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Learning and Action Alliance framework to facilitate stakeholder collaboration and social learning in urban flood risk management

E.C. O'Donnell[a,*], J.E. Lamond[b], C.R. Thorne[a]

[a] School of Geography, University of Nottingham, Nottingham, NG7 2RD, UK
[b] Centre for Floods, Communities and Resilience, University of the West of England, Bristol, BS16 1QY, UK

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ABSTRACT

Flood and water management governance may be enhanced through partnership working, intra- and cross-organisational collaborations, and wide stakeholder participation. Nonetheless, barriers associated with ineffective communication, fragmented responsibilities and 'siloed thinking' restrict open dialogue and discussion. The Learning and Action Alliance (LAA) framework may help overcome these barriers by enabling effective engagement through social learning, and facilitating targeted actions needed to deliver innovative solutions to environmental problems. By increasing the adaptive capacity of decision-makers and participants, social learning through LAAs may lead to concerted action and sustained processes of behavioural change. In this paper, we evaluate the LAA framework as a catalyst for change that supports collaborative working and facilitates transition to more sustainable flood risk management. We use a case study in Newcastle-upon-Tyne, UK, to demonstrate how the LAA framework brought together disparate City stakeholders to co-produce new knowledge, negotiate innovative actions and, ultimately, work towards implementing a new vision for sustainable urban flood risk management. The shared vision of Newcastle as a 'Blue-Green City' that emerged is founded on a strong platform for social learning which increased organisations' and individuals' capacities to manage differences in perspectives and behaviours, reframe knowledge, and make collective decisions based on negotiation and conflict resolution. Broad recommendations based on lessons learned from the Newcastle LAA are presented to aid other cities and regions in establishing and running social learning platforms.

1. Introduction

In England and Wales, annual expected damages due to flooding exceed £1 billion (Environment Agency, 2014) and are predicted to rise due to projected increases in the frequency, intensity and magnitude of storm events (Ramsbottom et al., 2012). This is a particular issue for cities, which predominantly comprise impermeable surfaces and rely on piped drainage systems (Ashley et al., 2015). Future urban flood risks are further exacerbated by increasing urban development which, over the next 50 years, may lead to a 60–220% increase in damages caused by surface water flooding (Adaptation Sub-Committee, 2012). In responding to these predictions, the UK has moved from flood defence to flood risk management, investing in portfolios of Urban Flood Risk Management (UFRM) measures, rather than being over-reliant on engineered structures (Defra, 2005). This has led to an ongoing transition from solely 'grey' infrastructure towards more resilient approaches that recognise the contributions possible using Nature-Based Solutions in the wider catchment (Environment Agency, 2010), Sustainable Drainage Systems (SuDS) and other multi-functional infrastructure in 'Blue-Green Cities'.

A Blue-Green City aims to recreate a naturally-oriented water cycle, combining water management and green infrastructure to generate multiple benefits (Hoyer et al., 2011). Blue-Green Infrastructure (BGI) including bioswales, attenuation basins, rain gardens, green roofs/walls, street trees and restored urban watercourses, mimics pre-development hydrology by increasing interception, infiltration, evapotranspiration and storage. In addition to managing water quantity and reducing flood damages, multifunctional use of blue-green spaces under non-flood conditions generates additional economic, social and environmental benefits (O'Donnell et al., 2017a). BGI can help meet the strategic objectives for climate change adaption, biodiversity, urban regeneration, and public health and wellbeing, while extending the lifetime of existing grey infrastructure. However, it can be challenging to implement BGI as this requires the active involvement of urban stakeholders beyond those traditionally engaged in flood control (O'Donnell et al., 2017b). Consequently, there is a need for new ways of working that focus on collaborative planning, partnerships, and co-funding to deliver multifunctional URFM infrastructure (Ashley et al.,

* Corresponding author.
E-mail address: emily.o'donnell@nottingham.ac.uk (E.C. O'Donnell).

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2015; Margerum and Robinson, 2015). Additionally, experience gained in pioneering cities such as Portland, Oregon, demonstrates that implementing transformative change and creating BGI requires stakeholders to develop long-term, shared visions for achieving urban flood resilience, which requires collaboration between multiple organisations and branches of city government and administration (Thorne et al., 2015).

Such intra- and cross-organisational collaborations, together with broadening stakeholder participation, represent an evolving paradigmatic shift in environmental governance (Benson et al., 2013). Progression from traditional command and control management (Pahl-Wostl et al., 2007) towards collaborative working aligns with recommendations in the UK Flood and Water Management Act (FWMA, 2010). However, collaborative approaches are inherently challenging due to issues related to ineffective communication within and between departments and organisations, fragmented responsibilities, 'siloed' thinking, and constraints on resources that limit communication and knowledge sharing. 'Social' and 'active' learning have been suggested as methods to overcome these barriers by allowing stakeholders to experience different views on best management practices and become better informed before making decisions (Ison et al., 2007; Benson et al., 2016). Social learning, where actors interact to develop alternative perspectives (whether at the individual or group level) on societal issues and collectively enable change (Bos et al., 2013), is a key component of sustainable water management. It emphasises development of adaptive cross-sectoral capacities and co-production of knowledge to respond to dynamic social-ecological systems (Pahl-Wostl et al., 2008). Social learning through Learning and Action Alliances (LAAs) can facilitate changes in working practices by bringing together diverse viewpoints and objectives to negotiate solutions that generate multiple benefits (van Herk et al., 2011a; Ashley et al., 2012). LAAs originate from *Learning Alliances*, defined as "a group of individuals or organizations with a shared interest in innovation and the scaling-up of innovation in a topic of mutual interest" (Batchelor and Butterworth, 2008). Adding *Action* as a second aim emphasises the importance of the LAA in enabling its members to deliver the innovative solutions their collaborative learning identifies (Newman et al., 2011).

This paper illustrates how LAAs can facilitate social learning to develop the capacity of different stakeholder groups to coalesce around innovative UFRM solutions. We begin by outlining the concept of social learning before introducing the LAA framework. We then demonstrate the capacity of LAAs to catalyse and synergise changing practices through collaborative working that facilitates the transitions required to deliver sustainable UFRM. We use a Newcastle case study to demonstrate how LAAs can work in practice. Finally, lessons learned from the Newcastle LAA are summarised and recommendations for enhancing social learning through LAAs are proposed.

2. Social learning through LAAs

While social learning remains a contest term (see discussions in Pahl-Wostl et al. (2007) and Benson et al. (2016)), the importance of gaining new knowledge to enable change is paramount in all definitions.

2.1. Benefits of social learning in transformative thinking

Social learning may be equated with individual level change (Bandura, 1977), collective level change (interpersonal change within wider social contexts, e.g. Pahl-Wostl, 2009), and/or collective learning; where social or institutional transformations at the group level are achieved through learning across members of a group (Gerlak and Heikkila, 2011). Social learning increases the adaptive capacity of decision makers and participants and, through interaction and deliberation, may lead to joint action and sustained processes of behavioural change (Pahl-Wostl et al., 2007). Social learning can also be seen to contribute to greater depth in learning as categorised by single, double and triple loop learning (Hurlbert and Gupta, 2017). According to Medema et al. (2014), multi-loop social learning is an essential element of land and water management in order to recognise the limitations of institutional and governance structures and to explore more participatory models. Development of trust between participants in the social space allows for "problem fixing" changes in practice (single loop), deeper understanding leading to institutional changes (double loop) and discussion of fundamental assumptions including expression of doubts in accepted norms and values (triple loop) (Hurlbert and Gupta, 2017). This kind of learning leads to transformation because it asks the question "how do we decide what is the right thing to do" (Medema et al., 2014), potentially leading to calls for policy and governance changes. On an individual level it can fundamentally shift perspectives, attitudes and behaviours. Social learning is closely associated with triple loop learning because the required depth of discussion is difficult to foster within hierarchies and can more readily occur between peers in less formal learning environments. In the context of LAAs, social learning can be achieved at the individual level, e.g. change in individual attitudes through the acquisition of new knowledge, and collective level, e.g. community interaction leading to joint understanding of a problem and mutually agreed action. Effective multi-loop social learning in LAAs can be demonstrated by short-term changes (e.g. new collaborating stakeholders) and long-term changes in policies and governance structures. Social learning may thus be regarded as a duality that combines the dynamics of practice with a governance framing that is supportive of that practice, and therefore a systemic approach to governance (Ison et al., 2013).

2.2. The LAA framework

The LAA framework represents a viable mechanism to facilitate social learning through the creation of a negotiated vision to address 'wicked' problems. LAAs are open arrangements wherein participants with a shared interest in innovation and implementing change create a joint understanding of a problem and its possible solutions based on rational criticism and discussion (Ashley et al., 2012). LAAs promote cooperation between stakeholders from different disciplines and backgrounds by breaking down barriers to both horizontal and vertical information sharing and accelerating identification, adaptation and uptake of new information (Batchelor and Butterworth, 2008). Continued processes of social learning allow stakeholders to create flexible networks, building the trust necessary to enable collaboration through formal and informal relationships (Pahl-Wostl et al., 2007).

LAAs encourage stakeholders to bring their knowledge and expertise and talk freely outside the constraints of existing formal institutional settings. They share many attributes with alternative stakeholder platforms and social learning environments, but the emphasis is on *development* rather than *transfer* of knowledge through joint learning where there are no established experts (Gourgoura et al., 2015). The atmosphere of mutual ownership increases adaptive capacity and facilitates the identification of innovative ideas for the solution of complex socio-technical problems and allows temporary setting aside of organisational "interests" in favour of the alliance. Development of shared meaning and values provides the basis for such collective action (Pahl-Wostl et al., 2007). The ultimate goal is for ideas developed at LAA meetings to be progressed through formal decision-making channels, not only leading to implementation of innovative solutions, but also bringing about institutional change (Verhagen et al., 2008).

LAAs are dynamic groupings that evolve organically. They are often led by academic research projects with the freedom to address sensitive or controversial issues without a perceived hidden agenda. Responsibilities typically pass to other members after initial relationships and working arrangements have been established. LAAs have been trialled as frameworks to tackle urban flood and water management in the UK, Netherlands, Germany and Norway, as part of EU