



How can policy making be improved by citizen science?

Meeting note from roundtable chaired by Ian Diamond, National Statistician

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Key points

- Citizen Science (CS) means doing science with citizens rather than for them. It is more than data collection, and more than “public engagement”.
- CS can advance science: new fields of research have directly emerged from citizen science studies, as have refined methodologies and protocols.
- Genuine participation in CS has proven impacts on individuals and communities. Using new CS models may allow involvement of groups previously unengaged with civic processes.
- There are significant hurdles in commissioning CS work from the policy professional perspective. Policy makers are often not aware of how to engage with communities or organisations. There is risk aversion towards CS.
- To ensure policy impacts, CS projects must be designed to that end. Efforts should be made to improve collaborative opportunities between citizen scientists and policy makers.

1. On scientific understanding

- CS expands the definition of what science is, rather than just “feeding into it”. It builds trust and understanding in science.
- CS can advance science: new fields of research have directly emerged from citizen science studies, as have refined methodologies and research protocols, such as in mental health research.
- CS allows both quantitative and qualitative data to be gathered in a single project.
- CS can provide a wide temporal and geographic scale that ‘professional’ scientists alone often cannot deliver, allowing for high-quality data collection which is often essential to policy development.
- There is value in thinking of CS projects involving a range of actors pulling together to achieve something: professional scientists, citizen scientists and policy makers. This enables multidisciplinary approaches.
- CS is already important in environmental and biodiversity policy making in the UK. It has potential to augment data collection in other areas, e.g. through farmer-led schemes.
- Citizen scientists often want action, demonstrating to scientists more broadly how science can lead to change. Action is at the core of how CS research questions are pursued, as in CS air pollution research.

2. On individuals and communities:

- CS means doing science with citizens rather than for them, yet citizen scientists often belong to limited demographic groups not representative of wider society. CS may not be inherently democratising: it requires effort to involve citizen scientists without existing skills and privilege – including to build trusted relationships.



- More time and energy are also needed to undertake complex projects (e.g. on mental health) compared to collecting data on wildlife, which leads to these areas being dominated by certain groups of people.
- Participation of highly educated people is not a bad thing (there is knowledge to gain from these groups) and there is clear value in mass participation exercises. However, there is also clear value in involving underprivileged people.
- Enthusiastic and widespread participation in CS has proven impacts. However, there is need for additional evidence and research on where these impacts happen, such as in the digital realm. It is often easier to see local impacts of CS; localised policies may be easier to affect. The scale of policy challenge should be considered in any CS project.
- Through CS, science is happening in new spaces. Using new CS models may allow involvement of groups previously unengaged with civic processes.
- Understanding why people and communities collect data presents opportunities for co-creation of CS projects and understanding public priorities.
- Technology should be used to help strengthen contacts between scientific and volunteering constituencies, helping CS grow and empower communities.

3. Barriers and solutions to involving citizen scientists in policy making

3.1 Barriers

- Some scientists and engineers may regard CS as a threat to their status.
- Officials and ministers may regard CS purely as a method of data collection and/or be sceptical about the quality of data generated by CS, not recognising that qualitative data collected by cheap instrumentation can still have significant value.
- Policy making is complicated and occurs through a range of formal and informal processes. Policy makers are not just policy professionals, but also special advisers, lobbyists etc. Citizen scientists will mostly be unfamiliar with knowledge hierarchies and processes of policy implementation (e.g. the use of quantitative vs qualitative data).
- Citizen scientists may themselves turn to lobbying as the most feasible way to achieve change, potentially causing scepticism about their motives. They are unlikely to think of policy reform as the primary aim of their efforts.
- There are significant hurdles in commissioning CS work from the policy professional perspective. Policy makers are often not aware how to engage with communities or organisations. There is risk aversion towards CS, where the processes are unfamiliar and outcomes uncertain.
- CS can't have transformative policy impacts without proper funding.

3.2 Solutions

- Education is needed in Government to overcome misconceptions and risk aversion around CS, such as learning & development for policymakers to experience CS.
- Before involving citizen scientists, policymakers should look at their own processes to ensure they are realistic and pragmatic.
- To ensure policy impacts, CS projects must be designed to that end. Efforts should be made to improve collaborative opportunities between citizen scientists and policymakers, perhaps through a CS centre for excellence, where the respective motivations of citizen scientists and policy makers can be explored, as well as discussions around types of evidence.



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- Co-created projects can find ways to negotiate challenges around unequal power dynamics between policy makers and citizen scientists, including the handling of data. They can address time/resource/skills barriers affecting certain citizens. False promises about “making a difference” should be avoided.
- The language and framing of CS is important. For example, “uncertainty” is a familiar issue for trained scientists, but less so for communities. This requires discussion in community partnered projects. Also, the term “citizen” isn’t inclusive enough (it doesn’t include non-UK citizens that are UK residents).
- CS is more than data collecting, but a key issue is knowing what data policy makers actually need. The Sustainable Development Goals could be a sensible route to get necessary CS data into policy making.
- Data systems require alignment so that citizen scientists and policy makers can use, share and interpolate the same data sets.

Participants

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