. For each of these dimensions, objectives, policies, measures and projections must be provided.

Figure 40: Timeline for NECPs

Source: Kuvolesi and Oberthur, (2020)

The Governance Regulation also requires member states to prepare and submit to the Commission their long-term strategy with a perspective of at least 30 years (By 1 January 2020, and subsequently by 1 January 2029 and every 10 years thereafter, and update them, where necessary every 5 years). The Member states' and the Union's long-term strategies shall contribute to fulfilling the Union's and the Member states' commitments under the UNFCCC and the Paris Agreement (Article 15 of the Governance Regulation).

Another recent EU legislation imposes binding annual greenhouse gas emission reductions, this time individualised by Member states[56] and for the non-ETS sectors only. By 2030, Belgium is obliged to reduce its greenhouse gas emissions, in 2030, by at least by –47% compared to its greenhouse gas emissions in 2005 levels.

In Belgium, the NECP and the long-term strategies are jointly developed by the federal authorities and the three regions. The Belgian NCEP 2021-2030, which has been submitted in 2019, is currently under review and will have to consider the recent (increased) 2030 GHG reduction objective. The Belgian long-term strategy submitted in 2019 does not include any national GHG emissions reduction targets for 2050. Instead, as part of their own contribution to the strategy, each region has adopted specific global 2050 GHG emission objectives: "The Walloon long-term strategy aims to achieve carbon neutrality by 2050 by reducing greenhouse gas emissions by 95% compared to 1990, supplemented by measures relating to carbon capture and use and negative emissions; The Flemish long-term strategy aims to reduce greenhouse gas emissions from sectors not covered by the ETS (the so-called non-ETS sectors) by 85% by 2050 compared to 2005, with ambition to move towards total climate neutrality. Regarding the sectors covered by the ETS, the Flemish Region fits into the context defined by the EU for these sectors with a decreasing emission quota; The long-term strategy of Brussels-Capital sets the objective of getting closer to the European objective of carbon neutrality by 2050, in the urbanised context of Brussels. The federal level does not have its own reduction objective" (Belgian long-term strategy, p. 3).

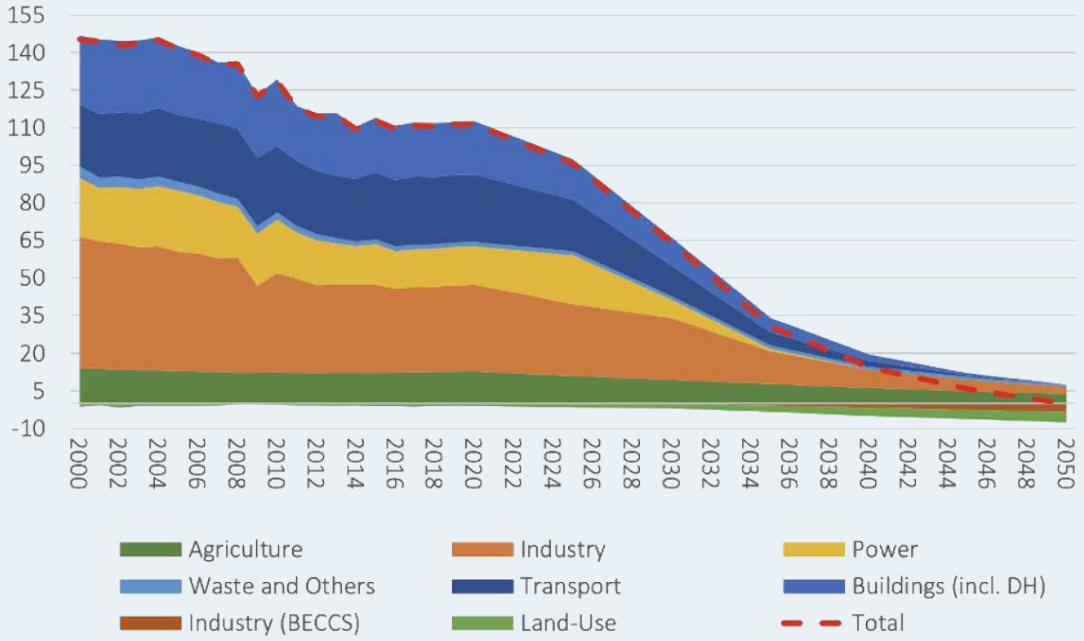
The Belgian federal government has pledged in its coalition agreement to reduce greenhouse gas emissions by 55% by 2030 and to move towards a climate-neutral Belgium by 2050. The study referred to in the box below (Box 15), shows that the transition towards climate-neutrality in Belgium by 2050 is technically feasible, but that it requires profound and rapid changes in all sectors of the economy, both on demand side (behaviour changes, consumption patterns) and on the supply side (changes in modes of production) (FPS Health - DG Environment - Climate Change Service et al., 2021).

55 The EU Governance Regulation 2018/1999
56 Effort-sharing Regulation, as amended in 2023, by Regulation 2023/857

Box 15. The Transition Towards a Climate-Neutral Belgium by 2050

A scenario analysis carried out by the Climate Change Service of the Federal Public Service (FPS) Health, Food Chain Safety and Environment shows that "achieving climate neutrality in Belgium by 2050 is technically feasible, although it represents a major challenge and requires systemic changes" (FPS Public Health - DG Environment - Climate Change Section, 2021, p.3). As the following figure illustrates, the transition to climate neutrality by 2050 requires profound and rapid changes in all sectors of the Belgian economy.

Figure 41: Belgian GHG emissions per sector in 'CORE 95', a scenario leading to a climate neutral Belgium by 2050 based on a balanced approach between technological and behavioural levers



Source: FPS Health - DG Environment - Climate Change Service et al. (2021) p. 12

Looking at the coloured zones in the graph above from top to bottom, the top blue zone marks the trajectory for the buildings sector. By accelerating renovation, electrification and fuel efficiency, emissions for buildings (including District Heating) should lead to near-zero emissions in 2050. For the transport sector (dark blue zone underneath), the trajectory implies a demand shift to public transport, cycling and walking (passengers) and to rail and inland waterways (freight) as well as a reduction of demand (km/capita). In addition, the electrification of passenger transport plays an important role, and the use of hydrogen, synthetic fuels and possibly biofuels for freight transport. The necessary changes in the power system (yellow) involve (a) a significant reduction in energy demand and (b) the phasing out of fossil fuels through electrification and carbon-free energy. On the energy production side, electrification also means further development of renewable energy sources, including solar panels and wind power, as well as strengthening storage capacity. The industry sector (orange) is one of the most difficult to decarbonise, due to a more limited potential for electrification. Decarbonising this sector also requires the use of hydrogen, synthetic fuels and biomass, as well as carbon capture, utilisation and storage (CCUS) and bioenergy with CCS (& BECCS). The circular economy has strong potential to reduce emissions indirectly. The agricultural sector (dark green) is also particularly difficult to decarbonise. Its decarbonisation requires changes especially on the demand side. Priorities include combating food surpluses and reducing meat consumption. Synthetic fertilisers and chemical pesticides need to be phased out, while methods for more climate-friendly livestock and land management need to be further developed. In terms of land use (lighter green), more natural pastures, forests or non-food crops are needed to promote the natural uptake of CO2.

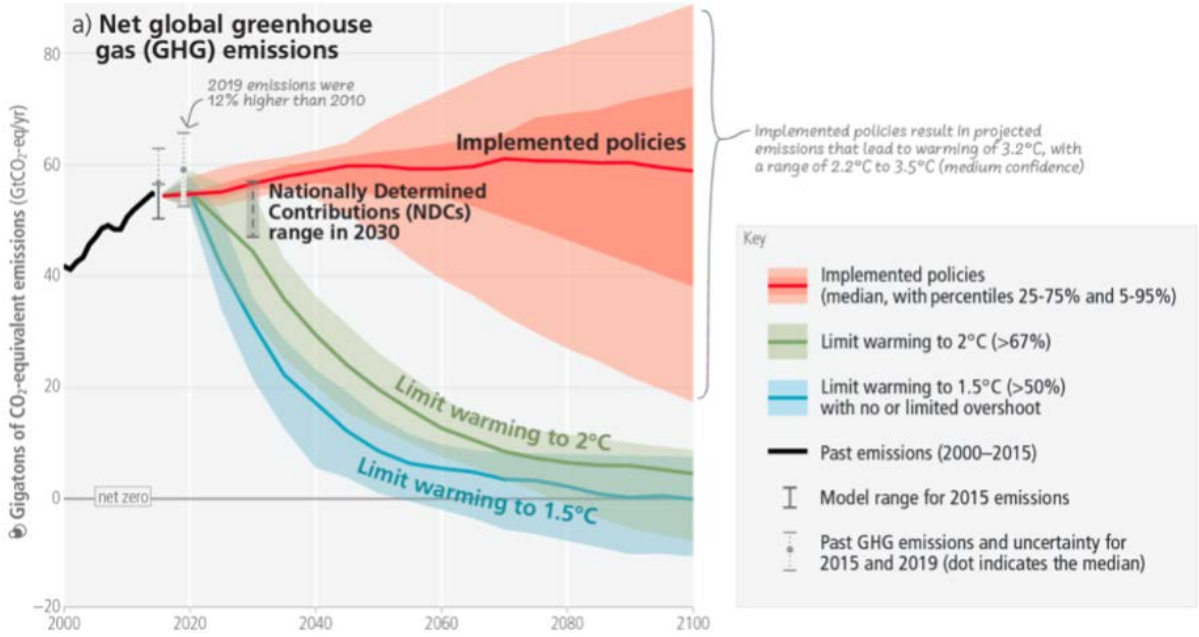
Across all sectors, demand for materials and raw materials also decrease, through higher material efficiency, functional sharing economy and behavioural changes in areas such as mobility, buildings, food and waste management. These transformations require additional investments in climate-friendly infrastructure in all sectors, for which, however, the estimated amounts depend heavily on the extent to which behavioural changes and circular economy can reduce demand for energy, materials and raw materials.

These transformation processes bring significant social, economic, and infrastructural changes, impacting businesses, households and the social state.

The climate mitigation policies currently adopted are not sufficiently ambitious to meet the climate policy objectives outlined hereunder.

The UNEP 'Emissions Gap Report' found that "the world is still falling short of the Paris climate goals, with no credible pathway to 1,5°C in place" (UNEP 2022). In its 2023 synthesis report, the IPCC indeed states that "in the near term, global warming is more likely than not to reach 1.5°C even under the very low GHG emission scenario" (IPCC, 2023a, p. 12) and that "without a strengthening of policies, global warming of 3.2 [2.2–3.5]°C is projected by 2100" (p. 11) (see Figure 42). This implementation gap exposes current and future generations to unprecedented climate risks.

Figure 42: Scenarios for the evolution of global greenhouse gas emissions

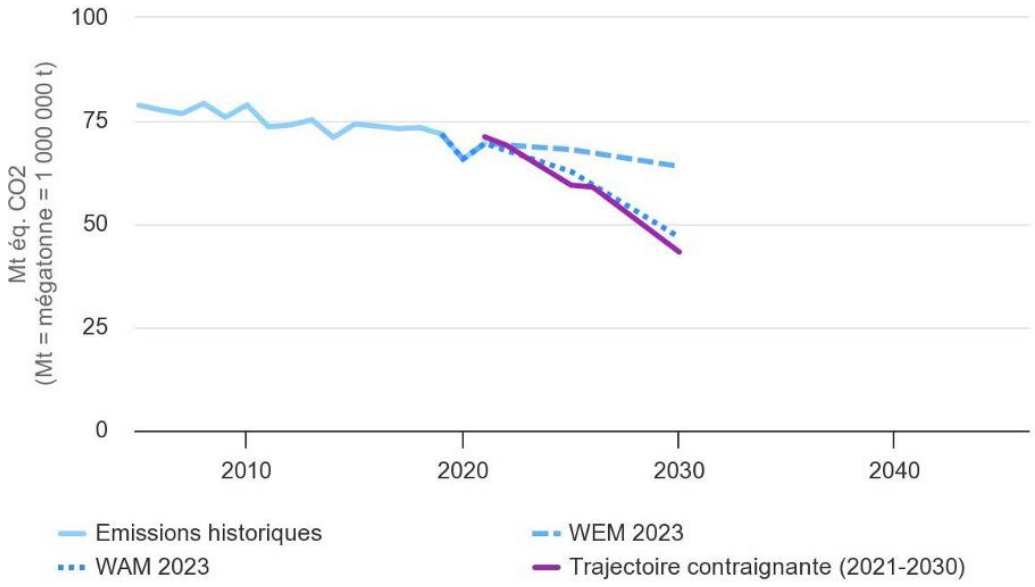


Source: IPCC (2023a), p. 22

Through insufficient climate policy action, Belgium is one of those countries that contributes to the current failure to achieve the Paris Agreement's objectives and the binding targets under EU law. As the figure below (Figure 43) shows, the 2030 GHG emissions reduction target of 47% for non-ETS sectors cannot be achieved neither in the scenario considering the measures already adopted and implemented (With Existing Measures or WEM) nor in the scenario considering additional measures (With Additional Measures or WAM) (compare the purple and blue dotted lines). As a result, without the adoption of new measures or the strengthening of existing ones, Belgium will not achieve the 2030 binding climate objective assigned by the EU and will have to resort to potentially costly flexibility mechanisms[57]. More fundamentally, the failure of Belgium to meet its climate target(s) would prevent us to grasp the important co-benefits of the transition to climate neutrality, such as the improvements in health and well-being brought about by the reduction in air pollution associated with the phase out of fossil fuels and the enhanced energy security linked to the deployment of renewable energies.

57 Climat.be. Politiques et mesures et projections. https://climat.be/politique-climatique/belge/monitoring-et-communication-d-information/politiques-et-mesures-et-projections

Figure 43: Evolution and projection of Belgium's non-ETS GHG emissions according to a scenario with existing policies (WEM) and a scenario with additional policies (WAM) with regard to the 2030 biding objectives assigned by the EU (2023 Declaration)



Source: Climat.be, 2023

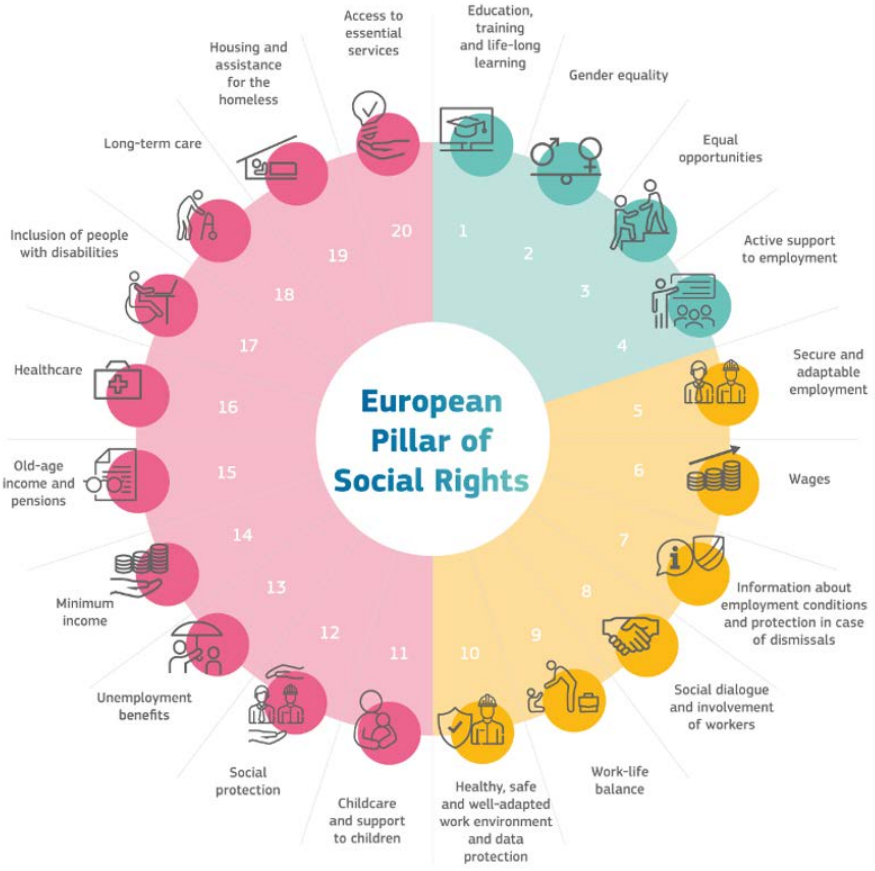
The non-achievement of the climate objectives of the Paris Agreement would have considerable socio-economic impacts on Belgium. The climate projections for Belgium carried out by the IRM based on the global GHG emissions scenarios of the IPCC, show that the most pessimistic scenario (RCP 8.5), which is the one that we come closest to, should lead to a rise in temperature of +5° by 2100. This would engender much wetter winters, an increase in the number of heat waves which would reach at least one heat wave per summer from 2050, more extreme precipitation, a rise in the number of droughts and more particularly exceptional droughts which could become five times more frequent than in the last century. The heat waves would be particularly important in urban areas, and notably in the centre of Brussels where the number of heat waves could triple, their intensity double and their duration increase by 50% (IRM, 2020). Such a change in climatic conditions would have significant impacts on people and economic sectors, and especially on the most vulnerable ones (see Sections 2.2.2 and 2.2.5).

Besides not living up to the internationally agreed objective of staying below 1.5°C of global average temperature increase, climate mitigation policies have traditionally hardly considered social concerns in their design (Fransolet, 2019a), leading to conflicts between environmental and social policy objectives as well as resistance against them. Climate mitigation policies can generate distributive effects via diverse channels - not all of them are empirically equally well-documented. Overviews of the direct impacts on household income of existing (and especially price-based) climate mitigation policies conclude that these tend to be regressive, either burdening low-income groups more, or benefiting higher income groups more (see Section 2.2.4). Differential vulnerabilities the labour market (see Section 2.2.3) and differential capacity to invest (see Section 2.2.4 and 2.2.5) add different layers of vulnerability and inequality. At the same time, the perceived fairness of a policy measure is found to be a major determinant of its social acceptability (see Section 2.2.4). While examples show that it is possible to reconcile social and environmental objectives in household-geared environmental and climate policies (see Section 3.1), this requires specific attention in their design, and these policies still represent exceptions rather than the rule.

The European Pillar of Social Rights

To address social problems, the European Union has adopted the European Pillar of Social Rights (EPSR). This framework sets out twenty fundamental principles in three areas (see Figure 44). It is in line with the United Nations' global objectives for sustainable development, the European Union's Charter of Fundamental Rights and the International Labour Organisation (ILO) conventions on decent work, social protection floors and social dialogue. The European Pillar of Social Rights (EPSR) was set out in 2017 by the EU to act as a compass for a strong social Europe. The EPSR sets out 20 principles in three main areas: (1) equal opportunities and access to the labour market (general education, professional training and lifelong learning, gender equality, equal opportunities, active support for employment) (2) fair working conditions (secure and adaptable employment, wages, information about employment conditions and protection in the event of dismissals, social dialogue and involvement of workers, work-life balance, healthy, safe and well-adapted working environments and data protection) and (3) social protection and inclusion (childcare and support for children, social protection, unemployment benefits, minimum income, old age income and pensions, healthcare, inclusion of people with disabilities, long-term care, housing and assistance for the homeless, access to essential services).

Figure 44: European Pillar of Social Rights



Source: European Commission (2021b)

The point and purpose of the Pillar and its 20 principles is "to serve as a guide towards efficient employment and social outcomes when responding to current and future challenges, which are directly aimed at fulfilling people's essential needs and ensuring better enactment and implementation of social rights" (Commission (2017) 2600 final, on the European Pillar of Social Rights, recital 12). The recommendation on the pillar states that economic and social progress are 'intertwined' and combines an emphasis on social investment with that on robust safety nets: "Modern social policy should rely on investment in human capital based on equal opportunities, the

prevention of and protection against social risks, the existence of effective safety nets and incentives to access the labour market, so as to enable people to live a decent life, change personal and professional statuses over the lifetime and make the most of their talent." (Commission COM(2016) 127 final, para 2.2).

The EPSR sets measurable targets for employment, training and social inclusion. By 2030, at least 78% of the European workforce should be employed, at least 60% of the workforce should participate in lifelong learning and the number of people experiencing poverty should be reduced by 15 million.

In its Action Plan, the Commission proposes the timeline (2021-2025), which is filled with wide-ranging initiatives that target virtually all principles of the EPSR. These are presented under five thematic areas: More and better jobs, skills and equality, social protection and inclusion, civil society involvement and the New Social Scoreboard. The first three are distinctively linked to the three headline targets whereas the latter two signify overarching initiatives necessary for ensuring a democratic change and a proper evaluation of the implementation of the EPSR. In the first and second thematic teams, we find wide-ranging actions such as recommendations, several legislative proposals, evaluations reviews and strategies. In the third strand regarding social inclusion and protection initiatives refer to a Recommendation on adequate minimum income schemes, the EU strategy on the rights of the Child, a Council Recommendation establishing the European Child Guarantee, a European Platform on Combating Homelessness and an affordable housing initiative (European Commission, 2021b).

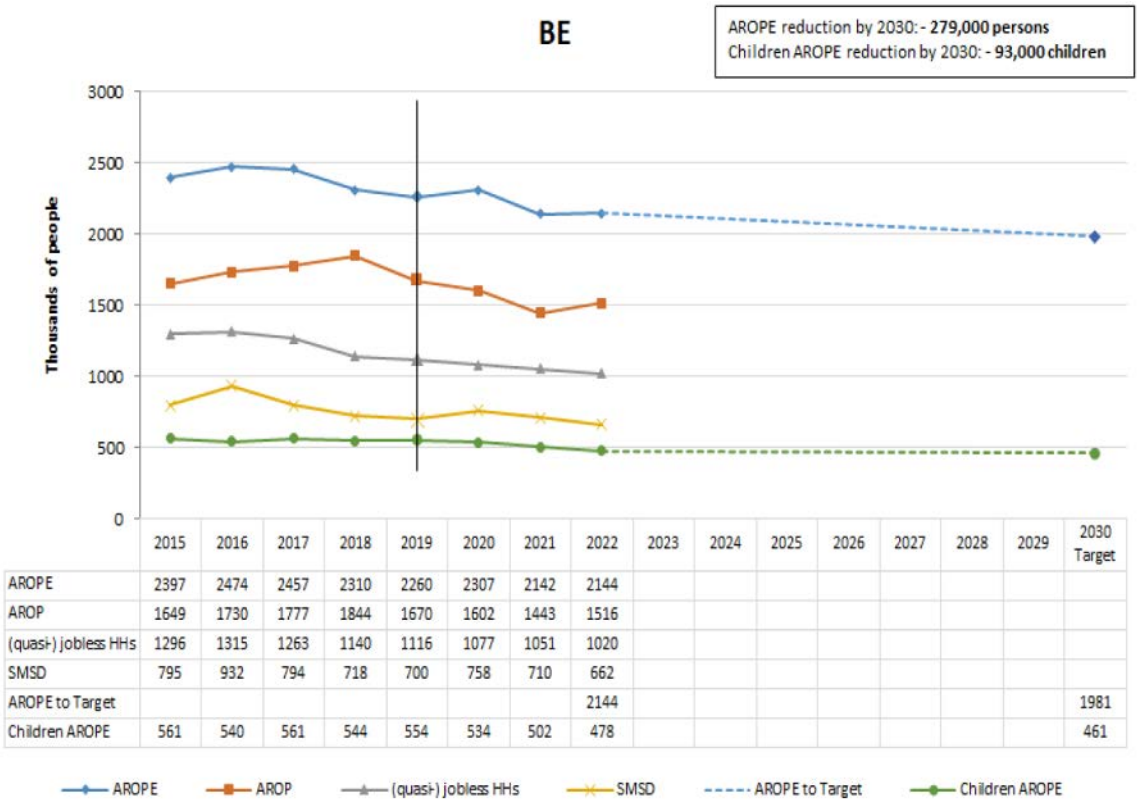
Within this framework, Belgium has set the following objectives: achieving a minimum employment rate of 80% by 2030, ensuring that at least 60.9% of adults engage in lifelong learning, and reducing the number of people in poverty or social exclusion by 279,000, including 93,000 children (see Table 4). The figure below illustrates that Belgium has made progress in terms of poverty and social exclusion, partly due to policy measures to protect families during the pandemic and the inflation crisis,. The figure below shows that the AROPE indicator (comprising the share of households with an income lower than 60% of the equivalent median income, the share of working-poor households, and the share of materially deprived households) has been on a declining trend since 2017. To achieve the European social objectives for 2030, efforts must continue. According to the latest report from the Federal Public Service for Social Security, the risk of poverty has decreased among the working population but has increased among groups traditionally at high risk of poverty, including working poor households, single-parent families, low-skilled individuals, and people with a migration background (see Figure 46).

Table 4: Belgian targets for reducing poverty and social exclusion

	Base value and year	Value or change set for 2030
Employment rate	70.5% (2019)	>80.0%
Adult participation in learning in the past 12 months	45.2% (2016)	>60.9%
People at risk of poverty or social exclusion	2,261,000 (2019)	-279,000 (among which 93,000 children)

Source: Eurostat

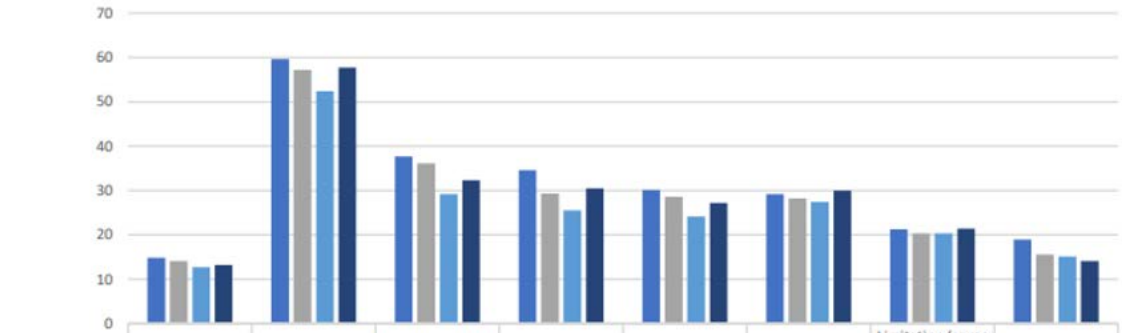
Figure 45: Progress towards the 2030 Belgian national targets for the reduction of poverty and social exclusion (AROPE) and the at risk of poverty (AROP) rates, very low work intensity / quasi jobless households (VLWI/QJH) and severe material or social deprivation (SMSD), Belgium, EU-SILC 2005-2022 (%)



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030 Target
AROPE	2397	2474	2457	2310	2260	2307	2142	2144								
AROP	1649	1730	1777	1844	1670	1602	1443	1516								
(quasi-) jobless HHs	1296	1315	1263	1140	1116	1077	1051	1020								
SMSD	795	932	794	718	700	758	710	662								
AROPE to Target								2144								1981
Children AROPE	561	540	561	544	554	534	502	478								461

Source: EU-SILC, Eurostat, Social Protection Committee (2023)

Figure 46: AROP by high-risk groups, Belgium, EU-SILC 2019-2022 (%)



	TOTAL	QJH	Country of birth non EU27	Single parent	Tenant	Low education	Limitation (some or severe) in activities	Children (-18)
EU-SILC 2019	14,8	59,6	37,7	34,6	30,1	29,2	21,3	18,9
EU-SILC 2020*	14,1	57,2	36,1	29,3	28,6	28,2	20,3	15,6
EU-SILC 2021	12,7	52,4	29,2	25,5	24,1	27,4	20,3	15,1
EU-SILC 2022	13,2	57,7	32,3	30,5	27,2	30	21,4	14,1

Source: Federal Public Service Social Affairs (2023), based on EU-SILC, Eurostat & Statbel. Population aged 18-64 for QJH, country of birth, tenure status and level education. Population aged 16-64 for limitation in activities.

If we widen the time frame and examine poverty trends during the period before the health crisis and the inflation crisis, overall poverty trends are more disappointing. Social indicators suggest that in the decade between the financial crisis (2008) and the health crisis (2020), among the working-age population, the share of people in relative and persistent income poverty has increased, especially among the less educated and jobless households, while income deficits have not declined, even when using a fixed poverty line that does not consider increases in purchasing power and living standards

(Cantillon and Vandenbroucke, 2014 ; Cantillon, Goedemé & Hills, 2017). The literature distinguishes between various factors driving these trends. The first factor relates to the unequal distribution of jobs among individuals in a dual labour market in which full employment among the higher-skilled men and women co-exists with the structural underemployment of the low-skilled. Against the background of individualization and increasing dual earnership, for reasons of social homogamy , this evolution was, secondly, reinforced at the household level. As a consequence, in many countries including Belgium the unequal distribution of employment growth has disproportionately benefited work-rich households, leaving jobless households structurally behind. A third reason is the decreasing impact of social protection and the resulting increase of relative income poverty among households with a low work intensity.

Continuing the favourable trends observed during the recent COVID-19 and the cost-of-living crisis is essential to meet the 2030 social objectives but that will require significant efforts. Higher employment rates, reducing the share of jobless households, and strengthening social protection are necessary for this purpose. Simply increasing the employment rate is insufficient; the growth in employment needs to be focused on those with lower levels of education, jobless households, and individuals with a migration background. This means that social investments need to be targeted towards these groups. Furthermore, an enhancement of social protection is required for those who remain dependent on social protection. In other words, this calls for reinforcing social security and social investments including education, life-long learning and child care. Significant improvements are needed in the 'social fabric' of welfare states: employment, fair working conditions and social protection are key while the role of the third sector, social services and active labour market policies in enhancing people's opportunities are equally important.

This poses a challenging task against the backdrop of, on one hand, the already high level of social protection expenditures (which accounted for over 30% of GDP in 2020), the increasing pension burden due to ageing, the growing healthcare expenditures resulting from technological advancements, and the rising expenses associated with the ecological transition. Therefore, it will be necessary to allocate social expenditures more effectively. As a general trend in the past decades we observed a rather generally reduced effectiveness of social security in combating income poverty among the working-age population. This trend is at least partly endogenous. On the one hand, a growing share of expenditure on new social risks accrued to work-rich families. On the other hand, benefits for working-poor households were under pressure from the slow growth of low wages and structural unemployment among the low-skilled. The related problem of unemployment traps was tackled with more conditions, more targeting and lower benefits. This refers to what soma have coined as a 'dual transformation' which retrenched social protection for so-called 'old' social risks (unemployment and ill-health) and expanded social policy to 'new social risks' (typically the reconciliation of work and family life, see Cantillon, 2022 and Bleses & Seeleib-Kaiser, 2004).

2.3.2. The Emerging Just Transition Policy Framework

As illustrated in the previous section (Section 2.3.1), the accelerating ecological degradations and the persisting poverty and social inequalities have until now been dominantly dealt with as separate problems, discussed in distinct fora, and placed under the responsibility of different actors. This policy fragmentation has made the systematic consideration of the interactions between ecological and social problems in the policy-making processes difficult. As a result, synergetic potential remains unrealised, and conflicts and trade-offs often remain unresolved or are even created (see Sections 2.2.3, 2.2.4 and 2.2.5).

The concept of just transition provides a promising emerging policy framework to further address the interdependence and integration of social and environmental policy. The notion of just transition finds its roots in the trade union movement since the 1970s, particularly in the United States. During phases of atomic dismantlement and later, the closure of environmentally toxic plants, it turned the 'jobs vs. environment' tension into an agenda to protect both workers and the natural environment,

reconciling financial support and decent jobs for affected workers with policies to protect health and the environment (Eisenberg 2019; Cahill & Allen 2020; Bauler et al., 2021). In the area of climate change mitigation, this vision was further developed and elaborated in the "Guidelines for a just transition towards environmentally sustainable economies and societies for all" presented by the International Labor Organization (ILO) in 2015. The notion of just transition has percolated from the trade union world to the political sphere, taking more and more place in the discourses and documents of climate mitigation policy (Ciplet, 2022 ; Abram et al., 2022 ; Stevis and Felli, 2020).

At the international levels, the imperatives of a just transition are reflected into core United Nations treaties and implemented via the 'Just Energy Transition Partnerships'. Within the United Nations, the 2015 Paris Agreement for the first time underlines the need of "[t]aking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs" (United Nations 2015). These imperatives were reaffirmed, deepened and widened first at the 2018 UN Climate Change Conference in Katowice (COP 24) with the adoption of the 'Solidarity and Just Transition Silesia Declaration', and then in 2021 in the Glasgow climate conference (COP 26) with the ratification of the 'Just Transition Declaration'.[58] This declaration, which aims at developing the enabling conditions for a global just transition, includes six principles (presented in Box 16). The COP 26 in Glasgow also saw the announcement of the first 'Just Energy Transition Partnerships' (JETP). They correspond to innovative financing cooperation mechanisms aimed at supporting emerging economies heavily dependent on coal to ensure a just energy transition. More specifically, the objective of JETP is to help "these countries' self-defined pathways as they move away from coal production and consumption while doing so in a way that addresses the social consequences involved, such as by ensuring training and alternative job creation for affected workers and new economic opportunities for affected communities" (Kramer, 2022). Such partnerships have already been concluded with South Africa, Indonesia, Vietnam and Senegal (Laurent, 2023c)

Box 16. The Six Principles of the "Just Transition Declaration" Adopted at COP26

"**1. Support for workers in the transition to new jobs**: We intend to support communities and regions that are particularly vulnerable to the economic, employment and social effects of a global transition away from carbon-intensive activity, and will take account of the impacts on, and benefits for all affected by this global transition away from a carbon-intensive economy in developing and emerging economies. We intend for our support to take into account the ILO Guidelines for a Just Transition. We envisage making efforts so that financial flows align with the Paris Agreement temperature goal, by promoting pathways consistent with net zero emissions by 2050 and keeping a 1.5°C temperature limit within reach, while also supporting social aspects of the United Nations 2030 Agenda for Sustainable Development, including the Sustainable Development Goals.

2. Support and promote social dialogue and stakeholder engagement: We recognise that the development of effective, nationally coherent, locally driven and delivered just transition plans within countries are dependent on effective and inclusive social dialogue. We intend to support and promote social dialogue between governments and the representative organisations of workers and employers, including those in secondary industries that are dependent on carbon-intensive industries as well as other stakeholders, in accordance with inter alia the relevant fundamental rights at work. We also recognise that other key stakeholders need to be engaged to ensure no one is left behind. This support may include strengthening social dialogue through capacity building of the participants.

3. Economic Strategies: We recognise that supporting a just transition from a carbon intensive economy to a net zero future not only involves support for clean energy to strengthen the ecological foundations of the economy, but also requires enabling frameworks and wider economic and industrial support for workers, enterprises, communities and countries to create sustainable, competitive economies that foster resource-efficient economic growth, create income and decent jobs, and reduce poverty and inequality. It also requires a sound framework to deal with local ecological impacts of the transition (e.g. contaminated sites). We intend to provide support to developing countries and emerging economies to support them in creating those long-term strategies, ensuring sustainable and inclusive economic recovery and growth, and embedding the creation of decent work and economic diversification.

58 Preamble, Paris Agreement, U.N. Doc. FCCC/CP/2015/10/Add, 1; Ministerial Declaration "Solidarity and Just Transition Silesia Declaration", 24th Conference of the Parties (COP24) to the United Nations Framework Convention on Climate Change (UNFCCC), on 3 Dec. 2018 in Katowice, Poland.

4. **Local, inclusive, and decent work**: We will aim that new jobs, and transitioning jobs, support the creation of decent, formalised, and sustainable work for people in their local areas, which is coupled with effective support for reskilling and training, as well as adequate, inclusive, and sustainable social protection for those in need. This includes the targeting of disadvantaged groups in the local labour market and community, such as those living in poverty, marginalised groups, women, and workers in the informal economy to achieve a transition to formality. In terms of low carbon investment, we intend to provide for the inclusion of measures that promote and advance the realisation of decent work for all. This includes occupational health and safety in accordance with the ILO Declaration on Social Justice for a Fair Globalization of 2008, and assisting the realisation in practice of the principles concerning the fundamental rights as reflected in the ILO Declaration on Fundamental Principles and Rights at Work and its Follow-up of 1998. We will work to support skills development and labour policies that support the transition to decent jobs in other sectors and support economic diversification into clean sectors in carbon-dependent regions, while empowering marginalised groups to participate equitably in the transition.

5. **Supply chains**: We recognise that transitions also impact businesses in supply chains and the health, environmental and broader social and economic interests of those economically reliant on those supply chains. We aim to focus on ensuring that existing supply chains, and the new and emerging supply chains required for the clean transition, create decent work for all, including for the most marginalised, and create equitable employment across borders. We intend to advance respect for human rights consistent with the United Nations Universal Declaration of Human Rights, and intend to respect relevant fundamental rights, including on the prohibition of slavery, child labour and forced labour. We urge businesses to ensure their supply chains are free of human rights abuses, including through carrying out corporate due diligence in line with the OECD Guidelines for Multinational Enterprises, the UN Guiding Principles on Business and Human Rights and the ILO's Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy. We also intend to consider the wider environmental, health, social and employment impacts of the operation of global supply chains, including the importance of building climate resilience into supply chains across all industries.

6. **Paris Agreement reporting and Just Transition**: We intend to include information on Just Transition efforts, where relevant, in our national Biennial Transparency Reports in the context of reporting on our policies and measures to achieve our Nationally Determined Contributions."[59]

Considering the EU level, the just transition imperatives are embedded within the European Green Deal (Commission 2019) and Operationalised through the 'Social Climate Fund' and the 'Just Transition Mechanism'. These compensatory schemes aim at ensuring a transition to a climate neutral society that "leaves no one behind". The Social Climate Fund constitutes a funding mechanism directed towards member states' measures and investments needed to support households, micro-enterprises, and transports' users that are vulnerable and particularly affected by reinforced climate policies (i.e.: the ETS extension to the sectors of buildings and road transportation, also called ETS 2). The European Just Transition Mechanism is a financing instrument to address the socio-economic inequalities associated with the transition of the most carbon-reliant regions and carbon-intensive economic sectors and enterprises in the European Union (Commission 2020). The boxes below provide more detail on the Social Climate fund as well as on the Justbox Transition Mechanism and its main implications for Belgium (Boxes 17 and 18). These programmes also make reference to the European Pillar of Social Rights. Given the central place of adequate minimum wages, fair working conditions, adequate social protection and adequate minimum incomes, the EPSR ties closely to both European and Belgian just transition policy strategies.

59 UN Climate Change Conference UK 2021. Supporting the conditions for a just transition internationally. https://webarchive.nationalarchives.gov.uk/ukgwa/20230313132211/https://ukcop26.org/supporting-the-conditions-for-a-just-transition-internationally/

Box 17. The European Social Climate Fund

The European Social Climate Fund (SCF) was part of the 'Fit for 55' legislative package put forward by the European Commission in 2021[60], as a concrete policy strategy to achieve the European Green Deal objectives. It accompanies the extension of the EU's Emission Trading System to include the buildings and road transport sectors, which can be expected to increase fossil fuel prices for residential energy use and transport. Providing financial support to member states for the measures specifically targeting vulnerable groups, it allocates a dedicated share of the revenues from the auctioning of emission allowances under the new ETS-2 system to address socially undesirable effects of climate measures on vulnerable households, micro-enterprises, and transport users (either through temporary income support (compensation) or social investments).

For this purpose, it allocates up to 65 billion from auctioned emission allowances in ETS-2 over the period 2026-2032 and 5 billion euros from ETS-1 to member states to finance the measures and investments included in their National Social Climate Plans.[61] Member states prepare these by specifying which measures will be implemented and which targets will be pursued. The Regulation further specifies that member states should finance 25% of their social climate plans with their own budgets, bringing the total budget for these social climate measures to an estimated 87 billion euros over the period 2026-2032 (2,2 billion euros for Belgium).

The social climate fund outlines two main routes to be used to decrease vulnerability of identified target groups: (i) funding long-lasting structural investments to increase energy efficiency of buildings, for the decarbonisation of heating and cooling buildings, and for improving access to zero and low-emission mobility and transport; and (ii) to finance direct income support for vulnerable households and transport users, in order to buffer for the impact of higher prices. Both aspects are emphasised to be necessary for a just transition: "Direct income support should be understood to be a temporary measure accompanying the decarbonisation of the housing and transport sectors. It would not be permanent as it does not address the root causes of energy poverty and transport poverty. (…) The Plans should therefore include direct income support provided that they also contain measures or investments with lasting impacts targeted at the vulnerable households and vulnerable transport users who receive direct income support." (Regulation (EU) 2023/955). For this reason, the share of measures providing temporary direct income support is also limited to 37,5 % of the estimated total costs of the National Social Climate Plan.

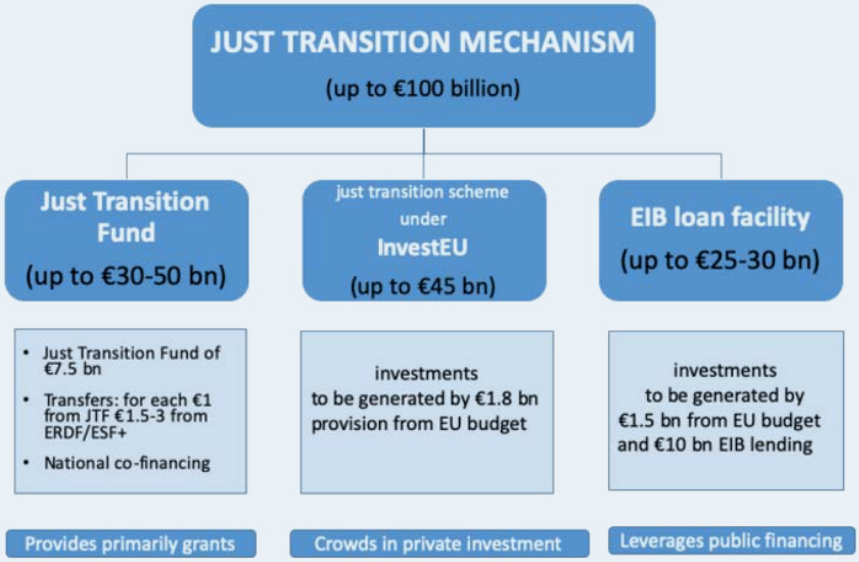
60 COM(2021)550 final, 14.07.2021. The SCF was recently established in amended form in Regulation 2023/955 of the European Parliament and of the Council (10.05.2023).

61 For Belgium, this cap corresponds to a maximum of 1.75 billion euros over the period 2026-2032.

Box 18. The European Just Transition Mechanism and What it Means for Belgium

In 2020, the European Commission launched the European Just Transition Mechanism (JTM). The mechanism is included within the European Green Deal's sustainable investment plan and is governed under the EU Cohesion Policy framework (i.e., the EU regional policy aimed at "strengthening of [the Union's] economic, social and territorial cohesion" and at "reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions".)[62]

Figure 48: Just Transition Mechanism



Source: European Commission, (2020).

The JTM is structured in three pillars: (i) the Just Transition Fund (JTF) which provides grants through the EU budget; (ii) the Just Transition Scheme which supports private investments through the InvestEU Programme and the European Investment Bank, and (iii) a public sector loan facility that leverages public financing with co-financing from the Member states. The Mechanism is embedded within the multi-level governance of traditional European Structural and Investment (ESI) funds, based on shared-management and coordination between different levels of government at subnational, national, and EU level.

To access JTM funding, Member states must prepare a Territorial Just Transition Plan (TJTP) that must be approved by the Commission.[63] The plan must target "one or more affected territories" within small regions for specific diagnoses or parts of those regions.[64] The territories to be targeted in the plans are those "most negatively affected, based on the economic and social impacts resulting from the transition, in particular with regard to the expected adaptation of workers or job losses in fossil fuel production and use and the transformation needs of the production processes of industrial facilities with the highest greenhouse gas intensity".[65] The TJTP must illustrate *inter alia*: the transition process at national level, the reasons for selecting specific territories, an assessment of the transition challenges and governance mechanisms (i.e. partnership agreement).[66] Following the Commission's approval of the plan, Member states must identify the eligible territories in dialogue with the Commission and in line with their national energy and climate plans required under the Energy and Climate Governance Regulation.[67] Once approved, the plans are adopted by the Commission and included in the regional development programmes ("cohesion policy programmes") that receive funding from the JTF.

In December 2022, the Commission approved the Belgian Territorial Just Transition Plan (TJTP) and the Partnership Agreement with Belgium. Based on the Belgian TJTP, 182.6 million euros from the JTF were allocated to support projects in specific territories in the Walloon region: Tournai, Mons and Charleroi. These territories were selected through dialogue between the Commission and local

62 Art. 174 TFEU.
63 Art. 11(1) JTF Regulation.
64 Ibid.
65 Ibid.
66 Art. 11 2 (f) and Art. 11(2)(a) to (e) JTF Regulation
67 COM (2020)21 final cited *supra*, p. 20. See Regulation 2018/1999 on the Governance of the Energy Union and Climate Action O.J. 2018, L 328/1.

partners during the negotiation of the Partnership Agreement. [68]

For the three territories, the Belgian TJTP covers three axes:

- Energy Axis aimed at the implementation of a decentralised green energy production system (hydrogen, biomethane) and recovery from local renewable resources;
- Industrial Axes aimed at decarbonising the industrial sector and helping SMEs to make their productive investments as part of support for local industries;
- Socio-Economic Axis aimed at developing ecosystems oriented towards new professions, in collabouration with universities, colleges and research centres, training actors and businesses.

The Belgian TJTP also addresses synergies and complementarities with support provided under the other pillars of the mechanism for a just transition, the InvestEU scheme and the Public Sector Loan Facility for Just Transition.

Although the adoption of the 'Social Climate Fund' and the 'Just Transition Mechanism' represents major breakthrough, it does not yet reach the full integration of social and environmental objectives. While both instruments make a major difference in terms of the expected social impacts of the Green Deal both for carbon-intensive regions and for households disproportionately affected by the introduction of ETS2, they still operate as add-ons to the Green Deal strategy, taking a corrective stance towards anticipated socially adverse effects. This is still a difference from an integrative approach where strategic policies could be designed to mutually support each other and actively enhance both social and ecological objectives (McCauley and Pettigrew 2022). While the multiple links between the Green Deal and the European Pillar of Social Rights are acknowledged, the social considerations remain non-binding. This is exemplified by the 2022 Council Recommendation on ensuring a fair transition towards climate neutrality. In this document, a genuinely integrative stance is taken: besides acknowledging unequal impacts and the need to "leave no one behind", it also emphasises the necessity of improving policies in a thorough and interconnected manner and ensuring the consistency of spending efforts at both Union and national levels. It encourages Member states to develop and implement comprehensive and consistent policy packages that address employment and social aspects, promoting a fair transition across various policy areas, such as climate, energy, and the environment, through a well-coordinated cross-sectoral approach. It highlights how these packages should incorporate measures to ensure: i) active support for high-quality employment; ii) inclusive education, training, and lifelong learning, along with equal opportunities; iii) equitable tax-benefit systems and social protection, including policies for social inclusion; and iv) access to affordable essential services and housing (Council of the European Union, 2022). While this recommendation is highly innovative and carries significant political weight, it is not legally binding. Akgüç et al. (2022) point out the risk that the emerging imbalance between EU green transition policies, increasingly adopted through legislation, and non-binding social initiatives (such as the 2022 Council Recommendation) may hinder the achievement of a just, ecological transition.

The current conception of just transition promoted by the EU thereby still neglects several of the dimensions of the just transition presented previously (see Section 1.2). First, it focuses on climate policies and pays less attention to the other Earth system boundaries, while other environmental policies within the scope of the Green Deal (such as circular economy, waste management, biodiversity and pollution) also raise major justice issues (see Section 2.2). Second, the objective of just transition promoted by the EU is limited to correcting the socio-economic impacts of climate mitigation policies. It does not include the fulfilment of social and environmental rights for all within safe Earth system boundaries, nor the resilience to natural risks for all. Yet, as previously discussed, these dimensions of just transition are equally important (see Sections 1.2.1 and 1.2.3). Those two limits are pointed by Bauler and colleagues, who argue for a broader understanding of just transition: "Today, the just transition project needs to be broadened even further (particularly in ecological terms, beyond climate change alone (…)). Just transition should no longer be understood simply as social support or financial compensation for policies to mitigate ecological crises, but more broadly as a strategy for social-ecological transition, including both ecological policies and ecological shocks" (Bauler et al., 2021, p. 8, personal translation). A third major limit of the conception of just transition

68 Belgian TJTP. (2021)

promoted by the EU lies in its consideration of procedural justice compared to distributive justice[69]. This conception places, indeed, little emphasis on the meaningful and continual participation of all in decision-making processes, while this dimension is fundamental for ensuring a just transition (see Section 1.2.4). This limit is highlighted by Armeni: "the EU Just Transition is merely built on a distributive understanding of justice and (…) this constrains participation. But procedures cannot be ignored if the EU is seriously committed to a just transition" (Armeni 2023, p.1027).

While the coherence and interdependence of reaching the ecological and social goals thus needs to be strengthened in the EU frameworks, their direct linkages in the governance process promise further routes to enable this: the references made to the European Pillar of Social Rights within the Social Climate Fund regulation for example, opens the door to further integration with social rights. The inclusion of energy poverty monitoring and strategies within the National Climate and Energy Plans provide first entry points to assess social and ecological indicators together, and to address these issues with integrated policy on that basis. Principle 20 of the European Pillar of social rights includes the right to basic high-quality services, encompassing important environmentally-related services such as water and energy. This brings environmental considerations and the need to protect and preserve the natural ecosystems upon which these depend, inside the social policy framework.

Finally, just transition policy is also developing in Belgium, but its institutionalisation is still in its infancy. The imperatives of a just transition can be found in the main climate policy visions, strategies and plans such as the 2021-2030 National Climate and Energy Plan (NCEP) and the Belgium's long-term strategy evoked previously (see Section 2.3.1). In these plans and strategies, however, the just transition imperatives are not (yet) translated into concrete policy objectives and measures. In this sense, the "Estates General for a Just Transition in Belgium", within which the work of the High Committee takes place, constitutes a first step for institutionalising a just transition policy in Belgium.

69 These different dimensions of social-ecological justice and their interconnections are presented in Section 1.1.1.

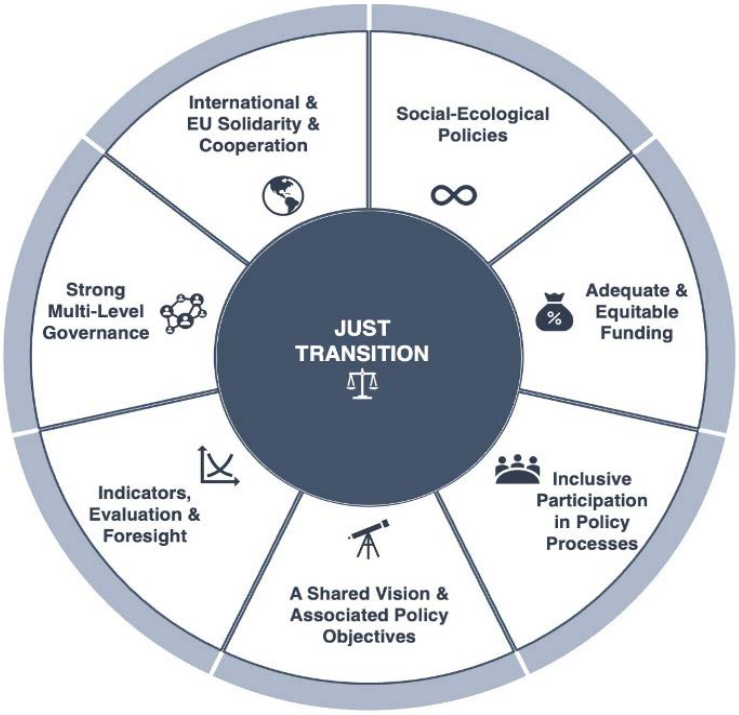
3. Building the Social-Ecological State for a Just Transition in Belgium

Building on the concepts of the just transition (Chapter 1, what?) and the empirical social-ecological nexus pointing towards its necessity (Chapter 2, why?), this chapter delves into the question for which the High Committee was mandated: "how to organise and institutionalise the just transition in Belgium?".

The main claim here is that, in order to organise and institutionalize the just transition, the Belgian social state needs to incorporate the ecological objectives and constraints fully into its scope, evolving into a 'social-ecological state' that addresses social and ecological challenges in an integrated way (Laurent, 2019). A social-ecological state calls for its wide array of societal institutions (the democratic system, the legal system, the economic system, and the social institutions installed to foster health, peace, care, equity, …) to be aligned to substantive goals of the just transition (see Chapter 1).

This chapter aims to draw some first outlines of what a Belgian social-ecological state would entail concretely. More specifically, it defines set of policy levers reflecting the wide array of policy tools and instruments that can be activated by our governments to build a social-ecological state. These are displayed in the following figure (Figure 49).

Figure 49: The integrated just transition policy framework for Belgium



Just transition is no pick-and-choose model, and it is not about correcting for adverse impacts in those cases where social and ecological domains create friction, trade-offs or conflicts. Rather, it is about incorporating these interdependences both in policy design and in the governance needed to develop and implement this policy agenda. Conceived as such, the policy levers presented in this chapter encompasses economic, social, environmental, health, employment, industrial, spatial planning, mobility, housing and other policy domains, and take place at different levels of governance, from local to European level.

3.1. Social-Ecological Policies

A Just transition requires developing and implementing policies aimed at addressing social and ecological challenges in an integrated way. Considering the structural relationship between social and ecological problems (see Section 2.2), it is not possible to address these problems separately, without considering their interactions (Carrosio et De Vidovich, 2023). To meet the need for an integrated approach to social and ecological problems, the concept of 'social-ecological policies', sometimes also referred to as 'socio-ecological' or 'eco-social policies' has been developed in the literature (Laurent, 2023a; Carrosio et De Vidovich, 2023 ; Hirvilammi et al., 2023 ; Mandelli, 2022 ; Koch, 2022 ; Gough, 2021). Social-ecological policies explicitly pursue both environmental and social policy goals in an integrated manner. The purpose is to reach a convergence of policy goals through either the unification or the coordination of different policies (Mandelli, 2022).

To typify potential social-ecological policies, we draw upon the functional categorization of social policy and ecological policy that exist in the literature.[70] From a social policy perspective, we use the terminology of the 3P+T framework (Devereux & Sabates-Wheeler 2004, 2007) that distinguishes between four functions of social policies: (i) providing relief from deprivation, (ii) preventing deprivation (iii) promotion of capabilities, income, opportunities or social rights, and more structurally and (iv) transformation of the socio-political contexts in which structural inequalities and vulnerabilities originate. Transformation is a crosscutting function rather than an autonomous category. Policies can be characterised as transformative when they address the root causes and power imbalances that encourage, create, and sustain inequalities and vulnerabilities. Therefore, these must often extend beyond an economic conception of risk and vulnerability and encompass legislative and institutional measures grounded in rights-based approaches. Each of the social functions can be directed at the micro-level of the household; the meso-level of communities (i.e. the interaction of individuals and groups with service providers and local institutions); and the macro-level (i.e. national and even international policy-making and government circles) (Roelen et al., 2016).

With respect to the functions of ecological policies, we enlarge the usual distinction between mitigation and adaptation to environmental degradations as traditionally used in the environmental policy literature (cf. footnote 54 for IPCC definitions to these concepts) to include a third function: the need for restoration (possibly including compensation) for ecological damages. In line with the classification made by the Dutch Scientific Council on Government Policy (WRR, 2023), we include this third function to reflect the imperatives of restorative justice encapsulated in the conception of social-ecological justice presented previously (see Section 1.1.1).

70 In the social policy literature, different frameworks have been developed to characterize the functions that policies for welfare, social protection and inclusion fulfil, which, in broad terms and leaving the transformative dimension aside, often point to similar distinctions (Kuriakose et al. 2013)

Table 5: Overviewing the functions of social and ecological policies

Functions of Social Policies	
Provision of alleviation deprivation of social rights, basic needs, and capabilities	The assistance and support to individuals, households and groups by ensuring that social rights, basic needs and essential capabilities are fulfilled for everyone, and in all circumstances, to a degree that is deemed minimally necessary to participate in society. These policies alleviate situations of deprivation and exclusion.
Prevention of (potential) deprivations	Reducing the risks and the likelihood for individuals, households and groups to fall into situations of deprivation and social exclusion. These policies focus on addressing the concrete triggers and underlying causes of vulnerability and on promoting resilience.
Promotion of social rights and capabilities	Enhancing social rights and general improvements of the social prospects of individuals, households and groups. These policies focus on creating opportunities for sustainable development, social cohesion, and empowerment.
Transformation of underlying political, social and economic contexts	Reshaping the social structures and norms in order to dismantle the barriers that limit equal access to social rights, democracy and advocacy for individuals, households and groups. These policies address the social economic and political power imbalances that sustain structural inequalities, aspiring societal change at the systemic level.
Functions of Ecological Policies	
Mitigation of environmental degradation through addressing its sources	preventing and reducing the impact of human activities on the environment, e.g. through reductions in the emission of greenhouse gases, other pollutants, or pressure on biodiversity. These consists of a combination of 'innovation' policies aimed at supporting the development and dissemination of sustainable alternatives and 'exnovation' policies aimed at destabilizing and phasing out unsustainable industries, technologies, business models and practices (See Section 1.1.3)
Adaptation to decrease vulnerability to global and local environmental changes	designed to help individuals, households and groups as well as ecosystems to cope with the adverse effects of climate change and environmental degradations, by minimising vulnerabilities and increasing resilience.
Restoration, of damages after these have occurred.	Addressing damages and vulnerability after environmental degradations and natural disasters have occurred, by indemnifying the social and economic infrastructures (both public and private) and the natural ecosystems that have been affected or provide financial or non-financial restitution for caused damages.

The boundaries between these different functions of social and ecological policies are not hermetic. While for each specific policy measure it is usually possible to identify a prevalent function, often multiple functions can be addressed simultaneously. Different types of mitigation policies (e.g. greening urban areas, making dwellings more energy-efficient) are also helpful in terms of adaptation. Social policies can combine several functions. For instance, education, training, and reskilling programmes can be both preventive and promotive. Health care systems can also have both have a a providing as well as a preventive function. This categorization is thus an ideal-typical one. It offers a structured view of the rationale behind, and potential breadth of, social-ecological policies.

By integrating the functions of social and ecological policy into a single double-entry matrix, the table below offers some examples of policies that can simultaneously serve one or multiple social and ecological objectives.

Table 6: The social-ecological policies matrix

		Dimensions of ecological policy		
		Mitigation	**Adaptation**	**Restoration and compensation**
Dimensions of social protection policy	**Provision**	Ensuring that low-income households have access to goods and services essential to participate in a society within planetary boundaries, including sustainable modes of housing, transport, food & water supply for all	Socially-sensitive early warning systems for situations of environmental risk. Mechanisms to ensure that basic needs (e.g. housing, hygiene, water, food, mobility) are covered in the event of extreme weather situations. Strong and shock-proof health care systems. Adequate minimum income provision, to support adaptive capacity to environmental risk.	Administrative assistance and cash and in-kind transfer programmes for individuals, households and groups that are affected by environmental degradation and disasters.
	Prevention	Decreasing environmental degradation, pollution and emissions (through regulation, pricing policy, and shifting norms) in a way that, for low-income households, the burdens are minimised and benefits are maximised. Social insurance and social protection systems that protect against potential income losses due to shifts and shocks of the economy (unemployment benefits) and that ensure job quality (contract types, working conditions, wages)	Public health and disease prevention to decrease sensitivity to environmental risks. Resilient food systems. National emergency plans that account for social vulnerabilities in the case of heat, heavy precipitation, flooding, crop failure, water scarcity. Combatting social isolation, particularly among the elderly.	Attuned public and private insurance systems. Adapted functioning and financing of the natural disaster fund. Policies that address the insurance gap.[71]
	Promotion	Education, training and reskilling programmes Enhancing the role of social economy enterprises in the circular economy. Green investments through pension funds	Deploying synergies between climate-compatible spatial planning and social cohesion. Policies to ensure environmental risk-resilient housing. Enhance green spaces in disadvantaged urban areas while counteracting gentrification dynamics.	Nature restoration programmes. Adequate support systems for farmers enabling reorientation to agricultural practices compatible with planetary boundaries.
	Transformation	Wealth taxation. Enabling the accessibility of community-owned structures for renewable energy production.	Transparent monitoring and accountability mechanisms of environmentally-affected social rights.	Public employment programmes in the sector of ecological conservation and restoration. Designing systems to ensure a fair distribution of the costs associated with disasters.

71 The climate insurance gap is used to point at the observation of the difference between between the costs of damages and the insurance payouts received by individuals, businesses, and communities affected by climate-related events such as hurricanes, floods, droughts, and wildfires.

While not exhaustive, the table shows that the scope for social-ecological policies is potentially very large. The central message is to make the interaction between social and ecological policy visible and point at the need for integrated policy design.

Authors such as Laurent (2023) and Mandelli (2022) point at three 'paths' through which integrated social-ecological policies can be developed. Table 7 summarises these three approaches to social-ecological policies as 'integration paths', illustrating each with examples.

Table 7: Social-ecological integration paths

Paths	Examples
Upscaling synergetic policies, that already work for both social and environmental goals	adequate unemployment benefits that protect workers against economic shocks and risks related to the transition adequate public transport
Integrating social concerns in ecological policies	counterbalancing gentrification mechanisms in projects of urban greening progressive ecological taxation programmes that avoid socially adverse consequences in their design
Integration ecological concerns in social policies	to enabling access to renewable energy infrastructures for low-income households as a complement to social tariffication systems training and reskilling programmes can be oriented to support the green transition; implicate and support social economy enterprises in circular economy objectives

What these three approaches – and their practical examples below – demonstrate is that **social-ecological policies are hardly ever stand-alone policies, but rather constitute a mix of instruments that work towards realising a social-ecological objective.** In the design of these policy bundles, it is essential to carefully select the tools and measures to be deployed as different policy instruments come with different implications in terms of finance methods, distribution of costs and benefits, and governance barriers and opportunities. Examples include the choice between individual benefits and collective services or investments, between benefits in cash and in kind, or channels of social assistance of social security.

In the remainder of the section, we present four case studies to illustrate the potential of social-ecological policies in practice for the domains of housing, mobility, social economy and health systems.

Housing

Access to housing is an acknowledged social right[72] **which is under pressure for different vulnerable groups.** At the same time, residential space heating is a major component of Belgian GHG emissions (15% of total emissions in Belgium in 2021; CELINE-IRCEL et al. 2023).

Social-ecological policies work to decarbonising the dwelling stock while aiming to provide the social right to housing, taking into account and combating existing inequalities and injustices. Inequalities in housing can be observed at different levels, starting with access to property: less than 50 percent of Belgian households in the first two income deciles own their own house, while this rate exceeds 80 percent for the four highest deciles (Aeby, 2019). Second, the least advantaged

72 The right to housing is guaranteed in the Belgian Constitution (art. 23) and also reflected in principle 19 of the European Pillar of Social Rights states that access to social housing or housing assistance of good quality shall be provided for those in need.

households tend to live in older and therefore potentially less energy-efficient and less climate-resilient houses than better-off households. In fact, in Belgium, nearly 90% of households in the first decile live in houses built before 1980 (before the implementation of energy performance standards for buildings), while this rate only reaches 65% for households in the last decile (Aeby, 2019). Third, despite the lower energy performance, poorer households tend to consume less energy and thus emit less GHGs than wealthier households. Still, in relative terms they spend a larger share of their budget on energy bills: around 11% of the budget of households in the first decile is spent on heating and electricity, while it represents only 3% of the budget of households in the highest decile (CLIMACT et al., 2018). Fifth, the patterns observed in many European countries (Ludden et al., 2022; European Environment Agency, 2020) - where poor households more often live in dense urban areas that are particularly exposed to air pollution and heat islands effects – have been demonstrated extendable to the cities investigated in Belgium (see Verbeek 2019 for Ghent, Burbidge et al. 2022 for Antwerp, De Muynck et al. 2022 for Brussels). This means not only the state of their own dwelling but also its location makes the least advantaged households more vulnerable to the effects of a changing climate.

These unequal starting points give rise to important distributional implications for policy aiming at decarbonising the dwelling stock. Today, the dominant policy is to stimulate energy renovations through information and financial policy tools. These are in theory a powerful tool in a residential decarbonization strategy: it can improve living conditions, reduce energy bills and, consequently, contribute to the fight against fuel poverty. However, several analyses reveal that low-income households benefit little from energy renovation policies - which often take the form of economic incentives - for various reasons, including the high proportion of tenants among low-income households, their lack of capacity to pre-finance renovation works, their limited access to information and assistance on technical, organisational, and financial aspects of a renovation (ICEDD et al. 2019; Financité, 2019; Vanhille et al. 2017). A broader set of measures, adapted to the different housing contexts and the different barriers at hand are necessary for a social-ecological housing policy.

In the private rental sector, social-ecological housing policy consists of incentivizing landlords to retrofit their home while safeguarding affordability for tenants. Regulatory, financial and informational mechanisms can be combined in this respect. Pilot projects have also shown the value of locally-governed interventions aimed at lowering organisational and administrative burden for landlords. By providing them with coherent financial calculation model, bringing them in contact with local renovation contractors and support, and by providing transitory housing for the renovation phases with most impact on habitability, important results are possible even without direct investment subsidies (Vanhille et al. 2017). For lowering financial barriers for landlords, access to investment subsidies and premiums can be made dependent on rent price (adjustments). Regulatory mechanisms can connect the energy performance of the dwelling with the possibility of indexing rent prices.[73]

Social-ecological housing policy should also anticipate and mitigate patterns of 'low-carbon gentrification': the eviction of tenants due to the demolition of their dwellings or the excessive increase of their rents following energy renovation projects (von Platten et al, 2020; Grossmann, 2019; Bouzarovsky et al, 2018; Femenías et al, 2018; Mangold et al, 2016; Grossmann and Huning, 2015) or urban greening projects as part of biodiversity protection or climate change adaptation strategies (Immergluck and Balan, 2018; Haase et al., 2017). The numerous examples of aggrieved communities resisting retrofit projects (see e.g.: Grossmann, 2019; Bouzarovsky et al., 2018; Tirado Herrero, 2013) highlight that when existing inequalities and the specific barriers experienced by vulnerable households are not taken into account in the design of policy measures addressing the issue of decarbonising the housing stock, both the objectives of decarbonization and of social justice are compromised. Vulnerable households are not reached with policy measures geared at stimulating own investments in energy renovation, while the dynamics that follow from these policy measures risk to increase existing inequalities further. The most important policy that prevents

73 In Flanders, this policy was experimented with during the inflation crisis, where rent prices for dwellings with EPC-label D, E or F could not index rents between October 2022 and October 2023, and were bound to follow a formula for limited rent increases afterwards.

affordability problems, energy poverty, and low quality of the dwelling, and emissions is therefore the investment in sufficient, climate neutral, and qualitative social housing.

In Belgium, there is huge potential for providing adequate low carbon social housing both through retrofitting the existing dwellings and through expanding the total social housing stock. Only 5 percent of the Belgian housing stock functions as social housing. In the Netherlands, this is about 34 percent and France 14 percent (OECD, 2022b). In Belgium today, waiting lists are long,[74] and many eligible households end up in the lower layers of the rental market where they face problems of affordability, quality, security and discrimination (De Sloover, 2022; Dekock, 2023; Vastmans & Deesen, 2021; Wallonie, 2023). The social housing stock does not perform very well in energetic terms (Rekenhof 2021, ONPE 2021). The potential for reducing GHG emissions associated with the energy retrofitting of the social housing stock is thus significant: the reduction on energy consumption associated with a massive renovation of the Belgian social housing stock could lead to a reduction of GHG emissions estimated between 370,000 and 728,000 tons per year (Plateforme de lutte contre la précarité énergétique, 2018). The reduction in energy consumption of social housing can also enable a decrease in the energy bill of their inhabitants, which can contribute to structurally tackle energy poverty. Reducing energy poverty does not only alleviate financial pressure, but also leads to broader social improvements, in terms of health, well-being, and social inclusion (Directorate-General for Energy, 2020; Meyer & Maréchal, 2016).

Different social housing policy measures can work towards social-ecological objectives, from regulation (e.g. stipulating quota for new building projects to include a minimum proportion of social housing), making it more attractive for private landlords to rent via social housing agencies, by providing adequate investment funds to social housing companies, and by better attuning investment policy and project management. The latter requires to take into account and tackle the multiple barriers that are currently slowing down planned projects (Dockx et al. 2023). Finally, the energy renovation of the Belgian building stock offers job opportunities for low-skilled workers (Lacroix et al., 2023). However, for these employment opportunities to constitute a real social improvement, the quality of the jobs created must be guaranteed.

Mobility

The analysis of transition scenarios towards a climate-neutral Belgium in 2050 (FPS Health - DG Environment - Climate Change Service et al., 2021) shows that a strong modal shift towards public transports and soft mobility can significantly reduce the total energy demand of the transport sector, and still growing (CELINE-IRCEL et al. 2023, p. 52)..

Concurrently, the lack of access to mobility and its negative consequences for the people concerned (e.g.: reduced access to employment, education, health service, leisure or social life) remains a social problem for vulnerable groups in Belgium, which is most pronounced in rural areas. In 2018, 20% of Belgian households faced mobility energy expenditure exceeding 6.5% of their income (after capped housing costs) (Kestemont & Bruynoghe, 2020). Moreover, Belgian households that face difficulties to afford the cost of travel by individual car do not necessarily have access to public transport alternatives, some areas being very poorly served by public transport. In 2021, 39.9% of the Walloon population lived in an area poorly served by public transport (Charlier & Juprelle, 2022).

Problems with accessibility and affordability of mobility can be mediated or reinforced by the transport system, as its design choices determine to what extent people can access essential services and destinations. This arises through an interaction between social- and transport related barriers (Lucas, 2012) which are shaped through social norms and practices, economic- and political structures, and governance- and decision frameworks. Environmental concerns can hamper policies aimed at alleviating transport disadvantage and vice-versa. This can potentially lead to a 'transport policy stalemate' for decision makers interested in both objectives (Mattioli, 2013). Recently, more

74 in 2022: 176.000 families in Flanders; 40.000 in Wallonia , and more than 50.000 in Brussels

and more transport services are becoming digitalized (i.e. information, booking and ticketing is accessible through a digital interface). Nevertheless, there is a large part of the population that does not have access to digital services (digitally excluded). This way digital exclusion reinforces transport inequity, leading to increasing social exclusion due to the lack of access of increasingly digitalized transport services (Durand et al., 2022).

It is widely acknowledged that the current mobility system gives rise to multiple injustices in terms of accessibility and affordability (Lucas, 2012; Sheller, 2018; Verlinghieri & Swanen 2020). The question is therefore: can the recalibration of transport systems to align them with an economy and society within planetary boundaries also be used as a leverage to design a fairer system or will it increase the gap?

Tensions between environmental goals and goals of alleviating transport disadvantage can be overcome to a great extent by adopting a clear hierarchy of measures for a transport system that is socially and environmentally sustainable (Sustainable Development Commission, 2011). Higher priority should be given to structural measures that are able to simultaneously reduce transport disadvantage and the negative environmental impacts of transport ('win-win' measures): e.g. reducing the need to travel (by car) by changing land use and the built environment (minimising distances between destinations, e.g., 15-minute cities), promoting ICT-based solutions (e.g., teleworking when possible keeping digital inclusion aspects in mind), and promoting collective modes of transportation. On the other hand, lower priority should be given to measures that would trade two goals against each other, such as efficiency improvements and capacity increases for individualised motorised transport. These measures are only tackling the symptoms of a transport system that is running into its limits, and does not allow for the necessary transformation.

In addition, modes of mobility in ecological mobility can generate social ameliorations in terms of health. The improvements in air quality brought about by modal shift can indeed improve health, and in particular that of the socio-economically disadvantaged people who, as demonstrated in the previous chapter (see Section 2.2.2), tend to live in areas more exposed to air pollution. The increase in physical activity associated with the deployment of transport by bicycle and on foot can further reinforce these improvements in terms of health. The significant health benefits associated with the development of cycling have already been observed in several European cities, including Brussels. Based on a health impact assessment study to quantify the health risks and benefits of car trips substitution by bikes trips, it was estimated that the health benefits of physical activity by far outweighed the health risks of traffic fatalities and air pollution (Otero et al., 2018).

In sum, investment in adequate, affordable and decarbonised public transport, and in cycling and pedestrian infrastructures are prime examples of social-ecological policies. These investments can promote a modal shift from individual car to ecological modes of transport, provided it is accompanied by exnovation policies aimed at destabilizing and phasing-out the use of individual car (e.g.: low emission or car free zone, carbon tax). They can therefore lead to a reduction in GHG emissions and air pollution, which contribute to environmental ameliorations.

Easy wins:

- **Tax incentives for cycling** has a positive effect on the environment by stimulating bicycle transport and offering a sustainable alternative to motorised transport. Under socially sensitive conditions, it can also improve the mobility of low-income groups.

- **Abolishment of the system of salary cars and introducing mobility budget** has a positive effect on the environment as it lowers the amount of road transport caused by this system and eliminates an important source of fossil fuel subsidies. It would have positive effects on equity as these systems benefit the highest income groups with tax benefits at the expense of the government and taxpayers.

- **Public transport** has a positive effect on the environment by being a sustainable transport alternative and on equity by improving access of low-income groups to economic opportunities, social- and health services. Public transport system should be complemented by on-demand systems where needed in an inclusive manner that addresses digital exclusion and improves the overall quality of service.

- **Stakeholder involvement** can lead to better policies by looking at issues from multiple perspectives and it can result in better consideration of the interests of all actors involved or those impacted by measures.

- **Short distance spatial planning** would be positive for the environment by reducing travel distances, enabling biking and walking, and on equity by improving mobility and accessibility.

Measures requiring additional support:

- **Road pricing** ensures that the polluter pays and can therefore reduce driven kilometers. It has a positive effect on the environment as it results in less emissions, noise- and air pollution from road traffic. It can improve equity if the budgetary revenues from the scheme are reinvested progressively, in for example public transport which further increases sustainability of the transport system and increases mobility for low-income groups or by a tax shift. Car-dependent low-income groups can be affected adversely if they have no real alternatives for mobility, in which case compensatory support should be considered.

- **Low Emission Zones** are positive for the environment as they can decrease road traffic and therefore lessen air and noise pollution, mainly in urban areas. It can negatively affect equity for low-income groups when there are no good (public) transport alternatives or supporting measures to replace their vehicle with one adhering to the standards.

- **Phasing out of fossil fuel vehicles** is positive for the environment as it stimulates the transition away from fuel transport towards renewable energy sources. It can have negative effects on equity when car-dependent low-income groups are unable to replace their fuel cars with an electric vehicle. Therefore, supporting measures should be in place for poor/ rural households with limited access to public transport.

- **Shared mobility** is positive for the environment by reducing the need for car ownership and by offering sustainable transport options. It can be negative for equity when it excludes people from its use due to digital illiteracy or when it goes at the expense of investments in public transport.

Social Economy Enterprises (SEEs)

Implementing a just transition requires action at different levels: individual, organisational, inter-organisational and macro levels. At the organisational level, it may be worthwhile to specifically support forms of enterprise that are compatible with (or better able to contribute to) a just transition. Social economy enterprises (SEE) (which in Belgium account for 12% of salaried employment and 9% of GDP) are of interest because their organisational models seem to meet this dual ambition.

In Belgium, SEE take a variety of organisational forms (mainly associations and cooperatives), but all pursue their activities with the aim of meeting societal needs; they do not subject their projects to the imperative of maximum profitability. To protect their 'raison d'être', they adopt two operating rules. Firstly, they limit the opportunities for personal gains for those who manage and control them (limited or forbidden distribution of dividends, no opportunity for financial speculation). They also implement democratic decision-making processes, limiting the links between capital contributions and voting power and involving various stakeholders in governance.

Moreover, SEE share common characteristics. They have strong local roots (local ownership, local customers, local workers). They operate in sectors considered essential (food, social services, education, culture, energy, mobility, housing, wage management, etc.). They innovate by building hybrid business models, mixing market and non-market logics.

Both scientific and institutional analyses suggest that these social economy enterprises offer many advantages for implementing a just transition. We can summarize them in 5 points.

Social innovation : By distancing themselves from the capitalist model, these enterprises find 'room for manoeuvre' to innovate and build inclusive and/or regenerative business models. By mitigating the pressure for maximum profitability and involving various stakeholders in their governance mechanisms (including future generations), SEE find alternative resources (including citizens savings and volunteering), use collective intelligence and explore solutions to the major issues of our time: e.g. manageing the commons, combating the abuse of market power, taking externalities into account, fostering socio-economic and labour market inclusion, offering reskilling opportunities. For example, the social economy has historically been at the origin of social security, ethical finance, fair trade, socio-professional integration through economic activity, the relocalization of food systems (short circuits) and the development of the circular economy (recycling). SEE are often seen "*as frontrunners in the green transition, helping to make it a faire rand inclusive transition by anchoring it in solidarity values*" (European Commission, 2023, p.3)

Resilience : SEE develop resilient business models. They never carry out activities for speculative purposes. They develop economic projects to which they give a long-term vision (supported by a patient 'capital' because it is not invested primarily for short-term returns). These enterprises are born as responses to real societal needs felt by their own members. They put management choices consistent with their *raisons d'être* (i.e. protection of ecosystems, accessibility and quality of products, well-being of workers and suppliers). Their models are based on an original alliance with their stakeholders. Stakeholders are loyal because their voices are heard and their interests are taken into account. When SEE do make a profit, they are careful to set it aside and most often reinvest it in the business. By combining market and non-market logics, by mobilising extra-economic links with their stakeholders, these enterprises reduce the risks associated with exogenous shocks (covid, war, energy crisis, etc.)

Territorial development : The local roots of social economy enterprises strengthen their loyalty to their territory. They are careful to defend the preservation of ecosystems and to offer fair working and trade conditions. They do not resort to informal work or threaten to relocate in order to benefit from favourable conditions for carrying out their activities. Moreover, in their 'Businees to Businees' relations, they naturally turn to similar structures. They build robust economic ecosystems through 'fair' vertical integration processes (social economy value chains) or horizontal integration processes (social economy holding). In addition, SEE seem to favour growth through spin-offs and duplication. This enables the development of an economic fabric of SMEs that retain their local roots. Their constant concern to meet the societal needs guides the economic development of our regions towards activities that are essential to the people who live there (food, social services, education, culture, energy, mobility, housing and real estate, reuse and repair, waste management, etc).

Empowerment and democracy: Social economy enterprises enable their members to express political choices through their economic actions. Through democratic decision-making, members participate and regain a certain capacity to act in the economic sphere. Moreover, being in contact with these SEE (as a customer, worker, volunteer or investor) also encourages changes in individual behaviour. Through peer learning, information and awareness-raising, people learn to take into account criteria of general interest in their individual choices. Generally speaking, these models are attractive to young people because they enable them to act professionally in a work context that is consistent with their pro-social or pro-environmental values.

Advocacy and narrative: By demonstrating that inclusive and regenerative business models are possible, SEEs implicitly denounce the excesses of an economic system driven by growth, the

predation of ecosystems and the exploitation of disadvantaged populations. By voluntarily submitting to operating rules protecting their *raison d'être*, they send the signal to public and private decision-makers that it is possible to build standards and comply with them in the general interest. By enabling individuals to join their experiences, they make the transition culturally acceptable. In this way, they build another collective narrative around a sustainable economy that works for all. They therefore have a significant transformative power.

If social economy enterprises are at the forefront of a just transition, how can we design public policies that support their development and build on their potential?

Because social economy pursues a variety of societal goals and is present in various sectors, it is affected by many cross-functional or sectoral public policies. In implementing these various policies, it is essential to support the virtues of social economy models: their focus on inclusion and ecosystem preservation/restoration. While it is not always possible to make public support (subsidies, tax regimes, investments) conditional on multi-criteria positive effects on society, we can - by default - preferentially support organisations configured to achieve these positive effects.

However, to specifically support SEE, we need to reinforce their legitimacy (knowledge of their specific features, understanding of their added value), facilitate their access to resources and support their links with territories. This requires 3 types of action.

Strengthening the legitimacy of the social economy. Develop general assessment tools for companies with regard to the just transition (contribution to the Sustainable Development Goals, stakeholder involvement processes, limits to self-interest, etc.); develop and reinforce SEE-related content in initial (primary, secondary and higher education) and continuing training programs (particularly for public administrations); raise awareness of these business models among economic players; and support research on the social economy, both on SEE business models and on the individual behaviour and normative frameworks that underpin their development.

Access to (financial) resources. Strengthen public investment funds specialized in the social economy; develop a favourable tax system for SEEs and provide tax incentives for their funders; facilitate volunteering in SEEs; and facilitate access to public procurements for social economy enterprises (by training contracting authorities in social and environmental criteria).

Territorial dimension. Finance the construction of social economy sectors or groups in local areas; support meeting places, training programs and HR devoted to build collabouration between SEEs; and draw up territorial roadmaps for certain key sectors, including an explicit role for social economy enterprises, and/or set out explicit governance guidelines for 'fair' value chains.

Health

Many environmental risks including heat waves, air pollution, flooding and zoonoses, have adverse consequences on physical or mental health. The rise in the prevalence of chronic diseases, multimorbidities and mental health problems among the Belgian population makes a growing segment of the population vulnerable to these risks. Among this vulnerable segment of the population, socio-economically disadvantaged groups are overrepresented (see Section 2.2.2). Starting from these observations, it clearly appears that improving the physical and mental health of the Belgian population constitutes a relevant line of action to reduce social vulnerability to environmental risks. This line of action is even more relevant as prevention is currently poorly developed in Belgian health policy. An analysis commissioned by the European Commission as part of the State of Health in the EU reveals that "Belgium spends relatively little on public health and disease prevention, devoting just 1.6% of its total healthcare expenditure to organised prevention programmes, which is below the EU average of 2.9%" (OECD/European Observatory on Health Systems and Policies 2021, p. 13, personal translation). It further shows that "preventable mortality is higher in Belgium than in many other Western European countries (although it remains below the EU average)" (OECD/European

Observatory on Health Systems and Policies, 2021). Consequently, social-ecological prevention policies should target health determinants such as alcohol and tobacco consumption, overweight, lack of physical activity, poor diet quality, low levels of health literacy and air pollution (Scienscano, 2022).

Additionally, preventive social-ecological policies have the potential to bring about substantial gains in well-being. First, this concerns the monetary savings in health expenditure related to the mitigation of avoidable pathologies and social isolation (one can precisely quantify the current cost to the health system of preventable diseases such as those linked to air pollution, without resorting to statistically and ethically fragile techniques of monetization of human life). A widely shared observation in this respect is the low level of preventive costs compared to curative costs. Second, it is necessary to evaluate the non-monetary gains in terms of well-being linked to the prevention of pathologies and social isolation, starting with life expectancy and life expectancy in good health. Finally, the health preserved and the expenses avoided due to the mitigation of the impact of ecological degradation by preventing and combating social isolation should be assessed and monitored.

The healthcare system should prioritise readiness, bolstering, and sufficient financial support to effectively address the challenges brought about by climate change-induced shocks and strains. This encompasses the establishment of early warning mechanisms, prompt responses to emergencies and the emergence of diseases, the fortification of infrastructure against environmental pressures, and the implementation of measures to cater to the health requirements of displaced communities (Issa et al., 2023).

3.2. Adequate and Equitable Funding

A just transition requires both increased public and private investment budgets, as well as socially-sensitive funding solutions. In Section 2.2.5, we concluded that the different policy instruments to align government budgets as well as private capital with ecological transition objectives come with important social implications. Therefore, the policy answers to this financial equation of just transition require a conscious design. Fragmented solutions could easily lead to avoidable trade-offs between social and ecological objectives.

3.2.1. Aligning Fiscal and Budgetary Policy with Just Transition Objectives

Budgetary and fiscal policy require a significant degree of recalibration in order to contribute to a just transition. The main functions of government taxation and expenditure systems are: (i) *to* finance public services - including infrastructural investments; (ii) to influence economic activity; and to (iii) *to* redistribute social welfare. A just transition requires alignment in all three domains. It entails adequate investments in public services, a smart taxation system geared at the objectives of a just transition, and redistribution to tackle social, economic and environmental inequalities.

In its influencer function, fiscal and budgetary policy choices provide incentives and disincentives for the economy. Instruments such as taxes, tax exemptions, subsidies, public procurement are all instruments that can be directed to support just transition compatible activities or industries, and discourage undesirable effects such as pollution or carbon emissions. Examples include the subsidies allocated to 'green' investments made by households and firms. However, the magnitude of fossil fuel subsidies in Belgium (see Section 2.2.5) shows that there is ample room for Belgium to improve the coherence between public spending and just transition objectives. Besides phasing out fossil fuel subsidies, smart taxation schemes are needed to disincentivize environmentally harmful practices, and encourage modes of production and consumption that are compatible with an economy within Earth system boundaries. This exercise should be a systemic part of the budgetary cycle (Blazey & Lelong 2022). The French Ministry of Finance pioneered in this respect (Tordjman et al., 2019), leading the EU Commission to promote 'green budgeting' tools to support member states in building their capacities to coherently align budgetary and fiscal policies with transition objectives. Potential examples for Belgium would include better adjusted tax rates (e.g. excises, value-added tax) accounting for the socio-ecological impact of the products at hand. Green budgeting tools highlight the potential of this approach for the possibilities it opens up for e.g. parliamentary oversight of national efforts. At the same time, this approach illustrates the absence of the distributive dimension in this exercise. While only a minority of current fossil fuels subsidies are flowing to households, the ex-ante assessment of distributive impacts of changed spending in the domains where households are affected is key, especially when in concerns food, energy and housing.

In its investor function, substantial budgets are required for making public infrastructures, the building stock and services compatible with just transition objectives. Important parts of our societal infrastructure still depend on fossil fuels. Retrofitting the public building stock (schools, offices, hospitals) and decarbonising its infrastructures (public transport infrastructure, energy infrastructure) will require substantial budgets. Public spending will also be needed to support individuals and companies during the ecological transition, as part of a carefully balanced policy mix between carbon pricing, regulation and subsidies. The recent study by France Stratégie (Pisani-Ferry & Mahfouz, 2023) expects that both an additional tax on wealth and an increase of public debt will be necessary to provide the resources for this purpose. For France, the analysis estimates that by 2040 France's public debt will have increased by 25 percentage points of GDP due to the combination of transition-related spending and a temporary drop in revenues due to a possible slowdown in growth. The report concludes that deferring investment to limit public debt is no solution to the financial problem: it will only increase the government efforts that will be needed in subsequent years to meet climate and environmental targets.

In its redistributive function, progressive income taxation and social insurance mechanisms provide us with well-established, robust and effective tools to realise redistribution between labour market income and net disposable incomes. However, the redistributive instruments of the welfare state largely disregard (income from) capital or wealth. Wealth inequality is a rising issue of concern among social scientists as well as policymakers. Economists have advocated for the need to reduce too large disparities as a threat to economic and social stability and growth (Berg et al. 2012; Stiglitz 2015, 2016), social science researchers warn about the impact of associated power concentrations on the functioning of democracy (Christiano, 2012; Robeyns 2017), and from an ecological perspective,scientists have warned about the disproportionate impacts associated with thlifestyles of the world's most affluent (Otto et al. 2019; Wiedmann et al. 2020). An often proposed policy option consists of wealth taxation (Atkinson 2015; Piketty, 2014; Robeyns 2019; Saez and Zucman, 2019).

Box 19. Assessing Wealth Taxation in the Belgian Context

Although the availability of accurate data is a major challenge (Kuypers 2023), wealth taxes have been assessed empirically through simulation analysis. For Belgium, the literature is very limited, with available studies using the ECB's household finance and consumption survey (HFCS) combined with either the Forbes rich list (Vermeulen, 2016; Krenek & Schratzenstaller, 2018) or De Rijkste Belgen list (Apostel & O'Neill, 2022). Such research shows for three different configurations of a one-off wealth tax in Belgium that these have the potential to generate significant budgetary revenue (estimated between 6 and 43 bn €). It also indicates the proposed rates of 1 to 5% of capital in excess of 1 to 3 million euros would lead to relatively minor impact of wealth inequality (the share of total wealth possessed by the richest 1% would decrease from 24% to 23% at most, the share possessed by the richest 5% would decrease from 42% to 41% at most) and consequently, also on associated emissions (total consumption-based CO_2 emissions of Belgian households would decrease by 0.1 to 0.6%).

To have a more sizable effect on wealth inequality, a wealth tax would need to be strongly progressive, with percentages increasing the higher up in the wealth distribution (Piketty et al. 2023). It would also need to be recurrent (Kapeller et al. 2021). The simulations show that wealth taxation is an important instrument in the transition, yet foremost for its budgetary consequences. While strongly progressively redistributive, in itself it seems insufficient to really tackle the inequalities in terms of wealth and associated emissions that were the topic of Section 2.2.1.

3.2.2. Developing a Comprehensive Just Transition Finance Strategy

Governments do not only affect the financial equation of the just transition by the public budget, but also by the way in which they influence the functioning of the financial sector.

The Belgian government has several instruments at its disposal to help financial institutions anticipate and contribute to the transition to an economy within planetary boundaries: standards and regulations, monitoring and reporting, but also the allocation of resources in public investment companies. Therefore, a first step consists of a sharper and annually updated picture of societal financing needs and bottlenecks.

At the Belgian level, an advancement of a national strategy for sustainable finance is key, and should prominently include social aspects. Geared at incentivizing the private financial sector, it should provide an encompassing answer to the question of which instruments the Belgian government can deploy to guide private financial institutions to anticipate an economy within Earth system boundaries and contribute to the transition towards it. A national sustainable finance strategy can clarify the scope of the effort (e.g., a sharper and annually updated picture of the societal financing needs and bottlenecks for both private and public actors), allow for coordination of instruments (e.g. overseeing the close linkages with the National Energy and Climate Plan, the Territorial Just Transition Plan and the National Social Climate Plan, all under the EU Green Deal), and provide the

basis for prioritisation. Immediate distributive implications are manifold. As a substantial proportion of the required investments have direct impacts on households (e.g., in areas such as housing and energy), it is essential that this strategy integrates social goals and explicitly considers social objectives and distributional effects. Finally, a successful financing strategy requires an accurate monitoring system, with indicators, targets, intermediate follow-up and reporting, and a responsible body for carrying out this exercise (administration or a specific committee set up for this purpose) that can make recommendations to the decision-makers. In general, strong conditions need to be guarded to ensure that public funds are well spent and that the private response also demonstrably supports the public interest.

A role model could be played by public 'banks' and investment funds.[75] By using clear criteria in the allocation of funds (explicitly clarifying which of the existing disclosure frameworks or taxonomies are used), they can put an example of what kind of investments are deemed societally (un)desirable. This is already acknowledged in the mission of some of these funds. However, due to limited transparency, it remains impossible to assess to which extent the resolutions are translating to an encompassing strategy that can coherently guide actual investment decisions. For this, clear objectives, monitoring and reporting practices are necessary but still lacking. Despite their relatively easy-to-use lever function and significant financial capacity, Belgian public investment funds cannot be considered to 'lead by example'.

Important levers of monetary policy are at the European level, where Belgium can help emphasise internationally the importance of integrating just transition objectives in the EU fiscal and budget rules, in the development of European finance instruments, and in the monetary framework of the European Central Bank (ECB). Interventions in these regulatory frameworks are needed to ensure that the policy instruments that they encompass are used in ways that contribute to, rather than slow down, the ecological transition of the economy (see also Section 3.7.1). The development of both a 'green' and a 'social' taxonomy of investments that is currently taking place at the European level should be viewed in this light, but requires sustained political attention.

As an example, The ECB has already taken first steps to acknowledge that climate considerations belong within its corporate credit operations and adopted experimental indicators on sustainable finance, carbon emissions and climate-related physical risk in 2023. In the future, the monetary levers could go much further. Climate and environmental risks could be incorporated in the decision framework on asset purchases and refinancing operations to align financial flows to the European environmental commitments. In the choice between which assets are accepted as collateral, a greater role could be played by e.g., the European Investment Bank, a transformed/new European Climate Bank, or by public investment banks in the member states (cf. above).

The design of each of these (possible) finance systems has profound implications for both distributive and procedural justice, as it determines who is receiving money to invest, who is benefitting from the results of the investments, and who gets to decide on the course of the 'green' economy (Tucker 2018; Ferret Mas 2023). Decisions on the way in which the regulatory and monetary frameworks can be aligned with environmental commitments entail important political choices (Fontan and van 't Klooster 2020), and lead to profound distributional consequences when bondholders and stockholders of selected firms see their assets increase in value (Montecino and Epstein 2015). Finance strategies of governments should be founded upon an analysis recognizing the intertwined nature of social and ecological problems. Exploring the options to get the ecological transition financed requires conscious attention to ensure politically legitimate processes and lead to fair financial outcomes. Again, an ex-ante assessment of how the design, mission, and governance of the finance mechanisms relate to its just transition goals is essential.

75 Examples include FPIM, PMV, LRM, Gigarant, SRIW, SOWALFIN, finance.brussels

3.3. Inclusive Participation in Policy Processes

Many of the proposals made so far require a strengthening of democracy. This includes reinforcing social dialogue, supporting organisations that represent and give voice to different social groups (especially the most vulnerable), and reinforcing democratic for enabling fair participation of all the actors concerned. A social and environmental right-approach to the just transition must be developed within the realm of strong democratic processes and institutions.

This section presents avenues to strengthening democracy by reinforcing a) social dialogue, b) worker participation in firm governance, and c) citizen participation in the elabouration and implementation of just transition policies.

3.3.1. Strengthening Social Dialogue

It is widely recognized that adequate governance of the structural changes that decarbonization efforts bring to our economy and society should contain processes of social dialogue as a key component. The legal establishment of fora where mutual exchange between societal stakeholders can take place and disputes can be managed serves both democratic accountability and social welfare goals (Pestoff, 2008). In this section, we maintain that just transition policies will always require context-specific translations, making the role of adequate and institutionalised structures for participation of affected groups (and their representatives) indispensable. These frameworks should be strengthened, but also enlarged, in two ways: (1) existing social dialogue practices between employers, workers and governments should be broadened in scope to cover a fuller picture of just transition and (2) a broader range of stakeholders should be structurally included in societal debates surrounding just transition policy.

Just transition - as a broad and necessary framework - will for its actual implementation always require context-specific translations. This is already most explicitly acknowledged in the labour context. Anticipating, instigating, and guiding shifts in economic, industrial, and employment structures, just transition policy (at company, sectoral, intersectoral, and government level) should acknowledge the diversity of the workplaces and the different ways in which they are affected, while maintaining its integrative perspective to social and ecological objectives. As noted by Galgóczi (2020), there is still a gap between narratively reconciling social and environmental concerns in just transition frameworks on the macro-level, and, on the micro-level, addressing the actual practical changes occurring due to decarbonisation strategies in (especially carbon-intensive) workplaces, regions, and sectors. While from an employment perspective, the outlook is one of opportunities for inclusive job creation (see Section 2.2.3), concrete processes of innovation and exnovation equally create pressures on employment, workers, and required flexibility, often conflicting with workers' immediate interests (Räthzel & Uzzell, 2011). Trade unions have a double role here: they combine the advocacy for workers' interests (whether through pursuing better working conditions, higher pay, shorter working hours, or training opportunities) with a broader 'social mission' (by supporting the working class in allocating a greater share of economic profits to labour). In both roles, trade unions have long been connecting the interlinkages between issues of environmental safety, fair working conditions and adequate social protection, which are at the root of the just transition concepts (cf. Mazzochi, 1993; Thomas 2021). Yet, despite this widely shared recognition that, in essence, social and environmental objectives are for workers 'natural allies' (cf. 'there are no jobs on a dead planet'), it is clear that the variety of contexts in which decarbonisation requires substantial change for a significant proportion of firms and industries (representing up to half of the Belgian jobs, see Section 2.2.3). Tailored approaches, as also advocated by the International Labour Organisation (ILO) in its Just Transition guidelines, need to ensure that workplace practices, industrial structures, societal contexts, and regional economies are taken into account as the economy shifts and changes. Social dialogue structures and practices are quintessential for reaching this required context-specificity, and need to be strengthened. At the same time, this also poses a number of challenges to the practice of social dialogue today.

First, just transition requires the scope of social dialogue to be broadened. Today, social dialogue, at company, sectoral and intersectoral levels relate primarily to social affairs and to a lesser extent or not at all to economic and financial issues. In the two latter areas, the social dialogue remains formally incomplete. Transitions involving new technological innovations and approaches affect however all of these domains: they are treated as economic and financial choices of firms, but generate potentially large impacts for employments and for the firms' organisation.

In addition, transition challenges (and possible responses) are not situated solely at firm level, but involve coordination within and between sectors and value chains. Also local coordination, that involve local energy solutions, and possibly neighbouring firms in the same spatial clusters, will need to increase. Today the pre-dominant logic of transition planning is sectoral. Expertise, indicators, policies are organised into sectoral silos: labour market, transport, energy, etc.. However, all of the transition plans that are designed from a sectoral perspective generate fundamental impacts for economy, society, employment levels, locations and access to training and potentially reskilling.

Overcoming these boundaries by combining a macro-vision on just transition with context-specific creativity in micro-cases will be crucial for policy and labour market institutions to foster positive outcomes. Core social dialogue topics of the just transition (e.g. related to active support to quality employment, and to equal access to quality, affordable and inclusive education, training and life-long learning programmes), depend on this exercise. A main challenge of the just transition in Belgium consists of in widening the access to professional training and education for labour market entrants and current workers to ensure that people's skills are aligned with the demands of a decarbonised economy. Successful examples of 'collective skill formation systems' as in Germany and Austria are prime examples of social dialogue exceeding its usual boundaries. These policies coordinated education and employment policies in light of new technological developments and shifting skills needs, designing vocational education and training in close concertation with the needs experienced by the industrial sector (Durazzi & Geyer, 2020).

Second, the need to broaden the range of impacts and stakeholders considered. The recognition that there is no silver bullet 'just transition' solution to the challenges faced (Galgóczi, 2020), that responses will need to be varied, also implies that for their success, a deviation from the traditional capital/labour relationship with its known actors and interests is necessary (Parker et al., 2021). The challenges posed by climate change and environmental degradation have led scholars to underscore the necessity of redefining the role of social dialogue for the 21st century (Rosemberg, 2010, Räthzel and Uzzell, 2011, and Hampton, 2018). For instance, recognizing the right of affected parties to voice their concerns implies the need to: i) identify and consider a broader spectrum of impacts that extend beyond immediate consequences for participants, encompassing global and far-reaching effects; and ii) find ways to involve a more extensive array of affected parties than usual, including those unable to participate directly in negotiations, possibly situated in different locations and timeframes (Upham et al., 2022).

One concrete translation of this line of thought is made by the Council of the European Union in its 2022 communication on "ensuing a fair transition towards climate neutrality" (Council of the European Union, 2022). When implementing and monitoring just transition policies, the member states are invited to adopt a 'whole of society approach', involving regional and local authorities, the social partners, civil society and stakeholder organisations. The substantive societal questions entailed in the very premise of just transition require debate, concertation, collective efforts and engagement, beyond the classic tripartite of workers, employers and government. Social dialogue structures and practices should be designed to include, in a structural way, non-governmental organisations, community groups, and organisations representing vulnerable groups such as migrants, young people, and people in poverty.

Box 20. Multi-Actor Social Dialogue for a Food System within Planetary Boundaries

Crossing planetary boundaries and failing to achieve minimum social conditions put global and regional and local food systems under severe pressure. A food system includes all elements (environment, people, inputs, processes, infrastructure, institutions, etc.) and activities related to the production, processing, distribution, preparation and consumption of food, and the results of these activities, including socio-economic and environmental outcomes (HLPE 8, 2014: 29). This systemic nature makes the transition of the food system a wicked issue. However, this transition is necessary, and urgent, because of the impact of the system on the planet, on public health, on farmers, as well as more generally on the resilience and values of society. After all, the food system also has geopolitical and cultural-social dimensions.

After several decades of euphoria due to the enormous increase in the productivity of food production in Europe after WWII, the negative consequences of this became clear from the 1960s onwards . On the one hand, on the living environment (with a special impact on components such as water, air, soil and biodiversity). On the other hand, the social and economic position of farmers, who gradually lost their agency due to a combination of the interests of the agro-business complex with those of political agendas . Moreover, this has led to a change in our food environment, including the shift to convenience food and the creation of 'food swamps' (parts of a residential environment where healthy food is not available in the vicinity). In Belgium and Europe, it has led to an exponentially shrinking group of farmers in an increasingly polluting and climate-damageing production system, combined with serious consequences for public health and the social welfare system.

Regionally and nationally, the response to this multiple impact of the food system on society is largely characterised by fragmented initiatives in an often incoherent policy, in which *Kurieren am Symptom* and a defence of sector interests take precedence over developing a long-term vision that can serve the public interest. This allows the established powers in the agro-business complex to consolidate their position, through inertia or a set of incremental measures that leave the fundamental issues (such as, for example, a drastic reduction in livestock, a continuing legal uncertainty for companies, the precarious economic situation of many producers, or the concentration of power of the retail and food industry) unmentioned and unanswered and thus perpetuate the status quo.

Different discourses, arising from different paradigms, indicate the failure of the food system as a problem of food security, food quality, food justice or ecological impact (Béné et al., 2019). These discourses, each with their own constituencies, suggest different solutions, but are often incompatible[76]. Building on principles of discursive representation (Dryzek & Niemeyer, 2008) and deliberative governance (Dryzek 2010), and with the public interest in mind, the possibility of developing a future pact for the food system can be explored. This can serve as a guiding framework for policy and society.

a. Led by a mandated body, the building of this pact starts from a shared commitment to address the flaws in the food system through a just transition.

b. This pact then develops a vision of what the society of the future looks like, and how the food system has a place in it. In the first instance, it builds on values and norms, and sets out guidelines, guiding principles that in a second phase serve as a touchstone for all parties involved. In other words, such a vision is not based on technological possibilities, specific revenue models, extrapolation of trends or the current constellation of actors in the food system, but on a desirable vision of the future. It is essential that this vision is jointly developed by a broad-based coalition of stakeholders (i.e. citizens, including young people and unorganised or unrepresented groups; civil society; industry and policy).

c. In a next step, the coalition of stakeholders develops the stepping stones towards this shared vision and translates them into concrete guidelines and enforceable regulations, in which both the principles of the future vision and the fairness of the transition measures are decisive.

d. Inducing a paradigm shift also presupposes the development of a different way of thinking about the food system, where efficiency, growth or profitability are no longer paramount. It therefore requires a system of monitoring based on indicators that differ from the current, common evaluation criteria.

A broad-based, but at the same time politically mandated dialogue, based on the above principles, seems to be a possible route for the food system to get through a just transition.

76 Kuhn, (1996).

In sum, designing, organising and implementing the just transition should take place in a strengthened framework of social dialogue, respecting workers' rights, enhancing their quality of life and future prospects. This requires a fundamental sensitivity to context-specificity, implying a crucial role for participation of targeted and affected groups at all levels of decision making. At the same time, enlarging the scope of traditional social dialogue, along with a further institutionalisation of social dialogue practices with actors that are currently underrepresented in societal debate, is necessary.

3.3.2. Strengthening Worker Participation

Given their centrality in the market economy, firms have drawn attention as to how they deal with environmental issues and to what extent they engage in the ecological transition. Increasingly, the business community is faced with the question of how the business outputs can take part in and even foster the ecological transition via innovation, and how their production processes can reduce their environmental impacts. In the last decade, the rise of financial reporting based on Environmental, Social, and Governance (ESG) indexes speaks for the understanding by the business community that environmental risks (in terms of sourcing, outputs, etc.) have to be properly factored in the profitability of any business investment. . It is becoming increasingly clear that to ensure a just transition, workers will have to be recognized as citizens in the workplace as well, i.e. to be treated as equal in dignity and rights not only in the political sphere but in the economy (Ferreras 2017, Ferreras, Battilana, Méda 2022). Our diagnosis on the connection between the need to democratise corporate governance by recognising workers' ability to weigh on the decisions of the firm, and the just transition lies with three core arguments.

First, in a consistent manner throughout the past two decades, the recognition of the role played by workers, or that they should play, in these processes has become increasingly salient. Since 2008 and as a part of its Green Jobs Initiative, the International Labour Organization (ILO) has referred to the idea of Just Transition (Renner et al., 2008), with a particular emphasis on the world of work. The recent ILO report on 'Greening Enterprises: Transforming Processes and Workplaces' also points out: "[t]he participation of workers in environmental matters is crucial to reducing enterprises' environmental impact and to putting into practice environmental policies" (ILO, 2022a, p. 66). Moreover, the ILO highlights two particular dimensions that can be considered as necessary conditions for the ecological transition to take place, and which rests with workers being involved at the core of the firm's decisions: the speed of the process and the efficiency and intelligence of the process (delivering the right conditions of implementation). The ILO's perspective is globally significant as the tri-partite institution has a decisive impact on the formulation of labour regulations, public policies, and normative references for the world of work.

Second, granting real weight to workers' voice in the firm's government would enable our society to structurally value another type of rationality. It is the type of rationality that workers would bring to work, and which is needed if we want to get out of an extractivist productive regime: a political rationality based on expressive and democratic expectations (Ferreras, 2007, 2017). In this line of thinking, Ferreras suggests that workers are best defined as the labour investors without whom there would be no product nor any service delivered (2007, 2022). This notion recognises that they are the a central constituency of firms, governed by the decisions of the firm, but also that they are the first constituency concerned with ecological matters at company level, given that they engage their bodies and their minds, at great environmental risk at times, within the firm's activities. Thomas Diefenbach reiterated the same argument, stating that "decisions that are made democratically tend to take more aspects into account, and they tend to be more comprehensive and more moderate because more people (with diverse views) are involved" (Diefenbach, 2020, p.165). This does not mean that democratic organisations automatically adopt a pro-environmental behaviour, but that overall they tend to take into account the environmental concerns more seriously. Nevertheless, such organisations have indeed a better chance to develop environmentally friendly activities than traditional firms because they are, by design, valuing other rationalities that the narrow instrumental

return on capital investment pursued by financial investors (Ferreras et al., 2020, 2022). Economic democracy at firm level is viewed as an effective tool to diminish inequalities, which have been demonstrated as being harmful to the environment (Jorgenson, 2015; Jorgenson et al., 2017; Rao & Min, 2018, as cited in Gunderson, 2019, p.40). This argument rests in the recognition that workers experience a direct confrontation with potential environmental risks. Moreover, workers in industry often live around the production sites in which they are employed. Under democratic conditions within firms, workers will find it easier to express the environmental risks they face on a daily basis. Hélène Landemore (2022, p. 51) illustrates this point by the following: "[w]Workers,[…] who often live near the factories where they work and cannot afford to move easily, would think twice about using a technology that took a significant toll on the health and environment of themselves and their communities."

Third, workers' involvement could help speed and deepen environmental measures implemented within organisations. Scholz and Vitols (2019) found a strong and positive relation between codetermination at corporate level in Germany and the adoption of targets for emissions reduction and the publication of a CSR report. This empirical result echoes survey results collected by Kite Insights' (2022). Based on a sample of 7.134 employees of private sector companies in several countries including Belgium, France, Brazil, the UK, and the US, the consulting firm Kite Insights' found that a large majority of workers (8 out of 10) are willing and motivated to act on climate issues in their jobs. However, 83% reported to feel unable to do so, mainly due to lack of meaningful capability within their workplaces. Addressing this capability gap in the workplace thus looks instrumental to speed up environmental ambitions and ensure that organisations will be able to help our society deliver a just transition.

3.3.3. Strengthening Citizen Participation

In parallel with strengthening social dialogue and worker participation, a broader approach to participation of all citizens is crucial to a Just Transition. As discussed above, participation in decision-making ensures the legitimacy of the process, improves the quality of decisions, and fosters public support for their implementation (see Section 1.2.4).

In order to enable environmental democracy and the fulfilment of human rights, specific legal rights for individuals and groups to participate in environmental decision-making are institutionalised at international, European and national level. The legal rights enshrined in the 1998 UNECE Aarhus Convention and their implementing EU and Belgian legislation provide a readily deployable tool for improving the democratic credentials of a Just Transition through the recognition of the right to participate and their strong link with access to information and access to justice.[77]

Box 21. The Three Pillars of the UNECE Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matter – "The Aarhus Convention" (Aarhus, 25 June 1998)

Access to Information

The Aarhus Convention requires its Parties to establish a system that enables the public to request and receive environmental information from the competent public authority. It also requires that Parties establish mechanisms through which public authorities collect environmental information and actively disseminate it, without the need for a request. Environmental information refers to "inter alia, the state of the elements of the environment, factors that affect the environment, decision-making processes and the state of human health and safety". (UNECE, 2014, p.75). This notion includes "conditions of human life" interpreted as including "air quality, quality and availability of water and

77 Both the European Union and its member states are contracting parties to the Aarhus Convention whose provisions are therefore binding upon them. The EU signed the Aarhus Convention in June 1998 and submitted its instrument of approval on 17 February 2005. Following approval from each of the Belgian parliaments, on 21 January 2003 Belgium ratified the Aarhus Convention, which entered into force on 21 April 2003.

food, housing and workplace conditions, relative wealth and various social conditions" (UNECE, 2014 p.55).

Public Participation

Under the Aarhus Convention, the right to participate applies to decision-making on specific activities; on the preparation of plans, programmes, and policies; and on the preparation of "executive regulations and other generally applicable legally binding rules that may have a significant effect on the environment"(Art. 6, 7 and 8).

Under the Convention, the "public concerned" (in decisions on projects) and the "public" (in decisions on plans and programmes) must be informed "early in the decision-making procedure" and in "an adequate, timely and effective manner"(Art. 6(2) and 7). The competent public authority must ensure access to information relevant to the decision. Participatory procedures must include "reasonable time-frames" to prepare and shape participation, "when all options are open and effective public participation can take place"(Art. 6 (3) and (4)). The Parties have discretion to choose the forms of participation, but as a minimum, these must "allow the public to submit, in writing or, as appropriate, at a public hearing or inquiry with the applicant, any comments, information, analyses or opinions that it considers relevant to the proposed activity" (Art.6(7)). The competent authority must take "due account" of the outcome of participation in the decision and "make accessible to the public the text of the decision" and give reasons. (Art. 6(7) and (8)). The Convention includes a softer obligation with respect to participation in decisions on policies. In this area, "to the extent appropriate", Parties "shall endeavour" to provide space for participation in the preparation of policies relating to the environment. (art.6 (9)).

The Aarhus Convention is also concerned with public participation in environmental law-making. Each Party must "strive to promote effective public participation at an appropriate stage, and while options are still open, during the preparation by public authorities of executive regulations and other generally applicable legally binding rules that may have a significant effect on the environment" (Art.8). To implement this obligation, the same procedural requirements related to specific activities, and plans and programmes apply but in a softer form. (Art.8 (2)). "As far as possible", the outcome of participation "should be taken into account". (Art. 8 (3)).

Access to Justice

The Aarhus Convention requires Parties to establish adequate review procedures to implement the rights of access to information and of public participation in environmental decision-making under the Convention as well as the rights guaranteed under national environmental law, more widely (Art.9).

While the Aarhus Convention provides for minimum legal standards and has recognised limits, it remains a cornerstone of environmental democracy (Lee, 2023; Barritt, 2019).

Building on the international, European and national legal instruments, the rights of individuals and groups, especially the most vulnerable, to meaningfully participate in decisions about a just social-ecological transition should be strengthened by focusing on four areas.

First, the scope of application of participatory rights should reflect an integrated approach to decision-making processes on the social and environmental issues surrounding a just transition. As discussed in the report, there is a strong relationship between environmental democracy and social justice (Young 1990). This relationship is crucial for achieving the core social and environmental objectives of a just transition. Both environmental and social rights pay attention to participation of individuals and groups, in particular those (most) affected by potential decisions, in specific types of decision-making processes. However, to strengthen participation for all in a just transition context, attention should be paid to the key steps of, and the access to, participatory processes and institutions related to the multiple and interconnected decisions on the just transition. This requires a broadening of the scope of application of participatory rights to a wider set of decision-making processes related to the just transition (e.g. investments, innovation, health decisions etc). Strengthening participation in this way means that access to information, public participation and access to justice should be reinforced across sectors and at all governmental levels.

Second, from the local to the EU level, it is necessary to open up the decision-making processes on the just transition so as to include the plurality of perspectives on the issue. A wider public should be able to contribute to decisions on a just transition, beyond usual stakeholders, interest groups, trade unions or the "public concerned" (Lee and Abbot, 2003). Attention should be given to

vulnerable social groups such as people in poverty, the youth, migrants and other groups affected by decisions related to the transition. In a more inclusive framework, the selection of the relevant participants by the competent authorities "could effectively act as a procedural guarantee of inclusion of relevant voices, rather than a reinforcement of powerful positions" (Armeni, 2023, p. 1051). This also relates to the territorial extension of participation. Inequalities, needs and impacts do not have an exclusively local or regional dimension (see discussion of cosmopolitan justice above). As a result, the contribution of a broader variety of actors should not be exclusively seen as a contribution from a local or regional actor geographically linked or impacted by a decision. Extending the territorial scope of participation in a Just Transition process can contribute to better social inclusion of all, a more integrated understanding of Just Transition problems, and an exchange of best practices. This means opening-up the decision-making process at various levels to actively identify and support the participation of different voices, interests, vulnerabilities, values and expertise/experiences related to a just transition, e.g. by organising structures for citizen participation and by supporting and taking into account the work and findings of organisations that represent and give voice to different social groups (especially the most vulnerable)[78]. In addition, an extended territorial approach to participation will allow a better coordination among regions, between regions and federal / EU actions, as well as a better understanding of needs and resources.

Third, the ability of citizens to influence the decision-making processes on just transition needs to be reinforced. This is what Bonvin refers to as "capability for voice" understood as "the real freedom to express one's point of view and have it taken into account" (Bonvin, 2008). It is important that decision-making processes are not only inclusive in theory but also in practice to avoid tokenism (Arnstein, 1969). While timely access to information and procedures is crucial, a key indicator of the quality of the process is the ability to influence "when all options are still open", as required under the Aarhus Convention (art 6(4)). While participation might be often difficult in practical terms (Lee 2023, Abbot, 2020, Urbinati and Warren 2008), it is the fundamental democratic strength of public participation and a legal requirement under the Aarhus Convention. Listening to citizens' "voice" and "choice" in the just transition (Stevis 2021) means working towards providing a clear indication of the extent to which decisions are open to influence and the weight that will be given to participants' opinions, values, knowledges, experiences and distributive preferences. Data on participation and the implementation of participatory rights in relation to a Just Transition should be collected and published. Attention to influence implies strengthening institutional channels to disseminate the outcome(s) of participatory processes to explain how participants' input has been considered, how the decision has been taken and conflicts addressed (Machin 2020). Explaining how the outcome of public consultations has been considered is also important for the legitimacy of such processes, for public trust and for the compliance with legal obligations.

Some lessons on ways to deepening citizen participation could be taken from case studies of deliberative fora and minipublics (e.g. citizens' assemblies, community boards). Analysing and evaluating processes and outcomes offers insight into how, when, and under which conditions these can generate most usable and effective advice, suggestions and decisions (Fishkin & Mansbridge, 2017). The field of climate and environmental policy have received particular attention, as the ecological and climate crises can serve as a prime example of the challenges our current representative democratic systems struggle to address effectively (Fiorino, 2018; MacKenzie, 2018). Willis et al. (2022) contend that the solution to the latter lies in advocating for 'more democracy' rather than 'less democracy.' They posit that fostering conducive environments for thoughtful debates on how societies can tackle the climate crisis could lead to more comprehensive, supported, and faster policy responses compared to what conventional democratic systems centred on the competition for citizens' votes currently offer.

78 See, for an applicable example, the thematic biennual report 2018-2019 of the Combat Poverty Service "Sustainability and poverty. Contribution to political debate and action".

Box 22: Lessons Learnt from a First Wave of Climate Assemblies

When it comes to shaping climate policy, Climate Assemblies are the fastest growing type of public participation and deliberation in Western Europe. Since 2019, there have been over a dozen of national climate assemblies, next to many regional and local ones (Boswell et al., 2023).

Climate Assemblies are citizens' assemblies applied to the issues of climate change. In the past few years, they have been set up to deal with topics like global warming, biodiversity loss, energy crisis and other major environmental challenges. National climate assemblies have been organised in Austria, Denmark, Finland, France, Germany, Ireland, Jersey, Luxembourg, Poland, Spain, Scotland and the UK. Belgium has its first national climate assembly in the Fall of 2023; the Netherlands organises one in 2024. Climate Assemblies are increasingly organised by public authorities, such as the federal government in the case of Belgium, or the national parliament in the forthcoming Dutch case.

Figure 50: National and local climate assemblies across Europe

Source: Smith, (2023b)

Climate Assemblies typically bring together a random sample of the overall population (sortition), thus creating a mini-public that is broadly representative of the nation as whole. The number of participants usually lies between 50 and 150 participants. They are drafted by lot through a two-step sortition process: first, several thousands of letters are sent to a broad random sample of addresses across the country, second, on the several hundreds of positive replies, a stratified sample is applied, in order to ensure equity on the basis of age, gender, geography, level of educational attainment, etc. Even 'attitude towards climate change' is increasingly used as a selection criterion, if only to guarantee maximum diversity and to anticipate criticism of skewed representation. Without this second step, there is a substantial risk of societal bias, whereby traditional elites (white, educated men above of the age 50 with an above-average concern for climate) would yield more power than their demography allows.

Once the participants have been recruited, Climate Assemblies in Europe give them time, space and information. Over the course of several weekends, experts are invited to shed light on different aspects of the topic at hand. Participants are often given the chance to invite additional experts, if only to avoid the impression that they are being brainwashed by the government's favourites. These experts are 'on tap', not 'on top': they feed but do not steer the debate. Professional facilitators then help the participants through lengthy deliberations in breakout-rooms to generate a number of policy proposals. Towards the end of the Climate Assembly, these proposals are voted in a plenary session and are adopted as formal recommendations.

Table 9: Citizen Climate Assemblies in Europe – overview with key characteristics.

	Year	Level	Topic	Participants	Recomm's	Uptake	Budget
Netherlands	2024	Govt	Climate+E	200?	-	-	6M?
Belgium	2023	Govt	Just Trans	50+25	-	-	450k?
Ireland	2022-23	Govt	Biodiversity	99	-	Must respond	?
Poland	2022	Foundation	Energy	86	>100	No commitment	195k
Spain	2021-22	Govt	Climate	94	172	Commitment to implement	?
Austria	2022	Govt	Climate	100	93	Commitment to respond	2M
Luxemburg	2022	Govt	Climate	100	56	Commitment to consider	700k
Germany	2022	Foundation	Climate	160		No commitment	1.9M
Jersey	2021	Parliament	Climate	45		Commitment to consider	300k
Denmark	2020-21	Govt	Climate	99	117	Commitment to respond	-
Finland	2021	Govt	Climate	50		Commitment to hear	-
Scotland	2020-21	Govt	Climate	105	81	Commitment to respond	1.6M
UK	2020	Parliament	Climate	110	>50	Commitment to consider	590k
France	2019-20	Govt	Climate	150	149	Commitment to consider	5.4M
Ireland	2016-18	Govt	Climate	99		Commitment to consider	1.5M

Source: Author's compilation based on KNOCA reporting and research (Smith 2023).

The wave of Climate Assemblies we have seen between 2019 and 2023 allows for some first conclusions. On the positive side, Climate Assemblies have invariably come up with policy recommendations that go significantly further than what often seemed politically feasible at the same time. The French "Convention Citoyenne pour le Climat" that ended with a report of 149 recommendations probably presented the most coherent and ambitious policy package ever seen in European member state so far. Another positive feature is that Climate Assemblies tend to be trusted procedures and often inspire more trust that traditional party politics, especially among the least educated and least moneyed in society. In the past years, they have had impact on the participants themselves, on the public at large, on policy development and even on institutions.

However, the actual impact of this first wave of Climate Assemblies has varied strongly between countries, as budgets, commitments and political will differed strongly. In many cases, the scope of the assembly was just too broad to make a difference. More recent examples, like the Irish assembly on biodiversity and the Polish process on energy poverty suggest that a more topical treatment might be the way to go.

The best Climate Assembly has a very well-framed question at the beginning, along with a very clear commitment as to what will happen with the outcome afterwards. As processes become more topical, Climate Assemblies are likely to develop into more permanent features within the policy landscape. Rather than one-shot ad-hoc events, they might become institutionalised tools for public deliberation. In that respect, the Brussels region has become the world's first political entity to have established a permanent Climate citizens' assembly.

3.4. A Shared Vision and Associated Policy Objectives

As explained, the rise in popularity of 'just transition' among many different actors have contributed to the emergence of a plurality of conceptions of just transition (see Section 1.1). Some research explore the diversity of conceptions (Wilgosh et al., 2022 ; Barnes et al., 2022 ; Cahill and Allen, 2020 ; Didier, 2020 ; Morena et al., 2018).

A plurality of conceptions of just transition has also been highlighted at the scale of Belgium. Based on documentary research, exploratory interviews and an online survey carried out among Belgian representatives of civil society organisations, administrations and citizens' movements, a recent study (La Gioia et al., 2023) has identified four contrasting visions of just transition in Belgium: one that could be labelled as 'Holistic', a 'Workers-Centered', a 'social-ecological state', and a 'Pragmatic Business-Centered' vision. As illustrated in the figure below (Figure 51), these visions are distinguished according to the degree of priority respondents give to various issues such as the reduction of existing inequalities and the provision of access to fundamental rights for all.

Figure 51: Main characteristics of the four visions of a just transition in Belgium

Vision 1: "Holistic" vision of a just transition	Vision 2: "Workers-centered" vision of a just transition	Vision3: "Social-ecological state" vision of a just transition	Vision 4: "Pragmatic business-centered" vision of a just transition
The just transition should **simultaneously reduce environmental degradations and reduce existing inequalities, while guaranteeing access to fundamental rights for all**	The just transition **should first focus on workers-related issues and should aim at guaranteeing the perspectives of workers and their access to decent and quality jobs as part of the ecological transition.**	The **action of the state (taxation, investment and social security) is key in ensuring a just transition.** The ecological crises and environmental degradation should be seen as social risks to be mutualized	The just transition **should ensure a "level-playing field" for companies** and should aim at **guaranteeing the security of supply of energy and materials.**
			

Source: La Gioia et al., 2023

Areas of consensus between the different Belgian actors have also been identified, notably regarding the need for inclusive participation. La Gioia and colleagues (2023) have pointed out to a consensus among the survey participants on the following item: "Just transition requires meaningful participation, including that of vulnerable groups. Meaningful participation implies involvement that affords some degree of influence in the decision-making process". The table below presents the other items which also attracted a high level of agreement among the respondents (table 9).

Table 9: Items with the highest total score in the survey on visions of just transition in Belgium

Items	Score
Just transition requires meaningful participation, including that of vulnerable groups. Meaningful participation implies involvement that affords some degree of influence in the decision-making process.	+ 41
Just transition requires investing in reskilling workers	+33
Just transition requires making sustainable alternatives accessible to disadvantaged social groups	+28
Just transition should target vulnerable workers (ex: fossil fuel industries workers)	+28
Just transition requires phasing-out, as of now, industries, technologies, business models and practices that raise systemic sustainability issues (ex.: fossil fuel extraction, polluting vehicles…)	+27
Just transition should target vulnerable social groups (ex.: low-income households, people with health concerns, people living in rural areas, women, elderly people…)	+26
The "just" in "just transition" should mean ensuring access to fundamental rights for all	+25

Source: La Gioia et al., 2023, p. 14. Note: The item in bold receives high scores in all three factors and is therefore the subject of a consensus

These areas of consensus can serve as starting points for building a shared vision of just transition in Belgium. Such a vision is essential to give to the actors orientation (i.e.: where to go) and guidance (i.e.: what to do) for moving towards sustainable future (Vergragt & Quist, 2011). Milkoreit further stresses the importance of visions for transformation processes: "Explicit visions of desirable (sustainable) […] futures are necessary to motivate and guide any kind of change, but might be particularly important for triggering transformational change – a process of fundamentally altering

the structure and character of a given system" (Milkoreit 2017, p. 1). The vision of Just transition for Belgium needs to be built as part of a broad and inclusive public debate (see also Section 3.3). The process of building the vision would benefit from being supported by participatory foresight tools and methods, as it will be presented in the next section (see Section 3.5.2).

The vision of the just transition for Belgium needs to be Operationalised into concrete policy objectives. For an effective and broadly legitimised policy strategy, it is indeed crucial to make shared policy objectives explicit. The social and ecological policy objectives elabourated previously (see Section 2.3.1) provide useful anchorage points to which a national just transition strategy can be connected, while their integration requires increased mutual coherence and stronger ties between all relevant policy domains.

3.5. Indicators, Evaluation and Foresight

3.5.1. Developing Science-Based Monitoring and Evaluating Systems

Ex-ante and ex-post evaluation of just transition policies is essential. To that end, a monitoring strategy should be implemented thatallows to track whether, to what extent, and under which conditions progress has been made with regard to the formulated objectives and to evaluate whether a (proposed) policy is coherent with the just transition objectives set forward in the policy making process. A monitoring strategy includes tracking indicators geared at policy inputs (e.g. legal initiatives, proposals for law and policies, household budgets), throughputs (political efforts made, policy processes), output (laws and policies, public expenditure), and policy outcomes (e.g. better insulated houses for low-income households). A coherent monitoring strategy is designed in accordance to the consensual policy objectives for a just transition.

For any monitoring to be effective and efficient, suitable indicators are fundamental. This implies that indicators should identify the essence of the problem studied, have a clear and accepted normative interpretation and a consistent measurement (indicator validity). It should also be robust enough so that if constructed multiple times and in slightly difference way, it would still provide the same result (reliability). Where indicators are quantitative rather than qualitative, they should be statistically valid and have neither big standard error nor large confidence intervals. Finally, the indicator should be responsive to policy changes and actions.

Applied to a just transition, indicators will need to be sensitive to a vertical (spanning different levels of governance, from the local to the European level) and horizontal integration (bringing together different sectoral data streams). This also implies that the indicator set should encompass a layered understanding of vulnerability. Many sectors relevant to the ecological transition are usually not occupied with also measuring the social dimension to avoid escalation of inequality, the integration requirements are hard to fulfil with existing data. Data in domains such as mobility, energy, or socio-economic information are typically organised in separate streams and do not easily allow to grasp interlinkages. Just transition indicators should therefore be accompanied by a data collection strategy that is specifically designed to treat the social-ecological nexus within the key domains of just transition (see section 2.2). In the domain of health, a lot of work remains to be done in terms of assessing the vulnerability of the Belgian population for ecological shocks at the level of a statistical sector, making use of publicly available datasets based on, for example, census data. Development and application of a methodology for local assessments (resulting in homogenous data) should be taken up at different levels.

The development of a Just Transition Dashboard or Scoreboard would allow for this, in analogy, to social scoreboard put forward to monitor the implementation of the European Pillar of Social Rights.

To monitor evolutions in terms of just transition objectives in a meaningful way, it is essential to treat both ecological and social dimensions in an integrated way. Based on different scenarios for an exploratory study, Bauler and colleagues (2022) provide the outline of a dashboard of indicators to monitor the implementation of a social-ecological policy strategy in Belgium. The authors distinguish between eight just transition domains (health, mobility, housing, education, biodiversity, social life, economic and work security and physical security) and three dimensions of justice (distributive, recognition, procedural). A just transition-inspired indicators approach for Belgium could encompass relevant sustainable development indicators as used by the Federal Planning Bureau, while at the same time complementing these with a more integrated perspective that would be enabled by a data as outlined above. Sciensano indicators on health and environment are a good example, where for the domain of health, exposure, impacts and vulnerability are already squared with (a limited number of) socio-demographic characteristics to allow for joint assessment.

Besides monitoring via indicators, a just transition also requires analytical policy evaluation. In Belgium, policy evaluation practices are underdeveloped in comparison to our neighbouring countries. Both in research and policymaking, evidence on the distributive and environmental impacts of policies remains partial and punctual, ad hoc rather than strategic. Adequate and representative microdata at the intersection of the social and environmental domains are needed but not available. The data strategy needs to be complemented by a practice of ex-ante policy evaluation inside the policy advisory bodies, using scientifically established methods. The simulation models used by the Federal Planning Bureau and the Federal Social Security Service are important tools to start with. Knowledge on the policy impacts allows policymakers to improve the design of social, economic, environmental and climate policy (bundles) and make sure they are simultaneously effective in mitigating emissions, minimising overall costs, and enhancing social rights.

The indicators and policy evaluation insights should be brought together and made publicly available through reporting on just transition in official progress reports and national plans. This would require grouping and centralising knowledge and information between the different government institutions that deal with just transition related themes. The sustainable development units of the Federal Planning Bureau, the National Bank, Statbel, and Sciensano, and others could be strengthened to that end. Mutual alignment and cooperation between the many public bodies directly or indirectly involved is needed (see Table 11 presented in Section 3.6)

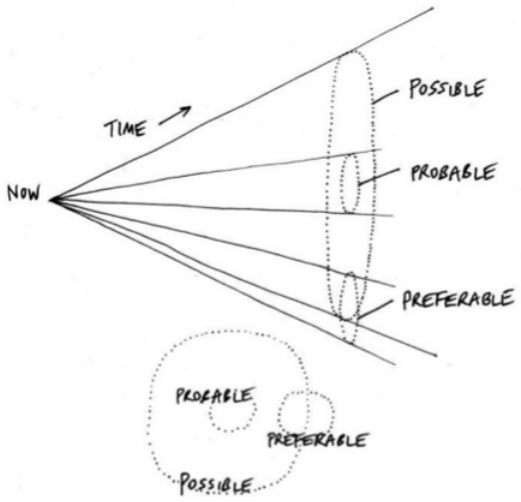
While such a data, monitoring and evaluation strategy remains to be developed, it is already clear that today's blind spots will need to be addressed. More granular social-ecological knowledge - including definitions, data collection and indicators – will be needed on energy and resource efficiency of different housing sectors, on accessibility and affordability of different forms of sustainable mobility, renewable energy, food and water, on quality of jobs and skills, on cumulative vulnerability, on adequacy of protection against various types of ecological shocks and economic shocks, and on social impacts from the wider Earth system boundaries (beyond climate, biodiversity and pollution) (McCauley & Pettigrew, 2022; Strambo et al. 2022; Sabato et al. 2023).

3.5.2. Building a Culture of Foresight and a Long-Term Governance

A just transition calls for mobilising foresight tools and methods. 'Foresight' or 'futures studies' ("prospective"/"toekomstverkenning") is a future-oriented approach assuming that the future is multiple, uncertain and potentially in rupture with the present and that it therefore cannot be predicted. This approach aims at envisioning and analysing in a systemic and holistic way alternative images of the future (Fransolet, 2019b, 2022). It explores *possible* and *preferable* futures (see figure 52) by mobilising a wide variety of quantitative, qualitative and mixed methods, including scenario

approach[79] (Popper, 2008; Börjeson et al., 2006). Well-known examples of foresight exercises are the global climate change scenarios analyses developed by the IPCC (IPCC, 2023). In Belgium, examples of climate foresight exercises are the scenarios for a climate neutral Belgium by 2050 (FPS Health - DG Environment - Climate Change Service et al., 2021) mentioned previously and other low-carbon scenarios analyses developed at the regional scale (see for e.g.: ICEDD et al., 2018 ; CLIMACT, 2017 and 2012 ; CLIMACT et al., 2015). Foresight is different from 'forecasting' ('prévision'/'vooruitzichten'), an approach aimed at predicting the *probable* future based on the extrapolation of past trends (Calay et al., 2022a). However, as will be discussed later, these two future-oriented approaches are complementary.

Figure 52: Probable, possible and preferable futures



Source: Candy (2010), p. 35.

By informing the present actions in the light of alternative futures, foresight constitutes a decision and orientation-support tool allowing the integration of the long-term and its uncertainties into policy processes (Calay et al., 2022b). It helps societies prepare for anticipated changes ('preactivity') and bring about desired changes ('proactivity'), thus enabling them to overcome the economically and socially costly[80] logic of crisis management ('reactivity') (Godet, 2007). In this sense, foresight invites us to "re-appropriate, individually and collectively, the future, [and] become together the architects of a chosen future rather than victims of a suffered future" (de Jouvenel 2004, p. 83, personal translation). This reappropriation of the future is essential to ensure a just transition.

The development of foresight exercises is needed for supporting the elabouration and implementation of just transition policies. Studies or research based on foresight tools and methods can help anticipating and analysing transition and/or natural risks (and associated vulnerabilities) to inform the design of policies to prevent and protect from these risks. Foresight exercises can also enable building a shared vision of a just transition (see Section 3.4) and the policy strategy to make this future happen[81]. Such visioning exercises can further contribute to challenging the established

79 A scenario usually corresponds to a narrative about the future. This includes 1) a representation of the current state of the system, 2) a description of the future situation (i.e.: image of the future), and 3) the pathway that connects the present to the image of the future (Godet, 2007; de Jouvenel, 2004). Various scenario types and techniques exist. Börjeson et al. (2006) have developed a scenario typology including the "predictive", "explorative" and "normative" scenarios, which respectively aim at exploring p*robable (*"What will happen?"), p*ossible (*"what could happen?") or p*referable (*"what should happen?") futures.

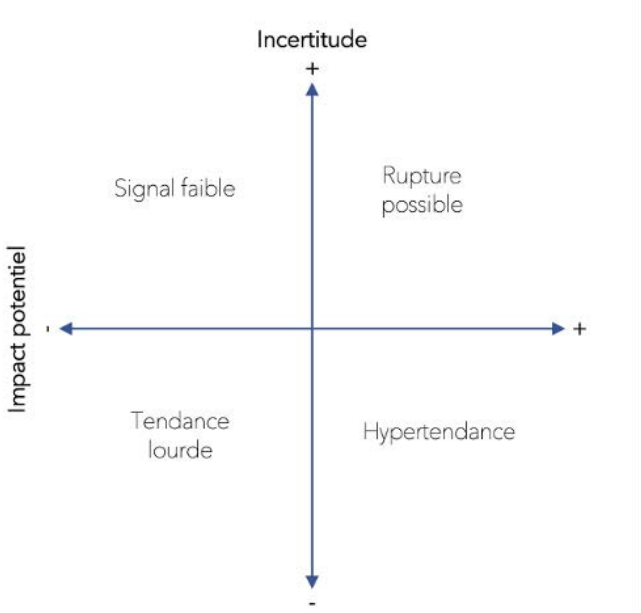
80 Many works, including the *Stern Review on the Economics of Climate Change*, demonstrate that a crisis management logic consisting of reacting to climate change impacts when they occur is much more expensive than an anticipatory approach consisting in preventing these impacts by investing in climate change adaptation and mitigation. The exorbitant economic and social cost of the logic of crisis management was notably observed in Belgium during the flooding of the Vesdre in July 2021 mentioned previously (see Section 2.2.2).

81 Foresight includes many proven methods and tools to collectively imagine of desirable futures (or 'visions') and pathways to connect these futures to the present, of which the best known is backcasting (Svenfelt et al., 2019 ; Höjer and Mattsson, 2020 ; Dreborg 1996 ; Robinson, 1982).

unsustainable paradigms and to creating new imaginaries necessary to ensure the just transition. Due to their disruptive attributes, the visions of sustainable futures developed as part of foresight exercises can, indeed, promote transformations by inspiring critical thinking and the development of alternative conceptions of the future (Fransolet 2019b, 2022).

Besides the development of foresight exercises, the establishment of foresight watch systems is essential to support the elabouration and implementation of just transition policies. Foresight watch aims at "collecting a variety of information in a continuous and structured manner and analysing it to understand the present and future transformations" of a given territory, sector, or organisation as well as of its environment (Calay et al., 2022, personal translation). It helps to detect the 'heavy trends', 'mega trends', 'weak signals' and 'possible ruptures' that are likely to influence the evolutions of the territory, sector or organisation considered (see figure 53). The knowledge produced through foresight watch can directly support policy action or be analysed in more depth as part of a foresight exercises. The establishment of foresight watch systems is crucial to navigate the maelstrom of uncertainties associated with social-ecological problems. Foresight watch is notably necessary to anticipate emerging natural and transition risks, but also any other change likely to threaten the achievement of just transition objectives (ex.: geopolitical conflicts, rise of authoritarianism…). Besides the detection of emerging risks, it can also help identify new opportunities to pursue just transition objectives.

Figure 53: 'Heavy trends', 'mega trends, 'weak signals' and 'possible ruptures'



Source: Durance, (2023, p. 106

In Belgium, a culture of foresight still needs to be built to ensure a just transition. While foresight practices have been established for many years in neighbouring countries like France, the Netherlands, and the United Kingdom, in Belgium, these practices are only emerging (Fransolet, 2019b; Petit Jean, 2016). The poor culture of foresight in Belgium has been extensively documented for the cases of energy and health policies in Wallonia by Petit Jean (2016). In view of the crucial role of foresight in the governance of the just transition presented above, it is essential to strengthen the culture of foresight in Belgium. Several avenues to facilitate the institutionalisation of foresight stem from the research carried out by Petit Jean (2016), including the funding and dissemination of applied, theoretical, methodological and reflexive works on foresight that could notably contribute to promote the acculturation of policy-makers to this practice, the formal integration of foresight into the policy cycle, and the co-definition with cabinets, at the start of the legislature, of long-term issues to investigate. These avenues would benefit from being analysed in depth and supplemented as part of an extensive reflection on the construction of a culture of foresight in Belgium.

The link between foresight and policy-making should also be forged through the development of a long-term governance. Even in countries with an established culture of foresight, the knowledge produced through foresight exercises tends to be hardly used to support the formulation and implementation of policies (Banister & Hickman, 2013; De Smedt, 2013; European Environment Agency, 2009; Fobé & Brans, 2013; Fransolet, 2019b; Kapoor, 2001; Olsson et al., 2015; Rijkens-Klomp, 2012; Stevenson, 2002; van der Duin et al., 2010; Van der Steen, 2017; Van der Steen & Van Twist, 2012, 2013; Volkery & Ribeiro, 2009; Yoda, 2011). Considering this implementation gap between foresight and policy, Volkery & Ribeiro (2009) describes foresight exercises as "hollow diamonds that sparkle alluringly but fail to contain real value to the decision-making process" (Volkery & Ribeiro, 2009). Compared with other decision- and orientation-support tools, foresight presents some characteristics that makes its use in policy processes difficult. Van der Steen and van Twist indeed explain that "Policy-makers do not 'choose' to neglect or decline future oriented notions, but find it problematic/impossible to apply them to their reality. (…) Policy-makers need clarity, while foresight provides them with new complexity. They seek solutions, while foresight reframes or even adds problems. They are troubled by present-day crises, while foresight downplays those in the light of future developments. And although policy-makers know that futures studies are often right, they can hardly make use of them because of their contextual requirements" (Van der Steen & Van Twist, 2012, p. 477 and 482). Based on these observations, Van der Steen asserts that the link between foresight and policy processes "needs to be forged – and sometimes perhaps forced" (Van der Steen, 2017, p. 194). To forge that link, some authors call for developing a long-term governance, namely a governance system that is more permeable to long-term concerns. In this sense, a particularly relevant avenue is the creation of a "parliamentary house of the future", an innovative institutional configuration composed of citizens drawn by lot whose main mission is to guarantee the integration of the long-term issues – and by extension the interest of future generations – in policy processes (see for e.g.: Bourg et al., 2017). This parliamentary house of the future could, for instance, replace the Senate.

Developing a long-term governance implies complementing foresight with other future-oriented approaches. This is notably the case of forecast, which is also necessary to ensure the just transition and highly complementary to foresight. Trend analyses are indeed essential to feed foresight exercises and watch systems (Calay et al., 2022a). Another little-known but promising future-oriented approach is 'experimental legislation'. This approach, which aims at exploring the possible future impacts of new legal approaches is presented in more detail in the box below (Box 23). Finally, less formal approaches to future explorations such as science fiction can also support just transition (Avice, 2023 ; Rumpala, 2021; Milkoreit, 2017). Indeed, considering that "climate change places major transformational demands on modern societies [and that such] transformations require the capacity to collectively envision and meaningfully debate realistic and desirable futures" (p.1), Milkoreit (2017) argue that climate fiction novels can contribute to sustainability transitions. She further explains that by leverageing respectively fears and hopes, dystopias and utopias, "invite the reader to "see" the present differently in order to start doing things differently" (Milkoreit 2017, p. 13). In the same way, literature (Nsah, 2021) and art more generally (Waddock, 2021) can also support the transformation processes towards a more just and sustainable future. Waddock indeed argues that "art uses images, symbols, ideas, and other expressions to enable people to construct new social imaginaries[82] that can inspire change toward a more desirable future" (Waddock 2021, p. 419). The mechanisms through which climate fictions and art influence societal changes are, however, still little known and would benefit from being explored in more depth through empirical research (Milkoreit, 2017).

82 Social imaginaries here refer to "how people see, understand, and envision the world, particularly for change agents who would bring about a world transformed toward social and ecological flourishing" (Waddock 2021, p. 420)

Box 23: Develop Clear Legal Frameworks for Experimental Regulations at All Levels of Power

'Experimental legislation' can be defined as temporary legislation with a restricted scope that, derogating existing law or exempting a number of existing legal requirements, are designed to try out new legal approaches so as to gather more information about them. They "are submitted to a periodic or final evaluation, after which the legislator should decide on whether the experiment should be extended to a larger part of the population, generalised and converted in a permanent legislative act, or terminated" (Ranchordás, 2014; Crouzatier-Durand, 2003, Flückiger, 2019).

In a context of urgency and high uncertainty, experimental legislation presents two major interests. On the one hand, they are "a tool for the rationalization of the legislative process". Through a "try, error and learning" process, they increase the legislator's knowledge and experience for the purposes of transformative policymaking, by testing it on a part of the territory or a segment of the population and gathering data on its effects and effectiveness. On the other hand, experimental legislation reduces the risk-taking associated with implementing change, which often tends to paralyse legislative action. The risk here is limited in that its scope of application is restricted in scope and time. . It avoids the adoption of general reforms that would later be found to have unintended effects or to be (largely) ineffective, and whose implementation would then politically be difficult to reverse (Ranchordás, 2014).

Experimental legislation can come into tension with two fundamental legal principles: the principles of legal certainty and of equal treatment (Jasiak, 2011; Ranchordás, 2014; Daskalova & Heldeweg 2017; Jacobs 2018). However, properly framed, experimental legislation will be a vector of legal certainty rather than a threat to this principle provided that, before being generalised, it will have been tested and will then be less subject to amendment (Ranchordás, 2014). In addition, experimental legislation may respect the principle of equal treatment if the differences of treatment introduced temporarily between categories of individuals who find themselves in the same situation are based on objective and reasonable justifications. To ensure harmony between experimental regulations and these two fundamental principles, it is thus essential to put in place an adequate overarching legal framework.

In Belgium, since July 2, 2021, the Flemish *Bestuursdecree*t of December 7, 2018 provides for and frames the possibility for the Flemish government to adopt *'experimentregelgeving'* ("experimental regulation"). This legislative framework contains a definition of the notion of experimental regulations; it lists the elements that must be specified by the government in experimental regulations, as well as the provisions that cannot be derogated from; it finally requires that any experimental regulation adopted by the Flemish Government that derogate from provisions adopted by Parliament must be ratified by the latter. To our knowledge, the other levels of government in Belgium have not regulated yet the possibility of adopting experimental regulations. In the absence of a clear legal framework, it is therefore risky for these levels of government to adopt such measures. In France, since a reform in 2003, the Constitution has included two provisions devoted to legislative and territorial experimentation (Crouzatier-Durand, 2003). *Territoire Zéro Chômeur de Longue Durée* is an example of an experiment being carried out in a series of French territories under an experimental law.

In conclusion, experimental legislation is a promising tool to promote the transformation of our welfare state into asocial-ecological state, on the basis of tried and tested experience. This presupposes the establishment of clear, and therefore encourageing, legal frameworks in this area at all levels of government. Indeed, just transition will require the mobilization of all levels of power. To ensure that these experiments comply with the principles of legal certainty and equal treatment, these frameworks will need, at the very least, to require experimental regulations to specify the objective they pursue, the legal provisions from which the experiment derogates, its duration, its personal and territorial scope, and the planned evaluation mechanism. They must also specify the provisions that can under no circumstances be derogated from through experimentation. In Belgium, the framework must also ensure compliance with the rules governing the division of competences, and the delegation of powers between the legislative and executive branches.

3.6. Strong Multi-Level Governance

A just transition presupposes activating political levers across policy domains, including the environment, energy, mobility, agriculture, social protection, employment, health and development cooperation. In climate policies and impact models, just as in many other national and international policy fields, the pre-dominant logic is sectoral. Impacts are measured according to specific sectors: labour market, transport, energy, etc., expertise is organised in sectoral 'silos' and agreements to promote the ecological transition are negotiated among mostly sectorally-organised stakeholders.

In Belgium, the policy competences required to ensure a just transition are fragmented between the federal state and the regions. Even if the environmental policy is mostly a regional competence, climate policy is a shared competence between the federal state, the regions and the communities, and the local level of the municipalities, which contributes to makes climate action particularly difficult. Moreover, the climate problem goes well beyond environmental policy and concerns other policy areas such as energy, transports or even taxation. The competences are therefore fragmented between the federal state and the regions. The Belgian communities have the competence over the essential lever of education. As they have several political levers, including mobility and urban planning, local entities have also an important role to play in the climate policy. For essential 'social' domains implicated in the just transition, such as social protection, health and employment, competences are distributed over federal and regional level. Levers situated in the finance domain are situated at the level of the federal state. The following table illustrates the division of competences for just transition policies between the federal state and the regions (Table 10).

Table 10: Division of competences for just transition policies between the federal State and the regions

	FEDERAL STATE	REGIONS
Environment	Coordination of the international policy (including climate policy) Products' standards Sea environment import/export of endangered species	Air and soil protection Protection and preservation of biodiversity Protection and distribution of water industrial installations (emissions control, permitting) waste + noise + use of products like pesticides
Energy	Energy foresight Nuclear fuel cycle Energy production, including offshore Major infrastructures of production and storage of energy Transport of energy Policy of final prices of energy for the consumer, including energy price social policy Energy efficiency of federal buildings Aspects of taxation (taxes, excise…)	Distribution and local transport of electricity through networks with a nominal voltage of 70,000 volts or less Rational use of energy Distribution rates (gas and electricity) Public distribution of gas Use of firedamp and blast furnace gas Distance heat distribution networks Valorisation of slag heaps New sources of energy with the exception of those related to nuclear energy Energy recovery by industries and other users Rational use of energy
Transports	National airport and railway lines Excises on fuels Vehicles' technical standards	Motorways, waterways, ports and regional airports Public transport and school transport Taxation on vehicles
Housing		Social housing Financial support for housing Tenancy regulation Housing taxation

Spatial planning		Spatial planning Building regulation and permits Urban renewal Monuments & landscapes Land consolidation (ruilverkaveling)
Social security	Pensions; Unemployment; Sickness & disability allowances; Social assistance	Family allowances Flemish care insurance Tegemoetkoming hulp aan bejaarden/ aide aux personnes âgées
Employment policy	Inspection on quality of working conditions and wellbeing at work Labour law Collective bargaining	Active labour market policies and employment programmes Training and education of job seekers and employees
Health policy	National compulsory health insurance, Setting of the hospital budget and of general organisation rules, Regulation of health products and activities, Regulation of health care professionals, Patients' rights.	Preventive healthcare (health promotion and disease prevention) Elderly Care Mental healthcare Care for people with a disability (including the granting of allowances) primary and home care and rehabilitation.
Finance policy	Personal Income Taxation Property & wealth taxes Taxes on goods & services (VAT)	Road taxes Registration taxes Immovable property taxes Inheritance taxes Regional surcharges on personal income taxation (incl. the credits and deductions)
Education		Communities

Source: Adapted from Service federal Climat.be

Within each entity, the competences are also fragmented between different political and administrative authorities. For instance, only at the federal level, at least 11 ministers and 6 administrations have levers for action to ensure the just transition (see table 11).

Table 11: Political and administrative authorities having levers for action to ensure the just transition

	FEDERAL STATE
Political authorities	Minister of Climate, Environment, Sustainable Development and Green Deal Minister of Energy Minister of Mobility Minister of Social Affairs and Public Health Minister for Pensions and Social Integration Minister of Economy and Labor Minister of the Middle Classes, the Self-Employed, SMEs and Agriculture, Institutional Reforms and Democratic Renewal Minister of Finances Minister of the Interior, Institutional Reforms and Democratic Renewal Minister of Foreign Affairs, European Affairs and Foreign Trade Minister for Development Cooperation and Urban Policy
Administrative authorities	FPS Health, Food Chain Safety and Environment FPS Mobility and Transports FPS Economy FPS Social security FPS Employment FPS Finances

Some structures have been established to coordinate the actions of the regions and the federal state in terms of environmental and climate policy, and health, but this coordination remains difficult and contributes to policy failures. To coordinate environmental and climate policy, the National Climate Commission (CNC), the Interministerial Conference for the Environment (CIE), the Coordinating Committee for International Environmental Policy (CCIEP), the Interregional Environment Committee (CELINE) and the State-Regions Concertation Committee on Energy (CONCERE) have been established. These structures bring together political and/or administrative authorities from the federal and regional levels. However, the coordination of climate and environment policy across the different levels of government remains difficult, notably because decision-making within coordination entities requires a consensus among the different governments. Some indeed observe that national climate policy tends to be insufficiently ambitious (when the consensus is based on the lowest common denominator between the different governments) or even paralysed (when the different governments fail to reach consensus) (Fransolet, 2019b). According to Happaerts (2013), the complex multi-level architecture of the Belgian climate governance often leads to policy failures. The federal and regional governments tend for instance to encounter difficulties in agreeing to share European climate and energy objectives within Belgium, or in speaking with one voice at European level.

The lack of cooperation between the federal state and the regions, and between different political and administrative authorities within each of these entities, constitutes a major obstacle to the just transition. The just transition involves complex interconnections between multiple social (poverty, inequality, health…), environmental (natural resources depletion, waste production, pollutions, climate change, biodiversity loss) and economic issues (modes of production and consumption in transport, housing, energy, and food sectors, employment, finance…). The lack of cooperation between the competent political and administrative authorities entails a risk of forgetting some issues (Churchman, 1967; Wright et al., 2019), and fails to capture the complex interconnections between the different issues, thus not making it possible to apprehend the just transition in its wholeness (Wright et al., 2018).

It is essential to build a strong cooperation between the different federated entities and policy domains to ensure a just transition (Tschersich & Kok, 2022). A mechanism aimed at strengthening cooperation between the different political and -administrative authorities responsible for climate policy has recently been developed at the Belgian federal level. Based on the decisions of the Council of Ministers of 1 April 2021 and of 8 October 2021, the federal government has indeed established a governance mechanism aimed to mobilize all the federal ministers and administrations responsible for the development, monitoring and evaluation of federal climate policy. This new governance mechanism is an important step forward in the reinforcement of multilevel cooperation. It would deserve to be assessed and, if necessary, adapted to best meet the objectives of the just transition.

Belgium is one of the few countries in Western Europe today without a nation-wide climate law. As already established by the Council of State in 2019 (advice 65.404, 4 March 2009, on the proposal for a climate law on the coordination of Belgian climate policy and the establishment of long-term objectives), a better coordination of the climate policies is needed and much awaited in Belgium. This coordination can take various forms in due regard on the existing division of competences. Two of these options are a federal law adopted on basis of a special majority (“loi spéciale”) or a cooperation agreement. The chosen approach must focus on the enhancement of governance mechanisms, including on aspects such as just transition, accountability and transparency.

As suggested by the Federal Council for Sustainable Development, Belgium could endorse a new principle of “mutuality” in its approach to addressing just transition challenges. This principle is meant to embody a fresh interpretation of “loyal cooperation” and underscores the importance of collabourative efforts among all stakeholders. By promoting mutuality, Belgium can foster a sense of shared responsibility and engagement in achieving environmental and social goals. This principle would guide policymaking, encourageing a collective commitment to sustainability and intergenerational solidarity.

A national health and climate change plan is another very concrete example where multi-level cooperation is crucial to provide adequate protection against increasing environmental risks. The health risks of climate change as well as of adaptation and mitigation measures, and which assesses vulnerabilities and health resilience to climate change. In fact, In Belgium, on the 10th of December 2003, a cooperation agreement was approved for providing the legal basis for a National Environment Health Action Plan (NEHAP) and for collabouration between the federal government, communities, and regions in the fields of environment and health. Currently, the federal government, communities, and regions are working on the NEHAP3 (2023-2029). This third edition of NEHAP, starting at the end of 2023 and running until 2029, focuses on two priority themes: climate change (resilience, adaptation and mitigation) and chemical substances (reducing the harmful effects on human health and the environment). In total, NEHAP3 encompasses eight different action areas, with the interaction between the environment and health at its core.[83] However, the current draft text (at the time of writing under public consultation) does not include items targeted at Just Transition or the reduction of inequality. Especially in domain 4 - the prevention and removal of harmful environmental and health effects, costs, and inequalities associated with the management of waste and contaminated sites - just transition and health could be used as a guiding principles.

Box 24: Area-Based Policies

Recognizing that just transition requires an integrated policy strategy, which transcends sectors and levels of competences and encompasses social and environmental objectives, area-based policies are one instrument to do so. Area-based policies are policies that integrate different objectives, policy sectors and sectoral policy instruments and different levels of governments through a focus on specific places. The territorial focus (re-)emerged from the 1980s onwards as a form of intervention and public action in opposition to the established forms of policy intervention of national states, which are largely sectoral and/or categorical in their approach (Moulaert, 2000; Palier, 1998). This 're-territorialisation' of public policies and actions is a direct response to the so-called 'crisis of sectorality' that first emerged when national welfare states experienced difficulties in coping with new social questions related to deindustrialization, migration and increased instability of family relations (Oosterlynck et al., 2013). Sectoral policies approach citizens on the basis of their professional or demographic status, whereas area-based policies approach citizens as members of communities that are rooted in particular places.

Although sectoral expertise is valuable and necessary, there is a tension with the systematic nature of the problem of climate change and the integrated nature of the ecological transition. While the ecological transition requires an intervention in the socio-ecological environment in which citizens live, sectoral policies tend to focus their interventions on the lives and behaviours of individuals. In this context, area-based policies are necessary to address the multi-dimensional and systemic nature of climate change and a just ecological transition. Area-based policies focus public interventions and actions on particular places. Places are characterised by the proximity of specific functions, infrastructures and social groups and the different meanings people attach to it (Vervloesem et al., 2022). Societal challenges such as climate change and environmental problems manifest themselves in specific forms in particular places (e.g. heat islands in dense built environment of disadvantaged neighbourhoods or historical environmental pollution in declining industrial regions suffering from lack of employment). In these places, they require customised and integrated answers (e.g. the energy transition requires the development of alternative forms of energy production, but this can be coupled to housing renovation, for example focused on the private rental market, and local job training and creation in the building sector).

Area-based approaches start by recognizing the mutual dependencies – albeit often asymmetric – between citizens, governments and market actors to transform places. In terms of governance, this means shifting from a top-down bureaucratic approach led by one specific government department to a partnership approach that includes a variety of public, private and non-profit stakeholders that are present and/or relevant to a particular area (Palier, 1998). It is precisely the focus on a specific area and its specific problems, opportunities and constraints (e.g. a region in industrial decline or transformation, a disadvantaged urban neighbourhood, a remote and shrinking rural region) that allows for an integrated approach that mobilizes all relevant actors, instruments and knowledge around a shared vision for a just ecological transition of the area. It moves away from treating local

83 Adaptation to the Effects of Climate Change on Health in Belgium, Sustainable Low-Carbon Healthcare System, Ozone & Heat, Chemical Risk Assessment, National Action Plan for Endocrine Disruptors, Training for Health Professionals, Monitoring Exotic Mosquitoes and Other Vectors: Monitoring of Exotic Mosquitoes, Exotic Mosquitoes and Other Vectors: Ticks.

entities as purely administrative categories to territorial platforms on which a collective capacity to act can be built to address systemic socio-ecological challenges (Moulaert, 2000).

Area-based policies can be applied on different levels of government. Although local governments tend to be better equipped to pursue area-based approaches, due to their proximity to the life-world of citizens and the concrete challenges that have to be addressed, supra-local government levels can also pursue area-based approaches. One of the rather few examples on the Flemish government level is the policy around subsidies for 'urban renewal projects'. Urban renewal projects are defined as 'leverage projects for integrated urban development', which aim to make cities at the same time more attractive, more sustainable and more liveable. Cities can apply for funding, but because an integrated, area-based approach and action orientation are central criteria for funding, proposals need to be developed by a local team with members coming from different government departments and also involve relevant non-profit and market actors in the project proposal. The proposals have to be defended as a team to a multi-disciplinary jury of experts and academics. The jury assesses the proposal not on the basis of individual quantitative scoring of proposals, but on the basis of a qualitative assessment arrived at through an intensive dialogue between the jury members, in which much weight is based on the extent to which the urban renewal proposal realises 'opportunities to couple social, economic and environmental aims'. Because urban renewal policy is not a 'sector', but is by nature transversal, it offers a good institutional environment for area-based approaches.

3.7. International and EU Solidarity and Cooperation

The seventh just transition policy lever is to contribute to a just transition at European and global scale. The just transition has an inherent transnational dimension. Since all parts of the global economy are intertwined and interdependent, a transition cannot be driven by one actor or region in isolation. As elaborated in Section 2.2, many of the inequalities described operate both at national level and at global level. This implies that global inequalities, as well as the impact of domestic policy choices on people living in countries elsewhere, must be taken into account in the Belgian policy-making process. Mitigating global environmental problems, but also building resilience and compensating for loss and damage associated with these problems in the regions that are most affected, both within the EU and at global level, requires extending mechanisms for solidarity beyond the national borders. However, a global just transition requires more than solidarity. It requires reshaping trade relationships, monetary policy and issues of (intellectual) property rights. It requires changing the way our own economy and the global economy operate. We first briefly discuss a just transition from an EU perspective (section 3.7.1). Subsequently, we highlight some points of concern from a global perspective (section 3.7.2).

3.7.1. Enhancing Just Transition at the European Level

At the European level the EU Commission has with the European Green Deal taken first, decisive steps for the implementation of a just transition policy strategy involving attention to several dimensions of environmental degradation (climate, energy, biodiversity, material use, health impacts) as well as to both territorial inequalities (between member states) and to inequalities within member states (see Section 2.3.2). This 'emerging' European framework for Just Transition (Sabato et al., 2023) acknowledges both dimensions of just transition throughout key European policy programmes. As elaborated in Section 2.3, the European Just Transition Mechanism is elaborated as a mechanism of European solidarity, providing economic support to the regions that are most affected by decarbonisation. The Social Climate Fund allocates budgets to member states specifically to support households vulnerable to socially adverse effects from the extended European Emission Trading System (EU-ETS 2) as of 2026, by either compensating vulnerable households and firms for adverse effects, or to support investments in infrastructure. To receive budgetary support from the Social Climate Fund requires the elabouration of National Social Climate Plans that identify

and address vulnerabilities and injustices, through investment in decarbonised infrastructures and compensation income.

Mainstreaming EU social and ecological policies could thus be done by tying the just transition framework more strongly to the principles of the European Pillar of Social Rights. While the inherent link is acknowledged, for instance in the Social Climate Fund legislation, the indicators of the European Pillar of Social Rights could be further used in the processes of drafting or monitoring of the National Social Climate Funds. The European Pillar of Social Rights also provides the principles needed to ensure that newly created 'green jobs' are of sufficient quality, in terms of contract type, wages, working conditions, opportunities for training, education and lifelong learning, and work-life balance. EPSR principle 8, on social dialogue and involvement of workers, could be drawn upon to provide a framework, measures, good practices and legislation on the anticipation and management of change (Akgüç et al. 2022). For these to work effectively, meaningful participation from workers at all levels (from the European level to the level of the firm) is an essential part (see section 3.3).

The financing of the just transition agenda embedded in the EU Green Deal has been noted to be limited in comparison to its objectives. While the total sum of EU-ETS revenues could substantially contribute to making the system an overall progressive distributive outcome and ensuring accessibility to carbon-neutral infrastructures for everyone (Held et al., 2022), now only a limited number of total ETS allowances is explicitly earmarked for the Social Climate Fund. In addition, the 'cap' of maximally 65+5 millions euros for the Social Climate Fund (see Box 17) instead of a fixed percentage of total revenues prevents the Social Climate Fund's budgets to rise when carbon prices go up, while higher prices would also increase the need for protection and compensation is higher (Braungardt et al., 2022). Also the share of co-finance by member states for implementing the measures from their National Social Climate Plans was reduced from 50% (in the preparatory texts) to 25% (in the final regulation). In sum, the total budget available to implement the social climate measures is therefore likely to be insufficient compared to the challenges it aims to tackle, and should be increased in a next round. Belgium should also engage to co-finance a significantly higher share of its National Social Climate Plan than the 25% that is mandatory, as to increase its clout, and to set the example. In a cross-country perspective, analysis by Held et al. (2022) shows that the burden will be relatively higher for the EU countries with GDP per capita below 60% of the EU average. Reinforcing the mechanisms for solidarity between member states is key to ensure that ETS revenues are reaching the most vulnerable households in Europe.

Designing the European Emission Trading System 2 in a way that it "leaves no one behind", not only requires adequate budgets, but also policy design that is finely attuned to social needs. Apart from guaranteeing sufficient budget contributions, policy design will be key: measures deployed as part of the National Social Climate Plans will need to strike the right balance between compensating the most affected and most vulnerable and financing infrastructural investments that decrease the dependency on fossil fuels for vulnerable households to fulfill social rights of housing, work, and essential services (energy, mobility, water, food). This will help avoid perpetual support payments. As argued in Section 2.2.4, identifying the diverse target groups which experiences situations of lock-in, is no easy task. Designing coherent policy bundles that are sensitive to the social diversity of contexts upon which they impact requires a good evidence-based policy preparation. This will be fundamental in preparation for the exercise of drafting the Belgian National Social Climate Plans. Significant groups in Belgium (which are much broader than the group below the poverty threshold) cannot afford the types of investment that are commonly put forward (energy renovations, heat pumps, electric vehicles, see section 2.2.4). Especially when using measures such as subsidies and fiscal incentives, a careful evaluation is necessary to ensure their design is tailored to benefit low-income and vulnerable populations. This requires going beyond the known measures of subsidising private investments that have dominated household-geared environmental policy until today. In addition, specific attention should be paid to reduce administrative and informational burdens to ensure sufficient take-up by vulnerable target groups.

The democratic and participatory dimensions of the EU's just transition policy and legal framework could be further enhanced. On the drafting, monitoring and follow-up processes regarding Territorial

Just Transition Plans and National Social Climate Plans, Hoon & Pype (2022) note that the experience with the National Recovery and Resilience Plans demonstrated the democratic challenges of these procedures: "The broad definition and lack of formal decision-making procedures, participation, and representation rules may pose risks of accountability and transparency. In vaguely defined democratic procedures, it is often the most vulnerable groups that are least represented." (Hoon & Pype, p.22). This points at the need for enhanced accountability, through increased scrutiny from the European Commission in the process of drafting, revising and implementing these plans, along with involvement from citizens, civil society, social partners, local democratic bodies at European, national and regional levels. Armeni (2023) finds that participation within the European Just Transition Mechanism "is narrowly constructed by EU rules leaving little opportunity for the lay public to be heard in the preparation of the TJTPs at national level" (p.1050), and calls for a strengthening of EU environmental rights in the EU Just Transition framework.

The European governance process still needs to incorporate the just transition objectives present in the various policy programmes in which the concept is mentioned, such as the Just Transition Mechanism, the Recovery and Resilience Facility, the Social Climate Fund and the 2022 Council Recommendation on ensuring a fair transition towards climate neutrality. The coherence with the Stability and Growth Pact (and its governance mechanisms of the European Semester) could be increased in order to avoid penalisation, and rather to reward, the member states that increase social-ecological investments for just transition (notably in renewable energies and building insulation) in the calculation of authorised annual deficits and the sustainability of public debt. The European Semester can also prove to be a key process for monitoring the implementation of the EU just transition policies and for ensuring internal consistency, but further reflection is needed on how this can be done without excessively burdening the Semester process. Potential routes include using the reporting on the National Energy and Climate plans to also include just transition, joint reviews of Member states' elabouration and implementation of policy packages for just transition by the Employment Committee (EMCO) and the Social Protection Committee (SPC), peer reviews and other Open Method of Coordination mutual learning tools, and including just transition indicators in the EPSR's Social Scoreboard (Sabato et al. 2023). Also here, the elabouration of social-ecological indicators will be of major importance to assess the employment, social, distributional and environmental impacts of transition policies. As pointed out in the 2022 Council Recommendation on a fair and just transition, this will require appropriate granular and high quality, sex-disaggregated data and indicators that are currently not (fully) available.

In sum, the European strategies provide a strong framework with large potential for aligning policies to the just transition. Ample room remains for broadening the scope of the EU just transition policy framework beyond its current operationalisation. It will be essential to ensure that the stated objectives are accompanied by adequate budgets (requiring a multiplication of what is currently foreseen), and regulated participation from citizens, workers, social partners, local democratic bodies and civil society. Socially sensitive compensation and investments will need to be complemented by close monitoring of the implementation of the policies in the members states, through integrating just transition in the EU governance process and through the anchoring of integrative social-ecological indicators.

3.7.2. Implementing a Just Transition at the Global Level

Three levels can be considered in which Belgium has the policy competences that are important for advancing the global dimension of social justice in the transition. First, there is an important role for Belgian development cooperation. Second, Belgium can play a more ambitious role at the international level, for instance within the International Labour Organisation (ILO) and other international organisations such as the World Trade Organisation, International Monetary Fund, the World Health Organisation and the World Bank. Third, given the impact of local, regional, national and EU decisions upon global inequalities and on people living outside the EU, notably in the global south, incorporating the global perspective within Belgian just transition policy is essential. This

requires the application of principles and criteria for a global just transition to all policies decided upon and put in place by Belgian authorities.

An integration of just transition objectives within the Belgian development cooperation is necessary to address the injustices between the countries historically responsible for global environmental problems and those who suffer the most from these problems. As previously demonstrated, a double climate injustice is observed between populations within the same region, but even more between different regions at the global level (see Section 2.2.1 and 2.2.2). While they contribute the least to the climate problem, the least developed countries and the Small Island Developing States tend to suffer the most from its impacts. Moreover, they are least protected by social protection systems. To tackle these intertwined challenges, a just transition perspective to Belgian development cooperation is necessary for functional, normative and political reasons. This also requires a shift in the conception of the development process. As Amagou (2020) argues, development must shift away from being a purely economic transition, and introduce justice in the dominant development paradigm. Not to impose European liberal approaches of justice to other countries, but to build a mode of international cooperation where traditional values, rules and practices to protecting social relations, natural ecosystems and solidarities are incorporated, and considering the different needs, urgencies and problems in different contexts.

A possible first instrument that can be used to do this is Socieux+, the EU Expert Facility on Employment, Labour and Social Protection, a technical assistance facility set-up and co-funded by the EU, France, Spain and Belgium, with the objective of enhancing the capacities of partner countries to better design, manage and monitor inclusive, effective, and sustainable employment strategies and social protection systems through peer-to-peer short-term technical assistance and knowledge development.

A second instrument is the Global Accelerator on Jobs and Social Protection for Just Transitions, an ILO-coordinated United Nations initiative that aims for the creation of decent work, social protection and equitable transition in a coherent, system-wide way.[84] In September 2023, Belgium has pledged 3 million euros for the associated UN Joint SDG Fund on Decent Jobs and Universal Social Protection, built around the International Labour Standards (Recommendation 202 on social protection floors (2012), adopted unanimously by the International Labour Conference). Belgium could further push for its strengthening, adopting it within international policy frameworks and concretizing the engagements. Great care will have to be taken to ensure that this broad objective is not diluted into mere 'job creation' and economic growth. Experience shows that such a classic economic recovery programme, mainly aimed at attracting investment, does not spontaneously lead to more and better social protection, decent work or a just transition. Close monitoring can ensure that it remains in line with the ILO's international standards, and that social dialogue and effective civil society participation remain explicit conditions. Belgium must therefore structurally anchor its support so that it can weigh in on the fulfilment of the above-mentioned conditions.

Given the existing frameworks, Belgium can further promote the imperatives of just transition in international policy fora. This implies prioritising integrated policies targeted at the creation of decent employment, universal social protection systems and green transition simultaneously, and contributing to the elabourations of international finance mechanisms to ensure these policies and their implementation are supported by an adequate financing strategy. For instance, the position of Belgium within these fora could draw inspiration from the recent report on Just Transition for Africa (2023) commissioned by the Africa Climate, Energy and Development Initiative, which uses Just Transition as a framework for African resilience and prosperity that can simultaneously tackle climate, energy and development challenges. It calls for addressing intertwined challenges of famine, energy poverty, regional conflict, economic insecurity and the impacts of climate change in a structural way, based on making more resilient food, energy and industrial systems, requiring also reforms of international trade and investment rules and international financial infrastructures (Sokona et al.,

84 UN Global Accelerator (2023).

2023). Throughout Belgian foreign policy, this is essentially about ensuring coherence policy within the different multilateral frameworks (such as the international frameworks on human rights, the guiding principles on just transition of the ILO, the European Green Deal, trade agreements, and the global financial architecture of institutions such as the World Bank and the IMF). It would include, for instance, condemning requirements by global financial institutions of blunt austerity measures that increase poverty and inequality and reduce climate resilience rather than promoting a just and effective transitions. Policy coherence is also central to the Belgian Advisory Council on Policy Coherence for Development (CCPD-ABCO), which recently published its advice on just transition (CCPD-ABCO, 2023).

Moreover, domestic and trade policies should be adjusted from a global perspective to just transition. For instance, Bassey et al. (2023) fear that the transition towards a net-zero emissions economy in the global North, will generate a new phase of environmental destruction in the global South. In particular, they point out that Belgium and the EU should be careful to not generate a new 'green colonialism', by relocating heavy industry elsewhere while re-importing emissions from abroad through consumption, and by continuing on an extractive path for the materials required for renewable energies, which are mostly mined in the global South. The EU's Carbon Border Adjustment Mechanism (CBAM) has the potential to address the first of these concerns. However, its effectiveness in that respect should be monitored. At the same time, it is important that Belgium does not only keep track of its domestic emissions and environmental impact from a production perspective in its official records and statistics, but also from a consumption perspective in which the emissions and other environmental impacts embedded in imported goods and services are counted as well, to have a complete picture of Belgium's environmental and climate impact. This is an essential additional tool to detect both areas to support for reducing emissions in the global South and other countries that export goods and services to Belgium, as well as areas where reductions in material use and consumption are required.

In general, the efforts should be drastically upscaled to avoid negative externalities of the transition in Belgium and Europe upon low-income countries and the global South. In addition to the insufficient amount of climate finance that is made available, the negative externalities of the transition in the global North risk to lock in low-income countries in high-emission practices and in limited opportunities for sustainable economic development and poverty reduction. For instance, the European Carbon Border Adjustment Mechanism (CBAM) is likely to create 'losers' in the global South, who may require support for transitioning to low-emission industry processes. Therefore, Belgium should plea in the EU context to put effective and adequately funded mechanisms in place to support affected countries in enabling workers' transition to more sustainable industries, while also investing in the development of local low-emission economies that increase local living standards and reduce poverty in an effective and sustainable way. For instance, the net revenue generated through CBAM could be used for this purpose. The current CBAM regulation states that the EU should support low and middle-income countries in this respect. However, it is rather vague on what is to be done with revenue generated by CBAM and how much of it should be used for this purpose. Therefore, the Belgian government should use its leverage to create clear financial commitments for *new* financial support, at least at the level of the net revenue collected through CBAM. This is in line with the amendment proposed by the European Parliament on 22 June 2022 in response to the Commission's CBAM proposal, stating that "the Union should finance least developed countries' efforts towards the decarbonisation of their manufacturing industries with an annual amount corresponding at least to the level of revenues generated by the sale of CBAM certificates."[85] This new source of funding should be developed in addition to delivering on past promises with regard to debt relief and financial support through development cooperation and the existing UN and other mechanisms that have been set up for supporting climate funding in low-income countries.

Furthermore, Belgium and the EU should put in place more-effective policies to ensure that the extraction of essential resources that end up in the EU does not jeopardise the fulfilment of human rights and development opportunities of populations in the global South. Key policy mechanisms

85 European Parliament 1.06.2022 A9-0160/Amendment 187 to recital 55 of COM(2021)564

in this respect are bilateral and multilateral trade agreements, as well as the newly proposed Critical Raw Materials Act. This is a new legislative proposal by the European Commission (COM/2023/160 final) to ensure a sustainable flow of critical and strategic raw materials into the EU through boosting domestic extraction, increasing processing of critical raw materials within the EU, increasing the share of raw materials that is recycled, and reducing dependence on single countries for sourcing certain materials. These different components of the proposed regulation are considered essential for meeting the needs for the energy transition and digitalization objectives of the EU. While parts of this proposal may be beneficial for the global south, it might also risk stimulating further extractive relationships, in particular if combined with trade agreements which limit the capacities of resource-rich countries to use their natural resources for boosting their own energy transition. For instance, Bassey et al. (2023) point to the EU trade agreement with Chile that limits Chile's options to ensure lower prices for domestic critical materials (e.g. lithium) to local producers, as compared to EU importers. Such agreements put a brake on the energy transition in the global South.

Current Belgian and EU policies do not call into question the rapidly increasing needs for rare earth materials and other resources that are difficult to mine in a sustainable way. Without better checks and balances, rapid increases in demands of some natural resources may also result in an increase in human rights violations in some countries. For instance, recently, Amnesty International (2023) reported on how the extraction of cobalt and copper in Congo contributes to human rights violations. The Critical Raw Materials Regulation would be an opportunity for Belgium and others to push for much stronger safeguards and support mechanisms to ensure that natural resources are extracted and exported in ways which (1) boost local living standards equitably; (2) fully respect human rights of local populations; (3) increase directly low-carbon infrastructure, for instance of renewable energy production, in ways that are compatible with principles such as local ownership and energy democracy; (4) minimise environmental destruction in the surroundings of extraction sites, for instance by providing access to the latest technologies. Furthermore, if Belgium's or the EU's net-zero strategy relies on a level of material inputs that is too high to source sustainably with respect for local human rights and sustainable development opportunities for local populations, policies should be implemented to reduce total material inputs to sustainable levels, for instance by introducing a cap on the amount of imported emissions (which is now explicitly ruled out in preamble 21 of the CBAM regulation). The same applies to total outputs of waste.

Conclusion and Perspectives: Towards a New Social-Ecological Pact for 21st century Belgium

This report was written in response to the question "how to organise and institutionalise the just transition in Belgium?". Such question was treated in three steps, exploring respectively the concepts *(what)*, the social-environmental nexus in Belgium *(why)* and the policy levers for navigating the just transition in Belgium *(how)*.

The first chapter addressed *what* is just transition. It conceptualises the just transition as a sustainability transition with social-ecological justice as its guiding principle, placing social and participatory rights at the heart of environmental policy. Four dimensions are distinguished, each of them necessary to speak of just transition: (i) the transition towards a society that guarantees the fulfilment of social and environmental rights for all within safe earth system boundaries; (ii) a fair distribution of the efforts and advantages associated with the transition; (iii) the resilience to risks (ecological risks as well as 'transition' risks) for all, and (iv) meaningful and continual participation of all in decision-making processes. The chapter concludes that the just transition can be characterised as both a 'compass' to move towards a just and sustainable future and a 'shield' to ensure the resilience of all to natural and transition risks.

The second chapter describes the Belgian issues at stake in the field of just transition(the challenges at hand, their inherent interdependencies, and their current policy frameworks),thus showing why a just transition is needed. After a brief outline of the challenges in the social and ecological domains in Belgium, we elaborate on their interdependency in six areas. Using the analytical framework of environmental inequalities, the chapter brings together the empirical evidence for Belgium on the questions of (i) who contributes to environmental degradations (ii) who is most impacted by the consequences of environmental degradations; (iii) whose jobs are and can be further expected to be impacted by the ecological transition (iv) who is affected and in which ways by household-geared environmental policies; (v) who pays and who benefits from the different answers to the financial equation of how the ecological transition can be funded, and (vi) whose voice is heard most in the process of policy design and implementation. The consistent finding of inextricable links between social and environmental issues in each of these areas highlights the need to address them in an integrated way. Fragmented solutions that narrowly address ecological issues while disregarding social repercussions and vice versa, easily lead to avoidable trade-offs between social and ecological objectives. This way of working compromises policy coherence, fails to realise the inherent synergies that can be realised, and undermines public support for the measures at hand. Summarising two (important) established policy frameworks in the domain of climate mitigation and in that of social rights leads us to point out the barriers and imbalances to a genuinely integrative social-ecological approach. At the same time, we observe important breakthroughs in elements of the EU Green Deal as evidence for an 'emerging' just transition policy framework at the EU level. Less pronounced, it can also be discerned at international and Belgian level. While requiring significant reinforcements, both conceptually and in terms of budgetary weight, these policy programmes open up promising avenues to further align social and environmental policies in striving for the substantive societal goals of progress, health, ecological sustainability and wellbeing.

The third chapter treats the question posed to the High Committee at the outset: how to organise and institutionalise the just transition in Belgium? Its point of departure is that acknowledging the systemic nature of the social-ecological challenges that Belgium is faced with, also requires a systemic policy approach. Just transition cannot be limited to an 'add-on' to otherwise disconnected social, ecological, or economic policy strategies. Just transition is not about correcting for adverse impacts in those cases where social and ecological domains create friction, trade-offs or conflicts. Rather, it is about incorporating these interdependences both in policy design and in the governance needed to develop and implement this policy agenda. It should encompass the entire policy framework and

its governing strategies needed to ensure that the sustainability transition is both more effective and more just. Conceived as such, just transition belongs at the heart of the societal pursuit of progress and development. We advance that our social state today, for this sake, should adopt the ecological goals and constraints fully within its aims, scope and structures, to evolve towards a social-ecological state.

The seven broad policy levers identified are, in a way, all established parts of the Belgian state's objectives, institutions and policies. Yet, to provide an integrated response to social and ecological challenges, they need to be recalibrated:

(i) **social-ecological policies** can address both social and ecological goals through thoughtful policy design, overcoming existing barriers to integrative approaches and realising synergies in societal objectives, in government budgets, and in public support;

(ii) the just transition agenda needs to be accompanied by both **adequate and equitable funding** strategies, with a coherent mix of financial regulation, taxation, government investments, and support to households and firms. A clear eye for the procedural distributive aspects of the different instruments is needed, as well as a coherent monitoring framework to follow-up financial streams and their alignment with set objectives;

(iii) **inclusive participation in policy processes** is an indispensable part of getting to these objectives, from the workplace to the European level. Existing structures for social dialogue, worker participation, and citizen participation need to be broadened in scope and deepened in ambition and inclusiveness;

(iv) building **a shared vision** requires further societal debate, making policy objectives explicit in order to come to effective and broadly legitimised policy strategy

(v) a strategy on **indicators, evaluation and foresight,** each element that is necessary to support the elaboration, implementation, and monitoring of just transition policies, providing different ways to address current blind spots and install a long-term perspective to policy and governance.

(vi) **strong multi-level governance**, needed to activate the political levers across policy domains (e.g., environment, energy, mobility, agriculture, social protection, employment, health, development cooperation) and across levels of competence (Europe, Belgium, the Regions, Communities, provinces and municipalities).

(vi) **strong multi-level governance**, needed to activate the political levers across policy domains (e.g., environment, energy, mobility, agriculture, social protection, employment, health, development cooperation) and across levels of competence (Europe, Belgium, the Regions, Communities, provinces and municipalities).

(vii) policy coherence beyond our national borders, with just transition objectives extending to the international and the EU level, through increasing **cooperation and solidarity.**

This is a report by experts. Experts cannot take the place of actors in political decision-making, in social consultation and in participatory citizens' initiatives. Just transition is about a transformation of the economy, the state and society as a whole, in an age of ageing, digitalisation and changing geopolitical relations. It is about systemic changes that will take shape through uncertain times. The given frame of thinking and working of the High Committee for a just transition meant to focus on how the accelerating social-ecological transition would need to be grounded into our Belgian institutions. We are well aware, however, that the upcoming multi-actor institutional discussions about the social-ecological state run the risk to remain sterile, opposing or technocratic as long as the social-ecological agenda has not generated a collective wide-spread feeling of the need for a Social-Ecological Pact. Just as the post-war industrial economic investment project of the Marshall

Plan was embedded in much wider socio-political projects and realities which were embraced by all societal forces as to the level of their daily life.

A Social-Ecological Pact will face a series of debates which we see are present already today in parts of the academic and intellectual world. Sometimes these debates are relatively new and emerging, sometimes the questions raised have been accompanying European societies since at least the beginning of the industrial revolution. These questions need now to be led into multi-actor societal debates and discussions. They need to be rightfully institutionalised and led on societal levels, because the consequences might well change fundamentally our current understanding of the good life. A prominent question in this sense is the prospect to direct the economic systems from our current growth and competition imperatives to sufficiency-based collaborative economies, as a prerequisite for going beyond the rather efficiency-centred frame of the Green Deal. On the dimension of employment, a discussion needs to tackle the prospect to evolve from the current prioritisation on productive salary work towards acknowledging and implementing social-ecological care. Already strongly ongoing, the debate needs to be strengthened on the evolution of the framing of poverties, inequalities and lack of opportunities into a wider and more humanistic understanding of wellbeing. In the academic realm, a strong call emerges from very prominent thinkers on the evolution of our current human rights towards adopting rights to the living world. Questions equally persist about how to evolve into a knowledgeable and participatory society considering the increasing democratic failures, power asymmetries and the unknowns of the digital transformation. Academia itself needs to be led into a societal, reflexive debate about the misalignment between the specialisation of science and the recognition of hybrid knowledge. Many such structural debates and questions about what is currently often seen as the root causes of the social-ecological challenges need to be addressed in a not so far future in order to prepare the advent of a Social-Ecological Pact for Belgium.

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Appendix 1. Authors and Contributors to the Report

This report reflects the collaborative efforts of the High Committee, composed of 25 scientists from different disciplines and with various areas of expertise. The broad contours of the report – its conceptualization, scope delineation, and overarching frameworks – were collectively shaped during the extensive exchanges and numerous discussions over the course of 18 months. The Table underneath treats the textual elaboration (original draft preparation, reviewing and editing) of what – through the group process – became the present scientific report.

INTRODUCTION		**Authors: Aurore Fransolet, David Van Reybrouck, Charlotte Scheerens, Olivier De Schutter & Josefine Vanhille**
1.	**THE JUST TRANSITION**	
1.1.	**Just Transition: A Sustainability Transition with Social-Ecological Justice as Its Guiding Principle, Placing Social and Participatory Rights at the Heart of Environmental Policy**	**Authors: Aurore Fransolet & Pascale Vielle** Contributors: Josefine Vanhille, Tom Bauler, Bea Cantillon, Chiara Armeni, Adeline Otto & Eloi Laurent
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1.1.2.	Strong Sustainability	**Author: Tom Bauler** Contributors: Chiara Armeni, Aurore Fransolet & Adeline Otto
1.1.3.	Sustainability Transition	**Authors: Tom Bauler & Aurore Fransolet** Contributors: Chiara Armeni & Adeline Otto
1.1.4.	Social and Environmental Rights, Capabilities and Needs	**Authors: Pascale Vielle, Chiara Armeni, Géraldine Thiry, Aurore Fransolet & Tom Bauler** Contributors: Tim Goedemé & Bea Cantillon
1.2.	**The Four Dimensions of Just Transition**	**Author: Aurore Fransolet** Contributors: Chiara Armeni, Bea Cantillon & Eloi Laurent
1.2.1.	Transition towards a Society that Guarantees the Fulfillment of Social and Environmental Rights for All Within Safe Earth System Boundaries	**Author: Aurore Fransolet** Contributors: Chiara Armeni, Josefine Vanhille, Bea Cantillon, Adeline Otto, Eloi Laurent & Pascale Vielle
1.2.2.	Just Distribution of the Efforts and Advantages Associated with the Sustainability Transition	**Author: Aurore Fransolet** Contributors: Chiara Armeni, Josefine Vanhille, Bea Cantillon, Adeline Otto & Eloi Laurent
1.2.3.	Resilience to Natural and Transition Risks for All	**Author: Aurore Fransolet** Contributors: Chiara Armeni, Josefine Vanhille, Bea Cantillon, Adeline Otto, Pascale Vielle & Eloi Laurent
1.2.4.	Meaningful and Continual Participation of All in Decision-Making Processes	**Author: Chiara Armeni** Contributor: Aurore Fransolet
1.3.	**Just Transition as a 'Compass' and a 'Shield'**	**Authors: Aurore Fransolet** Contributors: Eloi Laurent & Chiara Armeni
2.	**THE NEED FOR A JUST TRANSITION IN BELGIUM**	
2.1.	**The Twin Social and Ecological Challenges**	
2.1.1.	Accelerating Ecological Degradations	**Authors: Aurore Fransolet, Josefine Vanhille & Charlotte Scheerens** Contributors: Chiara Armeni & Bea Cantillon
2.1.2.	Persisting Social Inequalities and Poverty	**Authors: Bea Cantillon, Josefine Vanhille & Aurore Fransolet**
2.2.	**The Inextricable Link Between Social and Ecological Challenges**	**Authors: Aurore Fransolet, Soumaya Majdoub & Josefine Vanhille** Contributors: Chiara Armeni, Eloi Laurent & Bea Cantillon
2.2.1.	Not Everyone Contributes Equally to Environmental Degradations	**Author: Josefine Vanhille** Contributors: Tim Goedemé, Bea Cantillon, Marek Hudon, Tom Bauler, Eloi Laurent, Chiara Armeni & Aurore Fransolet
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2.2.5.	Not Everyone is Affected the Same Way by Financing Tools for Ecological Transition	**Authors: Josefine Vanhille & Marek Hudon** Contributors: Bea Cantillon, Tim Goedemé, Tom Bauler & Chiara Armeni
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2.3.	**The Current Policy Frameworks**	
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2.3.2.	The Emerging Just Transition Policy Framework	**Authors: Aurore Fransolet, Josefine Vanhille & Chiara Armeni** Contributor: Eloi Laurent
3.	**BUILDING THE SOCIAL-ECOLOGICAL STATE FOR A JUST TRANSITION IN BELGIUM**	**Authors: Aurore Fransolet & Josefine Vanhille** Contributors: Bea Cantillon, Marek Hudon, Tom Bauler, Eloi Laurent & Chiara Armeni
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3.3.2	Strengthening Worker Participation	**Authors: Isabelle Ferreras & Josefine Vanhille** Contributors: Bea Cantillon, Adeline Otto & Chiara Armeni
3.3.3.	Strengthening Citizen Participation	**Authors: Chiara Armeni, David Van Reybrouck & Josefine Vanhille** Contributors: Aurore Fransolet, Olivier De Schutter, Bea Cantillon, Cathy Macharis & Adeline Otto
3.4.	**A Shared Vision and Associated Policy Objectives**	**Author: Aurore Fransolet** Contributors: Marek Hudon, Bea Cantillon, Adeline Otto & Chiara Armeni
3.5.	**Indicators, Evaluation and Foresight**	
3.5.1.	Developing Science-Based Monitoring and Evaluating Systems	**Authors: Josefine Vanhille & Adeline Otto** Contributors: Tim Goedemé, Bea Cantillon, Aurore Fransolet & Chiara Armeni
3.5.2.	Building a Culture of Foreight and a Long-Term Governance	**Authors: Aurore Fransolet & Elise Dermine** Contributors: Tom Bauler, Josefine Vanhille, Cathy Macharis & Chiara Armeni
3.6.	**Strong Multi-Level Governance**	**Authors: Aurore Fransolet, Josefine Vanhille, Stijn Oosterlynck & Charlotte Scheerens** Contributors: Bea Cantillon, Delphine Misonne, Adeline Otto & Chiara Armeni
3.7.	**International and EU Solidarity and Cooperation**	
3.7.1.	Implementing Just Transition at the European Level	**Authors: Josefine Vanhille** Contributors: Bea Cantillon, Adeline Otto & Chiara Armeni
3.7.2.	Implementing Just Transition at the Global Level	**Authors: Tim Goedemé & Josefine Vanhille** Contributors: Thierry Amougou, Adeline Otto & Chiara Armeni
CONCLUSIONS AND PERSPECTIVES: TOWARDS A NEW SOCIAL-ECOLOGICAL PACT FOR 21ST CENTURY BELGIUM		**Authors: Josefine Vanhille, Tom Bauler & Aurore Fransolet**

Appendix 2. Social Rights

Rights	Definition	Description
Right to A safe, clean, healthy and sustainable environment	*Art. 37 of the EU Charter of fundamental rights : « A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development"*	*« A safe, clean, healthy and sustainable environment is necessary for the full enjoyment of a vast range of human rights, including the rights to life, health, food, water and development. At the same time, the exercise of human rights, including the rights to information, participation and remedy, is vital to the protection of the environment."*[1]
Right to Health	WHO Constitution (1946): "*the highest attainable standard of health as a fundamental right of every human being."*	- A legal obligation on states to ensure access to timely, acceptable, and affordable health care - A state's obligation to support the right to health – including through the allocation of "maximum available resources" to progressively realise this goal - Health policy and programmes must prioritise the needs of those furthest behind first towards greater equity[2] - *"to prevent as far as possible epidemic, endemic and other diseases, as well as accidents."*(Revised European Social Charter art. 11 par. 3 - 1990)
Right to Adequate housing	*Art. 11 International covenant on social, economic and cultural rights: "The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions."* *Art.31 Revised European social charter "With a view to ensuring the effective exercise of the right to housing, the Parties undertake to take measures designed:* - *to promote access to housing of an adequate standard;* - *to prevent and reduce homelessness with a view to its gradual elimination;* - *to make the price of housing accessible to those without adequate resources."* *Art. 34 European Charter of Fundamental Rights:* *"3. In order to combat social exclusion and poverty, the Union recognises and respects the right to social and housing assistance so as to ensure a decent existence for all those who lack sufficient resources, in accordance with the rules laid down by Union law and national laws and practices."*	*States must progressively and to the extent allowed by their available resources:* - prevent and address homelessness; - provide the physical infrastructure required for housing to be considered **adequate (this would include taking steps towards ensuring universal and non-discriminatory access to electricity, safe drinking water, adequate sanitation, refuse collection and other essential services)**; or ensure adequate housing to individuals or groups unable, for reasons beyond their control, to enjoy the right to adequate housing, notably through housing subsidies and other measures; - In specific cases, provide direct assistance, including housing or housing allowances, notably to people affected by disasters (natural or man-made) and to the most vulnerable groups in society"[3].

1 Human Rights Council, Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, John H. Knox, Preliminary report, 24 Dec. 2012 (A/HRC/22/43)

2 Committee on Economic, social and cultural rights, substantive issues arising in the implementation Of the International Covenant on Economic, Social and Cultural Rights, General Comment No. 14 (2000) (E/C.12/2000/4)

3 Committee on Economic, Social and Cultural Rights, general comment No. 4 (1991) on the Tight to Adequate Housing (art. 11 (1) of the Covenant) (E/1992/23)

Right to adequate food	*Art. 11 International Covenant on Economic, Social and Cultural Rights:* *1. The States Parties to the present Covenant recognise the right of everyone to an adequate standard of living for himself and his family, including* ***adequate food*** *(…)The States Parties will take appropriate steps to ensure the realisation of this right, recognising to this effect the essential importance of international cooperation based on free consent.* *2. The States Parties to the present Covenant, recognising the fundamental right of everyone to be* ***free from hunger,*** *shall take, individually and through international cooperation, the measures, including specific programmes, which are needed:* *(a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilisation of natural resources;* *(b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.*	*Following the Committee on social, economic and cultural rights[1],* *"The right to adequate food is realised when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement".* *Food must be available, accessible and adequate.* *The right to food places legal obligations on States to overcome hunger and malnutrition and realise food security for all. The right to food also addresses States' obligations beyond their borders, including trade-related ones.* *The right to food requires States to provide an enabling environment in which people can use their full potential to produce or procure adequate food for themselves and their families. However, when people are not able to feed themselves with their own means, for instance because of an armed conflict, natural disaster or because they are in detention, the State must provide food directly[2].*
Right to water	*While water has not been explicitly recognised as a self-standing human right in international treaties, international human rights law entails specific obligations related to access to safe drinking water.* *General Comment No 15 of the UN Committee on Economic, Social and Cultural rights (2002) : the right of everyone "to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses"[3]*	*States must ensure:* - everyone's access to a sufficient amount of safe drinking water for personal and domestic uses, defined as water for drinking, personal sanitation, washing of clothes, food preparation, and personal and household hygiene. - access to adequate sanitation, as a fundamental element for human dignity and privacy, but also to protect the quality of drinking-water supplies and resources. - participation in water- and sanitation-related decision-making at the national and community levels.
Right to Energy, sanitation, transports, financial services, digital communications	*Principle 20 of the EU Social Pillar "Everyone has the right to access essential services of good quality, including water, sanitation, energy, transport, financial services and digital communications. Support for access to such services shall be available for those in need".*	

1 Committee on Economic, Social and Cultural Rights, general comment No. 12 (1999) on the Right to Adequate Food (art. 11) (*E/C.12*/1999/5)
2 Ibidem
3 Committee On Social, Economic and Cultural Rights, General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant) (E/C.12/2002/11)

Appendix 3. Nussbaum's Basic Capability Set and Corresponding Social Rights

Nussbaum's Capability set	**Definition (Nussbaum 2020, p. 78-80)**	**Corresponding social rights**
Life	*"Being able to **live to the end of a human life of normal length**; not dying prematurely, or before one's life is so reduced as to be not worth living."*	*Right to Health*
Bodily Health	*"Being able to have **good health**, including reproductive health; to be **adequately nourished**; to have **adequate shelter**."*	**Rights to Health, adequate food and housing** *Right to water and energy*
Bodily Integrity	*"Being able to **move freely from place to place**; having one's bodily boundaries treated as sovereign, i.e. being able to be secure against assault, including sexual assault, child sexual abuse, and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction."*	*Right to transport*
Senses, Imagination, and Thought.	*"Being able to use the senses, to imagine, think, and reason – and to do these things in a "truly human" way, a way informed and cultivated by an **adequate education**, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing self-expressive works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to search for the ultimate meaning of life in one's own way. Being able to have pleasurable experiences, and to avoid non-necessary pain."*	
Emotions	*"Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by overwhelming fear and anxiety, or by traumatic events of abuse or neglect. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)"*	
Practical Reason	*"Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience.)"*	
Affiliation	***"A.** Being able to live with and toward others, to recognize and show concern for other human beings, to **engage in various forms of social interaction**; to be able to imagine the situation of another and to have compassion for that situation; to have the capability for both justice and friendship. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)"* ***"B.** Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails, at a minimum, protections against discrimination on the basis of race, sex, sexual orientation, religion, caste, ethnicity, or national origin. **In work, being able to work as a human being, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers**."*	**Right of workers**

Other Species	*"Being able to live with **concern for and in relation to animals, plants, and the world of nature.**"*	*Right to a safe, clean, healthy and sustainable environment*
Play	*"Being able to laugh, to play, **to enjoy recreational activities**"*	
Control over One's Environment	***"A. Political**. Being able to **participate effectively in political choices that govern one's life**; having the right of political participation, protections of free speech and association."* ***"B. Material. Being able to hold property (both land and movable goods)**, not just formally but in terms of real opportunity; and having property rights on an equal basis with others; having the **right to seek employment on an equal basis with others**; having the freedom from unwarranted search and seizure."*	**Right to Participation**

Appendix 4. Matrix of Needs and Satisfiers Developed by Max-Neef (2017)

Table 7.1 Matrix of needs and satisfiers*

Needs according to axiological categories	*Needs according to existential categories*			
	Being	*Having*	*Doing*	*Interacting*
Subsistence	1/ Physical health, mental health, equilibrium, sense of humour, adaptability	2/ Food, shelter, work	3/ Feed, procreate, rest, work	4/ Living environment, social setting
Protection	5/ Care, adaptability, autonomy, equilibrium, solidarity	6/ Insurance systems, savings, social security, health systems, rights, family, work	7/ Co-operate, prevent, plan, take care of, cure, help	8/ Living space, social environment, dwelling
Affection	9/ Self-esteem, solidarity, respect, tolerance, generosity, receptiveness, passion, determination, sensuality, sense of humour	10/ Friendships, family, partnerships, relationships with nature	11/ Make love, caress, express emotions, share, take care of, cultivate, appreciate	12/ Privacy, intimacy, home, spaces of togetherness
Understanding	13/ Critical conscience, receptiveness, curiosity, astonishment, discipline, intuition, rationality	14/ Literature, teachers, method, educational policies, communication policies	15/ Investigate, study, experiment, educate, analyse, meditate	16/ Settings of formative interaction, schools, universities, academies, groups, communities, family
Participation	17/ Adaptability, receptiveness, solidarity, willingness, determination, dedication, respect, passion, sense of humour	18/ Rights, responsibilities, duties, privileges, work	19/ Become affiliated, co-operate, propose, share, dissent, obey, interact, agree on, express opinions	20/ Settings of participative interaction, parties, associations, churches, communities, neighbourhoods, family
Leisure	21/ Curiosity, receptiveness, imagination, recklessness, sense of humour, tranquility, sensuality	22/ Games, spectacles, clubs, parties, peace of mind	23/ Day-dream, brood, dream, recall old times, give way to fantasies, remember, relax, have fun, play	24/ Privacy, intimacy, spaces of closeness, free time, surroundings, landscapes
Creation	25/ Passion, determination, intuition, imagination, boldness, rationality, autonomy, inventiveness, curiosity	26/ Abilities, skills, method, work	27/ Work, invent, build, design, compose, interpret	28/ Productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
Identity	29/ Sense of belonging, consistency, differentiation, self-esteem, assertiveness	30/ Symbols, language, religions, habits, customs, reference groups, sexuality, values, norms, historical memory, work	31/ Commit oneself, integrate onself, confront, decide on, get to know oneself, recognize onself, actualize oneself, grow	32/ Social rhythms, everyday settings, settings which one belongs to, maturation stages
Freedom	33/ Autonomy, self-esteem, determination, passion, assertiveness, open-mindedness, boldness, rebelliousness, tolerance	34/ Equal rights	35/ Dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey	36/ Temporal/spatial plasticity

* The column of BEING registers *attributes*, personal or collective, that are expressed as nouns. The column of HAVING registers *institutions, norms, mechanisms, tools* (not in a material sense), *laws*, etc. that can be expressed in one or more words. The column of DOING registers *actions*, personal or collective, that can be expressed as verbs. The column of INTERACTING registers *locations* and *milieus* (as times and spaces). It stands for the Spanish ESTAR or the German BEFINDEN, in the sense of time and space. Since there is no corresponding word in English, INTERACTING was chosen *à faut de mieux*.