

Methods of Water Harvesting: Implication for National Strategy

A Consultation at RGICS in collaboration with
VikasAnvesh Foundation, Pune

June 13, 2019



RAJIV GANDHI
INSTITUTE FOR CONTEMPORARY STUDIES

Authors:

Jeet Singh, Associate Fellow, Environment,
Natural Resources and Sustainability, RGICS

Subhrali Kachari, Junior Policy Associate

© 2019 Rajiv Gandhi Institute for Contemporary Studies

All rights reserved. This publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or otherwise provided it is used only for educational purposes and it is not for resale, and provided full acknowledgement is given to the Rajiv Gandhi Institute for Contemporary Studies as the original publisher.

Published by: Rajiv Gandhi Institute for Contemporary Studies,
New Delhi

Contents

1. Background.....	: 4
2. Methods of Water Harvesting:.....	: 5
- Farm Ponds in Jharkhand.....	: 5
- Doha Model in Jalana (Maharashtra).....	: 6
- Traditional Water Harvesting Methods in the Dang Region (Rajasthan)	: 7
3. Discussion.....	: 8
4. List of Participants.....	: 11

Background



Harvesting of water has been one of the central focuses of water related policies in India. Governments (both union and state) have designed and implemented several programs in the past to harvest runoff not only for livelihood purposes such as agriculture and livestock but also for domestic use and ecosystem servicing. The National Water Policy of India adopted in 2012 stress on the urgent need of promoting traditional and modern methods of water harvesting to address challenges related to looming water crisis in the country. Moreover, it provides for incentivizing and encouraging local level water harvesting initiatives through conversance of programmes like MGNREGA. However, to the large extent the policy remain unimplemented six years after its enactment. India has variety of local community traditions of water harvesting. However, various studies reveal to us that many such traditional methods have been ignored both at the community level and at the level of public policies. However, we also have several successful examples of rejuvenations of traditional water harvesting systems and installation of modern water harvesting system, which have significantly changed life of the people. In order to achieve India's policy goal of water harvesting, we need to understand and learn from implementation and impact of such local initiatives.

The Rajiv Gandhi Institute for Contemporary Studies (RGICS) and VikasAnvesh Foundation (VAF) jointly organized a policy consultation on June 13, 2019 on 'Methods of Water Harvesting: Implication for National Strategy'. This half-day consultation began with three presentations on methods of water harvesting. The first presentation by Mr. Nirmalaya Choudhury from VAF was on Farm Pond method in Jharkhand. Second presentation on 'Doha' model of water harvesting in Maharashtra delivered by Mr. Shashank Deora from VAF. Mr. Sanjeev Kumar from the Gram Gaurav Sansthan presented third presentation on 'Traditional Water and Soil Conservation' methods in the Dang region of the Rajasthan. This report of the consultation highlights methods of water harvesting presented in the consultation followed by the discussion.

Methods of Water Harvesting

Farm Ponds in Jharkhand:

- Presentation on Farm Ponds in the Kolhan region of Jharkhand by the VAF was based on their evaluation study of farm pond constructed by farming communities with financial and technical support from Tata Steel Rural Development Society (TSRDS).
- The purpose of Farm ponds of different sizes constructed by farming community in this region is to store water runoff and use that water for agriculture other livelihood activities such as livestock and fisheries.
- The study found that a small investment in the farm pond by TSRDS changed



(Photo Source: <https://www.villagesquare.in/2018/09/21/farm-ponds-improve-lives-of-singhbhum-women/>)

farmers' life in big ways. This intervention fetched following changes in the life of local farming community.

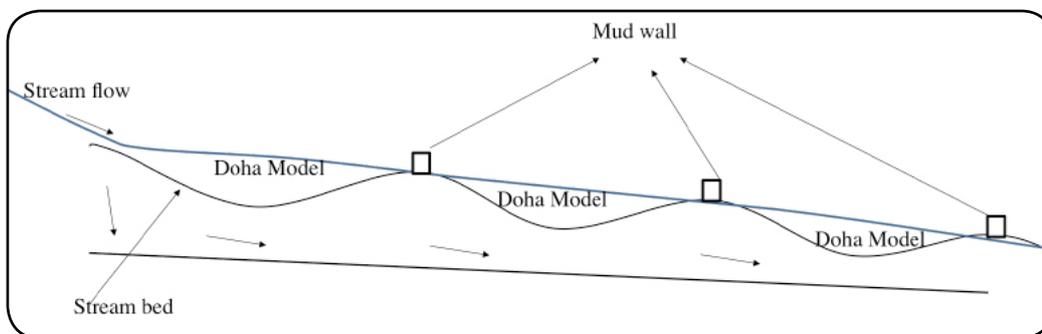
- With the help of this intervention the average crop intensification increased from 146% to 155%. It resulted into surplus the quantity of paddy sold in the market by these farmers increased from 1.5 tones to 2.2 tonnes.
- Paddy remain the main crop in the region, but this intervention helped farmers to diversify their cultivation. The Vegetable cultivation kicked off tremendously and now many farmer have started vegetable cultivation.
- The average agriculture income of farmers increased from Rs. 22.19 thousands to Rs. 77.1 thousands.
- Marginal increase was observed in livestock (cow, goat and poultry) but Fisheries have got a fillip. Fisheries as a source of livelihood has increased from just 13 farmers before the intervention to 85 farmers today.
- "Beyond the farm" - improve storage facility, strengthening market linkages,

packaging and value addition – is becoming increasingly important.

- Among the social groups the ST farmers are yet to benefit as much as the SC and OBC farmers.
- Safe sanitation, clean energy and access of health care seems to elude the otherwise income rich farmers.
- Improved access to drinking water, water for domestic use and dietary improvement.

Doha Model in Jalana (Maharashtra)

A bowl shaped structure is called 'Doha' in Marathi. The Doha model of water harvesting developed by an organization- 'Dilasa Sanstha' is a percolation tanks dug along the length of lower order seasonal streams. These structures facilitated recharge of wells in the agricultural fields close to streams. Facilitated by an increased water availability for irrigation, cropping intensity, cropping diversification and crop yields – especially for winter crops requiring assured irrigation – on these agricultural fields grew more than on the agricultural fields away from streams.



Line Diagram of Doha Model

The Doha model of water harvesting developed in few villages of Jalana region of Maharashtra yielded following results:

- It did not help in increase in number of irrigation sources but increase in water availability in existing sources was observed.
- There was insignificant change in the yield of Kharif crop but significant change was observed in the yield of irrigation requiring rabi crops.
- With Doha in nearby seasonal stream villagers reported increase in the availability of water. Average water level increase in perennial wells was reported 1.7 meter. Water in intermittent wells reported water for extra 49 days in a year.
- Number of livestock increase in villages after Doha intervention.

Traditional Water Harvesting Methods in the Dang Region (Rajasthan):

The Gram Gaurav Sansthan (GGS) and Rajiv Gandhi Foundation have been constructing traditional water harvesting structures in the Karauli district of Rajasthan. This region is popularly known as 'Dang'. The region can be described as undulating, Ravines, High water run-off and soil erosion, Low rainfall (avg 700 mm per annum). Traditional structures of water harvesting constructed by these two organizations includes following.

Pokhars small ponds at elevated sites-water storage and water re-charging in wells located downhill-both community and individual

Taals or large ponds in village vicinity for multi-use by villagers-bathing, drinking, livestock-community

Pagaras soil & water conservation structures for individual agriculture land lying on slopes and low elevation-(based on the ridge to valley concept)-equivalent to Khadins of Desert regions in Western Rajasthan



Achievements and Observations:

- Till date around 200 Pagaras have been constructed by GGS and RGF in Karauli @ ₹1.2 lakh per site with 50% contribution from farmers and remaining as support from RGF. This unit can irrigate 2-3 bighas of land.
- Farmer contribution is in the form of Stones, Sand and Labour while RGF support is in the form of Cement, Mason charge and water.
- There is a huge unmet demand for pagaras but the low labor component does not find NREGS support. If this is enabled, it can be a massive livelihood support for families engaged in farming
- Pokhars which are community based have 33% community contribution (labor mainly) while 67% cost is borne by RGF

Discussion

Following the presentations, participants discussed issues raised through presentations and otherwise related to water harvesting. Moderated discussion around this issue has been summarised as follows:

Integration of modern and Traditional knowledge: We have rich traditional knowledge on water harvesting in India. However, the science and technology has also helped us in understanding water resource more accurately. The hydrogeology varies from place to place. Therefore, it is necessary to use scientific and technical methods along with traditional hydrological knowledge. Few participants highlighted the idea of integrating traditional and modern knowledge for better results. They argued that the traditional methods of water harvesting in most cases are more



reliable. Therefore, the integration of hydro-geological study and traditional knowledge of an area can help us to have more effective harvesting models and improve efficiency of traditional methods.

Water Governance: The governance of water is another big hurdle in better water management. Few participants argued that the power is in the hand of inefficient institutions with no accountability. There is no connect between people and who manages water system and design policies. It was raised that apart from bureaucrats and political leaders, technocrats have great influence in shaping public policies. This group has become highly influential; therefore, it is important that the technocrats must connect themselves with local people to understand ground realities.

It was argued that the management of water could be improved by decentralization

and devolution of power to the local governing system and local people. It was also argued that the decentralization and devolution of power would further help in bringing equity and improving sustainability. Some participants also argued that the Public-Private-Partnership (PPP) model should be promoted from the point of governance rather financial arrangement.

Participants have also discussed the issue of ignorance of bureaucrats and political representatives. Despite looming crisis, both of these groups are negating the fact that millions of people are deprived from the necessity of water. Bureaucrats and political leaders present in the discussion agreed that the combination of various factors, which includes coordination and knowledge, over dependency of people, personal stakes, disconnect of these two groups from local issues leads to systemic ignorance and inefficient system.

Role of the Private Sector: Though the government can be trusted with some models, there should not be complete dependence on the public sector. As the public sector lacks the resource and initiative, the private sector should be given enough scope to enter and entrepreneur in water harvesting. As private sector is immediately accountable to the stake holders, it can be expected that they would function with more diligence. But water harvesting cannot be left alone to either the private or public enterprise. The role of NGOs and individual activists at local levels should also be promoted as they work as a connecting bridge.



Water Resource Management: As seen in Hyderabad, old aquifer storages and ponds should be demarcated and tried to be recovered. The existing wells and ponds should also be maintained and infrastructure to be developed to stop them

from becoming dumping ground

Other punitive ways should also be reduction of water supply in cities by the municipal authorities both in rainy days as well during dry spell. This will compel people to harvest water during rainy days. For cities which get water locked during the rainy days, water harvesting in terms of underground injecting can be used as a rescue. Other ways of constructing underground tanks to store rain water and planting trees should be promoted.

Commons especially in rural area has great importance in securing livelihood and maintaining eco-system servicing. But in last many decades, these commons have been encroached by powerful people. These commons are also important for water harvesting, but the encroachment of it has reduced its benefit.

Convergence and Funding: Participants unanimously agreed that we have numerous example of successful water harvesting model, but there is no avenue to upscale such models. People argued for necessary changes in schemes like MGNREGA to incorporate low cost and locally viable water harvesting model for up scaling. The Chhattisgarh and West Bengal governments now decided to upscale community driven water harvesting programs. But, it took 30 years for leading civil society organization – PRADAN to convince government at such large scale. Their work started from engaging with local government officials either formally or informally.

Policy and Institutional Reform: Participants raised the issue of water related institutions and lack of coordination between them. It was argued that the water should be seen as interlinking subject affecting all natural resources and ecosystem. The current institutional arrangement for example CWC and CGWB and their roles was criticized as it does not go with the wisdom on water resources. Apart from institutions, it was felt that there is lack of data to assess and plan water resources in the country. The discussion on the topic ended with appreciating government's decision to integrate two union ministries on water and demanding institutional reforms suggested by the Dr. Mihir Shah committee in 2016. The committee report provides for integration/coordination between institutions and policy coherence.

List of Participants

#.	Name	Organization
1	Mr. Vikas Arora	SAPED- Krishi Swaraj
2	Mr. Vivek Bhardwaj	KABIL
3	Dr. Vivek Bhatt	WALMI, Govt. of Madhya Pradesh
4	Ms. Nirma Bora	Water Aid India, Delhi
5	Mr. Nirmalya Choudhury	TISS, Mumbai
6	Mr. Anup K. Das	JNU
7	Mr. Shashank Deora	Vikas Anvesh Foundation
8	Mr. Achintya Ghosh	KABIL
9	Mr. M. Hajra	Development Alternatives
10	Mr. B.K. Jha	Activist
11	Ms. Subhrali Kachari	RGICS
12	Mr. Navin Kapoor	ILRT, Delhi
13	Mr. Dinabandhu Karmakar	KABIL
14	Dr. Deeksha Katyal	USEM, GGSIPU, Delhi
15	Mohd. Uzair Khan	Rajiv Gandhi Foundation, Delhi
16	Mr. Sanjeev Kumar	Gram Gaurav Sansthan, Karauli
17	Mr. Ajay Kumar	Manjari Foundation
18	Mr. Vijay Mahajan	Director, Rajiv Gandhi Institute for Contemporary Studies
19	Dr. Vishal Massey	Club of Rome, India
20	Mr. Deepak Mathur	Rajiv Gandhi Foundation, Lucknow
21	Mr. Pankaj Notani	Independent Researcher
22	Dr. Sanjiv Phansalkar	Director, Vikas Anvesh Foundation, Pune
23	Dr. Ritu Priya	SADED and JNU
24	Mr. Ajay Rai	Earth Care Consultants
25	Mr. P.D. Rai	IMI, New Delhi
26	Mr. Gyanendra Rawat	Freelance Journalist
27	Ms. Aoiti Roy	Gurgram Water Forum
28	Mr. Vishnu Sardis	B-ABLE
29	Ms. Gauri Sarin	Rurban Initiatives, Gurgaon
30	Mr. Manas Satpathy	PRADAN
31	Mr. Pradeep Singh	Retd. IAS Officer
32	Mr. Jeet Singh	Rajiv Gandhi Institute for Contemporary Studies
33	Dr. Archana Sinha	Indian Social Institute, Delhi
34	Mr. Kishor Upadhyaya	Forest Rights Movement, Uttarakhand
35	Ms. Nivedita Varshneya	WHH
36	Ms. Sakshi	TERI