Barriers to transformation towards participatory adaptation decision-making: Lessons from the Cork flood defences dispute

Key words: adaptation, barriers, transformation, floods, hazards, climate, governance, participation

Abstract

This paper analyses the causes and consequences of public participation failures in flood hazards management and the important lessons they offer for climate change adaptation. Despite the potential for participatory adaptation decision-making, scholarship on adaptation has remained largely separate from the literature on participatory environmental governance. This paper brings these literatures into conversation by applying the concept of transformation to both adaptation outcomes and adaptation decision-making. Through an examination of a disputed flood relief scheme in Cork, Ireland this paper develops three main arguments. (1) It demonstrates the need for analytical approaches which recognise that what constitutes transformative adaptation will vary depending on the definitions of transformation that are used, the contexts in which these definitions are applied, and the perspectives of local stakeholders. (2) It argues that by producing an intractable conflict and damaging the reputation of the organisations responsible for hazards management, public participation failures create formidable new barriers to transformative adaptation outcomes. (3) It concludes that incremental changes to the decision-making process will prove insufficient to overcome these barriers. In order to facilitate more effective public participation in hazards management and climate change adaptation, much wider change in hazards management policy and resourcing will be required.

1. Introduction

The concept of transformation has become increasingly influential in the fields of climate change adaptation (Clarke *et al.,* 2016; Pelling, 2011; Pelling *et al.,* 2015) and natural hazards management (Thaler *et al.,* 2019). Barriers and drivers of adaptation are also seen as increasingly important, both as these apply to adaptation in general (Amundsen *et. al.,* 2010; Barnett *et. al.,* 2015; Ekstrom and Moser, 2014; Moser and Ekstrom, 2010) and to transformative adaptation in particular (Clarke *et al.,* 2016; Thaler *et al.,* 2019). A separate literature has explored the role of public consultation and participation within environmental decision-making. Public participation is viewed as an objective in almost every area of environmental policy (Few *et al.,* 2007). However consultative or participatory decision-making is often viewed as an add-on to expert led decision-making, rather than as an integral part of an alternative approach (Fitton and Moncaster, 2018). Within the member states of the European Union the enactment of the Floods Directive in 2007 is sometimes viewed as a seminal moment when integrated flood risk management with active public participation became the norm. However, the rise of public participation has been patchy, with signification variations between and within member states (Priest *et al.,* 2016).

This paper examines the implications for hazards mitigation and climate change adaptation when public participation fails. It evaluates whether transformation of the governance structures and practices through which adaptation decisions are made is a pre-requisite to the delivery of transformative outcomes. It does this by applying the concept of transformation to two phases of the adaptation process; (1) adaptation planning and decision-making and (2) the policies, practices and infrastructures that emerge as adaptation outcomes. In other words the concept of transformation is applied both to *what* adaptation options are pursued and to *how* those options are chosen. These two stages of adaptation are examined through an analysis of a disputed flood relief scheme in Cork, Ireland.

2. *Transformative Adaptation and Public Participation*

The application of the term transformation to processes of social and environmental change has become increasingly common within both the policy and research communities (Feola, 2015). The concept has become particularly influential in research on adaptation to climate change and environmental hazards (Clarke *et al.,* 2018; Clarke *et al.,* 2016; Kates *et al.* 2012; Pelling, 2011; Pelling *et al.,* 2015; Thaler *et al.,* 2019). A wide variety of conceptualisations of transformation have been employed, although it is frequently used simply as a metaphor for change (Feola, 2015). Many definitions of transformative adaptation focus on changes to perceptions, values, norms, power structures, governance or institutions (Clarke *et al.,* 2016; IPCC, 2012; Pelling, 2011). Transformation is often seen as a deliberate choice (O'Brien, 2012) that can be viewed as the overall goal of adaptation (Pelling, 2011). Such deliberate transformative adaptation is seen as a "mechanism for progressive and transformational change that shifts the balance of political or cultural power in society" (Pelling, 2011, p. 84). These deliberate transformations can be aimed at achieving a variety of social, economic, or political goals that may not be directly related to climate change impacts, for example promoting greater levels of equality within a particular society. In contrast to this conceptualisation of transformation as wide societal level change, Clarke *et al.,* (2016) define transformation to include more limited changes to the ways in which social value and norms apply to particular places or within specific communities, for example the ways in which constructing new floods defences might change the uses of and values attached to a coastal promenade by local residents. The conceptualisation of transformation employed by Clarke *et al.,* (2016) appears to dissent from the mainstream of both research and policy literatures which generally define transformation as "a major, fundamental change as opposed to minor, marginal or incremental change" (Feola, 2015, p. 377). However there is often an absence of clear definitions of incremental adaptation in the literature (Park, *et al.,* 2012) and it is sometimes described simply as the opposite of transformative adaptation. It has also been suggested that differentiating between transformative and incremental change can be difficult and that transformational changes can sometimes occur

through a series of incremental changes (Clarke *et al.,* 2016; Kates *et al.* 2012; Thaler *et al.* 2019). Park *et al.,* (2012, p. 119) suggest that incremental strategies have "the central aim of maintaining the essence and integrity of an incumbent system or process at a given scale". It has also been suggested that the difference between incremental and transformative change generally depends on the size or extent of the change involved (Kates, *et al.,* 2012; Park, *et al.,* 2012). While the existing literature increasingly recognises the diversity of ways in which the term transformation is deployed by researchers, there has been little consideration of the ways in which particular adaptation outcomes are considered transformative will also vary greatly depending on the perspective and position of local stakeholders. In discussing adaptation outcomes this paper adopts an approach that recognises that the same adaptation options may be considered transformative by some stakeholders but not others, or in some contexts but not others. What constitutes major or fundamental change is dependent on the context and the perspectives of local stakeholders. While recognising that such differing interpretations are also possible in views on transformation of the decision-making process, in order to retain clarity of argument this paper adopts a more rigid approach to discussing the decision-making process. Change to the decision-making process are considered to be incremental if they represent add-ons to the existing process that leave it largely unchanged, for example by adding an additional layer of consultation to the existing process which is driver largely by the expertise of engineering consultants. Changes are considered transformative if they involve more radical changes to the decision-making process such as co-production approaches that would include other types of knowledge and expertise.

In addition to exploring transformation, adaptation researchers are increasingly emphasising that adaptation must be viewed as a political process in which power can function as either a means of domination or a source of transformation (Eriksen *et al.,* 2015). This highlights that there is no one right way to adapt (Eriksen *et al.,* 2015) and that all processes of change can create winners and losers (Leichenko and O'Brien, 2008). In recognising that adaptation is a political process it is

essential to question how problems are defined and by whom, how power operates within the decision-making process, the types of knowledges that are used, and the ways in which these are contested (Eriksen *et al.,* 2015). The term adaptation itself has been subject to a wide variety of definitions and can apply to a wide range of processes and challenges not just climate change (O'Brien, 2012). In its broadest sense it can refer to any "act of making something fit for a new situation or use" (O'Brien, 2012 p.669). In the remainder of this paper the term adaptation is used to describe any attempts to respond to or prepare for increasing exposure and vulnerability to flood hazards whether these are driven by contemporary climate variability or future climatic changes. The term adaptation decision-making is used to refer to the process of selecting adaptation strategies, plans or actions, while the term adaptation outcomes is used to describe the policies, practices and infrastructures that emerge from that process.

Barriers to adaptation have also become an increasing focus of research in recent years (Amundsen *et. al.,* 2010; Barnett *et. al.,* 2015; Ekstrom and Moser, 2014; Moser and Ekstrom, 2010). Barriers have been defined as obstacles to specific actions or decisions (Clarke *et al.,* 2016). Barriers are seen as obstacles that it is ultimately possible to overcome in some way and are contrasted with limits which are viewed as thresholds that cannot be crossed (Moser and Ekstrom, 2010). Barriers have been divided into four main categories; (i) social and cultural barriers such as beliefs or worldviews, (ii) institutional and governance barriers such as a lack of leadership or competing agendas, (iii) resource based barriers such as limited availability of finance, and (iv) physical barriers such as geological or climatic factors (Clarke *et al.,* 2016).

Governance issues can create barriers to both incremental and transformational adaptation (Clarke *et al.,* 2016; Klein *et al.,* 2014). Institutional structures and practices can create path dependencies that limit future adaptation options by prioritising particular forms of technical knowledge (Clarke *et al.,* 2016). The importance of effective leadership and the challenges created by competing planning

agendas has also been emphasised (Measham *et al.,* 2011). Reflecting on these barriers to adaptation invites consideration of whether they can be removed through incremental changes or whether transformation of the decision-making is required before the implementation of transformative outcomes becomes possible. These are questions that have not yet been widely considered within the literature on transformative adaptation. If one of the main barriers to transformative adaptation is the privileging of particular forms of expertise within decision-making (Clarke *et. al.,* 2016), then one of the ways in which this might be addressed would be would be through greater inclusion of a wider variety of stakeholders within the decision-making process.

Participatory approaches to adaptation have been the subject of a small number of studies (Few *et al.,* 2007). These have highlighted the importance of applying lessons from the general literature on participatory environmental governance to participatory adaptation (Few *et. al.,* 2007). A number of arguments in favour of participation are presented in this literature. Traditional democratic theories of decision-making assume that the public interest is most likely to be served by decision-making that includes wide participation (Godschalk *et al.*, 2003). It is also believed that greater participation can increase public interest in hazards management (Few *et al*., 2007), lead to greater acceptance and an increased likelihood of successful implementation (Godschalk *et al.*, 2003; Stevens *et al.,* 2010), encourage stakeholders to take responsibility in flood risk management (Begg *et al.,* 2015, Wehn *et al.,* 2015), and encourage the up-take of non-structural measures (Rouillard *et al.*, 2014). Proposals that lack sufficient public participation may experience technical failures due to a lack of consideration of experiential local knowledge, or they may fail to be implemented due to sustained local opposition (Fitton and Moncaster, 2018). Some researchers have also argued that poor public consultation on new flood risk management plans can erode existing community resilience (Jennings, 2009).

Decision-making processes are sometimes viewed in a binary model that categorises them as either consultative or participatory (Roberts, 2003). However participation can range from passive receipt of information to self-driven activism (Few *et al.,* 2007), or a series of steps from "manipulation" through "consultation" to "citizen control" (Arnstein, 1969, p.217). In consultative approaches communities may be consulted but have limited ability to influence the outcome while participatory processes typically involve a greater degree of influence for non-expert actors (Fitton and Moncaster, 2018). In practice some decision-making processes may involve elements of both consultation and participation, either at different stages of the process or for different stakeholders. Much of the literature has assumed that it is most important to include those who have an interest in or are directly impacted by flood risk management issues and this assumption is adopted in the EU Floods Directive (Moon *et al.,* 2017). The Directive requires that Member States "encourage active involvement of interested parties in the production, review and updating" of flood risk management plans (Directive 2007/60/EC). However the Directive provides no further guidance and there is a wide degree of flexibility to decide who should be involved in participation and on what basis (Moon *et al.,* 2017). Although the focus is often on those directly impacted by hazards, studies of place attachment and transformative adaptation have emphasised the importance of including wider constituencies in the decision-making process (Clarke *et al.,* 2018). These point to the potential benefits of more participation approaches rather than consultation. The importance of the expectations for and goals of public participation has also been emphasised in the existing literature. Few *et al.,* (2007) argue that limited forms of participation are most likely to be successful if the scope and limitations of public participation is made clear at the outset. Cook and Melo Zurita (2019) suggest that the chief reason that the potential for public participation in disaster risk reduction has not been realised is that the decision-making process has been constrained by an emphasis on knowledge transfer founded on the deficit model. Based on data derived from interviews with expert risk managers they suggest that the potential of participatory approaches can be realised

through changing the overall goal of the decision-making process to one of relationship building rather than knowledge transfer (Cook and Melo Zurita, 2019).

3. Context and Study Site

Flood hazards policy in Ireland has evolved over recent decades in response to changing economic, social and environmental policy priorities (O'Neill, 2018). In recent years flood hazards management has been carried out through Catchment Flood Risk Assessment and Management Plans (CFRAMs). These plans are the national mechanism for the implementation of the EU Floods Directive[1] in Ireland, but despite their national roll out there has been little public debate on flood policy (Devitt and O'Neill, 2016; O'Neill, 2018). Flood hazards management also remains highly centralised with the Office of Public Works (OPW)[2] playing a dominant role (Clarke *et al.,* 2016).

Cork has a long history of both river and coastal flooding with 301 floods recorded between 1841 and 2014 (Jeffers, 2014; Tyrrell and Hickey, 1991). These ranged from nuisance floods to destructive events resulting in loss of life (Jeffers, 2014; Tyrrell and Hickey, 1991). In recent years concern has focused on the economic costs to business and home owners who are no longer able to insure their properties after repeat losses. A river flood in November 2009 produced losses of €90m while a tidal flood in 2014 led to losses of €40m (OPW, 2017). Climatic changes are expected to result in increased exposure with some projections that ten year high flow levels on the River Lee may increase by over 80% by 2100 (Guerreiro, 2018). Two hydroelectricity dams can be used to attenuate river floods (Fitzpatrick and Bree, 2001) but their capacity to do so has been disputed. In the aftermath of the 2009 river flood, University College Cork sought damages from the dam operators (ESB) for flood losses. While the High Court found the ESB to be 60% liable, this decision was

[1] Although the Lee CFRAM began as a pilot study before the enactment of the Floods Directive, it contained many of the elements required by the Directive and CFRAM studies subsequently became the implementation mechanism for the Directive in Ireland.
[2] The national agency responsible for flood risk management and Ireland's designated competent authority under the Floods Directive.

overturned by the Court of Appeal in 2018, which confirmed that the ESB did not have a legal obligation to control flooding.[3]

In 2006, the OPW began work on a Catchment Flood Risk Assessment and Management (CFRAM) study for the Lee Catchment which was completed in 2014. This led to the development of a preferred flood risk management scheme which was published in late 2016. The Lower Lee Flood Relief Scheme is the largest flood relief scheme ever proposed in Ireland and is expected to cost €140m (O'Neill, 2018). It is designed to ensure that over two thousand properties are protected from river and coastal flooding (OPW, 2017). The proposal incorporates a mix of measures including a flood forecasting and warning system, designation of upstream washlands to facilitate increased dam discharges, a flow diversion structure, permanent and temporary defences, and a network of pumping stations.

The publication of the proposed scheme in late 2016 quickly elicited local opposition leading to the foundation of the Save Cork City (SCC) campaign group. SCC have objected the construction of flood defences in the city centre and proposed a range of alternative options including a tidal barrier and upstream afforestation and wetlands. Although the SCC campaign have generated the most publicity they are not the only opponents of the scheme. Other local individuals and environmental groups have also opposed the scheme and in some instances these have suggested more radical alternatives. These would incorporate elements suggested by SCC such as upstream management through afforestation or wetland creation/restoration but would also include redesign of the built environment of the city to allow flooding. Although the opposition campaign has continued, the OPW have moved into the implementation phase of the scheme. Construction of initial works was due to get underway in late 2018 with final completion of the whole scheme expected by 2024

[3] This decision has been appealed to the Supreme Court.

(OPW, 2018). However the scheme has been delayed as a result of legal action by SCC (see English, 2018). The dispute over the proposed scheme can be divided into two elements. The first concerns the scheme itself and focuses on whether it adequately considers values such as heritage, amenities, and local ecologies. The second aspect of the dispute focuses on whether adequate stakeholder consultation and public participation has taken place. It is this second facet of the dispute that is the focus of this paper.

4. Data Collection and Analysis

This paper draws on a qualitative analysis of semi-structured interviews, documents, and audio-visual resources. When examined together these sources provide a comprehensive overview of the actors involved in the dispute, their perspectives on the proposed flood relief scheme, and their views on the decision-making process.

15 Semi-structured interviews with local stakeholders who had participated in the dispute were completed in Cork during April and May 2017. A wide range of documents, audio-visual, and web based data sources were also analysed. This included reports, presentations and press releases produced by both the OPW and SCC; all pages from the OPW's project website for the proposed scheme; social media posts and YouTube videos produced by SCC; blogs submissions and opinion pieces produced by other groups and individuals; and the transcript from a national parliamentary committee hearing that featured testimonies from representations of the OPW and SCC (For more information on data collection see Table 1).

These documentary, audio-visual, and web based sources serve a number of purposes. They provide additional data to supplement the interviews by illustrating the perspectives of individuals or groups who either declined to participate in interviews or failed to respond to the invitation to participate. Analysing their publically expressed views allowed for the perspectives of a wider range of

stakeholders to be included. Some of the documentary sources also provided corroboration for the interview data as they were produced by or include contributions from stakeholders who were also interviewed. The documentary sources also provided important contextual detail about the decision-making process and the emergence of the SCC campaign.

All data was analysed with the assistance of the NVivo 11 qualitative analysis software. Coding was carried out over several steps that combined the use of themes identified in advance and inductive coding of themes that emerged from the data (see: Clarke *et al.,* 2016; Braun and Clarke, 2006 for examples of this approach). Some of the initial coding themes used were identified during transcription of the interviews while others were added during an initial round of coding. This produced a long list of codes which was then reviewed and simplified to focus on key themes. All of the initial codes from the interview transcripts and documents were then subjected to a second round of coding using these themes. The social media data was subsequently coded separately using the same simplified list of codes.

5. Results: Consultation, Participation and Controversy

The process of selecting a flood risk management scheme for the Lee Catchment has now been ongoing for over a decade. This section of the paper traces the steps of the process with a particular focus on its consultative/participatory elements (Section 5.1), and outlines contrasting stakeholder views on the process (Section 5.2).

5.1. The decision-making process

The decision-making process can be divided into two distinct stages (See Table 2); the CFRAM study which ran from 2006 to 2014, and the design and implementation of the proposed scheme which began in 2014 and remains ongoing. Two types of consultation and participation activities were undertaken during the CFRAM study. A list of stakeholder groups was compiled and these were

invited to complete a questionnaire before being invited to stakeholder workshops. A series of public participation days were also organised. Participation in this phase was low. Only 28 written submissions were made and most of these related to upstream villages. Despite the publication of monthly project newsletters and regular updates to the project website, the CFRAM study generated almost no engagement with the residents of Cork City. The design and implementation of the Lower Lee Flood Relief Scheme also incorporated stakeholder participation and attempts at public consultation. This included a public participation day and sending notifications to landowners likely to be directly impacted by construction works. The proposed scheme went on public display during December 2016 and January 2017, and on four days the design team were present at the exhibition to discuss the scheme. These four days were attended by 185 people, with many of these being landowners who had received formal notifications about the scheme. This exhibition also prompted the foundation of the SCC group which began a high profile social media campaign highlighting their objections. It appears that this campaign did more to make the local population aware of the proposal than any of the earlier consultative or participatory activities. Following an extended deadline the OPW received over 1100 written submissions on the scheme. These included both individual and group submissions with almost 90% of them coming from the general public. However by this point the OPW viewed the process as nearing its conclusion and seemed unwilling or unable to make substantial changes. While some minor changes were included, the OPW rejected all suggestions for major change as either uneconomical or technically unviable.

5.2 Contrasting interpretations of the process

As outlined above, the two stages of the process to date have included attempts at both stakeholder consultation and public participation. However the data collected clearly demonstrates that views of the effectiveness of that process vary greatly. Positive views of the participatory elements of the process are limited to the OPW and a small number of other stakeholders. The OPW has sought to emphasise that they have undertaken extensive stakeholder consultation and that there were

opportunities for public participation. There has been extensive stakeholder consultation and for some stakeholders this has been viewed as successful. Business organisations and some local businesses feel that they have been given sufficient opportunities to contribute and that they have been able to influence the outcome (See Table 3). It is also clear that the OPW views the decision-making process as something that took place within a fixed period of time that has now ended. Thus all opportunities to participate in decision-making have now been closed and they have moved to what they describe as the implementation phase.

Despite this there are many groups and individuals who feel that they were either not given sufficient opportunity to participate, or that if they were given an opportunity to participate then their concerns and views were not taken seriously (see Tables, 4, 5, and 6). These include environmental and community organisations, as well as local residents and small businesses who have backed the SCC campaign. It is also worth noting that negative assessments of the process were not limited to opponents of the scheme. Some supporters of the scheme have expressed satisfaction with the stakeholder consultations in which they were directly involved, while also criticising the public participation elements (See Table 4).

The role of business groups in Cork has been questioned by some opponents of the scheme due to their strong support for the proposals. An analysis of social media posts demonstrates that at least 60 small businesses have chosen to publically support the SCC campaign, although it is not clear if any of these had suffered flood losses. The position of the Cork Business Association and the Chamber of Commerce reflects the views of businesses who have direct experience of flooding, and may reflect the views of other businesses who have chosen to refrain from public involvement in the dispute. However it is also clear that businesses in the city do not speak with one voice and that the business community outside of flood exposed areas is divided on the merits of the proposed scheme. This example of business involvement in the dispute highlights how difficult it can be for the

public bodies responsible for hazards management to engage in effective consultation or participation. These challenges are discussed further in Section 6.3 below.

6. Discussion: Barriers and Transformations

This section of the paper examines the causes and consequences of the Cork dispute through the lenses of barriers to transformation. Section 6.1 explores the possible adaptation outcomes and the ways in which each of these can be considered transformative. Section 6.2 examines the question of whether transformative outcomes are possible within the current governance framework and explores the ways in which public participation failures have created formidable new barriers to adaptation. Section 6.2 explores whether these barriers can be overcome through incremental or transformative changes to the decision-making process.

6.1 Transformative adaptation in Cork

There are four possible outcomes from the current dispute; (1) do nothing, (2) implement the proposed scheme, (3) implement the alternatives proposed by SCC, or (4) implement a more radical alternative scheme. Outcome 1 could emerge unintentionally from the current dispute. If, as seems likely, the SCC group continue their opposition then the implementation of the scheme will be delayed. This could put the funding of the project in jeopardy if national government priorities change. If the opposition proves unsuccessful then the scheme may be implemented in full (Outcome 2). This remains the most likely outcome from the current dispute although it seems certain that implementation would occur only after a considerable delay. Option 3, the implementation of the SCC supported alternatives including the construction of a tidal barrier seems unlikely. This would require support from political leaders at local and national levels and this has not been forthcoming to date. Option 4 would be the implementation of more radical flood risk management policies such as those proposed by a minority of interviewees. This outcome seems the

most unlikely in the short to medium term but support for alternative strategies may grow in response to increased future flood risks.

While a definition of transformation can be applied by the researcher to deem particular outcomes as transformative or not, it was also clear from the interviews with local stakeholders that which schemes might be considered transformative and on what basis they might be deemed such is influenced by the perspective of the stakeholder concerned. Defining transformation as any fundamental changes to values, beliefs, or norms as they apply to particular places (Clarke *et al.,* 2016), outcomes 2, 3 and 4 can all be judged to be transformative, from the perspectives of different groups of local stakeholders. Outcome 4 would also be potentially transformative in the wider sense envisaged by Pelling (2011) as it would involve new forms of knowledge production, decision-making, land management and livelihood changes that would create wider socio-economic, political and cultural transformations throughout the Lee Catchment and beyond. Outcome 2, implementation of the proposed scheme in full is deemed to be transformative from the perspective of some local residents and recreational users of the river as it would fundamentally alter the ways in which they relate to and engage with the River Lee. These perceived transformations form the foundation of some of the objections to the scheme. Outcome 3 would be transformative to some extent for upstream stakeholders in that the proposals for upstream management through afforestation and wetland restoration/creation would represent a substantial shift away from a traditional engineering led approach to flood risk management. This would involve new approaches to land management in the Lee Catchment that would have to potentially to significantly alter the livelihoods of upstream farmers. However this would not be a fully transformative change in flood risk management practices due to its retention of large scale engineering in the form of a tidal barrier, and would not be transformative for many stakeholders within the city. Outcome 4 would be transformative within the city through reconceptualising the ways in which the city is designed to facilitate a radically different relationship with the river and its floods. For all stakeholders it would

represent new ways of understanding, developing and living in the city. It would also be transformative for upstream communities in the same way as Outcome 3.

These four possible outcomes illustrate the ways in which different outcomes can shape the social and spatial distributions of transformative change. Who experiences transformative change, whether they consider them to be transformative, why they are considered transformative, and where those changes occur will vary depending on the outcome that emerges and the perspective of the stakeholder concerned. In outcomes 2 and 4 the transformative change would occur within the urban spaces of the city itself, impacting some or all of its residents and businesses. In outcome 3 the most significant transformations would occur outside the city, impacting upstream landowners without significantly changing the city centre itself or the ways in which urban residents value or relate to the river. Outcome 4 would produce the widest transformative change impacting local communities both in the city and surrounding rural areas, while its implications for wider hazards management, climate adaptation and urban planning could potentially lead to wider transformative changes.

In outcomes 2, 3 and 4 the transformative changes would be deliberate and anticipated as part of the adaptation process. However outcome 1 also has the potential to create unplanned transformative outcomes. These potentially transformative outcomes are feared by those who support the scheme. If uninsured flood losses continue to accrue from future flood events, this may result in the closure of businesses in exposed parts of the city centre. This could lead to a loss of business activity, changing parts of the city from spaces of commercial activity to other uses. These changes would transform the ways in which local communities use and relate to these spaces. This would be an example of a transformative change created as a result of a decision (either deliberate or through inability to reach agreement) not to pursue any new adaptation strategies.

6.2 Can current decision-making processes deliver transformative change?

Accepting that the proposed scheme in Cork and alternative options can all be considered as transformative in a broad sense, at least from the perspective of some stakeholders, this section of the paper explores how public participation failures produce barriers to transformative adaptation outcomes. The Cork case highlights two types of barriers to transformative outcomes, those that are produced by failures in the decision-making process, and those that already existed but have been given increased visibility as a result of the dispute.

The unsuccessful attempts at public participation undertaken in Cork have produced several barriers to implementation including intractable stakeholder conflict, lack of public support, and erosion of public trust in the bodies responsible for hazards management. These outcomes demonstrate how poor public participation can lead to the emergence of barriers that threaten not only a specific proposal but also potentially render any alternative difficult to implement. The Cork dispute has become an intractable conflict. As the SCC group insist that the proposed scheme is inappropriate, impractical and potentially dangerous but the OPW contend that SCC's proposals are ineffective and uneconomic, compromise seems unlikely. While it cannot be guaranteed that greater public participation would have prevented the current conflict, much of the energy of the opposition campaign appears to have emerged from a sense that those involved feel that earlier opportunities for genuine participation were not provided.

For opponents of the scheme, their experience of the decision-making process has resulted in a loss of trust in the OPW. While the OPW has sought to draw on successes elsewhere to highlight its expertise, opponents of the scheme indicate that they no longer trust the organisation to design and implement an appropriate flood risk management scheme. Although the OPW point to other schemes where they have been successful and the outcomes have been supported by local communities, there are also examples of contested flood risk management strategies elsewhere in

Ireland (Clarke *et. al.,* 2016; Revez *et. al.,* 2017). Without public support the OPW's role as the lead authority for flood risk management in Ireland may become increasingly difficult.

In addition to creating these new barriers, the Cork dispute highlights existing barriers to transformative outcomes and their relationships to similar barriers to transformation of the decision-making process (discussed in section 6.3). Existing governance structures, institutional practices, legal regulations, and national policies can represent barriers to the implementation of a more participatory process and to any alternatives to structural solutions which might emerge from such a process. Despite a national review of flood policy which supported a move to non-structural measures, institutional and legislative structures have not changed significantly (O'Neill, 2018). Within this context there is little scope for the design or implementation of participatory decision-making processes which might potentially produce alternative outcomes. The extent of the changes this would require is illustrated by the alternative proposals for river flood management proposed by the SCC campaign. While these have been rejected on both technical and cost grounds by the OPW, even if they were deemed viable it is not clear how they could be implemented in practice. The alternative SCC proposal would involve large scale land use change in the catchment, including widespread tree planting, water diversions and wetland restoration/creation. These changes would require new models of co-operation between state bodies, farmers and other landowners. It would require that farmers move from their current agricultural practices to land management roles and the provision of a viable financial model to secure their livelihoods. There is currently no institutional, legal or governance framework in place capable of supporting such changes.

6.3 Barriers to transformation of the decision-making process

The barriers outlined in section 6.2 illustrate that implementation of any form of transformative outcome will prove difficult. While some of these could be overcome through more effective public

participation in the decision-making process, scholars of environmental governance have identified a range of obstacles that can prevent this.

Generating and sustaining engagement is one of the biggest challenges to ensuring that public participation takes place (Birkland, 1996; Godschalk *et. al..* 2003). It is clear that in the Cork case the strategies used by the OPW and their consultants failed to generate sufficient public engagement, while the stakeholder consultation has led some groups to form the perception that it may have privileged the interests of some stakeholders over others. This reflects experience of flood hazards management in other locations where some key stakeholders are permitted to engage fully with the process but other stakeholders and the general public are excluded as a consequence of poor communication (Moon *et. al.,* 2017). Godschalk *et. al.,* 2003 have pointed to the need for dedicated strategies to generate public participation and this must be one of the lessons from the Cork dispute. The existing literature also points to the benefits of new forms of co-production of knowledge (Landstrom *et. al.,* 2011; Lane *et. al.,* 2010) which offer models for developing alternative approaches to participation. These approaches often involve substantial time commitments from participants and have generally been tested in small catchments and rural areas. The Cork case points to a need to test new models of participatory decision-making and knowledge production on a larger scale in catchments that include complex urban environments.

In addition to generating and sustaining interest, there are difficult questions to be addressed in deciding who should be permitted to participate, whether they should participate directly or through representative organisations, and what weight should attach to the views of different groups and individuals. The Floods Directive suggests that all those impacted by or interested in flooding should be permitted to actively participate. In Cork the OPW and their consultants identified a range of stakeholder bodies, and contacted all landowners who would be directly impacted by the scheme. However this approach excluded many individuals and groups who

subsequently emerged in opposition to the scheme. Recent research on flood related disputes and other areas of environmental decision-making has emphasised the need to engage with broad constituencies of stakeholders and the general public (Clarke *et. al.*, 2018; Clarke *et. al.*, 2016; Gurney *et. al.,* 2017). The Cork case provides further evidence to support the argument that participation must engage with wider constituencies beyond those considered to be directly impacted by the hazard. It demonstrates how failure to do so can place flood risk management schemes at risk of non-implementation, as those who feel they were excluded from the decision-making process can become a powerful opposition force.

The role of stakeholder representative bodies can also be problematic as their representatives may not always accurately represent the interests of all of their members and it is obviously difficult to integrate a complex range of views (Fletcher, 2007; Imeson and van den Bergh, 2006; Milligan *et. al.,* 2009; O'Riordan and Ward, 1997). While this existing literature points to the question of whether stakeholder groups accurately represent their membership, the Cork case highlights that there are additional layers of complexity surrounding the role of stakeholder groups. The business associations in Cork clearly represent the views of businesses who have directly experienced flooding and may represent the views of the large businesses who have chosen to refrain from participating in the dispute. However they may not represent the views of many small businesses located outside flood risk zones. The need to ensure that wider constituencies are included in consultations may apply within stakeholder groups as well as within the wider decision-making process. The Cork case also demonstrates that the complexities surrounding the role of stakeholders groups extends to how that role is perceived by other actors. The OPW regard the business organisations as the representative voice for all businesses and point to their support when justifying the decision-making processes. However SCC point to the support they receive from small businesses to counter this argument. This demonstrates the importance of recognising nuances and complexities in the role of stakeholder representative groups in the decision-making process, and how their role is perceived by others.

The question of who should participate and what weight should be attached to the views of different groups also raises difficult ethical issues around how to compare different types of loss. While recent floods in Cork have rarely resulted in loss of life, livelihoods are under threat. Should further flooding occur a significant number of businesses will experience large uninsured loses and may permanently cease trading. However some business owners outside of flood zones view the disruption that will be caused by construction of the scheme as an existential threat to their businesses. There is no straightforward way to balance these competing views with each other or with the threats to heritage, aesthetics or amenities perceived by other opponents of the scheme. What is clear is that any decision-making process must allow meaningful participation in a way that enables these fears to be acknowledged and debated.

The availability of resources and expertise is also a significant limitation on participation. Under the Floods Directive each EU member state was required to designate a competent authority for flood risk management. In Ireland and several other member states the organisation chosen for this role is one with a track record of flood hazards management through engineering. The OPW self-identifies as an engineering organisation and considers many other issues to be beyond the scope of its expertise or responsibilities (Revez *et. al.,* 2017). It is unlikely that it possesses the resources or the expertise needed to lead a more participatory decision-making process.

The availability of time to consider and implement alternative outcomes can also be a significant constraint. Participatory processes are unlikely to result in a quick decision, but for home and business owners faced with the prospect that the next flood will result in uninsured losses that they cannot afford, time is a luxury they do not have. This was made clear by some interviewees in Cork who are frustrated that the process has already taken over a decade and that full implementation of the scheme is likely to be several years away. This can lead to a preference among some stakeholders for an authoritative decision-making process that may result in a faster decision.

6.4 Implementing an alternative approach to decision-making

A range of strategies to improve the decision-making process could be implemented. Improved public communication (Moon *et. al.,* 2017) and setting clear expectations at the outset of the process (Few *et. al.,* 2007) are incremental changes that might have resulted in a less contentious outcome. However in the Cork case it seems unlikely that such incremental changes would have prevented the emergence of new barriers to implementation such as intractable conflict and loss of trust. More substantial changes to the decision-making process are likely to be required in order to support transformative outcomes. While it is impossible to prescribe exactly how such a transformative alternative ought to operate, a number of general principles could guide such a process. These would recognise that all hazards management and adaptation is a political process in the broadest sense (Eriksen *et al.,* 2015) opening questions such as how to define the problem and who should be responsible for managing it, for debate at the outset of the process. Such a process would challenge existing roles and power relationships within the decision-making process, as well as raising challenging questions about how to balance and integrate different forms of knowledge (Eriksen *et al.,* 2015; Fitton and Moncaster, 2018; Landstrom *et. al.,* 2011; Lane *et. al.,* 2010). It could also extend to even more radical shifts such as changing to overall goal of the process from flood prevention to one of relationship building (Cook and Melo Zurita, 2019). Such a process would also be more cyclical and iterative in nature, seeing decision-making as an ongoing process during which outcomes are reviewed and changed if necessary, rather than as a process taking place at a fixed point in time. These types of changes to the decision-making process would be truly transformative to the ways in environmental governance and urban planning are conducted. Attempts to implement such transformative change would encounter many barriers but the Cork case demonstrates that transformative change to decision-making processes is likely to be a prerequisite to the implementation of transformative adaptation outcomes.

7. Conclusions

The existing literature on environmental governance highlights the opportunities and challenges associated with public participation. The challenges identified persist and reoccur in a variety of contexts. The Cork case is a typical example of the types of stakeholder conflict that can emerge when public participation fails. By exploring these failures through the lens of transformative adaptation this paper adopts an original approach to these challenges and offers important lessons for hazards management and climate change adaptation.

The Cork case highlights that various adaptation outcomes can be considered transformative, depending on the conceptualisations of transformation that is used, the locations and spatial scales to which the concept is applied, and the perspectives of the researchers and local stakeholders involved. Outcomes may be viewed as transformative by some stakeholders but not others, or in some locations but not others. When changes are viewed as transformative by some stakeholders this can help to drive their opposition to particular outcomes. In analysing transformation a reflexive approach is required that recognises that what constitutes transformation may be defined in one way by academic researchers but in a variety of other ways by local actors. It is also important to recognise that transformations can be deliberate and planned, or an unintended consequence of particular actions or inactions.

The Cork dispute demonstrates how public participation failures can produce new barriers to transformative outcomes. These barriers include intractable stakeholder conflict, lack of public support for implementation, and an erosion of public trust in the organisations responsible for hazards management. An intractable conflict has emerged in Cork while the OPW has suffered reputational harm that makes implementation of the scheme more difficult. The existing literature on barriers to transformative adaptation has not yet explored the relationships between transformations to the decision-making process and transformative outcomes. The empirical

research presented in this paper illustrates the importance of analysing these relationships and demonstrates that transformation of the decision-making process may be a prerequisite to transformative outcomes.

Successful public participation offers a means of potentially removing governance and institutional barriers to adaptation, and to avoiding intractable stakeholder conflicts such as that which has occurred in Cork. However the types of public participation necessary to achieve these goals must go significantly deeper than the consultations that have been attempted to date, and this is unlikely to be achieved through incremental changes in decision-making practices. It will require transformative changes in governance institutions and practices but there are a range of barriers to such transformative change. Removing these requires recognising that participatory approaches can be radically different from and disruptive to, traditional expert led decision-making. It cannot be left to organisations responsible for hazards management such as the OPW to undertake consultation and participation activities as an add-on to their existing roles and responsibilities. Engineering focused organisations such as the OPW possess critically important expertise and experience that will always play an essential role in both flood hazards management and climate change adaptation. However they are ill equipped to lead a transformation to participatory adaptation decision-making. The limited resources available to the OPW leaves them in a very difficult position and this is acknowledged even by their strongest critics in Cork. The Cork case analysed in this paper offers important lessons that are applicable to hazards management and climate change adaptation more generally. It demonstrates that in order to facilitate wider and more effective public participation in flood hazards decision-making and to fully explore the potential for alternative approaches to flood risk management, much wider change in hazards management policy and resourcing is likely to be needed.

References

Amundsen, H.; Berglund, F. and Westskogs, H. (2010) "Overcoming Barriers to Climate Change Adaptation – A question of multi-level governance?" *Environment and Planning C: Politics and Space* 28(2): 276-289.

Arnstein, S.R. (1969) "A ladder of citizenship participation" *Journal of the American Planning Association* 35(4): 216-224.

Barnett, J.; Evans, L.S.; Gross, C.; Kiem, A.S.; Kingsford, R.T.; Palutikof, J.P.; Pickering, C.M. and Smithers, S.G. (2015) "From barriers to limits to climate change adaptation: Path dependency and the speed of change" *Ecology and Society* 20(3): 5.

Begg, C.; Walker, G.; and Kuhlicke, C. (2015) "Localism and flood risk management in England: the creation of new inequalities" *Environment and Planning C: Government and Policy* 33:685-702.

Birkland, T.A. (1996) "Natural disasters as focusing events: Policy communities and political response" *International Journal of Mass Emergencies and Disasters* 14(2): 221-243.

Braun, V. and Clarke, V. (2006) "Using thematic analysis in psychology" *Qualitative Research in Psychology* 3(2): 77-101.

Clarke, D.; Murphy, C. and Lorenzoni, I. (2018) "Place attachment, disruption and transformative adaptation" *Journal of Environmental Psychology* 55: 81-89.

Clarke, D.; Murphy, C. and Lorenzoni, I. (2016) "Barriers to transformative adaptation: responses to flood risk in Ireland" *Journal of Extreme Events* 3(2).

Cook, B. and Melo Zurita, M.L. (2019) 'Fulfilling the promise of participation by not resuscitating the deficit model' *Global Environmental Change* 56: 56-65.

Ekstrom, J.A., Moser, S.C. (2014) "Identifying and overcoming barriers in urban climate adaptation: Case study findings from the San Francisco Bay Area, California, USA". *Urban Climate*. 9, 54–74.

English, E. (2018) "Key element of Cork flood defences delayed following EU court ruling" *Irish Examiner* https://www.irishexaminer.com/breakingnews//ireland/key-element-of-cork-flood-defences-delayed-after-eu-court-ruling-873008.html

Eriksen, S.H.; Nightingale, A.J. and Eakin, H. (2015) 'Reframing adaptation: The political nature of climate change adaptation' *Global Environmental Change* 35: 523-533.

Feola, G. (2015) 'Societal transformation in response to global environmental change: a review of emerging concepts' *Ambio* 44(5): 376-390.

Few, R.; Brown, K. and Tompkins, E.L. (2007) "Public participation and climate change adaptation: avoiding the illusion of inclusion" *Climate Policy* 7: 46-59.

Devitt, C. and O'Neill, E. (2016) "The framing of two major flood episodes in the Irish print news media: Implications for societal adaptation to living with floods" *Public Understanding of Science* 26(7): 872-888.

Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, *Official Journal of the European Union*, L 288 (6.11.2007), PP.27-34.

Fitton, S.L. and Moncaster, A.H. (2018) "Arguments for a co-production approach to community flood protection" *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* – published online.

Fitzpatrick, J. and Bree, T. (2001) "Flood risk management through reservoir storage and flow control" National hydrology seminar 2001, Irish National Committees for the International Hydrological Programme and the International Commission on Irrigation and Drainage, Dublin.

Fletcher, S. (2007) "Representing stakeholder interests in partnership approaches to coastal management: Experiences from the United Kingdom" *Ocean and Coastal Management* 50: 606-622.

Godschalk, D.R.; Brody, S. and Burby, R. (2003) "Public participation in natural hazards mitigation policy: formation challenges for comprehensive planning" *Journal of Environmental Planning and Management* 46(5): 733-754.

Guerreiro, S.B.; Dawson, R.J.; Kilsby, C. Lewis, E. and Ford, A. (2018) "Future heat-waves, droughts and floods in 571 European cities" *Environmental Research Letters* 13: 034009.

Gurney, G.G.; Blythe, J.; Adams, H.; Adger, W.N.; Curnock. M.; Faulkner, L.; James, T. and Marshall, N.A. (2017) 'Redefining community based on place attachment in a connected world' *Proceedings of the National Academy of Sciences* 14(38): 10077-10082.

Imeson, R.J. and van der Bergh, J.C.J.M. (2006) "Policy failure and stakeholder dissatisfaction in complex ecosystem management: The case of the Dutch Wadden Sea shellfishery" *Ecological Economics* 56: 488-507.

IPCC (2012) Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. In C. B. Field, V. R. Barros, T. Stocker, D. Qin, D. Dokken, K. L. Ebi, M. Mastrandrea, K. J. Mach, G. Plattner, S. Allen, M. Tignor, & P. Midgley, eds. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

Jeffers, J.M. (2014) "Environmental knowledge and human experience: using a historical analysis of flooding in Ireland to challenge contemporary risk narratives and develop creative policy alternatives" *Environmental Hazards* 13(3): 229-247.

Jennings, T.L. (2009) Exploring the invisibility of local knowledge in decision-making: The Boscastle Harbour flood disaster" In Adger W.N.; Lorenzoni, I.; O'Brien, K. *Adapting to Climate Change: Thresholds, values and governance* Cambridge University Press.

Kates, R.W., Travis, W.R., Wilbanks, T.J. (2012) Transformational adaptation when incremental adaptations to climate change are insufficient. *Proceedings of the National Academy of Sciences.* 109(19), 7156–7161.

Klein, R.J., Midgley, G.F., Preston, B.L., Alam, M., Berkhout, F.G., Dow, K., Shaw, M.R., Botzen, W., Buhaug, H., Butzer, K.W. (2014) Adaptation opportunities, constraints, and limits. In C. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, K. L. Ebi, Y. O. Estrada, R. C. Genova, B. Girma, E. S. Kissel, A. N. Levy, S. MacCracken, P. R. Mastrandrea, & L. L. White, eds.

Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press, pp. 899–943.

Landstrom, C., S.J. Whatmore, S.N. Lane, N.A. Odoni, N. Ward and S. Bradley (2011) "Coproducing flood risk knowledge: redistributing expertise in critical 'participatory modelling" *Environment and Planning A* 43: 1617-1633.

Lane, S.N., N Odoni, C. Landstrom, S.J. Whatmore, N. Ward and S. Bradley (2010) "Doing flood risk science differently: an experiment in radical scientific method" *Transactions of the Institute of British Geographers* 36: 15-36.

Marshall, N.A.; Dowd, A.M.; Fleming, A.; Gambley, C.; Howden, M.; Jakku, E.; Larsen, C.; Marshall, P.A.; Moon K.; Park, S. and Thorburn, P.J. (2014) "Transformational capacity in Australian peanut farmers for better climate adaptation" *Agronomy for Sustainable Development* 34(3): 583-591.

Measham, T.G., Preston, B.L., Smith, T.F., Brooke, C., Gorddard, R., Withycombe, G., Morrison, C. (2011) "Adapting to climate change through local municipal planning: Barriers and challenges" *Mitigation and Adaptation Strategies for Global Change.* 16(8), 889–909.

Moon, J.; Flannery, W. and Revez, A. (2017) "Discourse and practice of participatory flood risk management in Belfast, U.K." *Land Use Policy* 63: 408-417.

Moser, S.C., Ekstrom, J.A. (2010) A framework to diagnose barriers to climate change adaptation. *Proceedings of the National Academy of Sciences of the United States of America*. 107(51), 22026–22031.

O'Brien, K. (2012) Global environmental change II: From adaptation to deliberate transformation. *Progress in Human Geography*. 36(5), 667–676.

O'Neill, E. (2018) "Expanding the horizons of integrated flood risk management: A critical analysis from an Irish perspective" *International Journal of River Basin Management* 16(1): 71-77.

Office of Public Works (2018) *Lower Lee (Cork City) Flood Relief Scheme website* https://www.lowerleefrs.ie/

Office of Public Works (2017) *Lower Lee (Cork City) Flood Relief Scheme: Exhibition Report.*

O'Riordan, T. and Ward, R. (1997) "Buildign trust in shoreline management: creating participatory consultation in shoreline management plans" *Land Use Policy* 14(4): 257-276.

Park, S.E.; Marshall, N.A.; Jakku, E.; Dowd, A.M.; Howden, S.M.; Mendham, E. and Fleming, A. (2012) Informing adaptation responses to climate change through theories of transformation *Global Environmental Change* 22: 115-126.

Pelling, M. (2011) *Adaptation to Climate Change: From resilience to transformation* Routledge.

Pelling, M.; O'Brien, K. and Matyas, D. (2015) "Adaptation and transformation" *Climatic Change* 133(1): 113-127.

Priest, S.J.; Suykens, C.; Van Rijswick, H.F.M.W.; Schekkenberge, T.; Goytia, S.; Kundzewicz, Z.W.; van Doorn-Hoekveld, W.J.; Beyers, J.C. and Homewood, S. (2016) "The European Union approach to

flood risk management and improving societal resilience: lessons from the implementation of the Floods Directive in six European countries" *Ecology and Society* 21(4): 50.

Roberts, R. (2003) 'Involving the Public' In: Becker, H.A. and Vanclay, F. (Eds) *The International Handbook of Social Impact Assessment: Conceptual and Methodological Advances* Edward Elgar, Cheltenham.

Revez, A.; Cortes-Vazquz, J. and Flood, S. (2017) "Risky policies: Local contestation of mainstream flood risk management approaches in Ireland" *Environment and Planning A* 49(11): 2497-2516.

Rouillard, J.J.; Reeves, A.D.; Heal, K.V. and Ball, T. (2014) "The role of public participation in encouraging changes in rural land use to reduce flood risk" *Land Use Policy* 38: 637-645.

Stevens, M.R.; Berke, P.R. and Song, Y. (2010) "Public participation in local government review of development proposals in hazardous locations: does it matter and what do local government planners have to do with it" *Environmental Management* 45:320-355.

Thaler, T.; Attems, M.S.; Bonnefond, M.; Clarke, D.; Gatien-Tournat, A.; Gralepois, M.; Fournier, M.; Murphy, C.; Rauter, M.; Papathoma-Köhle, M.; Servain, S.; Fuchs, S. (2019) 'Drivers and barriers of adaptation initiatives – How societal transformation affects natural hazard management and risk mitigation in Europe' *Science of the Total Environment* 650(1): 1073-1082.

Tyrrell, J. and Hickey, K. (1991) "A flood chronology for Cork city and its climatological background" *Irish Geography* 24: 81-90.

Wehn, U.; Rusca, M.; Evers, J. and Lanfranchi, V. (2015) "Participation in flood risk management and the potential of citizen observatories: A governance analysis" *Environmental Science and Policy* 48: 225-236.

Table 1. Data collection

Data Analysed	Notes
Semi-structured interviews with local stakeholders. Completed in April and May 2017.	13 participants selected through purposive sampling focusing on stakeholders who had publically participated in the dispute. 2 selected through snowball sampling. A total of 48 people invited to participate in the study but 33 either declined to participate or did not respond to the invitation. Interviewees were asked how they would like to be identified and the identifiers used in this paper are those agreed with the participants.
Reports, presentations, press releases and flyers produced by the OPW and SCC Downloaded from the OPW and SCC websites on dates between April 2017 and February 2018.	25 documents were initially identified as potentially relevant to this study (23 OPW, 2 SCC) and these ranged from 1 to 500 pages in length. Following an initial examination a number of documents were excluded and 10 (8 OPW, 2 SCC) were selected for detailed analysis. The remaining OPW documents were excluded due to containing information of a purely technical nature or due to extensive overlap in content with other documents that had been selected. Despite their exclusion from the more detailed analysis these documents still provided important contextual information.
OPW Lower Lee Flood Relief Scheme project website.	All pages downloaded on two dates, in November 2017 and again in February 2018. This repeat download was to capture significant updates as the scheme moved from the proposal to implementation phases.
SCC Twitter profile and Facebook page.	All posts by SCC from the inception of these pages in December 2016 and January 2017 to February 5th 2018 were included in the analysis but retweets or shares of material posted by others were excluded. This amounted to 589 Tweets and 728 Facebook posts.
YouTube videos produced by SCC.	6 videos featuring opponents of the proposed scheme outlining reasons for their opposition.
Miscellaneous documents	Blog posts, newspaper opinion pieces and written submissions on the scheme that were posted online by their authors. These 9 documents were found via online searches.
Transcript from the Oireachtas Committee on Culture, Heritage and the Gaeltacht.	Representatives from the OPW and SCC were invited to appear as witnesses before the committee on October 18th 2017. They provided initial opening statements and then responded to questions from committee members. Transcript downloaded from Oireachtas Website.

Table 2. Timeline of events.

Dates	Events
Catchment Food Risk Assessment and Management Study (CFRAM) 2006-2014	
Early 2006	CFRAM study begins – Led by consultants Halcrow on behalf of the OPW in partnership with Cork County Council and Cork City Council.
December 2006	Public consultation days – 7 held in locations throughout the catchment, advertised in local and national media. Attendance numbers not known.
Jan 2007, May 2008 and April 2009	Stakeholder groups workshops – stakeholders identified and invited by Halcrow/OPW.
May 2009	Public consultations days – 4 held in locations throughout the catchment, advertised in local and national media. Attendance not known.
February to April 2010	Draft CFRAM study made available via website and hard copies at City and County Council offices. Open for public submissions. A total of 28 submissions received. Most focused on up-stream villages with little comment on Cork City.
17th July 2013	Public Consultation Day – constraints study. Attended by 44 people.
January 2014	CRFAM Final Study Published
Lower Lee Flood Relief Scheme (2014-present)	
29th July 2014	Public Consultation Day – emerging preferred solution. Attended by 181 people.
Dates unknown – assumed to be between Jan 2014 and Dec 2016	Over 100 face to face meetings held with landowners and other stakeholders directly impacted by the proposed scheme. Presentations given to local business groups, elected representatives and other stakeholders.
12th Dec 16 to 20th Jan 2017	Scheme on public display in four locations in Cork and on the web. 4 days when design team available to take questions from the public (attended by 185 people). SCC campaign group founded and campaign of opposition begins.
7th April 2017	Final date for written submission on scheme (extended deadline, original deadline February 17th). 1162 written submissions received with almost 90% of these coming from the general public.
5th December 2017	OPW publishes exhibition report outlining the main issues raised in the submissions received and their response to them.

Table 3. Positive stakeholder views of the consultation and participation process.

"We've also gone from disgusting walls and barricades and all sorts. We have got the OPW in conversation for a long time now to where we would like them to be." (Interview: Small Business Owner 1)

"Well the scheme firstly it was proposed two, two and a half years ago when the first adoptions came out from the OPW and we looked at them and we sent forward a very comprehensive submission, predominately supporting the objective but very challenging in terms of some of their design and their construct and some of the mechanisms that they had in place. In fairness to the OPW, they took on board a lot of our concerns, not them all but a lot and they built in some changes and in terms of the last draft we saw which was December we saw some of those changes and subsequent to that we engaged and have been engaging with the OPW and engagement is vital to work and to understand and to try and get a grasp of what their suggestions are." (Interview: Business Representative)

"The scheme has the support of the vast majority of the elected representatives of both local authorities, Cork City Council and Cork County Council. Key stakeholders such as the chamber of commerce and the Cork Business Association, which together represent between 900 and 1,200 businesses, are also fully supportive of the scheme. The Irish National Flood Forum supports the scheme. The OPW is of the firm view that the scheme has the support of the majority of residents and property owners in Cork city who wish to see a scheme implemented as quickly as possible to protect them from the devastating floods which have been experienced by the city." (John Syndenham, OPW, Evidence to Oireachtas Committee)

"I thank the Chairman for that question. It gives me an opportunity to mention the public consultation which has happened throughout the development of this project. In 2014 we indicated demountable barriers at bridge locations. The business community and the public in Cork made the point to us strongly that they wanted, insofar as possible, the bridges to remain open in times of floods. We have changed the design since bringing it to the exhibition. We now have gates which will close the footpaths on the bridges, but the roads on the bridges will remain open." (Ezra MacManoman, OPW, Evidence to Oireachtas Committee)

"*Recent newspaper articles on the Office of Public Works' proposals for the Lower Lee flood relief scheme which is currently at Public Exhibition stage appear to have been prompted by a campaign being given voice on Facebook and Twitter on accounts called savecorkcity. This campaign is appealing to the public to use the Exhibition process to persuade the OPW to change its mind on certain aspects of the proposals for the flood relief scheme. The OPW welcomes all comments on its proposals as part of the Public Exhibition which is the final stage of a comprehensive consultative process that included a public awareness event at the inception of the project, a public information day at the stage where an emerging preferred option was identified, briefings for elected representatives and business groups in the city and consultation with a wide range of stakeholders including a large number of personal consultations by members of the Project Team with those who might be affected directly by the project*." (OPW Press Release, February 2017).

"People were seemingly upset at the fact that the public were not consulted until apparently it was too late, but they did have an extended consultation period. Everyone can view those OPW plans. I resent the hard engineering approach being put forward as the only approach but they have looked at upstream changes as well. Making some floodplains. It doesn't seem to be enough. Although as I have been reading a bit more of the OPW stuff I am less convinced about the grievance on the part of people in the city." (Interview: Ecologist 1 – opposed to scheme).

Table 4. Negative comments on the process – lack of communication

"Our other great concern was the fact that this plan was going to have an irreversible effect on Cork and that virtually nobody knew about it. The OPW told us that they wrote directly about the Scheme to only 475 people out of a population of 125,000. This represents their interpretation of their obligations." (Save Cork City – Discussion Document)

"It is clear from the reaction of the public in Cork to the final plans that the initial public consultation process was inadequate." (Cork Environment Forum, submission to OPW)

"It's an argument that I have heard made against the State on several occasions in relation to several types of public consultation, whether it is putting in a bike lane in the city centre, whether it is building social housing in a particular area. The local authority or the state will argue that they have engaged in statutory public consultation but the effectiveness of that consultation leaves a lot to be desired. Putting an ad in the back of a newspaper advertising a session of public consultation just isn't enough anymore. There are so many channels of communication that they should use, that they didn't use or haven't used effectively enough. I think that is a part of the problem that has led to the emergence of this particular lobby group." (Interview: Local Resident – supporter of scheme)

"People weren't aware. Active communication with people, stakeholders, also seem to be quite small. They only directly contacted a very small portion of the population of Cork or the stakeholders. I don't think it has been effective because I think a lot of peoples in Cork still aren't aware of what the proposed ideas are." (Interview: Ecologist 2)

"W*hen they put the plans in City Hall. I use a lot of social media for my work and I didn't see it and I would definitely have gong there to check it out as I would have been super curious but I didn't hear anything. It was around Christmas and New Year and they kept it really quiet*." (Interview: Artist 2)

"*It was upon us we knew to tell you the honest to God's truth. It wasn't that well put out there. It was only when it was that it was drawn to our attention and we realised that at this stage almost the work had been. I would love to know when they began work on this procedure. How many years ago was it because we certainly haven't heard. We haven't received a letter from the Council as a trader or anything like that. We haven't been notified in any way, by email, nothing like that. I don't know whether it has been done covertly but I think they could have actually asked the people who are living in the city and working in the city what do they think about it. We pay the rates*." (Interview: Small Business Owner 3)

"Even if a few people saw the advertisements in the paper, it was described as the Lower Lee drainage scheme. I did not know what that meant and nobody really knew what it meant. Apparently there were advertisements on the radio as well but everyone in the group has yet to meet a person who heard them. We strongly feel that this was going to sort of rolled in under the radar." (Catherine Kirwan, SCC, Evidence to Oireachtas Committee)

"It is an issue that they don't really care about us. They do periodically try to do something but when it comes to flood defences, at no point can I remember a letter through the door here saying, look this is what we're looking at, this is why we're looking at it." (Interview, Small Business Owner 2)

Table 5. Comments on lack of trust and reputation harm.

"When I heard the OPW were to be involved initially, because I was only aware of their work on historic monuments I was slightly relived that it was the OPW and not the City, but that relief disappeared in about ten minutes. I think people do trust the OPW." (Interview: Save Cork City Representative)
"Now with all the talks of them wanting to build the wall it has created a lot of discussion. People are feeling disconnected from the governing bodies. They always will feel disconnected. This is now a major reason that they feel disconnected. People haven't been consulted about this major scar that's going to be put on the face of the city." (Interview: Ecologist 1)
"They just seem to be continuing in this tradition of throw a provocative proposal at people and wait for the flack as supposed to consulting with people from the start. They seem to be quite happy to have gotten the flack because now they can look at the flack and see what to do next and that's the craziest way of working that I have ever come across but that's the way they do things, that's the way the OPW works. If you don't object fast enough, then they will just do it." (Interview: Artist 1)
"*I think it is unfortunate that whether it is deliberate or not and I don't quite know what the OPW strategy is here, was it deliberate to put something controversial and by working back we will come up with something. I don't know. That very often is a consultation technique."* (Interview: Cultural Manager)
"The OPW is not the body to do it. It does a good job of looking after national monuments. They are sometimes involved in the building of schools. I don't think they have sufficient architectural expertise and I don't really know how they could possibly. There should have been an authority created especially for this. We need a new body with research active academics and engineers involved, who would actually investigate the situation and not just hand it over to the poor old OPW." (Interview: Writer)
"I think they are kinda arrogant about it and they have been a little condescending towards the campaign. They have spoken as if the people who are running the campaign don't know what they are talking about. I don't think they have necessarily treated those running the campaign with respect or as experts in their field. Yeah I think there has been a bit of arrogance and condescension in their responses to the campaign. Especially one of their press releases that they released was quite antagonistic. And that was before I ever got involved in the campaign as well. But I remember reading it and feeling that it was quite antagonistic." (Interview: Ecologist 2).