



Overcoming barriers to integrate more justice into climate change policies. Lessons from adaptation policies and flood risk management in Flanders and France

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ABSTRACT

The paper aims to improve the general and practical understanding of justice in climate change policies, both in terms of how policymakers integrate justice elements in political intentions and policy implementation. The paper is based on social scientific and qualitative research on justice in climate change policies, with a focus on both the study of climate adaptation policies and, more concretely, the study of flood risk management. The main objective is to identify obstacles to the definition and implementation of justice in policies. The article offers a cross-national analysis of the issue of justice in Flanders and France, between 2000 and 2020, of the issue of justice in climate adaptation policies, with a particular focus on flood management. Based on policy documents' analysis, the study helps to clarify barriers to pragmatically embed justice in policies' decision making, at the formulation stage through four cross-cutting issues: leadership, resources, information and values.

1. Introduction

In the introduction to the Environmental Justice Program in Georgetown University, Gaël Giraud explains that, to strengthen the knowledge on justice, research should be based on an iterative problem-based approach (Giraud, 2021). Giraud agrees that justice - as a common and universalist goal - is constructed step by step, case study after case study. Therefore, the priority of the article is to contribute to the general understanding of justice in climate change policies and to support practical policy formulation, i.e. selecting policy instruments and setting up a policy design. This may be a difficult challenge worldwide. The awareness of the urgency of integrating justice elements in adaptation policies (in civil society, in academic communities and in particular countries) is insufficiently echoed by political action. While discourses on delayed climate action have been studied and synthesized (Lamb et al., 2020), a concrete understanding of the barriers to make fairer policies is still lacking. Social science seems overwhelmed by the accumulation of analyses and theoretical frameworks, mainly on Southern countries (Bobo, 2006; Owen, 2020). Even if recent roadmaps for research intend to clarify challenges (Shi et al., 2016; Zimm et al., 2024), social scholars are also confronted with little research existing on the pragmatic stances that public policies take on justice in European

countries (Reckien et al., 2014).

While Europe is globally a reference for climate policies, it is surprising there is a lack of empirical knowledge to strengthen concretely justice in climate change policies. To fill the gap, this paper provides an analysis of two European countries (Belgium and France) to identify the barriers for achieving justice in the formulation and implementation of climate change policies.

To start in broad terms, according to the United Nations Development Program, climate justice means “putting equity and humans rights at the core of decision making and action on climate change” (United Nations Development Program, 2023). It involves recognizing and defining the diverse impacts of climate change, as well as allocating climate risks (Forsyth, 2014). The issue is on the agenda of all international institutions, including in Europe. In September 2015, the United Nations listed the reduction of inequalities and the access to justice as new universal challenges – Sustainable Development Goals – called to be put on the 2030 Agenda (United Nations, 2030). Goal 10 called “reducing inequalities” was specified in May 2020 as “the need to build back economies and societies that are more equal, inclusive, sustainable and resilient in the face of pandemics, climate change, and other defining issues of our time” (United Nations, 2020). Goal 10 explicitly addresses the objectives of equality and justice in the context of climate change policies.

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Furthermore, Goal 16 aims to “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” in a context of climate change (United Nations, 2020).

The article is not suggesting that there is no effort for justice in climate change policies in Europe. European institutions are integrating issues of justice in climate related policies, such as in the European Green Deal 2030 (Commission and Deal, 2019), the Adaptation Strategy in 2021 (Commission, 2021), the Mission on Adaptation to Climate Change in September 2021 (European Commission, 2021) or the European Council recommendation on fair transition towards climate neutrality (European Union, 2022). The European political program and legal context are strengthened. Undoubtedly, the intentions are there. Nevertheless, results are neither sufficient, nor tangible, even sometimes anti-effective (maladaptation) (Breil et al., 2021; European Environment Agency, 2022). The limits to the resilience of political systems are often highlighted in face of the rapid rise of unexpected events, such as extreme hydraulic events and dramatic floods. Cities in Europe are especially at risk, as the floods combined with landslides in Belgium in May 2016 and Summer 2021, or the widespread flooding in northern and eastern France in Winter 2023.

How can barriers to increased justice considerations in policy be alleviated as the urgency to tackle climate change is increasing? To come up with suggestions on the issue of justice, quantitative research such as economics and statistics tries to quantify inequalities in order to evaluate if injustice has been reduced (European Environment Agency, 2022; Giraud et al., 2019). The assumption is that increasing resilience means reducing inequalities, which can be limited by a smaller wage gap, increased open access to education or health services, a reduction of acts of discrimination and violence due to gender, age, faith, etc. However, quantitative indicators of inequalities may not give a complete picture of injustice. First, inequality is multidimensional and difficult to assess. Furthermore, while inequalities can be measured with an economic approach, justice is not only inequalities. It cannot only be measured quantitatively. “Equal access to opportunities is nowhere to be found in reality” (Giraud et al., 2019). “Nowhere” means - at least from a policy perspective - that justice is not sufficiently considered in the objectives of the public authorities that specifically must address climate change policies, such as participation and recognition processes.

The paper adopts a policy analysis approach of two climate change policies: adaptation policy as a policy with a comprehensive and transformative vision, and flood risk management as a traditional and operational policy, called upon to integrate adaptation issues. Drawing on the framework to diagnose barriers specified by Moser and Ekstrom (2010), the article offers a cross-national analysis to illustrate the similarities and the differences of two patterns of addressing – or not – the barriers to justice in climate change policies in Flanders (Belgium) and France since the 1980s. Moser and Ekstrom (2010) identified four cross-cutting types of barriers that the paper will study through a justice perspective: leadership, resources, information and values.

Put differently, the contribution is to typologize and to analyze obstacles that inhibit climate change policies to tackle and implement concretely the issue of justice in the field of climate change policies, with a particular focus on adaptation policy and flood risk management. To sum up, the article answers the question: how should justice be integrated into the formulation of climate policies and the selection of policy instruments?

2. Analytical framework. Justice in climate change policies through a barrier framework

Defining the concept of justice in three characteristics (procedural, distributive, recognition) helps to distinguish what has been done to mainstream justice in policy, and what remains to be done (2.1). To study concretely barriers towards fairer policies, we compare the integration of justice concepts in adaptation policies and policies on water-

related extreme events in urban areas (2.2) by means of the Moser and Ekstrom framework (2010) to overcome barriers to justice in policy planning phase of adaptation.

2.1. The importance of justice in tackling the impact of climate change policies in Europe?

The rapid intensification of the impacts of climate change constitutes a democratic challenge for society. Literature from “warmism” (Dupuy, 2004) and “collapsology” (Servigne and Stevens, 2015) has been warning us for a long time: climate change will have disastrous implications on social and political systems. Solidarity between people and communities as well as the accountability of institutions are not to be taken for granted.

Based on the definition in the IPCC reports (IPCC, 2022; IPCC, 2021), there are three aspects of justice to be considered: procedural justice; distributive justice; and recognition. Firstly, *procedural justice* deals with the decision-making process, including participation for integrating a diversity of knowledge and a collaborative resolution, and to limit top-down decision. It is supposed to lead to an equal access to benefits and harms that climate policies could impose. Secondly, *distributive justice* focuses on “the distribution of benefits and costs of climate action and inaction” (Tubridy et al., 2022). It concerns the allocation of resources, benefits and burdens of adaptation policy and flood management implementation. An inequal distribution of burdens or benefits can lead to maladaptation, just as a lack of participation breeds conflict, delays implementation and creates a feeling of mistrust. European member states essentially adopt a distributive and a procedural understanding of justice. This means European member states take additional efforts to support greater openness to community participation, and to help the most affected populations or regions (Breil et al., 2021; European Environment Agency, 2022). While procedural and distributional consequences in decision making have long been considered (Rawls, 1973; Sen, 2010), the concept of *recognition* is becoming more central nowadays. The notion of recognition focuses on respect and fair consideration to the different needs and perceptions of people experiencing climate change impacts. Recognition is linked to capabilities given or not to enable people to engage and benefit from climate change policies.

Little has been produced to operationalize the notion of justice, from a qualitative perspective, at the level of the policy formulation. To recap, the research question concerns how justice should be incorporated in the selection of policy instruments and in the set-up of policy designs for climate policies. The classic current definitions of the IPCC provide six concrete criteria for defining justice in terms of procedural, distributional and recognition justice (Table 1).

Today, not only recognition, but also procedural and distributive justice are not really embedded in European policy, as the evidence on how to assess the issue is still weak. In our study, the aim is to identify where the implementation of climate change policies, through adaptation policy and flood risk management, inhibits consideration for justice by identifying the obstacles to achieving these six criteria.

2.2. Understanding justice through adaptation policy and flood risk management

At the international and European levels, climate policy responses to climate change have been firstly framed by protection and defence strategies (Gralepois et al., 2016), then mitigation as a second answer (Edmonds et al., 2023; Fournier et al., 2016) and now by a adaptive option (Paavola and Adger, 2006). As Zimm et al. (2024) remind us (Zimm et al., 2024), the challenges facing research into climate change require tackling one of three strategies: mitigation, adaptation or the recent “losses and damages”.

Mitigation aims to put in place measures to reduce or eliminate the risks to people and property associated with hazards and their effects in the long term (Godschalk, 2003). In the field of natural hazards,

Table 1
Six concrete criteria for detecting justice in public policies.

Procedural justice		Distributinal justice		Recognition	
Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities

Source: IPCC Sixth Assessment Report (2022).

mitigation is defined as a strategy aimed at minimizing the probability of hazards and the scale of phenomena by implementing measures to deal with the presence of the hazard (Hegger et al., 2014). Acceptance of the fact that infrastructures are not infallible in all places, but also the fact that conventional means of minimizing risks have become insufficient in relation to the losses and damage expected from the effects of climate change on human systems and ecosystems, have led to a change in adaptation strategy.

Adaptation is defined in European policies as a resilience pathway by planning anticipation measures at the different levels of intervention (land-planning, prevention, information, engineering solutions, etc.) (Driessen et al., 2018). Adaptation is called to be a global strategy, more comprehensive, multi-actor and pluri-disciplinary, converging towards an alignment of solutions (Biesbroek et al., 2009). Understanding has grown that mitigation will not be sufficient to avoid climate change consequences. Adaptation is therefore a necessity (Stern, 2006). Adaptation is presented as the main value aligned with the EU climate policies. As adaptation is directly linked with the objective of vulnerability reduction, the EU member states have conceptually accepted the idea that adaptation measures will be more effective if justice is considered, like in the European Green Deal (Commission and Deal, 2019), the Adaptation Strategy (Commission, 2021), and the Adaptation Mission (European Commission, 2021). But it is not clear how they are actually integrating fair adaptation into development policy, as the Stern Review has been suggesting a long time ago (Stern, 2006).

The lack of consideration of how effects of climate change may impact future procedural justice, distributinal justice and recognition in adaptation policies in Europe also can be studied in relation to flood risk management (Penning-Rowsell et al., 2014; Kaufmann et al., 2016). The links between climate change and floods are clearly established (World Weather Attribution, 2021; Kundzewicz et al., 2010; La Jeunesse and Larrue, 2019). To investigate the consideration of procedural, distributinal and recognition effects, we are studying two policies that are linked by the challenge of integrating concepts of justice: adaptation policies and policies dealing with extreme events related to excessive water for urban settlements. Floods are the accumulation of water in areas that are not normally submerged. Causes and mechanisms differ. If precipitations are the most common, other characteristics of the climatic system could be combined: temperatures, drainage basin conditions, soil character and status, etc. (Kundzewicz et al., 2014). Anthropogenic factors are also involved in significant flood occurrences, such as intense urbanization and the presence – or not – of dikes, dams, or reservoirs. Although current research funding seems to be focusing more on energy, biodiversity and low-carbon mobility as climate issues (European Commission, Horizon Europe. Work Programme, 2023), it should not be forgotten that the risk of flooding remains the number one natural hazard in Europe and global warming increases the frequency of river floods in Europe (Alfieri et al., 2015).

2.3. Framework to overcome barriers to justice in policy planning phase of adaptation strategy and flood risk management

The analytical framework suggested integrates two sources of literature. In the first place, we are inspired by the guidelines of policy analysis built and updated by Michael Howlett, M. Ramesh, and Anthony Perl in 2020. These guidelines focus on public policy processes and phases, i.e. on stages of the policy cycle. Secondly, we are stimulated by the framework proposed in 2010 by Susanne Moser and Julia A. Ekstrom that diagnoses barriers to climate change adaptation policy.

Two national case studies, on Belgium and France, will illustrate how the formulation and the implementation of the climate change policies can practically produce injustices. The study aims to reveal barriers to fair policy formulation when it deals with identifying and assessing policy options and alternatives for justice in adaptation and flood management. Each policy – both adaptation and flood management – is implemented through policy tools (Gralepois, 2020). They are justified in national public documents. Policy scholars agree that the selection and the justification of options and tools are never neutral. Instrumentation reflects policy choices and goals (Lascoumes and Le Galès, 2007; Halpern, 2010; Hood, 1983; Howlett, 2000). The paper explores how the decision making, the definitions of options and the implementation of tools influence the level of justice in adaptation policy and flood risk management. This approach highlights that justice in public policies is dealt with differently in various countries. Nevertheless, in our study, it shows that the approaches are relatively similar between Belgium and France in the European context.

To reveal similarities and differences, many scholars study the just adaptation policies with a governance perspective, for example through the advocacy coalition framework (Malloy and Ashcraft, 2020; Malloy et al., 2022) or more broadly the motivations and goals of different actors (Okereke et al., 2018). In addition to the existing literature, this article suggests looking at policy documents and tools as a concrete expression of policy choices, and more specifically through the inclusion or exclusion of justice issues in questions of leadership, resources, information and values.

Susanne Moser and Julia A. Ekstrom proposed a framework in 2010 to diagnose barriers to climate change adaptation policy (Moser and Ekstrom, 2010). Barriers are defined as *obstacles*, not as *limits*. Limits are physical and ecological restrictions, that can be overcome with innovations for instance. Barriers are challenges that inhibit climate adaptation to be successful, and that can be overcome with creative management. Moser and Ekstrom's theoretical background is in classical political science literature (Lindblom, 1979; Jones, 1984; Cohen et al., 1972; Kingdon, 1993). It allows to consider the interconnection between the actors of policy, the context (social, legal, institutional, economical...) and the subject as a dynamic system of human-environment interactions. The framework offers the possibility to analyze intentional planned adaptation, i.e., the decision-making process of framing issues, selecting legitimate actors, organizing institutional responses, preparing policy instruments for implementation, enabling justice perspective or not. The *Planning Phase* involves three steps: development of adaptation options; assessment of options; selection of options¹ (Table 2).

In Thaler et al. (2019), this framework was adapted to highlight the barriers of bottom-up initiatives from local communities and authorities toward social transformation in flood risk management. Here, we reveal another side of the framework: the barriers for policy formulation, selection of options and policy tool preparation of top-down strategies. This approach is in line with the literature that aims to shed light on justice issues through an environmental policy approach (Thaler et al., 2018). We share the aim of making visible the underlying assumptions of institutional actions that could lead to the degradation of some living environments, as well as the accentuation of current socio-spatial discriminations and inequalities (Bullard, 1960). The level of national

¹ Moser and Ekstrom also identify a previous phase calls '*Understanding Phase*', i.e. detect a problem, gather information and redefine problem; and a third step '*Managing Phase*' on implementation, monitoring and evaluation.

Table 2
Common barriers in the stages of planning phases (policy formulation of options and associated tools of implementation).

Stages	Types of barriers
Develop options	Leadership authority and skill Ability to identify and agree on goals Control over process and options
Assess options	Availability of data and methods Perceived credibility and legitimacy of option assessment Agreement on assessment approach
Select options	Agreement and authority on selected options Threshold of negative effects Clarity of authority and responsibility

Source: From Moser and Ekstrom (2010)

policy will enable to discuss and develop the cross-cutting observations of Moser and Ekstrom. The cross-cutting issues focus on four important characteristics raised by the study of barriers: leadership, resources, information, and values.

The paper analyses similarities and differences in barriers towards procedural, distributional and recognition justice in adaptation and flood management through the lens of these four cross-cutting issues. According to the paper of Thaler et al. in 2019 (Thaler et al., 2019), we offer a simplified form to identify mainly the significance of cross-cutting issues in the analysis of barriers to justice in how both adaptation policy and flood risk management are formulated (Table 3).

Following the qualitative concrete cross-national approach of the inclusion of justice in policy presented above, the paper will test Table 3 on three explanatory levels.

3. Data and methods. A qualitative concrete cross-national approach of the inclusion of justice in policy

The research studies two European contexts with similar climate patterns (3.1), in which a multi-sited approach is used (3.2), through a cross-national study of policy documents (3.3). The data collection allows the work to be reproduced in other European regions.

3.1. Illustrations from Flanders and France to study justice in climate policies

France and Belgium are border countries in North-Western Europe. Belgium is a federal state and consists of three regions: Flanders, the Brussels-Capital region, and Wallonia. We chose to compare France to Flanders, because in Belgium, the regions all have their own executive and legislative bodies. Climate change adaptation and flood risk policies are mostly a regional responsibility, which is why Flanders is the main level of analysis here. France and Flanders are facing the same future challenges in terms of climate change effects, especially extreme floods. At least, at a general level, they both have a political and institutional history rooted in a culture of welfare and solidarity since the Second World War, which makes it possible to look at how the consideration of

Table 3
Analysis of barriers to justice in adaptation and flood management.

	Procedural justice		Distributional justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)						
Resources (where are concentrated financial resources, new technologies, etc.?)						
Information (who is said to have legitimate knowledge / accepted expertise?)						
Values (who has the power to impose beliefs and representations?)						

Source: inspired by Moser and Ekstrom (2010) (Kingdon, 1993) & Thaler et al. (2019) (Lindblom, 1979).

justice is evolving in both cases.

3.1.1. Two areas at risk: Northern Europe affected by the consequences of climate change on the probability, intensity and nature of floods

Climate change increases fluvial, pluvial and coastal flooding in Flanders and France, with an increase in the frequency, intensity and nature of flooding (World Weather Attribution, 2021). In both cases, especially in urban context, there is a range of flood types: fluvial along the main rivers; pluvial floods due to extensive rainfall; tidal floods and storm surge. Furthermore, the combination of types of flooding is more likely to happen (pluvial floods, high tidal floods and storm surges such as during Xynthia storm in 2010, or the combination of flood and mudslide in Belgium in July 2021).

In Flanders, climate change projections up to 2100 show an increase in the average temperature between 0.7 °C and 7.2 °C, with an increase in winter precipitation up to + 38 %, as well as an increase in the frequency and intensity of precipitation in summer (Klimaatrapport, 2015). These changes in temperature and precipitation patterns are changing the nature of the flooding system. During the 20th century, floods often had a tidal cause, whereas recent events are mostly caused by fluvial and pluvial flooding (Mees et al., 2016). These issues are compounded by the high population density and surface hardening in Flanders (Kellens et al., 2008). This prevents infiltration and contributes to surface runoff during rainfall, even though built-up areas are also expected to increase in the future by 30–50 % (Poelmans and Van Rompaey, 2009).

Similarly, in France, based on the scenario of a temperature increase of 3.2 to 5.4 °C according to the Fifth IPCC report, there would be an increase in the reference flood flows, especially in the South and North-East of France (Andre and Marteau, 2022). Rainfall that causes flash floods would increase in frequency. Rainfall that is currently decadal would occur more frequently, approximately every 4.5 years; vicennial events every seven years; and fifty-year events every 11 years. As a result of the increase in extreme events, cost and damages caused by flash floods will increase by 130 % in France. On the Atlantic and Channel coasts, this increase would result in a shift in each return period towards a closer return period (a 100-year flood today would become a 50-year flood by 2050) and an increase of 110 % in damage and costs (Andre and Marteau, 2022).

3.1.2. Taking justice into account in policies in Flanders and France since Second World War

In both cases, the welfare state was initiated between the First and Second World War to protect and promote citizens' basic social and economic security. The welfare systems are based upon equal opportunity and equality of citizens before the law (Smeyers and Buyst, 2016). Today, both countries have a liberal understanding of welfare state: inequalities are mainly derived from one's position in the labour market. Many voices claim that the labour market is not sufficiently inclusive because employment rates are low and welfare dependency is high (Marx and Routledge, 2019). Inequality reduction is implemented through redistributive fiscal policies, through social minima in France

for example (e.g., active solidarity income, social housing policies, disabled adults’ allowance, solidarity allowance for the elderly, family allowances, etc, ...). In Belgium, the same measures apply. On top, repeatedly policy makers underline the importance of reducing poverty, particularly infant poverty (Regering, 2019).

Nevertheless, in discourses, national policies are sensitive to a solidarity common principle. In France, several policies address the issue of justice as requested by the principle of equality of citizens before the law (article 1 of the Constitution of 1958). The Flemish Coalition Agreement (2019–2024) refers specifically to “living together in solidarity” multiple times (p.19) (Departement Omgeving, n.d.). Although the government “opts for an inclusive approach” in the policy note on equal opportunities, integration and citizen education (p.6) (Regering, 2019), policies and strategies are only tailored specifically to needs of vulnerable groups if absolutely necessary. It is also not further specified or explained what a “decent existence” means.

Even though, France and Belgium’s welfare systems are relatively large and redistributive, as for education, elderly or invalidity care sectors, solidarity mechanisms are under pressure. Social policies, governed at the regional level of Flanders in Belgium and by French government, are experiencing rough times due to budget cuts and liberally inspired increased emphasis on individuals’ responsibility to be resilient. Big government spending supporting households and industry during the recent COVID-19 and energy crises, have pushed public finance in debt. A general reduction of redistribution mechanisms is being witnessed, mainly hurting the social sector (health care, poverty reduction, refugee policies etc., but also education).

The paper examines how the Flemish and French policies integrate the inevitable and unequal effects of climate change in a political and institutional context in which the question of justice is historically central, mostly based on distributional mechanisms, but recently deteriorated by liberal governments (Table 4).

3.2. Multi-sited approach based on qualitative methods

The similarities as described in Table 4 allow to use a multi-sited approach between Flanders and France through policy analyses based on the framework of types of barriers towards justice in adaptation policy and flood risk management.

Comparison enables to highlight elements that would not have been visible in isolation, taken case by case, country by country (Vigour, 2005). However, our approach is not a systematic comparative analysis. We consider that situations are intrinsically linked to their historical and geographical roots, to territorial development and political processes, which make it difficult to compare them methodologically. The approach does not aim for a systematic comparative analysis (Pugh et al., 1968), in the sense that we are not comparing document by document or institution by institution. We acknowledge that the countries differ in terms of organisation of institutional systems and distribution of policy actions, which would complicate a strict comparison. On the other hand, we highlight relevant and common themes that emerge resulting from the “observations of the same object in several sites”, as suggested by the multi-sited approach (Cortes and Pesche,

Table 4
Similarities between Flanders and France in facing adaptation policy & flood management.

	Flanders	France
Floods	All types of floods: pluvial, fluvial, tidal & combination	
Climate Change Impacts	More extreme and unpredictable pluvial floods; more combination of floods and other hazards	
Political & Institutional Culture	Welfare State with a liberal understanding of inequality causes	
Original Consideration of Justice	Distributive justice with a decrease in distributional mechanisms	

2013). The multi-sited approach and data analysis methods enable to overcome an excessive quantitative interpretation or one reduced to the analysis of the quantitative criteria of a region. It requires us to go further than socio-economic or demographic indicators to understand the complexity of spatial scales and patterns.

3.3. Building a cross-national comparison

The empirical protocol of SOLARIS (SOLidarity in climate change Adaptation policies: towards more socio-spatial justice in the face of multiple RISks), the research project that all authors of this paper are involved in, focuses on mixed document analysis and interviews at national and local level. However, for this article we will mainly analyse documents at national scale. Barriers will be identified essentially in national and regional policy documents. The qualitative comparison between Belgium and France is based on a research question built on a specific notion (Rose and Mackenzie, 1991), which in this case is: how is justice integrated into the formulation of climate policies and the selection of policy instruments? The researchers identified whether and how justice objectives are formulated and which options for implementation are selected (Hantrais, 2009).

The relevant documents were identified based on their importance in guiding policy actions and implementation in the adaptation policies and flood management. We analysed the presence or absence of formulation of objectives and selection of policy tools to strengthen justice in both adaptation policies and flood management. The main data collected to study the cross-national analysis are key policy briefs, guidelines or laws that formulate national rationales and objectives to embed justice in adaptation and flood risk management. Three main sources of data were: i) national and regional climate adaptation plans; ii) national and regional flood risk management documents; iii) national and regional planning documents. We added reports and assessments on the environment, climate change, natural hazards, resilience and/or social justice that are referenced by the documents in the three fields above. In total 24 documents were analyzed (France, 14; Belgium, 10). As the link between adaptation and flood management is recent, hence most of the data are retrieved in the 2000–2020 period (Table 5). All references of documents analysed are available in the section 7.

Data to observe barriers for justice in adaptation policy and flood risk

Table 5
List of Documents analysed (Total: 24 documents).

Belgium	Total of 10 documents
	Flemish Coalition Agreement (2019–2024)
	Policy Note on Public Health, Family, and Poverty Reduction (2019–2024)
	Policy Note on Equality, Integration, and Integration (2019–2024)
	National Climate Plan (2008)
	National Adaptation Strategy (2010)
	National Adaptation Plan (2016)
	Flemish Adaptation Plan (2013)
	Decree on Integrated Water Policy (2013)
	Water Policy Note (2020–2025)
	Scheldt River Basin Management Plan (2015–2021/2022–2027)
France	Total of 14 documents
	Barnier Law for the protection of the environment (1995)
	National programme to combat climate change (2000)
	National observatory on the effects of global warming reports (2005)
	National Climate change adaptation strategy (2006), Grenelle of the Environment Law (2007, 2010)
	National Climate change adaptation plan & related recommendation sheets (2011, 2018)
	France commitment to the Sustainable Development Goals (2020)
	Flood prevention and action programmes specifications (2011; 2021)
	First national flood risk assessment (2012)
	Flood Risk Management Plans at district level. Initial framework elements (2013)
	National Flood Risk Management Strategy (2014)
	National Flood Vulnerability Framework (2018)

management in Flanders and France stem from the SOLARIS project. SOLARIS questions the socio-spatial injustices linked to the implementation of extreme hydrological risk management policies, in a context of adaptation to climate change in England, Finland, Flanders and France. In this article, the aim is to analyse and highlight justice concerns that emerge in France and Flanders, illustrating how at present, there is little attention to justice in climate change and flood management in Belgium (Flanders) and France. Although England and Finland are not included here, the lessons learned were checked collectively within the project context.

4. Results. An analysis of the barriers to justice integration

The four main results are explained in the following subsections. Firstly, the connections between adaptation and flood risk management are still weak and controlled, if not restrained, by the public authorities (4.1). This top-down approach is particularly visible in traditionally top-down organized flood management notwithstanding the fact that it shifted recently towards implementing a multi-layered strategy (4.2). Further, we clearly observe that in both adaptation policy and flood risk management, justice is not sufficiently considered and neglected in policy practice (4.3). Finally, a persistent barrier that needs to be overcome to achieve more procedural justice and recognition is the lack of active participation in the implementation of public policies (4.4).

4.1. Recent links between adaptation policy and flood risk management

Behind the development of the Flemish Adaptation Policy, there is a network of policy representatives from several policy domains including environment, nature and forest management, and energy, water management, agriculture, infrastructure and economy. Climate Adaptation policies are not as institutionalised as the domain of flood risk management, where one has its own public administration(s), dedicated decrees and regulations, its own set of policy instruments, etc. Adaptation policies at the regional level in Flanders are prepared by the Flemish Taskforce Adaptation. The Taskforce is composed of representatives from various policy domains and coordinated by the Environment Department of the Flemish government. The Taskforce prepared the Flemish Adaptation Plan which was adopted in 2013. The plan describes how to act, respond, and adapt to climate change. A new plan has recently been launched for the 2021–2030 period (Overheid, 2030). Adaptation policy in Flanders emphasises that climate change reinforces existing environmental problems through, e.g., drought, heat stress, storms, and floods (Klimaatcommissie, 2016). Floods have affected more people in the 21st century than other natural disasters (de Goër de Herve, 2022). But the recognition that climate change significantly changes flood risks in Belgium has been relatively recent; this becomes clear when looking at the river basin management plans (RBMPs), which are important instruments in the context of the European Water Framework Directive. Only the more recent plans explicitly recognise the links between climate change and changing flood risks. An exception may be coastal defence, where the links between climate change and sea-level rise have been recognised for a longer period. However, coastal defence falls under the responsibility of a different government agency. In flood risk management documents, climate change is recognized as a driver of changes in flood risks. Flood Risk Management supports adaptation to flood risks, hence flood risk management can be seen as a sub-domain within climate change adaptation – but this realization has been relatively recent.

In France, the issue of Adaptation is put on the national political agenda through the creation of the National Observatory on the Climate Change Effects (*Observatoire National sur les Effets du Réchauffement Climatique* - ONERC) in 2001. An important knowledge production specifically on climate change adaptation led to the adoption of the Climate Plan in 2004 (Onerc, 2005; Onerc, 2004). For the first time, adaptation is considered as a main objective of the French national

Climate Change Policies (Larrue et al., 2016). The First National Strategy about Climate Change Adaptation in 2006 associates more closely the local governments via two local strategic planning documents: the Local climate and energy plan (*Plan Climat Énergie Territorial - PCET*) and the Energy, Air and Climate Regional Scheme (*Schéma Régional du Climat, de l'Air et de l'Énergie* - SRCAE). The link between climate change and floods is particularly new and under-developed in France. However, the recent existence of such a link is progressively affirmed since the First National Climate Change Adaptation Strategy in 2006 (ONERC, 2006); the First National Climate Change Adaptation Plan 2011–2015 (MEDDTL, 2011) and the Second National Climate Change Adaptation Plan 2018–2022 (Mtes, 2018). The French Second “Grenelle Law” of July 2010 and the Climate Change Adaptation National Plan adopted in 2011 (and updated in 2018, with the Second Climate Change Adaptation Plan) are characterized by specific political and legal measures from the national and the local governments in the field of climate change. For example, the instruments of flood risk management must contain a climate change adaptation section (MEDDE, 2013). The different documents cited above (ONERC, 2006; Mtes, 2018; Mtes, 2021) urge to consider the effects of climate change during the Flood Risk Evaluation. For this purpose, three examples can illustrate this: i) The water level reference of flood hazard in Risk Prevention Plans is increased to at least 20 cm since 2011; ii) the flood risk prevision is calculated for the year 2100 (Dreal, 2016) or followed a 100-year hazard formulation (Mtes., 2021); iii) the level of risk of marine submersion is extended of 60 cm of sea level height (Mtes., 2021).

The table above outlines the lack of links between adaptation policy and flood risk management (Table 6). When looking closely at the documents, there are two different notions of Justice, confirming this lack of articulation. One larger notion of justice in adaptation policies; whereas the other is a technical and restrictive notion in flood risk management. This weakness could be explained both by the dominant position of the public authorities in steering as well as in the values induced in public policies. Although public authorities are fragmented in Flanders and simply distributed between national and local authorities in France, in both cases, implementation is very top-down and imposed mainly through regulatory instruments. This top-down effect is particularly pronounced in the field of flood risk management.

4.2. Traditional flood policies moved towards multi-layered strategy

Disaster reduction policies are likely to become part of climate policies, but there is strong resistance to their inclusion. Flood risk management illustrates the barriers inherent in sectoral policies, which have existed for longer than climate policies. The five flood risk management strategies (defence, prevention, mitigation, preparation, recovery (Hegger et al., 2016) can be analysed into two arrangements in Flanders and France: i) the first three strategies (defence, prevention, mitigation) are following a common trend. In both countries, defence is still emphasised and represents a strong pillar. Prevention is mainly based on spatial planning and appears to be an autonomous field of action, supported by different mandatory measures, e.g., to control building permits in flood prone area. In Flanders, the ‘water assessment’ obliges planners to seek advice from water managers (i.e., public authorities from flood defence) on the impact of permits and plans on the water system. In France, every building permits and spatial plans must follow the consideration of the Flood Prevention Plan (PPRI) under the control of the national authorities.

Flood mitigation is characterised by a diversity of measures. In Flanders, mitigation is not a policy domain on its own, compared to flood defence (water management) and flood risk prevention (spatial planning). Some efforts for risk mitigation require involvement of spatial planners (e.g., nature-based solutions), whereas others can be proposed by water managers (e.g., property-level protection). Mitigation could be seen as a bridging opportunity between strategies, but it still lacks alignment among measures and is weakened by a lack of

Table 6
Analysis of barriers to justice in adaptation and flood management.

Flanders						
	Procedural justice		Distributional justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)	no participation; a network of stakeholders from several policy domains	no diversity; limited network of experts (the Taskforce)	weak links; not institutionalised	weak links; not explicitly integrated	issue not integrated	issue recently integrated
Resources (where are concentrated financial resources, new technologies, etc.?)	concentration of resources in public authorities; new regulatory instruments	top-down data & legal tools; more local authorities involved	observed for coastal defences; more local authorities involved	recognition that climate change significantly alters flood	issue not integrated	issue recently integrated (coastal defence)
Information (who is said to have legitimate knowledge / accepted expertise?)	public authorities legitimacy from different policy domains even if Environment Ministry is still concentrating legitimate knowledge	compilation but no special production of knowledge; focus on technical knowledge and engineering solutions	more information coming from local authorities	issue not integrated	issue not integrated	issue not explicitly integrated
Values (who has the power to impose beliefs and representations?)	public authorities values	only from public authorities	In flood risk management, climate change is recognized as a driver of changes	issue not integrated	strong belief that food risk management is a government responsibility	issue not integrated
France						
	Procedural justice		Distributional justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)	no participation; a dual level of leadership both national and the local governments	no diversity; limited network of public experts	weak links; not institutionalised	weak links; not explicitly integrated	issue not integrated	issue recently integrated
Resources (where are concentrated financial resources, new technologies, etc.?)	concentration of resources in public authorities; new regulatory instruments	top-down data & legal tools; more local authorities involved	more local authorities involved	recognition that climate change significantly alters flood	issue not integrated	issue not explicitly integrated
Information (who is said to have legitimate knowledge / accepted expertise?)	public authorities legitimacy, even if national government is still concentrating legitimate knowledge	top-down information, but creation of knowledge as a precondition	important knowledge production	issue not integrated	issue not integrated	issue not explicitly integrated
Values (who has the power to impose beliefs and representations?)	public authorities values	only from public authorities	In flood risk management, climate change is recognized as a driver of changes	issue not integrated	strong belief that food risk management is a government responsibility	issue not integrated

autonomy. The strategies of defence, prevention, and mitigation are perceived as a regional responsibility (i.e., governed at the level of Flanders) (Mees et al., 2016). However, it is important to note that providing flood protection is not legally a government responsibility in Flanders, although the public does expect this. Some responsibilities, such as preventing further development in flood risk areas, are also decentralised to local authorities, however they often lack the resources to effectively and efficiently execute these responsibilities. France has recently devolved defence, mitigation, prevention from national affairs to local authorities. In both cases, even if there were a devolution of powers, defence, mitigation, prevention strategies are still state-oriented process.

The last strategies – flood preparation and recovery – are governed mainly on the federal level in Belgium. In the same way, these are national-level competences in France. Preparation is a well identified strategy as security remains one of the main prerogatives of the national authority. It tends to get more and more connections with others strategies through a multi-risk approach and global crisis management approach (Mtes, 2018). Furthermore, emergency plans are also developed at provincial and municipal levels in Flanders (Mees, 2017), as they also are developed by municipalities in France since the 2000 s. Flood recovery has its own independent existence. It is obviously a

freestanding competence, even if it is completely different in Flanders and in France. In Flanders, recovery is increasingly a shared competence between the federal government, private companies and regional governments (Mees et al., 2016). In France, Recovery is based on a principle of national solidarity, characterised by the existence of a public fund fed, for example, by housing insurance. In both cases, once a flood event is recognised as a natural disaster, a compensation procedure starts, and it is compensated through a public disaster fund.

The review indicates that the barriers to justice integration are the same in Flanders and France (Table 7). A long tradition of flood risk management by public authorities, stemming from a deep-rooted belief that it is public authorities’ responsibility to manage flood risks, makes these public authorities well-respected sources of information on flood and climate change risks. Even though there is a noticeable evolution towards shifting tasks and financial responsibilities to local governments, central governments are still very dominant actors, also in determining policy contents. As will be illustrated in the next section, these policy contents are mainly inspired by rational, engineering perspective on flood risk and climate adaptation, underexposing justice issues.

Table 7

Resistance of traditional flood risk management.

Flanders & France						
	Procedural justice		Distributive justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)	no participation; Top-down leadership	no diversity; flood risk management is perceived as a government responsibility	devolution to local authorities	issue not explicitly integrated	no integration: flood risk management is perceived as a government responsibility	issue not integrated
Resources (where are concentrated financial resources, new technologies, etc.?)	devolution of implementation to local authorities	more local knowledge	limited by conflicts on lack of sufficient resources	limited by conflicts on lack of sufficient resources	issue not integrated	issue not integrated
Information (who is said to have legitimate knowledge / accepted expertise?)	limited and unilateral participation on the knowledge base	limited diversity; but solid and little contested	shifting tasks and financial responsibilities to local governments	issue not evaluated	issue not integrated	issue not integrated
Values (who has the power to impose beliefs and representations?)	no participation, central governments are still very dominant actors	no diversity, central governments are still very dominant actors	efforts towards multi-layered actions; diversity of measures	issue not evaluated	public authorities' responsibility	issue not integrated

4.3. Justice is not sufficiently considered and even less concretely carried out in adaptation policy and flood management

4.3.1. Justice in adaptation policy: No concrete definition, no mandatory measure, no concrete application

First, concerning adaptation policies, the term of inequality only appears in the late 2010 s in Belgium in the National Adaptation Plan which recognises that “as climate change accelerates, increasingly severe impacts on natural ecosystems are expected. In addition, future climate change is expected to slow economic growth, erode food security, and increase inequality worldwide” (p.14) (Klimaatcommissie, 2016). In France, equality is even assumed as a principle for adaptation (p.8) (ONERC, 2006), just as the principle of solidarity in the face of disasters. The Second Climate Change Adaptation Plan integrates the notion of “climate justice” to refer to the question of social inequalities related to environment. This notion aims to underline inequalities between those who pollute the most, and those who are the most exposed to and affected by risks associated to climate change (Jouzel and Michelot, 2016).

Nevertheless, in both cases, there is no mandatory measure. Justice is defined as a challenge to identify what or who will be most affected and how. At least, this definition in terms of “who wins - who loses” can be seen as an approach to justice in its form of distributive justice. This may also indicate a recognition that different groups are impacted in different ways by climate change, depending on their socio-economic characteristics. But there is no commitment to reduce distributive injustices, nor to strengthen procedural justice. There appears to be a lack of specific actions to address justice concerns stated in policy. In Flanders and France, efforts to strengthen justice in adaptation and flood management policies do not go beyond International and European injunctions. In both cases, national adaptation documents do not concretely indicate how to address issues of justice neither at national, regional, nor local levels. There is no word on how local people are included in decision-making processes to reduce inequality. While general recommendations exist in adaptation strategy documents, the study of a sectoral policy such as flood management shows that there is no adjustment, as will be illustrated in the next section.

4.3.2. Justice in flood risk management: An exclusive distributive approach

Concerning flood risk management in Flanders, the 5 yearly Water Policy Note of the Flemish Government (*Waterbeleidsnota*) and the RBMPs are the two main important document-types. The policy choices as reflected in the *Waterbeleidsnota* are to be translated into RBMPs, which include concrete measures to improve groundwater and surface

water quality, and measures for flood protection and drought. Although both documents describe water management challenges, none focus on tackling issues of justice in floods (Coördinatiecommissie Integraal Waterbeleid (CIW). *Stroomgebiedbeheerplannen voor de Schelde*, 2016). The RBMPs do describe that the severity of flood risks is also determined by looking at social and economic impacts. However, social impacts are defined as the number of buildings in a potential flood area, and the economic impact is determined based on compensations paid by the disaster fund. In France, the concept of “vulnerability” – widely used in the different flood risk documents – is not related to a notion of social justice, contrary to the definition of vulnerability in the academic disaster studies literature (Wisner et al., 1977; Maskrey, 1993), or even in the latest climate change policy documents, where the term has a human dimension (CGDD, 2020). The definition of vulnerability in the main flood risk documents refers to the exposure of an asset to a hazard, and its capacity to be affected by an event (ONERC, 2006; MDEM, 2018; Stratégie, 2014). In short, vulnerability is understood as flood vulnerability, not as a social vulnerability to floods.

In Flanders and France, public authorities have organised a national solidarity system to compensate damages caused by natural disasters. Created in France in 1982, the Barnier fund is based on the principle of collective solidarity to compensate impacts of events considered as abnormal, recognised as such by public authorities. This solidarity principle is implemented through a tax on housing insurance paid by each citizen (uniform premium throughout the country). In Belgium, a very similar arrangement is made. Costs of flood damage are compensated via the housing insurance policies of privately owned insurance companies. The law obliges both owners and tenants to have a housing insurance and part of the premiums (paid by all, regardless of the flood risk of the property) is reserved for flood damage compensations. This very similar policies in Flanders and France do not attribute attention to potential differences in social vulnerability between groups, and the resulting inequality and justice issues. According to literature, the question of ecological inequalities in the context of French public policies is rarely and belatedly formulated (Laigle and Tual, 2007).

As is summarized in the Table 8, justice is insufficiently integrated in a similar way in Flanders and France. Although flood risk policies do include references to vulnerability, this is understood in terms of exposure to flood risks. Social vulnerability is often not mentioned or addressed. Furthermore, flood risk management policies are more technical and detailed, whereas the language used in adaptation policy remains more general and high-level. Thus, despite the principles of solidarity and inequality reduction assumed in the national climate change adaptation plan, adaptation to climate change does not start of

Table 8
Justice not integrated enough in adaptation policy & flood risk management.

Flanders & France						
	Procedural justice		Distributional justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)	limited participation; public authorities predominant on policy contents	often with a technical approach to floods	limited attention to social justice considerations	limited attention to social justice considerations and negative effects	emergence in strategic documents, not pragmatically integrated	emergence in strategic documents, not pragmatically integrated
Resources (where are concentrated financial resources, new technologies, etc.?)	public authorities predominance	public authorities predominance	not enough benefits effects: mandatory measure: late appearance and still few resources	no reduction of burden effects: late appearance and still few resources	issue not integrated	issue not integrated
Information (who is said to have legitimate knowledge / accepted expertise?)	limited participation; public authorities predominant on policy contents	no serious distinction between inequalities (exposure to risks) and justice	lack of operationalization of issues	not enough concrete to reduce burden effects pragmatically	social vulnerability is often not mentioned	emergence in documents, not pragmatically integrated
Values (who has the power to impose beliefs and representations?)	participation is underlined, but not implemented	emergence in strategic documents, not pragmatically integrated	no integration of distributive injustice between social groups	no integration of distributive injustice between social groups	main approach is an assessment of flood vulnerability, little recognition of social vulnerability	main approach is an assessment of flood vulnerability, little recognition of social vulnerability

from a universal perspective that underlines the importance of (more) justice, but from a technical approach that finds that e.g. flood risks are distributed unequally, without problematizing distributive injustice between social groups, nor pleading for more recognition of inequalities or justice in procedures.

4.4. Insufficient participation: A persistent barrier always neglected to strengthen justice

From a procedural justice perspective, France and Flanders, as many countries and regions in Europe, have integrated the notion of “public involvement” in the construction of public policies since the 1980 s, in the path of several international texts on public or citizens’ involvement in environmental policies (Rio Convention, Aarhus Convention, etc.). Stakeholder participation in flood risk management in Europe even became a legal requirement as a result of the European Floods Directive (European Union, 2007). Could that strengthen justice concerns in climate change policies?

Stakeholder involvement in flood risk management in Flanders was strengthened in the 1990 s, with the instalment of pilot river basin committees for the five main river basins (Hegger et al., 2013). The committees facilitate multi-stakeholders dialogue and integrated policy making. In 2003, the river basin committees received a legal status. Furthermore, in 2012/2013, a discourse emerged in Flanders that increasingly questions the executive role of the government in flood risk management: multi-layer water safety (MLWS). MLWS aims to redistribute responsibilities for flood risk management between water managers, spatial planners, other governmental bodies, and private stakeholders, including citizens (Mees, 2017). One important rationale for increased citizen involvement in the delivery of flood risk management is efficiency: it is seen as a means of cost sharing (Mees et al., 2016). However, it appears that public authorities in flood risk management often recommend that citizens should be informed rather than actively included in the decision-making process. For example, a website exists that informs citizens of existing flood risks (www.waterinfo.be), but opportunities to influence in flood risk management and adaptation more generally remain limited.

In France, the principle of the public’s right to information on major natural risks was notified in the 1987 Law relating to the organization of civil security. This right to be better informed is translated in public reports. The 2003 Law relating to the prevention of technological and

natural risks intended to develop an awareness and a “culture of risk” in the population such as the obligation for mayors to inform their citizens of the risks (Veyret-Medkjian et al., 2002). Finally, administrations still consider that “information” and “consultation” phases in the definition of Natural Risks Management Plans (*Plans de Prévention des Risques Naturels*), and among them the public inquiry, remain the most important time for public involvement in Flood Risk Management policies.

In recent decades, those institutional participation processes are said to be completely insufficient in either France or Flanders, as resumed in Table 9. Literature recalls that such process is still not considered to give power to citizens but to facilitate deliberation and enlighten decision later by policy makers. So, local authorities tend to launch additional participatory initiatives, i.e., *ad hoc* processes to reduce the difficulties and conflicts which may arise during projects’ implementation. Notwithstanding illustrations of efforts in flood risk management in Flanders and France to strengthen participation, many critiques remain (Blatrix, 1999). It is more “information” and “consultation” than “participation” and “association” in climate change policies decision making (Blondiaux and Sintomer, 2002). Both in Flanders and France, public authorities recognise that the participation procedures are often symbolic, e.g., to reduce resistance and build support. Without a recognition of differences in the capacity of groups to participate, it is unlikely that vulnerable groups will be included or that their needs will be heard. This underlines the importance of recognition justice that we will discuss alongside procedural and distributive justice in the next section.

5. Discussion. Overcoming barriers for justice in climate change policies

This section highlights the barriers to strengthening justice by drawing attention to four central themes. Central questions to answer are: what can we learn on the importance of leadership; resources; information; and values to explain barriers to justice in climate change policies?

First, the cross-cutting question on leadership highlights that Flanders and France are encouraging a model in which general aims of justice are supported by central authorities, but that the concrete definition, operationalization and implementation should be made more at local levels. In France, although plans for adaptation to climate change, i.e. the First National Climate Change Adaptation Plan

Table 9
Not enough participation in adaptation & flood risk management.

Flanders & France						
	Procedural justice		Distributional justice		Recognition	
	Participation in problem resolution	Diversity of knowledge	More benefits effects	Less burdens effects	Integration of perception	Integration of capabilities
Leadership (who governs and decides?)	public authorities define the scope of the participation	insufficient diversity of knowledge integrated in participation process	information and consultation in the conception phase of policy making, but not in decision making	not enough participation to concretely reduce burdens effects	attempts to integrate perceptions	attempts to integrate capabilities
Resources (where are concentrated financial resources, new technologies, etc.?)	limited participation; legal obligations stemming from international texts	insufficient diversity of knowledge integrated in resources	participation procedures are often symbolic	little resources for participants to influence policies	issue not integrated, participation focuses on legal obligations	issue not integrated, participation focuses on legal obligations
Information (who is said to have legitimate knowledge / accepted expertise?)	limited participation; application of the "principle of the public's right to information" by sharing of information by public authorities	limited diversity; no intention to influence the decision-making process	processes to reduce the difficulties and conflicts	not considered to give power to citizens	attempts to integrate perceptions	attempts to integrate capabilities
Values (who has the power to impose beliefs and representations?)	more "information" / "consultation" than "participation" / "association"	insufficient diversity of knowledge integrated in participation process	indirect and representative participation through various committees	issue not integrated pragmatically	more to reduce resistance and build support than to drive justice in climate policies	more to reduce resistance and build support than to drive justice in climate policies

2011–2015 (MEDDTL, 2011) and the Second National Climate Change Adaptation Plan 2018–2022 (Mtes, 2018) highlight the importance of justice, the choice of socio-spatial characteristics to define injustice or the integration of participation in development project in cities are driven by local authorities. The same applies to Flanders, where reference to justice issues is in climate adaptation plans drafted by central governments, but it depends on the drive that project leaders of decentral authorities have, to pay attention to socio-spatial inequalities or organizing participation exercises.

Focusing on resources as a second cross-cutting issue to discuss when identifying barriers for implementing justice in climate change policies, the paper makes clear that there are not enough resources (made) available to truly address the just adaptation issue in Flanders and France. The main resources are legal frameworks, mainly derived or stimulated by European Laws. The national adaptation strategies have not taken the step of implementing regulatory obligations, even if this is the case for flood management. Indeed, flood risk management is historically a public policy in which the safety of populations has involved a strong production of legal rules. These obligations to impose a rule do not yet appear in the adaptation strategy. The paper also explains that few resources (knowledge, expert debate...) are provided by public authorities to precisely define the issue of justice. The objectives remain general: whilst they retain the principle, in practice, public policies do not deploy the efforts for an effective implementation to remedy (in) justice.

Concerning the cross-cutting issue of information as a potential barrier, the definition of justice remains too vague: it does not distinguish between the different forms of justice; it does not operationalise the different scales; it often uses justice, inequality or vulnerability indifferently. Moreover, there is no room for lay knowledge or the perspectives of the most vulnerable communities. In flood risk management, the knowledge is framed through a modelling perspective, based on quantified data, which can be historically explained by a strong flood risk management defence strategy (Gralepois et al., 2016). Justice is insufficiently operationalised in concrete indicators and still under-explored in climate change policies (Kaufmann et al., 2018). There is a lack of typology, methodology, international comparison, tools for general explanation, etc. Even if policy documents recently focus more

explicitly on justice, it is mostly in discourses and general objectives. There is no clear formulation or concrete implementation.

At last, concerning the theme of values, it stands out that justice is seen as an essential pillar principle for adaptation. It is recognized that avoiding justice could lead to maladaptation and failures in policy action. As Juhola et al. observe with a quantitative framework (Juhola et al., 2022), justice is mainly accepted through distributive effects. It used to refer to inequalities related to environment (pollution, concentration, exposure, etc.), and it is slightly moving towards a more comprehensive approach of socio-economic inequalities (poverty, gender, ages, race...), even if it lacks a concrete and common typology and methodology, as stated previously. There is little done to change procedures in climate change policies. The only strategy used is to respect national and local mandatory rules of public participation, but this article confirms that these participatory processes do not reach the more marginalised groups, because participatory processes are too formal and often too narrowly focused to reach "left-behind" communities. Spontaneous mobilisations are seen as obstacles, not as fuel to reveal vulnerabilities and inequalities to reduce.

6. Conclusion

Based on a cross-case comparison of adaptation policies and flood risk management in France and Flanders, this article aims to answer the research question: how should justice be integrated into the formulation of climate policies and the selection of policy instruments? The paper concludes that public authorities dominate the development of policies, neglecting issues of justice. Justice in adaptation and flood management is studied through exposure measurement and zoning, vulnerability criteria (mainly linked to spatial exposure also) and ensuring mandatory minimum participation according to recent laws. Justice is highlighted in high-level policy plans as important principles, but this could be described as 'window-dressing'. In practice, policy documents, especially on flood risk management, tend to have a hard technical approach to risk, without clear terminology, indicators or assessment criteria to deal with differences in social vulnerability. Participatory mechanisms, often seen to integrate the values and opinions of all citizens, have mainly an "informative" function. Their potential to influence public

policy therefore seems limited. The documents analysed do not clearly indicate their articulation for the reduction of inequalities and issues of justice. In the current context, where more climate change impacts are to be expected and flood risks are increasing, there is a growing need to help policy-makers to operationalize justice. Given that responsibilities for concrete projects are shifting towards decentral authorities, there is more specifically a challenge of supporting local policy makers in efforts to not only consider flood vulnerability, but also social vulnerabilities, e.g. in the selection of projects to develop.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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