



Members of the Women Empowerment Centre (WEC) in Nepal's far western region learn how to check water quality in the Mahakali river

Photo: Kamal Rawal/ RUWUDC

## TROSA LEARNING BRIEF

ISSUE 4/MAY 2020

# CITIZEN SCIENCE ENGAGING AND EMPOWERING LOCAL COMMUNITIES

## EXECUTIVE SUMMARY

Across South Asia's transboundary river basins – the Ganges-Brahmaputra-Meghna (GBM), and Salween in Myanmar, TROSA supported projects are bringing together civil society, scientific community and policymakers to collaborate in novel ways to inform river governance related policies. At the center of this approach is the voluntary engagement of local communities, mostly women and youth, to collect and analyze river water quality data and through the process

build an evidence base which subsequently informs multi-stakeholder dialogues for collective action on water governance.

Water-focused citizen science initiatives are also growing around the world. Governments are recognizing that citizens can be a valuable resource in managing time constraints related to data collection, their interest and volunteering spirit needs to be harnessed to make informed decisions.

## INTRODUCTION

'Citizen Science' is a term used to describe when members of the public collect—and even analyze— scientific data, often in collaboration with professional scientists.<sup>1</sup> For example, a member of the public might collect samples of water from a stream close to his or her house, or take samples of soil from a nearby park. With its use of non-professional volunteers to help answer questions about the environment, citizen science employs engaged citizens

interested in understanding their world.<sup>2</sup>

The citizen science approach is based on the concept that when informed citizens become active advocates, it can create windows for change and garner political will for improved policies for dealing with riverine issues. This involves creating an enabling environment for local communities to be aware and take ownership and a greater stake in shaping their local riverine policies.

## HOW TROSA USES CITIZEN SCIENCE-BASED APPROACH

**To empower communities to better engage with riverine governance policies, including engagement with the private sector**

TROSA's Citizen Science approach involves a series of steps that aims to build the capacities of the local representative target groups from the ground up to be better able to identify outstanding and common issues

related to riverine communities. These include early warning for flash floods, river pollution, irrigation, riverbank erosion and over exploitation of riverine resources.

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<sup>1</sup> <https://www.iisd.org/blog/citizen-science-gathering-rivers-information-knowledge-pool>

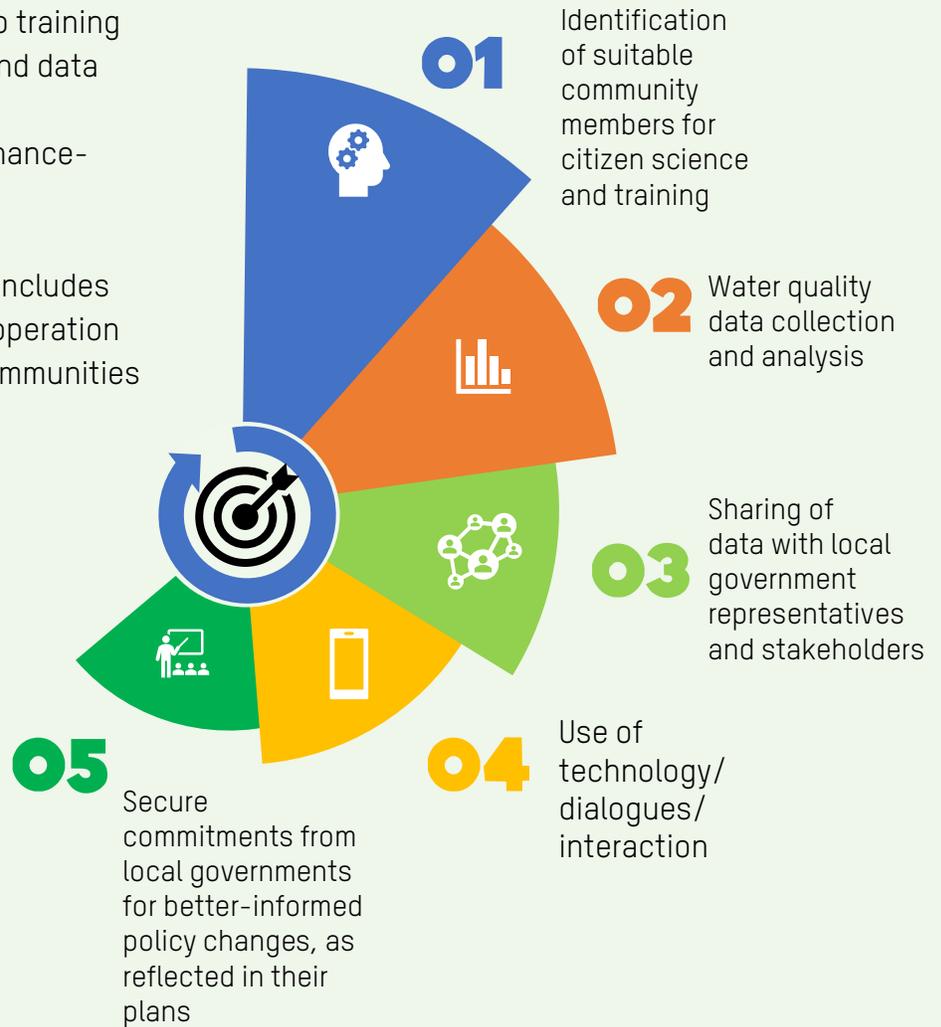
<sup>2</sup> <https://www.iisd.org/blog/citizen-science-gathering-rivers-information-knowledge-pool>

Citizen Science volunteers undergo training to measure water quality testing and data analysis which is shared with local government to inform water governance-related policies.

The long term impacts envisioned includes improved Transboundary water cooperation among upper and lower riparian communities and authorities.



Photo: Kamal Rawal/ RUWUDC



### Women at the heart of Citizen Science

Women Empowerment Centers (WECs) in the Mahakali basin in Nepal are formed with special focus on transboundary rivers to sensitize them about their rights over, and responsibilities for riverine water resources, to capacitate them in becoming water leaders, so that their voices and opinions are included in transboundary water resources planning and decision making.

The citizen science drive in the Mahakali/ Sharda basin resulted from discussions among communities with local government representatives and civil society organisations of Nepal and India, which led to



Photo: Kamal Rawal/ RUWUDC

the identification of common issues related to transboundary water governance in the Mahakali, including those brought on by increasing pollution in the river.

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*We used to drink water from the Mahakali without knowing its quality, as it looked clean and its from the Himalayas. The application of citizen science tools has helped us know more about its quality. Now, we have made an action plan to control its pollution. I am proud to be a citizen scientist”. – Laxmi Okheda, 25, Kanchanpur. Member of Ramanuj WEC.*

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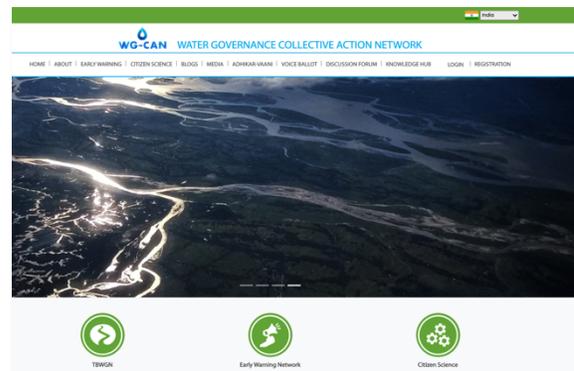


## Water Governance Collective Action Network (WG- CAN)

TROSA supports the Water Governance Collective Action Network ([WG-CAN](#)) – a web platform of civil society organizations, youth and women leaders and citizen science volunteers in India and some selected TROSA sites in South Asia. The network came into being in June 2018 as a result of commitments affirmed by civil society organizations for a concerted engagement with important actors like the government and the private sector in correctly framing the issues surrounding water governance from a transboundary perspective.

WG-CAN emphasizes the strengthening of last-mile structures at the village and community level. Sharda Nadi Nagrik Manch and Mahabahu Brahmaputra Federation

are examples of two citizen-led forums established under the initiative which proactively engages with local officials on issues including water governance. A network of 348 volunteers from 79 most vulnerable villages in Saralbhanga, Lower Brahmaputra and Mahakali/Sharda basins are engaged as citizen scientists and early warning volunteers.



[www.wgcan.org](http://www.wgcan.org)

The WG-CAN initiative focuses on:

- Inclusive Water Governance Policies recognizing the rights of riparian communities
- Responsible practices of the private sector and other stakeholders respecting the rights of riparian communities
- Improved capacities of Women and CSOs to participate in water resource management

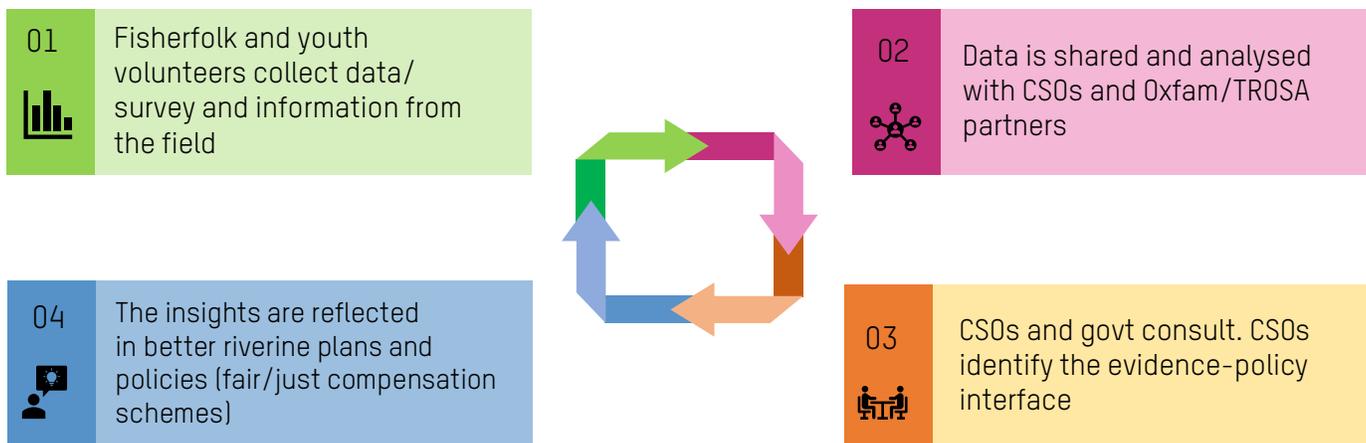
## Hilsa Watch

The TROSA citizen Science initiative goes beyond the traditional water quality and pollution monitoring exercises. In Bangladesh, the 'Hilsa Watch' initiative based on voluntary reporting system is producing critical information at the ground-level that informs TROSA's evidence-based advocacy drive for inclusive fisheries governance across the Ganges-Brahmaputra-Meghna (GBM) river basins.

Hilsa (*Tenualosa ilisha*) is a culturally and commercially important fish in the GBM river basin, with Bangladesh amassing 60% of the global catch. About 2 million people are indirectly dependent on the Hilsa value chain<sup>3</sup>. To sustain this valuable resource, the Bangladeshi government enforces two

closures (fishing bans) lasting more than two months<sup>4</sup>, which while ensures safety for juvenile fishes, leaves the fisherfolk communities with no sources of income. A government compensation package is in place, but it is far from being fair, just and adequate.

The Hilsa Watch initiative has revealed that the expenditures of the fisherfolk families far exceeds the government compensation and that the seasonal and the geographical distribution and availability of the fish is skewed towards the coastal region comparison to upstream areas. This has created unequal access to fisherfolk whose lives depend on the Hilsa.



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[https://www.researchgate.net/publication/305441408\\_Fishers'\\_perceptions\\_of\\_the\\_performance\\_of\\_hilsa\\_shad\\_Tenualosa\\_ilisha\\_sanctuaries\\_in\\_Bangladesh](https://www.researchgate.net/publication/305441408_Fishers'_perceptions_of_the_performance_of_hilsa_shad_Tenualosa_ilisha_sanctuaries_in_Bangladesh)

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<https://www.dhakatribune.com/bangladesh/2020/05/17/65-day-ban-on-fishing-in-bay-of-bengal>

## LEARNINGS:

- A key learning is that the data being generated is being used in local-level advocacy and engagement with various stakeholders.
- As can be seen in the examples of TROSA pilot approaches in Nepal and Bangladesh, it is evident citizen science can act as an agent of social inclusion and local level participation and bringing a sense of ownership in shaping riverine policies. In Nepal, it has demonstrated outcomes in increased participation of women in water quality testing and evidence informed compensation package policies in Bangladesh.
- The transformative potential of CS approach provides a conducive environment for scientific results from CS projects to enhance evidence-based decision making for ensuring that fair and equitable compensation packages are designed – as in the case of Bangladesh, where citizen science data informed better compensation packages.
- The CS approach is firmly based on international scientific norms and guidelines which can help spread awareness and a common and better understanding about water quality, pollution, the state of riverine ecology at local, provincial and even bilateral levels as evidenced in the emerging data sharing understanding (via apps) in the Mahakali basin in Nepal and India.
- It can break myths misconceptions around the potability of water for domestic uses. For example, dispelling a longstanding myth in the communities that the Mahakali river water is potable as it originated in the Himalayas.
- Data quality-related issues like credibility, veracity and verifiability of citizen produced data can be a major concern regarding this approach. Efforts must be made to make sure that protocols and standardized methods are followed. Processes like calibration and data validation must be done by experts to ensure greater buy-in from government agencies and private sector stakeholder.

### About TROSA

TROSA is a five year (2017-2021) regional water governance programme being implemented in the transboundary river basins of Ganges-Brahmaputra-Meghna (GBM) in Nepal, India and Bangladesh and the Salween in Myanmar. Adopting a human-rights based approach, TROSA facilitates river dependent communities' participation in water governance and help them uphold their rights to water. As part of this, it also supports and promotes multi-stakeholder partnerships and collective action for inclusive water governance policies and practices at various levels. TROSA is funded by the Government of Sweden and managed by Oxfam.

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**Disclaimer:** Views expressed in this brief are those of the author and don't represent the views of the Oxfam or Government of Sweden.



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