



# Environmental justice and the politics of climate change adaptation – the case of Venice

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Received: 21 March 2020 – Revised: 1 September 2020 – Accepted: 16 September 2020 – Published: 28 October 2020

**Abstract.** In this intervention, we reflect on the potential of environmental justice and climate justice approaches to reveal the politics of climate change adaptation. Taking the attempts at dealing with extreme flooding events in Venice as an example, we illustrate that different dimensions at the core of the environmental justice concept (distributive and procedural justice and justice as recognition) are helpful to analyse and to politicise climate change adaptation interventions. We call for a transformative research agenda to reconfigure interventions and expertise to more closely account for the socio-political processes and narratives shaping coastal environments and to foster multiple epistemologies. Above all, this entails strengthening the inclusion of local (environmental) knowledge, the involvement of the populations affected by interventions in adaptation planning and the open discussion of political questions and values shaping interventions.

## 1 Introduction

In this intervention, we reflect on the potential of environmental justice (EJ) and climate justice approaches to reveal the politics of coastal climate change adaptation (CCA). Using as a background the case of Venice and the attempts at dealing with the tide peaks that periodically flood the city, which are known as “acqua alta” (high water), we illustrate how CCA interventions can be analysed using as a lens the different dimensions at the core of the EJ concept (distributive and procedural justice and justice as recognition). Applying EJ thinking to CCA is helpful to identify barriers to, as well as opportunities for, fostering just adaptation, which is “adaptation that effects socially equitable and environmentally sustainable change on the ground” (Shackleton et al., 2015:322; see also Brisley et al., 2012). EJ approaches provide an analytical tool that helps to raise questions in relation to aspects of fairness, the equitable distribution of resources and participation while drawing attention to local contexts and communities as they bear the positive and negative effects and side-effects of climate change and CCA governance (Holifield et al., 2017; Cameron, 2012). EJ also draws attention to epistemic inclusion, self-determination and partic-

ipation in environmental and climate governance processes (Schlosberg and Collins, 2014; Fricker, 2007).

Acqua alta refers to a temporary rise in sea level (higher than 80 cm) which is attributed to the convergence of high tides and the southern “scirocco” wind, which occurs mainly in the winter months (Molinari et al., 2019). With an acqua alta of 100 cm about 5 % of the historic city of Venice is flooded, and at 140 cm about 59 % of the city is flooded (Comune di Venezia). A high tide of about 1.87 m, like the one that hit the city in November 2019, leads to the flooding of more than 85 % of Venice’s historic centre. Flooding affects navigation, limits pedestrian movement within the city, damages private and public historical buildings – Venice and its lagoon are a UNESCO World Heritage Site – and can cause casualties; during the 2019 November floods, two people died. In order to protect the city from the extreme flooding events, a system of movable dams, the Mo.S.E. (Modulo Sperimentale Elettromeccanico, Experimental Electromechanical Module) is under construction.

Coastal and flood protection infrastructure, like the Mo.S.E., are key sites which we can use to analyse the uneven access and allocation, for example, of resources, responsibilities and risks in CCA (Grecksch and Klöck, 2020).

Sea walls, artificial islands and mobile dams not only create uneven geographies of vulnerability but also reflect specific approaches to CCA and incorporate specific views and claims to the coast (Herbeck and Flitner, 2019; Colven, 2017). As Bennett (2019) notes, coastal environments “are awash in politics as powerful actors, organisations, and states employ various strategies (...) to promote diverse social, economic, political, and environmental agendas and carry out different conservation and development activities” (Bennett, 2019:2). Hence, interrogating the processes of coastal infrastructure development is key to revealing socio-political processes, including knowledge politics and narratives that shape CCA, and fostering just interventions (Marino and Ribot, 2012; Nightingale et al., 2020). However, the literature on the political ecologies of coastal environments remains limited (Bennett, 2019; Klepp and Vafeidis, 2019; Klepp and Chavez-Rodriguez, 2018) and even more so in the case of Italy and the Venetian Lagoon – existing works on EJ in Italy focus mainly on garbage struggles (Armiero and D’Alisa, 2012), on the uneven health effects of industrial development (Pusceddu, 2020) and on resistance to transport projects (Porta and Piazza, 2007).

Bearing in mind how EJ has developed as both a research subject and a social movement, as well as the breath of scholarly debate on the different interpretations and geographies of EJ (Carruthers, 2008; Holifield et al., 2017; Holland, 2017; Martinez-Alier, 2003; Nightingale et al., 2020; Rocle and Salles, 2018), in this paper we focus on the three key dimensions (distributive and procedural justice and justice as recognition) as defined by Schlosberg (2007) and Walker (2012). Our aim is not to develop a comprehensive analysis of the EJ dimensions of the Venetian Lagoon, but rather we seek to offer some initial suggestions of the potential of an EJ lens to identify the uneven outcomes and power relations shaping coastal CCA.

## 2 Understanding the politics of adaptation in Venice through an environmental justice lens

Venice is a symbol for a unique waterscape, a place in which water and the city have been fused together for centuries, and it is a symbol of the dire effects of climate change including the politics of adaptation. Research suggests that exceptional floods (with a high tide above 1.4 m) have occurred more frequently in recent decades and that by 2100 their frequency is expected to increase to a range of between 20 and 250 times per year (Tosi et al., 2013). The growing frequency of *acqua alta* is explained in the literature by the combined effects of climate change, specifically sea level rise, land subsidence and an uncertain feedback of sediment supply and morphological changes (Antonoli et al., 2017), but the long history of human interventions and infrastructure built, often carried out in the name of economic interests rather than being motivated by social and ecological concerns, has also helped to

intensify the flood surge and has contributed to serious environmental degradation (Suman et al., 2005). The Mo.S.E. is a prime example of large-scale human intervention in the lagoon ecosystem. Comprised of 78 floodgates (each 20 m wide) anchored with hinges at the bottom of the three inlets of the Venetian Lagoon, the Mo.S.E. was designed as part of a series of measures to safeguard the Venetian Lagoon. It has been under construction since 2003 and should become operational in 2021 despite the bribery scandal (one of the biggest scandals in post-war Italy) that became known in summer 2014 (Yardley and Pianigiani, 2014). The case of the Mo.S.E. reveals how distributive and procedural justice and justice as recognition are virulent in the development of coastal protection infrastructure in the context of CCA.

A focus on distributive justice draws attention to the distribution of resources like money and assets that come with an adaptation project or policy, as well as its socio-environmental impacts on local contexts and people. Who is included in the “community of justice” (Walker, 2012:42) and who is excluded? What will be distributed and to whom? Who will benefit from a CCA intervention? Asking these questions in relation to CCA in the case of Venice draws attention directly to the sheer amount of public funds that have been invested in the planning and construction of the movable barriers constituting the Mo.S.E. – the total expected costs exceed EUR 5 billion (CNV, 2014). Distributive justice approaches raise concerns in relation to the recipients of these resources in terms of the actors and the types of CCA intervention. In the case of Venice, funding and the responsibility to carry out the studies and implementation of measures to safeguard the city and its lagoon, including the construction of the Mo.S.E., have been granted to a sole concessionaire, a consortium of national and local construction companies, the *Consorzio Venezia Nuova* (CVN). The same CVN was at the centre of the corruption scandal of 2014, and since then it has been in extraordinary and temporary management according to Italian anti-corruption laws. In terms of the interventions, the construction of the Mo.S.E. involved the commitment of a major portion of the financial and human resources for coastal protection in the Venetian Lagoon, although climate change concerns were not the primary motivation for the Mo.S.E. (Molinarioli et al., 2019). This in turn has important long-term impacts as the focus on the Mo.S.E. has limited funding for other decentralised coastal protection measures such as beach nourishment and wetland restoration (Molinarioli et al., 2019). Lastly, aspects of distributive justice are also relevant when looking at the (expected) effects of the construction and operation of the Mo.S.E.: while the efficacy of the mobile gates in protecting Venice and the lagoon from high water is fiercely debated, several authors have warned about the adverse impacts of the project on the lagoon ecosystem and on activities in the lagoon (Del Bello, 2018). For instance, fishers are among those most dependent on the lagoon ecosystem and are representative of the lagoon’s traditional economic activities, but they

are also among those most exposed to the consequences of the Mo.S.E. (Vianello, 2017). Several authors warn about the negative impacts that the frequent and long closures of the gates could have on the shipping industry, while it remains unclear if the only sluice gate planned as part of the Mo.S.E. will be able to handle industrial and tourist ship traffic (Umgiesser, 2020; Vergano et al., 2010).

Questions of distributive justice are rarely discussed with people on the ground before a CCA intervention is planned or realised (Cameron, 2012). This brings us to the second dimension of the trifold EJ perspective: procedural justice. This dimension is at the heart of critiques commonly directed towards CCA as it addresses political equality and the institutional and decision-making context of CCA (Holland, 2017) and tackles the knowledge–power nexus. The Mo.S.E. construction is a prime example of a state-led project implemented with only limited support and involvement of local communities. Indeed, while national government(s) have always been in favour of the Mo.S.E., concerns about the environmental impacts of the project on the lagoon ecosystem and about its financial sustainability have been raised by municipal governments (those in the 1990s, not the current one), citizens groups, environmental organisations and scientists (Cavallo, 2016). Mostly excluded from decision-making processes, environmental groups (together with the Venetian municipality) unsuccessfully brought nine appeals against the construction of the barriers to the Administrative Regional Tribunal (TAR) and the Council of State and called in the European Union (Munaretto and Huitema, 2012). At the same time, instead of fostering participation and discussion in CCA interventions, the CVN maintained an “antagonist approach to local activities and citizens (including local administrative institutions and research organizations)” (Vianello, 2017), contributing to the establishment of a conflictual relationship (Vianello, 2017) and transforming the lagoon into a disputed space (Cavallo, 2016).

Closely connected to distributive justice and procedural justice, a third dimension of EJ is justice as recognition. Considering the works of Charles Taylor and Alex Honnet, Schlosberg (2007) refers to recognition as “the range of social and cultural values and practices that impede the full recognition of a group as an accepted member of the moral and political community” (Schlosberg, 2007:16). The case of the Venetian Lagoon is illustrative in this regard as some groups and economic activities were devalued in comparison to others when developing plans for the safeguarding of the lagoon (Vianello, 2017). Fishers, for instance, “were seen by CVN as a category in part sacrificed in front of the higher common good of protection from high waters, discarding any loss of forms of cultural heritage” (Vianello, 2017:88). Importantly, as Fricker (2007) suggests in her work, forms of marginalisation and discrimination, which Fricker defines as epistemic injustices, entail the exclusion of some actors for their social location (race, gender, economic position, etc.), as well as the exclusion of specific knowledge sys-

tems, in the frameworks used to interpret a phenomenon (see also Allison, 2015). Hence, the third dimension of EJ invites us to reflect also on the limits that characterise interpretative frameworks and narratives which shape approaches to CCA. Narratives can be expressions of people’s world views that establish causal links and that influence human behaviour by suggesting that some actions are morally or socially preferable to others while picturing other actions as inconceivable (Somers, 1992). The case of Venice is an example of how CCA interventions tend to reflect understandings of socio-ecological relations that favour engineering knowledge and views of the environment as being separate from society while discarding other forms of knowledge and values, i.e. cultural, spiritual and sacred (Allison, 2015; Nightingale et al., 2020). According to Vianello (2017), the Mo.S.E. was carried out with the deliberate assumption that “it is the environment that must adapt to the [infrastructural] work and not vice versa” (Vianello, 2017:87). This view favours an engineering logic while sidelining understandings of the lagoon as a delicate, vulnerable and complex system in need of constant and capillary maintenance, views supported by the various groups opposed to the Mo.S.E. Likewise, the prevalence of engineering knowledge fosters a framing of high water (and climate change) as being a stressor that can be fixed through technological solutions and not as something embedded in specific economic, social and political processes (Nightingale et al., 2020). This in turn contributes to a technological lock-in precluding other approaches to CCA in the Venetian Lagoon, e.g. a decentralised approach to flood protection involving smaller interventions that underlines the need for continuous maintenance and adjustments (Molinari et al., 2019).

### 3 Conclusion

EJ is a perspective that is multidimensional and flexible but also normative which examines how we conceptualise human–environment relations and justice ideas; at the same time, it focuses strongly on the harm caused by human beings. It acknowledges the complexity of environmental degradation and environmental inequalities and their structural and historical roots (Walker, 2012). This means that the EJ framework can be applied in a context-dependent way without being arbitrary. To understand aspects of justice in CCA is crucial for more legitimate, sustainable and transformative adaptation policies and practices (Shackleton et al., 2015; Brisley et al., 2012). Drawing from the case of the Venetian Lagoon, a World Heritage Site of global interest and unique coastal environments particularly prone to climate change effects (i.e. sea level rise), in this intervention we contribute to the literature on just adaptation as we discuss how EJ approaches are useful in revealing the politics of coastal adaptation.

The case of Venice and the infrastructural projects that aim to deal with “acqua alta”s provide an example of how different dimensions at the core of the EJ concept (distributive and procedural justice and recognition) are essential for CCA interventions. While several scientists warn about the profound social and ecological impacts of the Mo.S.E. and while it is still not clear if (and to whom) this infrastructure will bring the wished for protection against flooding and sea level rise, the Mo.S.E. continues to channel the attention and resources of policy and science. As a result, the political question of just adaptation is framed in technical terms and in narratives that demand an expert or consultant solution (Klepp and Chavez-Rodriguez, 2018). This not only obscures other potential strategies and approaches to deal with high water but also continues to exclude some groups (and their knowledge systems) from decision-making processes of CCA in the lagoon (i.e. fishers).

We therefore call for a transformative research agenda to reconfigure CCA expertise and interventions to closely account for the socio-political processes shaping coastal environments and adaptation interventions. This entails moving beyond engineering and technological solutions in favour of a pluralistic (environmental) knowledge in interpreting climate change and fostering the inclusion of the populations affected by changes in adaptation planning (Kelman, 2010; Crate and Nuttall, 2016; Nightingale, 2016). Importantly, such a transformative agenda also needs to engage with questions concerning adaptation finance justice, a point raised already by scholars analysing CCA in the Global South and in international climate negotiations (Batz, 2018; Bigger and Millington, 2020; Khan et al., 2020). New concepts of responsibilities for the effects of climate change, including an acknowledgement of loss and damage approaches that are legally binding, also offer opportunities for fostering transformative CCA agendas (McNamara et al., 2018). As the case of Venice and research in other contexts suggest, if CCA is limited to an engineering task and technical-fix narratives, attention is distracted from failed policies (including forms of corruption) and the decision makers who are responsible for those policies (Connell, 2003), but attention and funding are also diverted from locally grounded lived experiences of climate change and adaptation practices (Frick-Trzebitzky, 2017; Allison, 2015). EJ perspectives help us to make inequalities in CCA more visible and to find narratives for more just adaptation processes that are based on solidarity and on new ways of adapting and financing adaptation, e.g. resource sharing that is based on commoning. As CCA aims to support the most vulnerable, this is the kind of analysis we need to make sure that epistemic and infrastructural violence (Rodgers and O’Neill, 2012; Spivak, 1988) in CCA is overcome and diversity is taken into account.

**Data availability.** No empirical data were collected for the article. All references and websites consulted can be viewed in the reference list.

**Author contributions.** RA, SK and AB contributed equally to develop the ideas presented in the paper and to write the text.

**Competing interests.** The authors declare that they have no conflict of interest.

**Acknowledgements.** We would like to thank the editor and one anonymous referee for their valuable comments.

**Financial support.** This research has been supported by the German Federal Ministry of Education and Research, Bundesministerium für Bildung und Forschung, grant no. 01LN 1316A.

**Review statement.** This paper was edited by Jonas Hein and reviewed by one anonymous referee.

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