Report on

Towards a Multi-stakeholder Assessment of Atal Bhujal Yojana: Anchoring Integrated Water Resource Management through the Participatory Groundwater Conservation and Management in Uttar Pradesh

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By:

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Contents

Executive Summary

Integrated Water Resource Management (IWRM) officially established in 1992 is defined as "*a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems*"[1]. Development and management of water, land and related resources require institutions at the Central and State level for issuing synchronized laws, policies and schemes. Moreover, there are Panchayati Raj Institutions at the Gram Panchayat[2] (GP) level that must be equipped to share the responsibility of sustainably managing the resources under the guidance and supervision of State Governments.

Article 243G of the Constitution of India 1949 empowers the Legislature of the State to endow the GPs with such responsibilities for them to become institutions of self-governance including granting the powers for economic development and social justice with respect to the matters enumerated in eleventh schedule but not limited to- land improvement, implementation of land reforms, land consolidation and soil conservation; minor irrigation, water management and watershed development; drinking water; maintenance of community assets, etc.

The 'Multi-stakeholder Assessment of Atal Bhujal Yojana' is one such projects that imbibes the essence of Article 243 and analyzes the involvement of various stakeholders at State level as enunciated in Atal Bhujal Yojana[3] by incorporating Integrated Water Resource Management approach with special emphasis on empowering the institutions at village level through participatory ground water conservation practices for inclusive development, management and conservation of ground water since, unsustainable water use is the major cause of concern for growing water insecurity and the demand for water is met through unchecked groundwater withdrawal.

Mau Girwann Gram Panchayat under Mahua Block in Banda District, Uttar Pradesh (U P) was identified for the study from the list of blocks[4] based on the criteria for selection under Atal Bhujal Yojana. The criterion is that the districts and its associated blocks covering Gram Panchayats are water stressed due to over exploitation of the ground water.

Shri Uma Shankar Pandey was identified as Focal Point on basis his experience with the community and ground water conservation works for assisting in undertaking project related works at ground level. Field visit including on ground verification was planned to identify opportunities and gaps for effective implementation of the Atal Bhujal Yojana that reiterates about sustainability of the resources, community involvement and institutional strengthening for ground water management through participatory approach for field self-regulation. U P

[1] UN Department of Economic and Social Affairs, Integrated Water Resources Management (IWRM), available at: https://www.un.org/waterforlifedecade/iwrm.shtml#:~:text=Although%20many%20parts%20of%20the,discussions%20as%20to%20what%20it

[2] Gram Panchayat is a basic governing institution in Indian villages

[3] Ministry of Jal Shakti, Atal Bhujal Yojana, Program Guidelines, available at: https://ataljal.mowr.gov.in/Ataljalimages/Atal%20Bhujal%20Yojana%20Program%20Guideline%201.2.pdf

[4] List of Blocks is available at: https://ataljal.mowr.gov.in/Ataljalimages/Data%20Disclosure/Area%20under%20Atal%20Bhujal%20Yojana.pdf

Government stakeholders working in urban and rural areas were also consulted for their valued opinions for finalizing the gap analysis.

A background research undertaken on groundwater management under Atal Bhujal Yojana in Uttar Pradesh revealed the following:

1. Section 8 of the Uttar Pradesh Ground Water (Management and Regulation) Act, 2019 mandates ground water resource estimation at the block level for GPs to prepare water budget. However, during consultations there was no awareness in the community regarding this pre-requisite to prepare a water budget. Moreover, Atal Bhujal Yojana Guidelines also prescribe a procedure wherein continuous data collection of water level from Digital Water Level Recorders (DWLRs) installed in earmarked piezometers/dug wells in each Gram Panchayat and their dissemination is required for preparation of water budget by the Gram Panchayat and the water budget is to be revised atleast once a year. Moreover, volunteers from the Gram Panchayats are to be identified and trained by the District Implementation Partners (DIP) in data collection. The data collected is to be made available to the public by the GPs by displaying it at prominent places in the GP (Panchayat Office, Schools, etc.). The data collected by volunteers and received from DWLRs is to be analysed, interpreted and published as a report at Block Level. This data would then serve as a valuable input for water budgeting and preparation of GP Water Security Plans. Therefore, prior to preparation of water budget, a report at the Block level is required with data accumulated from the installed piezometers for the GP to prepare a water budget. However, there was no such awareness regarding the current water level in 2023 for GPs to prepare a water budget.

2. Atal Bhujal Yojana relies on behavioral change and collective action. It was observed that no concerted awareness program on the same was taken up at the district/block/ village level.

3. Surface and groundwater linkages are known to communities through traditional knowledge, but the awareness about the status of groundwater decline and scientific knowledge to ascertain the reasons for decline still needs to be promulgated.

4. There is disparity between villages having an access to canal water and those who cannot access but draws ground water. Accordingly, the response to groundwater conservation is needed. The aquifer could be diminished by the withdrawal from the source whether water is drawn from a canal or ground. Thus, there is no homogeneity in approach.

5. It shows that attempts on groundwater conservation in Bundelkhand Region were not prioritized prior to the introduction of U.P. Groundwater Act, 2019 and the Rules, 2020 that vows to empower Panchayati Raj Institutions and the communities by providing them with reliable information on ground water scenario of the village to make appropriate decisions.

1. Background

At the core of the 2030 Agenda for Sustainable Development are 17 Sustainable Goals and 169 targets[5]. Sustainable Development Goal No. 6 declares ensuring "*availability and sustainable management of water and sanitation for all"* which is intricately linked to and inter-dependent upon other objectives, comprising poverty reduction, gender equality, climate, food, energy, health, cities, and ecosystem within its ambit.

Target 6.5 intends to implement Integrated Water Resources Management at all level by 2030. Accordingly, a "Multi- Stakeholder Assessment of Atal Bhujal Yojana" was undertaken in Gram Panchayat, Mau Girwann of Mahua Block in Banda District, U P based on the previous campaign implemented in Banda by the name of "*Bhujal Badhao - Peyjal Bachao Abhiyaan (Enhance Groundwater, Protect Drinking Water Campaign)"* for ensuring water security campaign led by the District Administration. The campaign was taken as a case study for this project to analyze the success and gaps of IWRM approach through the lens of Atal Bhujal Yojana through interactions with institutions at Gram Panchayat level; village community; and stakeholders at State level to identify opportunities for continuation of public participation that had stalled after the then District Magistrate of Banda District, Dr. Heera Lal, I.A.S was transferred.

Accordingly, the project aimed at improving the participatory groundwater management by:

1. Stocktaking of the existing measures implemented under the business as usual scenarios;
2. Assessing the status of mainstreaming of Atal Bhujal Yojana (Central Government's Flagship Scheme) in one GP in the state of Uttar Pradesh;
3. Identifying the measures needed to address the gaps in consultation with the local village institutions known as GP;
4. Facilitating interactions on the development of Gram Panchayat Water Security Plans and;
5. Promoting water use efficiency at the village level.

[5] United Nations, Department of Economic and Social Welfare, Transforming our world: the 2030 agenda for Sustainable Development, available at: https://sdgs.un.org/2030agenda

2. Brief details of the Activities Undertaken

2.1 Identification of Project Village and Local Partner Organization

1. Initially Shri Uma Shankar Pandey was identified as Focal Point as suggested by Dr. Heera Lal, I.A.S (Former District Magistrate Banda).

2. The Gram Panchayat Mau Girwann in Mahua Block of Banda District in Uttar Pradesh was identified through the list of water-stressed blocks provided for implementation of Atal Bhujal Yojana. Gram Panchayat functionaries were also interested to participate in the exercise to be undertaken by the Focal Point.

3. Later on, a Local Partner Organization "Abhiyan" in Banda was identified to assist in field works during a session chaired by Managing Partner of IELO comprising 30 Civil Society Organizations from Uttar Pradesh at Bankers Institute for Rural Development (A NABARD Organization), Lucknow.

2.2 On-line Meeting held on 26th May, 2023

An online meeting was held on 26th May, 2023 with Dr. Heera Lal, I.A.S, Former District Magistrate, Banda District, Uttar Pradesh; Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, IWP; Shri Shawahiq Siddiqui, Indian Environment Law Organization (IELO) – Project Coordinator; and Shri Uma Shaker Pandey (Focal Point).

Dr. Heera Lal, I.A.S. said that he led the effective water conservation program in the district with community participation during his tenure which resulted into dramatic increase in the water table upto 1 meter 34 centimeters. He told that how he was able to revive the wells, ponds and other water bodies with the help of community in Banda district, Uttar Pradesh.

Shri. Uma Shaker Pandey gave his insight on how he motivated people to utilize traditional means of conserving water in the Bundelkhan region. He spoke about increasing the groundwater level by conserving water in the Jakhni village of Banda district. He reiterated the concept of medh bandhi (making boundary around farm land) that contributed to the rise in water level and making nullahs (passage of water) in Jakhni village so that the wastewater can be seeped into the ground for re-circulation.

Shri Shawahiq Siddiqui, IELO said that Banda and Jakhni model can be replicated in other parts of Uttar Pradesh.

Dr. Veena Khanduri spoke about the importance of scientific issues that must be shared with people to educate them so that practice of water conservation is adopted with a right approach.

Minutes of the Meeting is attached as **Annexure 1**.

2.3 Water Issues in Banda District and Major Interventions Needed

Water issues in Banda District and major interventions needed are:

- Because of high runoff and erratic rainfall, surface water storage structures, viz, dams/ponds/percolation tanks, gully plugs, nala bunds, gabion structures needs to be revived/constructed.

- Due to high base flow, studies at micro-shed level and construction of subsurface dykes are required as suggested in Aquifer Management Plan of Banda.

- Owing to siltation of surface water bodies, desiltation of streams/nalas; restoration/revival/reconstruction of existing ponds/tanks/reservoirs and catchment treatment through large scale plantations are needed.

- Inefficient irrigational practices require promotion of drip and sprinkler/piped water irrigation practices;

- On- farm activities such as gradient levelling of peripheral bunds/trenches, etc, are required; and,

- Catchment area treatment and other rainwater harvesting structures are needed.

2.4 Preparation of Knowledge Product- Legal Brief

1. The Legal Brief titled "*Delivering IWRM (SDG 6.5) by Strengthening Atal Bhujal Yojana in Bundelkhand, Uttar Pradesh- Need for a fresh Legal Perspective*" has been prepared. Findings of the Legal Brief are derived from Dr. Heera Lal's Banda Campaign and Shri Uma Shankar Pandey's Jakhni Village Model and the same is placed as **Annexure 2**. The major findings are:

   i. District Leadership Matters: Strong leadership and community engagement by district administration can significantly improve water conservation efforts, particularly for groundwater;

   ii. Mobilizing Public Acceptance: Public awareness campaigns and local dialogues can leverage the connection between groundwater, land rights, and common pool resources. Property owners can then exercise self-regulation as envisioned by the UP Groundwater Act (2019).

iii. Community Mobilization: Effective campaigns and persistent dialogues can empower communities to manage their water resources.

iv. Synergy of Schemes: Convergence of programs like MGNREGS, watershed management, and Jal Jeevan Mission can play a crucial role in achieving water security.

v. Community-led Revival: Communities possess the potential to revive water bodies and improve groundwater levels without external aid, provided there is strong leadership, inclusivity, and ownership of the initiative.

vi. Replicating Success: The Jakhni village model can be replicated by sharing learnings and creating more "Jal Grams" (water villages).

vii. District Support: Proactive villages can be supported by the district administration in their groundwater conservation efforts.

2.5 Village Level Dialogue on Participatory Ground Water Management

1. A Village Level Dialogue at Banda District was held on 17th and 18th November 2023 to seek clarity on people's mobilization and participation for reviving the water harvesting structures due to which , the campaign Bhujal Badhao - Peyjal Bachao was taken as an instance for community to relate to participatory ground water management and provide its recommendations whereby, it was specified:

    i. If Government schemes like MGNREGA, and horticulture schemes are converged; rate of daily wages will be increased; and if new plantation schemes are introduced, then plantation status in the village will improve;

    ii. Appropriate mechanical support along with incentives must be provided for digging wells and ponds;

    iii. Livelihood options must be generated through encouraging the plantation of fruit bearing trees on suitable soil along with collective farming to reduce costs of infrastructure; and,

    iv. Medh bandi with trees/plants should be done in the farm to retain water.

3. Multi-Stakeholder Engagement and Community Dialogue on Participatory Groundwater Management

The multi-stakeholder engagement took place in Mau Girwaan village on 17th November 2023 with Shri Prem Singh (Atal Bhujal Yojana Representative); and on 18th November, 2023 with Shri Akhilesh (Atal Bhujal Yojana Representative); Shri Ashok (Abhiyan); Shri Laxman Prasad, (GP Pradhaan) with village community and Shri Sanjeev Kumar Baghel, Banda District Economics & Statistics Officer, Planning.

The Ground Report on Multi-Stakeholder Engagement is attached as **Annexure 3** which compiles the discussions held during the project period with various stakeholders along with their recommendations. Photographs of Stakeholder Engagement are attached as **Annexure 3.1**. The following suggestions were arrived during multi-stakeholder engagement and community dialogue:

3.1 Suggestions for Rural Areas

1. Bhujal Badhao-Peyjal Bachao was an initiative led by District Administration of Banda. However, it has not been institutionalized but it's a good success story when it comes to community mobilization.

2. Non-convergence of financial schemes ails groundwater conservation efforts.

3. Leadership role of GPs on groundwater is not activated as mandated in Uttar Pradesh Ground Water (Management and Regulation) Act, 2019. Eg: As per Section 3(4) of the Ground Water Act, Gram Panchayat is empowered to prepare the GP Water Security Plan. However, village level dialogue confirmed that the GP representatives had not participated in preparation of GP Water Security Plan.

4. To maintain water table in Banda district, collective efforts with public participation and inter-departmental cooperation needs to be arranged which will be possible, if the schemes and laws governing the subjects of each department are not in contradiction but in consonance with each other.

5. Central Sponsored Schemes and State Sponsored Schemes must be converged to improve the financial resources for implementing the projects.

6. The campaign "Bhujal Badhao Payjal Bachao" satisfies the five Disbursement Linked Indicators (DLIs) of Atal Bhujal Yojana Guidelines but it should be institutionalized.

7. Incentives in the form of health benefits and carbon trade-offs must be provided for the people to undertake ground water conservation measures.

8. Third party auditing or verification that ascertain the practices followed by the farmers are sustainable; that the farmer is maintaining the plantations; and that the traditional knowledge combined with sustainable practices has produced positive results such as; increase in ground water level as also reiterated in Atal Bhujal Yojana Guidelines. Such interventions could be linked with Green Credit Program of Ministry of Environment Forest & Climate Change (MoEFCC), Government of India, wherein, the certificates received from such scheme could be exchanged with the entities that are required to cut GHG Emissions helping the farmers earn extra income along with the State getting the funds to take appropriate measures for conserving the ground water.

9. Traditional practices for restoring degraded land must be adopted without relying on unsustainable measures such as using gypsum/pyrite for soil improvement that keeps the land degraded therefore, water sector schemes must be linked with soil, agriculture, forestry and horticulture schemes both structurally and financially to dissuade friction and contradiction.

3.2 Suggestions for Urban Areas

1. Policies and laws must specify source of extraction of water.

2. Urban areas should be treated like a city basin to manage water supply. City Basin Plans must be developed for urban water planning.

3. City Basin Plan would incorporate basin points wherein water collection can take place. Water would be collected through gradients made in basin points and percolation in footpaths/pavements because water in the cities also percolates in ponds available in urban areas. Smart City Mission can be helpful in executing City Basin Plans.

4. Ponds and wells in urban areas must be optimally utilized for water harvesting.

5. Grey water should be treated using net to filter contaminants without littering and the treated water can be utilized for urban grazing, eg: A Pune based startup has created a user-friendly recycling system for reuse of grey water in activities like; gardening, floor cleaning, and toilet flushing.

6. Recycling and reusing waste water could help in conserving fresh water resources. However, there is under-utilization of installed capacity of treatment plants and capacity expansion of the treatment plants requires time and more space.

7. Check dams must be constructed with technical innovation and designed so that they are easily accessible by people. Public participation should be regular. Capacity building of Gram Panchayats should be made mandatory to ensure maintenance of soak pit structures and plantations.

4. Key Highlights and Achievements

1. **Continuity:** The first stakeholder engagement project on the policy preparedness to deliver on the concept of 'Participatory Groundwater Management (PGM) emerging from the Regional Consultation on IWRM held in 2021 in Lucknow, had highlighted groundwater depletion as the major concern in Uttar Pradesh. As such, the design of the Project had yielded useful insights through the Bhujal Badhao-Payjal Bachao Abhiyaan- A Case Study on groundwater conservation, in Banda District of Uttar Pradesh.

2. **Uniqueness and critical importance:** This was the first of its kind of project that examined the implementation efficacy and practical gaps of Atal Bhujal Yojana through community consultations and grassroots expert engagement with the help of a a well-documented Case Study in the Banda District of Bundelkhand region and has successfully engaged with the key stakeholders and village communities involved in the Banda Model on groundwater conservation.

3. **New Case Study Identification (Awarteensheel Kheti):** Yet another model at an individual farmer level of groundwater linked ecosystem value enhancement has been identified and is being further studied.

   Key highlights and achievements along with insight on U.P. Ground Water Laws were presented by IELO at Annual General Body Meeting of IWP held on 28.12.2023. The presentation is attached as a separate document.

5. Conclusions

1. It can be concluded that Bhujal Badhao-Peyjal Bachao Abhiyaan had successfully incorporated IWRM approach and satisfies the Disbursement Linked Indicators of Atal Bhujal Guidelines. DLI's are result indicators linked to disbursement of funds by the World Bank which shall be dispersed subject to achievement of the result

indicators by the implementing agencies such as the National Program Management Unit (NPMU) at the national level and line departments/State Program Management Units (SPMUs) established in the participating states.

DLI#1 - Public disclosure of groundwater data/information and reports: This DLI incentivizes the strengthening of groundwater management institutions to ensure collection and public disclosure of groundwater related information to assist Panchayati Raj Institutions and community. The campaign via Jal Choupal model of Wateraid, India held training and awareness camp at each Gram Panchayat and urban center educating people about the idea and benefits of water budgeting and importance of water conservation in Banda, due to depleting water level and defunct water harvesting structures.

That resulted in mass participation leading to revival of defunct wells and ponds. Collective effort of the people of Banda led to improved ground water table as confirmed by the U P Irrigation Department.

DLI#2 - Preparation of Community-led Water Security Plans. This incentivizes the roll-out of a standardized bottom-up participatory groundwater management process. The Former District Magistrate of Banda, Dr. Heera Lal. I.A.S had created a formal District level Water Committee comprising of key officials from all water related departments, civil society members and technical water experts to implement the water conservation measures needed to revive the ground water. Mandate of constituting a District Ground Water Management Council is also provided under section 6(2) of the Ground Water Act 2019 of Uttar Pradesh and has a role of implementing and monitoring the implementation of District Ground Water Security Plan. This council constituted within the campaign is not constituted as per the Act because, State Ground Water Management and Regulatory Authority has the responsibility to constitute this council whereas the, the former District Magistrate of the Banda Campaign had constituted the committee.

DLI#3 - Public financing of approved Water Security Plans through convergence of on-going/new schemes. The DLI-3 incentivizes the use of the standardised bottom-up groundwater planning process to improve the effectiveness of public financing and align implementation of various government programs on groundwater. The campaign pooled-in funds and resources available in different departments, channelizing their synergies towards campaign. Initiated Phase one with voluntary work and in Phase two, utilized resources from MGNREGA, Khet Taalab Yojna, RWH, etc.

i. **DLI#4** - Adoption of practices for efficient water use which incentivize the implementation of demand-side measures within the Water Security Plans and signals the importance of shifting focus away from supply side measures towards demand-side measures to improve groundwater conditions. Under the campaign, the demand-side measures that were taken are; Trench digging; Rejuvenation of old water sources; Creation of new ponds and building Rain water harvesting structures. However, the campaign does not address supply-side interventions that may be required at a larger scale with appropriate machinery.

ii. **DLI#5**-Improvement in the rate of decline of groundwater levels incentivizes the arrest in decline of groundwater levels. After the campaign, the report from Minor Irrigation Department of U.P. Government in 2020 was issued that verified the post-monsoon increase in net average water table by 1.34 meters of Banda District Blocks such as; Baberu, Badokhar, Bisanda, Jaspura, Kamasin, Mahua, Naraini, and Tindwari.

The Comparative Evaluation of Bhujal Badhao-Payjal Bachao Abhiyan on Groundwater and Atal Bhujal Yojana is attached as **Annexure 5**.

6. Recommendations

1. The U.P. Ground Water Act, 2019 acknowledges depleting ground water scenario; maintaining and restoring wholesomeness of ground water quality. It provides first right of use for drinking, domestic use and cattle. It also states that demand side interventions and supply side management interventions must be undertaken to conserve ground water. However, Atal Bhujal Yojana Guidelines do not finance the supply side interventions that would be appropriate considering the water scarcity in the region.

2. The Act regulates critical and over-exploited blocks only. In Banda district, the blocks are neither critical nor over-exploited as per CGWB Ground Water Resource Estimation Report, 2022. The Act provides for effective monitoring devices/mechanisms to manage ground water. Therefore, monitoring mechanism needs to be established for bulk water suppliers who are abstracting ground water to prevent misuse of the provisions in the name of domestic use. Moreover, since the Act regulates critical and over-exploited blocks, it becomes easier for such suppliers to exploit ground water in the safe and semi-critical blocks.

3. Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Government of India in 2020 notified the Guidelines to regulate and control groundwater extraction by industries in India. However, till now,

in Banda there in no industrial use of ground water rather the ground water is being mostly abstracted for irrigation use and domestic use as per CGWB Ground Water Resource Estimation Report, 2022. However, the guidelines do impose abstraction charges for bulk water supply from safe and semi-critical blocks as well and imposes a requirement of No-Objection Certificate. However, it permits ground water extraction per day from over-exploited blocks at 50 m3/d; from critical and semi-critical blocks at 100 m3/d; and from safe blocks at 150 m3/d. Central Government is empowered under section 3 of the Environment Protection Act 1986, to take measures to protect and improve environment whereas the guidelines permit extraction of ground water in over-exploited areas. Moreover, the Uttar Pradesh Ground Water Act 2019 prevents the extraction of ground water in not only the over-exploited areas but also the critical areas provided they are notified. Therefore, it is recommended to pay heed to such discrepancies and harmonize the guidelines with the Act. Moreover, serious exercise of notifying blocks as critical and over-exploited must be taken within the Act because if such blocks go un-notified then State Authorities may permit the withdrawal of water from these blocks and not notify them, keeping them out of the ambit of the Act.

4. Since, the Act imposes a ban on construction of new wells in notified areas i.e., critical or over-exploited areas therefore in Banda, since the blocks are neither categorized as critical nor over-exploited, the people are utilizing government schemes to construct tube wells for drinking water and tree plantations. The provision also permits construction of tube-wells/borings in notified areas through government schemes, but only for the purpose of drinking water supplies and tree plantations. However, Banda village community dialogue suggested that people should undertake tree plantations, however, it is difficult to keep the plantations safe from animals. Furthermore, it was also pointed out by the village community that each house has a Submersible Pump whereas government scheme offer exemption on tube wells and pumps only when tube well is dug beyond 250 feet which is impossible to dug due to the rocky terrain. Rainwater recharge structures must be promoted in these areas to prevent further ground water exploitation.

5. U.P. Ground Water Management and Regulation Rules 2020, provide that ground water abstraction limits for commercial, industrial, infrastructural and bulk users is supposed to be fixed and if the water is being extracted beyond the threshold limit, then it is mandatory to recycle it and where the ground water and surface water are being polluted, then it is mandatory to install treatment plants. However, reuse and recycling of grey water for domestic use must also be incorporated in U.P. Ground Water Rules and Regulations. e.g: Soak pits must be constructed around hand pumps that are hotspots (wherein water wastage is the most) and wherever it is not feasible to

construct soak pits then artificial channel must be made so that extra water/waste water is collected in the soak pits through artificial channels. However, it must be ensured that soak pits are designed technically on the basis of the land and soil of the place and it does not pollute ground water. Furthermore Atal Bhujal Yojana Guidelines do not dissuade providing investments for minor industrial wastewater collection, and treatment plants and this incentive can be utilized for rural and urban wastewater treatment planning. A user-friendly recycling system for reuse of grey water can also be made that may not require technical maintenance.

6. Furthermore, a notification is issued by Uttar Pradesh State Government (based on the Guidelines on ground water abstraction) exempting micro and small enterprises whose groundwater extraction is less than 10 cubic meters per day from the provision (section 12) of obtaining No Objection Certificate for groundwater extraction[6], however, re-cycling, re-use provisions must be made mandatory for these enterprises otherwise such notifications also poses threat to the safe and critical blocks leading to violation of precautionary principle.

7. The ground water rules also provide that authorities such as Gram Panchayat Ground Water Sub-Committee; Block Panchayat Ground Water Management Committee; Municipal Water Management Committee and the District Ground Water Management Councils are supposed to encourage reuse of water for non-potable agricultural purposes on the condition that abstraction limits for commercial, industrial, infrastructural and bulk users is fixed and only if they are withdrawing water beyond the threshold limit, then only are they are supposed to "recycle". However, in Banda there is no industrial use even in semi-critical and safe blocks, therefore, scope for recycling and reuse is not there. Moreover, CPCB 2019 Guidelines for Utilization of Treated Effluent in Irrigation states that *"The possible risks of wastewater usage in agriculture may range from changes to physico-chemical and micro-biological properties of soils to impact on human health. In unfavorable economic conditions, the search for alternative irrigation sources, such as the use of untreated or inadequately treated wastewater may result in risk factors. Thus, it is necessary to ensure the beneficial aspects of this practice before application of treated wastewater in irrigation."*

   Non-potable water reuse for agricultural purposes is supported by the Ground Water Rules, however, CPCB Guidelines not only cautions against wastewater usage in agriculture but also its detrimental impact on human health. Therefore, there must be consistency between Acts/Rules/Guidelines issued by State and Central Government.

8. Hydrogeological Report of 2022 of Ground Water Department for Mahua block on partial fulfillment of Disbursement Linked Indicator-1, specifies that due to significant sub-surface outflow, the aquifers are depleting immediately after monsoon

[6]Uttar Pradesh Government, Namami Ganga and Rural Water Supply Section-3 No. 331/76-3-2021-44NG-2020 Lucknow, March 2, 2021Notification, available at: https://upgwdonline.in/pdf/MSME&10KLD_Notification.pdf

and water scarcity is prevalent during summer months. The highly heterogeneous Hydrogeological conditions resulted in the failure of the considerable number of bore wells. Therefore, interventions proposed in the Ground Water Policy of Uttar Pradesh 2013 could be implemented for consolidated development and management of ground water resources:

i. Traditional methods of rain water harvesting and recharge may not be adequate. Keeping this in view, the Minor Irrigation and Irrigation (Mechanical) Department should consider starting pilot schemes for assessing the feasibility of those techniques of recharge, which could recharge on a large scale. The idea is that from the areas with abundant water or additional water available in canals etc., pumping could be done to recharge aquifers of stressed areas with huge quantity of water. But ensuring water quality will be essential before launching such schemes.

ii. Despite adequate rainfall and high run-off in the rocky terrain of Bundelkhand - Vindhyans, the aquifers are not being recharged as expected. Micro watershed based integrated plans be prepared and implemented by the Minor Irrigation, Agriculture, Land Development & Water Resources Department, etc. for adequately recharging the aquifers in these areas.

iii. Comprehensive technical guidelines for ground water conservation/recharge in the form of Ground Water Recharge Manual should be prepared, which should include simple models and techniques of recharge.

9. The Act promotes "restoring wholesomeness of ground water quality" which requires that concentration of any parameter in ground water should not exceed the maximum permissible limit for drinking water prescribed by the Bureau of Indian Standards. As per CGWB Ground Water Resource Estimation Report, 2022, Banda district does not have any industries however, as confirmed through stakeholder engagement that arsenic is found in drinking water around villages in Muhua block. High fluoride in some isolated pockets/ sources is also reported. It was also stated that certain wells in Banda have water with higher PH, therefore, recycle and reuse must be made mandatory despite there being no industry in the district and water is being withdrawn below threshold limits otherwise surface water of rivers Ken and Yamuna around villages would have more pollutants making it unfit for drinking.

10. Atal Bhujal Yojana Guidelines, specifies that State Program Management Unit (SPMU), shall monitor presence of contaminants including toxic elements in the samples collected from surface water sources located in surface water quality hotspots (such as in/near the river sites having very bad water quality). SPMU had been formulated by Uttar Pradesh Government order dated 21.05.2020 and as mandated

under the guidelines, it should supposed to monitor the toxic elements in the surface water sources located in surface water quality hotspots. Mahua is also a block identified for implementing Atal Bhujal Yojana, however it is a "safe" block as per CGWB Ground Water Resource Estimation Report, 2022 whereas stakeholder engagement confirmed presence of toxins. Therefore, monitoring must not only be taken of the surface water of Ken and Yamuna rivers but also of the ground water of Mahua block.

11. Atal Bhujal Yojna Guidelines suggests sub-surface dykes as the typical interventions that qualify under Yojana for funding. However, within the campaign, the trenches were dug manually but considering geomorphological features of Banda, it still needs remote sensing studies that can provide valuable information on drainage density and lineament intensity, to assist in identifying suitable sites for recharge. Various geomorphic units can also be delineated, which may determine the suitable recharge structures required for the area.

12. The Ministry of Jal Shakti, Government of India guidelines, regulates bulk water suppliers of ground water but bulk water supply of surface water through pipelines is also done in Banda district, so in Uttar Pradesh, Irrigation Department is charging the water rate on the basis of per unit area/quantity of water under Participatory Irrigation Management Act, 2009 and Rules 2010 for the purpose of irrigation. Whereas bulk water supply entitlement is given by the Uttar Pradesh Water Management and Regulatory Commission to a share of water resource produced by a project, river system or storage facility, for a specific period of time and purpose as specifically provided for granting the entitlement. However, such projects need to ensure source sustainability or intervention by the Regulatory Commission.

7. Annexures

The Annexure 1, 2, 3, 3.1, 4 & 5 are attached separately.