

EVALUATION FRAMEWORK FOR BOTTOM-UP INITIATIVES IN FLOOD MANAGEMENT

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Abstract

TRANS-ADAPT project focuses on bottom-up initiatives to flood risk management that are different from the mainstream flood risk management measures. Our hypothesis is that these initiatives are pursued by local stakeholders, with the aim to address local problems or to secure the multi-functional use of land. TRANS-ADAPT explores what and who is behind these initiatives and outlines the motives and key aspects of multi-functional outcomes that are relevant for flood risk management. The final objectives are to explore the possibilities for up-scaling and replicating these initiatives in other countries and outlining the institutional change required to facilitate local initiatives. To identify the barriers and limitations of the current flood governance, the project aims to develop a conceptual framework. This framework will adapt the classical governance and design criteria for flood risk management, providing operational indicators. The aim of the project is to answer TRANS-ADAPT research questions, literature review and the conceptual framework. The project can give insights to the participation issues suggested by Track04. We will present the results from one French case study during the communication.

1. Introduction

1.1 Increased flood risks: how to improve policies?

In a context of climate change, recent extreme hydrological events experienced in Europe have focused the attention of policymakers on flood hazards. It leads to an increasing focus on flood risk beyond vulnerability and flood risk (Fuchs et al. 2013), such as climate change impacts on exposed societies (Keiler and Fuchs 2010; Birkmann et al. 2013). As they concern critical economic resources, transportation, interdependent networks, social and information systems, and urban areas are especially vulnerable.

In parallel, the context of changing role of the state in responsibility and accountability for risk management and precaution (Adger et al. 2013; Mees et al. 2013) and the question of other emerging flood risk strategies. Especially, the implementation of these strategies

Directive in Europe places the lead responsibility on local organisations to deal with flood risks. This requires local governance to manage local risks which demands societal transformation (Driessen et al. 2009; Fuchs 2009; Fuchs et al. 2011).

We propose to focus on how local governance elaborates new flood management strategies where multiple functionality land use is included, alternatively to classical flood risk management imposed by top-down State governance which are dominated by one type of use (flood prevention).

1.2 Research objectives: evaluation framework for bottom-up initiatives

In JPI-Climate research, the project TRANS-ADAPT contributes to answering the question of societal transformations of society in the face of climate change. TRANS-ADAPT is the acronym for « Societal transformation and adaptation necessary to manage dynamics in flood risk management and mitigation ». TRANS-ADAPT evaluates and analyses bottom-up initiatives in flood risk management in Europe. The aim is to refresh policy analysis on new types of local initiatives and the outcome, TRANS-ADAPT mixes different disciplines: geography, economy, and governance scholars.

To face the challenges of climate change and flood prevention, TRANS-ADAPT focuses on societal transformations in bottom-up initiatives driving to multiuse alleviations in flood risk management. The main objective of this paper is to frame the problem definition and to build an evaluation framework. This framework matrix will help us to test the success of the non-traditional flood risk management strategies. We therefore propose to use a multidisciplinary set of criteria commonly applied in flood risk management analysis (Tompkins & Adger, 2004). The governance criteria selected in TRANS-ADAPT are used both at evaluating the governance processes, but also the spatial outcomes. The case studies are from four European countries (Austria, The Netherlands, Ireland, France).

We refer to classical criteria in governance policies, and we aim to ground them in the context of bottom-up initiatives in flood management. The evaluation helps to qualify the local governance. How do local stakeholders come to organise and create the local initiatives: how do they create multi-use (process) and make it live today (outcome) and is it socially sustainable? On the time scale, the non-traditional flood risk management strategies of multiuse are observed mostly from the Second World War onwards, even if in some situations need a look back in the late 1900s to understand spatial and social transformations.

2. Research background

2.1. Adaptation to Climate Change

Climate change fostered by human activities is triggering more and more extreme events, including violent floods. Europe does not escape them, although its climate is moderate. Europe is also facing 'global weirding'. Heavy rainfall, violent storms, and sea level rise at catchment scale make rivers step out of their beds and submerge areas vulnerable to flooding. European cities, towns and villages are part of these vulnerable areas, because they are located near coasts. The risk of flooding is high in these densely populated areas. Artificial drainage networks and embankments of river beds are making living areas more vulnerable to the occurrence of floods.

In this context, societies are engaging at different levels into adaptation processes. O'Brien (2005) define adaptation to climate change as an adjustment in ecological, economic, and social systems in response to observed or expected changes in climatic stimuli and their impacts, in order to alleviate adverse impacts of change or take advantage of new opportunities. Adaptation is a continuous stream of activities, actions, decisions and attitudes.

about all aspects of life, and that reflects existing social norms and processes. In these definitions, adaptation challenges the prevention of risks in the context of extreme events. It involves adjustments of responses, and integration of prevention against extreme events in development. Societies face the challenge to continue development and at the same time to build acceptable infrastructure and make adaptation choices based on supposed-to-happen events.

Whereas incremental adaptation is the fact of going further in what is already being done, as Kates et al. define it (2012), transformational adaptation is bringing new ways of doing things in a changing context. Kates et al. (2012) define Incremental adaptations to climate change as extensions of actions and behaviours that already reduce the losses or enhance the benefits in variations in climate and extreme events. In other words, they state it means doing what is already being done to deal with natural variation in climate and with extreme events. In the challenges of climate change, urban societies are required to transform themselves and their organisation. More than an incremental adaptation, societal transformation is an essential component of the strategies (Kates and al. 2012 ; Smith and al. 2011 ; Navarrete, 2011). Those transformations require to pay attention to the context, including cultures and identities, of people and places (Marshall and al. 2012). If extreme events or shocking events, a brutal transformation can also have a devastating impact on societies. Most of the environmental policies are top-down decision processes, especially for natural risks.

2.2. Flood risk management: traditional top-down policy

TRANS-ADAPT defines risk as the probability of a hazard to occur combined with exposure and vulnerability to damage the society. It deals with two types of hydrological hazards: river floods and coastal flooding. The combination of hazard, vulnerability and exposure seems relevant in seeing risk as a dynamic approach. TRANS-ADAPT will analyse both hazard and flood risk, in order to identify ways for risk reduction. The definition of the characteristics of the hazard is useful to evaluate the feasibility, but also to understand the expert-based rhetoric in flood management. It is based on experiences of flood in the different places. The aim of TRANS-ADAPT is to study the capacity to react, to face, to manage with flood risks in the context of very complex and uncertain flood management.

In flood management, after WWII and until the 1970s, 'hard engineering' solutions were at the top of the pyramid. They were essentially suggested to resist to flood risks for farming profitability, industrial interest and growing urban assets. There was little attention to social representation and local solutions, especially non-structural approaches. « that if mitigative strategies are to be successfully implemented, then the process must incorporate public participation at the local decision-making level. Flood management can be no more a top-down process: actors are so numerous, diverse and powerful than the State. The technical decision coming from the State, from a top-down viewpoint, is challenged, not only in terms of protest, of political claims for more participation, also because local stakeholders can do better, with less resources or more quickly than the State decision-making process. In a context of financial crisis, flood management is a purpose of the current appraisal, prioritisation in decision-making processes.

In this context, how do bottom-up initiatives lead (or not) to multi-functional solutions in rural contexts, in the field of flood risk management?

2.3. Bottom-up initiatives in flood risk management: a step towards social transformation

The idea of bottom-up initiatives is an organisational method to take decisions from and with the local users, not only with the elite solution makers. In flood management, it is an alternative to the traditional State expert-based decision-making way for more innovative measures. Johnson and Priest (2008) analysed the shift of responsibility between the State and its citizens, and then, a new balance between structural risk management options, towards more tailor-made choices, dependent on social, economic or cultural characteristics of the nature of the place and the risk.

In its empirical research, TRANS-ADAPT wants to understand how bottom-up initiatives can be innovative spatial flood risk measures and what they teach us about flood management cases where a significant amount of responsibility is given to local authorities. We suggest to define bottom-up initiatives as the decision-making process and policies which local stakeholders in a local area address problems of local interest, as well as share flood management between the State and the local stakeholders, and, secondly, to find creative and innovative solutions to face climate changes in terms of extreme events.

TRANS-ADAPT will pay a special attention to the role of community in the emergence of bottom-up initiatives. Besides the other stakeholders involved in the flood policy, we define those that allow to speak about community :i) a system of interrelations around a community that improve their own representation of spatial quality of life ; iii) which include spatialisation in the community. Using several sources of definitions for community (Hoggett 1997; Jentoft, 2000; Orr, 2007) TRANS-ADAPT will study groups of people living on land that bear specific features geographically defined, with a definite function. These groups include those residing in close proximity to rivers, flooded districts relative to political authorities, fisheries interest groups, environmental associations, etc. The objective of protecting their environment, their quality of life and their freedom for creation of recreational areas or in finding other qualitative ways to reduce risk.

2.4. Integrating multiple uses of land in flood risk management

Multifunctional land use can be defined as the combination of different socio-economic functions in the same area (Vreeker et al., 2004). The main goal of multifunctional land use is to save scarce space by intensifying its use. Vreeker et al. (2004) argue that the concept of multifunctional land use (as a planning concept) is its emphasis on the return to land use, supposed to create synergy effects by combining a diversity of land use functions on the same location .

With the objective of giving rivers more space (EU Floods Directive 2007), flood management should consider the maintenance and/or restoration of floodplains where possible. The design could be: multifunctional use of land, in the scope of flood risk prevention, allowing several functions or activities through space (on different plots of the same land) or on a same location, associating at least one use of land that serves the interest of flood risk management, whichever the type of flood risk management it may be.

3. Hypotheses

3.1. Objectives of the research

TRANS-ADAPT aims to contribute to the analysis and evaluation of the role of local initiatives that are complementing conventional flood policies in the field of Climate Change adaptation. Ultimately, to provide guidance for the design of bottom-up initiatives for flood risk management. TRANS-ADAPT focuses on community-based bottom-up initiatives for flood risk management that are clearly different or niche relative to mainstream solutions of flood risk management.

interest given the involvement of diverse actors is multi-functional use of the functions (park, leisure, festival, shops, sport, gardening, farming, fishing...

These initiatives are pursued by local stakeholders, with the aim of protecting and preserving a certain quality of life and space. When those three components are studied as community and trying to see how the specificities of being community support multi-use flood strategies. How community-led initiatives are creating new ways of managing flood prevention infrastructures with multi-use strategies? Our study shows that the bottom-up process of local actors is more innovative than traditional top-down. We argue that the main reasons for this shift from centralised to decentralised management scale is more efficient in dealing with those tasks relating to risk management.

Our second hypothesis is that the community process led to a more successful reduction of vulnerability and resilience, in which multi-uses is the example we observe. In the functions of a land (leisure, sport, commercial activities, fishing spots) and the vulnerability of those activities, we are studying if multi-functions increase resilience defined as the capacity to respond to a disturbance by resisting and rebuilding. Classical flood risk management measures, which are dominated by one type of use, cannot respond to the new circumstances. We argue that such approaches hold an unexploited, potential for realising unexpected solutions for dealing with flood risk (Hanger & Pidgeon 2007).

3.2. Goals of the evaluation framework

One of the aims of TRANS-ADAPT is to identify wider lessons for other European countries working on the implementation of climate change adaptation strategies arising from flood risk (Hanger & Pidgeon 2011; Hanger et al. 2013). To be able to learn from the existing projects and account explicitly the effect of scale, but at the same time to be able to provide recommendations and actions, the evaluation framework offers many opportunities.

The evaluation framework is composed of 8 criteria that will be used to evaluate flood risk reduction initiatives and multi-use alleviations, processes and outcomes. We have developed a multidisciplinary set of criteria commonly applied in policy analysis. The framework includes 8 evaluation criteria that assess the success of the community-based multi-functional flood risk adaptation strategies, in terms of: 1) economic efficiency; 2) effectiveness; 3) achievement; 4) legitimacy including legality; 5) accountability; 6) social justice; 7) vulnerability reduction, in terms of physical, social, institutional and economic; and finally 8) technical feasibility. Criteria have been divided into two parts. Five criteria (efficiency; effectiveness; legitimacy; accountability; social justice) will especially be used to evaluate the process and the outcome of the bottom-up approach to multi-use flood management. Then, there are two design-oriented criteria (legality and technical feasibility) that will be used in order to replicate initiatives in other contexts and to mainstream policies.

4. Methods: the development of an evaluation framework for legitimacy and accountability

This paper focuses on two governance criteria dealing with participation in governance: legitimacy and accountability. Each criterion has been studied in a conceptual workshop and a literature review from geography, social, governance and risk management scholars. Then, these criteria were grounded into TRANS-ADAPT research, to adapt their understanding to our research objectives. In order to make the criteria operational in the empirical research, indicators have been

adaptation. The idea is that throughput legitimacy is created when the different the decision-making and can also influence the decision-making.

In interactive governance modes such as policy networks and public-private part legitimacy is gained through meaningful participation (e.g. Smith, 2003; Pa 2006; Paavola, 2008) and due deliberation (e.g. Dryzek, 2000; Adger et al., Elander, 2010). Meaningful participation is about being able to truly influence all voices should count. This is in contrast to the phenomenon that public deci use participatory processes as window dressing to legitimize predetermined ou (2007), a phenomenon famously coined by Arnstein (1969, p. 218) as tokenism . D about collective decision making being done on the basis of integrating med deliberation and debate (Bekkers& Edwards, 2007, p. 44; Dryzek, 2000; Smith, 20 that all stakeholders critically engage in unconstrained dialogue so that they increase their knowledge base, widen their own perceptions, reflect and loo preferences (Renn, 2006). Thus an enlarged mentality can be created based on m (Smith, 2003, p.63). The process of deliberation should be conducive to making choices, even if consensus cannot be reached. Legitimacy thus rests on all stake and accepting the rationale behind the outcomes, although disagreement may perta

Output legitimacy is about what comes out of the decision-making process and rei the outcomes of the decision-making. In case of output legitimacy, acceptance o by the extent to which that authority is effective in achieving goals (Scharpf, 19) states that a democracy would be an empty ritual if the democratic proce produce effective outcomes, by achieving the goals that citizens collective Tatenhove (2011) argues that a system is legitimate if it has the capacity to Both interpretations of Scharpf and Van Tatenhove are very much related to effe to Biermann and Gupta (2011, 1858), it is about the perceived effectiveness rather than effectiveness as in the actual solving of the issue. Perceived acceptance of the outcomes of the governance process (Bekkers and Edwards, 2007) It is advised to use the interpretation of perceived effectiveness for the evalu for TRANS-ADAPT, since effectiveness is already included as one of the other assessing the performance of the community initiatives.

4.2 Accountability as the essence of answerability

In its most core meaning accountability refers to actors, organisations, leader account to some authority for their actions according to some set standard (Mas 2000). Generally speaking accountability is about stakeholders and society being the actions of policy-makers. It has become a term for all kinds of mechanisms t institutions responsive to their publics.

All in all, most definitions of accountability concern the obligation of indiv provide information about, and/or justification for, their action to other ac imposition of sanctions for failure to comply and/or to engage in appropriate ac (2004, p. 372). Mark Bovens has particularly studied the concept of accountabili be used in (comparative) empirical studies. Therefore his following definition (adopted:

Accountability is a relationship between an actor and a forum, in which actor has an obligation to explain and justify his or her conduct, the for pose questions and pass judgement, and the actor may face consequences .

By adopting this definition, various questions are raised relating to who is t forum, what is the obligation, and how the obligation can be enforced in such may indeed face consequences. Those questions may be answered differently depe instance, the scale and context in which accountability is evaluated (local, na

global governance, environmental governance, corporate governance, network gov
This can also change depending on the entity to which it is applied (officials,
corporations, networks, etc.) (e.g. Mason, 2008; Bovens, 2007; Mulgan, 2000;
Therefore, any empirical study on accountability should start with answering
questions (Bovens, 2007; Papadopoulos, 2007; Brinkerhoff, 2004; Romzek, 2000):

Who is held accountable? Who is/are the accountable actor(s)?

To whom, i.e. who holds to account? Who is/are the overseeing actor(s)?

For what, i.e. about what is the account to be rendered? This can be subst
results) and this can be procedural such as the decision-making process

How can the accountable actor be made accountable for their action
(procedures, mechanisms to correct deviant behavior through sanctions .)

5. Results

5.1 Evaluating legitimacy of bottom-up initiatives to flood risk management

Facing several definitions from social scientific disciplines, TRANS-ADAPT has p
normative political/policy science perspective, since we are dealing with the a
design of bottom-up community initiatives as a form of a political system.

We focus here on interactive governance modes such as networks, given its sig
(global) governance, and given the fact that the Trans-Adapt case studies can a
examples of network arrangements in which the local public authorities collab
private stakeholders for the planning and implementation of flood risk managemen
the legitimacy of network arrangements the procedural characteristics of the
processes are very important (e.g. Sørensen and Torfing, 2005). Acceptance
promoted through the direct participation of stakeholders (Paavola, 2008; Adger
through an open deliberative process which leaves room for reasoned debate (e.
B ckstrand et al., 2010). Furthermore, participation and deliberation may increa
and facilitate implementation (e.g. Lemos and Agrawal, 2006; Juhola and Westerho

For the operationalisation of the legitimacy criterion into indicators it is use
the key challenges related to legitimacy in the context of interactive governa
networks. Key challenges to the legitimacy of networks include (e.g. Papadopoul
and Agrawal, 2006; Few et al., 2007):

Skewed interest representation

Limited quality of participation

Limited quality of deliberation.

Legitimacy for whom?

Here the questions arise with respect to:

the legitimacy of whom or what are we evaluating?, and
in the eyes of whom?

It is proposed here to use the community initiative including the public-privat
and stakeholders in the different case studies as the unit of analysis for t
legitimacy criterion in terms of the of whom/what question. This network of
regarded as legitimate, i.e. have authority, in the eyes of the participants o
legitimacy) as well as in the eyes of outsiders/the community in general (exter
to whom question).

The indicators that are proposed in the table below are based on the typology of input and output legitimacy.

Indicator 1: Inclusive and equal interest representation (input legitimacy)

This indicator deals with the question of who participates. Skewed interest representation is a challenge to be addressed here. Networks are not sufficiently pluralist (i.e., not representative of society at large (Papadopoulos, 2007)). The representation reflects unequal power relations, such that certain elites obtain a dominant voice through their position in the governance network, leading to procedural and distributive inequities (e.g. Bogason and Musso, 2006; Lemos and Agrawal, 2006). Moreover, short-term economic interests (housing, tourism) may overshadow long-term non-economic interests (flood risk reduction). The hypothesis is that the more all interests, including weaker long-term interests, are represented, the higher the legitimacy of the network.

Indicator 2: Quality of participation (throughput legitimacy)

This indicator deals with the question of how stakeholders participate. Quality of participation is determined by the possibility to influence the decision-making by the stakeholders. The key regarding participation lies in the true nature of stakeholders' influence on decision-makers. Decision-makers might use participatory processes as window dressing to legitimise their outcomes (Few et al., 2007). The hypothesis is that the more the participants have real influence on the decision-making process, the higher the legitimacy of the network.

Indicator 3: Quality of deliberation (throughput legitimacy)

This indicator also deals with the participation process. Deliberation is about how decision-making is realised on the basis of integrating mechanisms such as deliberation rather than through traditional democratic representation (Bekkers & Edwards, 2006; Smith, 2003). All stakeholders need to critically engage in unconstrained dialogue, share arguments, increase their knowledge base, widen their own perceptions, and move beyond personal preferences (Renn, 2006). Legitimacy rests on all stakeholders understanding and accepting the rationale behind the outcomes, although disagreement may pertain to specific details. A key issue lies in the stakeholders' ability to understand complex informational rationales behind decision-making, in particular with lay people such as residents (Renn and Semenza, 2008). The hypothesis is that the higher the quality of deliberation, the higher the legitimacy of the network.

Indicator 4: Acceptance of outcomes (output legitimacy)

This indicator related to output legitimacy is very straightforward and concerns the acceptance of the outcomes of the Trans-Adapt case study. It might still be necessary to identify the outcome(s) are referred to in the case studies, and whether this outcome can be identified in each case study, for instance the flood risk measure that is implemented. We do not want to leave it open, and ask the interviewees which outcome for them is most important. The hypothesis is that the more the outcomes of the network are accepted by the participating community in general, the higher the legitimacy of the network.

The indicators used to evaluate legitimacy are gathered in this table (Table 1) and the corresponding levels of scoring.

	Score 1 : low	Score 2 : medium	Score 3 : high
Quality of interest representation	Some interests are under-represented; particular the weaker	All interests are represented but representation is not direct	All interests are represented; there is an equal representation of those interests

(process)	of flood protection.	interests over others	
Quality of participation (process)	No real influence on decision-making in the policy process by participants of the network	Limited access to/influence in the policy process, especially in terms of the stages of the policy process, or in certain specific parts of the process	High access to and influence on major stages of the policy process by all participants
Quality of deliberation (process)	There is hardly any deliberation, and it is symbolic rather than substantive according to participants in the network	There is deliberation but discussions are not so constructive in the network for participants	There is ample deliberation; open exchange of argumentation and discussion is encouraged
Quality of outcome as measured by the acceptance of that outcome (outcome)	The majority of participants in the network do not accept the key outcome chosen flood risk management	The outcome is accepted by participants of the network (internal legitimacy)	The outcome is accepted by the participants and by the community in general (external legitimacy)

Table 1 : Legitimacy Indicators & Scoring for TRANS-ADAPT project (adapted from Mees et al., 2014)

5.2 Evaluating accountability of bottom-up initiatives to flood risk management

The TRANS-ADAPT project analyses community-based initiatives, in which the local authorities (municipalities) collaborate with local private stakeholders. Those initiatives are classified as network arrangements. For the operationalisation of the accountability indicators to evaluate the accountability of the TRANS-ADAPT cases it will therefore take account of the challenges related to accountability in the context of networks.

Key risks for the accountability of public-private networks include (Papadopoulos 2004, p. 200):

1. Opaque/informal decision-making procedures
2. Diluted, shared responsibilities among a large number of actors
3. Networks often operate in isolation from democratic institutions
4. Networks are not sufficiently pluralist (re interests) and representative

Indicator 1: Clear allocation of responsibilities

This indicator addresses the *who* question, which can be linked to the challenge of shared responsibilities. It is difficult to hold the network accountable, if responsibilities are shared and diluted. Who should be held accountable for what? If the actors in the network do not meet the basic criteria of accountability and transparency, the network itself cannot be held accountable (Papadopoulos 2004, p. 200). In order to hold the individual participants in the network accountable, it is necessary to know who is responsible for which task in the network. The hypothesis is that the higher the clarity of responsibilities are allocated among the participants of the network, the higher the accountability of the network.

Indicator 2: Influence of elected representatives

This indicator addresses the *to whom* question, which can be linked to the challenge of accountability from democratic institutions. Besides peer accountability (mutual accountability within the network) which is difficult to monitor and control, it could be important to have elected representatives of the community (members of council, Aldermen), for example to make decisions regarding the project (so this is political accountability). It is

the interests of the actors in the network from the interests of the wider community by elected officials. It may well be that an important interest of the wider community is represented in the actor network, and therefore political accountability will be high. This political accountability enables a functional separation of power between decision-making formulation in the network, and the constituent power dedicated to institutions that are accountable to citizens (Papadopoulos, 2007, 485). This is a phenomenon, and the democratic anchorage of networks (Sørensen and Torfing, 2005).

This echoes back to the 'quality of participation' in the throughput legitimacy hypothesis that the participants of the network have real influence in the decision-making process. In the present indicator, we look at the contrary. Both situations exist: direct representation by relevant stakeholders AND decisions being accountable to the elected representatives that they should reflect the interests of society as a whole. In other words: the network represents the wider community that are not covered in the network. Therefore the network does not represent society as a whole. So they are complementary even if it sounds like they are not. The hypothesis is that the more elected representatives can influence the major decisions, the higher the accountability of the network.

Indicator 3: Transparency

This indicator addresses the for what question, and is linked to the challenge of decision-making procedures. Networks cannot be held accountable if the procedures, voting mechanisms and decision-making processes are not open to scrutiny (Benner et al., 2004). The hypothesis is that the more open and transparent the decision-making processes are, the higher the accountability of the network.

Indicator 4: Sanctioning mechanisms

This indicator addresses the how question. It is not directly linked to any particular hypothesis but is very relevant in light of the fact that the principal-agent relation in networks is often weak and therefore there is no principal to punish the agent to correct the agent's behavior. If a network formulated its own sanctioning mechanisms, are they dependent on external mechanisms like naming and shaming the main or even only whistle blowing mechanism? The hypothesis is that the more sanctioning mechanisms are in place within the network, the higher the accountability of the network.

The 4 indicators are gathered in a table in order to evaluate the TRANS-ADAPT concept. The table was developed with 3 levels of scoring.

	Score 1 : low	Score 2 : medium	Score 3 ghh
Allocation of responsibilities	Responsibilities are not clearly defined for each participant and for different tasks	Responsibilities are defined, and clear for participants of the network	Responsibilities are defined per participant/task, and are completely transparent to other participants of the network and outside the network
Influence of elected representatives	There is no influence of elected representatives on the major decisions of the network	Council members/Aldermen were involved in decisions, but there was no formal ratification of their power	Council members and/or Aldermen have been able to influence the major decisions and there was a formal ratification of the major decisions by those council members/Aldermen

Transparency	There is no transparency regarding the decision-making rules, procedures, etc. of the network	There is transparency within the network, but not for outsiders	There is full transparency of the decision-making process, also for outsiders. The procedures have been written down on paper and are openly published
Sanctioning mechanisms	There are no sanctioning mechanisms in place	There is a sanctioning mechanism in place, but it is not widely used or not effective	One or more sanctioning mechanisms are clearly discussed and applied within the network

Table 2 : Accountability Indicators & Scoring for TRANS-ADAPT project

6. Analysis and discussions

The challenge of the evaluation framework on how bottom-up and community-led management is to build relationships between the two participation criteria (Accountability) and the other Governance criteria: Efficiency, Effectiveness, Social Capacity.

Concerning efficiency, we first need to ask ourselves the question of the efficiency. What should be efficient? TRANS-ADAPT makes a basic distinction between bottom-up and multi-use flood strategy as a process (stressing the decision-making community-led) and an outcome. First, the criterion of efficiency seems to better fit the outcome dimension of TRANS-ADAPT. The outcome dimension corresponds to the output of the input output ratio, the effect dimension of the cost effect ratio, and the cost benefit ratio. TRANS-ADAPT is about whether the chosen multi-use flood alleviates the most efficient.

Then, concerning the criteria of effectiveness, we evaluate it in terms of an input process, or we can evaluate in terms of the outcome(s) of that process, i.e. flood alleviations. The most logical choice seems to be to evaluate effectiveness in terms of the TRANS-ADAPT case studies. The evaluation will be carried on the outcomes of the process on the process itself. Even the process effectiveness is based on an outcome, i.e. other policies or norms. So, for transparency, we should be able to provide argumentation that the community initiative has created such outcomes, and that the outcomes (flood alleviation) were not the result of something else.

Third, the notion of who wins and who loses and how those decisions are made is a matter of contention within and between societies. The issue of social justice with respect to flood risk management has been extensively researched. Recognising these increasing risks, a number of scholars have sought to understand the justice issues that societies face through the lens of flood risk management. The lack of fairness in flood risk management decision-making is a result of vulnerability and inequality and called for nationally consistent practices and structural strategies. Such an approach, coupled with greater autonomy over flood risk management decisions at a local level, may alleviate the vulnerability and injustice that exist. In contrast, decision-making is best made at a national level with respect to flood risk management sustainability and the wider concerns of society are to be taken into consideration. Priest (2008) call for a greater understanding in determining the feasibility of community-led partnerships with respect to flood risk management focusing on a combination of bottom-up and top-down approaches. Furthermore, they stipulate the need for more radical approaches to engage local stakeholders and their resources in the decision-making process. The current analysis continues to act as the primary decision mechanism for flood protection.

Finally, the question raises whether those most densely populated cities will be challenged by the challenges of developing social capacities at individual, community and organisational levels. These challenges may prove particularly problematic for enhancing social capacity at a local level. It is widely recognised that structural measures alone will be insufficient to deal with the economic and human losses from extreme flooding in the future. As non-structural measures gain prominence, increased public engagement and participation, and a collaborative process between stakeholders is needed to manage the risks posed by flood risk. Effective flood management will require further co-operation between multiple actors from across the city, including, but not limited to, civic society and public and private sectors in order to reduce the losses from flooding are to be curtailed or reversed. Furthermore, adopting an individualistic approach alone to social capacity building does not necessarily produce desired outcomes. A more participatory approach is argued, is too paternalistic and does not recognise the mutual learnings that can be shared between builders and those with a capacity deficit. A move towards a system where participatory capacity building measures are recognised as inter-dependent is needed. In flood risk management is to be addressed effectively. Social capacity is an iterative process and needs to take account of multi-actor interactions, unexpected outcomes and feedback loops from previous actions and feedback loops.

To address the challenge of linking those criteria, we will test the framework in a project located in Le Mans, on the Sarthe river. The Ile aux planches is a leisure park and flood control system in the city. Le Mans Agglomeration accounts about 200 000 inhabitants. In the 1990s, the city of Le Mans has been strongly hit by floods. The Ile aux Planches is located close to the city centre. It was created in 2008 on a brownfield site. It includes playgrounds for children, green areas dedicated to festivals and cultural events, and a space left for biodiversity. The flood issue has been tackled within this project with a park that has been designed so that it can be flooded (10-year and 50-year floods) with specific plantations, public benches secured to the ground). From the start, the project was supported by two local NGOs. After the city had been hit by major floods, some of the initiatives were supported by a supporting association. Another association of the district residents was created to promote the sustainable use of the brownfield site. At that time, it belonged to a national utility company (EDF), willing to sell it to building promoters. The local NGOs fought against this project and proposed to Le Mans Agglomeration to use the site as a leisure park adapted to floods and contributing to risk management. Le Mans Agglomeration took the responsibility for implementing it. After implementation, the supporting association kept organising cultural and social events on the site. Today, it is a park and regularly used for public events. Its function as a spillway and retention area has been successful.

7. Conclusions

TRANS-ADAPT will use this evaluation framework, including participation evaluation, to assess the success of the initiatives and of the outcomes. The participation concern is highlighted in the case studies and the evaluation will give insights about the level of success and the processes. TRANS-ADAPT also explores and analyses what and who is behind the initiatives (in response to economic and socio-ecological pressures) and will tease out the motives of different actors. Key aspects of multi-functional initiatives that are relevant for their success and sustainability will be employed to present best practices and develop recommendations/guidelines for the application of such approaches in other institutional and organisational settings. The challenges of climate change for society. Further, we will research the extent

functional approaches to risk reduction are promising in solving local problems and learning lessons from such initiatives.

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