Implementation of Watershed Development Programmes in India: A Situational Analysis of Selected Dry Regions

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Abstract

India is a water stressed country if not yet water scare country yet. Water is crucial to maintain it's economic growth and retain self-sufficiency in food production along with realization of safe drinking water to all. Most of the large dams are either over exploited or closer to saturation. Micro watersheds are the key for water security in future. Though country has lunched watershed for all most 60 years still only a third of rain fed area in the country is under watershed development. Despite spending millions of dollars watershed development is yet to realize its full potential. Crucial to the development of successful outcome of micro-watershed intervention is its stake holders; state, PIAs, communities, donor agencies and institutions with technical expertise. Watershed is no longer seen as technical challenge but a nucleus around which sustainable livelihood, ecological security and empowerment of marginalized communities can be enhanced. This paper beings out the specific challenges India is facing in water security in future, water conservation practices in ancient times to modern times and it's relevance, benefit of promoting micro-watersheds, current state policy towards watershed development and issues that need to be addressed at grass root level for better implementation of the watershed programmes. Nine districts in three states; viz. Madhya Pradesh, Maharashtra and Rajasthan which have large rainfed areas were covered in the field work. Out of ninety villages covered i.e. ten villages in each district, only fourteen of them has any IWMP intervention. The investigations shows all 14 IWMPs are either lagging or stagnated, yet to be operational in any credible sense, most of them hardly have any livelihood activities and political differences at local level seriously crippled the functioning of the watershed committees. Urgent intervention is required to ensure timely release of funds from center to state to institutions below, better coordination among various departments operating in the watershed area, putting effective mechanism to ensure difference among villagers not crippling functioning of the watershed committees and to ensure timely training and credit supply to self-help groups to motivate them to take up some livelihood activities. The better management of watersheds are crucial to water security and water governance in India. None of these projects visited by us were of any possibility for conducting any rigorous exercise involving advance analytical tools like cost-benefit techniques, Net Present Value Techniques or sensitivity analysis.

JEL classification: Q25, Q28, Q29, Q30

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Introduction

'Water' apart from 'Air' is one of the most crucial element to sustain life in earth. In cosmos our 'Earth' is the only planet which sustains life because we have both water and air elements in this planet. Most of the planet is covered by sea water. Oceans contains 96.5% of all water available in the planet. Another 1% of the water which is available on the surface is not useable as it is available as saline groundwater or in saline lakes. Thus only 2.5% of the surface water is fit for consumption for humans. Again nearly two-third of this surface water is in frozen form on glaciers in great mountains. No doubt all major rivers on earth start their journey from snowcapped mountains.

All most all civilizations in the history were founded and developed along these river basins or near sweet

water lakes or in places where ground water is fit for human consumption. As population increases, demand for water increases for agriculture, industry, hygiene and sanitation needs, construction work and as input to many other human endeavors. Apart from human life the sweet water also supports life of many aquatic animals and mammals, some of which are also essential to food chain that sustain human civilization. Over the years the pressure on water is only growing, to meet human needs as the population is increasing to nearly a billion in another couple of decades. Both sweet water and human settlements are not homogenously scattered across the planet.

India is one of such example. At present the country has population of 1.35 billion which is roughly one-sixth of the 7.7 billion population on earth in 2018 (as per 'Worldometer' data accessed on 27.10.2018). At the same time India occupies only 2.1% of the land mass on earth and supports every one out of six person on earth. At the same time it has only 4 percent of all water sources on earth (KPMG 2010). As per the KPMG report, India gets 4000 trillions of water from rain and snowfall every year. Most of these water drained to sea via major river systems and only 46 percent could be saved in lakes and ponds (natural as well as man-made). However all stored water cannot be used due to topology and other related factors.

Thus only 28 percent of total 4000 trillion liters of water is available for human consumption in India (ibid). With increase in population the demand for water is increasing for domestic, industrial as well as for agricultural purpose. As per the above report, India was consuming 581 trillions of water during the given year, of which 89 percent was for irrigation, 7 percent was for domestic use and rest were for industrial use (ibid).

Not only humans, India also has 20 percent of all domestic cattle population on the planet which again requires huge amount of water to sustain. Nearly 20.5 million people in India depends directly on livestock farming including cattle. Livestock contributes nearly 14% of total income in rural households. About 9% of the population currently employed in livestock sector. The contribution to national GDP from livestock sector is 4.1% while one fourth of all agricultural GDP comes from livestock sector (annual report 2017-18, Department of Animal Husbandry, Dairying and Fisheries, GOI). So any scarcity in availability of water will affect livelihood of millions of families in Rural India.

Water Crisis in India: Brief Overview

Water becoming a major challenges for policy makers in India. The per-capita availability of water in India has declined from 1,816 cubic metres in 2001 to 1,545 cubic metres in 2011 (KPMG and ASSOCHAM; 2018). In a given region if annual water availability is below 1,700 cubic metres per person it can be termed as a water-stressed region as per United Nations definition. According to the same report, almost 20 per cent of ground water blocks which is roughly translated to 60 percent of the districts in India, are in critical condition or overexploited. On the other hand the per capita availability of river water in India varies from 300 cubic meter to 2000 cubic meter per person per year (ibid). Since most of the rivers are perennial in nature, ground water is the major source of irrigation for the country. Ground water is the source of irrigation for more than 60 per cent of India's agriculture land. Currently ground water caters two-third of India's need for irrigation. With implementation of green revolution and limited coverage of canal irrigation, the irrigation through bore wells gain wide acceptance. In five decades the share of bore well irrigation increased from 1 per cent to 60 per cent between 1960 and 2007. Extraction of ground water has helped the country to add 84 percent more to the total net irrigated area during the independence (Shah; 2013). At the same time only 18-20 percent of the 4000 billion cubic meter precipitation every year, could be used in recharge of India's surface and ground water bodies, as the country lack necessary infrastructure for storing and managing water. At present India is largest user of groundwater in the world with an average abstraction of 251km3/year (ibid).

Not only agriculture but 85 per cent of drinking water supplies in the country comes from ground water supply. Due to climate change the spell of rain is erratic in past couple of decades. This can be detrimental to crop cycle practice in the country and may lead to more dependence on ground water. Growing urbanisation has increased pressure on available water in the country. The worrying part of domestic consumption of water is that almost 80 per cent of it comes back to ecosystem as waste water (KPMG and ASSOCHAM; 2018). This creates problem of environmental degradation and is also source of many communicable diseases. Niti Ayog observes 48 per cent of India's population is under 'high to extreme' water stress. About 75 per cent of Indian households are without drinking water connections at their homes. Nearly 70 percent of the supply water is contaminated by biological, toxic, organic, and inorganic pollutants, and not safe for human consumption, irrigation and industrial use.

A recent report from NITI Ayong, suggests by 2020, almost 54 percent of India's groundwater wells will see depletion in water level. Similarly 21 major cities may also run out of groundwater by 2020. Some 100 million people's livelihood may be affected due to decline in the availability of ground water (Niti Ayog, 2018). People

are digging deeper for ground water which increases the risk of contamination from fluoride, arsenic and other matters. At the same time both rivers and groundwater are also polluted by untreated effluents from industrial units and untreated sewage. Recent events related to climate change has adverse impact on hydrologic cycle, extreme rates of precipitation and evapo-transpiration has resulted in floods and droughts more frequently (Shah; 2013).

There are countries like Israel, Japan, Taiwan etc which have hardly any major river basins or storage of fresh water. But their focus on micro-irrigation systems enabled them to overcome the water shortage and become self-sufficient in domestic food production. Nearly 60% of arable land in these countries depends upon micro-irrigation, in India hardly 5 per cent of India's cultivated area are under micro irrigation (KPMG and ASSOCHAM; 2018). Since India receives 75% of it's annual rain fall in short span of four months i.e. July to September, during monsoon, it is very important for the country to manage the water for rest of the year (Dhawan 2017).

There are certain regions which are frequently experience drought. These areas are Southern and Eastern Maharashtra, Northern Karnataka, Andhra Pradesh, Odisha, Teleangana, Bundelkhand region spread across Uttar Pradesh and Madhya Pradesh and Rajasthan. [http://www.mapsofindia.com/maps/india/drought-prone-areas.html]. Out of total cultivable land in India, 42 percent lies in drought-prone areas. Rain is the only source of water in 54 percent of India's net sown areas. The major crops in India like Rice, wheat and sugarcane constitute about 90% of India's crop production and these are the most water consuming crops. Rice, the major staple food in India, consumes as much as 3,500 litters of water for a kilogram of grain produced. Our farmers use more water (2 to 4 times more) to produce one kilogram of a major food crop compared to China and Brazil. Such is the pressure on ground water in India, nearly 62 per cent of available 398 billion cubic meters of ground water has been extracted mainly to sustain agriculture. (Dhawan; 2017). According to Gandhi and Bhamoriya; 2011, the level of ground-water development i.e. extraction of ground water is very alarming in North-Western states of Punjab, Rajasthan and Haryana (141 per cent, 111 per cent and 105 per cent respectively). Next follows Tamil Nadu (81 per cent), Gujarat at 70 (per cent), and Uttar Pradesh/Uttarakhand (65 per cent).

Brief Overview of Evolution of Water Management in India in Ancient Times

The arguments above clearly shows India needs better water harvest and water conservation approach to sustain it's agricultural growth to feed increasing population, meeting needs of increasing pace of industrialisation along with growing drinking water requirements. While large dams on Perianal Rivers address irrigation and water supply in basin areas, the increasing siltation and irregular rain in monsoons significantly restrict their utility potential in recent times. As discussed above nearly two-third of the land in India is not having any major river basins. Rain water is the only source to millions of people and their livelihood in these areas. In absence of rain water, ground water is the only alternative for the people living in these areas.

Then ground water itself comes from surface flow of rain water which enters underground through cracks in surface and collected in rock beds underneath the soil. So tapping the surface flow to recharge ground water is an efficient way of storing water for future use. The water is also stored in lakes, ponds and wells of various sizes but the amount of water saved in aqua spheres can cater to larger area and recharge the ponds, lakes and wells itself. An efficient ground water recharge method basically slows down the flowing water which then sipped underground, in that process it also increase moisture content of the soil which further helps in growth of various vegetation in it's command area.

From centuries Indian subcontinent is known for measures storing surface water. The Indus civilisation places like Harrapa, Lothal, Dholavira has well laid out structures to capture both surface and flood water for future use. Various dynasties in north India especially in modern Bihar, Madhya Pradesh, Uttar Pradesh and Gujarat built large artificial reservoirs to store water. One such ancient reservoir lake Sudarshan in Junagadh of Gujarat built in 3rd century B.C. is still in use. Near Bhopal a largest known artificial lake was constructed by King Bhoj Parmar, in eleventh century, by constructing a vast embankment across two hills. The lake taps water from 365 streams and springs. The water is still used for drinking water requirement today.

Other such ancient lakes are lakes of Udaipur, Raj Samand lake in Rajasthan and Wullar lake of Kashmir. In South India Chola, Pandya, Pallava, Chera, Vakataka and Kakatiya dynasties developed a vast network of tanks and canals that served both agriculture and irrigation. In Deccan region large reservoirs were built in both ancient and medieval period on sites of large natural depressions and many of them are still in use. Pallavas of 7th century A.D. were famous for construction of anicuts over river cauvery. The Cholas on the other hand were famous for creating chain-tanks i.e. a number of tanks with connecting channels. It is not only rulers but also village communities and rich individual who contributed to construction of large, medium and small

reservoirs throughout the country. Apart from irrigation these large water storages also cater to the cattle and for domestic use directly or indirectly through charging of wells.

From ancient times in the arid and semi-arid areas of northwest India, communities developed mechanism and structure to collect, save and use rain water in underground storage tanks called Tanka, Kunds or Kundis. In western part of Rajasthan roof top water harvesting system is adopted from centuries and every house had such a system. Similar roof top water harvesting system is also seen today in old part of Junagadh city of Gujarat. The forts of Golconda, Junagadh, Burahnpur, Daulatabad, Ranathambor were made invincible because these forts had developed very good water harvesting systems through construction of underground pipes and tunnels to transport water to different parts of the forts.

In the desert areas (western parts of Rajsthan and Kucch in Gujarat) which gets scanty rainfall from centuries, communities built tanks, kunds, step-wells or baolis which are mostly interlinked and tap every natural water flow in the given area. These structures were known in various names as johadhs, khadins, tankas, adlaz, jhalara, modhera, vapi, medhbandhi (in agricultural plots), Virdas. The stored water is taken out through draw wells known as 'rahat' and 'dhekli'. Often these structures help people to wade through drought years for centuries. From ancient times to till date Bandharas and Tals of Maharashtra, the Bundhis in Madhya Pradesh and Uttar Pradesh, Ahars and Pynes of Bihar, Kuhls in Himachal Pradesh, Kuhals of Jammu & Kashmir, Eris of Tamil Nadu, Surangams of Kerala, Pokhurs and Pokhris in Bengal and Odisha, Kattas of Karnataka are still used by local communities to sustain agriculture, livestock, local manufacturing and drinking water during both good rain years or not so good rain years including drought years. The present water policy needs to reinforce these practices to address growing water needs of the people (Pandey 2016, Pal 2016, Sutcliffe et al 2011, Date 2009, Ayngar 2007). It is estimated that nearly 1.3 million human made lakes and pond from ancient times still exists across India. Post-Independence, India continued to focus on developing it's water resources with application of modern technologies and management practices. Focus was on identifying watersheds from it's head to end point streams and organising the required infrastructure for better management of flow as well as stock of fresh water.

Modern hydrology defines, watershed as an area from which the water flows into a common point on the drainage system. Every stream, tributary or river in the nature has an associated watershed. Small watersheds aggregate together to become larger watersheds. The starting point of a stream, with no other streams flowing into it, is called the first order stream. More than one first-order streams come together to make second-order stream. Similarly more than one second-order streams makes third-order stream and so on. It is the stream order that defines the relative location of the intended watershed project (Wani and Garg 2009).

Identifying stream order in a given watershed is helpful in estimating amount of water available in a given watershed. It helps in dividing larger watershed into smaller units for better water flow management. Terrain slope of the intended watershed is very important to identify the objectives which the watershed project can achieve. Relatively larger watershed can be managed in plain valley areas or where forest or pasture development is the main objective. On the other hand in hilly terrains or where intensive agriculture development is planned, relatively smaller watersheds are useful. People and livestock are the integral part of any watershed development initiative and their activities affect the productive status of watersheds and vice versa (ibid).

Water Management in post Independent India

Watershed development and management in independent India has undergone many phases. It started with the River Valley Projects of the 1950s but it was only in the 1980s that the Government of India (GoI) began dry land development programs using a 'watershed approach'. Throughout the development of watershed initiative in India, mainly three Ministries of Government of India, viz., the Ministry of Environment and Forests (MoEF), the Ministry of Agriculture (MoA) and the Ministry of Rural Development (MoRD) are involved (MoRD 2016, Shah 2016, World Bank, 2016a, Nagaraja and Ekambram 2015, Symle et al 2014, Gray and Srinidhi 2013, Wani and Garg 2009, Sharma 2005).

In 1962 soil conservation works in the catchments of major river valley projects were taken up through watershed to check soil erosion and it's consequence on storage capacity of large dams. In 1967 first comprehensive policy on watersheds were made. In 1971 under Rural Works Programme, watershed development were given priorities. In 1973-74 Drought Prone Area Programme (DPAP) was launched under MoRD to promote economic development and mainstreaming of drought prone areas through soil and moisture conservation measures. In 1977-78, Desert Development Programme (DDP) was launched under MoRD where the objective was to minimize adverse effects of drought and desertification through reforestation. The DDP also adopted watershed development approach to achieve it's objective.

In 1989 Integrated Wasteland Development Programme (IWDP) was launched under MoRD with the objective of regenerating degraded non-forest land through silvipasture and soil and water conservation techniques at the village level through promotion of micro-watersheds. Same year another programme named Integrated Afforestation and Eco-Development Scheme (IAEPS) was launched under Ministry of Environment & Forests (MoEF) and State Forest Departments to restore and regenerate the ecological balance of degraded forests on a watershed basis using a participatory approach (involving local communities).

In 1990 National Watershed Development Project for Rainfed Areas (NWDPRA) under Ministry of Agriculture (MoA) was launched to promote sustainable natural resource management, enhance agricultural production, restore the ecological balance, reduce regional disparities, and create sustained employment opportunities in rainfed areas of the country. In 1992 Indo-German Watershed Development Programme8 (IGWDP) was launched to rehabilitate micro-watersheds for the purpose of regeneration of natural resources and sustainable livelihoods, using a participatory approach. National Bank for Agriculture and Rural Development (NABARD) and the Watershed Organisation Trust (WOTR) were the nodal agencies to implement the scheme. This is also the period when donor agencies from foreign countries funded various micro watershed projects in India. Department for International Development (DFID), Government of the United Kingdom, Swedish International Development Agency (SIDA), Swiss Development Cooperation (SDC), the Royal Netherlands Embassy (RNE), the Danish International Development Agency (DANIDA) and the development agencies of Germany and Japan were some of the major donors to implement micro watershed across the length and breadth of the country.

In 1994 MoRD brought common guidelines for watershed development to promote micro watersheds through participatory approach. It invested huge amount of money in micro watershed to complement the effort of the voluntary organisations supported by the foreign donors. In 1999–2000 Watershed Development Fund was created under MoA and NABARD to provide financial support to scale up successful participatory watershed development projects in 100 priority districts. In 2001, government of India revised the 1994 watershed guidelines and brought other programmes like IWDP, DPAP, DDP, and other similar programs notified by GOI under the common guideline. Participatory approach was now universal to all ongoing watershed schemes.

In 2002 National Afforestation Programme (NAP) combining IAEPS and three other forestry programmes was launched under MoEF to develop forest resources using a participatory approach and build capacity of communities who depends on the forest. In 2003, MoRD brought out Hariyali guidelines to focus on further Integration of local community level institutions in implementation of DPP, DPAP, and IWDP. In 2005 the largest job guarantee programme in the world Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) was launched under supervision of MoRD to enhance livelihood security in rural areas. Under the programme at least 100 days of guaranteed wage employment a year to every household whose adult members volunteer to do unskilled manual work. The scheme gives emphasis on creation of community based assets especially natural resources. Nearly 60 percent of the assets created under the programme is related to development of watersheds through soil and water conservation, afforestation, and land development. To quote Mihir Shah *"Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has potential to be our largest watershed programme, giving renewed energy to the reformed Integrated Watershed Management Programme (IWMP) launched in the Eleventh Plan and launching a completely revamped programme on Repair, Renovation and Restoration (RRR) of Water Bodies"*, (Shah 2013).

In 2006 Parthasarathy Committee under Planning Commission was constituted to evaluate the DPAP, DDP, and IWDP. The Committee reviewed India's Watershed Program extensively and came out with various suggestions which led to formulation of the Neeranchal Guidelines and the creation of National Rainfed Area Authority (NRAA). The later created common guidelines for all watershed schemes under the different ministries for the development of rainfed farming systems. In 2008 NRRA came out with common guidelines for watershed development (Neeranchal) to promote a fresh framework to guide all WSD projects in all departments and ministries.

Neeranchal was formally launched in 2014 and it will run upto 2022. World Bank (WB) gave 50% of total 357 million US dollars while rest was given by Government of India. As of October 2018, only 0.23 million US dollar has been given by the WB for the programme. Out of total available fund 38% was allocated to Agricultural Extension, Research, and Other Support Activities, 34% towards construction of Irrigation and Drainage, 4% towards Public Administration - Agriculture, Fishing & Forestry and remaining 1% for other Agriculture, Fishing and Forestry.

In 2009 Integrated Watershed Management Programme (IWMP) was launched by MoRD consolidating three programs: IWDP, DPAP, and DPP. The new program aims to develop cluster of micro-watershed (1000 ha

to 5000 ha scale) to enhance sustain livelihood for the beneficiaries. In 2011 MoRD again revised its common guidelines for watershed development developed in 2008. The revision was done based on feedback received from concerned ministries, departments, state governments, and NGOs. Another revision to the revised common guideline was done in 2011 by NRRA and planning commission to integrate the objective of developing rain fed areas through IWMP (ibid).

However the performance of IWMP is not as intended by the planers. Six states that has 65.6 per cent of the total rain fed area in the country (viz. Maharashtra, Rajasthan, Madhya Pradesh, Karnataka, Gujarat and Andhra Pradesh) were sanctioned 52.8 per cent of the total projects for covering an area to the extent of 54.6 per cent with 58.9 per cent of the total funds released. However only 37.8% of the rain fed area could be covered by the projects in these selected six states, with a high proportion of area covered in Rajasthan (50.8 per cent) to a low of 29.0 per cent in Madhya Pradesh and 29.3 per cent in Andhra Pradesh. Above figures were for years 2009-10 to 2014-15 (Nagaraja and Ekambram 2015).

In 2015-16, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) was launched. It aims at to accord high priority to water conservation and its management. PMKSY envisages to extend the coverage of irrigation with motto of **'Har Khet ko pani'** and improving water use efficiency with the slogan on **'More crop per drop'.** It aims to address the water issues in a holistic manner i.e. end to end solution in terms of creation, distribution, management, field application and extension activities related to all sources of water. All ongoing schemes related to irrigation and water conservation were merged into PMKSY. The programmes that were merged under PMKSY were Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWRRD&GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) of Department of Agriculture and Cooperation (DAC). For financial year 2015-16 when the programme started, an outlay of Rs.5300 corer has been made towards PMKSY. Out of the total available funds, Rs. 1800 corer was for DAC, Rs. 1500 corer for DoLR (which also runs IWMP); Rs. 2000 corer for MoWR (of which Rs. 1000 corer was for AIBP).

Currently under 'participatory' watershed development approach helps in integration of community members in watershed development alone but also promote ecosystem-based interventions (e.g. Afforestation, agro-forestry), technical interventions (e.g. human-built interventions for soil and water conservation and drought mitigation), and social interventions (e.g. women's self-help group development, capacity building) for holistic development of communities living in the watershed. At present India spends nearly 4 billion US dollar in watershed management programme every year (Gray and Srinidhi 2013). The cost benefit analysis from meta-analysis of watershed literature in India till 2012 shows the ratio to be varying from lowest 1.34 to 7.1568 (ibid).

Findings from Filed Survey

In 2015-16 and 2016-17 we have covered 9 districts in 3 states of Madhya Pradesh, Maharashtra and Rajasthan. In all these 3 states we have covered 9 districts; Damoh, Sagar and Vidisha in Madhya Pradesh, Nanded, Parbhani, Hingoli and Jalna in Maharashtra and Nagaur and Sikar in Rajasthan. The states, districts and 10 villages in each districts to be visited, were allotted to Gujarat Institute of Development Research, Ahmedabad by Ministry of Rural Development (MoRD) of Government of India for regular monitoring of its flagship programmes. IWMP is one of the programme that was monitored during the visit. A structured questionnaire is used to gather relevant information. We also held focus group discussion with various sections of the villagers to document their opinion about implementation of watershed programme in their village. As already highlighted above, Madhya Pradesh, Maharashtra and Rajasthan are among 3 out of 6 states in India having 60 percent of total rain fed areas. In Madhya Pradesh 29.0% of total rain fed areas were covered under IWMP between 2009-10 and 2014-15. In Maharashtra 35.0% of total rain fed areas were covered under IWMP between 2009-10 and 2014-15. In Rajasthan 50.4% of total rain fed areas were covered under IWMP between 2009-10 and 2014-15 (Nagaraja and Ekambram, 2015).

Status of watershed projects in Damoh, Madhya Pradesh

Damoh constitute part of Bundelkhand region that falls in Madha Pradesh. Bundelkhand region is a known water scarce region in India and also comes under 250 most backward districts in India. It has a geographical area of 7306 square kilometers, 38% of which are forested regions. The district receives help under Bundelkhand Special Package. According to 2011 census, 80% of district's population lives in rural area. Of the total district population, 19.5% are from scheduled caste and 13.1% are from scheduled tribe.

The district is facing drought like situation consecutively for past 4 years. In fact the entire Bundelkhand region is receiving 27%-47% less than normal rainfall over the years in recent past. Agriculture is the principal activity in rural areas. There is also incidence of high seasonal migration, especially after the rabi crop, in the rural areas to cities like Bhopal, Indore, Nasik, Nagpur, Mumbai,

Delhi and Surat. Failure of agriculture for successive years played a major role in accelerating migration.

Integrated Watershed Management is essential in a district like Damoh where water is scarce and the region is undergoing through drought for past four years. The district had spent Rs. 1922.29 lakhs against target of 1989.27 lakhs available for IWMP in the said year (approximately 97% of the available fund) and covered 15200 hectares of land against target of 16019 hectares (95.0%). The lion share for the programme is received from central grant while state's share is only 9.6% for the year 2014-15.

Given the fact that the district has only two major perennial rivers, Sonar and Hiran and lacks any major irrigation infrastructure, watershed development could be game changer for the district's agriculture. The coverage of watershed development has to be widened. The talukas we visited, Damoh, Bathiyagarh, Hatta and Tendukheda were having very few villages covered under the IWMP.

Only in one out of ten villages which were allotted to us in Damoh district we found any watershed development work was being carried out. This was Jangupura in Bahtiyagarh taluka. Only one check dam was being constructed under IWMP in convergence with MGNREGS. The dame was to be completed due to lack of funds. The wage payment to labour was still pending. There were no details available of the said project with the village officials or villagers. Since the project was constructed under MGNREGS, no watershed committee was required to be constituted. So participation of the community was not seen in the above said project.

Status of watershed projects in Sagar, Madhya Pradesh

Sagar is one of the centrally located districts in Madhya Pradesh having a geographical area of 7306 square kilometers, 38% of which are forested regions. The district is connected to major national and state level highways as well as rail heads. Like Damoh this district also falls in Bundelkhand region. According to 2011 census, 70% of Sagar's population lives in rural areas. Of the total district population, 34.3% are from scheduled caste and scheduled tribe.

Agriculture is the principal activity in the district. The district has also high incidence of seasonal migration due to lack of livelihood alternatives in the district in non-farm sector. After the rabi crop, large number of people from rural areas of the district migrate to cities like Bhopal, Indore, Nasik, Nagpur, Mumbai, Delhi and Surat. Failure of agriculture for successive years due to poor monsoon for past couple of years has accelerated migration.

The district had spent Rs. 2672.19 lakhs against Rs. 2726.65 lakhs available fund for IWMP in 2014-15 (approximately 98% of the available fund) and covered only 1440 hectares of land. There was no target set for the programme that year by the district administration!! The lion share for the programme is received from central grant while state's share is only 9.4% for the year 2014-15. Given the fact that the district has few perennial rivers, and lacks any major irrigation infrastructure, watershed development could be game changer for the district's agriculture. The coverage of watershed development has to be widened. Only in one out of 10 villages we visited we found any watershed related activity was undertaken (Jera village).

Only in one out of ten villages in Sagar district we found any watershed development work was being carried out. This was Jera village in Jaisinagar taluka. One check dam was constructed under IWMP as entry point activity in 2012-13. All mandatory procedures like taking clearance from gramsabha, participatory rural appraisal for beneficiaries and proper exit protocol were undertaken. The watershed committee has 3 women members.

Under livelihood component, total of 9 SHGs were formed under this watershed development programme. Few of them have taken up vegetable cultivation and goatrey. There are 4 water user groups formed, but these were not functioning during out visit due to lack of water in the check dam. These groups were also given training in running SHGs as mandated by the IWMP but no credit was available to them till the time of our visit for starting any livelihood activity.

But the details about IWMP project like area covered under the project, information about SHGs and user groups were not displayed in the notice board of gram panchayat office or community building, as mandated under IWMP guidelines. Because of lack of rain for past 4 years there was no water in the check dam when we visited. Since the district is drought prone one would expect such water conservation activities could be undertaken under MGNREGS in large scale in this region.

Status of watershed projects in Vidisha, Madhya Pradesh

The area of the district Vidisha is 7731 square kilometre, of which 20.6% are forest. According to 2011 census, 77% of Vidisha's population lives in rural areas. Agriculture is main livelihood for the people in the district. Of the total district population, 19.8% are from scheduled caste (SC) and 4.9% are from scheduled tribe (ST) as per 2011 census.

Vidisha is neighbour to Bundekhand region but not part of it. It has Betwa and few perennial rivers crisscrossing

a part of the district. In 2014-15, 4963 hectares were covered under IWMP against target of 5930 hectares. Out of total Rs. 595.57 lakhs available to IWMP, 84.0% of the available fund was utilised.

The lion share for the programme (88.0%) is received from central grant for the year 2014-15. Given the fact that the district has few perennial rivers, and only a few major irrigation infrastructures, watershed development could be game changer for the district's agriculture. The coverage of watershed development has to be widened. In none of the 10 villages we visited there were any IWMP implementations during the time of our visit.

Status of watershed projects in Nanded, Maharashtra

Nanded is of the country's 250 most backward district and receiving Backward Regions Grant Fund Programme (BRGF) since 2006. The district is facing drought like situation consecutively from 2013 onwards. The long term average annual rainfall is little over 900mm but in 2014-15 and 2015-16 the rainfall was scanty (40-45% less of long term average rainfall). Agriculture is the principal activity in rural areas which suffered heavily from monsoon failure. This leads to incidence of high migration, in the rural areas to various cities of Maharashtra and Telengana (mainly Hyderabad).

Apart from monetary income, during drought the availability of drinking water is another major problem for rural people in place like Nanded as the ground water in many of the villages have gone down to alarming level due to lack of adequate rainfall and over dependence on ground water to save at least one crop.

Integrated Watershed Management is essential in a district like Nanded where water is scarce and the region is facing drought for past four years. The district had spent Rs. 2357 lakh out of Rs. 3085.8 lakhs available to it (76.4% of the available fund) and covered little more than one lakh hectare of land against target of 2.11 lakh hectares (49.7%) under IWMP in 2015-16. The lion share for the programme is received from central grant for the year 2015-16. Given the fact that the district has mainly perennial rivers and rain is mostly scanty in recent past, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened.

Out of the 10 villages in the district, we got IWMP being implemented in only 2 villages. These are Hasnali and Dudhad-Walkewadi villages, where IWMP being implemented from 2014 onwards and 2011 onwards respectively. In Hasnali 100 hectares were covered under IWMP during the time of out visit. In Dudhad-Walkewadi nearly 1000 hectares were covered during the same period. In both the villages the gramsabha had approved the programme and details were painted in panchayat office walls. Watershed committees were formed in both places and in Hasnali, 3 out of 15 members were women and in Dudhad-Walkewadi, 2 out of 11 members were women. In Hasnali no self-help groups or water user groups were formed yet. So the programme is limited to earthen work which helps in ground water recharge and soil conservation.

In Dudhad-walkewadi under the programme 15 self-help groups and 14 water user groups were formed. The groups were given training and revolving fund of Rs.25000 has been provided to each of SHGs. However there is no water storage yet, as the check dams not constructed so far. So both the IWMP projects are long way to go to achieve their mandate. It is also observed the IWMP related meetings/resolutions were maintained in general gramsabha record. The head of the 'Panlotsamiti' or watershed committee have hardly any clarity of the issues unless assisted by sarpanch and panchayat secretary.

Status of watershed projects in Hingoli, Maharashtra

The district is one of the country's 250 most backward district in 2006-07 and receiving Backward Regions Grant Fund Programme (BRGF) since then. The district is facing drought like situation consecutively from 2013 onwards which entire Marathawada region is suffering at present. The long term average annual rainfall is 895mm but in 2014-15 and 2015-16 the rainfall was scanty (40-45% less of long term average rainfall). Agriculture is the principal activity in rural areas which suffered heavily from monsoon failure.

Integrated Watershed Management is essential in a district like Hingoli where water is scarce and the region is facing drought for past four years. The district had spent Rs. 1468.44 lakh out of 1797.04 lakhs available to it (81.7% of the available fund) and covered 18361.3 hectares of land out of 45591 hectares that was planned (49.7%). The lion share for the fund towards IWMP was received from the central government in that year (96.2%) and balance carried forward from previous year. There was no state release. Given the fact that the district has mainly perennial rivers and rain is mostly scanty in recent past, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened. Only 2 of the villages have any watershed out of the 10 village we have covered in the district.

These were Lohgaon and Sawna villages where IWMP being implemented from 2014 and 2011 onwards respectively. In Lohgaon 1052 hectares of land were covered under the IWMP. While in Sawna only one check dam has been constructed (of earth and boulder). In both the villages the gramsabha had approved the programme and only in Lohgaon details were painted

in panchayat office walls. Watershed committees were formed in both places.

In Lohgaon 2 out of 11 members were women and in Sawna, among 15 members 2 were women. In both Lohgaon and Sawna SHGs were formed under IWMP. In Lohgaon there were 10 SHGs and IN Sawana there were 27 SHGs respectively during out visit. All the SHGs were not functioning at the time of the survey and till date none of the SHGs had received any monetary assistance from any source. There was no water user groups formed in any of these 2 villages because the projects were not designed to hold the water. However both the IWMP projects are long way to achieve their mandate. It is also observed that the IWMP related meetings/resolutions were maintained in general gramsabha record. The head of the 'Panlotsamiti' or watershed committee were present with us and shown us the records of the meeting of the watershed committee time to time.

Status of watershed projects in Parbhani, Maharashtra

The district falls in country's 250 most backward districts and receiving Backward Regions Grant Fund (BRGF) since 2006. The district is facing drought like situation consecutively from 2013 onwards, like other parts of Marathawada. The long term average annual rainfall is 895mm but in 2014-15 and 2015-16 the rainfall was scanty (40-45% less of long term average rainfall). Agriculture is the principal activity in rural areas which suffered heavily from monsoon failure. Out of total workforce in the district, as per 2011 census, 35.86% were cultivators and another 38.63% were agricultural labourers. This implies nearly 74.5% of workers depend upon agriculture in the district, much higher than the state average is 53%. Only 12.9% (57135 hectares out of 441918 hectares cultivable land) of the cultivated area in Parbhani has access to some irrigation, rest depends upon seasonal rain. The consecutive failure in monsoon leads to incidence of high migration, in the rural areas to various cities of Maharashtra and Telengana (mainly Hyderabad).

Integrated Watershed Management is essential in a district like Parbhani where water is scarce and the region is facing drought for past four years. The district had spent Rs. 483.2 lakhs out of Rs.514.99 lakhs available to it (93.9% of the available fund) and covered 5243.26 hectares of land. However no information was available for the target set that year. The lion share for the fund towards IWMP was received from the central government in that year (95.0%) and balance carried forward from previous year. There was no state release. Given the fact that the district has mainly perennial rivers and rain is mostly scanty in recent past, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened. In none of the 10 villages allotted to us there were any IWMP projects being implemented during the time of the survey or before that.

Status of watershed projects in Jalna, Maharashtra

The district has a sub-tropical climate, in which the bulk of rainfall is received from the southwest monsoon, between June to September. The average annual rainfall of the district ranges between 650 to 750 mm. The district often experiences drought with rainfall recording as low as 400 to 450 mm. The Economy of the Jalna district is based on agriculture and agro-industries, as the 85 % of the geographical area is under agricultural use. Out of the total 7, 61,200 hectares of the geographical area, 6,51,553 hectare of land is under agricultural use. Kharif crops are usually shown in 75 % of the total land under agriculture, where as only 40% of land are under Rabbi crops. The Jawar, Wheat and cotton are the major cereals grown in the district. The area under double crops is just 15% of total land under agriculture while area under irrigation is only 7.8% which is far below the state average. Jaikawadi project is the only major project having capacity of irrigating 36000 hecters (one-third of total irrigated area in the district).

The district is declared as one of the country's 250 most backward districts in 2006-07and receiving Backward Regions Grant Fund (BRGF) since then. The district is facing drought like situation consecutively from 2013 onwards, like other parts of Marathawada. The long term average annual rainfall is 895mm but in 2014-15 and 2015-16 the rainfall was scanty (40-45% less of long term average rainfall). Agriculture is the principal activity in rural areas which suffered heavily from monsoon failure. Out of total workforce in the district, as per 2011 census, 42.8% were cultivators and another 28.1% were agricultural labourers. This implies nearly 70.9% of workers depend upon agriculture in the district, much higher than the state average is 53%. Only 7.5% of the cultivated area in Jalna has access to some irrigation, rest depends upon seasonal rain. The consecutive failure in monsoon leads to incidence of high migration, in the rural areas to various cities of Maharashtra and Telengana (mainly Hyderabad).

Integrated Watershed Management is essential in a district like Jalna where water is scarce and the region is facing drought for past four years. The district had spent Rs. 66.9% of Rs.1382.7 lakhs available to it and covered little more than 6000 hectares of land. However no information was available for the target set that year. The lion share for the fund towards IWMP was received from the central government in that year (58.8%), followed by state government (22.0%) and balance carried forward

from previous year. Given the fact that the district has mainly perennial rivers and rain is mostly scanty in recent past, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened. In 4 of the 10 villages we visited, there were IWMP projects being implemented but all of them are yet to achieve it's desired goals.

The villages where we found IWMP being implemented during out visit were Paradgaon and Ravana from Ghansavangi taluka and Butkheda and Shipora of Jafrabad taluka. All the mandatory processes were followed in implementation of the programme. The gramsabhas were consulted and the project proposals were approved by the panchayats in their meetings. The watershed committees were formed. In such respective committees, presence of women members were very limited. In Paradgaon 2 out of 21 members were women, while in Ravana out of 11 members 2 were women, in Butkheda out of 11 members 3 were women and in Shipora 2 out of 11 members were women.

In Paradgaon 66 SHGs were formed under watershed committee. Here the project started in 2009-10. The purpose of the watershed development was soil conservation not the storage of water per say. Out of proposed 2881.21 lakhs of rupees till date, 345.75 lakhs of rupees (12.0%) were spent till date and 139.72 hectares (6.6%) out of proposed 2115.6 hectares of land had been brought under the IWMP so far. As entry point activity one drinking water project was completed and still it provides water to villagers. However the overall performance could be termed as 'poor' because none of the SHGs were into any economically productive activity. No financial assistance had been provided to them yet. The project details were not painted on the walls of the panchyat or any other building in the village.

In Ravana, 13 SHGs were formed under watershed committee. Out of the 13 SHGs, 2 SHGs were given sewing machine each, 1 SHG was provided with flour mill, 3 other SHGs were given 30 goats each to start animal husbandry, 1 more group was provided with thresher and a landless family has been provided with resources to start a repair shop. Here the project started in 2009-10. The purpose of the watershed development was soil conservation not the storage of water per say, though earthen ponds were built. Till date 1250 hectares of land was brought under IWMP. The compartment bunding was done to check the force of the water and help in ground water recharge and protection of top soil. Three earthen ponds were constructed to hold water but had very less water due to poor rain.

As entry point activity one public well was dug to provide drinking water to villagers in Sabar Nagar locality. Also two computers were given to the school for children and one mechanized zym machines was given to the local youth club. The overall performance could be termed as 'satisfactory' because most of the SHGs were into any economically productive activity. The project details were not painted on the walls of the panchyat or any other building in the village.

In Butkheda village the watershed area was under 1000 hectares. Total of 17 SHGs were formed but they were not into any economic activity yet. Water user groups were there (36 of them) but all of them were defunct as the project yet to have any water. The informations were painted on Panchayat building wall. We verified the records of the watershed committee and found various resolutions but not much execution. In entry point activity one library was given to the village which helps children of the village to prepare for competitive examinations. People appreciated the library very much.

In Sipora village the IWMP project was at initial stage. Though 15 SHGs were formed no economic activity had been initiated yet till our visit. However in January 2016 they were given some training to initiate economic activity of their own. The gramsabha approvals for the design and work estimates for the project was underway during out visit. The project aims to treat 1232 hectares of land belonging to 300 farmers. The details of the project were yet to be painted on the wall. Overall except for Ravana, in other 3 villages IWMP has long way to go to achieve their objectives.

In case of IWMP, there is certain complain in written of mal practice in implementation of the project from Ravana village. So we recommend the concerned officials to investigate the matter further if found suitable for the same by concerned authority.

Status of watershed projects in Sikar, Rajasthan

Sikar has total geographical area of 7,742.44 square kilometer of which 8.27% is under forests but these are mainly thorny bushes and shrubs. Aravali mountain range divides the districts in two topographical parts. There are no perennial rivers in the district. The most of the rain water drained into dry desert regions or to Sambar lake. Sikar district ranks 6th in terms of population, 17th in terms of area and 10th in terms of population density among 33 districts of Rajasthan.

The district experience very hot climate in summer, ranging from 45 degrees Celsius to 52 degrees Celsius, while in winter it may come down below zero degrees Celsius. The long term average annual rainfall is 460 mm and most part of the district experience dry and hot climate for most part of the year. The agriculture mainly depends upon rain water. Mostly coarse cereals, pulses, fodder and oilseeds are cultivated and recently cotton has gained popularity. Over extraction of ground water for

agriculture has complicated the issue of sustainability of agriculture in the region. Rural people in this region for centuries depend upon the state for survival in terms of food and job in absence of agricultural work due to poor monsoon. Most of the mansions, palaces, forts and public utilities in the region built during such difficult times. The district lacks any major industrial or urban centers which could create adequate employment. Migration to other parts of the country and abroad for unskilled and semi-skilled jobs is quite common in the region.

Integrated Watershed Management is essential in a district like Sikar where water is scarce. The district had spent Rs. 1516.52 lakhs out of Rs. 2495.85 lakhs available to it (60.8% of the available fund) and covered 10110 hectares of land against the target of 26667 hectares (72.0%). The lion share for the total available fund towards IWMP in 2015-16 was carried forward from previous year (64.1%). In 2015-16 the center and state releases were Rs. 585.61 lakhs and Rs.309.41 lakhs respectively.

Given the fact that the district has to depend only on rain water and ground water in absence of any perennial rivers, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened. Only 1 of the villages has any watershed out of the 10 village, we have covered in the district.

Integrated watershed development works was only found in Kudli village (Piprali taluka). It was started in 2015-16 and to be completed by 2020-21. It covers 4800 bigha land in the village. The works were approved by gramsabha. Participatory rural appraisal (PRA) activity had been done during the starting of the project. We found signboards with all relevant details about the IWMP in the villages properly installed at prominent places. Since Sikar is part of the dry central region from Rajasthan the IWMP mostly involves construction of rain water harvesting structures for individual households and for community use.

There were 7 women self-help groups (SHGs) and 2 water user groups formed under the project. The water user committee has 10 members, 3 of them are women. However during our visit we found no physical activity has been started so far. Only training was given to SHGs in July 2016. Revolving fund was not given to them till the time of our visit. No entry point activity had been done yet. The project is worth Rs. 2 corers but the releasing of funds is not adequate to take up the construction of physical assets. We were not given information that how many community and individual water storage tanks were going to be constructed under the project.

Status of watershed projects in Nagaur, Rajasthan

Nagaur is one of the prominent districts in Rajasthan having historical, cultural, political and religious significance in both inside the state and outside. A major portion of the district falls in Thar desert. The district is connected to major national and state level highways as well as rail heads. The district is bounded by Bikaner district to the northwest, Churu district to the north, Sikar district to the northeast, Jaipur district to the east, Ajmer district to the southeast, Pali district to the south, and Jodhpur district to the southwest and west. In a way it is geographical heart of the Rajasthan state. The Aravalli Range passes through southeastern portion of the district, and the saline Sambhar Lake, India's largest salt lake lies at the southwestern corner of the district, marking the boundary with Jaipur district. It has total of 1631villages. Of the total geographical area of 17718 suare kilometers of the district, 1.3% is covered under hills and desert forests.

The district is primarily rural as 70% of the worker engaged in agriculture; 51.5% as cultivators and rest are agricultural labourers. The long term average annual rainfall is 361mm and most part of the district experience dry and hot climate for most part of the year. The agriculture mainly depends upon rain water.

Mostly coarse cereals, pulses, fodder and oilseeds are cultivated and recently cotton has gained popularity. Over extraction of ground water for agriculture has complicated the issue of sustainability of agriculture in the region. Rural people in this region for centuries depend upon the state for survival in terms of food and job, in absence of agricultural work due to poor monsoon. The district lacks any major industrial or urban centers which could create adequate employment. Migration to other parts of the country and abroad for unskilled and semi-skilled jobs is quite common in the region.

In 2015-16, the district spends 46701.7 lakhs on the total of seven programmes of Ministry of Rural Development, Government of India, which is 94% of total funds that was available to it. On all programmes, the district spent less than what was available to it. On IAY the fund utilization was 30%. On IWMP the utilization was 72%. On NRDWP the utilization was 79%. On rest of the programmes over 90% of the funds were utilized.

Out of the total funds which was available to district administration, 22792.08 lakhs (46.1%) were from central grant, 19005.31 lakhs were from state (38.4%), 7552.92 lakhs were carried forward from previous financial year (15.3%) and remaining from other sources.

Integrated Watershed Management is essential in a district like Nagaur where water is scarce. The district had spent Rs. 3814.11 lakhs out of Rs.5284.79 lakhs available to it (72.2% of the available fund) and covered 25426 hectares of land against the target of 35330 hectares (72.0%). The lion share for the total available fund

towards IWMP in 2015-16 was carried forward from previous year (62.2%). In 2015-16 the center and state release were Rs.983 lakhs and Rs.958 lakhs respectively. Given the fact that the district has to depend only on rain water and ground water in absence of any perennial rivers, watershed development is crucial for the district's agriculture. The coverage of watershed development has to be widened. Only 3 of the villages found to be having any watershed activity out of the 10 village we had covered in the district.

Integrated watershed development works were found in Mawa (Didwana taluka), Meethri and Udrasar (Ladnun taluka) villages. The works were approved by gramsabha. Participatory rural appraisal (PRA) activity had been done during the starting of the project. We found signboards with all relevant details about the IWMP in the villages properly installed at prominent places. Since Nagaur is part of the dry central region of Rajasthan the IWMP mostly involves construction of rain water harvesting structures for individual households and for community use. These structures found to be meeting the drinking water requirement of the beneficiaries from 4-6 months of the year post monsoon.

Actually Udrasar and Meethri village comes under same IWMP project. The Ringan is the third village which is covered in the same project. In Udrasar 1615 hectares of land to be covered, while in Mithri 1915 hectares to be covered. In both of these villages we visited, the village crematorium grounds were developed (boundary walls constructed and cremation sheds were provided with tin roofs) as part of entry point activity. Also 5 large community water harvesting tanks each were provided. Each of these community tanks cost Rs. 1.59 lakhs. Till date 13 individual tanks were constructed in Udrasar and 27 tanks in Meethri. The targets for each village under the project were 134 tanks and 113 tanks respectively. The cost per tank is Rs. 1.2 lakh. However the project is at present stopped due to lack of funds. Only 20 percent of the funds spent so far. In Udrasar, 9 women self-help groups (SHGs) were formed and in Meethri, 8 SHGs were formed under IWMP. In Udrasar none of the SHGs were provided with seed money yet while in Meethri 6 of the 8 SHGs got Rs. 25000 each as revolving fund. They were found only doing internal lending activities.

In Mawa village the watershed project is estimated to be Rs. 1.3 corers of which Rs. 28 lakhs or 20% spent so far. At entry point activity 4 community water harvesting tanks were constructed and village cremation ground was renovated with boundary wall and tin roof. Out of those 4 community tanks, 2 were for animals, 1 for crematorium and 1 for the school. Till date 28 individual tanks were constructed out of 101 totals to be constructed. Here 9 women SHGs were formed and provided with Rs. 25000 revolving funds. Each SHG has 5 women members. So far 15 women from these SHGs had purchased cow, 3 women had purchased buffalo and 11 women beneficiary had purchased sewing machine. Apart from these 9 SHGs, 3 individual beneficiaries were also given assistance for livelihood activities. In all 3 watershed villages we visited, we found the watershed committees were formed with adequate women members.

The gramsabha records show the discussions taken place on IWMP implementation in the village. However when we asked for records of monthly meeting registers we were told these were kept with concerned officials from taluka offices and not in gram panchayat offices. Apart from the chairman of the watershed committee no other member came to meet us. Overall we found the IWMP programme in all these 3 villages are facing shortage of funds and it is unlikely they will meet the target in stipulated time period. The programme suffers from irregular release of funds. Only 20-30% of the financial and physical targets met till date in Mawa, Meetrhri and Udrasar villages. Keeping in mind the water scarcity region in which most of the district falls, the programme implementation should not be delayed. The implementation of IWMP in Mawa, Meethri and Udrasar villages are in standstill. The project should start at the earliest to achieve it's objective. All the women SHGs must get revolving fund and other assistance to expand their activities.

Summary and Policy Implication

There were some major issues that emerges from the implementation of the IWMP programmes in these three states which constitute bulk of the rainfed areas in the country. There is lack of proper supervision on part of project implementing agencies or PIAs across the districts of the 3 states. Often we observe there is also tussle between panchayat and watershed committee especially in Maharashtra which are seen as competing power centers in the same village. While the members of the watershed committee are selected in participatory approach the panchayat is an elected body and often ask its opinion to be honoured in matters of decision.

In most of the 14 villages we have visited across these 3 states the projects are either stagnated or lagging. One of the reason is fund is nor released in time. Most of the structures we visited are without water during our visit due to long spell of inadequate monsoon in these areas. Due to lack of rain the check dams or ponds were being neglected and people do not see any use of them. It is found the community assets created under IWMP were not properly maintained. However the individual water tanks to collect rain water constructed in Nagaur were maintained properly as people drink water from

them. In Madhya Pradesh and Maharashtra it is found the public is not aware of the respective IWMP projects as informations are not displayed at prominent places in the village.

The immediate policy intervention that is needed to make IWMP relevant is to adhere to the timeline for implementation of the project. Since centre gives 90% of funds in IWMP, fund should be released in time. The progress of each watershed project should be made available digitally for better supervision and monitoring. The geo-tagging itself may help to preserve and maintenance of these assets. Except for couple of watershed projects it was found the livelihood activities hardly took off. Most of the SHGs were without any revolving fund or training. This is not acceptable as sustainable livelihood creation is one of the major objective of the IWMP. In case of political difference in the project area the supervising authorities most immediately step in to ensure smooth functioning of the water shed committee and water user groups. The coordination between elected local bodies like gram panchayats and selected bodies like watershed committees and water user groups is very crucial for the success of the programme. It is also observed the PIAs are short of man power, especially skilled and technical manpower like project engineers. This creates burden for existing man power and delay the progress of watershed development. The adequate manpower must be made available in PIAs.

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