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Social justice in the context of adaptation to climate change – reflecting on different policy approaches to distribute and allocate flood risk management

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Consequences of extreme hydrological events, such as those recently experienced in United States (e.g. Hurricane Harvey or Irma in 2017), floods in South Asia in 2017, or the Central European floods in 2013 and 2016, have again focused the attention of society, policy makers and academic scholars on questions of how to reduce vulnerability to such events, especially when faced with the dual challenges of climate and societal change. Not only is the likelihood of floods increasing (e.g. IPCC 2014), but, due to continuing development in hazard-prone zones, the so called bullseye effect which argues that increasing disaster frequency is largely due to increasing exposure, and the resulting higher degree of vulnerability in floodplains, it becomes more and more challenging to protect all properties to the same standard (see discussion around residual risk, Ashley et al. 2014; Jongman et al. 2015; Fuchs et al. 2017a). Hence, the outcome of current flood risk management strategies in many situations are necessitating changes to the current social contract between state and society, requiring a re-design of the role of central government and individual citizens and communities in terms of sharing responsibilities (Adger et al. 2013; Doorn 2016). In particular, government often encourages society to take the lead in the responsibility for flood risk management, but apparently with conflicts and misunderstandings arising (Harris 2012; Kuhlicke et al. 2016; Fuchs et al. 2017b) as well as potentially introducing inequalities in flood risk management outcomes. In Europe, we can already observe these aspects in recent developments, which have led to a re-arrangement of roles and responsibilities for flood risk management, such as introduction of Partnership Funding in England and Wales or Canada 'risk-based' stormwater charge (Thaler and Priest 2014; Geaves and Penning-Rowsell 2016; Thaler and Levin-Keitel 2016; Henstra and Thistlethwaite 2017). However, discussion and research concerning the implications of social justice and injustice in these new flood risk management debates is scarce (Johnson et al. 2007; Doorn 2015; Thaler and Hartmann 2016).

As management of flood risk becomes increasingly demanding, dilemmas of justice emerge: some individuals and communities benefit from flood management whereas others lose. Key questions to be addressed include:

- What justifies managing the flood risk of a particular property as opposed to another property?
- Is a national solidarity approach to flood risk advocated? Are all at risk treated equally?
- How climate change will change flood risk management in the context of social justices?
- Does flood risk management privilege the upstream communities and sacrifice the downstream, or vice versa?
- What are the allocation principles for flood protection measures? Who decides how flood risk management measures are allocated? And are the distributional consequences scrutinized?
- How do landowners contribute to the costs of flood risk management measures?
- Who pays for damage induced by flood events in designated and managed flood inundation areas?

For example, decisions about why upstream communities should protect downstream communities cause large conflicts in the allocation of land-use, but also in question who should finance the costs (Thaler et al. 2016; 2017; Machac et al. 2017). Nevertheless, within academic discourses, but also with

respect to policy and governance, this (sometimes even called ethical) question has become more prominent (Doorn 2015; Kaufmann et al. 2016; Sayers et al. 2017).

The concept of justice has a broad range of possible meanings and interpretations (Elster 1992). Within philosophical discourse of social justices, there are different and (in many times) contradicting concepts of how to understand and how to implement social justices in current policy discourses (Johnson et al. 2007; Kaufmann et al. 2016; Thaler and Hartmann 2016). Different interpretations lead to different results and, in some cases, radical shifts of co-operation between state and society (Thaler et al. 2017). However, it is broadly acknowledged that justice concerns review of the allocation of resources, capital and wealth across different members of society (Varian 1975). For example, justice does not simply concern the fair distribution of resources, but it also considers the process of how a certain distribution was reached (procedural justice, Walker 2009; Walker and Burningham 2011). Social justice is a key topic in political philosophy and had been made prominent by John Rawls in the 1970s. Social justice focuses on justice-related implications of social and economic institutions, or in other words: "what does it mean to say that society is just or unjust?" (Swift 2006: 9). These justice implications can be examined in different ways, including distributional justice (the distribution of benefits and burdens across different societal groups; Thaler et al. 2017), procedural justice (the design of just institutions and processes for decision making; Walker 2012), inter-generational justice (duties of justice to future generations; Schlosberg 2007), and recognitional justice (the recognition of historical inequality, or in other words, acknowledging the existence of a “highly uneven playing field” (Young 1990).

In the discussion of justice and flood protection, not only the actual allocation of flood protection measures is significant (Campbell 2012; Neal et al. 2014), but also the way in which this allocation is achieved. A sole focus on distributive justice intends only questions of compensation payments to achieve distributive fairness (such as compensation payments after flood events). On the other hand, procedural justice includes moral standards in the policy discussion, such as equality of opportunity in terms of sharing information, exclusion of self-interests in policy discussions by policy makers, and the engagement of society in current policy decision-making process. In this line, a central aspect reflects the question of cultural injustices of individuals. Cultural injustice is reflected in discrimination on the grounds of nationality, race, sexuality, gender or/and ethnicity (Fraser 1995). “People who are subject to both cultural injustice and economic injustice need both recognition and redistribution” (ibid: 74). Consequently, the state needs also to acknowledge social justices already in current institutional framework concerning how and in which way people might be recognized by society and how they might involve in current decision-making processes, such as how local citizens are involved in the development of current local flood risk management strategies (Honneth 2001; Geaves and Penning-Rowsell 2014; Thaler and Priest 2014). The rules of distribution (material and cultural) are mirrors of the society and their institution (Ostrom 1990). Therefore, conflicts over distribution (or distributional justices) can only be understood as conflicts over social exclusion and how to overcome them (Paidakaki and Moulaert 2017).

This special issue contributes to this ongoing debate, and offers a broader examination on how different concepts of justice provide different answers and perspectives in current flood risk management strategies across the world. Therefore, we strongly believe that the individual contributions will also cross-fertilize the policy discourses around this topic. Together the assembled papers present new empirical research from a number of European and North American examples, and link theories and findings from the philosophical discourse on social justices and environmental governance towards sustainable flood risk management. A core aim is to open a discussion on the potential contributions and challenges of social justice(s) to flood risk management planning processes. The eight papers collected in this special issue are mostly drawn from numerous exchanges and discussion between the guest editors and authors over the last years.

In comparison to research from other environmental hazards, the literature regarding environmental justice (EJ) implications of flood hazards is smaller and more recent. The article written by Collins et al. (2017) reviews and synthesizes knowledge based on findings from EJ-related studies of flood hazards, introduces a new analysis framework for distributional EJ research on flood hazards, and applies the framework to a household-level study of the EJ implications of flood hazards in the two largest coastal metropolitan areas in the southeastern United States: Houston (Texas) and Miami (Florida). In contrast to the vast majority of distributional EJ studies focused on air pollution, which have found that socially marginalized groups experience disproportionate exposure to risk, distributive EJ studies of flooding have yielded ambiguous findings regarding the relationship between social vulnerability and flood hazard exposure. Divergent relationships between social vulnerability and flood risks have been identified for studies focused on actual flood impacts vs. estimated pre-flood risks. The 2017 study by Collins et al. underscores the need to incorporate a consideration of protective resources and locational benefits in future empirical analyses of social inequalities in the distribution of flood hazards.

The distributional debate of the Dutch flood risk management approach, i.e. the probability-reducing approach focused on (absolute) safety from coastal and fluvial flooding with the aim to make the Netherlands 'the safest delta of the world' is examined by Kaufmann et al. (2016). The paper utilizes a mixed methods approach and offers an exploration of the distribution of burdens within this particular management approach, such as what is perceived as fair, just or equal burden sharing in the context of Dutch flood risk management. Furthermore, the authors analyze the (institutional) outcomes of these perceptions, and consider the potential challenges for offering more balanced flood risk management in the future. Their theory is based on social justice literature, which describes different forms of distributional and procedural equity. Depending on the type of equity considered the burdens in flood risk management (i.e. burden of risk, burden of costs and burden of responsibility) are differently distributed across society, reaching from more individual to more collective burden sharing. Kaufmann et al. explores the consequences of this discourse in terms of distribution of burdens for private households when it comes to the management of pre-flood defense structures and post-flood recovery. They highlight that the costs for pre-event defense management are carried by the national collective based on solidarity. However, next to this solidarity-based approach different understandings of equity are adopted for other types of flooding, areas which are unembanked and for post-event recovery. Due to climate change and changing vulnerabilities a number of challenges might emerge in the future for this pluralistic approach.

A recent all-UK assessment of future flood risk has been undertaken for the Climate Change Committee in order to inform its statutory duty to advise Parliament on the future strategy for climate adaptation. Using a flood risk "emulator", the paper written by Sayers et al. (2017) has investigated the changing risk between now and the 2080s for all sections of society in all sectors of the economy. The results show that those living in deprived areas, as gauged by income distribution, are set to suffer disproportionately severely as flood risk worsens in the future. This is a function of both their relative deprivation, and lack of capacity to respond to flooding, as well as the geographical incidence of flooding increasing in the areas they occupy. Policy implications could include the introduction of a greater degree of positive discrimination in favor of risk reduction in these locations than is currently the case under the government's Flood Defence Grant-In-Aid formula and adopted as part of the Partnership Funding approach. In this way, more targeted assistance to those who are most vulnerable implies the adoption of a broadly Rawlsian approach to flood risk management, rather than utilitarian approach which has dominated until now.

Thaler et al. (2017) explore questions of social justice and injustices in the Austrian natural hazards debate. They offer a spatially explicit object-based temporal assessment of elements at risk to mountain hazards (snow avalanches, river floods, torrential floods and debris flows) in Austria. The

assessment is based on two different datasets, (a) hazard information using legally binding land use planning restrictions, and (b) information on the building stock and citizens combined from different spatial data available at the national level. The temporal assessment of exposure shows considerable differences in the dynamics of exposure to different hazard categories in comparison to the overall property stock. As protection against flood risks becomes increasingly difficult, dilemmas of justice emerge: some benefit from flood protection whereas others lose. Decisions on who to protect differentiate spatially between upstream and downstream communities or those residing on the left and right side of a river. This raises a central but barely discussed conflict: what (or rather who) should be protected against inundations? Justice concerns questions over fairness in the allocation of resources, capital and wealth across different members of society. There are different and contradicting concepts of justice, which differ in interpretations of fair resource allocation and distributions. Reducing exposure, and the decisions on reducing exposure for which building types are thus a question of justice.

Shively (2017) considers the question of the impact of insurance systems on the social justice discourse. The Federal Emergency Management Agency's National Flood Insurance Program (NFIP), which subsidizes flood insurance offered by private companies to property owners in flood hazard zones, is an important non-structural flood control measure implemented in the United States. Many experts argue, however, that it has encouraged floodplain and shoreline development and has led to increased damages and recovery costs. In response to these challenges, federal legislation passed in 2012 and 2014 mandated new NFIP rate structures, and moderate to high levels of premium increases will affect the affordability of homes and business properties in many US communities as well as the redevelopment of urban centers; key principles of smart growth, social equity, and urban sustainability. New mixeduse developments, affordable housing, and commercial and community-centered activities, may be displaced from existing urban centers thus re-engendering patterns of sprawl-like development.

Colton et al. (2017) discuss the central issue of the connection between social justice and individual mobility / relocation caused by natural hazards events. Coastal regions of Louisiana have long endured a perilous reliance on flood protection, such as the levees on the banks of the Mississippi River or coastal protection schemes. However, failures of such levees prompted the adoption of a complementary protection system. These additions required supplemental engineering works causing large conflicts with Native Americans, African Americans, Asians, Acadians, and Isleños who are facing sea-level rise, hurricanes and oil spills. These communities are social and economically vulnerable and excluded from the current policy discourse on flood and coastal risk management. In particular, new adaptation strategies developed by public administration often neglect the impact of management regimes on more marginal coastal communities with the aim to protect mainly large urban city centres, such as New Orleans. Residents living in the coastal areas were requested to adapt (to resettle) again to an already flood-prone environment to protect Louisiana's commercial capital. In addition to inundation within the spillways, each use of these structures disrupts the livelihoods of fishermen in coastal areas. Questions of social justice in relocation process reflects mainly the question of choice and whether decisions are directly or indirectly forcing migration, the impact on the character of communities and individual wellbeing. In particular, those who have already adapted to an environment altered by the flood control system are being asked to adapt once again, while the city continues to live in relative safety.

It is acknowledged that the threat of flooding, and efforts to contain or reduce flood risk, poses considerable social justice questions. Clearly, certain populations have spatial proximity to flood hazards posing a threat to their security and vitality. More recent studies have drawn attention to the nuances of flood vulnerability, particularly given how certain socio-economic or demographic groups are more likely to suffer a loss of well-being in a flood, or have diminished capacity to respond to

flooding. At the same time, scholars and practitioners of spatial planning have advocated planning as a means to realise greater social justice in the city. The paper by O'Hare and White (2017) reviews how disadvantaged individuals – who are more usually more vulnerable – are included in stakeholder engagement processes in current flood risk management strategies. Stakeholder engagement is a core issue in current flood risk management approaches which more often include mainly well-educated people in the decision-making process and lacks efforts to engage those in more deprived areas. Hence, the paper argues that disadvantaged groups in floodplain areas have to be understood as a dynamic group who have different needs. Following this approach, there is a better understanding about why some communities are more vulnerable and recover better than others.

Moving towards concerns of good governance and social justice the paper by Alexander et al. (2017) presents a conceptual framework for evaluating the legitimacy of flood risk governance; operationalised through the criteria of social equity, procedural justice, transparency, accountability, access to information, participation and acceptability. Drawing from in-depth policy analysis and interviews with key actors, flood risk governance in the Netherlands and England is analyzed through the theoretical lens of legitimacy. These two countries are often opposed in the literature, with the former heralded as world-leading in terms of flood defense and the other, renowned for its comprehensive and diverse approach to flood risk management. The paper offers a valuable opportunity to examine how aspects of legitimacy have emerged through contrasting physical, socio-economic and cultural settings. The comparative focus reveals a number of distinct, as well as, shared strengths and weaknesses in English and Dutch flood risk governance, from which opportunities for enhancing legitimacy are discerned. Moving forwards, a number of recommendations and principles for legitimate flood risk governance are highlighted.

The papers collected here present various directions of distributional and procedural justices, from relocation processes over potential social impacts of climate change or policy change. A clear message emerges that social justice needs to be embedded in current flood and coastal risk management strategies and decision-making. Recognising the important role that community capacities play in flood risk management strategies is therefore crucial if authorities want to increase the legitimacy of the decisionmaking process and not exacerbate existing or introduce additional inequalities in how flood risk is managed. This raises an important question of how we design future flood risk governance and how we include and prioritize different societal groups in decision-making processes and how we confront flood hazards and risk management strategies.

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