Chapter 89
Can Citizen Science Seriously Contribute to Policy Development?
A Decision Maker's View

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ABSTRACT

This chapter considers the potential for citizen science to contribute to policy development. A background to evidence-based policy making is given, and the requirement for data to be robust, reliable and, increasingly, cost-effective is noted. The potential for the use of 'co-design' strategies with stakeholders, to add value to their engagement as well as provide more meaningful data that can contribute to policy development, is presented and discussed. Barriers to uptake can be institutional and the quality of data used in evidence-based policy making will always need to be fully assured. Data must be appropriate to the decision making process at hand and there is potential for citizen science to fill important, existing data-gaps.

INTRODUCTION

The research presented in this chapter has contributed to the European Union FP7 project COBWEB (EU FP7 reference number: 308513). COBWEB is a multidisciplinary citizen observatories project that aims to develop a data collection and sharing platform for crowdsourced or citizen science data, using standards and interoperability principles (Leibovici *et al.* 2015; Hodges *et al.* 2014). Contributors are mostly non-expert and can use this platform to customise their own data collection projects or campaigns,

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communicate with other contributors, and share and find data that are of interest to them. An overarching goal of the project is to enable the collection of data that ultimately can be sourced and accessed and used by policy makers; this data must be suitable, robust and of a known quality for evidence-based policy making. As such, the Welsh Government has been involved since the start of COBWEB and contributes the views of government and decision makers to the development of the project. The views presented in this chapter are based on the involvement of the authors in the COBWEB project, rather than a comparison of a range of structure data collection methods, and draws on personal experience in the policy development arena.

With respect to policy development, governments are interested in the quality of data, knowing where they came from, why and, whether or not the data are fit for purpose. Collecting environmental datasets on the geographical and temporal scales required to make informed decisions and to develop a broad and robust evidence base can be an expensive and resource costly exercise when employing traditional methods of data collection. Budgets are becoming more and more limited, and governments are increasingly open to innovative and cost-effective solutions to source reliable data (Haklay *et al*. 2014). Concurrently, mobile devices are becoming increasingly ubiquitous and more powerful, enabling ordinary citizens and volunteers to contribute more and more data about their local environments than ever before. Decision makers are acutely aware of the potential for these developments to significantly contribute to the 'data gap' and, increasingly, government papers are calling for more and more volunteer data (POSTnote 2014).

The importance of stakeholder engagement as a central precept to policy development and decision making cannot be overstated although it has been argued that the quality of decisions made through stakeholder participation is strongly dependant on the nature of the process leading to them (Reed 2008). Directly working with stakeholders, COBWEB presents the opportunity to explore and demonstrate effective methods of engagement with different stakeholder groups that are organising high volume environmental data collection projects. This is an opportunity for Welsh Government to learn effective measures to strengthen the interface between policymakers, citizens and scientists with the aim of educating, informing and communicating. The potential for citizen science as a method to stimulate local participation in environmental governance in line with the key themes of sustainable development is also an area of great interest to government.

The question that is being tested here is simply whether or not there is real potential for volunteered data on the environment, on the whole collected by the non-expert, to contribute to evidence-based policy making. If this is the overall goal of this work (and it is ongoing) then there are a number of objectives that contribute to answering this:

- To identify the main barriers to the uptake of projects like COBWEB.
- To develop strategies that can be applied to overcome these barriers.
- To incorporate effective stakeholder engagement to better align the objectives and applications of citizen science projects with those of the policy/decision makers.

BACKGROUND

The term 'citizen science' is used within this chapter to denote the collection of spatially referenced data and information by persons involved in on-the-ground environmental projects that use the internet to

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