

# InnWater Article

## #7 Building Community cohesion through Citizen Science



### Context

Communities can often become disengaged from their rivers and the wider environment and rely on the state to provide evidence on the health of their water courses which creates a top-down way of managing the catchment. This divorces society from developing a deeper collective understanding of the problems and solutions which in a complex and sometimes chaotic system can lead to lethargy to act or a lack of ownership of the challenge.

### Definition

Citizen science, the involvement of non-professional scientists in scientific research, has emerged as a powerful tool for environmental monitoring and management. When applied to water quality monitoring, citizen science not only aids in gathering critical data but also fosters community cohesion and enhances collective understanding of environmental issues. The following are examples of where citizen science in water quality monitoring can bring communities together, improve understanding and allow strategic actions to be integrated.

**Empowering Communities through Participation** - Citizen science democratizes scientific research by involving community members in data collection and analysis. This participatory approach empowers individuals, giving them a sense of ownership and responsibility towards their local environment. When community members participate in water quality monitoring, they become more invested in the health of their water bodies. This engagement fosters a collective sense of stewardship, motivating communities to take proactive measures to protect and improve their water resources.

**Building Social Cohesion** - Water quality monitoring projects often require collaborative efforts, bringing together individuals from diverse backgrounds. This collaboration promotes social cohesion by providing opportunities for community members to interact, share knowledge, and work towards common goals. Through regular meetings, workshops, and field activities, participants build relationships, trust, and a shared sense of purpose. These interactions strengthen community bonds and create a supportive network of individuals committed to environmental conservation.

**Enhancing Environmental Awareness and Education** - Citizen science projects provide hands-on learning experiences that enhance environmental awareness and education. Participants gain practical knowledge about water quality indicators, sampling techniques, and data analysis methods. They learn to identify pollutants, understand their sources, and recognize the impacts on aquatic ecosystems and human health. This experiential learning fosters a deeper understanding of environmental issues and equips individuals with the skills needed to advocate for better water management practices.

**Generating Localized Data** - One of the significant benefits of citizen science is its ability to generate localized data. Professional scientists and regulatory agencies often face resource constraints that limit the scope and frequency of water quality monitoring. Citizen scientists can fill these gaps by conducting regular and widespread sampling. The data collected by community members provide valuable insights into local water conditions, helping identify pollution hotspots, seasonal variations, and long-term trends. This localized data is essential for developing targeted and effective water management strategies.

**Promoting Transparency and Accountability** - Citizen science projects promote transparency and accountability in environmental monitoring. By involving community members in data collection, the process becomes more transparent and accessible. Local residents can verify the data, ask questions, and hold authorities accountable for water quality management. This transparency builds trust between the community and regulatory agencies, fostering a collaborative approach to addressing water quality issues.

**Influencing Policy and Decision-Making** - The data collected through citizen science projects can influence policy and decision-making at local, regional, and national levels. When communities provide robust and credible data, it can be used to advocate for better water management policies, stricter regulations, and targeted remediation efforts. Citizen science data can also support grant applications, funding proposals, and community-led initiatives aimed at improving water quality. The collective voice of an informed and engaged community can drive meaningful change shaping sustainable water management practices.

**Fostering Intergenerational Engagement** - Citizen science projects often engage participants of all ages, fostering intergenerational engagement. Families, schools, and community groups come together to monitor water quality, creating opportunities for young people to learn from older generations and vice versa. This intergenerational exchange of knowledge and experiences strengthens community ties and ensures the continuity of environmental stewardship across generations. It also inspires young people to pursue careers in environmental science and advocacy.

**Enhancing Community Resilience** - Community resilience is the ability of a community to adapt and thrive in the face of environmental challenges. Citizen science in water quality monitoring enhances community resilience by building local capacity to address water-related issues. Participants gain the skills and knowledge needed to identify, respond to, and mitigate the impacts of water pollution. This local capacity-building reduces dependency on external resources and empowers communities to take proactive measures to protect their water resources.

**Bridging the Gap between Science and Society** - Citizen science bridges the gap between scientific research and society by making science more accessible and relevant to everyday life. Participants in water quality monitoring projects gain firsthand experience with scientific methods and principles, demystifying the scientific process. This increased scientific literacy enables community members to critically evaluate environmental information, engage in informed discussions, and make evidence-based decisions. Bridging this gap fosters a culture of science-based decision-making and strengthens the role of science in society.

**Creating a Sense of Place and Connection** - Water bodies are often central to the identity and culture of a community. Citizen science projects create a sense of place and connection by encouraging community members to engage with their local water resources. Through regular monitoring activities, participants develop a deeper appreciation for the ecological, cultural, and recreational value of their water bodies. This connection fosters a sense of pride and responsibility, motivating individuals to protect their local environment.

**Leveraging Technology for Citizen Science** - Advancements in technology can revolutionise citizen science, making it easier for communities to monitor water quality. Mobile apps, online platforms, and affordable monitoring equipment enable citizen scientists to collect, analyze, and share data with ease. These technological tools facilitate data collection and promote collaboration among participants. They also provide a platform for communities to share their findings with the broader public, raising awareness and inspiring action.

Citizen science in water quality monitoring is a powerful tool for building community cohesion and enhancing collective environmental understanding. By involving community members in scientific research, citizen science empowers individuals, fosters social cohesion, and promotes environmental awareness and education. It generates localized data, promotes transparency and accountability, and influences policy and decision-making. Furthermore, it fosters intergenerational engagement, enhances community resilience, and bridges the gap between science and society. Through citizen science, communities develop a deeper connection to their local water resources, creating a sense of place and responsibility. As technology continues to advance, citizen science will play an increasingly vital role in water quality monitoring, enabling communities to protect and preserve their water resources for future generations.

## Link with InnWater

The Westcountry Rivers Trust is working through the InnWater project to expand their own Citizen Science scheme (Citizen Science Investigations) to not only build water quality data (to date the project has taken 20,000 samples) but automate the analysis of this and other data to provide communities with information and understanding about their environment at different scales. Within the InnWater project the Trust is developing a tool to provide understanding from the individual river reach surrounding towns and villages to counties and even regions.

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