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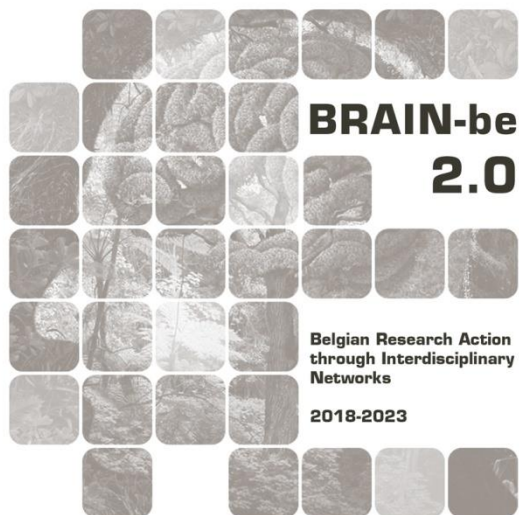
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SOLARIS

**SOLidarity in climate change Adaptation policies.
Towards more socio-spatial justice in the face of
multiple RISks**

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NETWORK PROJECT

SOLARIS

SOLidarity in climate change Adaptation policies. Towards more socio-spatial justice in the face of multiple RISks

Contract - B2/20E/P3/SOLARIS

FINAL REPORT

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ABSTRACT

Climate change impacts are unevenly distributed, which raises questions of fairness, justice, and equity. Through the lens of flood risk management (FRM), the SOLARIS project evaluates attention given to justice issues in Climate Change Adaptation Policies (CCAPs) and the instruments used to reduce the risk from extreme events. Based on multidisciplinary research grounded in social sciences, using a case study approach (2 per country) from four countries (Belgium, England, Finland, France), the SOLARIS project aims: (1) to fill the research gap in analysis of social justice in relation to CCAPs; (2) to develop conceptual and analytical approaches to reveal social justice perspectives of CCAPs; (3) to explore the policy and decision-making process for a broad range of stakeholders (e.g. policymakers, practitioners, citizens etc.) to facilitate better participatory processes.

In the SOLARIS comparative report, the core results are presented from the comparative analysis, focusing on key themes that emerged in the analysis. The project finds that in all SOLARIS countries there is a strong emphasis on technical knowledge and expertise; often there are no clear indicators for addressing social equity issues in FRM. Furthermore, most participation processes fail to involve all target groups. The set-up of the participation often tends to limit conflictual situations and does not preventively discuss the unequal distribution of burden and benefits. The dominant use of cost benefit analysis approaches (e.g. in Finland, France, Flanders) leads to a focus on protecting the largest number/highest value of assets at the lowest cost. This may be exacerbating inequalities as it will allocate investment towards higher asset areas which are more likely to be associated with wealthy people. Lastly, the broadening of the actors considered responsible in FRM does not only entail involving multiple policy sectors, but also multiple types of actors like governments, (insurance) businesses, knowledge actors, individuals and households etc., pushing flood risk *management* (with competent governments) towards flood risk *governance*.

Keywords: distributional justice, recognition justice, procedural justice, fairness, flood risk management, Flanders, Belgium, Finland, France, England

1. INTRODUCTION

Facing the unpredictability and unavoidability of climate change effects, governments in Europe must increasingly promote the further development of their Climate Change Adaptation Policies (CCAPs). In this field, adaptation to extreme hydraulic events such as flooding and erosion are more urgent than ever. As Tradowsky et al. considered when they examined floods in Western Europe in July 2021: “models indicate that intensity and frequency of such events will further increase with future global warming” (Tradowsky et al., 2023).

In this context, climate change impacts are unequally distributed, and adaptation to these impacts therefore raises questions of fairness, justice, and equity (Adger, 2001; Byskov et al., 2021). Studies have highlighted the importance of justice in climate change exposure, especially in countries in the Global South (Bobo, 2006; Owen, 2020) and more recently as well in Europe (Reckien et al., 2014), however further analysis of justice issues related to CCAPs in Europe was lacking. The SOLARIS project focuses on flood risk issues and flood risk management (FRM) and illustrates how justice can be considered in public policy.

FRM has long raised issues of justice (Walker & Burningham, 2011). Flood risk itself is often unevenly distributed, due to the diversity of causes of flooding, types of landscape, the location of the houses and assets on which people depend. The impacts of floods and their consequences on individuals and communities is determined by a range of factors other than the severity of the flood itself, such as socioeconomic characteristics and different types of financial, social and cultural capital, health conditions, age, and psychological characteristics, etc. (Thaler et al., 2018). Furthermore, access to the benefits of FRM is also said to be “inherently unfair” (Johnson et al., 2008; Johnson et al., 2005). The (un)fairness of FRM is principally a question of who benefits from the measures and who pays for them (Begg, 2018). But other considerations include the ability of stakeholders to influence the decisions made and the way in which vulnerable people are recognised and defined.

2. STATE OF THE ART AND OBJECTIVES

SOLARIS aims to fill the research gap relating to the analysis of justice in CCAPs that focus on flooding. Our hypothesis in the SOLARIS project is that social and spatial inequalities exist and threaten the implementation of CCAPs and the equitable involvement of affected citizens. This is particularly true for floods, that are among the main climate and weather-related causes of damage in Europe. Through the lens of FRM, we evaluate the attention given to justice issues in CCAPs and the instruments that they use to reduce the risk from extreme events. Based on multidisciplinary research grounded in social sciences, using a case study approach (2 per country) providing data from four countries (Belgium, England, Finland, France), the SOLARIS project aims:

- To fill a research gap in analysing social justice in relation to CCAPs;
- To develop conceptual and analytical approaches to reveal social justice perspectives in CCAPs;
- To explore the policy and decision-making process for a broad range of stakeholders (e.g. policymakers, practitioners, citizens etc.) to facilitate better participatory processes.

To reach these objectives, we formulated three central research questions that guided our analysis and that were answered in the four SOLARIS countries:

- Q1: Is fairness brought on the table? To be able to analyse impacts of CCAPs, this question addresses issues of recognition justice. It aims to identify to what extent social inequalities are recognised in policy and by public authorities working on the topic, what mechanisms of solidarity exist or are being implemented within public policies in each country, and more particularly in FRM and CCAPs? How and when are issues of inequality and justice defined, addressed and concretely implemented in CCAPs and FRM?
- Q2: What participation procedures are in place? This question addresses issues of procedural justice. It aims to uncover levels of citizen participation in decision making during the processes of definition and implementation of FRM and CCAPs. What participation procedures are in place (legal obligations, legal framework)? What are the cultural and political traditions? Are there mandatory procedures? What is the intensity of the participation procedures and processes? Are there ad hoc mechanisms? Who are the target groups? What are the effects of participation?
- Q3: What types of knowledge about inequality and justice are available? In order to address the blind spots in public policy regarding the fight against inequality and injustice, this question aims to analyse the knowledge considered but also missing within the implementation of FRM and CCAP. It also addresses the potential for capacity building on (knowledge on) social inequalities and differentiated risk. Are there requirements for developing and/or compiling data? Are they being used? What are the steps to integrate different types of knowledge, including lay knowledge?

3. METHODOLOGY

SOLARIS is a qualitative social science research project aiming to explore justice in FRM across four countries: Belgium, England, Finland, and France. The three research questions have been answered for each participant country at both national and sub-national (case study) level.

This project takes a case study approach with a common protocol used during the investigation. The above research questions dominated the analysis, and the case study approach utilises four main empirical tools (mixed-method design): analysis of policy/guidance documents/grey literature, interviews with stakeholders, local discussion groups, and participant observation.

The first method of data collection is **document analysis**. Document analysis involves the analysis of legal and policy documents such as legislations, rules, and programs (Massey et al., 2014) to underline how FRM recognises and considers the issues of justice. We aim to note the distance between the formal documents and the discourses of the different groups (through interviews and local discussion groups). In total, 187 documents (France, 86; Belgium, 24; Finland, 43, England, 34) have been formally analysed by the four countries, however others may have been consulted to direct the research. Where appropriate it has also been possible to draw on the analysis of documentation undertaken in previous research projects (see, e.g., Alexander et al., 2016).

The second method of data collection is **semi-structured interviews** carried out with public authorities, policy makers, and other experts and practitioners involved at the national and case study level, as well as local NGOs. In some of the cases, interviews were also conducted with local at-risk inhabitants to supplement data. Specific attention was given to the implementation from national to local. Interviews typically lasted 60-90 minutes and began with a set of pre-prepared questions focussing on the role of justice and equality in FRM, both in policy and in practice, as well as participatory practices and the role of knowledge. Following on from these questions, the interviews would become less structured to expand and probe issues that participants had raised. All interviews were recorded with the participants' permission, transcribed, and thematically analysed through an iterative process. A total of 166 interviews were conducted in the four countries (France, 53; Belgium, 39; Finland, 49; England, 28).

The third data collection approach is the organisation of **local discussion groups**. The aim was to contribute to the analysis through a discussion with a limited number of relevant experts (flood risk managers, i.e., engineers, spatial planners, etc.; policy makers; NGOs, local resident experts) invited to the local discussion group. The objective was twofold: first, to ask for feedback on preliminary results and to provide knowledge exchange concerning next steps, and then to invite experts to reflect on the (in)equality and (in)justice issues that are raised by current FRM policies. Each country organised a Local Discussion Group per case study level.

The final and fourth data collection approach is **participation observation**. Participant observation implies the presence of the researcher in the social world of the respondents, in their usual activities (Beaud & Weber, 2003; Bryman, 2016). The objective is to understand their relationships and daily practices beyond the mere collection of their discourse (carried out in the context of an interview).

This data collection strategy was implemented according to the case studies, the disciplinary context, and the willingness to experiment in each country. For instance, Finland realised an art experience called SOLARIS-ART: Engaging with Solidarities in Flood Risk Management Through Community Art. It is “a temporary public space for listening called the Outdoor Living Room (OLR). This is a unique method that was developed to set up a living space in public places to engage people, who would otherwise not feel comfortable attending more formal meetings” (Mazzotta, 2022).

4. SCIENTIFIC RESULTS AND RECOMMENDATIONS

WP1. Results from WP1 (conceptual and empirical framework)

The SOLARIS project focused not only on revealing and understanding injustices related to CCAPs and FRM, but also aimed at comparing them between countries. The triple-dimension of justice was chosen as a starting point: distributional justice, procedural and recognition justice.

Whilst it was clear that there was significant conceptual complexity associated with the topic of justice, climate change adaptation, and FRM, it became more obvious (c. late 2021/early 2022) when discussing early empirical results that there the politicising of justice (e.g. equality, solidarity, equity) differed between the SOLARIS countries, which led to concerns in the consortium about using these in a comparative way¹. However, WP1 succeeded in specifying a conceptual framework, adapted to a bottom-up, pragmatic and empirical approach, oriented by the three research questions, mentioned before.

WP2. Results from WP2 (national and case-study assessment)

SOLARIS WP2 was based on the case study analysis, two in each partner country (France, England, Belgium, Finland).

Learn more here: https://solaris.univ-tours.fr/?page_id=1093

More extensively, the country reports (milestone M2.3) are the final results of the national and case study analyses. Currently, they serve as input for several scientific papers on socio-spatial injustice in CCAPs and FRM. They also served as input for the cross-case analysis in reported on in WP3. The country reports reflect the relevant characteristics of the 8 case studies in SOLARIS and the main relevant findings on vulnerability, (in)equality, and justice in FRM.

WP3. Results from WP3 (comparative report)

The SOLARIS comparative report presents the most important results from the comparative analysis, and it is centred around some key themes that emerged across the countries:

1. **Policy makers should question their concrete capacity to plan adaptation and FRM for the future: the data and the type of expertise required, but also the funding capacity, the cost of implementation, human resources and their other resource capacities.** There are different degrees of justice in CCAPs and FRM: is the concept concretely recognised and included in public policies? Without the capacity to act in practice, both CCAPs and FRM will be dealing “too little, too slow” with justice concerns. There is a need for research on geographical specificities both on climate and governance. It also calls for the study of tensions between authorities, sectorisation of priorities and policy uptake of evaluation results.

¹ Similar decisions needed to be made in relation to the assessment framework as there were significant differences between the quality and availability of data between countries.

2. In all SOLARIS countries **there is a strong emphasis on technical knowledge and expertise.** Although in the case of England, data on flood risk do consider aspects of differentiated vulnerability and inequality, technical definitions of risk continue to dominate FRM in the other countries. What kind of knowledge is available and may be used to better define risk and inequalities? Basing public planning actions solely on a technical approach to risk can lead to bias in participatory processes. Often there are no clear indicators for addressing social justice issues in FRM, which can limit the effectiveness of a particular intervention. Where such indicators exist, they are not used. The notion of vulnerability in FRM often refers only to exposure (location) and the characteristics of the building to withstand an event, or the total number of people that can be protected by measures. Differences in the capacity of people to deal with a flood event, and thus identifying who needs help, are overlooked. Local authorities face difficulties in working with lay knowledge because they lack resources but also because lay knowledge is often not seen as a suitable type of knowledge to include in decision making. Practitioners often assume that lay knowledge is naive. They also believe that lay knowledge should be homogeneous, while in reality, it is not. This plurality of viewpoints prevents practitioners from using it as a resource. The existing participatory mechanisms are insufficient to include all voices. In civil society organisations, power relations can also be a challenge. Not all citizens are equally able to speak and be heard in participatory spaces.
3. **There are always boundary conditions to participation.** Participation processes often do not discuss the issue of flooding itself. The technical dimension is not up for debate, and hydraulic and hydrological decisions are made by flood risk managers. Instead, participation processes often focus on other aspects of (local) projects or aim to reduce conflict among participants, but debates concerning the flood issue itself and discussions about potential socio-spatial inequalities in face of the flood risk are not on the table. In most cases, public participation in FRM combines participation procedures and processes with the ambition to improve the involvement of inhabitants and local communities. Participation processes often fail to involve all target groups. “Uninvited participation” (Waagenar, 2014) sometimes plays an important (and unexpected) role. Protest and resistance may be considered as relevant and functional forms of participation; giving room to conflicts may be a more productive way of dealing with them, more than trying to enforce consensus.
4. **Justice issues relating to the allocation of investment to manage flooding.** There is often a disconnect between those benefiting from FRM and FRM investments (both intra and intergenerational solidarity). Overall, there is a lack of recognition of the additional benefit ‘value’ that investment in flood risk reduction can bring. Findings highlighted the importance of path dependency and how decisions taken now may relieve or place increasing burden on certain communities in the future. Many of the cost benefit analysis approaches in the countries (e.g. Finland, France, Flanders) had policies and guidance which focused almost exclusively on protecting the largest number/highest value of assets at the lowest cost. This approach may exacerbate inequalities as it will allocate investment towards higher asset areas which is likely associated with more expensive properties and wealthy people.

5. **FRM is no longer an exclusive responsibility of governments.** Since the 2010s, the countries studied in SOLARIS are evolving from a primarily flood defence approach towards more diversified FRM. A risk-based approach is used, emphasising the need to address both the probability and the consequences of flooding and stressing the importance of collaboration between spatial planners, water managers, emergency and recovery actors. The broadening of the actors considered responsible in FRM does not only entail involving multiple policy sectors, but also multiple types of actors like governments, (insurance) businesses, knowledge actors, individuals and households etc., pushing FRM (with competent governments) towards flood risk governance. Across Europe, citizens are also increasingly expected to participate in the implementation of FRM. However, in reality, due to differences in socioeconomic and demographic characteristics of people, not all residents have the same capacities and capabilities to deal with flooding themselves and be self-reliant.

5. DISSEMINATION AND VALORISATION

Practitioners' guide

The Practitioners' Guide has stemmed from the comparative phase carried out after empirical work (WP3). Through the comparison of different national contexts and cases, 5 broad topics appeared to be the most crucial in our results and relevant for practitioners to consider:

- Justice is not very present as a concept in CCAPs and FRM policies
- There are dominant technocratic and engineering perspectives on risk and inequalities in FRM
- Acknowledging power (im)balances, that influence participation and the importance of recognition of people's needs
- There are important justice issues related to the allocation of investment to manage flooding
- Consider the distribution of responsibility between public and private actors in FRM and its implications for reinforcing inequality and injustices

Our guide has been composed of these 5 main sections. In each section, readers may find:

- Initial points for attention by practitioners on this topic (identified as "issues" in the final document)
- Insights from the SOLARIS project to illustrate these points for attention and learn from actual situations (using empirical evidence from our case studies)
- Additional advice to reflect on their current and future practices

At last, the concluding section provides complementary tools for practitioners. By developing the concept of a "justice box", combining spatial, social, and temporal dimensions of justice, we offer several lists of questions that practitioners may address when defining and implementing policies.

Local Discussion Groups

Stakeholders and local partners of SOLARIS were invited during **Local Discussion Groups** to participate and contribute to data analysis. **Local Discussion Groups** have taken place during the last year of the project. They were organised in order to present the SOLARIS key results at case study level, obtain feedback from local stakeholders and former interviewees but also contribute to the local on-going debates and reflexions on these issues. **Local Discussion Groups** gathered from 8 to 20 contributors. Depending on local contexts and potential tensions between stakeholders, several meetings have been sometimes organised. For instance, in Ault (France), a first meeting was prepared for institutional stakeholders and policymakers, before a second event specifically dedicated to inhabitants and local NGOs. Some **Local Discussion Groups** have also been combined with events from other research projects (see the case of Beerse in Belgium).

Please read more here: https://solaris.univ-tours.fr/?page_id=1055

Arty experience

In Finland, within the Kokemäenjoki River watershed case study, we conducted a participatory data collecting method. Outdoor living rooms, which have been developed by a US based artist Matthew Mazzotta, were conducted in cooperation with the artist in Huittinen and Kokemäki during August 2022. For the events a living room was set up in an open public place and passers-by were welcomed to join the discussion based on a semi structured questionnaire. One outdoor living room was held in both cities, with the same pattern of questions. Both events were also advertised in local newspapers. The advisement influenced the stakeholders participating notably in Huittinen, where several members of a local flood committee attended. During the outdoor living rooms, the questionnaire compiled was based on SOLARIS-research questions combined with Mazzotta's questionnaire, based on the method he has developed. Alongside the collected data, the outdoor living rooms helped to make connections in the area and to find relevant stakeholders for the upcoming focus groups interviews. The focus groups formed based on the data from the outdoor living rooms include i) parties responsible for regulating the water, such as regional authorities and representative of hydropower companies, ii) municipal experts and politicians, and iii) other local stakeholders, such as people who encounter flooding and farmers. Altogether, twelve people were interviewed in this phase of the data collection process.

Please read more here : https://solaris.univ-tours.fr/?page_id=1054

Advisory committee

Two Advisory Committees with external partners and experts on climate and floods were organised during and after completion of the fieldwork. This committee was composed of academics and policymakers at national and regional levels. The meetings have been planned and decided from the initial discussions among team members, with the ambition to test and refine the validity of SOLARIS research questions and results. These moments have provided additional research input, developed collaboration and dissemination activities and helped the consortium in the outcomes. Some members of the Advisory Committee also directly contributed to the sessions of SOLARIS final conference in July 2024.

Please read more here: https://solaris.univ-tours.fr/?page_id=1160

Final conference

Within our dissemination strategy, we organised a final conference in France (Paris) in order to present the results of the project and share experiences/expertise with the scientific community. This final conference involved not only the researchers participating to the project but also other research fellows and practitioners to discuss the SOLARIS outcomes and put them in perspective with their own expertise and experiences.

Please read more here: https://solaris.univ-tours.fr/?page_id=1415

Others dissemination activities

- Conferences and abstracts: https://solaris.univ-tours.fr/?page_id=765
- Media and newspapers: https://solaris.univ-tours.fr/?page_id=1328

6. PUBLICATIONS

Dissemination activities of the results from SOLARIS started early during the project, with several scientific abstracts accepted in international and national conferences in 2021 and 2022 (see below). Following these first activities, scientific articles started to be published from 2023 and even more in 2024. A special issue in the *Journal of Flood Risk Management*, entitled “Recognising justice in flood risk management” and based on articles from both researchers of the consortium and externals, is also about to be finalised. Some articles are still under review.

Articles (from most recent to oldest publication)

- Bonnefond, M., Guevara Viquez, S., & Gralepois, M. (2024). Pluraliser les savoirs pour penser les futurs face à l’incertitude. Le cas de l’effondrement de la falaise d’Ault (Picardie, France). *Nouvelles perspectives en sciences sociales*, 19(2), 67. [\[online\]](#)
- Gralepois, M., Paauw, M., Guevara, S., & Crabbé, A. (2024). Overcoming barriers to integrate more justice into climate change policies. Lessons from adaptation policies and flood risk management in Flanders and France. *Total Environment Advances*, 10, 200098. [\[online\]](#)
- Paauw, M., Smith, G., Crabbé, A., Fournier, M., Munck Af Rosenschöld, J., Priest, S., & Rekola, A. (2024). Recognition of differences in the capacity to deal with floods—A cross-country comparison of flood risk management. *Journal of Flood Risk Management*, e12965. [\[online\]](#)
- Guevara, S., & Cardinal, J. (2023). L’impensé social des pratiques de délocalisation préventive. Ce que les cas de Blois et Ault apportent aux débats sur l’adaptation au changement climatique. *Dynamiques environnementales*, 51, 1-28. [\[online\]](#)
- Fournier, M., Gralepois, M. (2023). Des SfN avant l’heure : Ce que nous en disent les opérations de mitigation urbaine en zone inondable. Le cas des villes ligériennes. *Développement durable et territoires*, Vol. 14, n°2. [\[online\]](#)
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- Paauw, M., Priest, S. & Crabbé, A. (under review). Homeowner responsibility in flood risk management – the fairness of financial support for property-level flood resilience. *Environmental Science & Policy*.
- Paauw, M., Coppens, T. & Crabbé, A. (under review). Evolving justice discourses on compensation for restricted development rights in Flemish spatial planning for flood risk management. *European Planning Studies*.
- Cardinal, J., Paauw, M., Smith, G. & Fournier, M. (under review). Nature-Based Solutions for flood risk management: towards more recognition of the most vulnerable target groups through public participation. *Journal of Flood Risk Management*.

7. ACKNOWLEDGEMENTS

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