

# Restoration of Historic Water Tanks of Bundelkhand

A partnership approach for adapting to climate change on rural livelihoods

R.Parasuram, Prasanna Khemariya, Stutilina Pal

**Abstract** – The study reports on an initiative seeking to reconnect rural communities and their livelihoods to their proximate natural environment. Given the complexities arising from simultaneous challenges posed by climate change, degradation of soils and overexploitation of available water, it explores the role a multi-stakeholder partnership can play. Early outcomes and learnings from a pilot implemented by the initiative have thrown up encouraging pointers advocating expanding them in scale and dimension across landscapes.

**Index Terms**— Bundela Tanks, Bundelkhand, Chandela Tanks, Climate-smart Agriculture, Irrigation, Livelihoods, Tank desilting

## 1 INTRODUCTION

Immediate and long-term impact of environmental degradation and the looming threat of climate change on livelihoods has dominated the public discourse in recent times. It has given rise to several path-breaking initiatives both for adaptation and mitigation. Evidence-based research has helped policy makers gain meaningful insights into the social and economic dimensions of the challenge (Besseau, Graham, & Christophersen, 2018). At the landscape level - wherein lies a large part of the action - local administrations and civil society have been instrumental in helping millions of people, whose livelihoods continue to depend on the health of the natural environment. In one such initiative, in the Bundelkhand region of Central India (Fig 1), a group of concerned individuals and like-minded NGOs have made the restoration of the natural environment and the generation of sustainable livelihoods their common cause and a shared purpose.

Our experience of working in the region and wide-ranging consultations for conceptualizing the thematic underpinnings of the initiative clearly brought out that the community - men and women alike, comprising of farmers and householders, both well-to-do and from weaker sections - consider water as its single most important overarching concern. Also, that participation and ownership in any programme for sustainable use of the natural capital, linked to livelihoods and economic well-being can succeed if water issues are placed at its centre. (Global Commission on Adaptation, 2019) This came as no surprise given the fact that the region is severely water-stressed.

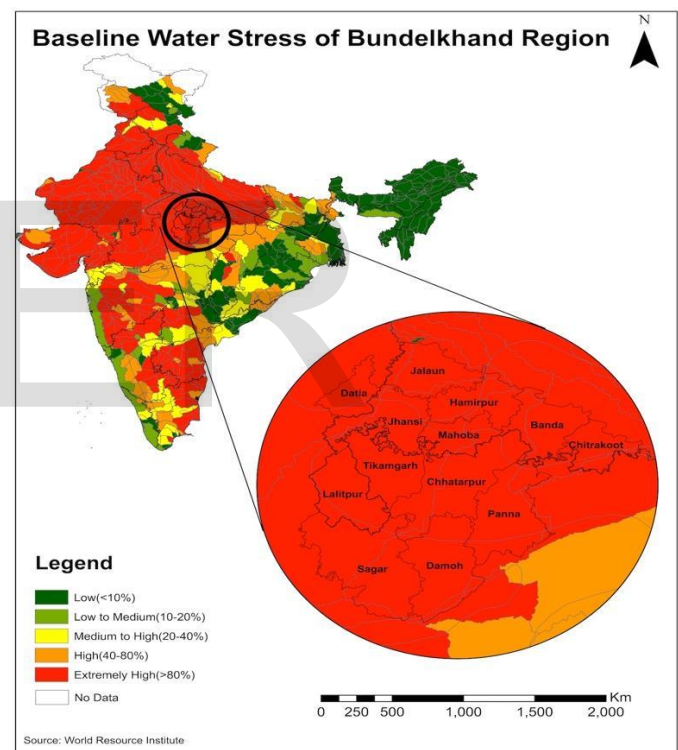


Fig 1 Water Stress of the Bundelkhand Region

## 2 THE BIWAL INITIATIVE

### 2.1 Background

Chandela and Bundela kings of Bundelkhand ruled over a hilly and rugged topography, drained by large rivers like Betwa, Ken and others. Soon after the monsoon season, their flow ebbed, leaving behind dry drought-prone tracks for agriculture. Chandelas kings, prodigious builders of temples and monuments, built over eight thousand tanks across the region. Generating employment during construction, the tanks harvested water for domestic use, recharged groundwater and downstream irrigation. More significantly

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they provided water security for the inhabitants during years of scarcity. The Bundelas added several more tanks in the period following the Chandela rule (Tripathi, 2016).

Numbering in thousands these water bodies pockmark the Bundelkhand countryside across northern Madhya Pradesh (MP) and southern Uttar Pradesh (UP) (Mishra, 2011). Having served as a lifeline during lean years of monsoon and droughts, they are a living testimony of climate-resilient intervention at scale undertaken centuries ago.

## 2.2 The consultation

It does not take a lot of imagination to appreciate the role they have played in shaping its agro-ecology. In them, we saw the potential to serve as a launchpad for developing a coherent strategy for landscape-level interventions and addressing them at scale. We also became aware that several attempts in the past had not resulted in a concerted plan to repair and rejuvenate at least most, if not all, of the tanks and the ecosystem surrounding them. No effort perhaps was made to integrate these attempts with the current and emerging priorities of the community and the natural environment.

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Local-level consultations with the communities and their leaders, district administrations and with a large number of NGOs working in the region threw up an entirely positive response to the approach we had in mind. These interactions helped recall and appreciate the role the tanks play in the lives of the people who live around them. This led to the formation of the Bundelkhand Initiative for Agriculture, Water and Livelihoods (BIWAL)<sup>1</sup>, an open-ended collective of seven NGOs, their mentors and funders.

The initiative has placed the restoration of these tanks at the centre of a comprehensive strategy for the restoration of the natural environment and the spread of sustainable agro-ecological practices for livelihoods. For a region, otherwise, in news for its poverty and out-migration, this initiative has the potential to serve as a model for adaptation and building back better. When restored, if not entirely to their original state but substantially so by taking into account ground realities, augmented supplies of water from these tanks can We saw in repair and rejuvenation of the tank economies an opportunity to expand them to coalesce with the larger issues of managing the natural capital endowment

(especially water and soil), sustainable agricultural practices and expanding avenues for on and off-farm employment. To plan and implement a region-wide venture two major decisions were taken. These were: help expand and deepen livelihood opportunities and with backward integration and forward linkages strengthen the local agro-ecology.

## 2.3 Challenges, Constraints and Opportunities

Envisioning a planning and implementation strategy for tank repair and rejuvenation and making it the launchpad for ecological restoration and sustainable livelihoods threw up several challenges and helped appreciate severely limiting constraints (UNEP, 2020). It became evident that these can be overcome only with a wider partnership.

The challenges and uncertainties were seen to arise from:

- a) the sheer number of tanks running into several thousand and their spread across fourteen districts, seven each in MP and UP;
- b) the absence of consolidated tank-wise information on the physical condition of the engineering structure of the bund, the waste weir, and watercourses;
- c) the physical condition and ownership patterns in their catchment and drainage area;
- d) details of ownership, whether owned by the Panchayats and local bodies, or by administrative departments of the state;
- e) power relations and the resulting community-level equilibrium on the one hand, and the inherent and apparent inequities in the sharing of the resource and extraction of benefits;
- f) winning the approval and continuous support of local administrations for implementation, and of the state governments at a policy level;
- g) understanding existing community-level interests of various stakeholders in the tank economy and leveraging their strengths to design and build convergent action (Brouwer, Woodhill, Hemmati, & Verhoosel, 2016).

## 2.4 Constraints

The main constraints faced by the BIWAL partners were akin to what might obtain in similar initiatives with big ambition.

- a) limited capacity to commence an activity whose impact wouldn't be discernible unless taken up on scale;
- b) the limited capacity of partnering NGOs to mobilise funds on their own, through the CSR window for instance;
- c) insufficient clarity on the level of support such an endeavour shall receive from the local and state administrations.

<sup>1</sup> The participating NGOs in the pilot phase were SRIJAN, CARD, HARITIKA, Arunodaya Sansthan, ABSSS, BSS, YKVM.

## 2.5 Converting opportunities into initiatives

We saw in repair and rejuvenation of the tank economies an opportunity to expand them to coalesce with the larger issues of managing the natural capital endowment (especially water and soil), sustainable agricultural practices and expanding avenues for on and off-farm employment. To plan and implement a region-wide venture two major decisions were taken. These were:

Firstly, to implement through a strong learn-as-you-do approach, a pilot project sufficiently large to test and verify design components and processes in as many districts as BIWAL's NGO partners' capacities would permit; and

Secondly, by moving energetically ahead for building an ecosystem of acceptability: at the policy level, with the state governments and local administrations; and with other stakeholders, the village communities, with prospective corporate and individual donors, establishing, in essence, a multi-stakeholder partnership (Buckingham, Singh, & et al, 2018) (Li, Gray, & Dennis, 2017).

During preliminary consultations with the community, we discovered that the initiative can help unearth opportunities resulting in outcomes, not limited merely to the physical repair of the tanks, but towards realising a bigger overarching objective of adapting the natural environment to the livelihoods and wellbeing of the people, a game-changer if you like! However, it was clear that the initiative won't be able to make much headway unless local administrations for implementation and the state governments at the policy level lend their active support. To ensure sustainable outcomes the initiative will have to work towards developing ownership at the community level and institutionalizing a problem-solving and dispute-resolution mechanism (Shah Mihir, 2015).

BIWAL's NGO partners bring rich grassroots level experience in executing projects, involving a basic understanding of civil design, construction and repair, catchment area treatment and restoration of defunct watercourses in the command areas of the tanks which were designed for irrigation etc. Nonetheless, it was considered prudent to approach and convince the administrations to take the lead for repairing the engineering structures through one of the technical departments, in MP through the Rural Engineering Service of Panchayat and Rural Development Department (MP-P&RDD), for instance.

We devoted attention to two other important features:

Firstly, to identify the various technical aspects by commissioning a diagnostic study of a limited number of randomly selected tanks and develop comprehensive implementation guidelines; and

Secondly, to ensure commitment and long-term ownership making the restoration exercise participatory and process-intensive at the community level.

Several grassroots level exploratory meetings followed by focus group discussions (FGDs) with the community, including Gram Panchayat representatives as well as local and regional consultation workshops helped in identifying leaders and key stakeholders. At the national level, the BIWAL NGOs reached out to potential CSR donors to explore the latter's willingness to fund the initiative. These stakeholders' consultations helped determine the interest each would have and the contribution they and others like them would be willing to make. Challenges in converging private sector and government programme funding for the pilot were also identified. The participating knowledge partner, AIGGPA, Bhopal, agreed to take up a diagnostic study of fourteen tanks, randomly selected, to learn tank specific characteristics and develop guidelines for implementation. MP-P&RDD agreed to appoint a separate committee of technical experts to come up with technical parameters for tank repair and rehabilitation.

District administrations, in both MP and UP, agreed to provide an overarching umbrella for the pilot phase. They also showed a willingness to take up responsibility for the repair of the engineering structures. Early support came from reputed private CSR players. Initially, they came forward to fund the deepening of tank beds by excavating silt, rich in soil carbon, and for allowing the farmers to transport it to their fields. This proved to be an excellent entry point for the commencement of work on the ground. On the one hand, JCB machines were deployed through donor financing for the purpose, while on the other it served as a positive step towards attracting community-wide attention and farmer engagement. All these resulted in a broad agreement on establishing a multi-stakeholder partnership (AIGGPA, June 2020).

Further deliberations led to a better understanding of the interest each stakeholder had and the contribution they were willing to make to the initiative. With the impending commencement of the United Nations Decade on Ecosystem Regeneration, 2021-30, it was felt that the initiative has the potential to serve as a laboratory for testing its underlying concepts. Collaboration among organizations engaging different stakeholder types aligned to meet the common vision and enabling synergies of complementary resources leads to maximum value created towards the Sustainable Development Goals (Stibbe & Prescott, 2020).

Table 1 tries to capture in brief the mutuality and convergence of interest a multi-stakeholder partnership could bring in.

Table 1 Mutli-Stakeholder Partnership: Mutuality of Interest

Stakeholder	Interest	Contribution	Consideration
Community	<ul style="list-style-type: none"> <li>•Water: augmented storage &amp; reliable availability, groundwater recharge</li> <li>•Soil: silt as topsoil; arrest soil erosion</li> <li>•Livelihoods: expand opportunities</li> <li>•Market access: higher value for produce</li> <li>•Commons: improved management practices</li> </ul>	<ul style="list-style-type: none"> <li>•Participation</li> <li>•Decision making</li> <li>•Consensus building</li> <li>•Dispute resolution</li> </ul>	<ul style="list-style-type: none"> <li>•Ownership</li> <li>•Equity</li> <li>•Benefits sharing</li> <li>•Social cohesion</li> </ul>
NGOs	<ul style="list-style-type: none"> <li>•Tank water economy: repair &amp; rejuvenation</li> <li>•Sustainable water harvest: catchment area treatment &amp; command development</li> <li>•Agriculture: adaptation to climate change and agroecology principles</li> <li>•Livelihoods: climate resilience &amp; enrichment</li> <li>•Social &amp; economic empowerment: women, weaker sections</li> </ul>	<ul style="list-style-type: none"> <li>•Design &amp; implement multi-sectoral interventions</li> <li>•Grassroots level organisational &amp; managerial best practices</li> <li>•Community mobilisation</li> <li>•Promote environmental literacy</li> <li>•Finance from non-government sources</li> </ul>	<ul style="list-style-type: none"> <li>•Social commitment</li> <li>•Promote organic farming and agro-ecology</li> <li>•Build circular economy &amp; self-reliant communities</li> <li>•Conserve local ecological and biodiversity concerns</li> </ul>
Gram Panchayat	<ul style="list-style-type: none"> <li>•Tank water economy: repair &amp; rejuvenation</li> <li>•Address concerns for social development &amp; employment generation</li> </ul>	<ul style="list-style-type: none"> <li>•Support for project implementation</li> <li>•Support grassroots level institutions for collective action</li> </ul>	<ul style="list-style-type: none"> <li>•Political support for community convergent action</li> </ul>
Local Administration	<ul style="list-style-type: none"> <li>•Tank water economy: repair &amp; rejuvenation</li> <li>•Strengthen local action and community level cooperation</li> <li>•Issue administrative orders</li> <li>•Release government component of project funding</li> </ul>	<ul style="list-style-type: none"> <li>•Problem solving and coordination</li> <li>•Convergence of public &amp; private funding</li> </ul>	<ul style="list-style-type: none"> <li>•Meeting local developmental and environmental targets</li> </ul>
State Government	<ul style="list-style-type: none"> <li>•Local area development</li> <li>•Deepening decentralised governance</li> </ul>	<ul style="list-style-type: none"> <li>•Legitimacy</li> <li>•Convening &amp; problem solving</li> <li>•Operationalising at scale</li> <li>•Policy guidelines</li> <li>•Project governance structures &amp; processes</li> </ul>	<ul style="list-style-type: none"> <li>•Expediting development</li> <li>•Meeting national environmental targets</li> <li>•SDG targets</li> <li>•Empowering weaker sections</li> </ul>
Knowledge Partners	<ul style="list-style-type: none"> <li>•Sound scientific and technical practices</li> <li>•Monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>•Guidelines: easy to implement</li> <li>•Capacity building</li> </ul>	<ul style="list-style-type: none"> <li>•Documentation</li> <li>•Analysis, feedback</li> </ul>
Corporates and private individuals	<ul style="list-style-type: none"> <li>•Sourcing quality primary produce</li> <li>•Promoting cost-effective local value addition</li> </ul>	<ul style="list-style-type: none"> <li>•CSR funds</li> <li>•Charitable donations</li> </ul>	<ul style="list-style-type: none"> <li>•Building social capital</li> <li>•Key partnership in economic development</li> </ul>

### 3 PLANNING AND IMPLEMENTATION OF THE PILOT

#### 3.1 Planning

The pilot phase comprising of a range of social mobilization activities commenced in January 2018. At the preparatory level the following steps were taken:

- (a) Several rounds of formal and informal consultations with village communities, Panchayat representatives, and district and block level officers of concerned government departments were held. Similar consultations were held with senior functionaries of the state government.
- (b) Simultaneously prospective corporate and individual funders were approached to explore and secure early funding.
- (c) To bring all stakeholders on to the same page and iron out differences in approach and methodologies, multi-stakeholder consultations were organized in Bhopal and Orchha.
- (d) A series of capacity building initiatives and collaborations were planned and implemented.

These lead to all the major stakeholders agreeing on what they shall contribute to the pilot phase. Fifty-four odd tanks spread over 3 districts in Madhya Pradesh (MP) and four districts in Uttar Pradesh (Tikamgarh, Chhatrapur and Niwari of MP, and Mahoba, Hamirpur, Chitrakoot and Jhansi of UP) were initially selected for restoration, commencing summer 2018.

#### 3.2 Implementation

A snapshot of physical work, both in terms of coverage and principal components can be seen in Table 2. These and some other components of work on sensitization and institution-building were as follows:

- (a) Work commenced with community mobilisation and desilting of tanks accompanied by arrangement for transport of silt by farmers to their fields. This helped establish a rapport with the community boosting confidence for taking up other works. To impound surface overflows and augment groundwater recharge, the construction of Dohas was taken up in shallow upstream watercourses. Three-hundred-twenty-two such structures were constructed.
- (b) Prioritising community needs several other tasks were carried out. These included minor repair works such as cleaning and disinfection of drinking water wells, repairing distribution pipelines of piped water supply schemes, new construction or repair of existing platforms (Jagat) encircling dug-wells and hand-pumps. A total of 295 drinking water spot sources across 61 villages were repaired.

- (c) Turning next to the enhancement of productivity and promotion of agro-ecological practices, 66 Prakartik Krishi Kendras or AGRINACs (Agri-Nature Centres) run by local entrepreneurs were established with technical and managerial support from the initiative. To sensitise the community on the importance of biodiversity conservation 5 Tapovans (usually of 500 sq.m area), inspired by the Japanese concept of Miyawaki forests were developed. The survival rate within these enclosures has been assessed at 97%. Through a major drive more than 100000 trees saplings, principally comprising of native species, have been planted on both farmer-owned and common lands.
- (d) A charter and guidelines for post-repair management, benefit-sharing and dispute resolution mechanism for the Tanks and associated infrastructure by the community were developed after extensive consultation between different stakeholders (AIGGPA, June 2020).
- (e) AIGGPA, the knowledge partner, made a detailed diagnostic study of eight tanks leading to a project report recommending a coherent strategy for tanks' repair and rejuvenation. Intensive consultations, informed by evidence collected from the field lead to the finalisation of a set of operational guidelines for the initiative (AIGGPA, June 2020).

Table 2 Work taken up during pilot phase (2018-21)

Tank Restoration Work	
Tanks repaired & silt removed (nos.)	88
District's work taken up in (nos.)	8
Villages where tanks located (nos.)	81
Silt removed and transported to farmers' field (cu.m)	5,74,400
Farm area where silt was applied (Ha)	2571.2
Dohas excavated in upstream watercourses (nos.)	322
Farmers Benefitted by all above work (Nos.)	6146
Tapovans (Miyawaki Forests) planted (Nos.)	5

### 4 WAY FORWARD: BEYOND THE PILOT

The initiative is now at a juncture, which calls for a rapid assessment of what has been achieved. More significant would be an evaluation of the extent and depth of involvement of each category of stakeholders. These will have to be attempted against a backdrop of what can be perceived as their expectations from and for the initiative. We have attempted to capture these in Table 3.

It can be revised first hand through an interactive dialogue between stakeholders, similar in manner and scope to what was done before finalizing the pilot phase. Given the restrictions imposed by COVID-19 and its aftermath, this might take some time. Nonetheless, the analysis here can help the initiative move forward. An assessment and projection of this kind is of utmost importance if it is to achieve scale, dimension and spread across Bundelkhand while ensuring sustainability and resilience over an implementation period spread over five years or more.

While the communities have continued to show a high level of acceptance and even keenness to benefit from a project of

this kind, as it generates employment opportunities in the short term while enhancing opportunities for better livelihoods. The receptivity was greater wherever the work programme was designed and implemented with backward and forward linkages.

The biggest concern and challenge for BIWAL partners is continued funding from both CSR and individual donors. Another challenge is to keep getting convergence funding for activities from the government under MGNREGS, and from other programmes for institutional development support in establishing SHGs and FPOs, for instance.

Table 3 Multi-stakeholder Partnership: Assessment and Way Forward

Stakeholder	Acceptance & Involvement in Pilot Phase	Stakeholder's Expectation	Future Course of Action for BIWAL Partners
Community	High degree of acceptance & encouraging involvement	Sustainable livelihood centred interventions	Establish institutional arrangements for post-project sustainability
NGOs	Pro-active involvement	Consolidation & expansion with predictable funding	Identify new NGO partners; Plan expansion and deepening of work by existing partners.
Gram Panchayat	Largely accepting and cooperative	Linked to community-level expectations; Give due importance to local social and political leadership and equations	Maintain dialogue to ensure smooth functioning and dispute resolution; Strengthen cooperation between tank management committees and GPs
Local Administrations	Largely receptive and cooperative	Policy level guidance from the state government for scaling	Maintain both formal and informal dialogue; Establish partnerships to leverage resources and competencies
State Governments	Moderately accepting depending on current leadership; No opposition to local administrations taking lead in decision-making Partial involvement.	To be ascertained/articulated	Explore possibilities for the issue of programme level guidelines for convergent action;
Knowledge Partners	Totally involved; timely delivered products	Programme level articulation by BIWAL partners for selection and engagement of new partners	Identify new knowledge partners within and outside the public sector for agriculture, value addition, capacity building and independent evaluation.
Corporates and private individuals	Willing and forthcoming to fund projects;	Targeted and result oriented approach; Strategic clarity of priorities	Strengthen existing partnerships; Identify new potential partners;
International and multilateral organizations	To be explored as it will be a new engagement	Aligning with globally recognised priorities and challenges; Best practices and technology inputs	Explore partnerships for policy-level dialogue and funding.

It was heartening to see how forthcoming local administrations were in supporting the initiative. Without their support, the pilot phase wouldn't have taken off on the ground and made a positive impact on the community generating the confidence needed for expansion.

In MP as well as in UP, the Panchayat and Rural Development Departments leant very good initial support. However, in both states, it would be essential for institutionalizing this by recognizing the initiative as a distinct programme that combines several integrative features. It will facilitate local administrations towards committing funds for convergent action and encourage corporates to extend larger funding support.

The region has not been a traditional or a favoured destination for CSR funds. One of the early ambitions of the initiative was to try and address this shortcoming. The pilot can help showcase the underlying potential. It can also be an attractive proposition for multilateral funding as well as an opening through field studies for knowledge organisations to connect with the local communities.

## 5 CONCLUSION

The initiative was conceptualised as a project, not merely for the repair and rejuvenation of water bodies of historical significance, but to expand their capacity to serve the surrounding habitations. By focussing on agroecological farming and building community-level institutions for livelihoods, it has hopefully identified a potential vehicle for revitalising the rural economy. As a multi-stakeholder partnership, it has served as a laboratory for exploring convergent action, and for integrating nature-based solutions with the existing programmes of the government in the rural and agriculture development sectors. We also see it as a vehicle to address current as well as emergent concerns like adaptation to climate change and ecosystem restoration through backward and forward linkages. It can also serve as a useful laboratory to deepen our understanding of how to bring a cultural shift in the manner in which various stakeholders, including the communities think and respond to new ideas.

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