WeSenseIt
Citizen Water Observatories

CITIZEN OBSERVATORY POLICY BRIEF

CITIZEN PARTICIPATION IN THE DIGITAL AGE – FROM POLICY TO PRACTICE

INTRODUCTION TO THE ISSUE

Floods, droughts and other weather-related extreme events are among the key risks that endanger the biodiversity, ecosystem, infrastructure and citizen's well-being in Europe. Europe suffered from more than 100 major floods between 1998 and 2004; around 700 deaths, displacement of 500,000 people and a minimum estimated insured economic loss of €25 billion are the results of these events for European countries (European Commission, 2014). Furthermore, it has been predicted that the number of people who are affected by floods, mainly driven by climate change, and the annual monetary damage resulting from that will double during the next 70 years (Ciravegna, Huwald, Lanfranchi, & Wehn de Montalvo, 2013; Ciscar et al., 2009).

To face these challenges, nowadays, flood risk management approaches focusing on non-structural measures are advocated. Stakeholder participation in decision making - and in flood risk management in particular - has been recognized by international and regional treaties such as the Aarhus Convention (1999), which promotes public participation in decision making on environmental issues, and the European Flood Directive 2007/60/EC, which requires the establishment of public participation mechanisms to ensure citizens' involvement in the flood management cycle.

1.2| Participation – easier said than done

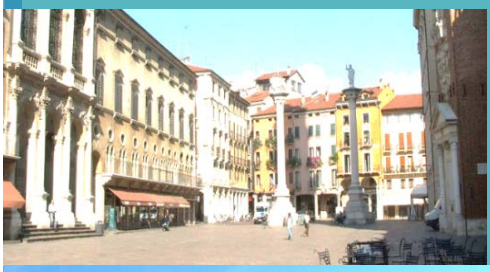
On paper (de jure), formal institutions, such as the Flood Risk Directive, the EU Water Framework Directive and the Aarhus Convention require citizen participation (in flood risk management), but, de facto, the importance given to these and the extent of their implementation varies. Also: while participatory approaches are commonly presented as a means for leading to more informed and effective policies, several studies have also shown that many participatory approaches fail to do so (Edelenbos and Klijn, 2006; Behagel and Turnhout, 2011).

Three EU case studies

This brief builds upon experiences in the three case studies of WeSenseIt (an EU funded FP7 project). WeSenseIt designed and implemented three citizen observatories, in order to test, experiment and demonstrate their purpose.

The observatories were deployed in Doncaster (UK), Vicenza (Italy) and Delfland (Netherlands). Each was fed with data by both physical sensors (e.g. water level sensors) and social sensors (e.g. mobile applications).

All three observatories focused on flood risk and put into place in collaboration with water management and/or civil protection agencies.



2| FROM PAPER TO PRACTICE

The innovative combination of existing and new sensor technologies and other ICTs such as mobile apps, Web 2.0 services and web applications has given rise to so-called citizen observatories, in which the observations of ordinary citizens, and not just those of scientists and professionals, can form an integral part of (earth) observation and decision making. Citizen participation can now span from data collection to actual involvement in decision making (see figure below).

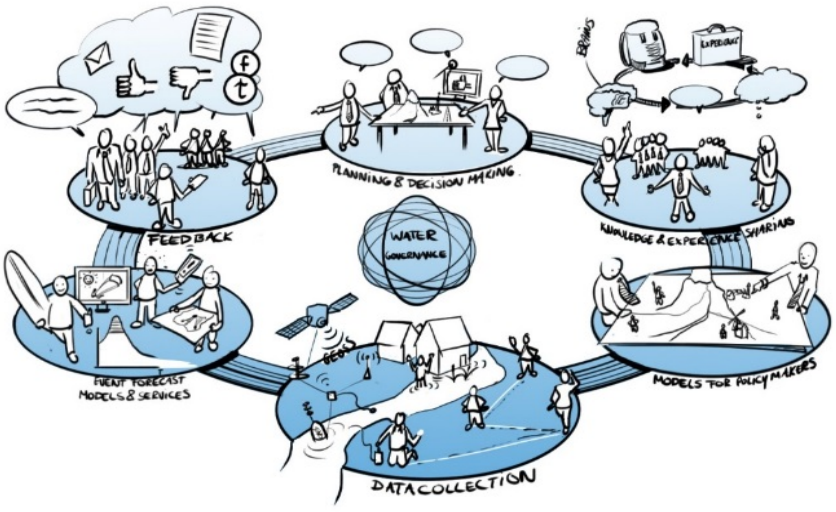
Next to the technological innovations and the resulting improved density of information available for environmental management, the citizen observatories present the potential for considerable improvements in terms of social innovations. Their features can enable a two-way communication paradigm between citizens and decision makers, potentially resulting in profound changes to existing flood risk management processes.

2.1| Experiences

Between 2013 and 2016, three citizen observatories on the topic of flood risk management were designed and implemented in different policy contexts (see side bar). One of the first and most valued outcomes in all three cases was the levelled access to relevant and specific information between stakeholders. Authorities can now make use of the eyes and ears of citizens, while citizens and other stakeholders have gained insight in the data that is used to base decisions on (pumping regimes, road closures, etc.). This emancipates the dialogue and enhances the effectiveness of participation.

The observatories facilitated the dialogue between stakeholders, but could not force this dialogue into existence. For all involved parties, feedback on their efforts was needed for them to stay engaged and keep sharing. The success and use of the observatories was therefore dependent on whether and how the involved authorities wanted to cooperate with citizens and other stakeholders. This is not an easy decision since this cooperation comes with responsibilities both, in terms of continuity and responsiveness.

In all three cases, the authorities appear hesitant to transfer their interactions with citizens into the online environment of the observatory, owing to fears of interrupting already establish procedures and the need of having to respond. Liability and accountability concerns are particularly salient in the preparation, impact and response phases of flood risk management (e.g. having to respond quickly to online posts about flooding, creating an additional channel for the emergency response team, separate from their existing decision support systems).



The **key aspect of citizen observatories** is the direct involvement of user communities in the data collection process as 'social sensors'.

Citizen participation can now span from **data collection and provision** (e.g. monitoring water levels using a range of sensors), **feedback and knowledge exchanges** (via mobile apps or online platforms) to actual **involvement in decision making**

Different choices in that respect were made in the three case studies, leading to very different outcomes in the observatories.

In one case, the authorities decided to give the community ownership of the observatory. The online platform got a peer-to-peer focus and was used by the authorities only to monitor the situation on the ground.

> Implementing a citizen observatory is **not 'plug and play'**, but needs attention for local issues, interests and context.

In another case, the authorities took the opposite stand and kept full responsibility for what was posted, when and by whom. This online platform became a tool for coordination and communication between trained volunteers and emergency services. Here the platform was so successful that it was not only implemented in the case study area but at a regional level, with the embedding of the concept of citizen observatories into the regional policy as a means for environmental resources management.

In the last case, the decision was made to build on existing communication structures to ensure responsiveness. The online platform in this case knew little activity. Respectively the results for their flood risk management strategies focused on (1) sharing information and building community trust, on (2) competences in the community and effective response or on (3) efficient and effective risk mitigation. Each of these three outcomes were valued in their own local context by local stakeholders. This shows that citizen observatories are tools that can help to generate or support an array of participation approaches, depending on how the tools are put to use.

> The changes resulting from the introduction of citizen observatories are **location-specific** and **locally-shaped**.

3 | LESSONS LEARNED

Engaging citizens in flood risk or environmental management through the means of a citizen observatory can be very successful, but the implementation of the observatory requires more than ICTs and a top-down decision to make it work. Implementing a citizen observatory is not 'plug and play', but needs attention for local issues, interests and context. The best approach is tailor-made and depends on local case-specific objectives and context (such as flood risk, history, democratic objectives and even budget cuts).

The three case studies demonstrated how acutely aware authority representatives are already of the responsibilities that go hand-in-hand with engaging with their citizens. The cases show that the belief that citizen engagement should be done only if "you're in it for the long run" is widely shared. The self-imposed standards for responsiveness are very high – and almost paralysing. Trust, ownership, continuity and responsiveness are indeed important issues to take into account. And given different traditions, cultures and backgrounds, these issues need to be resolved differently in each case. This leads to different implementations and, thus, distinctive experiences with citizen observatories.

> Connecting stakeholders in a citizen observatory can be **beneficial for the inclusiveness** of the community. But: with creating those connections comes the responsibility to **offer continuity and be responsive.**

One generic way to build trust is the actual use of the data collected by citizens. In any observatory, citizens will provide additional information into existing systems, whether in the form of incidental observations or feedback on policy and strategy developments. The authorities need to take these inputs seriously to maintain their legitimacy. Just like flood risks, data can be perceived and interpreted very differently by different users.

Transparency on how data has been gathered, translated into information, for what purpose and for whose benefit is therefore crucial.

In addition, the active involvement of citizens as human sensors (providing intended and volunteered observations using sensor technologies or cameras) may be the necessary trigger for greater flood risk awareness and participation. However, more advanced levels of citizen participation in flood risk management are highly reliant on the role granted for citizens by the authorities.

4 | POLICY RECOMMENDATIONS

To improve stakeholder participation in environmental decision making and flood risk management in the digital age, citizen observatories can provide useful and practical approaches. Their implementation raises key policy issues to which responses are suggested below.

1. Citizen observatories should be not be seen as a panacea nor as a 'quick fix' for including non-structural measures in flood risk measurement. The technical features and functionalities of citizen observatories (physical and social sensors, visualisation, e-collaboration and feedback, etc.) are not 'plug and play' solutions for implementing 'good' governance per se (Wehn et al., 2015b,c; Wehn and Evers, 2015). Instead, they are the tools that can be used to interact and engage with local stakeholders. Citizen observatories should therefore be seen as socio-technical frameworks that can provide a mutual / shared framework for all actors. When including citizen observatories in river basin management plans or in regional or national policies, *this requires careful articulation in the respective policies*, with clear attention for the actual implementation process of citizen observatories.

2. Citizen observatories can have different 'shapes and sizes' since, despite legal mandates, citizen participation is locally defined. Although legal obligations for citizen participation in flood management exist, local patterns of participation prevail. Different authorities have differing perceptions of citizen participation in flood risk management in terms of the citizens' roles and influence. Citizen observatories may serve many different objectives. But ultimately, for more advanced levels of citizen participation, the potential for changing the role of citizens is highly reliant on the room that citizens are granted by authorities - but also on that claimed by citizen. *These changes need to be reflected in - but also enabled by - local policy*.

3. Setting up citizen observatories can be done in many different ways and therefore requires different resources and approaches. Next to the implementation of relevant technologies that enhance current decision making, the willingness of citizens to share data is essential. So is the willingness to cooperate, by both, professionals and citizens, raising the importance of mutual trust. For citizens, the appeal of an observatory is grounded in their current concerns. *Data policies that ensure transparency on how data has been gathered, translated into information, for what purpose and for whose benefit are therefore prerequisites for citizen observatories* – and thus for greater flood risk awareness and participation.

Further reading and References

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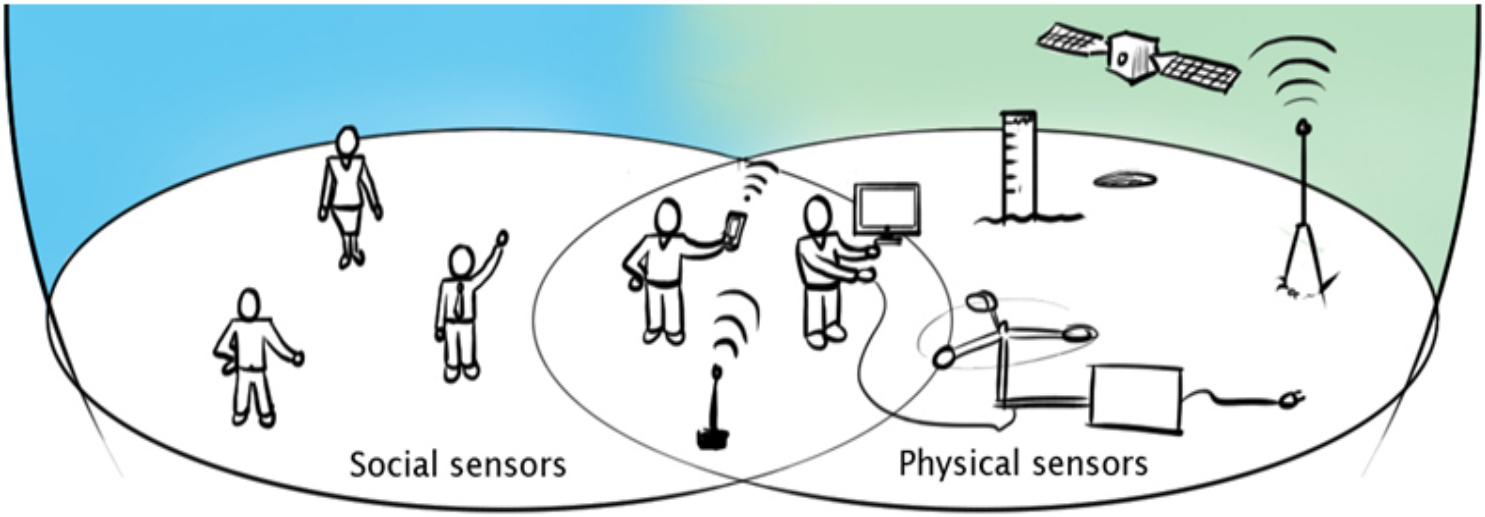

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UNESCO-IHE is the largest international graduate water education facility in the world and is based in Delft, the Netherlands. The Institute confers fully accredited MSc degrees, and PhD degrees in collaboration with partner universities. In addition, more than 1,000 Tailor-made and Short courses have been delivered to participants world-wide in the last 10 years. Also, numerous research and capacity development projects are carried out throughout the world.

The mission of UNESCO-IHE is to contribute to the education and training of professionals, to expand the knowledge base through research and to build the capacity of sector organizations, knowledge centres and other institutions active in the fields of water, the environment and infrastructure, particularly in developing countries and countries in transition.

WeSenseIt

Citizen observatories of water.
EU FP7 project (2012 to 2016) that developed citizen observatories of water focused on flood risk management. UNESCO-IHE lead the work on Integrated Social and Physical Sensors Networks and on Governance and Social Innovation, as well as the Dutch case study.
www.wesenseit.eu

Ground Truth 2.0

Environmental knowledge discovery of human sensed data.
H2020 project (2016-2019) to deliver the demonstration and validation of six scaled-up citizen observatories in real, operational conditions, with 4 European and 2 African demonstration cases. UNESCO-IHE is the Project Coordinator and leads the work on the Social Dimensions of Citizen Observatories.
www.gt20.eu

SCENT

Smart Toolbox for Engaging Citizens into a People-Centric Observation Web.
H2020 project (2016-2019) enabling citizens to observe their environment & influence environmental policy making. UNESCO-IHE leads the work turning observations into spatio/temporal flooding patterns.
https://twitter.com/SCENT_EU

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