

Connecting People and Nature

Center for Study of Science, Technology and Policy

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The theme of the International Day for Biological Diversity 2021 is “We’re part of the solution”. This carries forward the momentum generated last year with the theme “Our solutions are in nature”. Nature-based solutions, comprising blue infrastructure such as wetlands, floodplains, rivers, canals, ponds, and water treatment facilities and green infrastructure such as forests, trees, lawns, parks, and fields have gained attention in recent years. While these solutions are heralded as promising and cost-effective measures to bend the curve on biodiversity loss, their mainstream acceptance is dependent on multiple factors — the fundamental one being public awareness and demand. One way to generate public interest in nature-based solutions is through citizen science initiatives.

What is citizen science?

Citizen science is the involvement of the public or people from non-academia in the process of scientific research, also referred to as participatory action research, civic science, community science, or crowd-sourced science. The concept of citizen science has gained attention and acceptance in recent decades. It is now seen as a tool for creating awareness among citizens, engaging them where possible, demanding action, and integrating the views and expectations of different stakeholders.

How and where can citizen science play a role?

The various stages in which citizen science can play a role include project demand, design, implementation, monitoring, and maintenance. Demand comes from the awareness of a problem and the scope for implementing a nature-based solution. Citizen science initiatives can sensitise citizens to a problem by involving them in documenting issues related to biodiversity, air and water quality, and other environmental issues.

A 2019 report by the DST Centre for Policy Research, Indian Institute of Technology Delhi, states that there are 25–30 citizen science projects on ecology in India. [Earthwatch India](#) reports 7,000 data points collected by citizen scientists in Bengaluru, which helped map associations between blue–green infrastructure and ecosystem resilience. Such initiatives are usually led by a scientist and provide opportunities to citizens for striking up conversations on the potential for nature-based solutions — creating awareness and motivating citizens to demand nature-based solutions.

Citizen involvement at the time of design revolves around promoting engagement with the living environment, creating awareness, and encouraging partnership and coalition so that citizens become involved in a project design. In [Sint-Andries in Antwerp](#), Belgium, the involvement of citizens alongside experts and the government is being promoted through the URBACT Local Group (ULG). This group was consulted to better understand and identify challenges of climate adaptation, for which they first mapped the area from a climate adaptation perspective. This was followed by the ULG identifying challenges, which substantiated by facts and figures from expert consultation were prioritised for implementation.

Likewise, in [Gothenburg, Sweden](#), the goal was to transform the Frihamnen area — an uninhabited harbour area — into a residential neighbourhood. Through a series of workshops and consultations, the City Council arrived at a consensus on how the area was to be developed, making use of features offered by the river and water as well as the historical heritage, designing an urban environment that was accessible to all, and involving citizens and letting them take possession of their city and influence how it was designed and used.

The scope for involving citizens in project implementation is quite limited, given the need for technical skills for implementation. This is evident in projects implemented in Bergen, Norway, and Bradford, England, for providing light rail transport and Aberdeen, Scotland, and Hamburg, Germany, for creating sustainable urban drainage and water storage systems. Here, citizen involvement was limited to consultations and building awareness as these were predominantly engineering-oriented solutions.

Involving people in monitoring and maintenance is feasible. This is because green infrastructure such as parks and recreational facilities are focused on people, and their maintenance and management are dependent on people who use them. In England, citizens' involvement in the maintenance of rain gardens and wetlands in Kent and Enfield, respectively, are examples of local voluntary groups involved in maintenance — potentially stimulating social cohesion and the lowering of budget for maintenance.

There is thus ample scope for citizens to be part of the solution through engagement at various stages, depending on the type of initiatives and projects.

Creating the niche for citizen science initiatives

Reduced budget, capacity, and scope for monitoring by institutions coupled with increasing awareness, public knowledge, and concern of citizens on human impacts on ecosystems have created the impetus needed for promoting citizen science involvement in monitoring, conservation, and decision-making. Citizen science initiatives provide an innovative approach to involve citizens, thereby promoting interdisciplinary collaboration, accountability, inclusivity, and the democratisation of science. Further, citizen science initiatives can turn out to be critical in promoting sustainable development goals by making people realise that biodiversity is not a burden to be shouldered, but an essential element in our survival.

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