



**EXPANDING
AQUACULTURE-BASED
LIVELIHOOD
OPPORTUNITIES THROUGH
MAHATMA GANDHI
NREGA**

An Exploration

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Abbreviations

CSR	Corporate social responsibility
CWRM	Composite Water Resource Management
DoF	Department of Fisheries
DPR	Detailed Project Report
FIDF	Fisheries Infrastructure Development Fund
FPO	Farmers Producer Organisation
GIS	Geographical Information System
INRM	Integrated Natural Resource Management
KCC	Kissan Credit Card
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MSME	Micro, Small And Medium Enterprise
NRAA	National Rainfed Area Authority
NRLM	National Rural Livelihood Mission
NRM	Natural Resource Management
PMMSY	Prime Minister Matsya Sampada Yojna
PRI	Panchayati Rajya Institution
RKVY	Rashtriya Krishi Vikas Yojna
SC/ST	Scheduled Caste/Scheduled Tribe
SDG	Sustainable Development Goal
SFAC	Small Farmers Agriculture Consortium
SHG	Self-Help Group
WFP	World Food Programme
WM	Water Management

Executive Summary

'Enhancing Rural Resilience through Appropriate Development Actions (ERADA)' is an Indo-German development cooperation project commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, India is implementing the project in partnership with Ministry of Rural Development (MoRD), Government of India (GoI). It also supports the *Corona Immediate Programme* of the BMZ. The objective of the ERADA project is to strengthen the livelihoods of vulnerable households based on locally available natural resources and development support programmes in cooperation with the Public Employment Programmes, especially the Mahatma Gandhi National Rural Employment Guarantee Act (Mahatma Gandhi NREGA). It is operational at a national level and in eight blocks across eight aspirational districts in four Indian states namely Bihar, Jharkhand, Madhya Pradesh, and Rajasthan.

Mahatma Gandhi National Rural Employment Guarantee Scheme (*Mahatma Gandhi NREGS*) is the world's largest programme, which ensures employment of unskilled labours and conservation of soil and water through various water harvesting structures. Under this programme around 168 types of works are identified which belong to water conservation, giving ample opportunity to another livelihood sector like fisheries and pond-based livelihood. Fisheries and aquaculture is one of the emerging sectors contributing to ensuring food and income security, earning foreign revenue, and ensuring gainful employment for more than 16 million people. Additionally, more than 20 million people are engaged along the value chain. Harnessing the potential of existing waterbodies and incorporating better management practices can engage millions more and ensure doubling farmers income.

This report aims to highlight the potential under the *Mahatma Gandhi NREGS* programme for expanding aquatic livelihood through convergence with other flagship programmes.

This report is part of a series of five thematic areas study reports, covering livestock, non-farm, agriculture, aquaculture; and trees and forest-based livelihood activities

under *Mahatma Gandhi NREGA*. The motto is to 'not reinvent the wheel', and build on the existing successful thematic livelihood-based activities with a potential to replicate and upscale at larger level in five thematic areas.

Mahatma Gandhi NREGS programme becomes more impactful after convergence with other programmes like National Rural Livelihood Mission (NRLM). *Mahatma Gandhi NREGS* also created many assets during the past years which further generate an opportunity for the development of aquatic livelihoods. In this context aquatic livelihood represents not only the fisheries sector, but other plant origin produces like *Makhana* (Foxnut), *Singhara* (water chestnut), and value addition of products. Under the wetland management, water hyacinth infestation is the primary challenge. It is faster growing aquatic weed and spreads everywhere in wetlands. This report also gives potential opportunity in value addition of water hyacinth to prepare various products which are used in our daily life.

This report focuses more on the potential impacts to create aquatic livelihood, noting merely the heterogeneity across states and that in many states the implementation of the programme needs to adopt different localised strategies. The report also gives suitable recommendation and systemic strategies for sectoral development through the *Mahatma Gandhi NREGS* programme.

The report presents a programme framework named as "Project Pokhar", that may be piloted as it integrates the *Mahatma Gandhi NREGS*, convergence with other mainstream programmes like Prime Minister *Matsya Sampada Yojna* (PMMSY), *Kisan Credit Card* (KCC), *Amrit Sarovar Yojna*, Fisheries Infrastructure Development Fund (FIDF), and National Rural Livelihood Mission (NRLM). Farmer's practice, resource and water quality data will be collected using different data collection methods to provide bundles of micro-services to farmers and local micro-entrepreneurs.

This report concludes that integrating proposed livelihood strategy through water-resource assets will bring millions of durable asset creation, sustainable micro enterprises generation and ensuring income and food security at micro level.

Introduction

Project Objective: The objective of Enhancing Rural Resilience through Appropriate Development Actions (ERADA) project is to strengthen the livelihoods of vulnerable households based on locally available natural resources and development support programmes.

The project has three outputs:

Improving wage work potential of vulnerable households and enhancing the natural resource base

Long-term green livelihood development, in convergence with the National Rural Livelihood Mission (NRLM) and other relevant national and state programmes

Improving convergence and strengthening of multi-stakeholder platforms for providing better access to vulnerable households

The Mahatma Gandhi National Rural Employment Guarantee Scheme (*Mahatma Gandhi NREGS*) is one of the most pivotal legislations passed by the Government of India. In 2005, *Mahatma Gandhi NREGS*, along with the Right to Information Act, marked the importance of rights-based legislation in India, and secured the crucial rights to work and accountability for citizens in the Constitution.

Over the years, several independent studies and review has contributed to developing scope of implementation from creating “Common Asset to Livelihood Generation”. Various categories of work have been integrated in *Mahatma Gandhi NREGS*. Many State Governments have also passed government order to incorporate innovative scheme like horticulture, fisheries, and aquaculture etc., e.g., by West Bengal Government way back in 2012, through GoI in year 2016, and Government of Orissa in the year 2020-21.

Mahatma Gandhi NREGS was widely seen by both the rural poor and returned migrants as a lifeline during the COVID-19 crisis, and a record 40% increase in the demand for work was observed as compared to the previous year. While *Mahatma Gandhi NREGS* was not necessarily designed to be a crisis-response measure, its existence served as a crucial buffer against starvation for many impoverished families. However, prevailing issues in the scheme’s implementation acted as an exclusionary force for many returned migrants.

A preliminary survey conducted by PRIA in June 2020 across 65 panchayats in five states revealed that migrants didn’t just have trouble reconciling their divergent skillsets with the manual work provided under the scheme; they were also grappling with delays in job card issuance and wage payments. The COVID-19 pandemic has thus highlighted the definite need to address the deficiencies in the scheme’s implementation and secure the rights of all workers as envisaged in the Act.

In such a difficult situation, ERADA envisaged to restore rural livelihood in selected aspirational districts of Bihar, Jharkhand, Madhya Pradesh, and Rajasthan in convergence with the *Mahatma Gandhi NREGS*. *Mahatma Gandhi NREGS* focuses on creating livelihood asset for both at individual and community level. A much unexplored part of livelihood can be developed using water bodies and pond-based livelihood systems or pond-based. Various other government initiatives, like Prime Minister Matsya Sampada Yojana (PMMSY), Fisheries Infrastructure Development Fund (FIDF), Tribal Development Fund (NABARD) etc. can be used in convergence model to restore livelihood and promote aquatic livelihood section in identified project locations.

The objective of the ERADA project is to strengthen the livelihoods of vulnerable households based on locally available natural resources and development support programmes.

1

Indian Aquaculture Sector

Fisheries and aquaculture is one of the emerging sectors contributing to ensuring food and income security, earning foreign revenue, and ensuring gainful employment for more than sixteen million people. Additionally, more than twenty million people are engaged along the value chain.

Harnessing the potential of existing waterbodies and incorporating better management practices can engage millions more and ensure doubling farmers income.

India has a diverse fisheries and aquaculture potential, ranging from coastline of over 8,000 km, an Exclusive Economic Zone of over two million sq km, the inland resources are in the form of rivers and canals (1.95 lakh km), floodplain lakes (8.12 lakh Ha), ponds and tanks (24.1 lakh Ha), reservoirs (31.5 lakh Ha), brackish water (12.4 lakh Ha), saline/alkaline affected areas (12 lakh Ha) etc. (DoF,2019).

The share of fisheries sector in the total GDP (at current prices) increased from 0.40% in 1950-51 to 1.03% in 2017-18, achieving an increase of almost 157%. The sector contributed INR 1,75,573 crores to the GDP (at current prices) during FY 2017–18 (MoSPI, 2020). Fisheries sector is one of the key contributors of foreign exchange with India being one of the foremost seafood exporting country.

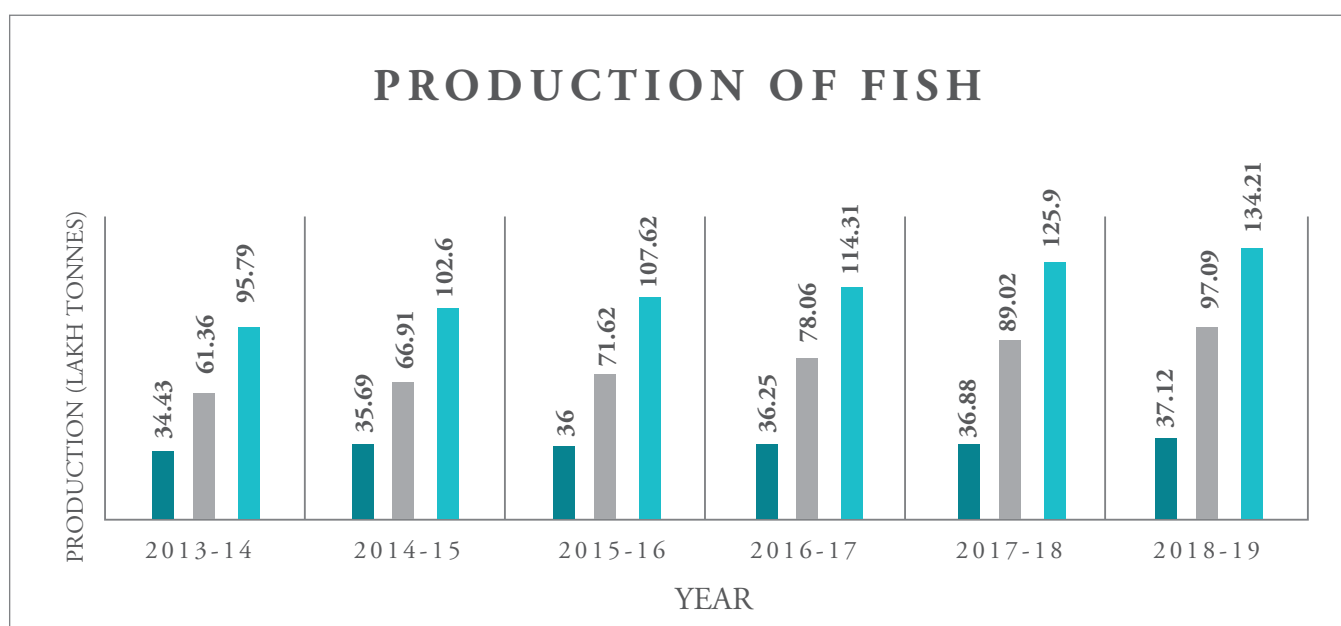
The total fisheries potential of India has been estimated at 22.31 million metric tonnes, of which potential of marine sector is estimated to 5.31 million metric tonnes and potential of inland fisheries is estimated at 17 million metric tonnes (DoF, National Fisheries Policy, Draft 2019). In the last few years, the fish production in India has registered an

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average annual growth rate of more than seven percent. The total fish production in the country increased from 0.752 million metric tonnes in 1950-51 to 13.42 million metric tonnes (provisional) during FY 2018-19. Of this, the marine fisheries contributed 3.71 million metric tonnes and the inland fisheries contributed 9.71 million metric tonnes. The average growth in fish production during 2017-18 stands at 10.14%, mainly due to 14.05% growth in Inland fisheries when compared to 2016-17 when compared to 2016-17 (DoF, 2019).

The unutilised and unexplored various inland water resources offer eminence possibilities for fisheries and aquaculture-based livelihood development and leading to economic prosperity for millions of people.

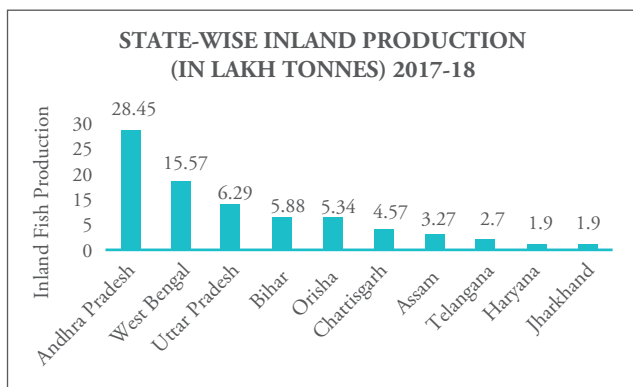
Foreseeing the larger contribution towards ensuring economic development through fisheries and aquaculture sector, the Government of India has announced the mission “Blue Revolution” to strengthen “Blue Economy”.



Graph 1: Production of fish in India during 2013-2019 (DoF, 2019)

The Marine sector and brackish water sector are major contributors of export earnings, whereas freshwater fishes are consumed mostly in domestic market. It is visible that contribution of freshwater fish production is increasing as compared to marine fisheries.

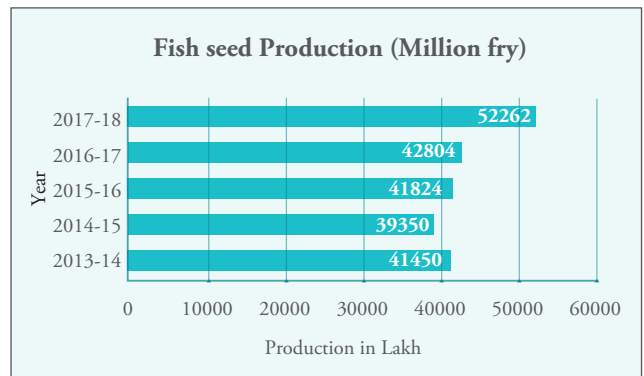
Due to rise in commercial farming, aquaculture production has increased to 6.2 million metric tonnes in FY 2017-18 from 1.9 million metric tonnes in 2000-01. About 88% of the farmed fish comes from freshwater aquaculture. But there is with much potential to harness existing fisheries potential of India. During 2018-19, 71% of marine fisheries potential has been harnessed, whereas only 58% of inland fisheries potential was harnessed during the same period (DoF, National fisheries policy, 2019)



Graph 2: State wise Inland fish production State, (DoF 2017-18)

Considering existing waterbodies potential, many of the eastern Indian states like Jharkhand, Orissa, Bihar need to promote favorable ecosystems to harness Inland fish production potential. Access to better quality and timely seed availability is one of the prerequisites for the inland fisheries sector. The existing 1784 hatcheries produces 40,54,04 lakh fry. To further raise pond productivity; a total no. of 3,88,430 Lakh fry is required to fulfil requirement of deficit 1,94,215 lakh fingerlings (DoF, Mission Fingerlings, 2017-18). Such massive target needs additional 50,490 Ha. of rearing ponds. Considering existing potential of Mahatma Gandhi NREGS ponds, innumerable small and seasonal ponds and farm ponds created under various programme there is a huge potential to scale up aquatic-based livelihood initiative and diversify aquatic food production system.

Rashtriya Krishi Vikas Yojna (RKVY) has designated resources for fisheries-based livelihood generation programme but it is mostly missed in other large scale programme of similar nature e.g. The Watershed Mission, Jal Jeevan Hariyali and NRLM .



Graph 3: Fish seed production, DoF 2018-19

One of the largest freshwater fish seed markets in India based at Naihati, West Bengal supplies freshwater and aquaculture fish seed to almost all states of India. Most of the catfish and other commercial variety of fish seeds are imported across the Bangladesh border. The fish seed demand for *Pangasius*, *Tilapia*, *Mangur*, *Koi (Anabas)*, *Roopchand* has been growing in recent years, which is mostly supplied through the Bangladesh route. In sum, still fish seed sector in India needs to build capacity to fulfil domestic demand.

In Inland culture fisheries, access of quality seed, low input culture system, lack of diversity in culture practices and species, credit linkages, disease outbreak, low levels of investment, marketing support, dependency on monsoon, poor extension support services, limited availability of technology and input support, post-harvest processing facility, absence of cold chain traditional marketing system are challenges across states. Other macro level issues, like lack of management practices at cooperative level, insufficient stocking of waterbodies, issue with tenure and lease rights, poor market linkages and supply chain, primitive methods of fishing operations, absence of credit support and seasonal nature of fishing operations are some of the important limiting factors.

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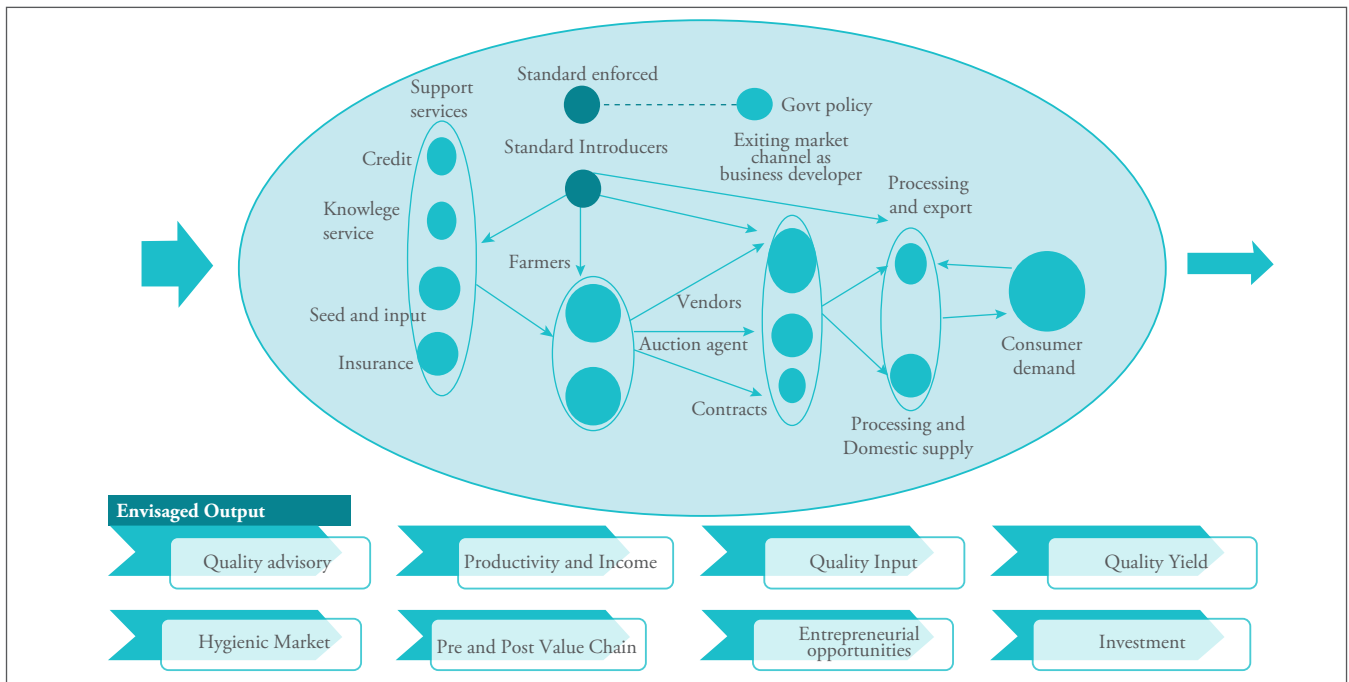


Figure 1: Systemic issue in fisheries sector in India

Capture fisheries in India is managed by fisheries cooperatives. During last few years, it has been observed that most of the traditional fishery's cooperatives are struggling for access and tenurial rights. Most of the cooperatives comprises of traditional fishing communities' members with low education, inability to ensure technology and credits; their waterbodies are controlled by external traders. This situation is more prevalent in inland sector across states like Madhya Pradesh, Maharashtra, Assam, Telangana etc. many states auctioning system is delineating traditional fishing community and cooperative members to sustain their livelihood. They are gradually turning as a labour for contractor or moving out of fishing-based livelihood.

It has been well documented that mostly fisheries cooperative members lack training on modern fishing techniques, technology, and access to credit. Other parameters of

socio-economic status like education, income level, savings and expenditure etc. are also not satisfactory, and need the attention of the Government to address issue of the fishermen to improve their socio-economic status (Indrani and Kanagraj, 2019).

Since the fisheries and aquaculture sector is diverse and dynamic, the scope of the National Inland Fisheries and Aquaculture Policy (Draft), 2019 comprehends development, management and regulation of inland fishery resources including aquaculture in freshwater and brackish water areas and strengthening institutional mechanism, post-harvest management, strengthening and modernisation of the value chain. Proposed national fisheries policy is a unified approach to tackle issue and challenges of across sector marine, Inland, brackish water sector.

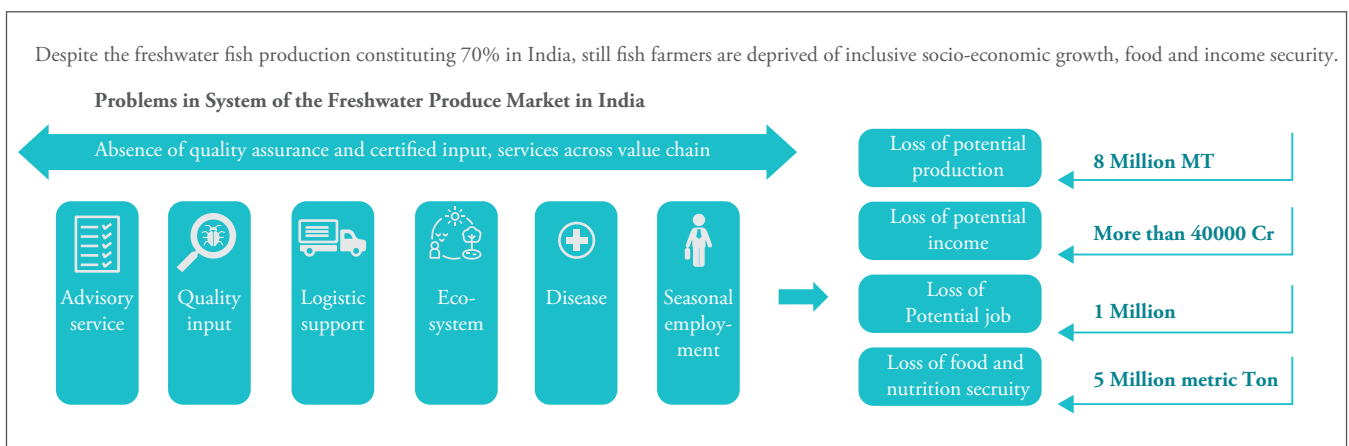


Figure 2: Challenges in fisheries and aquaculture sector

The major bottlenecks in the inland fishery sector in India include non-availability of good quality fish seed particularly fingerlings, weak institutional arrangement, governance and management practices in fisheries cooperatives, absence of knowledge centres, limited capacity building/technical support to the fish collectives, lack of credit linkages and limited marketing facilities for fresh fish.

The central governments initiative to create a Fisheries Infrastructure Development Fund (FIDF) in year 2019 and Prime Minister Matsya Sampada Yojna (PMMSY) in year 2020 with a vision to create more infrastructure and promote growth of sector is a way forward to integrate various production system, quality fish seed, adoption of good aquaculture practices, feed, value addition facilities etc. as a cluster development approach.

Over the last few years, the fisheries sector of India has made impressive strides towards modernisation and sustainable economic growth through concerted and collaborative efforts by the government and private sectors. Recognising the immense potential of this sector, the Indian government launched a new flagship scheme called as Pradhan Mantri Matsya Sampada Yojana (PMMSY) at a substantial investment of INR 20,050 Crores for the holistic development of fisheries in the country.

PMMSY, marking the historically largest investment in the Fisheries sector, aims to drive ecologically health, economically viable, and socially inclusive growth that contributes meaningfully towards the economic prosperity and wellbeing of fishers and fish farmers as well as to the food and nutritional security of the country. The scheme will be implemented across the country over a period of five years with an aim to attain and additional fish production of 70 lakh tonnes, to double fisheries exports to INR 1,00,000 Crores and to generate 55 lakh employment opportunities for socio-economic development.

One of the major issues with PMMSY is selection of entrepreneurial beneficiary and develop detailed project report (DPR) as per the cost norms in guideline. There cannot be a unique DPR guidelines to aquaculture and fisheries activities because major cost in farming is allocated to feed and seed cost. Since most of the Indian state are dependent on West Bengal and Andhra Pradesh for seed

supply, it's important to develop convergence plan integrating *Mahatma Gandhi NREGS*, DAY-NRLM, fisheries dept, Cooperative dept, Horticulture dept together.

Some suggestive points for better implementation of PMMSY scheme through convergence mechanism are underlined:

For aquaculture sector, it was also exemplified that the state fisheries departments were to arrange for capacity building, supply of livelihood components in the form of fingerlings, manures, etc. by mobilising available funds of other on-going schemes.

Develop compendium of aquatic livelihood farm advisory for implementation and farmers skill building under *Mahatma Gandhi NREGS* and DAY-NRLM,

Develop roadmap, strategy, convergence framework and models for aquatic livelihood activities under DAY-NRLM

Perspective development exercise for decision-makers, leadership, and planning experts.

Presenting farm pond as climate resilient technology and livelihood opportunity across aquatic livelihood thematic area

2

Status of Mahatma Gandhi NREGS

The *Mahatma Gandhi NREGS* aims at enhancing the livelihood security of the people in rural areas by guaranteeing hundred days of wage employment in a financial year to a rural household whose members volunteer to do unskilled manual work. The objective of the Act also includes creation of durable assets and strengthening the natural resource base livelihood of the rural poor. The choice of work suggested in the Act addresses the causes of chronic poverty like drought, deforestation, soil erosion and so on, so that the process of employment generation is sustainable. *Mahatma Gandhi NREGS*, this is the one of largest rights-based social protection initiative in the world. As per the Schedule I of the Act, the work under *Mahatma Gandhi NREGS* will be essentially creation of sustainable rural assets.

Many programmes were initiated by the Government of India namely National Rural Employment Programme, Rural Landless Employment Guarantee Programme, Jawahar Rozgar Yojana and Sampoorna Grameen Rozgar Yojana in the past.

Named differently under different regimes, these programmes have primarily aimed at providing the rural poor with wage employment opportunity through community works. The programmes went through a paradigm shift in early 2006 with the Mahatma Gandhi National Rural Employment Guarantee Act (as *Mahatma Gandhi NREGS*) which had several legally binding provisions including a guarantee up to 100 days of work a year on demand to every rural household willing to do unskilled manual work.

The *Mahatma Gandhi NREGS* builds on earlier experience with Employment Guarantee Scheme (EGS) in Maharashtra. The key component of *Mahatma Gandhi NREGS* is the provision of employment by the state at a prescribed wage for those unable to find alternative employment, which provides a form of social safety net to the rural unemployed people. Long term objectives of the scheme include:

- a) Enhancement of livelihood security in rural areas,
- b) Creating productive assets,
- c) Protecting the environment,
- d) Empowering rural women and,
- e) Fostering social equity.

The first words in the official text of *Mahatma Gandhi NREGS* are:

“An Act to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage

employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto.” Apart from affirming the ‘right to work’, the Act also seeks to ensure that the poor have a say in decisions on the works to be undertaken, so that such works contribute to improvement in their livelihoods.

The core objectives include:

Providing a minimum 100 days’ work as per demand, and creating productive assets of prescribed quality and productivity to enhance rural infrastructure

Strengthening the livelihood resource base of the rural poor

Proactively ensuring social inclusion

Strengthening Panchayat Raj Institutions (PRIs)

As per para 4 (1), Schedule I of the Act, focus of the Scheme is on the works categorised as below:

Category-A: Public Works Relating to Natural Resources Management

Category-B: Community assets or Individual assets for vulnerable sections (only for households in paragraph 5)

Category-C: Common Infrastructure Including for NRLM Compliant Self-Help Groups

Category-D: Rural Infrastructure

Since its inception, *Mahatma Gandhi NREGS* has generated 3,834.56 crore (383.45 million) person days as of April 2022 and created over 6.31 crore (63 million) geo-tagged assets as of 2022. In 2021-22, around 805 lakh households demanded employment under *Mahatma Gandhi NREGS*

across major states, but around 802 lakh households received employment. The gap varies across states. States like Madhya Pradesh, Rajasthan, Bihar and Uttar Pradesh performed poorly as compared to other major states. In view of the widespread agrarian distress that has engulfed substantial parts of the country, shortfall of days of employment from 100 days, across major states, is not on account of lack of demand for work; rather, it reflects opportunity to strengthen implementation process.

Paradigm shift: Towards creating resilience in rural livelihood

Since 2016, Natural Resource Management (NRM) has been an important component of *Mahatma Gandhi NREGS* to promote sustainable livelihoods for the poor. About 60 percent expenditure has been allotted for the creation of natural resource assets (both community and individual assets).

Mahatma Gandhi NREGS brought comfort to 55 million households by ensuring livelihoods from April to August 2020. Many of those who got jobs under the scheme were the ones who had reverse migrated from cities due to complete shutdown during the pandemic.

In 2020, the scheme managed to repair, rejuvenate, or construct over 6,00,000 water harvesting structures such as check dams, farm ponds, or tanks across India. Ultimately, water harvesting enables better groundwater recharge and water availability for rain fed farming those accounts for 51% of the net sown area and nearly 40% of the total food production in India.

Till date, *Mahatma Gandhi NREGS* accounts for only the number of works done, person-days generated, and the number of households that have benefited from the programme. Given the large budget allocation and the NRM-focus of the programme, it is important that the assets created under it are durable, and the benefits are monitored and quantified and programmed to use it for sustainable livelihood generation. Various case examples are compiled and published on water conservation and use of ponds for fisheries-based livelihood in a website, <https://MGNREGSsuccess.wordpress.com>

However, tracking the benefits of *Mahatma Gandhi NREGS* that go beyond job creation and asset creation requires a framework. Such a framework should be able to track not just the asset location but its condition and the livelihood benefits that are generated through improvement in natural capital like water, soil, and tree cover.

In terms of socio-economic impacts, *Mahatma Gandhi NREGS* has made some very significant achievements:

- *Mahatma Gandhi NREGS* has widely been cited, including by the World Bank, as one of the largest social security schemes in the world.
- As per NREGS MIS, Though the scheme mandates that 33.3% of workers be women, trends over the last decade have regularly averaged at over 52% nationwide. Multiple studies have indicated that *Mahatma Gandhi NREGS* has had a positive impact by making more work accessible and available to rural women (GoI, 2014) and Dreze 2011).
- In areas where the scheme is implemented efficiently, the self-targeting, demand-based mechanism has been effective in helping the most vulnerable access the scheme. According to the *Mahatma Gandhi NREGS* MIS, on average, 40% of the total households employed under *Mahatma Gandhi NREGS* each year belong to people of Scheduled Castes and Scheduled Tribes. The programme has had significant effects on consumption and poverty of SC/ST households in the lean agricultural seasons. Trend may vary from state to state, it needs a thorough analysis of NREGS MIS.
- There is also evidence to show that the *Mahatma Gandhi NREGS* has put upward pressure on agricultural wages which improves welfare for the poorest.
- Assets created under *Mahatma Gandhi NREGS* are useful to local communities. Where principles of Integrated Natural Resource Management have been properly applied, they have resulted in improved quality of agricultural and watershed management assets, both at the individual and community level, as well as in creating infrastructure that meets key local needs. Apart from approved wage employment days, an additional 50 days of wage employment is provided over and above 100 days in the notified drought affected areas or natural calamity areas in the country on recommendation of the Ministry of Agriculture and Farmers Welfare.

3

Potential of Livelihood Generation through Mahatma Gandhi NREGS

An important component of *Mahatma Gandhi NREGS* is creating assets that aid natural resource base and improve the quality of cultivable and cultivable waste land, as well as aid in local watershed management. Since the implementation of *Mahatma Gandhi NREGS*, many CSOs have worked actively at local and higher levels to ensure that planning and implementation of works under *Mahatma Gandhi NREGS* follows principles of Integrated Natural Resource Management (INRM) in a manner that improves the natural resource assets as well as benefits local communities. INRM, when properly conducted, requires highly localised planning and innovations to ensure that the needs of local communities are met and sustainable livelihoods are generated through the *Mahatma Gandhi NREGS* works, while ensuring the sustainability of the works and the environment.

CSOs have created resources to help governments establish mechanisms to promote INRM in *Mahatma Gandhi NREGS* nationwide. e.g., PRADAN worked with the Ministry of Rural Development to develop guidelines on INRM in *Mahatma Gandhi NREGS*, and to build capacities to institutionalise it. The Centre for Youth and Social Development has played a constructive role in Odisha to facilitate proper implementation of INRM guidelines. The Indo-German development cooperation project 'Water Security and Climate Adaptation' that GIZ India implemented on behalf of the German Federal Ministry for Economic Cooperation and Development was instrumental in implementing GIS technology in *Mahatma Gandhi NREGS* works planning and implementation. Composite Water Resource Management (CWRM) is one such new addition in the list of CSO engagements.

The trajectory of community asset to “works on individual land” has created types of livelihood assets. Individual beneficiary based scheme accounted for 67.3% , a sharp rise from 21.4% of the total works over the years. During last

Individual beneficiary based scheme accounted for 67.3% , a sharp rise from 21.4% of the total works over the years. During last few years, creation of over 18.17 lakh individual farm ponds, 10.56 lakh Vermi/Nadep pits, 4.85 lakh soak pits, 5.16 lakh wells, support for 1.54 crore rural housing beneficiaries, 1.3 lakh goat sheds, 5.56 lakh cattle sheds have been constructed boost thrust on livelihood security.

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Works related to water and soil conservation, afforestation and land development were given top priority under the *Mahatma Gandhi NREGS*. The water management (WM) works specifically includes:

- a. Water conservation and water harvesting
- b. Drought proofing
- c. Irrigation canals
- d. Provision of irrigation facility to land owned by households belonging to SC/ST or to land of the beneficiaries of land Reforms/Indira Awas Yojana/BPL families
- e. Renovation of traditional water bodies
- f. Land development
- g. Flood-control and protection works

A list of all types of permissible asset creation under each category and its possible utilisation for promoting water based livelihood is presented in **Annexure 1**.

Impact on Agricultural Productivity

While there isn't clear evidence that *Mahatma Gandhi NREGS* has impacted the agricultural sector at the macro level, there is on-ground that the scheme has had a positive impact for farmers in growing crops. Studies show how works created under *Mahatma Gandhi NREGS*, when properly constructed and implemented, can greatly improve agricultural productivity and the quality of life in rural communities. They indicated that *Mahatma Gandhi NREGS* assets resulted in overall improvements in land quality, and beneficiaries report increased incomes. Some eventually transition away from *Mahatma Gandhi NREGS* work and are even able to open small local businesses due to the increased income resulting from improved land productivity.

A study by IISc (Indian Institute of Science) 2011 and Tiwari et al. (2013) found that *Mahatma Gandhi NREGS* assets they studied reduced the vulnerability of agricultural production, water resources and livelihoods to uncertain rainfall, water scarcity and poor soil fertility. A survey of 2,000 households in 40 villages in Andhra Pradesh, Rajasthan, Madhya Pradesh and Karnataka quantifies clear benefits in terms of reduced soil erosion, increased water availability, groundwater recharge and biomass (IISc, 2011). In a survey of perceptions of users of 4,100 assets in 100 villages in 20 districts in Maharashtra,

farmers consistently viewed water conservation and harvesting works as enabling diversification of crop production for the market, maintaining livestock, and expanding area under irrigation and cultivation.

In broad terms, there is evidence suggesting a rejuvenation of agriculture through increased cropping intensity, area expansion, and the growing of more commercial crops. The *Mahatma Gandhi NREGS* assets have contributed to building

resilience and reducing farmer vulnerability as well and in the management of natural disasters.

Considering the nature and size of the WM works undertaken, many believe that *NREGS* would yield a remarkable impact on rural water management, providing water security in some water-deficit areas (Shah 2010) and protecting some other areas from devastation caused by floods.

Asind block of Bhilwara district in Rajasthan has been facing severe water shortage, especially during summer season. The annual rainfall in the region has remained less than 500 mm since 2008. The minor dams constructed in the early years have also dried up due to erratic rainfall because of which women travelled long distances to fetch drinking water. A traditional village pond called Dharmi Talav in the village Bramhonon ki Sareri was filled with sand mounds and wild babul trees making it unsuitable for any use. The villagers requested for its renovation in the year 2017.

— Implementation —

The proposal for renovation of Dharmi talav was approved by the Gram Sabha in August 2017 under *Mahatma Gandhi NREGS* at a cost of INR 35.08 lakh (INR 6.25 lakh on wages and INR 28.83 lakh on materials). Removal of sand mounds, bushes and the deep-rooted Babul trees from the channel carrying water to the pond was a daunting task. Trenches were dug inside the pond to increase its water retention capacity and help percolation of water to the underground aquifer.

— Impact —

Apart from meeting drinking water needs of a population of 5,000 in the village, the pond also met the water needs of nearly 2,500 livestock. Approximately 150 farmers depending on 21 wells downstream now get sufficient water for rabi crops, mainly wheat. The yield of wheat has increased from 300-400 kg to 500-600 kg per acre. The irrigated area has increased by 18.54 hectare. The pond now covers 9.84 hectare of land with an increased storage capacity of 108 lakh gallons of water. Due to enhanced soil moisture, 50 bigha of pastureland now have a vegetation cover throughout the year. An increase of three to six feet in water table in the nearby wells has reduced the plight of women as they are no longer required to walk long distances to fetch water.

— Villagers says —

We used to get impure water in our village, which made our children sick with joint pain. They are feeling better now. Our animals suffered as they had no proper access to water. Deepening of the pond has increased the availability of water. “Though this village received water from Chambal river, the water was not enough always. The bore well dug near the pond now supplements the drinking water needs of the village quite efficiently”.

Source: <https://MGNREGSsuccess.wordpress.com/>

4

Convergence Potential with Mainstream Programmes

SHG and NRLM

Ten years since the NRLM was first launched, India has the largest network of women's SHGs across the world. As of May 2021, there are 6.9 million SHGs in India with 75 million members across 7.83 lakhs villages. During its launch, the programme declared its goal of covering 70 to 80 million rural poor households in ten years, to include every last village in India.

NRLM has multiple, overlapping goals, such as: poverty reduction, women's empowerment, and improving outcomes in health, nutrition, and education. The programme has been effective in providing members access to finance by promoting savings, providing grants, and linking them to banks so they can obtain loans. It has also contributed to improved development goals related to education, health, and access to public services.

In 2019 the World Bank examined the NRLM's impact on female labour force participation through women's self-employment. The study covered the states of Jharkhand, Maharashtra, and Madhya Pradesh, and collected data from 2011, the year the mission was rolled out, up to 2016-17.

Over those five years, the villages with NRLM intervention experienced an overall increase of 20.4% in self-employment livelihood activities, which in turn led to a 13.6% increase in women's participation in the work force.

State	Individual		Community		Total Works
	No. of Works	No. of SHG Household	No. of Works	No. of SHG's	
BIHAR	234	231	1	1	235
JHARKHAND	2,885	2,663	0	0	2,885
MADHYA PRADESH	6,515	6,020	170	103	6,685
RAJASTHAN	701	652	7	5	708
Total India	50,043	45,915	2,272	1,985	52,315

Table 1: NRLM SHG (Mapped with *Mahatma Gandhi NREGS* Permissible Work, Year 2020-21)

Above table presents, four of the identified States in ERADA project area covers nearly 20% of work in collaboration with women SHG. Out of these States, Madhya Pradesh and Jharkhand has innovated to utilise convergence opportunity.

Water resource development

With only 4% of the world's water resources and 16% of the global population, according to the National Water Policy 2012, India's water crisis is headed towards an inflection point. The country's per capita availability of usable fresh water is about 1,123 cubic meters, down from about 4,000 cubic metres in 1947, and against the current global average of 3,000 cubic metres.

Nearly 20% of the area of India is drought prone and about 40 million Ha of the land is affected by flood. The per capita water availability in India during the period 1951-2001, has

declined from 5,177 m³ to 1,820 m³ per year and it is apprehended that it will further decrease to 1,140 m³ by the year 2050 if no immediate action is taken to increase the water resources. At present, India is considered to be a water stressed country.

Government attempts to reorient NREGS towards water conservation by reserving at least 75% of the 2.58 billion person days expected to be generated during 2019-20 to boost water storage and agricultural activities. The corresponding proportion was 67% in 2018-19. The move comes even as large parts of India reel under the impact of a water shortage, and with drought looming large in some cases. Recently centre has launched "*Amrit Sarovar*" to build large water resources.

These projects include both individual and community assets such as farm ponds, dug wells, check dams and trenches. There are 168 different types of structures that can be built under

Mahatma Gandhi NREGS, mostly for water conservation. In the past four years, government has invested roughly INR 1.20 lakh crore in water conservation under *Mahatma Gandhi NREGS*.

The rural ministry's initiative coincides with the ambitious Jal Shakti Abhiyan, piloted by the Jal Shakti ministry, to put in place measures for rainwater harvesting, water conservation and replenishing water bodies.

NRM assets have helped small and marginal farmers to improve livelihood opportunities. Besides, a significant proportion of household beneficiaries found that access to water for livestock has increased. These are important factors contributing to sustainability of rural livelihood of small and marginal farmers. Overall, it can be said that both individual and community assets are helping the rural community in certain important aspects that contribute towards sustaining and improving livelihoods.

The beneficiary households reported several types of benefits being derived from the NRM assets created in *Mahatma Gandhi NREGS*. Increase in irrigation potential was reported as the prime benefit from the creation of community assets. Both individual and community assets beneficiaries experienced increase in ground water table.

Agricultural Productivity Growth

In a study done by CEE, it is reported that Participants in NRM assets reported a productivity growth of about 12% for rice and wheat, 16 to 17% for bajra, maize, pulses and oilseeds during the post-asset's creation period compared to pre-assets creation period. The largest increase of 28% is reported for vegetables. These are obviously considerable productivity gains for the small and marginal farmers benefiting from the NRM assets. The respondents reported that per household income from agriculture and allied activities increased by 15% from INR 52,600 before assets were created to INR 60,600 after the assets were created.

NRM assets creation as an intervention has helped households in increasing the level of income by improving the productivity of land and through diversifying income sources. It is estimated that a one percent increase in cereals productivity leads to income rise by 0.27%. As an intervention, *Mahatma Gandhi NREGS* though NRM assets provision has come out as a solution to beneficiaries for improving their livelihoods and not just another employment scheme to transfer payments. Water table rise has been felt as a major ecosystem gain by the respondent households with many of respondents reporting gain after construction of the NRM assets.

Dharmavaram village in Prathipadu mandal of East Godavari district is dominated by small and marginal farmers who are mostly dependent on rain for agriculture. Juvvala Venkata Rao, a native of the village, owns 2.5 acres of dry land which is the only source of his living. As there were no rains and no other sources of water for him to cultivate the land, he had become an agriculture labourer. His story is like many other small and marginal farmers in the village who have dry lands and have no source of water for agriculture for their small landholdings.

—Implementation—

In convergence with the Horticulture Department, Shri Venkata Rao was given 150 mango and cashew plants during 2013-14 and again 350 saplings in 2014-15 that were planted in his 2.5 acres of land. In 2016-17, a farm pond was sanctioned on his land through *Mahatma Gandhi NREGS* as part of the Ground Water Recharge Project. Under the supervision of *Mahatma Gandhi NREGS* and Horticulture Department officials, he maintained the orchards and earned wages through watering the plants and digging pits. The farm pond provided fish, moisture to the soil and he had a healthy produce.

Source: <https://MGNREGSsuccess.wordpress.com/>

5

Generating Aquatic Livelihood through Mahatma Gandhi NREGS

Food insecurity is of increasing concern globally as even before the ongoing COVID-19 crisis, 690 million people across the world were undernourished. If this trend continues, the number of people affected by nutrient deficiencies will exceed 840 million by 2030 (World Food Programme, 2020). COVID-19 is having a devastating impact on the already undernourished and marginalised sections of the society, by affecting their access to food and nutrition, and consumption patterns (Drèze and Somanchi 2021). Many have also suffered from a lack of regular access to nutritious and sufficient food.

In one of the recently published reports by WFP (2018), it is mentioned that twelve districts in Bihar state need special focus to ensure food and nutrition security, these districts are:

- | | |
|-----------------|--------------------|
| (i) Kishanganj; | (vii) Sheohar; |
| (ii) Araria; | (viii) Aurangabad; |
| (iii) Jamui; | (ix) Kaimur; |
| (iv) Katihar; | (x) Sitamarhi; |
| (v) Madhepura; | (xi) Lakhisarai; |
| (vi) Purnia; | (xii) Banka. |

Most of the above-named districts come under aspirational districts and are flood-affected zone in Bihar, impacted by climatic variability. Such analysis presents evidence for more focused intervention towards livelihood promotion using NREGS provisions.

Drought proofing

On-farm water management and renovation of traditional water bodies can be suitable for drought proofing in these semi-arid and arid regions. Reports prepared by National Rainfed Area Authority (NRAA) will provide better programmatic intervention approach in rainfed area. Normally, any meteorological drought will translate into a hydrological drought marked by reduced surface water and resultant negative impact on groundwater recharge (Kumar et al. 2009). Therefore, the available water will have to be used more efficiently.

On-farm water management will prove to be beneficial for drought proofing. Normally, under the name of renovation, capacity enhancement work of traditional water bodies such as tanks and ponds, including digging of earth and raising embankments is taken up.

Both Bhaskar and Yadav (2015) and Agarwal et. al. (2012) finds that Jharkhand's *Mahatma Gandhi NREGS* wells had impressive rates of return of 6% and 2.29-4.09%, respectively. A set of Tata-IWMI (International Water Management Institute) studies reported that for most assets, cost recovery is within a year of completion of works. Additional water consequently available for protective irrigation led to saving of diesel costs.

Khandabandh village in Jashipur Block of Mayurbhanj District suffered from intense topsoil erosion that hindered productive agriculture. The village practiced rain fed irrigation and received an average of 1600.6mm rain annually. The kharif crops got destroyed due to the heavy monsoons because of high runoff and poor water holding capacity of the soil. The village therefore had large tracts of waste and uncultivable land. Possibilities of second cropping were minimal because of the absence of irrigation facilities. The ICRG programme chose this village as a demonstration site for climate resilient works based on resource mapping and field visits.

Although topsoil erosion is high and water holding capacity of the soil poor, the texture and quality of the soil was found to be good. The ICRG project found that there was scope for improving the soil moisture content and increasing its water holding capacity. These interventions presented possibilities of bringing the uncultivated waste lands under crop cover. The project also saw the possibilities of constructing small water harvesting structures on the waste lands to recharge ground water and improve irrigation facilities in the long run.

—Implementation

Individual farmers land development such as 30x40 model; field bunds and land levelling on approximately 18 Ha, Introduction of kharif crops like arhar, paddy, etc. on the barren lands, Construction of three new farm ponds under *Mahatma Gandhi NREGS*, Construction of two dug wells for irrigation under *Mahatma Gandhi NREGS*, Construction of compost pits for 31 households to improve soil health

—Impact

26 households in the village have taken up different types of livelihood activities at the site, The 30 X 40 model land development intervention helped to bring 1.5 acres under paddy cultivation, Fish in farm pond, Arhar plantations were done on the field bunds of 8 different plots covering 2.10 acres, Pumpkin cultivation is being done on 3.2 acres in the fields treated by the field bunds, Additional 5 acres of land downstream has been brought under paddy cultivation because of the 30 x 40 model, Stagnated water bodies identified in the treated area help in soil moisture retention

Source: <https://MGNREGSsuccess.wordpress.com/>

Mahatma Gandhi NREGS has adopted agri-nutrition garden initiative in convergence with SHG promoted under NRLM. The objective is to restore food and nutrition security through backyard farming. The data shown, Jharkhand has utilised this process most efficiently among all States in India. SRLM-Jharkhand has facilitated using SHG groups, community federation to promote nutrition garden

in massive way, that leads to proper adoption of this programme. Earlier, various CSO has demonstrated household level benefit of nutrition garden approach like PRADAN, CWS, TSRDS and other existing livelihood forums. State SRLM promoted this model through existing SHG network.

State	Individual			Community			Total Works	Total Area Covered (in Acre)
	No. of Works	Area Covered	No. of SHG H/H	No. of Works	Area Covered	No. of SHG's		
BIHAR	61	585.49	32	37	93.35	22	98	678.84
JHARKHAND	88765	134028.03	78478	159	367.3	62	88924	134395.33
MADHYA PRADESH	2631	32567.07	2304	2063	4191.47	742	4694	36758.55
RAJASTHAN	106	284.45	48	258	1699.4	117	364	1983.85
Total in India	107534	211080.12	94356	6074	11499.75	2921	113608	222579.87

Table 2: SHG Agri-Nutrition Garden with Area Covered 2020-21

This kind of individual household level model has huge potential to reduce food and nutrition security related vulnerability. But many States have not been able to effectively utilise such models to the full capacity. CSO and village based SHGs needs to be made aware for raising demand for such provision.

Wetland management

In India, the agricultural activities consume nearly 70% of fresh water while the industries and commerce and domestic requirements are approximately 20% and 10% respectively. With rapid growth of population, the requirement of water in each sector is rapidly increasing. In the country, the wetlands which include rivers, lakes, tanks, ponds, waterlogged areas etc., are vanishing and also getting polluted due to various anthropogenic activities including industrialisation, urbanisation, drainage from agricultural and water system regulations etc. During the last century, due to these activities nearly 50% of the wetlands have vanished. To increase the surface and ground water resources, it is essential to develop new wetlands and revive the old ones with rainwater harvesting. The wetlands help in increasing the potential of surface water, recharging the

ground water, flood control and water storage, wildlife conservation, production of foods including pisciculture and fabrics, reduction of atmospheric pollution and temperature moderation, drainage easement, improvement of wastewater quality, reduction of soil erosion etc. In addition to developing the existing wetlands and creating new wetlands particularly in the low-lying areas, it is essential to make provision for rain water harvesting in the wetlands with facilities for recharging the ground water.

During the last century, due to these activities nearly 50% of the wetlands have vanished. To increase the surface and ground water resources, it is essential to develop new wetlands and revive the old ones with rainwater harvesting.

Case study

Mr. Ajay Singh, a poor marginal farm in Basao village under Basantpur block of Siwan district learnt about individual farm ponds (khet pokhari) that can be constructed even on a small holding of less than 2.5 acres at the Gram Sabha from *Mahatma Gandhi NREGS* programme officer. He learnt about various livelihood options such as fish farming that he could engage in with khet pokhari that will reduce his dependence on farming alone. This is an inspiring story of a poor marginal farmer whose condition was only slightly better than a landless labourer and who now runs his own business in the village.

Implementation

In 2015-16, a khet pokhari was sanctioned in the name of Shri Ajay Singh covering an area of 7000 square feet at an estimated cost of INR 76,500. Work started in January 2016 and was completed within 13 days at a total expenditure of INR 60,201. Shri Ajay Singh introduced around 2000 fingerlings of Pugnacious variety in his farm Pond in February and 500 fingerlings of Rahu variety in April in his farm pond. Six months later, he harvested Pugnacious fish and earned INR 1.8 lakh. In January, he introduced a packet of Rahu Katla seeds in the pond and sold six quintals of Rahu fingerlings that fetched him INR 90,000. He also harvested 55 kgs of Rahu variety that gave him an additional income of INR 55,000. Shri Ajay Singh managed to earn INR 3.25 lakh from this venture and after deducting the expenditure on fish feed, labour and other expenses which amounted to INR 80,000, he made a total profit of Rs 2.45 lakh within a year and a half of individual farm pond construction. With his first income Shri Ajay Singh has opened a small shop of Veterinary products in the village which is an additional income for him.

Impact

The farm pond has not only brought additional sources of income to the individual beneficiary, it has also raised the water table which is now able to provide water even in the summer months of May and June. Shri Ajay Singh, along with other farmers in the surrounding areas are able to irrigate their lands from the pond as he exchanges 30 percent of farm pond water every month to maintain oxygen and suitable pH level for better growth of fish.

Source: <https://MGNREGSsuccess.wordpress.com/>

The Government of India has very substantially increased the share of *Mahatma Gandhi NREGS* in the recent budget. If this amount is properly utilised, the wetland development programmes with rainwater harvesting can be successful and while providing a lot of employment opportunities can meet the water requirements of the people both in rural and urban areas of the country throughout the year.

Renovation of traditional water bodies and on-farm water management can be an important intervention in naturally water-scarce areas which experience physical water scarcity, owing to water demands far exceeding the total water renewable water resources. Such regions in India are characterised by variable rainfall and high evaporation rates.

Thus, there is need for convergence for optimal utilisation of resources. Careful planning and efficient implementation of WM works can make *Mahatma Gandhi NREGS* a highly effective social protection initiative capable of reducing rural poverty and enhancing livelihoods. But, it is imperative that when public funds to the run of many billion of rupees are spent on creating assets in a decentralised manner in villages,

a small fraction of it is spent for planning them, with proper scientific and technical inputs.

In Bihar, oxbow lakes or *Chour-Mouns* with a total estimated area of 2.4 lakhs ha offer immense scope for scientific culture-based fisheries development. These lakes with varying sizes ranging from 4 to 400 ha are created by the action of meandering rivers, mainly in the river Koshi, Ganga, and Gandak river basin.

District-wise distribution of wetlands showed that districts Katihar (31,011 ha) followed by Begusarai (20,365 ha) and Saharsa (12,086 ha) have the highest extent of wetlands which cover about 10% of the geographical area of the respective districts. Also, some districts have high climate vulnerability index CVI (above 0.8-0.9) which shows the climatic vulnerability of the existing community.

Implementation of wetland management programme, desiltation of ponds and removal of water hyacinth from ponds would enhance productivity and livelihood opportunities in wetland parts of India.

Relevance for tribal area development

The total area under reservoirs, tanks (taalabs) and lakes in India is 7 million Ha. Of these, tanks and ponds cover an area of 2.9 million Ha. (Ministry of Jal Shakti, 2017). Tanks have traditionally been part of village landscape, and these multiple use structures have great significance in a village as a common source providing for sustenance as well as livelihood of rural communities. Outstanding engineering, geohydrological, managerial and social skills of our ancients led to creation of an extensive system of rainwater harvesting structures throughout the country, which were built and maintained by people for centuries. Most of these tanks are today in a state of disrepair and decay.

Four states of the central tribal belt; namely Madhya Pradesh, Bihar, Chattishgarh, Jharkhand and Orissa have a total of 39,740 tanks with an area of 1.5 million Ha (Ministry of Water Resources,). As many as 75 districts in these states are tribal districts. The rejuvenation of these tanks and their use to augment livelihoods and health through fishing cooperatives thus presents tremendous potential.

Chatterpur district in Madhya Pradesh has numerous Chandela tanks. Entitlement of fisheries cooperative over tanks has promoted fish farming, Singhara farming in almost every waterbodies of this district. At present each of the waterbodies produces three tonnes of fish that has brought huge economic benefit to fishing community members.

Fisheries department in Jharkhand has promoted Cage fisheries in Chandil dam, Jharkhand. At present more than 3,000 families are getting livelihood support from fish farming in *Chandil dam*. Such models need part of integrated planning in wetlands management action plan.

Recently, Govt of India has included Moringa (Sahjan) nursery plantation under *Mahatma Gandhi NREGS*. This was designed to ensure nutrition security, producing high valued fodder crop and protect from soil erosion in agriculture fields. Tribal area in India has traditional food culture of consuming moringa. Nowadays, Moringa is called as super food, it is globally became an export commodity.

Moringa plantation work in convergence with NRLM			
State	Total Works	Total number of plants	Total Area Covered (in Acre)
BIHAR	0	0	0
JHARKHAND	12	21	10.1
MADHYA PRADESH	9	3910	16.9
RAJASTHAN	0	0	0
Total India	490	15584	103.99

Table 3: Moringa nursery plantation in Mahatma Gandhi NREGS 2021

Hardening to see how during year one of scheme launch during year 2019-20, none of the state in India utilised this provision. During second year of implementation, nearly 100 acres is covered through this programme. Introducing moringa on pond bund could leverage food security, pond bund safety, availability of high valued natural plant feed to fishes and tackle child malnutrition in tribal parts of India.

6

Aquatic Based Livelihood: Exploring the Unexplored

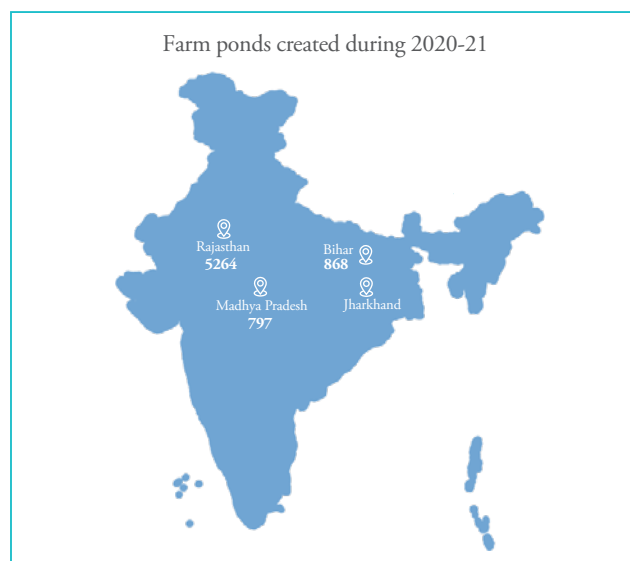
Water based food production system and aquatic ecosystem system-based livelihood opportunities are named as aquatic livelihood system. There are various types of animals and plant based food production system; that is part of tradition and culture. There are variety of medicinal plants, grass variety, algae that has commercial value.

Expanding the definition of aquaculture system create space to bring aquatic plants, animals and algae system for food production and livelihood generation. The list would be; Fish farming, fish seed production, Singhara (water chestnut), Makhana (Fox nut), Azola, Lotus, Spirulina, Rice-fish farming, Prawn, Crab, etc.

Till now, the importance of aquatic based livelihood system is restricted only upto fisheries based activity. Other benefits and contribution of aquatic livelihood-based value chain is ignored. Example: Bihar produces 70% of Makhana production. Makhana has emerged as globally one of the most nutritious crops during last decades. Madhya Pradesh contributes significantly in Singhara production. It is completely manual activity from pond preparation to processing, but hardly Makhana and Singhara is discussed as livelihood opportunity through *Mahatma Gandhi NREGS* for cooperative members or for individual small-marginal farmers.

In most of the States, management of smaller tanks of less than 100 Ha has been handed over to Panchayats and similarly different size of waterbodies to different local institutions. Their use for sustenance continues, but due to improper maintenance, the multiple livelihood options offered are often curtailed and used sub-optimally. Along with asset creation, setting up participatory planning and implementation processes can ensure community-led governance, which is crucial for the success of the aquaculture and fishing enterprise. Along with additional income, fish also provide food and nutritional security to tribal communities. Apart from common natural resources, large numbers of small sized individual waterbodies are created under *Mahatma Gandhi NREGS*.

Setting up participatory planning and implementation processes can ensure community-led governance, which is crucial for the success of the aquaculture and fishing enterprise. Along with additional income, fish also provide food and nutritional security to tribal communities.



The foregoing discussion leads us to three broad typologies to determine the priorities vis-à-vis the type of land and water-based interventions that are appropriate to be considered under *Mahatma Gandhi NREGS* that take into agroclimatic, hydrological and geological factors. For each typology, the types of water management activities that can be taken up under *Mahatma Gandhi NREGS* are described.

During year 2020-21, nearly 20,000 farm ponds were created through *Mahatma Gandhi NREGS*, out of those, nearly 50% is contributed by focus States in ERADA programme. But performance in aspirational districts is below average performance in Madhya Pradesh, Rajasthan against total work completed.

Total farm ponds constructed in 2020-21		
State	In State	In aspirational district
BIHAR	868	605
JHARKHAND	2,593	2,180
MADHYA PRADESH	797	87
RAJASTHAN	5,264	408
Total India	19,826	5,110

Table 4: Total farm ponds constructed in 2020-21

Nearly 40% of farm ponds are constructed in Rajasthan and Jharkhand alone. These are the project states and provides a good opportunity to scale up water-based livelihood, aquaculture, and aquatic food plant production in constructed farm ponds.

State/UT	Water Conservation and Rainwater Harvesting (No.)	Renovation of Traditional and other Water Bodies/ Tanks (No.)	Reuse and Recharge Structures (No)	Watershed Development (No.)	Intensive Afforestation (No.)	Total
BIHAR	64243	3891	14810	53603	2473	139020
JHARKHAND	66675	323	39785	313247	2777	422807
MADHYA PRADESH	119994	1960	8067	237562	12433	380016
RAJASTHAN	50223	5559	85	13048	6940	75855
Total in India	1297650	113644	999353	2134427	470719	5015793

Table 5: NRM activity Status (State-wise/Activity Category-wise) Details

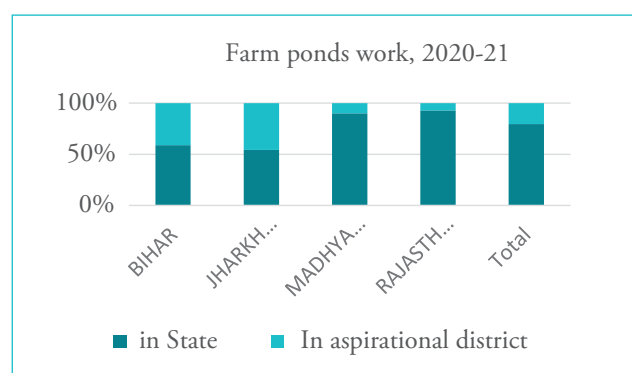
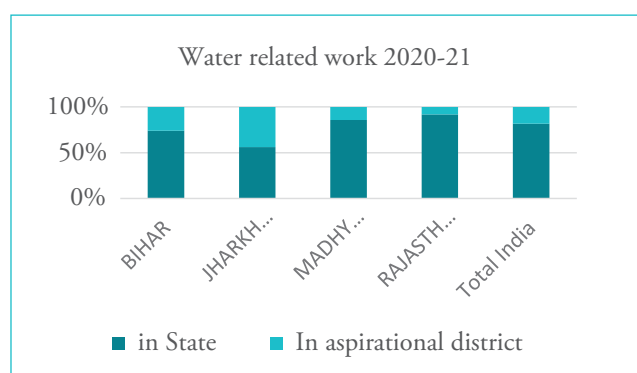
Another priority convergence opportunity exist in Bihar through Jal Jeevan Hariyali mission. This scheme aims at to create productive natural resources (land, water development), watershed and afforestation.

Bihar seems legging behind in using *Mahatma Gandhi NREGS* scheme to construct or renovate ponds. It appears, village community are not well aware of new provisions in *Mahatma Gandhi NREGS* that allows individual asset creation.

State	Soil and Water Conservation Related Works	Ground Water Recharge Related Works	Irrigation Related Works	Drainage and other Related Works	Total	Farm Ponds
BIHAR	18362	8859	19160	333	46714	868
JHARKHAND	145431	5883	47804	123	199241	2593
MADHYA PRADESH	124280	11665	55515	95	191555	797
RAJASTHAN	16802	735	22636	129	40302	5264
Total India	1033556	65358	677882	8245	1785041	19826

Table 6: Water related work in 2020-21, Source NGRES MIS

The graph shown below clearly describes, how water and soil conservations initiative is ignored in most of the aspirational district of project ERADA priority States.



Flood control and protection works as WM intervention will be highly effective in regions which are both “naturally water abundant” and have surplus water resources from the point of view of availability and demand. These areas are characterised by high to moderate rainfall, easy access to the available water resources (both surface and groundwater) and low water demands. However adequate financial resources to access water are not available with the populations living in there, causing economic water scarcity. Most part of eastern India fall under this category. The flood control and protection work that can be undertaken include embankment construction, embankment stabilisation through afforestation, and measures to stop soil erosion and silting up of existing reservoirs.

Works related to runoff water harvesting and provision of irrigation facility to land owned by economically weak classes can be best suited for regions which are naturally water rich but physically water scarce. This region covers the northern and north-eastern India. The landscape in these areas is mostly hilly and even after receiving good rainfall much of the water is lost as runoff. Such regions are perfect for surface water harvesting or creating impoundments.

But, before undertaking these interventions, proper geo-technical studies should be carried out to prevent undesirable consequences such as landslides. Soil and water management interventions including continuous bunding, drainage control and gully plugging (watershed management approach) are equally effective in these regions. Small on-farm storages can also be constructed in these hilly areas to provide irrigation facilities on the farmers’ agricultural field.

Impact of climate change along with coping-up and mitigation measures. Loss of livelihood opportunity, employability, food insecurity, vulnerability, and loss of natural resources capital may rise due to climatic variability. That suggests intervention towards ensuring livelihood, food security and building capacity to safeguard natural resources are important aspects to create resilience and adaptation at the community level. Reimagining livelihood framework from a resilience perspective needs to be mainstream across the farm and non-farm-based livelihood segment to ensure adaptation.

7

Convergence potential to
promote aquatic livelihood

Indian fish farmers live in an ecosystem, where they have agricultural land along with subsidiary other kind of farming system like livestock, fisheries, sericulture and horticulture. Convergence is a process that brings shared values and responsibilities, acts as a supplementary and complementary mode to achieve common objectives and mutual benefits to converging partners around targeted programmes. Convergence of line departments in service delivery would accelerate the development processes and can contribute towards. At present, there are various kind of convergence potential exist for individual farmers, farmers collective and local institutions. Using convergence model have huge potential to create a mutually complementary eco system for livelihood generation.

Apart from *Mahatma Gandhi NREGS* linked provisions, there are various other useful scheme such as Prime Minister Matsya Sampada Yojna (PMMSY), Fisheries Infrastructure development fund (FIDF), Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME), Small Farmers Agri Business Consortium (SFAC for FPO), National Horticulture Mission (NHM), Watershed mission, Climate resilient agriculture initiative etc. for rapid productive, economic growth and poverty alleviation.

Details of existing convergence initiatives are,

- Project “UNNATI” under *Mahatma Gandhi NREGS*: The objective of the project is to upgrade the skill-base of the *Mahatma Gandhi NREGS* workers and thereby improve their livelihoods by shifting from part time employment to full time employment. The training would be provided for one adult member (of age 18-45 year) of a household who has completed 100 days of work under *Mahatma Gandhi NREGS* in FY 2018-19.

The target is to train two lakh adult members of *Mahatma Gandhi NREGS* workers in three years. The candidate undergoing training will be paid stipend for a maximum period of 100 days and the household from which, the candidate will be selected for the training, will continue to get 100 days of work under *Mahatma Gandhi NREGS* in a financial year. This project has two types of skilling viz., Skilling for Wage Employment, wherein the eligible beneficiaries may opt for any of the training programme conducted by PIAs of DDU-GKY and Skilling for Self- Employment, wherein the eligible beneficiaries may opt for any of the training programme conducted by RSETIs and KVKs.

Skilling *Mahatma Gandhi NREGS* labour on aquaculture technology, production, processing and marketing will be one of the unique processes to bring skilled manpower in fisheries and aquaculture sector.

- Cluster Facilitation Programme (CFP) has been rolled out on 1 April, 2020 with the objective to ensure effective implementation of Mahatma Gandhi National Rural Employment Guarantee Act (*Mahatma Gandhi NREGA*) in 250 blocks of 117 Aspirational districts and 50 blocks of other backward areas across 29 States/ UT through better planning, coordination and monitoring. CFT programme was scaled up post pilot implementation by civil society organisations. Integrating aquatic livelihood component, integrated fish farming models, setting up backyard fish farming units will be helpful to ensure household food security.
- GIS based planning portals: A GIS based planning through online portal Yuktdhara as Developed by National Remote Sensing Center, ISRO, Department of Space. Climate Resilience Information System and Planning (CRISP-M) tool for *Mahatma Gandhi NREGS* was launched ministry. The BHUVAN geoportal of NRSC has been customised for this purpose. The database is accessible to the Ministry and States for monitoring and database creation, respectively. So far more than 4.72 Crore assets created under *Mahatma Gandhi NREGS* have been geotagged. All these planning tools need to be converged for developing cluster planning.
- Prime Minister Matsya Sampada Yojna (PMMSY) is a 25,000 Cr investment commitment by Govt to promote fisheries and aquaculture-based business opportunity. It has a huge set of recommended programmes like Rice-Fish farming to installation of Recirculatory aquaculture system. There are more than 50 types of schemes is available under PMMSY. This programme provides subsidy from 40-60% on proposed DPR by a farmer, group, or private sector initiative. But still, popularisation of PMMSY is not up to the ground level.
- Fisheries infrastructure development fund: Similar to PMMSY, this fund is created to provide investment loan for entrepreneurs for infrastructure development.
- NRLM process: NRLM has made provision for District level *Mahatma Gandhi NREGS* plan linked to livelihood activity. But due to lack of fisheries-based intervention plan process, fisheries and aquaculture is mostly missed out of the planning exercise even with NRLM and SRLM.
- Horticulture mission: to integrate aquatic food producing crops like Singhara, Makahana, Lotus etc in ensuring livelihood, nutrition security and maintaining food diversity in ecosystem.

- Kissan credit card: KCC provide financial security up to Rs 1.6 lakh to beneficiary for productive investment. Collaboration with KCC on campaign mode will bring small and marginal farmers to access credit in time and use it for input purchase, management cost, logistic development etc.
- NABARD tribal development fund: NABARD tribal development fund has made provision for horticulture development, BARI, backyard nutrition garden and farm pond-based irrigation system (integrated farming approach). This can be linked easily with *Mahatma Gandhi NREGS* pond creation and livelihood sustenance effort post asset creation.
- State specific programmes related to climate resilient agriculture initiative, most of the state government has special programme related to climate resilience and livelihood/ livestock sector development. Like in Maharashtra SMART project, POCRA project and in Bihar Bihar Koshi basin development programme, Zero budget natural farming initiative in Andhra Pradesh, Mission millet in Odisha etc.. Such initiative has opportunity to get engaged with small and seasonal pond-based livelihood intervention.
- CSR initiative: Now a days, lot of CSR engagement is possible post asset creation if it is show cased as government convergence programme. CSR are investing resources even for renovation of Anganwari centre and government school building. post COVID-19, there are lot of applicability of using CSR creatively along with livelihood process design.
- Demonstration farm: With partnership of panchayat, KVK, agri university and CSR, may be a demonstration unit within community periphery will provide more opportunity to engage with farmers/ beneficiary. The AQUASCHOOL model developed by Jaljeevika facilitates training and convergence collaboration facilitation for fish farmers, such model needs to be part of mainstream programme.

Case study: Using *Mahatma Gandhi NREGS* for fish production in Tripura

Being purposed at understanding the utilisation efficiency of excavated and or reclaimed ponds as newly created assets under the *Mahatma Gandhi NREGS*, a study was conducted at Dhalai district of Tripura state (India) . Tripura is one of the State that has developed dedicated programme for fish farming promotion through *Mahatma Gandhi NREGS*.

Study revealed that the district had executed 16,717 number of works combining both pond excavation and reclamation jobs during 2012-13 to 2016-17, of which the shares of pond excavation and reclamation works were 81.77% and 18.23%, respectively. Despite such good physical performance in work execution, very poor accrual of average annual fish productivity (414.25 kg ha), much lower than average productivity in Dhalai district, where the study was conducted.

Although 66.30% of the beneficiaries of *Mahatma Gandhi NREGS* had no previous experience of culture fisheries as they became first ever owners of pond, a staggering 67.39% of them didn't receive any knowledge vis-a-vis skill enabling training on scientific aquaculture, which led to disappointing extents of their knowledge and adoption of scientific aquaculture. Garrett ranking revealed 'lack of systematic and timely supply of critical inputs from the Fisheries Department' and 'lack of training facilities' to be the two prime perceived constraints of the beneficiary respondents. The two most important suggestions emanated from them were: 'timely provisioning of critical inputs from the Department of Fisheries' and 'arranging of more longer duration hands-on training programmes to make those really worthy for the fish farmers.

though the opportune stage has been created through commendable execution of works relating to excavation and reclamation of water bodies in the district, much is still to be done if the issue of convergence of *Mahatma Gandhi NREGS* with aquaculture sector of the district is to meaningfully address during the post work execution phase, so that the beneficiary pond owning class, characterised by very high intensity of disadvantageous communities, is truly enabled to efficiently harness those built up assets as a genuine livelihood means for them to improve the quality of their lives.

Contextual to the quite noticeable insufficiency in the knowledge and adoption levels of the pond owning beneficiaries of the scheme in the matter of scientific aquaculture practices coupled with extreme dearth of providing systematic knowledge and skill enabling training to them, and lack of systematic and timely supply of critical inputs, it is being strongly advocated to take up strategic interventions in devotedly organising in situ demonstrations and tailor made longer duration skill enabling trainings on relevant domains of good practices alongside rendering regular expert advisory/know-how support and timely providing of critical inputs like fish seed and feed, quick lime, MOC, fish health medicine etc. as per the fitment of requirements of the target populace.

8

Recommendations

Apart from *Mahatma Gandhi NREGS* related implementation, there are various limitation is incorporating aquatic livelihood perspective and bring livelihood opportunity using *Mahatma Gandhi NREGS* framework, these are most vital to address in this study:

Missing links

- Importance of aquaculture seems missing in livelihood planning process.
- Aquatic food plant production system is missed in mainstream horticulture and agriculture planning (e.g., *makhana*, *singhara*, lotus, *bhent*, *kesbore*, spirulina, seaweed, etc.).
- Aquatic plants utility is missed in livestock feed planning (e.g., Azola, duckweed, water hyacinth etc.).
- Skill development units (RSETI, KVK, Unnati programme) unable to address essential of aquaculture related skill development.
- Rural haat development component of *Mahatma Gandhi NREGS* misses designated space for women fish vendors.

Synthesising fundamental challenges in aquaculture sector led us to reflect on following key points:

- Low productivity driven by lack of access to information and skill building services; climate change, technology, weather variability and quality input and absence of location-specific advisory support.
- Lack of access to tailored micro-entrepreneurship opportunity, financial products.
- Lack of access to a choice of market, offtake options and facilitating domestic marketing of aquatic produce.
- Pond based integrated farming modules (Fish+ Makahana+ Waterchestnut + Liliy etc.) is not in priority of livelihood / NRM based livelihood programme.
- Fish seed and aquatic plants nursery development is missed out in nursery development/ horticulture and agri. Development component of *Mahatma Gandhi NREGS*.
- Focus of large waterbodies, priorities for fisheries cooperative in allocation of pond, focus of large investment project like biofloc, recirculation system, cages etc. reduced scope to highlights innovative and traditional knowledge system by mainstream line department.
- Aquaculture is showcased as only traditional community owned livelihood function, making it universal brings opportunity for more.
- Considering ponds as source of irrigation rather as an integrated livelihood ecosystem.
- Address Climatic variability.

This section shares the process to set up and operationalise community-based aquaculture in community ponds and individual farm ponds through collective actions as well as individual enterprise.

How to integrate gender, inclusion and technology part together to address local climatic variability along with livelihood potential of farm pond needs an integrated framework rather presenting a solution kit. Following are suggestion to integrate aquatic livelihood through *Mahatma Gandhi NREGS* and other mainstream govt programme, such as:

Expanding the ambit of permissible works under *Mahatma Gandhi NREGS*

Ministry of Rural Development although keeps on revising the nature and number of permissible works under *Mahatma Gandhi NREGS*. ambit of permissible works under *Mahatma Gandhi NREGS* require a much frequent revision for including such works also which are felt utmost necessary at the local levels through the emerging needs of the specific geographical terrain. Particularly, works such as fish seed rearing nursery development, installation of mini cages, *Makhana*, *Singhara* plantation in low lying area, construction of bunds which would stop the land erosion/cutting due to flow of rivers during the time of floods in various parts of the country definitely merit a serious look. Developing innovative “Sojorn” method of farming in low lying area will infuse lots of employment and food security measures in flood affected parts of India. Works can also be added in area-specific manner through specific orders for a fixed time period. Thus, the report, recommend the Department of Rural Development to revisit their procedures while revising and including new works under *Mahatma Gandhi NREGS* for having an objective and logical approach to include area specific work as per local requirement also.

Allocation of Innovation fund to ensure nutritional security

Mahatma Gandhi NREGS can also play crucial role in nutrition security programme at national level. Very recently Moringa plantation is adopted in *Mahatma Gandhi NREGS* framework and on the other side lot of water harvesting structures are constructed under the programme which have the further scope of innovation work on pilot basis like *Makhana*, *Singhara* plantation, fish seed nursery, other livelihood components which is possible in local geography area.

Capacity building exercise is needed with local officials to incorporate provisions of innovation fund for pilot and demonstration activities.

Provision of lining of Ponds with Plastic through Mahatma Gandhi NREGS

Specifically, about the drought prone areas and the scarcity of water also in rainfed areas for their agricultural works, the report suggests adoption of lining of ponds /dug wells / pits with plastic so that the water is stored in them during the rainy season for future agricultural works. More often than not it has been observed that the farmers of rain deficient region somehow sow their crop and wait for proper rainfall for water needs. Even if they are able to irrigate their crops initially but later are not able to do so owing to the scarcity of rains. This situation can be eased a bit if through *Mahatma Gandhi NREGS* works the water is stored and not allowed to be wasted by the lining of plastic done all around with proper cover so that water so stored is not evaporated by scorching heat and this water can be used in a time of need when there is severe shortage. On the one hand, it will create a new area of work while on the other hand it will create a reservoir of water in rain deficient regions. We are aware of the fact that the concept of 'ground water recharging' exists, but still, it recommends Department of Rural Development to examine this issue based on geographical stretch and specific location which are deprived of water mostly and come up with suitable revision in their list of permissible works by including the plastic lining of ponds also.

Promotion of 'Buldhana Pattern'

In recent times, a much recognised and appreciated framework of work obtained through the convergence of water conservation aspect with national highway construction has garnered huge praise and national recognition, is that of 'Buldhana Pattern' First time used in the Buldhana District of Maharashtra in the drought affected Vidarbha region. This pattern synchronises the work of water conservation through desilting and deepening of waterbodies by the removal of earthen material and silt and using this material for national highway. Thus, a unique and beautiful symbiotic relationship is being observed between two aspects of development wherein the raw material for road construction is obtained from the clogged and overflowing water bodies through their desiltation. This not only rejuvenates the water bodies and deepens them but also provide cheap and easily available raw material for the road construction. Further these roadside waterbodies, stream stretch, nallah can be used for singhara, makhana, horticulture plantation.

Rejuvenation of Traditional Water Bodies

Drought prone Bundelkhand region is full of Chandela tanks, similarly Wabri in Rajasthan, Malgujari tank in Maharashtra, Backyard ponds/ Pokhar in Northern India

have immense potential for desiltation and then integrate with aquatic livelihood opportunities. While examining the works permitted under 'National Resource Management' component of *Mahatma Gandhi NREGS*, it is noticed that although the provision mandate for nurturing and strengthening water resources in the country through *Mahatma Gandhi NREGS* works, still much can be done by way of rejuvenating already existing dilapidated and unusable traditional water bodies like ponds, old wells and reservoirs, etc. The report note that work is progressing in this regard but the pace is very slow and a sustained focus for accelerated momentum is required. The recommendation is that rejuvenating traditional water bodies not in use at present will not only save financial resources but will also yield better results in much less amount of time.

Promotion of aquatic food crop Plantation under Mahatma Gandhi NREGS

Plantation of trees is a permissible work under *Mahatma Gandhi NREGS*. According to the guidelines, saplings are planted on roadside, government lands or other feasible sites and are taken care of for the next three years. There are commercial food producing plants like *Makhana*, *Singhara*, *Lotus*, *Khubahi*, etc. used for food security and cash income by community in many parts of India.

The report suggests that this provision under *Mahatma Gandhi NREGS* can be effectively utilised in a much more pragmatic manner so that the purpose of plantation is also solved on one hand while simultaneously creating a revenue model side by side. Plantation of cash crops like fruit/flower bearing plant, trees or trees having good wood quality for utilisation purpose in the long term would perhaps amplify and add value to the work taken under *Mahatma Gandhi NREGS*.

Inclusion of Aquatic Labourers' Works under Mahatma Gandhi NREGS

A long pending demand to widen the ambit of works/nature of workers under *Mahatma Gandhi NREGS* which attracted the attention of the recommendation is that of inclusion of

National Highway Construction has garnered huge praise and National recognition, is that of 'Buldhana Pattern' First time used in the Buldhana District of Maharashtra in the drought affected Vidarbha region.

agricultural labourers and variety of agricultural works also under the ambit of *Mahatma Gandhi NREGS*. On practical grounds, it is a known fact that the agricultural work comprises majority of the unskilled nature of works and utilising this aspect can only widen the horizon of the permissibility of works under *Mahatma Gandhi NREGS*. There are numerous new works that can be undertaken in the villages under *Mahatma Gandhi NREGS* but cannot be done now since they do not fall under the permissible category. These works are in some way or other associated with agriculture related activities like sowing, reaping, cutting of weeds, fencing/barricading of farms and other earthen works associated with farming. North and east India waterbodies is infested of water hyacinth. Infested ponds cannot be used for production system, and it also causes waterlogging, health menace. Utilising skill of traditional fisherman to weed out water hyacinth would improve productivity as well as reduce financial burden to create new waterbodies for irrigation purpose. Therefore, the report recommends inclusion of agricultural works and agricultural labourer's by the Department of Rural Development.

Skilling of Mahatma Gandhi NREGS workers

The provisions of *Mahatma Gandhi NREGS* are aimed at the fulfillment of objective of providing mainly unskilled works to willing persons of rural population who do not have any other avenue of employment while also creating durable assets as a result. While 60% of the funds are earmarked for the payment of wages to unskilled labourers, the remaining 40% of the funds cover for material component and wages of skilled/semi-skilled workers employed as per requirement. The above formula of fund division was done from the initiation of the scheme wherein primary works were concerned with unskilled manual component. However, with the passage of time and changing demands of infrastructure/asset creation, there is an increased need of skilled labourers to perform meaningful work under *Mahatma Gandhi NREGS*. Thus, with growing requirement of skilled labour, it is perhaps in the fitness of things if skilling of labourers, already engaged in *Mahatma Gandhi NREGS* works is done simultaneously, so that in a span of time a pool of skilled labourers is created along-with fulfillment of objective of the scheme. Therefore, the report recommends the Department of Rural Development for creating ways and mechanism pragmatically for effectively carrying out the skilling of labourers which would certainly go a long way in not only ensuring the improvement of professional opportunities of labourer's by equipping them with new armory of skill set but would also augment the faster completion of *Mahatma Gandhi NREGS* works in future. Skilling on fish-makhana-Singhara farming, processing, feed development, marketing etc. would create a pool of skilled person for further promotion of aquatic based micro enterprise in convergence with PMMSY scheme.

Market infrastructure development for vendors and women vendors

It is known fact that women are majorly engaged in fish sale/vending in rural area. It is one of the most prominent livelihood opportunities for women from fishing community across Indian States. But there are no provision of safe, hygiene, sanitation is available for vendors engaged in fish farming. In rural market haat construction component, designated places can be created at panchayat/ village haat level for advancing market linked activity.

Wetland management – developing value added product from Water hyacinth

Most of the wetlands are heavily infested with aquatic weed like water hyacinth (*Eichhornia*). It is free floating perennial aquatic plant, which rise above the surface of the water as much as 3 ft height. It is one of the fastest growing plants in the aquatic ecosystem. It is one of the biggest problem, farmer used to remove manually by using the local labours but getting any benefits of it. Now a lot of products are developed from water hyacinth like; handmade paper, cardboard, intermediary material for the statue making work.

Water hyacinth value addition has a huge potential which is one of the untapped activities, adding this activity in *Mahatma Gandhi NREGS* framework not only boost the enterprise development related to value addition to products from water hyacinth but also provides guaranteed employment to women from marginal communities engaged in aquaculture sector.

This report proposes a set of strategies to support fisheries and aquaculture sector to grow further in convergence with *Mahatma Gandhi NREGS* and other sectoral programmes to harness its production potential adopting eight core components. Programmatic action plan needs to be devised further as per the guidance of proposed National fisheries policy 2019.

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9

Systemic Strategies for Sectoral Development

Strategies and action plan for boosting aquaculture and fisheries sector in India needs a multipronged approach to focus more on localised value chain development, integrated cluster approach, revival of fisheries-based producer organisations, promotion of localised entrepreneurship model, easy access to finance and affordable insurance system, setting up community based stewardship consisting of quality pack, management and traceability system.

Such integrated approach will be based on pillar of institutional development, extension support, market intelligence and uniform safety nets to integrate small and marginal farmers, fish workers, women and excluded section of community. A shift in approach from scaling production to integrate “Value chain development” approach will help in revival of sector, bring sustainability, create more employment opportunities, and promote local market demand.

Proposed strategies for ensuring inclusive growth in fisheries and aquaculture sector include:

Training and capacity building

- Farmers and local entrepreneurs need more intensive training and skilling opportunity towards seed breeding, farming of high-end fish variety like airbreathing and catfishes, logistic, marketing and orientation on new emerging technology. At this moment, every State in India is not equipped with such facilities. Instead, adaptation of micro level AquaSchool model will work better for farming community.

Engagement with private sector and voluntary sector to establish community-based knowledge centre (in form of AquaSchool model promoted by Jaljeevika) will encourage farmers to apply learnings in farm. Facilitator of “AquaSchool” will provide handholding support to local farming community as a service-based model. Delivery of extension through lead farmer at the producer level is a cost-effective way of extension delivery wherein both parties develop symbiotic relationship. Such process will create a platform to forge relationships of businesses with the fish producers input supplier, processors, marketing channel etc. Private sector has access to knowledge and technologies that can address local challenges and integrate options that fit best with farmers.

- Government has announced PMMSY scheme, but how to develop Detailed project report for submission of application is not known at farmers end. Skilling farmers on how to develop DPR, business plan is immediate need of the hour.
- Emerging trends and technology related new interventions on aquaculture are helping fish farmers to enhance productivity. Fish farmers need to be trained on better

management practices, risk management strategies and emerging advance technologies on aquaculture sector. Such capacity building process will facilitate better decision-making process and promote concept of “Fish farming as an enterprise”.

- Digitalisation of all knowledge products, adoption of technology, best practices guidelines and digital mapping of waterbodies will facilitate scale up process. Setting up an open-source repository of all process, experiences, SoP will help in standardisation of fish farming process.

Entrepreneurial ecosystem to promote Value chain

- Based on the experience of “Matsya Mitra” concept operational in Jharkhand and “Farmer to farmers” extension programme in Bangladesh, a large-scale community-based extension cum entrepreneurship support mechanism can be installed. “Fisheries Extension Entrepreneurs” are those who operates services like extension, fish seed rearing, local feed supply, basic support to pond owners, manages resources in scientific manner to produce quality seed, associated with seed enterprise, provide input support services to the fish farmers or practices semi intensive practice for better production through resources.
- India has shortage of fish seed production capacity, that is a risky proposition to ensure Mission Blue revolution. A national level programme needs to be designed for setting up seed rearing units, hatchery, mini hatchery, community based brood bank system to ensure self-sustainability.
- Various entrepreneurship models (such as individual, community led, social enterprise, private enterprise etc) needs to be promoted for fulfilling local demands, bring innovations and establish technology at grassroot level. Most of programmes is focussed on production enhancement or require high capital investments. Various technologies promoted by ICAR and other government research institutes needs to be scale up through “open source” model to adopt existing technology across geography. There are lots of scope to improvise value chain across aquaculture sector through promotion of entrepreneurship model.
- Agencies of national repute like Small farmers agri. consortium (SFAC), NABARD, MANAGE, Start-up India programme, Atal innovation centre etc may include value chain and entrepreneurship related to fisheries and aquaculture sector.
- Bring other aquatic crops like Makhana, Singhara, Lotus, Azola, Maluses etc under ambit of aquaculture system so that process becomes holistic and more inclusive.

State level knowledge cum incubation centre

- Each State must promote one state of the art facility for knowledge cum incubation centre. Such facility will have all knowledge support system to help potential entrepreneurs to implement business plan. Unavailability of knowledge, process and existing technology related to fisheries-based enterprise is one of the limiting factors to realise potential of fisheries sector. Even private sectors need mapping of business potential area that can be leveraged for business association with farmers. Building a facilitative programme to create fisheries cluster with support of incubation centre would bring many entrepreneurs, private sector and input supplier to create value for sector development.

Access to technology, credit, and insurance

- As mentioned above, all technology developed through government research agency made “Open source” for community-based organisations, Cooperatives, FPO, women self-help group to pilot and further scale up in local area. Technology Licence to one company cannot fulfil requirement of millions of farmers in such a geographically spread country like India. Present crisis is an opportunity to make technologies “open source” for at least two years to transform community-based organisations as an business unit. Infrastructure and set-up cost can be provided as loan services through FIDF scheme.
- Difficulties in access to finance is common challenges across sector and all value chain service providers. Although Government of India has extended scope of Kissan credit card (KCC) for this sector, but it needed a clear guideline on how farmers, cooperative members, producer organisations members and other value chain support service providers like (hatchery operator, Seed growers, transporter, traders etc.) can access benefit of Kissan credit card. access to credit services from government bank, private bank and non-banking financial institutions is limited for most of the people engaged in fisheries and aquaculture sector. Recognising technology based services and production system (e.g Hatchery, Processing, bio-floc set up, Recirculatory aquaculture system, etc) as “MSME” sector will provide option to entrepreneurs for accessing financial services, credit and subsidy available to MSME sector.
- Access to insurance facility does not exist for fish farmers in Indian context. Such unavailability of insurance-based services is major reason for fish farmers to collaborate with traders and processors or exporter for supply of input, bulk procurement, and market supply. Installation of innovative insurance models will support

farmers to opt for better management practices, enhance production, and opt for market services. e.g., Community based aquaculture insurance model in Thailand has supported thousands of shrimp farmers from crop failure risk. Similarly, various positive case examples in “Cooperative insurance / Mutual” models in health, education and agriculture sector across world is a learning that need to be adopted in India.

- On pilot basis, successful trainees with “Aqua-School” or trained participants from KVK, ICAR training centre or Government programmes should be linked with one-time small loan facility and Kissan credit card scheme. Massive training programme for women Self-help groups promoted through National rural livelihood mission will bring more women to fisheries and aquaculture sector. For example, more than 4000 women are engaged in fisheries programme through Maharashtra State Rural Livelihood Mission. Even during lockdown period these women’s group members are earning meaningful livelihood.

Harnessing power of collectives/ community institutions

- Each of the State runs their welfare scheme and support programme mostly through fisheries cooperatives. All these collectives have issue related to management, governance, transparency, inability of manage as a business etc. but, other models like self-help group, farmers producer organisations etc are performing well with support of a facilitating agency. Pilot programme on fisheries FPO and engaging women SHG in fisheries programme will open fisheries-based livelihood programme in rural area.
- FIDF, PMMSY, KCC, NRLM, NABARD and SFAC can develop a joint programme alongside *Mahatma Gandhi NREGS* and CSO collaboration to launch such model in selected districts. Each such FPO developed during pilot programme will develop detailed cluster plan based on available resources and business potential. Once learning is generated, such cluster planning-based

FIDF, PMMSY, KCC, NRLM, NABARD and SFAC can develop a joint programme alongside *Mahatma Gandhi NREGS* and CSO collaboration to launch such model in selected districts.

model can be scaled up across States as a special programme to boost rural livelihood through fisheries and aquaculture-based programme

- Focused approach to increase per capita availability from six to twelve kilograms peryear will open opportunities in domestic markets for producers. It must be linked with Campaign to popularise nutritional benefits of fish and shrimp products.
- Setting up mini cold chain in each of the clusters in rural area on Public Private Partnership (PPP) model.

Universalisation of social safety net

- Most of the social safety measure for fisheries and aquaculture sector revolves around social safety for “Fish farmers” and “Cooperative members”. People engaged across value chain are hardly covered by any of the safety net. Since mostly males are engaged as members in the cooperative sector, women are excluded in most of farming process as members.
- A detailed data base of active members, cooperatives, vendors, people engaged in processing sector. All fish workers need to be covered through different safety nets including food security, personal, accidental and health insurance, pension scheme for windows/ old age people, nutritional security, interest free loan for small scale vendor, young entrepreneurs, boat operator’s etc engaged across value chain.
- Converge with *Mahatma Gandhi NREGS* for pond digging, renovation, pond cleaning, drying space construction, net mending, boat making, plucking water chestnut, makhana etc will ensure social safety for traditional fishing community and fish workers
- Ensure usufruct right over, access and long-term lease priority over waterbodies to active fisherman, fish workers
- Ensuring women’s participation in each activity, their capacity building and set up a special subsidy / grant fund for supporting women in fisheries will change social norms. Supporting women through innovative scheme is itself generate safety net at household level.

These strategies and action plan will be helpful to ensure utilisation of existing production capacity and safeguard fish farmers, entrepreneurs and fish workers from any potential risk and shock. Recently, The Union Cabinet, chaired by the Prime Minister Narendra Modi, has given its approval for implementation of the Pradhan Mantri Matsya Sampada Yojana (PMMSY).

This is an opportunity to install recommended action through PMMSY for achieving larger vision to create livelihood, income security and wellbeing for fish farmers, entrepreneurs, and fish workers.

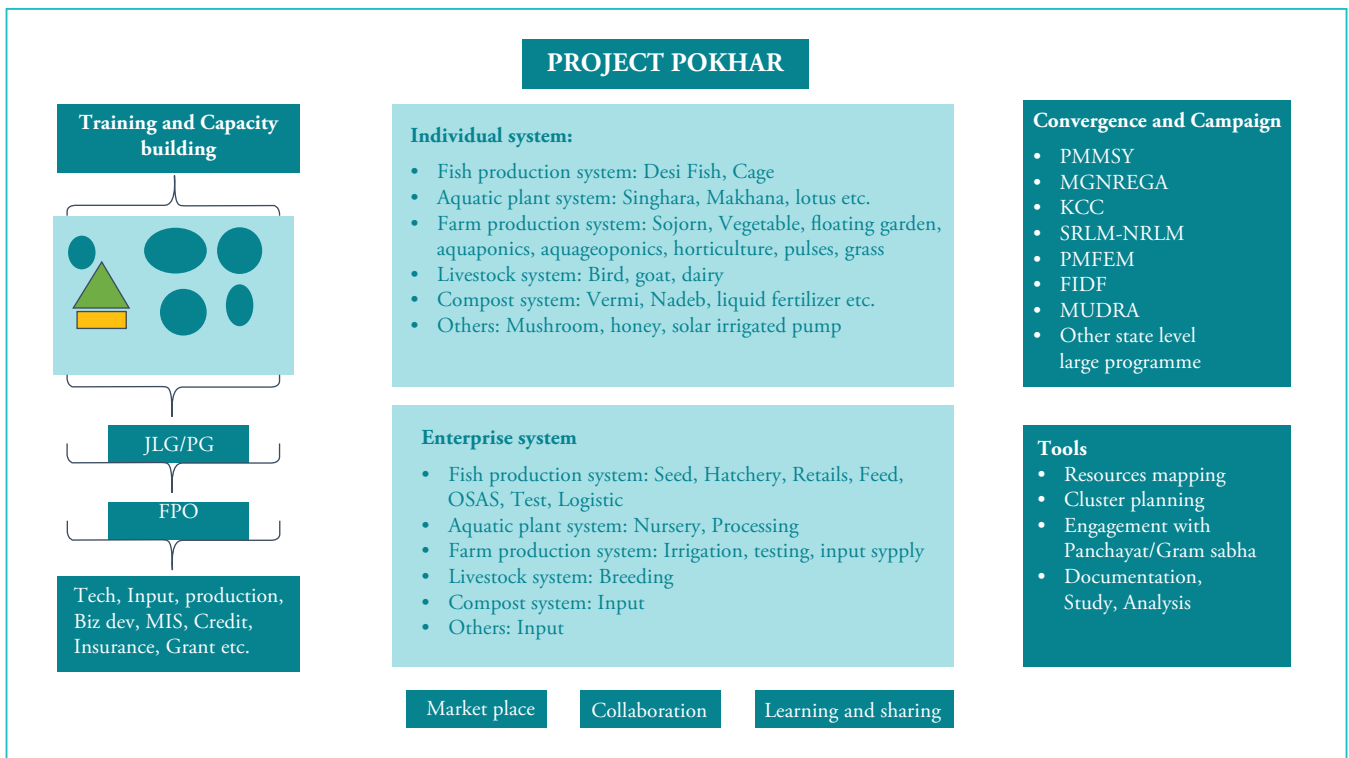
A list of all potential *Mahatma Gandhi NREGS* activities (more than 50 work activities) is enlisted in annexure for convergence options and promotion of aquatic livelihood.

Integrating above mentioned action points and process, the report proposes a uniform programme design as “Project Pokhar” to integrate promising potential of aquatic livelihood in ensuring food security and livelihood opportunities.

Project Pokhar

The programme will equip small-scale producers, the landless poor and their communities with the resources needed to implement locally appropriate, proactive resilience strategies using water-based livelihood strategies. Such programme will contribute to six of the seventeen Sustainable Development Goals, with a particular focus on **SDG 1 (no poverty) and SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) and direct contributions to SDG 5 (Gender equality), SDG 12 (Encouraging sustainable consumption and production), SDG 13 (Climate Action), and SDG 14 (Life below water). Convergence of Mahatma Gandhi NREGS, fisheries and aquaculture initiative, PMMSY, NRLM, KCC, etc. will bring together several stakeholders and initiatives under a common umbrella, programme project design will be an example of innovative partnerships in action to scale up contributions to the achievement of the SDG and thus is a marker of SDG 17 (Partnerships for the Goals).**





Adaptation to new and emerging risks requires access to innovative knowledge and technology, including when smallholders are already increasingly integrated into markets. A key pathway is providing timely access to relevant climate information, which improves the quality of autonomous adaptation decisions and reduces losses and damage from climate hazards. Different types and scales of climate information can be used for different purposes, from adjusting seasonal crop calendars to changing crop selection and integration of non-farm livelihood support system.

Scaling up pathways

- Synthesised learning, programme framework and strategies will be shared among state level and national level large scale government programme like NRLM, NABARD, MKSP etc. to integrate this approach and scale in their respective programme geography across Bihar, Uttar Pradesh, Madhya Pradesh, West Bengal and North India part of India.
- The proposed programme is a comprehensive response to the challenges of climate change and poverty in rural India, with an overall approach that is intended to strengthen the resilience of rural community to climate change and adopt innovative livelihood approaches to sustainable use of natural resources and promotion of diversified livelihood portfolio, while developing infrastructure and equipment for more climate change resilient value chains in fisheries. It builds adaptive capacity by adopting innovative diversification activities,

like promotion of cultivation and sale of Makhana, water chestnut, lotus etc. This could be an income generating activity for women. Additionally, salting and drying of fish that are not sold is a potential alternative livelihood strategies.

- Providing technical and financial support needed to scale up innovations and allow for replication and adoption of best practices.
- Climate proofing the aquatic and Agri based value chain and building capacity for sustainable management and use of resources.
- Promote the formation of farmers' groups, cooperatives, and fisheries associations as a first step towards co-management regimes and a key entry point
- Synthesise learnings from micro level intervention for making it deployable at macro level
- Use of technology to reduce vulnerability using cluster mapping, weather information, response messaging etc.
- Improve harvest and post-harvest technology, including improved fish storage, handling and processing
- An integrated and holistic approach to tackling these problems, including cross-sector collaboration, is needed to build resilience to climate change within fisheries and aquaculture communities. Implementing the "ecosystem approach" to fisheries and aquaculture management is essential to integrate at community level.

Proposed Intervention

Towards Building resilience for adaptation to climate change using fisheries and aquaculture-based livelihood sector following interventions are proposed:

- Aqua-School: Setting up Aqua-School for skill building, demonstration, and natural resource management planning.
- GIS mapping-based cluster planning:
- Installation of mini cages for fish production
- Organic fertiliser and growth promoter's unit using agri and fish waste (Vermicompost, Fish hydrolysate, black soldier fly etc).
- Set up an ecosystem for practitioners and micro entrepreneurs to diversify livelihood portfolio.
- Water hyacinth-based product: Converting aquatic weed like water hyacinth as fertiliser, handmade paper unit, floating garden, Mushroom production bed etc. for vegetable production.
- Women collective processing unit (Makhana, Singhara, Lotus seed, Solar dried packaged vegetable and fish):
- Convergence planning with *Mahatma Gandhi NREGS*, Prime Minister Matsya Sampada Yojna, Kissan Credit Card, Jal Jeevan Haryali, Jal Shakti Yojna, Watershed Mission together.
- Profiling village vulnerability map and preparedness.

Process to be followed

- The onus of last-mile service delivery will be on Aqua-School and "Community Extension Lead" known as Aqua-Fellows, they will operate innovative "Aqua-School" for skill-building and knowledge transfer.
- Entire pond-based data will be collected by service agents. This system will also have an "Info-Kiosk" to generate pond specific business plans and provide information on the existing government schemes.
- Data-driven advisory support (using water quality test system or any other tools) and data analytics will generate

farmers specific advisory support to manage pond water quality, seed stocking density, feeding calculations on a day-to-day basis. Farmers regular field operation practice is digitalised to produce expected production and financial related projections. The IoT based solutions and advisory support will be provided by a community extension person to ensure better management practices.

- Subsequently, layered with existing production potential, market mapping, supply chain analysis will be helpful to generate a "Cluster development plan" for the project blocks.
- Market intelligence and business acumen among local micro entrepreneurs, traders, building collaborative network of local vendors, service providers and business functionaries, market information sharing
- As a process, all skilled and informed farmers, micro entrepreneurs will be formed as collective enterprise unit "AquaFPO". Jaljeevika is already in process of promoting Aqua Farmers producer organisation in collaboration with world bank initiative Bihar Koshi Basin Development Project.

Expected Output

- Resilient livelihood opportunity is strengthened for rural households.
- Setting up field based Aqua-School cum Info-kiosk for skill building.
- Training of community cadre cum micro-entrepreneur's (each cadre support 20-25 farmers) on using water testing, service delivery to users, convergence process to link beneficiary to government scheme and data collections. this is linked to project *Unnati-Mahatma Gandhi NREGS*.
- Community based climate risk mapping to be developed in partnership with panchayats (local village governance unit).
- Establishment of data analytic system to generate block-level cluster plan.

10

Conclusion

Mahatma Gandhi NREGS, which completed 15 years in 2020, is a transformative legislation, enabling livelihoods for many who may not have had access before, as well as serving as an employment alternative during crises. Over the years, access to *Mahatma Gandhi NREGS* has gradually increased, and the works constructed under the scheme have proven useful in catalysing individual and community economic and human development. However, severe implementation gaps as well as institutional hurdles and disincentives have proven to be major stumbling blocks in the achievement of its core principle objectives.

The COVID-19 crisis revealed that *Mahatma Gandhi NREGS* has the potential to serve as a lifeline for rural communities in times of crisis, in addition to its potential to catalyse rural development overall. The government contemplates extending the Right to Work to small urban communities as well, lessons must be learnt from the past 15 years of implementing the Act and outreach of the scheme to all workers, especially economically disadvantaged and marginalised families.

Trajectory of *Mahatma Gandhi NREGS* from employment generation to livelihood generation is a big leap by government, now inclusion of GIS based planning, skill building (Unnati), programmes by Ministry of *Jal Shakti* and *Jal Jeevan Haryali* poses huge opportunity to integrate livelihood and social security together.

More than 60% of investment is towards INRM and particularly water resource generation, brings huge opportunity to scale up livelihood, food, and nutrition security through integrating aquatic livelihood segment. This part of livelihood is till date not included in mainstream development programme. This process will be also helpful to integrate achieving international commitment of united nation SDG 14 (Life below water).

The arguments for *Mahatma Gandhi NREGS* and converging this programme with water-based livelihood generation in this analysis report are three-fold-the **first**, a theoretical one, is that workfare is a crucial part of comprehensive social protection that serves as a safety net for those who are most vulnerable, the **second** rationale, an empirical one, *Mahatma Gandhi NREGS* has done remarkably well from the perspective of addressing natural resource asset development. The **third** rationale is in recognising the larger contribution of *Mahatma Gandhi NREGS* as a focal point for organising around the rights of rural workers and its capacity for transformative livelihood activities. It is hard to think of any other social programme that has this potential.

Although there is a substantial literature and much commentary on these issues, this report focusses more on the potential impacts to create aquatic livelihood, noting merely the heterogeneity across states and that in many states the implementation of the programmes needs to adopt different localised strategy.

This report concludes that integrating livelihood strategy through water-resource asset will bring millions of durable asset creation, sustainable micro enterprise generation and ensuring income-food security at micro level.

More than 60% of investment is towards INRM and particularly water resource generation, brings huge opportunity to scale up livelihood, food, and nutrition security through integrating aquatic livelihood segment. This part of livelihood is till date not included in mainstream development programme.

Annexure

List of approved work and potential use in aquatic livelihood promotion

Mahatma Gandhi NREGS work list No	Name of approved work	Potential use in aquatic livelihood	How/ What
18	Construction of earthen contour bund for individuals	yes	In order to prepare contour bunds, many trenches are formed and that trenches can be used for short term fisheries activities (this condition apply only few cases, not everywhere)
36	Construction of feeder canal for Community	yes	These canals can use as source of water for the water if we connect with pond or other water bodies
37	Construction of distributary canal for Community	Yes	These canals can use as source of water for the water if we connect with pond or other water bodies
41	Lining of Feeder Canal for Community	yes	Lining of canal can increase the efficiency of water distribution from source to end point and reduce the water loss, when canal are connected with water bodies
46	Renovation of feeder Canal for Community	yes	Renovate and connect with the ponds and other water bodies
47	Renovation of distributary Canal for Community	yes	Renovate and connect with the ponds and other water bodies
56	Renovation of Flood/Diversion Channel for Community	yes	Protection of crop, lives, livestock
63	Development of Chaur Land for Community	yes	On the basis of ownership, we can plan chaur in three ways- 1. Pond development on individual land 2. Develop a master plan for the chaur develop for individual farmer or group level
65	Reclamation of Community Waterlogged Land	yes	Water logged land can be use for the Makhana cum fish culture with community (with group approach)
66	Drainage of Community Waterlogged Land	yes	Aquatic plants
67	Construction of watershed for Livelihood activity for Groups	yes	All the created water harvesting structure can be use for the fish culture
69	Construction of Earthen Anicut Check Dam for individuals	yes	Can be use for the fish culture
71	Construction of Masonry/CC Check Dam for individuals	yes	Can be use for the fish culture
74	Construction of Earthen Check Dam for Community	yes	Can be use for the fish culture
75	Construction of Boulder Check Dam for Community	yes	Can be use for the fish culture
78	Repair and Maintenance of Earthen Check Dam for Community	yes	It can be use to strengthen the check dam to increase the water holding capacity of water bodies
79	Repair and Maintenance of Boulder Check Dam for Community	yes	It can be use to strengthen the check increase the water holding capacity of water bodies

Mahatma Gandhi NREGS work list No	Name of approved work	Potential use in aquatic livelihood	How/ What
82	Construction of Compost Pit for Individual	yes	All the activity can be integrated with fisheries to enhance the fisheries production system
83	Construction of Vermi Compost structure for Individual	yes	
84	Construction of NADEP Compost structure for Individual	yes	
85	Construction of Berkeley Compost Pit structure for Individual	yes	
86	Construction of Vermi Compost structure for Community	yes	
87	Construction of NADEP Compost structure for Community	yes	
88	Construction of Berkeley Compost Pit structure for Community	yes	
89	Construction of Compost structure for Community	yes	
90	Repair and Maintenance of Vermi Compost structure for Community	yes	
91	Repair and Maintenance of NADEP Compost structure for Community	yes	
92	Repair and Maintenance of Berkeley Compost structure for Community	yes	
93	Repair and Maintenance of Compost Pit for Community	yes	
94	Construction of Vermi Compost structure for Groups	yes	
95	Construction of NADEP structure for Groups	yes	
96	Construction of Berkeley Compost Pit for Groups	yes	
97	Construction of Compost Pit for Groups	yes	
114	Construction of fish drying yards for Individual	yes	Innovative techniques for fish drying, specially applicable in wetlands, flood prone areas where capture fisheries are dominated nearby the major rivers sources. till date major yards are established for marine sector but has high potential use in low land areas/ freshwater areas/ rivers
115	Construction of fish drying yards for Community	yes	As do
116	Repair and Maintenance of Fish Drying Yards for Community	yes	As do
117	Boundary Line Plantation of Horticulture Tress for Individuals	yes	Integrated farming-horticulture
133	Block Plantation of Sericulture Trees in Field For Individuals	yes	Integration of sericulture with fisheries; waste is a protein rich material and can be ingredients for feed
139	Canal Line Plantation of Horticulture Tress for Community	yes	
162	Block Plantation of Sericulture Trees in Field For Community	yes	Integration of sericulture with fisheries; waste is a protein rich material and can be ingredients for feed. activity prompted in group
175	Raising of Nursery For Individuals	yes	Seed production (spawn, fry, fingerlings) unit
176	Raising of Nursery For Community	yes	Seed production (spawn, fry, fingerlings) unit

Mahatma Gandhi NREGS work list No	Name of approved work	Potential use in aquatic livelihood	How/ What
181	Construction Of Farm Ponds for Individuals	yes	Farm ponds can be used for for the fingerlings productions or as grow out pond (from yearlings to table size),
182	Construction of Fisheries Ponds For Community	yes	Water resources creations- useful for composite fish culture, desi fish varieties can be promoted
183	Construction of community Water Harvesting Ponds	yes	Use in fish culture
184	Repair and Maintenance of Fisheries Ponds for Community	yes	Repair and maintenance of resources
185	Repair and Maintenance of Community Water Harvesting Ponds for Community	yes	Repair and maintenance of resources
186	Renovation Of Fisheries Ponds For Community	yes	Useful in fish culture
187	Renovation Of Community Water Harvesting Ponds For Community	yes	Useful in fish culture
211	Construction of Cattle Shelter for Individuals	yes	Live stock integration with fish farming
212	Construction of Goat Shelter for Individuals	yes	Live stock integration with fish farming
213	Construction of Piggery Shelter for Individuals	yes	Live stock integration with fish farming
214	Construction of Poultry Livestock Shelter for Individuals	yes	Live stock integration with fish farming
215	Construction of Cattle Shelter for Community	yes	Live stock integration with fish farming
216	Construction of Goat Shelter for Community	yes	Live stock integration with fish farming
217	Construction of Piggery Shelter for Community	yes	Live stock integration with fish farming
218	Construction of Poultry Shelter for Community	yes	Live stock integration with fish farming
243	Construction Of Infrastructure for Azola cultivation for Individual	yes	Azola is nutritious feed supplement for desi poultry which is easily found in most of the rural households. can directly use as feed for fish
244	Construction Of Infrastructure for Azola cultivation for Community	yes	As do
246	Construction of Infrastructure for Liquid Biomanure for Individuals	yes	Ex-Fish hydrolysate can be used in fish ponds to enhance the productions
247	Construction of Infrastructure for Liquid Biomanure for Groups	yes	Ex-Fish hydrolysate can be used in fish ponds to enhance the productions
248	Construction of Infrastructure for Liquid Biomanure for Community	yes	Ex-Fish hydrolysate can be used in fish ponds to enhance the productions of community pond
249	Repair and Maintenance of Infrastructure for Liquid Biomanure for Community	yes	Repair
252	construction of rural haat for community	yes	Can be used to improve the fish market in hygienic conditions
253	repair and maintenance of rural haat for community	yes	Repair

Employment generated during year 2021-22

1	2				3				4				5						
	a	b	c	d	a	b	c	d	e	a	b	c	d	a	b	c	d		
	HH issued jobcards				No. of HH Provided Employment				EMP. Provided				No. of Persondays generated				Families Completed 100 Days		
State	SCs	STs	Others	Total	SCs	STs	Others	Total	No. of Women	SCs	STs	Others	Total	Women	SCs	STs	Others	Total	
ANDHRA PRADESH	23.25	7.685	66.565	97.499	11.116	4.033	30.598	45.747	40.647	523.088	224.667	1473.594	2221.35	1271.3	0.87	0.569	2.296	3.735	
ARUNACHAL PRADESH	0	2.67	0.159	2.829	0	2.386	0.153	2.539	1.196	0.003	118.532	7.78	126.315	55.969	0	0.025	0	0.025	
ASSAM	3.02	8.392	45.109	56.521	1.075	3.673	18.755	23.503	16.244	29.065	107.988	564.315	701.367	330.459	0.011	0.032	0.246	0.289	
BIHAR	40.504	3.166	159.085	202.756	4.556	0.495	33.842	38.893	23	162.552	17.962	1230.476	1410.99	758.692	0.021	0.002	0.104	0.127	
CHHATTISGARH	4.335	13.279	23.425	41.039	2.71	9.235	15.579	27.525	26.587	122.335	550.533	738.441	1411.308	713.228	0.266	1.777	1.697	3.74	
GOA	0.008	0.102	0.236	0.346	0.001	0.012	0.02	0.033	0.026	0.039	0.253	0.607	0.899	0.707	0	0	0	0	
GUJARAT	2.616	16.415	24.35	43.38	0.565	4.793	5.544	10.901	8.282	28.449	222.165	274.048	524.662	244.64	0.02	0.141	0.166	0.327	
HARYANA	4.714	0	7.493	12.207	1.752	0	2.102	3.854	2.869	55.321	0	75.736	131.058	68.469	0.034	0	0.046	0.08	
HIMACHAL PRADESH	3.654	0.859	9.637	14.15	1.746	0.468	4.455	6.669	5.441	83.304	23.905	211.554	318.763	198.975	0.1	0.042	0.246	0.387	
JAMMU AND KASHMIR	0.829	1.49	10.404	12.724	0.32	0.815	5.372	6.506	3.313	14.083	40.095	266.394	320.573	104.942	0.006	0.01	0.102	0.117	
JHARKHAND	6.373	18.197	36.434	61.005	2.323	5.83	15.914	24.067	13.724	95.862	248.57	702.845	1047.277	477.306	0.064	0.241	0.416	0.72	
KARNATAKA	13.495	6.763	55.424	75.681	5.723	3.327	23.856	32.906	30.576	249.253	157.235	1088.325	1494.813	746.993	0.181	0.131	0.897	1.209	
KERALA	4.999	1.259	30.863	37.121	2.825	0.768	12.431	16.024	13.673	168.856	58.042	695.277	922.175	734.182	0.322	0.214	1.319	1.855	
LADAKH	0	0.373	0	0.373	0	0.315	0	0.315	0.221	0	17.487	0.014	17.501	10.921	0	0.011	0	0.011	
MADHYA PRADESH	11.713	23.691	41.78	77.184	6.607	16.706	26.262	49.575	39.478	359.639	918.192	1499.555	2777.386	1139.878	0.193	0.757	0.783	1.733	
MAHARASHTRA	9.147	14.322	77.532	101	1.65	3.466	12.995	18.11	14.299	55.056	159.936	441.786	656.778	281.028	0.093	0.4	0.756	1.249	
MANIPUR	0.156	2.549	3.201	5.906	0.15	2.4	3	5.55	3.054	7.898	123.744	161.428	293.07	153.308	0	0	0.014	0.014	
MEGHALAYA	0.04	5.798	0.455	6.294	0.036	4.676	0.417	5.129	3.657	2.08	289.118	26.462	317.66	158.484	0.001	0.846	0.041	0.888	

1	2				3				4				5						
	a	b	c	d	a	b	c	d	e	a	b	c	d	e	a	b	c	d	
																			HH issued jobcards
State	SCs	STs	Others	Total	SCs	STs	Others	Total	No. of Women	SCs	STs	Others	Total	Women	SCs	STs	Others	Total	
MIZORAM	0	2.067	0.015	2.082	0	2.098	0.016	2.114	1.308	0.031	190.886	1.398	192.316	117.617	0	0	0	0	
NAGALAND	0	4.31	0.205	4.515	0	3.854	0.186	4.04	1.755	0.006	139.646	5.603	145.256	55.599	0	0	0	0	
ODISHA	12.4	20.306	41.6	74.306	4.77	11.064	17.993	33.827	25.012	255.127	661.562	946.499	1863.187	857.844	0.517	1.475	1.838	3.83	
PUNJAB	12.666	0.006	7.075	19.747	5.957	0.005	2.717	8.68	6.355	211.573	0.181	104.82	316.574	189.371	0.112	0	0.058	0.17	
RAJASTHAN	23.372	21.898	70.649	115.918	14.646	14.99	39.345	68.981	58.962	799.172	854.762	2188.087	3842.021	2556.72	1.107	1.278	3.312	5.697	
SIKKIM	0.048	0.358	0.463	0.869	0.032	0.26	0.33	0.622	0.369	1.561	12.891	16.374	30.827	16.094	0.001	0.014	0.018	0.033	
TAMIL NADU	25.333	1.541	63.377	90.252	19.179	1.037	46.729	66.945	63.81	887.463	45.219	2135.481	3068.1622615.524	0.329	0.011	0.8	1.14		
TELANGANA	12.398	9.546	35.199	57.144	6.265	5.267	16.691	28.223	26.401	300.833	285.347	777.934	1364.113	794.055	0.736	0.795	1.653	3.184	
TRIPURA	1.116	2.702	2.731	6.549	0.994	2.535	2.367	5.896	3.993	56.702	193.544	132.678	382.925	181.625	0.061	0.618	0.137	0.817	
UTTAR PRADESH	63.312	1.962	146.823	212.097	23.365	0.799	52.16	76.324	33.696	942.112	34.279	2059.666	3036.0571128.045	1.386	0.059	2.918	4.363		
UTTARAKHAND	2.186	0.434	9.327	11.947	0.88	0.201	4.436	5.517	4.241	36.303	8.788	175.602	220.693	121.578	0.042	0.013	0.182	0.237	
WEST BENGAL	36.017	10.371	95.35	141.738	20.043	5.988	48.237	74.268	49.215	850.093	265.44	2215.026	3330.5591550.487	0.831	0.325	2.208	3.364		
ANDAMAN AND NICOBAR	0	0.041	0.287	0.327	0	0.002	0.038	0.04	0.027	0	0.049	0.872	0.921	0.493	0	0	0	0	
LAKSHADWEEP	0	0.079	0.001	0.08	0	0	0	0	0	0	0.008	0	0.008	0.001	0	0	0	0	
PUDUCHERRY	0.204	0.002	0.535	0.741	0.105	0.001	0.245	0.351	0.328	1.555	0.011	3.642	5.208	4.569	0	0	0	0	
THE DADRA AND NAGAR HAVELI AND DAMAN AND DIU	0	0.035	0.001	0.035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	317.905	202.668	1065.79	1586.36	139.391	111.499	442.785	693.674	521.759	6299.41	5971.04	20222.32	32492.77	17639.1	7.304	9.786	22.253	39.341	

Mahatma Gandhi NREGS Status in Aspirational Districts 2020-21

States	Districts	Projected Mandays	Mandays Generated	Women Participation	Expenditure Rs in Lakhs	Renovation of traditional water bodies	
						Ongoing	Completed
1	2	3	4	5	5	6	7
ANDHRA PRADESH	VIZIANAGARAM	30665394	30660330	60.86	107088.754	4391	5220
ANDHRA PRADESH	VISAKHAPATANAM	26263969	26266506	57.57	96842.841	1344	1915
ANDHRA PRADESH	CUDDAPAH	14914899	14917066	60.13	72437.264	154	263
ARUNACHAL PRADESH	NAMSAI	1080272	1079828	23.69	3388.215	4	16
ASSAM	DHUBRI	5697956	6282658	43.5	15162.277	13	0
ASSAM	GOALPARA	1887713	1917037	45.88	4804.387	35	12
ASSAM	BARPETA	5184098	5303082	41.85	16368.171	23	3
ASSAM	DARRANG	3328542	3327055	45.59	7495.201	70	14
ASSAM	HAILAKANDI	2761364	2797717	28.86	6976.434	5	0
ASSAM	BAKSA	1885656	1910740	52.38	6739.156	5	4
ASSAM	UDALGURI	1188348	1177341	45.26	7352.308	8	6
BIHAR	AURANAGABAD	5855123	6096302	43.34	18989.401	207	83
BIHAR	GAYA	9865578	9982886	54.45	25873.982	763	341
BIHAR	NAWADA	4512805	4637059	52.94	13996.017	180	71
BIHAR	SITAMARHI	7913887	7786197	58.89	19852.732	21	4
BIHAR	MUZAFFARPUR	7654157	7685785	55.13	19357.731	201	25
BIHAR	BEGUSARAI	5446777	5589391	68.79	18101.89	50	10
BIHAR	PURNIA	6490513	6699578	60.78	20212.654	38	10
BIHAR	KATI HAR	7932715	8241569	60.6	20821.328	15	7
BIHAR	KHAGARIA	2867667	2837892	69.7	6962.703	1	0
BIHAR	ARARIA	9214893	9324247	52	23511.7	249	24
BIHAR	BANKA	7631479	7591021	58.56	21457.082	37	18
BIHAR	Sheikhpura	1324785	1351125	50.1	3214.457	11	3
BIHAR	JAMUI	5912392	6135161	54.97	18050.139	275	94
CHHATTISGARH	RAJNANDAGON	17324010	17324010	59.36	36357.375	682	244
CHHATTISGARH	KORBA	5146177	5137904	49.01	11847.746	209	78
CHHATTISGARH	KANKER	7592312	7592312	50.89	17005.304	153	117
CHHATTISGARH	BASTAR	3066064	3065257	50.28	8218.865	125	55
CHHATTISGARH	DANTEWADA	2210687	2210562	47.54	4951.725	9	6
CHHATTISGARH	MAHASAMUND	8777037	8777037	48.8	15700.313	834	412
CHHATTISGARH	BIJAPUR	3070154	3070154	49.59	8113.042	19	12
CHHATTISGARH	NARAYANPUR	1008395	1008066	51.35	2472.954	21	3

States	Districts	Projected Mandays	Mandays Generated	Women Participation	Expenditure Rs in Lakhs	Renovation of traditional water bodies	
						Ongoing	Completed
1	2	3	4	5	5	6	7
CHHATTISGARH	KONDAGAON	3630799	3630799	49.96	8913.705	23	17
CHHATTISGARH	SUKMA	3118434	3118434	49.53	9339.339	3	3
GUJARAT	DOHAD	9149060	10391842	45.89	30900.233	1016	1869
GUJARAT	NARMADA	2851232	2948678	52.13	9246.859	180	537
HARYANA	MEWAT	4981067	4776500	41.46	25969.99	53	73
HIMACHAL PRADESH	CHAMBA	6236906	6435702	51.04	18620.857	139	135
JAMMU AND KASHMIR	KUPWARA	2984500	3104290	33.14	11854.453	33	32
JAMMU AND KASHMIR	BARAMULLA	1713000	1789715	16.25	5541.574	10	228
JHARKHAND	RANCHI	5451113	5416196	43.97	16059.948	1	0
JHARKHAND	LOHARDAGA	1556241	1551084	45.69	4086.859	2	0
JHARKHAND	GUMLA	4110129	4178247	39.75	11701.698	7	0
JHARKHAND	SIMDEGA	3909441	3953403	41.63	12477.864	42	47
JHARKHAND	PALAMU	7224133	7570177	40.12	17589.978	27	5
JHARKHAND	LATEHAR	5188869	5232782	43.48	13141.024	91	109
JHARKHAND	GARHWA	8393436	8909246	44.07	25408.868	12	1
JHARKHAND	WEST SINGHBHUM	4466349	4346195	43.81	11625.362	1	0
JHARKHAND	EAST SINGHBUM	4291868	4259866	45.63	11733.239	3	2
JHARKHAND	DUMKA	5866578	6131527	41.66	14494.559	3	0
JHARKHAND	SAHEBGANJ	4004163	4282662	43.02	11643.955	184	8
JHARKHAND	PAKUR	3370827	3402591	37.59	9165.858	0	1
JHARKHAND	GODDA	5694959	5948123	38.86	15864.966	17	3
JHARKHAND	HAZARIBAGH	5340711	5690370	45.13	15434.929	2	9
JHARKHAND	CHATRA	4236648	4392237	44.69	11939.916	5	8
JHARKHAND	GIRIDIH	11176758	11353922	47.28	29194.478	7	18
JHARKHAND	BOKARO	4325847	4364475	40.38	11125.313	5	2
JHARKHAND	RAMGARH	2064355	2162096	43.87	6598.04	1	1
JHARKHAND	KHUNTI	2202938	2197670	38.93	5961.272	0	0
KARNATAKA	RAICHUR	11720661	12094253	51.12	45292.372	414	843
KARNATAKA	Yadgir	3809928	3882088	50.32	13401.817	122	33
KERALA	WAYANAD	5000000	4259105	86.91	16153.26	86	84
MADHYA PRADESH	GUNA	8378643	8530339	37.01	26133.475	110	54
MADHYA PRADESH	CHHATARPUR	7218115	7318956	34.55	18675.243	25	63

States	Districts	Projected Mandays	Mandays Generated	Women Participation	Expenditure Rs in Lakhs	Renovation of traditional water bodies	
						Ongoing	Completed
1	2	3	4	5	5	6	7
MADHYA PRADESH	DAMOH	6737123	6805578	35.27	17143.343	60	117
MADHYA PRADESH	KHANDWA	6993657	7028263	42.46	20249.246	11	6
MADHYA PRADESH	RAJGARH	8953875	9079537	38.27	25597.819	67	48
MADHYA PRADESH	VIDISHA	5983799	6032125	28.45	17626.954	51	5
MADHYA PRADESH	BARWANI	7389296	7519060	43.05	14198.85	23	15
MADHYA PRADESH	SINGRAULI	5326857	5404188	38.77	12110.193	14	14
MAHARASHTRA	GADCHIROLI	2450720	3465772	47.28	9602.945	52	22
MAHARASHTRA	NANDURBAR	3014517	3066220	41.49	9288.761	1	4
MAHARASHTRA	OSMANABAD	1435566	1204204	41.74	3819.145	82	69
MAHARASHTRA	WASHIM	1085707	662686	37.47	2628.441	9	0
MANIPUR	CHANDEL	1169840	1149881	40.89	3915.996	0	0
MEGHALAYA	RI BHOI	2217397	3150477	51.81	10955.264	86	86
MIZORAM	MAMIT	2243741	2117119	68.66	5740.196	0	38
NAGALAND	KIPHIRE	1105069	1399948	36.52	2831.307	0	0
ODISHA	DHENKANAL	8200000	8393531	46.44	22971.144	740	55
ODISHA	KANDHAMAL	8680000	8711838	47.47	21992.759	45	6
ODISHA	BOLANGIR	12200000	12421975	41.47	37625.336	1440	230
ODISHA	KALAHANDI	9650000	9996171	42.89	30913.294	939	98
ODISHA	KORAPUT	11970000	12070023	42.94	30526.521	589	126
ODISHA	NABARANGAPUR	10380000	10419526	43.13	26523.184	350	64
ODISHA	MALKANGIRI	3930000	3991788	42.24	10951.591	47	9
ODISHA	GAJAPATI	4950000	4939837	47.19	14657.351	177	5
ODISHA	NUAPADA	5300000	5358431	44.61	18309.73	396	63
ODISHA	RAYAGADA	8230000	8338509	46.25	27302.528	297	41
PUNJAB	FEROZEPUR	2022780	2124046	42.55	8301.915	314	150
PUNJAB	MOGA	1413188	1458550	64.34	4292.725	222	195
RAJASTHAN	DHOLPUR	7136046	6196645	47.69	14073.579	776	47
RAJASTHAN	KARALI	4600000	5708516	57.46	15237.737	241	28
RAJASTHAN	JAISALMER	7134902	7298213	61.98	19291.703	174	174
RAJASTHAN	SIROHI	9762623	9977870	74.72	20626.383	90	100
RAJASTHAN	BARAN	10938135	9720683	58.85	17965.005	410	105
SIKKIM	WEST DISTRICT	1419040	1485515	49.9	4150.789	0	0
TAMIL NADU	RAMANATHAPURAM	11041864	11998506	87.36	29671.338	6	12
TAMIL NADU	VIRUDHUNAGAR	7086707	9499097	85.98	23807.302	5	5
TELANGANA	KHAMMAM	7104559	7206523	58.66	23302.415	401	244

States	Districts	Projected Mandays	Mandays Generated	Women Participation	Expenditure Rs in Lakhs	Renovation of traditional water bodies	
						Ongoing	Completed
1	2	3	4	5	5	6	7
TELANGANA	JAYASHANKER BHOPALAPALLY	2172810	2201121	53.29	6758.017	161	50
TELANGANA	KUMRAM BHEEM (ASIFABAD)	3917690	4062773	50.19	12080.525	30	21
TRIPURA	DHALAI	8661893	8490258	46.8	20076.721	43	11
UTTAR PRADESH	FATEHPUR	6677941	6401668	36.27	21197.269	702	727
UTTAR PRADESH	BAHRAICH	10177142	9716720	35.91	35887.51	3	1
UTTAR PRADESH	SIDDHARTH NAGAR	11653937	12038776	48.55	42843.729	170	41
UTTAR PRADESH	SONBHADRA	6374002	6834824	47.78	21232.101	397	154
UTTAR PRADESH	CHANDAULI	7152376	5659289	32.21	20126.361	108	74
UTTAR PRADESH	BALRAMPUR	5848591	6284284	33.09	17562.385	48	11
UTTAR PRADESH	SHRAVASTI	3020589	3043470	31.25	8935.674	76	204
UTTAR PRADESH	CHITRAKOOT	5375845	4731803	42.39	15993.085	9	13
UTTARAKHAND	HARIDWAR	1612002	1667151	38.98	5133.204	16	27
UTTARAKHAND	UDAM SINGH NAGAR	1517949	1523636	46.4	4879.483	27	39
WEST BENGAL	NADIA	12719435	12712574	42.55	25881.118	239	139
WEST BENGAL	BIRBHUM	20836018	20831951	42.68	49648.497	483	251
WEST BENGAL	MALDAH	22948818	22943402	55.61	70177.543	397	100
WEST BENGAL	MURSHIDABAD	19080276	19075901	32.61	48577.947	308	33
WEST BENGAL	DINAJPUR DAKSHIN	6246116	6242049	45.76	14244.677	198	66
	TOTAL	754593964	765268946	5550.08	2194454.09	24306	17398

NRM work 2019-21 in Madhya Pradesh

Districts	Soil and Water Conservation Related Works (19-20)	Soil and Water Conservation Related Works 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
AGAR-MALWA	299	540	7	27	549	608	2	0	12	164	S No.	3	2	2
ALIRAJPUR	242	1962	45	713	1084	2020	0	1	337	2131	20	10	4	0
ANUPPUR	390	2190	41	221	1360	2462	2	3	167	562	28	27	137	54
ASHOK NAGAR	234	1094	16	99	366	980	1	1	171	247	2	2	16	21
BALAGHAT	5577	6312	47	366	1937	2050	13	3	792	700	81	30	49	5
BARWANI	486	2256	149	68	856	1248	2	0	1051	744	18	8	13	6
BETUL	750	3418	531	395	1250	1924	2	2	120	493	8	4	74	49
BHIND	491	1237	9	5	69	164	7	1	152	215	11	1	9	2
BHOPAL	210	514	5	81	348	446	1	0	192	95	4	2	2	0
BURHANPUR	427	1386	43	64	410	352	0	5	106	462	2	1	29	40
CHHATARPUR	307	2647	71	132	904	1924	1	3	458	702	18	12	37	42
CHHINDWARA	2850	7726	133	169	1371	2093	11	8	1043	3158	93	43	108	54
DAMOH	554	1929	39	470	820	1026	0	1	333	489	11	13	25	22
DATTA	312	1276	9	26	67	322	3	2	94	449	0	1	7	4
DEWAS	362	841	225	574	1098	1197	2	1	288	2946	0	3	12	7
DHAR	573	5161	134	536	1114	1908	7	2	1491	1015	5	5	22	5
DINDORI	4017	6131	82	424	1103	1565	5	0	1306	2087	232	136	55	29
GUNA	236	2928	30	137	842	1020	1	0	80	585	2	2	3	4
GWALIOR	302	1190	15	54	58	98	7	4	148	365	43	18	4	1
HARDA	109	366	41	43	138	257	0	0	865	287	5	0	0	0

Districts	Soil and Water Conservation Related Works (19-20)	Soil and Water Conservation Related Works 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
HOSHANGABAD	387	498	16	72	125	259	0	0	931	2005	56	8	5	5
INDORE	443	769	79	57	241	300	0	0	87	759	0	1	6	2
JABALPUR	868	4162	23	75	131	416	1	0	99	213	8	5	0	1
JHABUA	333	2332	76	144	1063	1835	0	3	90	808	2	5	5	5
KATNI	480	3937	18	148	300	663	0	0	1038	599	14	4	7	7
KHANDWA	952	3847	75	897	1252	1554	1	0	334	1645	4	3	15	5
KHARGONE	737	2547	75	296	1387	1824	1	2	210	9931	0	14	16	7
MANDLA	4428	7606	60	157	1756	1779	43	3	1401	1352	133	54	72	41
MANDSAUR	258	587	181	445	582	718	2	0	510	132	2	0	17	1
MORENA	659	1973	9	21	34	36	18	22	194	645	8	5	1	2
NARSINGHPUR	453	3809	117	375	180	706	2	0	2612	1319	5	2	20	6
NEEMUCH	367	853	43	95	157	181	68	11	39	61	1	0	5	0
PANNA	661	3127	6	15	455	837	0	1	147	267	3	5	74	57
RAISEN	227	1878	11	168	419	579	0	0	909	988	9	2	1	0
RAJGARH	373	1018	96	238	1475	2288	0	0	472	294	9	4	8	1
RATLAM	182	887	83	396	939	1254	2	0	1330	471	5	1	23	6
REWA	913	3764	16	43	299	642	4	2	335	558	22	11	28	20
SAGAR	460	1351	53	732	1834	3895	13	4	411	959	34	63	95	114
SATNA	2403	5266	25	728	543	690	5	0	300	214	36	3	34	8
SEHORE	282	439	34	279	451	390	1	0	114	335	4	1	6	4
SEONI	1534	4104	82	142	1253	2433	5	3	384	2296	24	14	118	67
SHAHDOL	303	2513	16	24	911	1875	2	3	69	239	15	12	71	31

Districts	Soil and Water Conservation Related Works (19-20)	Soil and Water Conservation Related Works 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
SHAJAPUR	316	244	40	247	1033	719	2	0	85	85	3	2	17	0
SHEOPUR	532	1391	73	41	22	17	4	3	143	302	7	8	0	3
SHIVPURI	500	1946	25	131	489	866	0	0	218	296	1	4	10	2
SIDHI	961	2473	16	67	582	1020	2	0	348	271	51	12	30	16
SINGRAULI	414	3044	29	66	444	754	1	1	310	313	14	2	23	6
TIKAMGARH	977	3727	62	198	667	922	1	0	313	285	5	2	31	23
UJJAIN	417	679	50	200	262	379	0	0	197	127	0	1	1	0
UMARIA	340	1734	4	324	404	861	1	0	161	569	11	8	10	9
VIDISHA	176	776	68	240	864	1146	1	0	99	393	2	1	0	1

NRM related work in Bihar 2019-21

Districts	Soil and Water Conservation Related Works 19-20	Soil and Water Conservation Related Works() 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
ARARIA	106	380	0	64	119	255	13	8	294	504	147	181	60	38
ARWAL	132	524	0	3	273	998	1	0	52	309	60	77	11	7
AURANAGABAD	242	620	1	65	642	1125	3	1	199	169	58	32	59	41
BANKA	323	552	57	158	982	1008	6	6	25	58	62	15	168	65
BEGUSARAI	155	429	37	203	46	68	1	0	239	1098	75	33	10	1

Districts	Soil and Water Conservation Related Works() 19-20	Soil and Water Conservation Related Works() 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	7	-	8	
BHAGALPUR	204	363	0	68	480	378	4	5	357	554	350	145	30	12
BHOJPUR	69	132	9	201	495	659	3	1	94	113	12	3	18	4
BUXAR	74	340	0	49	249	614	0	0	135	124	86	88	41	17
DARBHANGA	229	211	0	134	159	139	12	4	35	68	449	141	34	18
GAYA	634	1846	43	1520	672	1156	44	9	76	272	201	65	71	54
GOPALGANJ	461	773	1	460	176	428	5	0	102	215	316	106	69	12
JAMUI	278	957	9	81	756	918	2	1	18	30	35	24	287	227
JEHANABAD	645	906	2	127	264	342	10	4	30	73	19	15	11	1
KAIMUR (BHABUA)	451	673	8	189	443	610	1	0	254	244	81	13	54	5
KATI HAR	126	463	16	303	63	144	5	1	129	191	173	176	22	10
KHAGARIA	20	44	0	73	12	10	3	0	99	142	18	11	8	4
KISHANGANJ	150	523	28	780	54	203	7	1	153	13	319	99	21	10
LAKHISARAI	181	612	1	21	259	405	24	10	145	116	218	170	14	2
MADHEPURA	43	298	0	139	35	84	0	0	310	115	390	429	22	5
MADHUBANI	249	268	5	187	78	149	6	0	47	156	307	53	4	0
MUNGER	72	215	1	197	205	368	7	8	71	15	38	16	18	3
MUZAFFARPUR	322	214	3	41	371	354	10	5	156	86	807	260	178	77
NALANDA	309	527	11	419	870	1040	31	32	272	335	47	24	47	15
NAWADA	235	586	2	53	352	709	33	63	41	90	55	35	23	24
PASHCHIM CHAMPARAN	49	210	0	81	428	692	12	0	62	154	120	114	53	24
PATNA	221	625	54	112	406	627	3	3	220	82	27	19	19	10
PURBI CHAMPARAN	191	991	8	315	241	1269	278	105	65	137	183	312	79	42

Districts	Soil and Water Conservation Related Works() 19-20	Soil and Water Conservation Related Works() 20-21	Ground Water Recharge Related Works 19-20	Ground Water Recharge Related Works 20-21	Irrigation Related Works 19-20	Irrigation Related Works 20-21	Drainage and other Related Works 19-20	Drainage and other Related Works 20-21	Plantation Related Works 19-20	Plantation Related Works 20-21	Land Related Works for Livelihood support 19-20	Land Related Works for Livelihood support 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
PURNIA	277	455	1	247	152	257	4	3	407	1299	451	236	83	34
ROHTAS	126	391	6	35	513	1579	1	2	18	96	30	28	27	16
SAHARSA	87	419	0	630	36	178	2	1	60	79	617	598	24	4
SAMASTIPUR	258	1006	0	513	74	157	7	16	316	833	639	767	10	8
SARAN	448	825	9	335	488	968	9	1	362	276	175	63	30	6
SHEIKHPURA	107	288	8	2	138	145	20	12	84	104	111	32	18	3
SHEOHAR	32	58	1	55	21	80	14	13	11	31	157	255	11	1
SITAMARHI	177	395	1	152	167	262	1	0	45	31	1129	1281	20	27
SIWAN	221	241	0	35	306	353	16	7	71	97	294	77	55	9
SUPAUL	69	161	2	55	113	199	21	6	375	274	123	75	36	30
VAISHALI	276	436	33	757	169	229	46	5	95	41	1210	435	15	2

NRM works in Rajasthan 2019-21

Districts	Soil and Water Conservation Related Works 19-20	Soil and Water Conservation Related Works 20-21	Ground Water Recharge Related Works(7) 19-20	Ground Water Recharge Related Works(7) 20-21	Irrigation Related Works (19) 19-20	Irrigation Related Works (19) 20-21	Drainage and other Related Works (16) 19-20	Drainage and other Related Works (16) 20-21	Plantation Related Works (17) 19-20	Plantation Related Works (17) 20-21	Land Related Works for Livelihood support (9) 19-20	Land Related Works for Livelihood support (9) 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	-	-	4	-	5	-	6	7	-	-	8
AJMER	606	757	8	4	208	107	16	4	74	436	5	16	27	2
ALWAR	595	896	213	128	316	127	3	0	115	251	32	27	34	5
BANSWARA	496	944	87	114	1934	2659	91	42	65	158	240	134	77	134
BARAN	316	364	4	1	261	113	7	2	211	69	111	29	12	3
BARMER	69	140	6	8	6393	6258	0	0	37	31	13	12	3761	2512
BHARATPUR	141	406	3	38	132	62	2	1	47	133	22	9	5	1
BHILWARA	1040	1265	6	4	531	203	54	14	340	432	294	59	60	7
BIKANER	263	290	1	1	605	227	2	1	74	51	45	9	229	42
BUNDI	427	344	0	2	318	383	10	0	69	46	96	3	1	0
CHITTORGARH	396	291	9	1	235	38	6	0	93	38	396	91	5	1
CHURU	492	821	4	7	1576	590	9	1	157	314	89	22	869	249
DAUSA	327	485	3	7	108	52	11	7	61	91	63	59	7	4
DHOLPUR	301	92	2	0	69	75	4	0	46	49	354	14	1	0
DUNGARPUR	441	505	8	1	687	392	6	0	29	98	152	54	21	13
HANUMANGARH	172	175	6	13	1049	1608	0	1	21	26	43	10	8	14
JAIPUR	423	422	25	4	144	52	1	0	91	38	53	10	30	19
JAISALMER	250	964	3	12	293	999	3	6	83	217	43	102	127	404
JALORE	153	193	2	0	203	75	2	9	69	35	112	20	120	33
JHALAWAR	1373	1533	2	1	406	145	9	5	333	139	1183	539	72	9
JHUNJHUNU	215	234	20	4	118	27	8	0	271	173	24	3	66	15
JODHPUR	170	607	5	5	915	1668	0	0	65	179	1	3	423	507
KARAULI	160	198	7	1	131	35	4	1	41	98	34	5	2	1

	Soil and Water Conservation Related Works 19-20	Soil and Water Conservation Related Works 20-21	Ground Water Recharge Related Works(7) 19-20	Ground Water Recharge Related Works(7) 20-21	Irrigation Related Works (19) 19-20	Irrigation Related Works (19) 20-21	Drainage and other Related Works (16) 19-20	Drainage and other Related Works (16) 20-21	Plantation Related Works (17) 19-20	Plantation Related Works (17) 20-21	Land Related Works for Livelihood support (9) 19-20	Land Related Works for Livelihood support (9) 20-21	Farm Ponds 19-20	Farm Ponds 20-21
1	2	-	3	3	-	4	-	5	-	6	-	7	-	8
KOTA	319	486	2	5	508	463	22	1	131	121	162	26	41	3
NAGPUR	515	903	10	19	2659	2773	0	22	59	150	59	140	1109	1061
PALI	222	380	44	20	216	82	6	1	43	29	35	10	85	10
PRATAPGARH	248	492	10	15	422	275	10	1	55	60	393	180	16	16
RAJSAMAND	216	453	0	1	86	24	1	1	58	208	482	54	8	2
SAWAI MADHOPUR	498	446	34	217	559	149	2	0	104	117	101	39	144	3
SIKAR	83	52	6	1	172	54	0	0	215	10	181	6	89	49
SIROHI	226	631	45	71	175	64	8	1	20	144	6	2	28	0
SRI GANGANAGAR	234	294	3	7	1970	2118	5	2	35	40	257	126	32	20
TONK	533	325	8	5	349	140	9	2	61	78	592	71	100	11
UDAIPUR	518	565	15	18	1760	585	25	4	373	761	1501	952	165	113

NRM work in Jharkhand 2019-21

Livelihood work completed in Rajasthan since inception:

Districts	Total Expenditure	Expenditure on Agriculture Works	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Allied Works	% of Expenditure on Agriculture and Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
1	2	3	4=(3*100)/2	5	6=(5*100)/2	7=3+5	8=(7*100)/2	9	10=(9*100)/2
TOTAL	3955487.4	2286242.1	57.8	76839.1	1.94	2363081.2	59.74	1710173.1	43.24
AJMER	195598.5	99093.33	50.66	2131.55	1.09	101224.88	51.75	90073.23	46.05
ALWAR	69227.04	35119	50.73	607.58	0.88	35726.58	51.61	31469.02	45.46
BANSWARA	250505.09	168235.6	67.16	14977	5.98	183212.59	73.14	93889.74	37.48
BARAN	73430.95	49558	67.49	1754.97	2.39	51312.97	69.88	38177.24	51.99
BARMER	368217.92	256256.03	69.59	3488.06	0.95	259744.09	70.54	186040.36	50.52
BHARATPUR	78465.54	31955.5	40.73	1222.19	1.56	33177.69	42.28	29090.06	37.07
BHILWARA	214542.4	120808.74	56.31	5682.92	2.65	126491.66	58.96	102332.68	47.7
BIKANER	160751.54	80020.07	49.78	2177.56	1.35	82197.63	51.13	51720.3	32.17
BUNDI	63072.68	30184.59	47.86	994.74	1.58	31179.33	49.43	20271.94	32.14
CHITTORGARH	86405.84	42217.79	48.86	2850.82	3.3	45068.61	52.16	25220.7	29.19
CHURU	150706.16	86624.7	57.48	2332.84	1.55	88957.54	59.03	62918.78	41.75
DAUSA	51033	28364.4	55.58	1495.23	2.93	29859.63	58.51	24506.1	48.02
DHOLPUR	42842.56	22565.59	52.67	1191.93	2.78	23757.52	55.45	19346.61	45.16
DUNGARPUR	197493.65	112155.67	56.79	1813.29	0.92	113968.95	57.71	89957.97	45.55
HANUMANGARH	115867.45	81303.99	70.17	1981.63	1.71	83285.61	71.88	69394.31	59.89
JAIPUR	92597.82	48324.88	52.19	1029.29	1.11	49354.16	53.3	41825.21	45.17
JAISALMER	88223.99	58309.65	66.09	1178.3	1.34	59487.94	67.43	46264.44	52.44
JALORE	93008.18	40871.08	43.94	4374.45	4.7	45245.52	48.65	34318.66	36.9
JHALAWAR	129230.82	85049.01	65.81	2718.15	2.1	87767.15	67.92	55451.07	42.91

	Total Expenditure	Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Agriculture Allied Works	% of Expenditure on Agriculture and Agriculture Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
1	2	3	4	5	6	7	8	9	10
			$4=(3*100)/2$		$6=(5*100)/2$	$7=3+5$	$8=(7*100)/2$		$10=(9*100)/2$
JHUNJHUNU	39948.99	22893.74	57.31	688.5	1.72	23582.24	59.03	15007.97	37.57
JODHPUR	167419.84	97935	58.5	1769.47	1.06	99704.47	59.55	75528.43	45.11
KARALI	56655.46	34186.46	60.34	812.91	1.43	34999.37	61.78	29347.44	51.8
KOTA	62143.32	30034.12	48.33	4998.86	8.04	35032.98	56.37	26071.33	41.95
NAGAU	281306.15	160646.38	57.11	2850.78	1.01	163497.16	58.12	127839.43	45.44
PALI	113631.18	65887.89	57.98	2074.22	1.83	67962.11	59.81	55108.59	48.5
PRATAPGARH	67328.36	37702.72	56	1229.28	1.83	38932	57.82	24078.48	35.76
RAJSAMAND	90554.59	42250.59	46.66	568.02	0.63	42818.6	47.28	30302.52	33.46
SAWAI MADHOPUR	69201.07	40887.33	59.08	348.1	0.5	41235.43	59.59	24031.34	34.73
SIKAR	56785.74	27259.16	48	685.99	1.21	27945.15	49.21	21398.46	37.68
SIROHI	52816.2	35857.61	67.89	2458.27	4.65	38315.88	72.55	29100.43	55.1
SRI GANGANAGAR	146732.57	98964.7	67.45	444.8	0.3	99409.51	67.75	77311.14	52.69
TONK	67934.62	38160.43	56.17	653.58	0.96	38814.01	57.13	27320.13	40.22
UDAIPUR	161808.13	76558.36	47.31	3253.84	2.01	79812.2	49.33	35459.03	21.91
Total	3955487.4	2286242.1	57.8	76839.1	1.94	2363081.2	59.74	1710173.1	43.24

Livelihood work completed in Bihar Since inception

Districts	Total Expenditure	Expenditure on Agriculture Works	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Agriculture Allied Works	% of Expenditure on Agriculture and Agriculture Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
1	2	3	4=(3*100)/2	5	6=(5*100)/2	7=3+5	8=(7*100)/2	9	10=(9*100)/2
TOTAL	2663126.54	1490587.6	55.97	38168.11	1.43	1528755.71	57.4	490728.85	18.43
ARARIA	84070.38	46278.38	55.05	1048.04	1.25	47326.42	56.29	5430.43	6.46
ARWAL	34219.44	18881.06	55.18	291.47	0.85	19172.53	56.03	12669.62	37.02
AURANAGABAD	85678.2	45866.98	53.53	225.44	0.26	46092.43	53.8	31573.47	36.85
BANKA	74757.89	49268.61	65.9	311.77	0.42	49580.37	66.32	28596.15	38.25
BEGUSARAI	70195.8	38225.85	54.46	464.12	0.66	38689.97	55.12	2811.55	4.01
BHAGALPUR	72713.5	44222.91	60.82	1469.81	2.02	45692.72	62.84	18870.09	25.95
BHOJPUR	50552.43	27828.77	55.05	293.78	0.58	28122.55	55.63	13204.38	26.12
BUXAR	54425.85	25274.68	46.44	105.37	0.19	25380.05	46.63	11484.73	21.1
DARBHANGA	93436.4	54716.09	58.56	1664.58	1.78	56380.67	60.34	7602.22	8.14
GAYA	101642.2	71165.73	70.02	1745.89	1.72	72911.62	71.73	31696.3	31.18
GOPALGANJ	55944.98	29803.75	53.27	456.33	0.82	30260.08	54.09	9886.04	17.67
JAMUI	79499.39	57534.97	72.37	379.29	0.48	57914.26	72.85	38051.36	47.86
JEHANABAD	46163.51	23984.28	51.96	880.34	1.91	24864.62	53.86	19268.28	41.74
KAIMUR (BHABUA)	41940.1	27340.62	65.19	55.18	0.13	27395.8	65.32	13667.19	32.59
KATIHAR	94417.32	35784.41	37.9	896.68	0.95	36681.09	38.85	4544.87	4.81
KHAGARIA	31165.28	13785.65	44.23	180.96	0.58	13966.61	44.81	875.96	2.81
KISHANGANJ	51120.82	19844.78	38.82	856.23	1.67	20701.01	40.49	3690.75	7.22
LAKHISARAI	47969.74	24305.83	50.67	1829.51	3.81	26135.35	54.48	12580.05	26.22
MADHEPURA	76971.49	49810.88	64.71	143.25	0.19	49954.12	64.9	2345.36	3.05
MADHUBANI	73096.6	40217.55	55.02	533.79	0.73	40751.34	55.75	5596.42	7.66
MUNGER	39240.76	23106.41	58.88	2748.08	7	25854.49	65.89	17540	44.7
MUZAFFARPUR	88193.23	44061.67	49.96	1005.51	1.14	45067.18	51.1	9807.66	11.12

	2	3	% of Expenditure on Agriculture Works	4=(3*100)/2	5	% of Expenditure on Agriculture Allied Works	6=(5*100)/2	Total Expenditure on Agriculture and Allied Works	7=3+5	% of Expenditure on Agriculture and Allied Works	8=(7*100)/2	9	% of Expenditure on Irrigation on Works	10=(9*100)/2
1														
NALANDA	77366.79	40347.59	52.15	2371.33	42718.92	55.22	22784.58	29.45						
NAWADA	77519.74	43045.37	55.53	3583.41	46628.79	60.15	33785.86	43.58						
PASHCHIM CHAMPARAN	72769.61	44563.07	61.24	607	45170.06	62.07	9897.82	13.6						
PATNA	79613.56	36421.82	45.75	3902	40323.82	50.65	17799.47	22.36						
PURBI CHAMPARAN	124455.47	73397.08	58.97	939.24	74336.32	59.73	13627.95	10.95						
PURNIA	88041.92	41020.12	46.59	455.76	41475.88	47.11	4693.09	5.33						
ROHTAS	61791.19	36362.58	58.85	506.29	36868.87	59.67	21068.77	34.1						
SAHARSA	86405.44	52143.84	60.35	605.35	52749.19	61.05	2733.65	3.16						
SAMASTIPUR	117197.9	69698.6	59.47	1036.57	70735.17	60.36	7771.06	6.63						
SARAN	108166.34	50463.83	46.65	2073.67	52537.5	48.57	20267.01	18.74						
Sheikhpura	19498.84	10173.65	52.18	786.56	10960.2	56.21	7143.7	36.64						
SHEOHAR	30941.44	22012.91	71.14	23.43	22036.33	71.22	1470.65	4.75						
SITAMARHI	81037.47	52331.54	64.58	563.9	52895.44	65.27	5447.01	6.72						
SIWAN	39917.49	21215.16	53.15	2184.93	23400.09	58.62	8968.5	22.47						
SUPAUL	58163.75	21130.5	36.33	467.49	21597.99	37.13	3632.52	6.25						
VAISHALI	92824.28	64950.1	69.97	475.76	65425.86	70.48	7844.33	8.45						
TOTAL	2663126.54	1490587.6	55.97	38168.11	1528755.71	57.4	490728.85	18.43						

Livelihood work completed in Jharkhand since inception

Districts	Total Expenditure	Expenditure on Agriculture Works	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Allied Works	% of Expenditure on Agriculture Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
1	2	3	4=(3*100)/2	5	6=(5*100)/2	7=3+5	8=(7*100)/2	9	10=(9*100)/2
TOTAL	1714713.5	1365056.49	79.61	6196.22	0.36	1371252.69	79.97	728594.81	42.49
BOKARO	65254.06	57985.32	88.86	107.88	0.17	58093.2	89.03	29405.67	45.06
CHATRA	77160.83	62645.19	81.19	244.01	0.32	62889.19	81.5	34108.28	44.2
DEOGHAR	117684.54	100226.42	85.17	312.9	0.27	100539.32	85.43	56683.8	48.17
DHANBAD	58224.44	49503.65	85.02	26.2	0.05	49529.85	85.07	27382.19	47.03
DUMKA	91242.72	72011.62	78.92	87.68	0.1	72099.3	79.02	39276.31	43.05
EAST SINGHBUM	65338.62	44734.62	68.47	705.48	1.08	45440.1	69.55	26830.05	41.06
GARHWA	100843.92	86249.04	85.53	28.8	0.03	86277.84	85.56	39649.71	39.32
GIRIDIH	135602.32	106954.88	78.87	109.84	0.08	107064.73	78.95	57457.7	42.37
GODDA	72043.36	57435.47	79.72	31.98	0.04	57467.44	79.77	35465.5	49.23
GUMLA	61566.81	45056.88	73.18	77.24	0.13	45134.13	73.31	25948.05	42.15
HAZARIBAGH	76389.86	61203.38	80.12	51.46	0.07	61254.84	80.19	33085.69	43.31
JAMTARA	61800.36	54420.91	88.06	46.36	0.08	54467.26	88.13	28090.68	45.45
KHUNTI	33285.36	25896.69	77.8	40.14	0.12	25936.83	77.92	13490.93	40.53
KODERMA	34911.85	28220.41	80.83	32.93	0.09	28253.34	80.93	12134.97	34.76
LATEHAR	73214.41	62963.11	86	8.07	0.01	62971.18	86.01	33663.17	45.98
LOHARDAGA	34486.95	29132.08	84.47	53.94	0.16	29186.02	84.63	19091.64	55.36
PAKUR	69962.17	51873.43	74.14	657.63	0.94	52531.06	75.08	32360.1	46.25
PALAMU	78538.47	59107.55	75.26	78.35	0.1	59185.91	75.36	23677.8	30.15
RAMGARH	37000.26	30391.15	82.14	0	0	30391.15	82.14	14179.32	38.32
RANCHI	100309.32	83546.64	83.29	76.95	0.08	83623.59	83.37	45973.55	45.83
SAHEBGANJ	76093.54	49602.29	65.19	2349.98	3.09	51952.27	68.27	27425.24	36.04
SARAIKELA KHARSAWAN	62116.19	51882.9	83.53	829.64	1.34	52712.53	84.86	24054.09	38.72
SIMDEGA	57259.74	40767.57	71.2	183.61	0.32	40951.18	71.52	15576.53	27.2
WEST SINGHBHUM	74383.43	53245.29	71.58	55.15	0.07	53300.43	71.66	33583.84	45.15
TOTAL	1714713.5	1365056.49	79.61	6196.22	0.36	1371252.69	79.97	728594.81	42.49

Livelihood work completed in Madhya Pradesh since inception

Districts	Total Expenditure	Expenditure on Agriculture Works	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Agriculture Allied Works	% of Expenditure on Agriculture and Agriculture Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
1	2	3	4=(3*100)/2	5	6=(5*100)/2	7=3+5	8=(7*100)/2	9	10=(9*100)/2
TOTAL	4175789.8	2778298.3	66.53	28309.5	0.68	2806607.8	67.21	1600915.3	38.34
AGAR-MALWA	35362.4	23301.78	65.89	33.19	0.09	23334.96	65.99	13004.3	36.77
ALIRAJPUR	81349.27	63842.61	78.48	100.09	0.12	63942.7	78.6	41903.89	51.51
ANUPPUR	87128.94	61910.4	71.06	299.66	0.34	62210.06	71.4	20535.5	23.57
ASHOKNAGAR	48491.33	28685.92	59.16	33.53	0.07	28719.45	59.23	16493.19	34.01
BALAGHAT	182251.28	123151.25	67.57	3910.15	2.15	127061.39	69.72	57207.33	31.39
BARWANI	83962.73	60539.57	72.1	265.02	0.32	60804.59	72.42	41089.75	48.94
BETUL	118181.83	90424.05	76.51	683.12	0.58	91107.17	77.09	59414.08	50.27
BHIND	55394.13	24177.03	43.65	348.78	0.63	24525.81	44.28	14134.75	25.52
BHOPAL	27255.17	18478.09	67.8	12.78	0.05	18490.87	67.84	10682.95	39.2
BURHANPUR	36998.53	26401.37	71.36	274.07	0.74	26675.44	72.1	18429.27	49.81
CHHATARPUR	89823.59	59291.36	66.01	564.71	0.63	59856.06	66.64	35022.44	38.99
CHHINDWARA	162413.93	116777.03	71.9	751.66	0.46	117528.69	72.36	51576.91	31.76
DAMOH	86600.87	63433.07	73.25	321.67	0.37	63754.73	73.62	38080.69	43.97
DATTA	23982.02	11693.06	48.76	105.87	0.44	11798.94	49.2	6200.26	25.85
DEWAS	81728.79	49715.26	60.83	379.92	0.46	50095.17	61.29	26120.62	31.96
DHAR	201656.28	150988.72	74.87	318.81	0.16	151307.53	75.03	120478.56	59.74
DINDORI	153021.43	113488.55	74.17	840.04	0.55	114328.59	74.71	67414.33	44.06
GUNA	102370.61	61783.56	60.35	50.06	0.05	61833.62	60.4	40372.69	39.44
G'WALIOR	52813.73	24792.34	46.94	369.66	0.7	25162.01	47.64	13319.44	25.22
HARDA	21580.93	10128.85	46.93	157.3	0.73	10286.15	47.66	3786.25	17.54
HOSHANGABAD	25242.18	14483.68	57.38	124.05	0.49	14607.73	57.87	3165.77	12.54
INDORE	37656.16	18528.91	49.21	284.39	0.76	18813.3	49.96	11099.97	29.48

1	2	3	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	5	% of Expenditure on Agriculture Allied Works	6=(5*100)/2	Total Expenditure on Agriculture and Allied Works	7=3+5	% of Expenditure on Agriculture and Allied Works	8=(7*100)/2	Expenditure on Irrigation Works	9	% of Expenditure on Irrigation Works
JABALPUR	57404.63	35134.15	61.2	406.61	0.71	35540.75	61.91	13294.35	23.16					
JHABUA	116973.68	92722.79	79.27	217.34	0.19	92940.13	79.45	73141.09	62.53					
KATNI	75497.87	50876.6	67.39	197.82	0.26	51074.41	67.65	27985.08	37.07					
KHANDWA	92949.47	70636.67	75.99	356.26	0.38	70992.93	76.38	46036.08	49.53					
KHARGONE	127763.47	95484.19	74.74	614.63	0.48	96098.82	75.22	62414.34	48.85					
MANDLA	138797.54	114425.99	82.44	1687.98	1.22	116113.98	83.66	53565.22	38.59					
MANDSAUR	69293.06	40146.78	57.94	363.91	0.53	40510.69	58.46	22878.83	33.02					
MORENA	132725.08	81010.71	61.04	5415.9	4.08	86426.61	65.12	70094.29	52.81					
NARSINGHIPUR	50095.08	27585.55	55.07	265.91	0.53	27851.46	55.6	7606.97	15.19					
NEEMUCH	30998.83	13704	44.21	1745.12	5.63	15449.12	49.84	9456.72	30.51					
PANNA	71368.85	43930.09	61.55	663.43	0.93	44593.52	62.48	23434.22	32.84					
RAISEN	46492.89	25509.21	54.87	28.8	0.06	25538.01	54.93	8152.22	17.53					
RAJGARH	153433.61	104951.55	68.4	326.14	0.21	105277.69	68.61	55818.88	36.38					
RATLAM	68274.13	46118.5	67.55	366.39	0.54	46484.89	68.09	25651.2	37.57					
REWA	72302.18	38679.18	53.5	324.25	0.45	39003.43	53.95	12211.04	16.89					
SAGAR	104640.16	62616.01	59.84	223.99	0.21	62840	60.05	29310.99	28.01					
SATNA	80974.26	55227.87	68.2	477.2	0.59	55705.07	68.79	27781.39	34.31					
SEHORE	53993.07	32534.74	60.26	33.93	0.06	32568.68	60.32	20956.73	38.81					
SEONI	122003.98	80501.75	65.98	1820.46	1.49	82322.21	67.48	39069.35	32.02					
SHAHDOL	81790.83	58679.55	71.74	567.82	0.69	59247.37	72.44	23329.87	28.52					
SHAJAPUR	38291.24	21385.63	55.85	6.55	0.02	21392.18	55.87	8145.32	21.27					
SHEOPUR	62048.15	40341.03	65.02	225.33	0.36	40566.36	65.38	26549.11	42.79					
SHIVPURI	96223.45	55413.17	57.59	123.72	0.13	55536.89	57.72	36255.82	37.68					
SIDHI	66820.53	44451.88	66.52	415.51	0.62	44867.39	67.15	20332.52	30.43					

1	2	3	4=(3*100)/2	5	6=(5*100)/2	7=3+5	8=(7*100)/2	9	10=(9*100)/2
	Total Expenditure	Expenditure on Agriculture Works	% of Expenditure on Agriculture Works	Expenditure on Agriculture Allied Works	% of Expenditure on Agriculture Allied Works	Total Expenditure on Agriculture and Agriculture Allied Works	% of Expenditure on Agriculture and Agriculture Allied Works	Expenditure on Irrigation Works	% of Expenditure on Irrigation Works
SINGRAULI	66842.38	40538.46	60.65	185.41	0.28	40723.88	60.93	26416.82	39.52
TIKAMGARH	111466.78	76536.08	68.66	291.5	0.26	76827.58	68.92	59387.09	53.28
UJJAIN	58025.91	28888.97	49.79	281.32	0.48	29170.29	50.27	19046.16	32.82
UMARIA	68381.13	48683.89	71.19	341.84	0.5	49025.72	71.69	30244.09	44.23
VIDISHA	64651.41	35566.81	55.01	105.92	0.16	35672.74	55.18	12816.54	19.82
TOTAL	4175789.8	2778298.3	66.53	28309.5	0.68	2806607.8	67.21	1600915.3	38.34

Mahatma Gandhi NREGS-NRLM mapped with SHG work 2020-21

States	Individual		Community		Total Works
	No. of Works	No. of SHG Household	No. of Works	No. of SHG's	
1	2	3	4	5	7=3+5
ANDHRA PRADESH	4	4	0	0	4
ARUNACHAL PRADESH	0	0	1	1	1
ASSAM	22484	22003	120	84	22604
BIHAR	234	231	1	1	235
CHHATTISGARH	465	416	89	88	554
GUJARAT	49	46	47	41	96
HARYANA	1	1	42	42	43
HIMACHAL PRADESH	4919	4619	26	19	4945
JHARKHAND	2885	2663	0	0	2885
KARNATAKA	541	264	11	10	552
KERALA	192	176	243	206	435
MADHYA PRADESH	6515	6020	170	103	6685
MAHARASHTRA	58	57	1	1	59
MANIPUR	0	0	1	1	1
MIZORAM	45	43	8	8	53
NAGALAND	14	14	5	5	19
ODISHA	100	51	39	16	139
PUNJAB	10	10	0	0	10
RAJASTHAN	701	652	7	5	708
SIKKIM	63	62	0	0	63
TAMIL NADU	46	42	14	14	60
TRIPURA	13	13	0	0	13
UTTAR PRADESH	5624	5247	74	62	5698
UTTARAKHAND	2188	2091	19	19	2207
WEST BENGAL	2891	1189	1354	1259	4245
ANDAMAN AND NICOBAR	1	1	0	0	1
TOTAL	50043	45915	2272	1985	52315

SHG Nutri garden work 2020-21

States	Individual			Community			Total Works	Total Area Covered (in Acre)
	No. of Works	Area Covered (in Acre)	No. of SHG Household	No. of Works	Area Covered (in Acre)	No. of SHG Household		
1	2	3	4	5	6	7	9=3+6	10=4+7
ANDHRA PRADESH	0	0	0	4	20	4	4	20
ARUNACHAL PRADESH	0	0	0	1	2	1	1	2
ASSAM	8000	6131.72	7548	521	496.4	384	8521	6628.11
BIHAR	61	585.49	32	37	93.35	22	98	678.84
CHHATTISGARH	89	65.55	67	137	285.56	95	226	351.11
GUJARAT	4	4	4	56	54.95	43	60	58.95
HARYANA	0	0	0	7	13.5	4	7	13.5
HIMACHAL PRADESH	2940	19302.59	2755	403	340.32	195	3343	19642.91
JAMMU AND KASHMIR	0	0	0	5	4.57	5	5	4.57
JHARKHAND	88765	134028	78478	159	367.3	62	88924	134395.3
KARNATAKA	1249	5657.2	382	271	350.07	98	1520	6007.27
KERALA	13	36.17	12	9	9.11	9	22	45.28
MADHYA PRADESH	2631	32567.07	2304	2063	4191.47	742	4694	36758.55
MAHARASHTRA	0	0	0	5	2.4	5	5	2.4
MIZORAM	15	49	15	12	72	10	27	121
NAGALAND	9	1.8	9	0	0	0	9	1.8
ODISHA	2	0.2	2	533	153.31	222	535	153.51
PUNJAB	1	4	1	6	5.8	5	7	9.8
RAJASTHAN	106	284.45	48	258	1699.4	117	364	1983.85
SIKKIM	30	30	30	0	0	0	30	30
TAMIL NADU	9	13	7	3	4	3	12	17
TRIPURA	1	1	1	186	201.82	43	187	202.82
UTTAR PRADESH	2064	11636.33	1928	116	89.08	85	2180	11725.42
UTTARAKHAND	588	584.56	567	837	1435.83	439	1425	2020.39
WEST BENGAL	957	97.96	166	445	1607.51	328	1402	1705.46
TOTAL	107534	211080.1	94356	6074	11499.8	2921	113608	222579.9

Drumstick plantation in convergence with NRLM 2020-21

State	Individual					Individual			Total Works	Total number of plants	Total Area Covered (in Acre)	Nursery raised by CLF	
	No. of Works	Number of plants	Area Covered (in Acre)	No. of SHG Household	No. of Works	Number of plants	Area Covered (in Acre)	No. of SHG's				No. of Nursery raised	No. of Plants
1	2	3	4	5	6	7	8	9	10	11	12	13	14
AANDHRA PRADESH	0	0	0	0	0	0	0	0	0	0	0	0	0
ARUNACHAL PRADESH	0	0	0	0	0	0	0	0	0	0	0	0	0
ASSAM	39	625	19.65	37	0	0	0	0	39	625	19.65	0	0
BIHAR	0	0	0	0	0	0	0	0	0	0	0	0	0
CHHATTISGARH	0	0	0	0	0	0	0	0	0	0	0	0	0
GOA	0	0	0	0	0	0	0	0	0	0	0	0	0
GUJARAT	0	0	0	0	18	1500	2.4	14	18	1500	2.4	0	0
HARYANA	0	0	0	0	0	0	0	0	0	0	0	0	0
HIMACHAL PRADESH	2	26	5.65	2	1	100	1	1	3	126	6.65	0	0
JAMMU AND KASHMIR	0	0	0	0	0	0	0	0	0	0	0	0	0
JHARKHAND	12	21	10.1	9	0	0	0	0	12	21	10.1	0	0
KARNATAKA	0	0	0	0	0	0	0	0	0	0	0	0	0
KERALA	0	0	0	0	0	0	0	0	0	0	0	0	0
LADAKH	0	0	0	0	0	0	0	0	0	0	0	0	0
MADHYA PRADESH	0	0	0	0	9	3910	16.9	8	9	3910	16.9	0	0
MAHARASHTRA	0	0	0	0	0	0	0	0	0	0	0	0	0
MANIPUR	0	0	0	0	0	0	0	0	0	0	0	0	0
MEGHALAYA	0	0	0	0	0	0	0	0	0	0	0	0	0
MIZORAM	0	0	0	0	0	0	0	0	0	0	0	0	0
NAGALAND	0	0	0	0	0	0	0	0	0	0	0	0	0
ODISHA	0	0	0	0	397	9401	43.62	161	397	9401	43.62	0	0
PUNJAB	0	0	0	0	0	0	0	0	0	0	0	0	0
RAJASTHAN	0	0	0	0	0	0	0	0	0	0	0	0	0
SIKKIM	0	0	0	0	0	0	0	0	0	0	0	0	0
TAMIL NADU	0	0	0	0	0	0	0	0	0	0	0	0	0

State	No. of Works		Number of plants	Area Covered (in Acre)	No. of SHG Household	No. of Works	Number of plants	Area Covered (in Acre)	No. of SHG's	Total Works	Total number of plants	Total Area Covered (in Acre)	No. of Nursery raised	No. of Plants
	2	3												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
TELANGANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRIPURA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UTTAR PRADESH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UTTARAKHAND	10	0	4.01	8	0	0	0	0	10	0	4.01	0	0	0
WEST BENGAL	2	1	0.66	1	0	0	0	0	2	1	0.66	0	0	0
ANDAMAN AND NICOBAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAKSHADWEEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUDUCHERRY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
THE DADRA AND NAGAR														
HAVELI AND DAMAN AND DIU	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	65	673	40.07	57	425	14911	63.92	184	490	15584	103.99	0	0	0

Reference

Aggarwal, A., Gupta, A. and Kumar, A. (2012). Evaluation of NREGA wells in Jharkhand. *Economic and Political Weekly*, 47(35): 24-27.

Ashok, Pankaj and Bhattacharya, Mondira; 2022, Income and livelihood promotion through individual asset, *Economic and political weekly* , Vol. 57, issue 4

Azam, M. 2012. The Impact of Indian Job Guarantee Scheme on Labour Market Outcomes: Evidence from a Natural Experiment, Institute for the Study of Labor (IZA) Discussion Paper Series No. 6548. Bonn: IZA.

B. Indrani , Dr. B. Kanagaraj, 2019, A Discriptive Study on Challenges and Opportunities Faced by Fishery Sector's in India, *INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH and TECHNOLOGY (IJERT)* Volume 08, Issue 09 (September 2019),

Census of India. 2011. Office of the Registrar General and Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Chahal, Mukesh and Kumar, Pardeep. (2020). Impact of MGNREGS on Employment

Chandrasekhar, C.P. and Jayati Ghosh. 2011. Public Works and Wages in Rural India, *Macroscan an Alternative Economics Website*, 11 January.

David, Rebecca Sharon. 2008. The National Rural Employment Guarantee Act: Towards Governance and Conservation of Natural Resources. Working Paper No. 37, June. Anand: The Foundation for Ecological Security.

Desai, Sonalde, Prem Vashishtha, and Omkar Joshi. 2015. Mahatma Gandhi National Rural Employment Guarantee Act A Catalyst for Rural Transformation, 210. New Delhi: National Council of Applied Economic Research.

National fisheries development board, DoF, Mission Fingerlings, 2017-18

National fisheries development board, DoF, National fisheries policy- Draft, 2019

Dreze, J. 2011. Employment Guarantee and the Right to Work. In *The Battle for Employment Guarantee*, ed. R. Khera, 3–20. New Delhi: Oxford University Press.

Dreze, J. and J. Khera. 2009. The Battle for Employment Guarantee. *Frontline* 26(1).

Dreze, J., and R. Khera. 2011. Battle for Employment Guarantee. In *The Battle for Employment Guarantee*, ed. R. Khera, 43–80. New Delhi: Oxford University Press.

GOI. 2014. Discussion paper on quality of assets created under MGNREGS. Letter No. 'D.O. No. AS (RD)/MGNREGS/14/FTS 36607', dated 31st May, 2014. Office of the Additional Secretary, Ministry of Rural Development, Government of India, New Delhi.

Himanshu, Abhiroop Mukhopadhyay, and M.R. Sharan. 2015. NREGS in Rajasthan: Rationed Funds and Their Allocation across Villages. *Economic and Political Weekly* 50 (6): 52–60.

IISC. 2013. Environmental Benefits and Vulnerability Reduction through Mahatma Gandhi National Rural Employment Guarantee Scheme by Indian Institute of Science, Bangalore, Synthesis Report, 51p. <http://fes.org.in/studies/report-env-benefits-vulnerability-reduction.pdf>.

ILO. 2014. Employment and Livelihood Security Through MGNREGS: A Case of a Right-Based Social Protection Floor in India. Report of the International Labour Organization (ILO). Retrieved from http://www.ilo.org/beirut/events/WCMS_246596/lang-en/index.htm on August 10, 2014.

Jha, R., and R. Gaiha. 2012. NREGS: Interpreting the Official Statistics. *Economic and Political Weekly* 57 (40): 18–22.

Kumar, Sanjay and Kumari, Meena and Alam, Shamsher. (2018). Ground Realities and Inhibitions in Execution of MGNREGS in Jharkhand, India. *Asian Journal of Research in Social Sciences and Humanities*.

MGNREGS MIS website, Mahatma Gandhi NREGA | Ministry of Rural Development, Government Of India (nregarep1.nic.in)

Ministry of Rural Development, Department of Rural Development (DRD). 2015. Mahatma Gandhi National Rural Employment Guarantee Act, 2005: Report to the People, 2 February 2015 (New Delhi).

Ministry of Rural Development, Mahatma Gandhi NREGA Sameeksha. 2012. An Anthology of Research Studies on the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 2006–2012. Ministry of Rural Development, New Delhi: Orient Blackswan.

Mishra, P., and S.K. Mishra. 2015. Strategies and Policies for Alleviation of Rural Poverty in India: Experience of Mahatma Gandhi National Rural Employment Guarantee Scheme. *Review of Development and Change* 19 (2): 43–76.

Narayanan, Sudha and Upasak Das. 2014. Women Participation and Rationing in the Employment Guarantee Scheme. *Economic and Political Weekly* 49 (49): 46–53.

Nayak, N.C., B. Behera, and P. Mishra. 2011. Monitoring Convergence between NREGS and Ongoing Schemes of the other Ministries in Orissa. New Delhi: Project Report Submitted to the UNDP.

Panda, Manoj et al, 2018, Rapid assessment of NRM component under MGNREGS, Institute of economic growth, New Delhi

Pankaj, A., and R. Tankha. 2010. Empowerment Effects of the NREGS on Women Workers: A Study in Four States. *Economic and Political Weekly* 45 (30): 45–55. (July).

PMMSY website, Pradhan Mantri Matsya Sampada Yojana | Department of Fisheries, MoCIT, GoI (dof.gov.in)

Shah, Amita. 2012. Assets Creation and Local Economy Under MGNREGS: Scope and Challenges. In *Right to Work and Rural India*, ed. Ashok Pankaj, 197–225. New Delhi: Sage Publications India.

Shah, Amita., and Aasha Kapur Mehta. 2008. Experience of the Maharashtra Employment Guarantee Scheme: Are There Lessons for NREGSA, Working Paper No. 118, Chronic Poverty Research Centre, 37p., <https://www.researchgate.net/publication/46476846>.

Shah, M. 2012. Report of the Committee for Revision of MGNREGS Operational Guidelines. New Delhi: Mihir Shah Committee Report Submitted to Ministry of Rural Development, Government of India.

Training programme on MGNREGS and NMR, Report , Dept of Rural development, 2018

Verma, Shilp. 2011. MGNREGS Assets and Rural Water Security: Synthesis of Field Studies in Bihar, Gujarat, Kerala and Rajasthan, Anand: International Water Management Institute.

Viswanathan, P K and Mishra, Narayan and Bhattarai, Madhusudan and Iyengar, Hema. (2014). Mahatma Gandhi National Rural Employment Guarantee (MGNREGS) Programme in India ,GIDR Occasional Paper Series 4, 2014 2

Viswanathan, P.K., and Amit Mandal. 2012. NREGS as Instrument of Gender Mainstreaming: An Exploratory Analysis. *Man and Development* 34 (3): 17–36. (September).

water conservation works through National Rural Employment Guarantee Scheme (NREGS) in Andhra Pradesh: An analysis of livelihood impact. *Agricultural Economics Review*, 22: 443-450.

Yamin toko et al, 2019, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) - Aquaculture Convergence: An Experience from Tripura, India, *Advances in research*



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