ANNUAL REPORT

2018-19

WASSAN

WATERSHED SUPPORT SERVICES AND ACTIVITIES NETWORK (WASSAN)

Our Donors

BRLF

Dr. Reddy's Foundation

NABARD

HSBC

Azim Premji Philanthropic Initiatives

FWWB

CONTENTS

Executive Secretary's Message

WASSAN

Our Background

The Watershed Support Services Activities Network (WASSAN) emerged as a network initiative of the Centre for World Solidarity (CWS), in the context of the participatory approach in the Guidelines of Watershed Development Projects, issued by the Ministry of Rural Development, GoI, in 1994. The need for a network initiative emerged out of the Annual Network Meetings (ANMs) organized by CWS during 1995-98, to ensure establishment of the participatory approach in the mainstream natural resources management (NRM) programmes and facilitate effective partnerships between NGOs/VOs and government agencies. WASSAN was registered as a charitable trust on December 19, 1999.

The Guidelines of Watershed Development Projects were revised in 2008 and 2011, to provide an enabling framework for the planning, design, management and implementation of watershed development projects in the country.

Our Approach and Value Proposition

WASSAN has since its inception retained its character as a network based support organisation. Over the years, it has grown in strength through its many enriching partnerships with community based organisations (CBOs), NRM based cooperatives, panchayat raj institutions, agriculture labour unions etc.

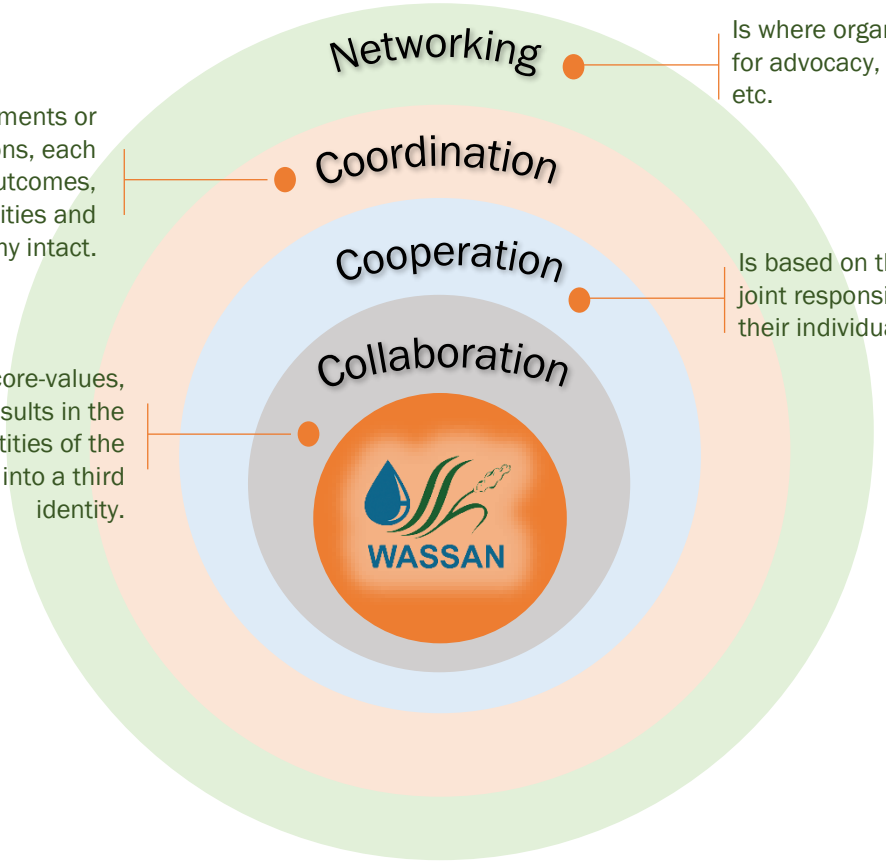
WASSAN endeavours to adhere to the values of Equity, Participation, Collaboration, Team-work and Accountability, in fulfilling its vision, through its Fields of Action.
WASSAN forges ahead with the vision to "Entrench participatory processes through a network approach that strengthens NRM practices, to secure livelihoods of deprived communities in drought prone areas."

Each area of work is considered a Field of Action and is strategically structured to contribute to the others.

The Fields of Action are:

TRAINING	Provide quality trainings on various theme-based and participatory techniques to stakeholders, as required by the various projects
SUPPORT SERVICES AND RESOURCE CENTRE	Capacity build various partnerships to explore, experiment, capture, innovate and document processes and disseminate experience-based knowledge, using various media, to all stakeholders - from community to policy makers.
RESEARCH & POLICY DELIBERATION	Anchor research studies and facilitate deliberative initiatives in partnership with other NGO/CBO networks
NETWORK	Facilitate and anchor theme based networks of NGOs/CBOs, government agencies

In achieving its vision, WASSAN has varying degrees of partnerships, based on the intensity of relationship namely; **collaboration, cooperation, coordination** and **networking.**



Is where organisations come together for advocacy, sharing of information etc.

Is based on formal agreements or MoUs between organisations, each responsible for a set of outcomes, with their respective identities and autonomy intact.

Is based on the organisations taking joint responsibility for outcomes, with their individual identities still intact.

Is based on sharing of core-values, teams and roles and results in the individual identities of the organisations, merging into a third identity.

Governance at WASSAN

The WASSAN Board of Directors

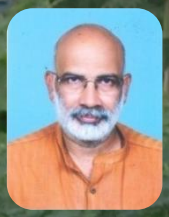
Y.V. Malla Reddy
Chair, Board Trustee and Accion Fratern, RDT - Ecology Centre
Ananthapur district

Gagan Sethi
Member, WASSAN
Trustee, CSJ, Ahmedabad, India

Dr. V. Rukmini Rao
Member, WASSAN
Executive Director, Gramya
Hyderabad

C. Udaya Shankar
Member, WASSAN
Consultant,
New Delhi

P. Balaram
Member, WASSAN
Ananthapur District



K. Suresh
Member, WASSAN
Trustee, Manchi Pustakam
Hyderabada

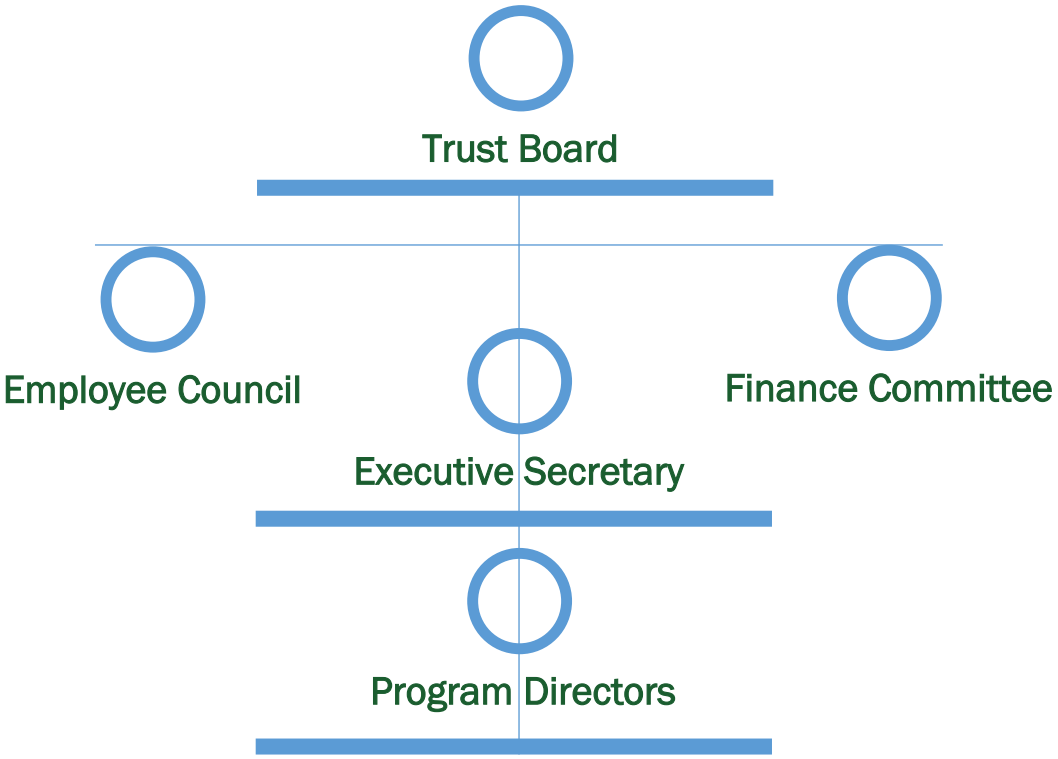
A Ravindra
Executive Secretary, WASSAN

WASSAN is a staff driven organisation. It has over the past year gone through as Organisational Development (OD) exercise and choose an Employee Council (EC) route to help conceptualise and implement guidelines, rules, processes and policies at WASSAN.

The EC is a self-governed advisory body comprising of ten staff members (full-time WASSAN staff handling substantial resources) nominated by the Board. The EC will meet monthly to achieve its goals. EC members will not enjoy any special privileges.

WASSAN's direct field involvement is limited to its activities in Parigi of Anantapuram district and in the North Coastal districts of Andhra Pradesh. Its work across all other regions is through partner NGOs, as a Lead Technical Agency, or as a network hub etc. The project staff in the districts are mentored by the team leads and state coordinators and report to them. The project managers ensure that the project deadlines are met.

WASSAN Organizational Structure



Director
(A. Ravindra)

Projects

Knowledge Management (Web / Communications

Data Analytics / IT Applications

Director
(M.V. Ramachandrudu)

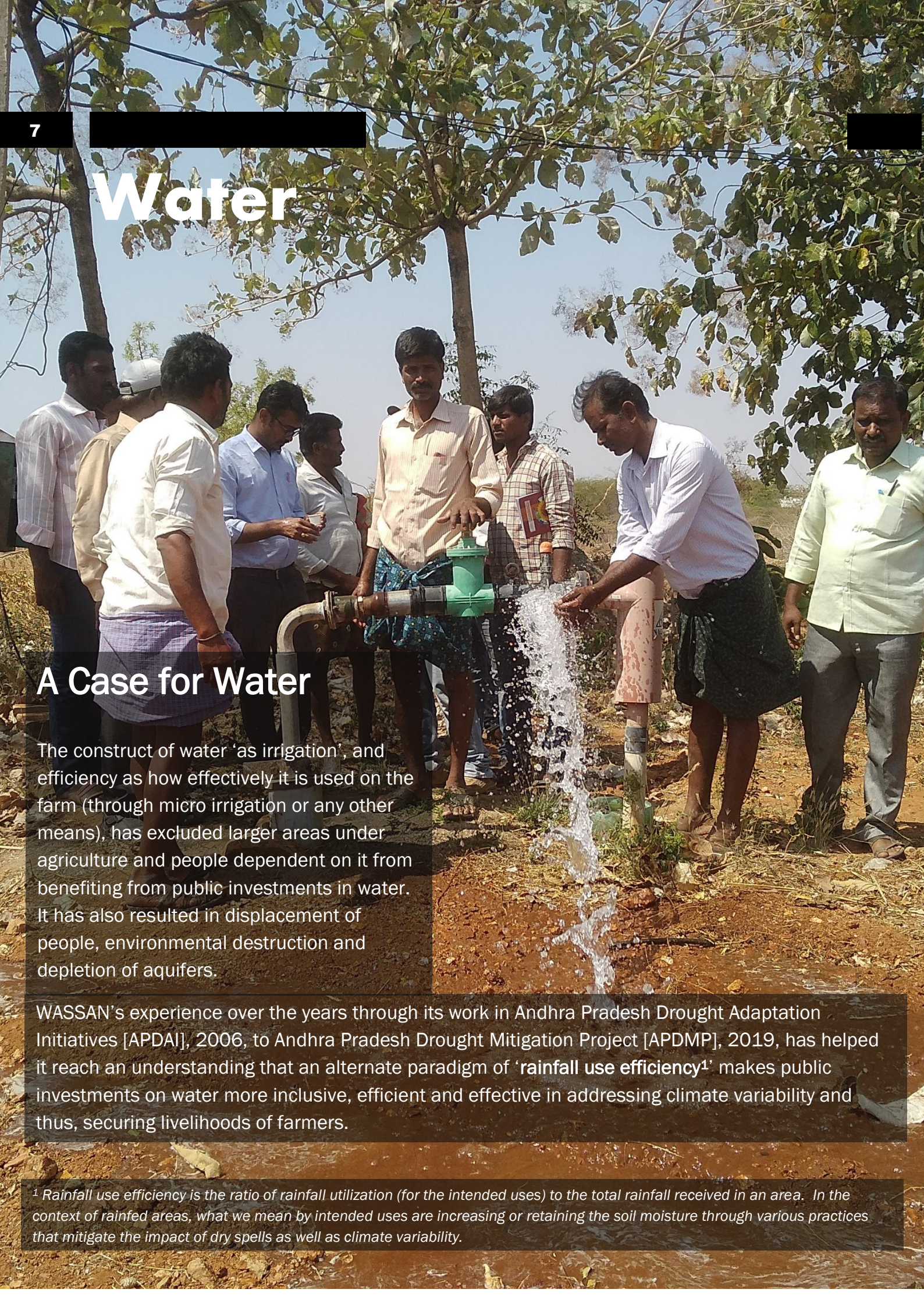
Projects

MIS

Accounts Manager

Finance and Administration

Water



A Case for Water

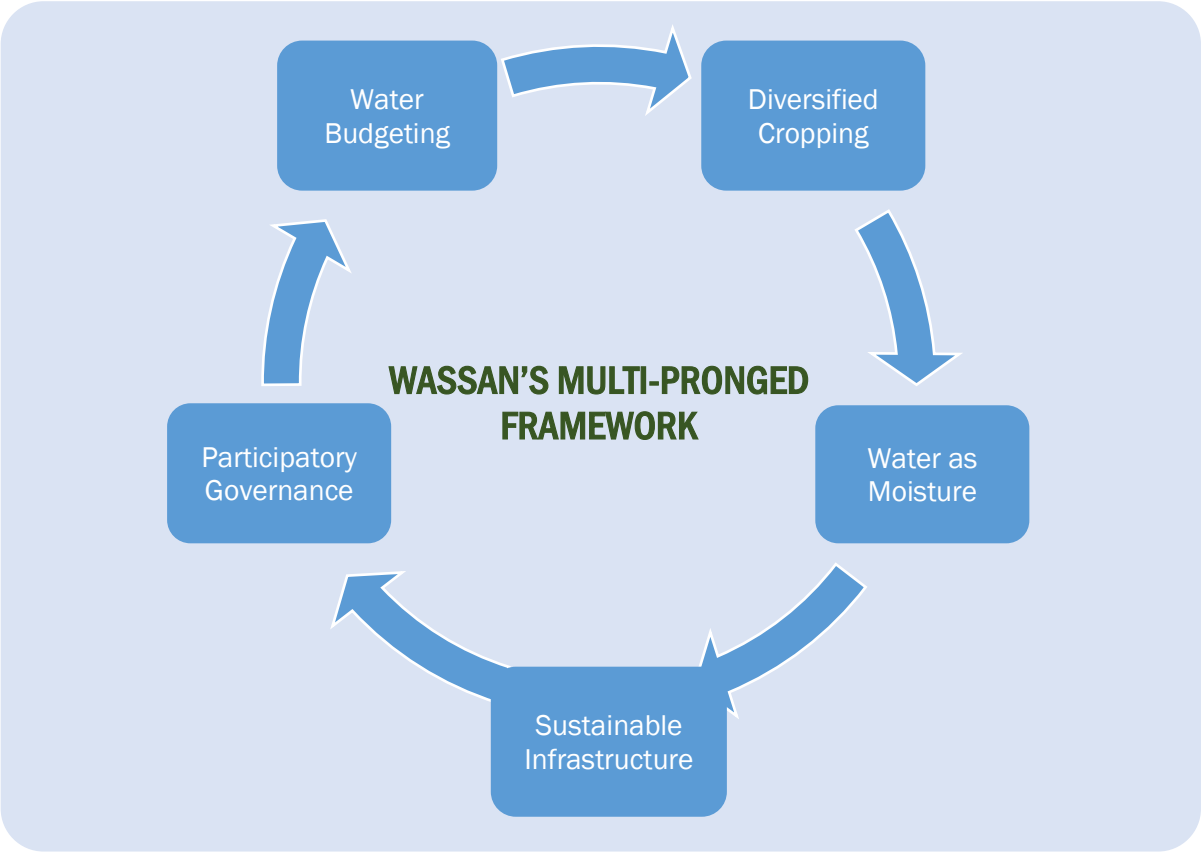
The construct of water 'as irrigation', and efficiency as how effectively it is used on the farm (through micro irrigation or any other means), has excluded larger areas under agriculture and people dependent on it from benefiting from public investments in water. It has also resulted in displacement of people, environmental destruction and depletion of aquifers.

WASSAN's experience over the years through its work in Andhra Pradesh Drought Adaptation Initiatives [APDAI], 2006, to Andhra Pradesh Drought Mitigation Project [APDMP], 2019, has helped it reach an understanding that an alternate paradigm of '**rainfall use efficiency**[1]' makes public investments on water more inclusive, efficient and effective in addressing climate variability and thus, securing livelihoods of farmers.

[1] Rainfall use efficiency is the ratio of rainfall utilization (for the intended uses) to the total rainfall received in an area. In the context of rainfed areas, what we mean by intended uses are increasing or retaining the soil moisture through various practices that mitigate the impact of dry spells as well as climate variability.

Framework for Action

Because of erratic rainfall and dry spells in rainfed areas, it becomes vital to maintain soil moisture at critical stages of crop life-cycle. Therefore, protective/critical irrigation is essential to secure rainfed crops and thereby, farmers' incomes. To that extent, WASSAN has been working with farmers, governments, civil society organizations etc. to build community based institutions for an effective and participatory management of water resources.



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Scope of Work in 2018-19

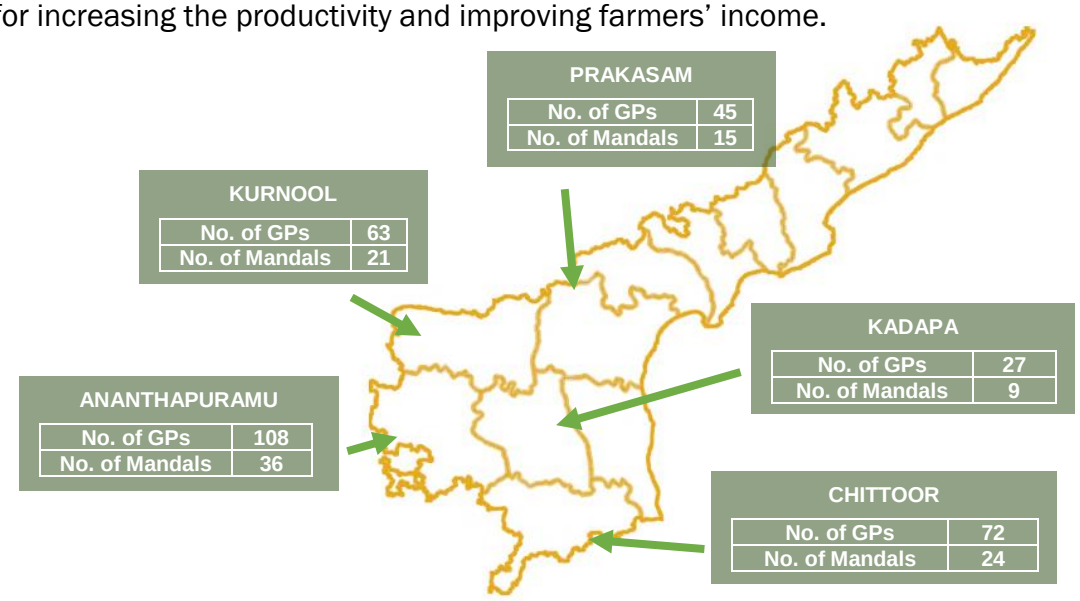
Department of Agriculture, GoAP

Promoting Participatory Ground water regulation through ground water collectivization in Anantapur, Kurnool and Chittoor districts. So far, 2600 acres have been brought under crop water security through bore well pooling and sharing with a budget layout of ₹ 5 crore for the 6 years.

Andhra Pradesh Drought Mitigation Project (APDMP)

ONE OF THE PRIMARY COMPONENTS OF APDMP PROJECT:

Drought proofing through NRM and Water governance, where all techniques are employed for increasing the productivity and improving farmers' income.



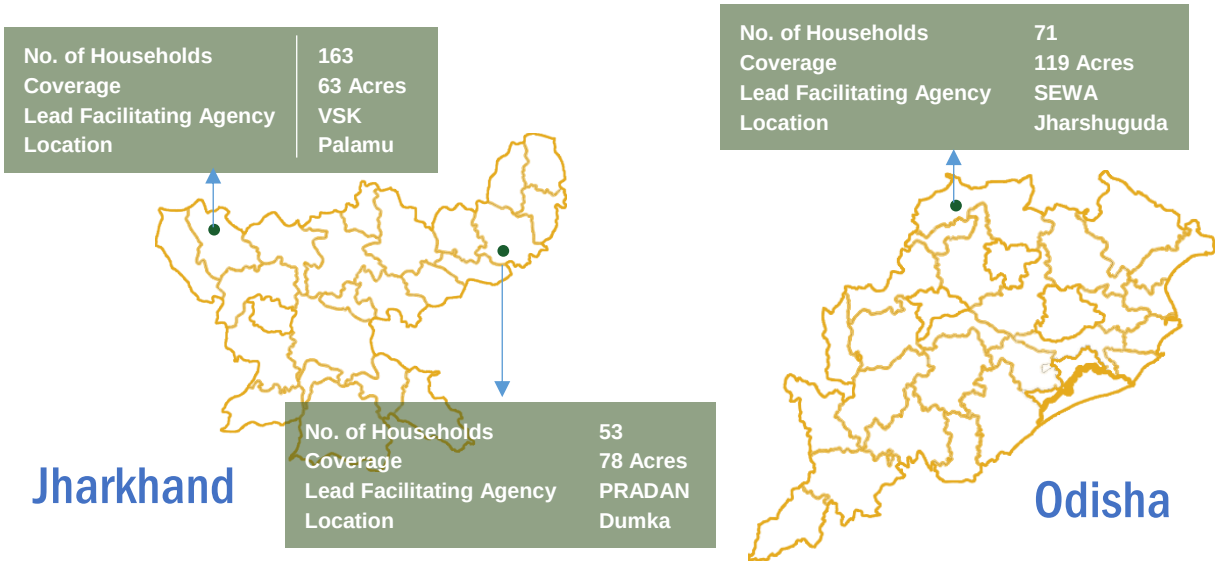
5 States

315 No. of GPs

105 No. of Mandals

Capacity Building of Civil Society Organizations [CSOs] under Bharat Rural Livelihood Foundation [BRLF]

The objective was to build CSOs' capacities to integrate Participatory Groundwater Management [PGWM] with livelihood programs in tribal-dominant regions/states of the country. Knowledge was imparted on: hydrological mapping, setting up of participatory groundwater monitoring network, pumping test, in-situ water quality, aquifer characterisation, data synthesis and analysis, sharing findings with community, crop-water budget plans, setting up community-led water governance protocols, and preparation and implementation of water security plans.



2 States

3 Partners

287 HHs

26 Trained staffs

Achievement

SEWA

- **Groundwater Table:** increased by 1.2 meters
- **Constructed:** 2 farm ponds; 4 percolation tanks; 1 contour bund; 1 stone gully plug; 8 check-dams
- **Water sharing:** 40 acres; Organic farming
- **Communities** following water security plan and crop-water budgeting
- **Staff trained:** 12

VSK

- **Groundwater Table:** increased by 1 meter
- **Constructed:** 11 water harvesting / recharge structures
- **Coverage:** 163 households, 63 acres
- **Staff trained:** 8
- **Communities** following water security plan and crop-water budgeting

PRADAN

- **Groundwater Table:** increased by 0.79 meters
- **Constructed:** 6 dug wells
- **Barren to cultivable land:** 12 acres
- **Staff trained:** 6
- **Communities** following water security plan and crop-water budgeting

Participatory Water Management in Rural India: WASSAN as Knowledge Partner

NABARD: Crop water budget, train the trainers (ToTs) workshops organised for 100 trainers for their watershed programme in Telangana.

Dr. Reddy's Foundation: The project covered 35 villages in 8 blocks of Uttar Pradesh, Bihar, Chhattisgarh and Maharashtra. Trained MITRA team on crop-water budgeting and preparation of project reports. Also developed Inter-Personal Communication [IPC] tool on water management practices. Currently, 500 lead farmers are using the tool to train more number of farmers.

CR-ZBNF

- Trained 10 Community Resource Persons (CRPs) on the concept and impacts of water security planning.
- Facilitated construction of two [mini] percolation tanks in convergence with IWMP in Tribal areas of North-Coast zone of Andhra Pradesh, as part of water management and supportive irrigation.
- Mobilized ₹ 2.5 Cr., from GoAP for groundwater collectivisation in Rayalaseema region.

Future Outlook

Case Study

Sharing Water Increases Income to ₹20,000 pm (from a meagre ₹ 30,000 pa)

Anantapur receives scanty rainfall, and produce is often uncertain, both in terms of quantity and quality. So far [till 13.03.2019] Nallacheruvu mandal received 372 mm rainfall, which is a deficit of 31% from normal. Across the district, the deficit is as high as 45% from normal. With low rainfall and water levels across the district falling significantly, everyone is wary and protective of their rights and access to water.

Sane Thulasamma owns four acres of farm land in Pallevandlapalli hamlet of Oravoy village, in Nallacheruvu mandal of Anantapur district. The land is not a single plot. It is in chunks of two acres, and two plots of an acre each, at different places in the hamlet. She does not have access to water (bore well or canal) at the first two plots. In the past, she got three bore wells dug at 300 feet, 500 feet and 550 feet depth. Each time there was mud, rock and stone, but never water. There was one bore well that struck water, a few years ago, at the third plot. However, it eventually went dry. As it is too far from her house, she now cultivates only three acres and gives the fourth acre on lease for ₹. 2,000 a year. The best choice to earn money from the land, is to cultivate groundnut depending on monsoon showers i.e. Kharif crop.

Sane Thulasamma at her farm, where she cultivates firecracker flowers. She waters the crops using micro – drip – irrigation system.

Thulasamma has travelled extensively, as an active member of a women's Self Help Group (SHG), and as the president of a block-level women's group - Sri Anjaneya Swamy Mahila Mandala Samkya. Several years ago on one of her journeys, she came across Andhra Pradesh government's pilot program: interconnecting bore wells of farmers who have bore wells, through a pipeline network and distributing water to farmers who do not have bore wells.

"After observing the 'Karuvukavacham' program in Gandlapenta mandal, I decided to replicate it in my village. It took 10 meetings to convince the first person, Suryanarayana Reddy, who had a bore well. Everyone had one or the other apprehension", says Thulasamma.

Farmers consider ground water as a resource integral to the land they own. But in reality, aquifers stretch beyond our understanding of land ownership, size, shape and depth. Initially, neither did Thulasamma have the knowledge to explain the science of aquifers to farmers, nor were the farmers ready to understand. But she was determined to bring everyone together.

At last, in June 2012, 20 farmers (of whom five owned bore wells and 15 did not) came together to form the 'Chinna Mareppa Chenu Raithu Sangam' collective. The collective has through the pipeline grid brought a total of 41 acres under cultivation, resulting in

increased incomes for all. The collective has two more women farmers (S. Gangulamma and B. Shivamma), apart from Thulasamma.

All the farmers of the group signed an agreement monitored by the Mandal Revenue Officer, since government provides 75% of the project cost. The rest comes from farmers, who pay Rs. 2,500 per acre as their contribution. The primary terms of the agreement are: water distribution would happen only during Kharif season, for a minimum of three times either during sowing, flowering, pod/bud formation or harvesting. The others are reduction in paddy cultivation and no new bore wells being drilled for 10 years and choice of crops to-be-cultivated based on the water table.

“Since the group has various stakeholders, very often issues came up in the beginning. We sorted them through discussion and reaching a consensus,” says Suryanarayana Reddy, 48, a farmer who is part of the collective and has one bore well.

A farmer would make an average Rs. 10,000 per acre per annum, in the event of normal rainfall, by cultivating groundnut. With Rs. 4,890 as minimum support price per quintal of groundnut, during 2018 Kharif, Thulasamma stands to earn Rs. 58,680 from three acres (one-acre at Rs. 19,560). However, after deducting the cultivation costs and her own labour costs, what she is left with is a pittance.

But farmers of Pallevandlapalli choose their crops wisely. 40 of the 89 households cultivate ‘Kanakambaram’, firecracker flowers. Though labour-intensive, this perennial crop can be cultivated anywhere between 1/5th of an acre to one acre, and is a source of steady income.

On an average, from June to December, the production is 40-50 kilograms per month and it is sold at Rs. 500-1000/kilogram. During the other months, they sell around 100 kilograms per month at Rs.150-300/kilogram. During festivals like ‘*Varalakshmi vratham*,’ price touch Rs. 1200 per kilogram.

Thulassama usually earned a meagre Rs. 10,000 per acre, per annum or at times, nothing at all. However, today, she earns around Rs. 20,000 a month, thanks to the water sharing pipeline grid and her choice of crop.

Millets to Millions

A Case for Millets

The Green Revolution policies along with the procurement and supply of paddy and wheat through the public distribution system (PDS) has resulted in major shifts in crop and consumption patterns, away from millets. The traditionally millet growing areas are essentially rainfed uplands with undulating topographies, inhabited by tribal communities and perform lower on several human development indicators. While millets have been the most reliable source of food and nutrition security in these areas, they've been neglected by agriculture policy resulting in extreme nutritional deficiencies. WASSAN's work on millets comes from this realization.

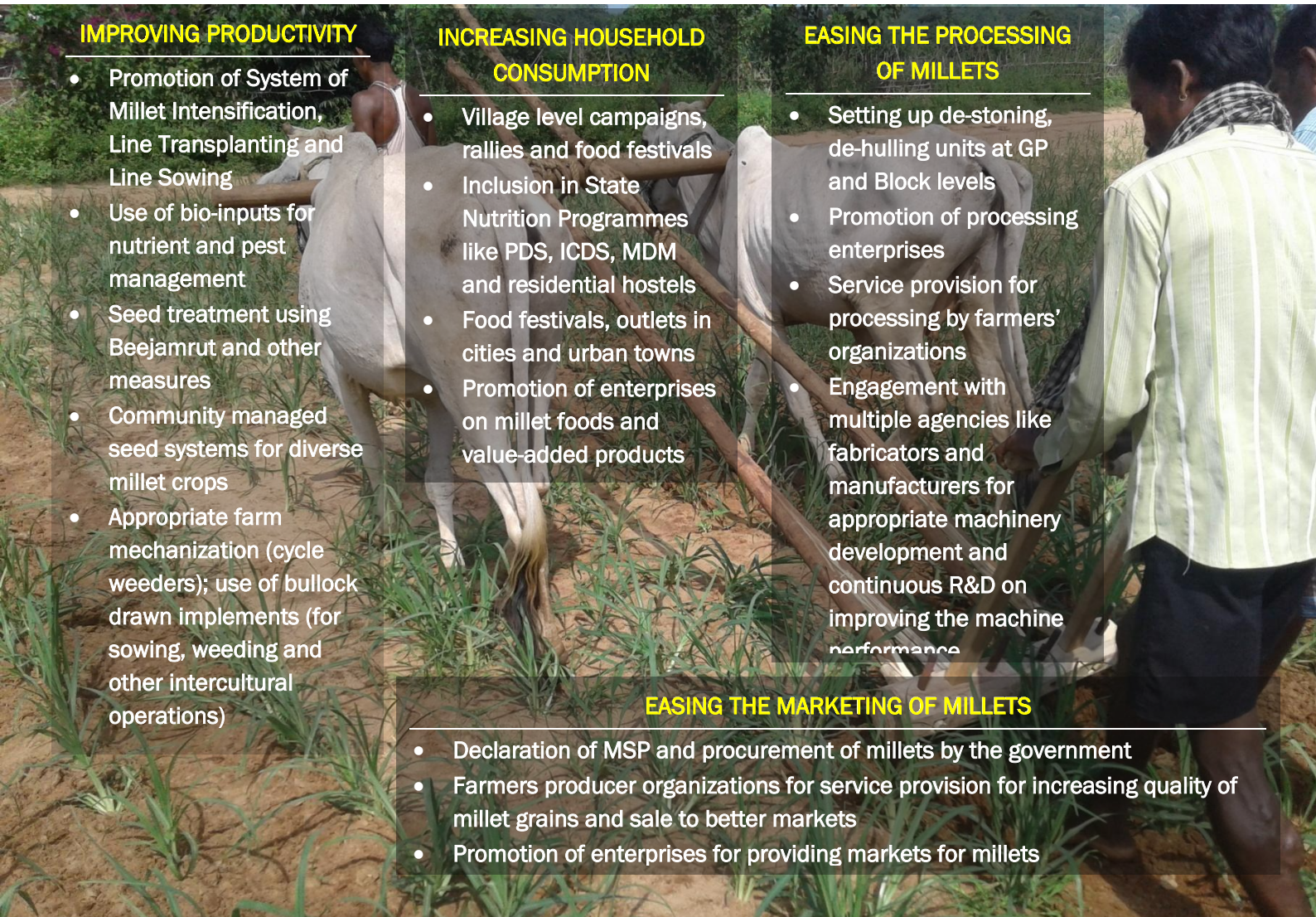
WASSAN's work on millets began with some pilot initiatives in Andhra Pradesh. WASSAN has been anchoring the **"MILLETS THEMATIC NODE"** under the 'Comprehensive Pilots' initiative of the RRA Network. This gave WASSAN the opportunity to generate experiences in multiple agro-ecological zones in different states viz. Jharkhand, Odisha, Telangana and Madhya Pradesh.

Framework for Action

WASSAN has learnt through the experiences of the RRA network that there's no magic bullet for promotion of millets. Interventions on a single part of the millets ecosystem or economy will not help.

Millets are grown on the poorest of soils with almost no investment on soil health. Integration of improving soil health with critical irrigation is essential for improving productivity of millets. Interventions only on increasing production and productivity will not help if household consumption doesn't go up. Markets for millets have also been few with little support from the government on ensuring an MSP for millets, especially minor millets like Foxtail Millet and Little Millet. There has been virtually no R & D investment on processing of these millets as well that are majorly processed at home by women which involves a lot of drudgery.

Thus a multi-pronged approach with the integration of interventions spread across production, processing, consumption and marketing can hopefully make a difference in the revival of millets on farms and plates. The following have been the action points in different millet programmes in different states that WASSAN has initiated:



IMPROVING PRODUCTIVITY

- Promotion of System of Millet Intensification, Line Transplanting and Line Sowing
- Use of bio-inputs for nutrient and pest management
- Seed treatment using Beejamrut and other measures
- Community managed seed systems for diverse millet crops
- Appropriate farm mechanization (cycle weeders); use of bullock drawn implements (for sowing, weeding and other intercultural operations)

INCREASING HOUSEHOLD CONSUMPTION

- Village level campaigns, rallies and food festivals
- Inclusion in State Nutrition Programmes like PDS, ICDS, MDM and residential hostels
- Food festivals, outlets in cities and urban towns
- Promotion of enterprises on millet foods and value-added products

EASING THE PROCESSING OF MILLETS

- Setting up de-stoning, de-hulling units at GP and Block levels
- Promotion of processing enterprises
- Service provision for processing by farmers' organizations
- Engagement with multiple agencies like fabricators and manufacturers for appropriate machinery development and continuous R&D on improving the machine performance

EASING THE MARKETING OF MILLETS

- Declaration of MSP and procurement of millets by the government
- Farmers producer organizations for service provision for increasing quality of millet grains and sale to better markets
- Promotion of enterprises for providing markets for millets

Scope of Work in 2018-19

WASSAN's work on millets is now spread across **THREE** states – Andhra Pradesh, Telangana and Odisha. The initiatives range from policy and program development at state level to supporting grassroots organisations in the implementation of the millet initiatives, participatory technology development, working with State nutrition programs, improved agronomy and others. Advocating, designing and supporting state level **"MILLETS MISSIONS"** has been a key strategy.

Andhra Pradesh - The Comprehensive Revival of Millets Programme (CRMP)

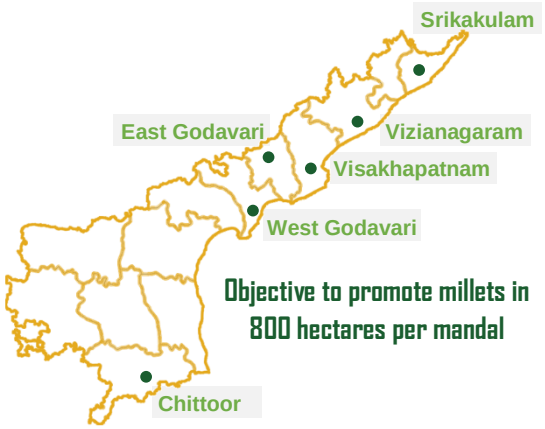
6
Districts

xyz
Mandals

xyz
HHs

xyz
Ac

xyz
Partners



Grounded 28 small millet processing enterprises (10 by programme and FAs in Rayalaseema region, another eight by FAs in North Coastal (NC) districts). The machine specifications evolved through a consultative process and the selection of the machine vendors standardised with AP-Agros.

- Millet mixers introduced for use by local women (and also servicing other women on payment basis) where the possibility of a 3-phase electricity was not available.
- GoAP initiated distribution of Ragi and Jowar through the PDS in all 13 districts since October 2018.
- Integration into ICDS: CAVS, a partner in Srikakulam, supplies 1300 kgs of millet biscuits every month to the Tribal Welfare Hostels (5000 students) and korra rice to all ICDS centres in ITDA Seethampeta, making a turnover of 60 lakh per annum.
- Deepening partnership with the ICAR-National Bureau of Plant Genetic Resources (NBPGR) - Protocols evolved for systematic exploration, collection, characterisation, cleaning, participatory varietal trials and selection for multiplication. 287 accessions (including seeds of millets, oils, pluses) collected from four NC districts and purified by NBPGR. 114 selected for varietal trials at multiple locations. Finally, 5 varieties in red gram, 2 in little millet, one each in foxtail, finger and barnyard millet identified as promising, to be multiplied in kharif 2019.
- Crop cutting experiments taken up with the DoAgri-AP to prove the efficacy of Guli Ragi has shown yields of an average of 1 ton per acre.

- Success of Guli Ragi* has inspired GoAP to support a scale up of ragi cultivation in 6000 acres under the ZBNF program (partnership with Sanjeevani).
- Location specific millet recipes identified from recipe competitions held at 100 villages brought out as a book in partnership with Earth 360. The same being translated into English for a wider urban circulation.
- FAs established three millet hotels at Gootty (Ananthapuramu), Addateegala (East Godavari) and Parvathipuram (Vizianagaram).
- Double row planter introduced across CRMP to reduce the labour intensity during transplantation.

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SRI Guli Ragi is a package of practices that include transplanting of individual saplings along with Jeevamrutham, regular weeding and running a wooden log/plank across the plot during early tiller stage that increases the number of tiller in each plant, thus increasing productivity.

Telangana (The Telangana Millets Mission)

Inclusion of millets in the Integrated Child Development Schemes (ICDS) in Adilabad has reached 45 anganwadis

A millet-based food enterprise is operational (with the support of NABARD) in Mallayagudem village. Another in Sircilla Telangana (3 single-women's group) is taking root supported by the district administration. They supply ragi, jonna, multi millet biscuits to 50 anganwadi centres on a pilot basis.

6	xyz	xyz	xyz	xyz
Districts	Mandals	HHs	Ac	Partners

Odisha Millets Mission (OMM)

- Inclusion of millets in the PDS is a big policy achievement.

- Procurements to the tune of 17985.78 quintals of ragi made through TDCCOL from 5748 farmers @ ₹ 2897 per quintal. Ragi procured during kharif 2018 to be distributed through PDS and included in ICDS.

- Crop cutting experiments with DoAgri to prove the efficacy of Sri Guli Ragi has shown 40 % jump in productivity (yields of average 13 quintals per hectare as against the state average of 8.9 quintals).

- Participatory varietal trials, resulted in collecting 124 accessions of which 34 were selected for trials after a farmer preference analysis exercise.

- The OMM stall at the 2018 Men's **Hockey World** Cup held in Bhubaneswar saw good sales ranging on a few days to ₹ 20,000 too.

- The production support component of OMM has supported 25000 farmers.

- A special mention made of the institutional model of OMM to be followed by other states at the National Workshop on Nutri Cereals in Pune.

- During the 15th Finance Commission Chairperson's visit to Odisha, the state government highlighted OMM.

6	xyz	xyz	xyz	xyz
Districts	Mandals	HHs	Ac	Partners

Future Outlook

These experiences over the years have deepened WASSAN's understanding of various aspects of the millet value chain from farm to plates. They have also fed into the larger policy initiatives at both the state and national level. WASSAN now has the capabilities to initiate a National Millets Incubation Centre (probably with the RRA Network) to provide hands-on training and immersion for organisations, multi-lateral projects, prospective entrepreneurs and senior officials in aspects of designing of large scale programmes, implementation modalities, technology choices, rural and urban consumer insights, policy making etc. Expanding the Millets Missions to other states in collaboration with the RRA Network is also in the offing. In doing so, WASSAN and all others should be aware of the pitfalls of mono crop millet cultivation.

MANYAM GRAINS PRIVATE LTD

Finding bulk markets for the yield from the increased area brought under millet production under CRMP has been a major challenge in the promotion of millets. Manyam Grains Pvt. Ltd. Company, a state-of-the-art processing millet (near-automated technology) of larger capacity was established near Anakapalle, by WASSAN Foundation along with a few partners of the program and a few social investors. The unit is setup on the premises of a farmer's cooperative of a partner NGO. Manyam Grains is now tying up with the farmers' groups for a year-long supply of coarse grain. WASSAN now has an in-house expertise and experience in millet processing technologies and promotion of millet enterprises.

Case Study

Mandia Café – An initiative to introduce millets to urban consumers, Bhubaneswar City

Tasty biscuits, laddoos, muffins and kheer, all served hot attracted many urban consumers to the 'Mandia Café' set up by Odisha Millets Mission (OMM) in collaboration with Mission Shakti. The millets-based food stall was put up at the fan village of Kalinga Stadium, Bhubaneswar during the International Men's Hockey World Cup 2018 hosted by Odisha. Members of Trishakti Federation of Women's Self Help Groups (SHG's) supported by Mission Shakti managed the café. The women were trained and provided technical support by the programme secretariat (of OMM) hosted by Nabakrushna Chowdhury centre for Development Studies (NCDS), Bhubaneswar.

Packaged bakery products like biscuits, laddoos, muffins and freshly cooked salads, sandwiches, vada, biryani and kheer were served hot. Ragi flour and little millet rice were also made available. The stall received an encouraging response, especially from families looking for healthier options, without compromising on taste. Many of them expressed their longing for a permanent shop in Bhubaneswar offering these recipes and millet grains throughout the year. Mandia Cafe didn't just provide healthy and tasty food, but also conveyed the nutritional benefits of millets to people. Having tasted millet recipes, people also bought packed biscuits, laddoos, muffins and other snacks for family and friends. Mandia Café was operational during the entire duration of the Men's Hockey World Cup from 28th November to 16th December 2018. The initiative was well received by the general public as well as different departments in the government.

Case Study

Guli Ragi Agronomic Practice – Improving Productivity & Increasing Incomes

One, two, three, four, five ... thirty seven, thirty eight, thirty nine, 58-year-old Thota Sundar Rao (of Deppiguda habitation in Gullumuru gram panchayat) counts the tillers in a ragi plant, on his one-acre land. 39 is a very high number of tillers for a plant. The result of clubbing traditional knowledge with modern crop management practices. He calls it the guli ragi method, where guli means pit and ragi is finger millet. Sundar Rao vouches for its efficacy saying, “In this method, I get 50-100% more yield than in the conventional practice.” Like Sundar Rao, tens of adivasi farmers (Savaras and Jatapus belonging to Scheduled Tribes according to Census, 2011) in Seethampet mandal of Srikakulam district, Andhra Pradesh, are starting to use the Guli Ragi method for cultivating ragi.

Most of the farmers in Seethampet and Veeraghattam in the eastern ghats have both uplands and lowlands. As in any tribal area, their crops are dependent on rain. Depending on the type of land and access to water during kharif and rabi, farmers cultivate paddy, millets, cashew, turmeric, vegetables, bananas, lemons, ginger etc.

Woman farmer and community group leader, Koranga Arudramma, 39, owns one and half acres in Peddarama village. She happily recounts how things changed last year, “In last rabi, I harvested nine 50-kilogram bags. Two bags were for our food; the remaining I sold in the market, at ₹ 25 per kilogram.”

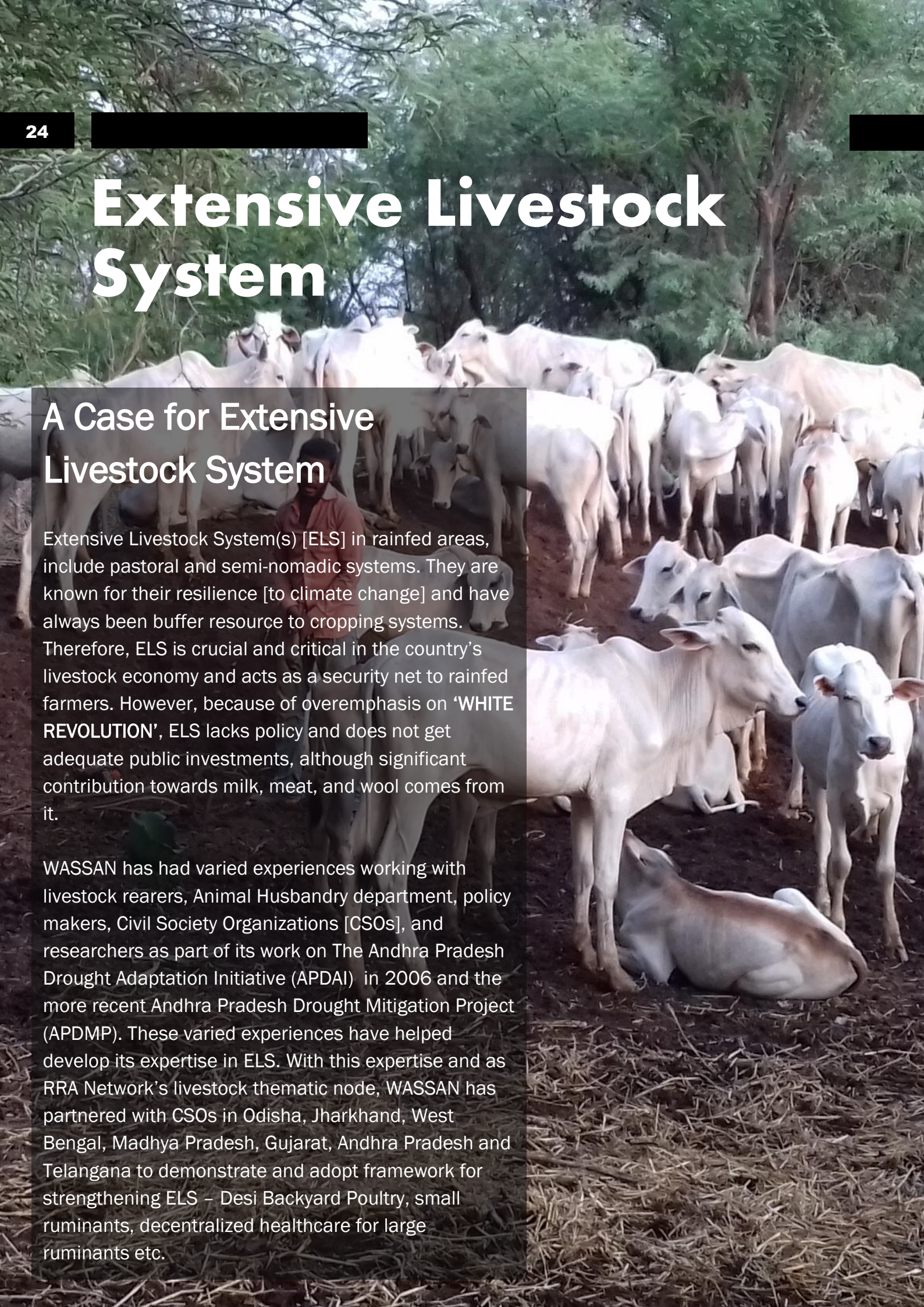
"Since we plant the seedlings in a pattern it requires five to six times lesser seed. It also reduces the duration of transplantation. Thereby, number of labour-person-days reduces. However, the seedlings have to be transplanted on time and have to be handled carefully as they are very tender. It needs skill," says Ananda Rao, 47 of Navugada village.

In previous years, among the several crops grown, ragi was grown to meet their household requirements (food security). Now, they mostly cultivate ragi in rabi, using the guli ragi method to increase their household income by anywhere between 10% and 30%. It has challenges, though; most importantly the method lacks government support – from seed to seedling transplantation, labour management to minimum support price (MSP).

Eight of Ananda Rao's (15 member joint-family) work on their 10 acre (six acres of lowland and four acres upland) land. They grow cashew (on two-acres), turmeric (on one-acre), 50 tamarind trees, 50 lemon trees, paddy, pigeon pea and ragi. They make around ₹ 2,00,000 per annum from the cashew plantation. "Earlier I used to get 4 quintals of ragi per acre. But last year using the guli ragi method, we got 14 quintals. I employed five women-laborers at ₹ 150 per day during the transplantation. I hope to get the same quantity this year too." says Ananda Rao. 10 quintals additional production at current MSP would fetch him ₹ 28,970. Ragi grown in rabi needs moderate amount of water. Ananda Rao is a bit fortunate. He irrigates his crop with water from a small pond called '*Jilieka Maney Jore*', on the nearby hilltop.

Far from Navugada village at a distance of 8-10 kilometers is Peddaguda hamlet in Vambaravalli village of seethampet mandal, a couple of farmers are still cultivating in the traditional fashion where seeds are broadcast. "We get around six to eight bags (50 kg). It is enough for household purpose," says Savara Empaiah, 34, and Savara Bajanna, 54, from Peddaguda who together cultivate two acres. "We got to know about this method after we broadcast the seeds. Next year, we want to experiment with this new practice of Guli Ragi." they say. Having seen the increase in productivity by following the Guli Ragi method, more farmers are willing to try it out and experience the benefits first hand.

Extensive Livestock System



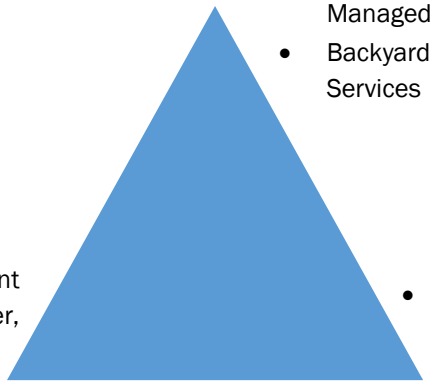
A Case for Extensive Livestock System

Extensive Livestock System(s) [ELS] in rainfed areas, include pastoral and semi-nomadic systems. They are known for their resilience [to climate change] and have always been buffer resource to cropping systems. Therefore, ELS is crucial and critical in the country's livestock economy and acts as a security net to rainfed farmers. However, because of overemphasis on **'WHITE REVOLUTION'**, ELS lacks policy and does not get adequate public investments, although significant contribution towards milk, meat, and wool comes from it.

WASSAN has had varied experiences working with livestock rearers, Animal Husbandry department, policy makers, Civil Society Organizations [CSOs], and researchers as part of its work on The Andhra Pradesh Drought Adaptation Initiative (APDAI) in 2006 and the more recent Andhra Pradesh Drought Mitigation Project (APDMP). These varied experiences have helped develop its expertise in ELS. With this expertise and as RRA Network's livestock thematic node, WASSAN has partnered with CSOs in Odisha, Jharkhand, West Bengal, Madhya Pradesh, Gujarat, Andhra Pradesh and Telangana to demonstrate and adopt framework for strengthening ELS – Desi Backyard Poultry, small ruminants, decentralized healthcare for large ruminants etc.

Framework for Action

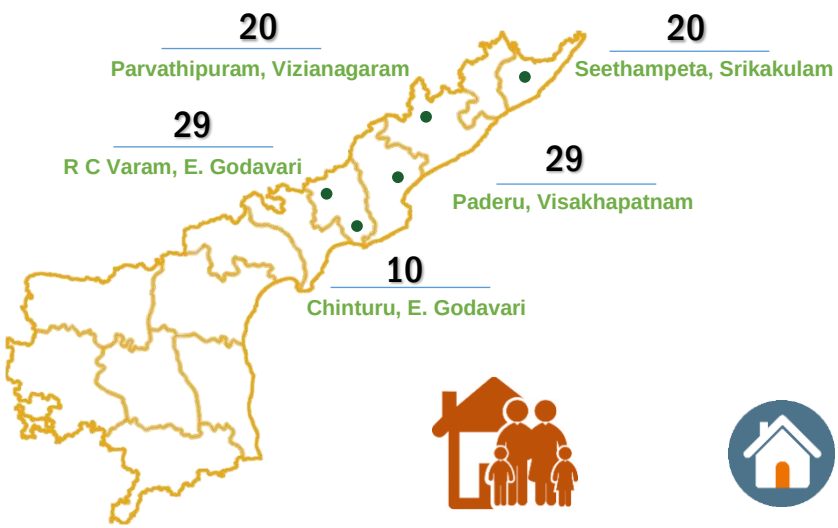
- Village level vaccination through Community Managed Poultry Fund
- Backyard Poultry Health Worker for Paid Services



- Improved Birds Management at Household (night shelter, management)
- Desi Poultry Breed Farm Enterprise for Regular Supply of Chicks

Scope of Work in 2018-19

The Department of Animal Husbandry, GoAP has been supporting 'Rural Desi Backyard Poultry'. It covers 12,900 households and 129 entrepreneurs across five Integrated Tribal Development Agencies [ITDAs] in North Coastal Andhra Pradesh.



17
Mandals covered

13029
Tribal Families

129
Habitations

106
Gram Panchayats

Institutional Building Process
Around 900 SHG groups involved in BYP

Common Interest Groups:
13029 families; 129 groups

Membership fee: ₹ 100
Deposit: ₹ 200 – poultry health fund.

Total (Health) Fund Collected
27.93 Lakhs

Capacity building: Training on breed farm management for Breed Farm Entrepreneurs. Membership fee: ₹ 5,000.

RD vaccination coverage: Administered 12.54 [unit missing] Ranikhet Disease (RD) vaccine dosages till September 2018. Generated ₹ 6.27 lakhs income.

Vaccinated 1,16,553 birds in 119 clusters. An average of 979 birds per household per cluster.

Value of the Birds:
₹ 291.38 lakhs; @ ₹ 250 per bird.

Construction of Night Shelters:
Night shelters constructed: 10,501
under construction: 1,900

Internal Participatory Assessment:
Participatory assessment in 119 clusters with BYP entrepreneur, NGO staff, and community resource person

Earnings Per Enterprise
From ₹ 30,000 p.a. to ₹ 90,000 p.a.

Breed Farm Entrepreneur Family Consumption
24-78 eggs and 14-30 birds annually

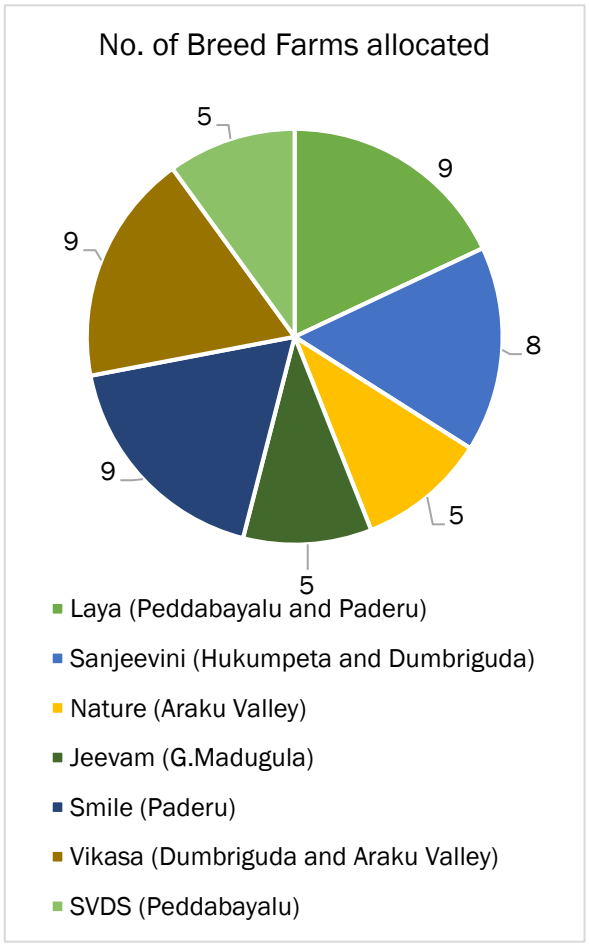
Household Level Income
₹ 2000 to 10,000 annually

Girikodi Scaling Up with TRICOR

WASSAN, in a Memorandum of Understanding with TRICOR and Animal Husbandry Department, with a budget of ₹. 39 Cr., covers 14,040 tribal households [27 mandals; 6 ITDAs: Paderu, Parvathipuram, Seethampet, Rampachodavaram, Chinturu, and KR Puram]. The program involves training, vaccination, primary healthcare services, night shelters, and backup enterprises – of Desi Breed Farm – for every 100 households.

Desi Poultry- Aiming for Nutritional Support to Tribal Hostels

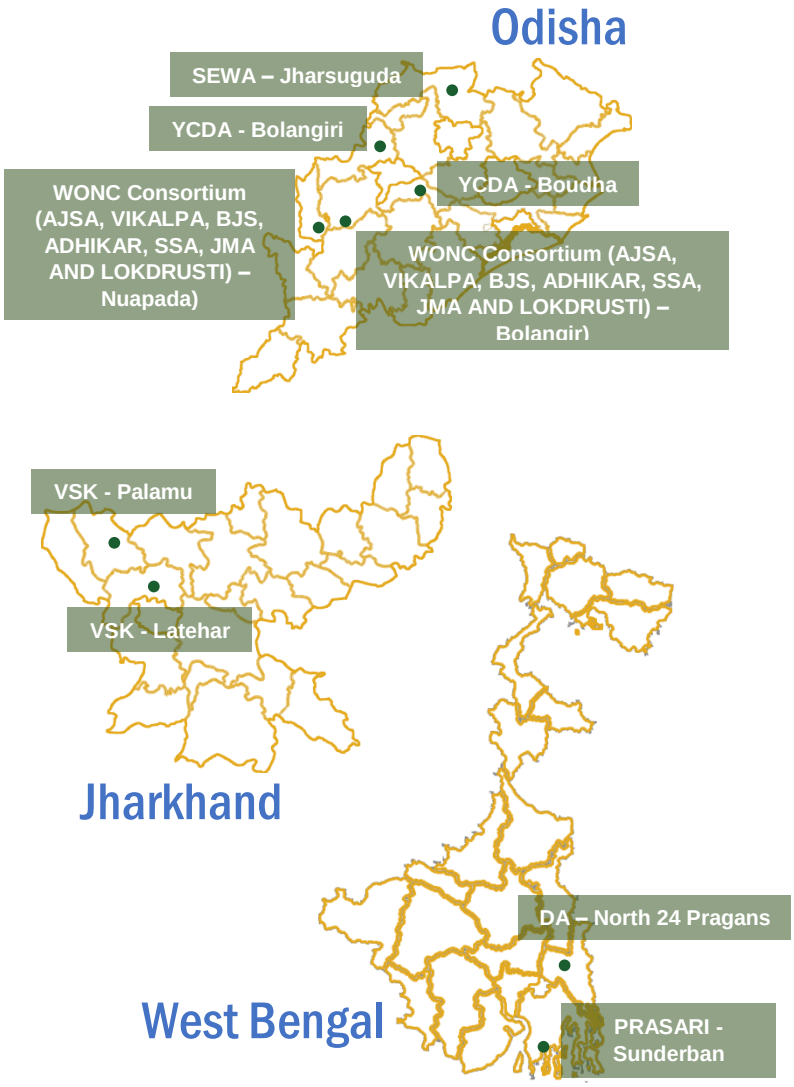
With an objective to supply Desi Chickens to ITDA hostels, ITDA, Paderu, signed a MoU with WASSAN and allocated ₹ 67 lakh to develop 50 poultry Breed Farm Entrepreneurs [BFE], from Particularly Vulnerable Tribal Groups [PVTGs]. The MoU was signed after mapping, with rigorous assessment, ITDA hostels and identifying BFEs. In 2018-19, 34 Breed Farm Enterprises were established which would be ready to supply chicken to tribal hostels in the next year.



Spreading the Idea: Bharat Rural Livelihoods Foundation – Technical Support on BYP

WASSAN has provided technical support to 12 partner NGOs, which are working with Bharat Rural Livelihoods Foundation, to integrate Backyard Poultry with livelihoods. Covers: 8000 Households; Trained: 110 [includes staff, BFE, Community leaders]

Status of Implementation



Small Ruminants

Our approach in small ruminants has been to increase 'area productivity' by strengthening support services in cluster-based approach – with 250 households per cluster; 4-5 villages and around 2500 small ruminants per cluster.

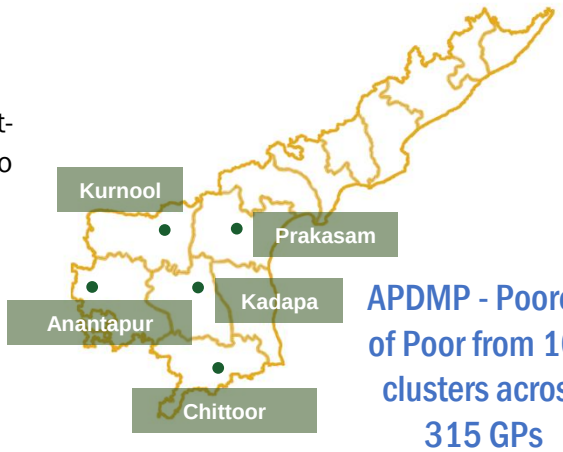
DESIGN:

- Enabling preventive healthcare by local trained para-workers in collaboration with the Department of Animal Husbandry (DoAH), where one trained para-worker covers 200-250 households.
- Creating infrastructure like:
  - Night shelter for goats
  - Cold chain for vaccination
- Biomass intensification through:
  - Mixed cropping for feed supplementation
  - Plantation of fodder trees at homestead land and farmland
  - Plantation of fodder species in common grazing areas/grazing track/water stream
- Breed improvement through selective breeding
- Building small ruminants' institution for strengthening support services and better bargaining power with markets

CR - ZBNF

The objective is to establish community-managed, payment-based universal vaccination to small ruminants, and to increase income of herds-people.

- 947 households accessed vaccination services
- Feeding trails: 150 grams supplementary feed per day in two clusters; 15 kid-goats
- Observation: Weight gained up to 1000 grams]



APDMP - Poorest of Poor from 105 clusters across 315 GPs

APDMP

Improving small ruminant production system is one of the important component of APDMP. WASSAN, as the lead technical agency has designed the intervention. Budgets have been allocated to ground the activities related to desi backyard poultry and small ruminants under APDMP. Rearer Field School (RFS) sessions have been initiated where para workers discuss symptoms of diseases, preventive measures, deworming and vaccinations are given.

Recognition of Indigenous Cattle Breeds

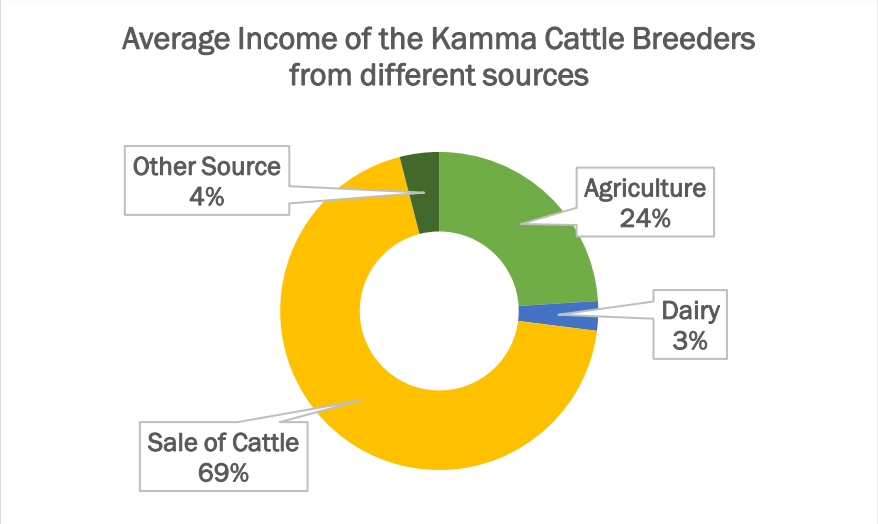
WASSAN has been documenting and characterizing indigenous livestock in rainfed areas to realize their contribution in rainfed farming and providing livelihood security. To that end, WASSAN has been recognized as the Centre for Network Project on Animal Genetic Resources [AnGR], under All India Coordinated Research Project [AIRCP] of Indian Council of Agricultural Research [ICAR], for identification and registration of indigenous livestock in Andhra Pradesh and Telangana.

Currently we are working with indigenous communities and the state government to characterize, document and facilitate registration of Vandera and Kamma cattle breeds. Both the breeds are medium-sized, draught-purpose; found predominantly in Telangana and Andhra Pradesh.

Poda Thurupu

WASSAN is recognized as a research partner in the AICRP (All India Coordinated Research Project) of the Animal Genetic Resources Network Project. The cattle, Poda Thurupu, are native to the Amrabad Tiger Reserve of Eastern Ghat's Nallamala range. Lambadas, Gollas, and Chenchus of the region breed the cattle. Often, a major part of their income comes from trading the cattle. Some of them believe that Thurupu cattle have been influencing their lifestyle and culture. The association of breeders, traders, farmers, etc. with the cattle, the significance of the association, living conditions of the cattle, and current challenges and issues in breeding make the breed very unique. An application has been submitted to the National Bureau of Animal Genetics and Resources for identifying/recognizing as 43rd breed in the country.

Submission of application to identify Vandera and Kamma cattle as breeds of the country by NBAGR is work in progress.



Case Study

Desi Backyard Poultry (BYP) boosts family nutrition and income in Gummidiguda village, Pachipenta Mandal Vizianagaram District, Andhra Pradesh

Y.Chandara Rao), a few years back. Pollamma and Narsamma, her Mother-in-law are both interested in rearing poultry birds. But predation has been a major problem and they could not manage rearing birds in large numbers.

ITDA provides funds for the promotion of backyard poultry (BYP) programme to the State Animal Husbandry Department (AHD), which then channels the funds to local community-based organizations (CBOs) through Tribal Sub Plan (TSP). The structure of the programme is to create a Common Interest Group (CIG) – a cooperative of 100 households, which pool in money to avail the services of the vaccinator and get preference for sale of birds from the breed farm. This ensures that birds stay healthy. Presence of this service has encouraged many to take to backyard poultry and become members of the CIG.

Pollamma and Narsamma were happy to receive the support from ITDA in 2016 for construction of night shelter. They also received 5 chicks from a breed farm entrepreneur, (Y.Seethram) in 2017. They are now managing about 43 birds at household level. 6 Hens (1 in brooding and 3 with chicks), 2 cocks, 30 chicks, 5 growers.

The amount they spend on feed is very low, as they cultivate millets and paddy. They use the same to feed the birds. They only purchase rice bran at ₹ 10/- per kg. On an average, they spend ₹ 1000/- on feed in a year.

Pollamma and Narsamma are not interested in sale of birds. They use them for their household consumption and for sacrifice during local festivals. As the number of cocks in their brood increased, they recently sold 5 cocks.

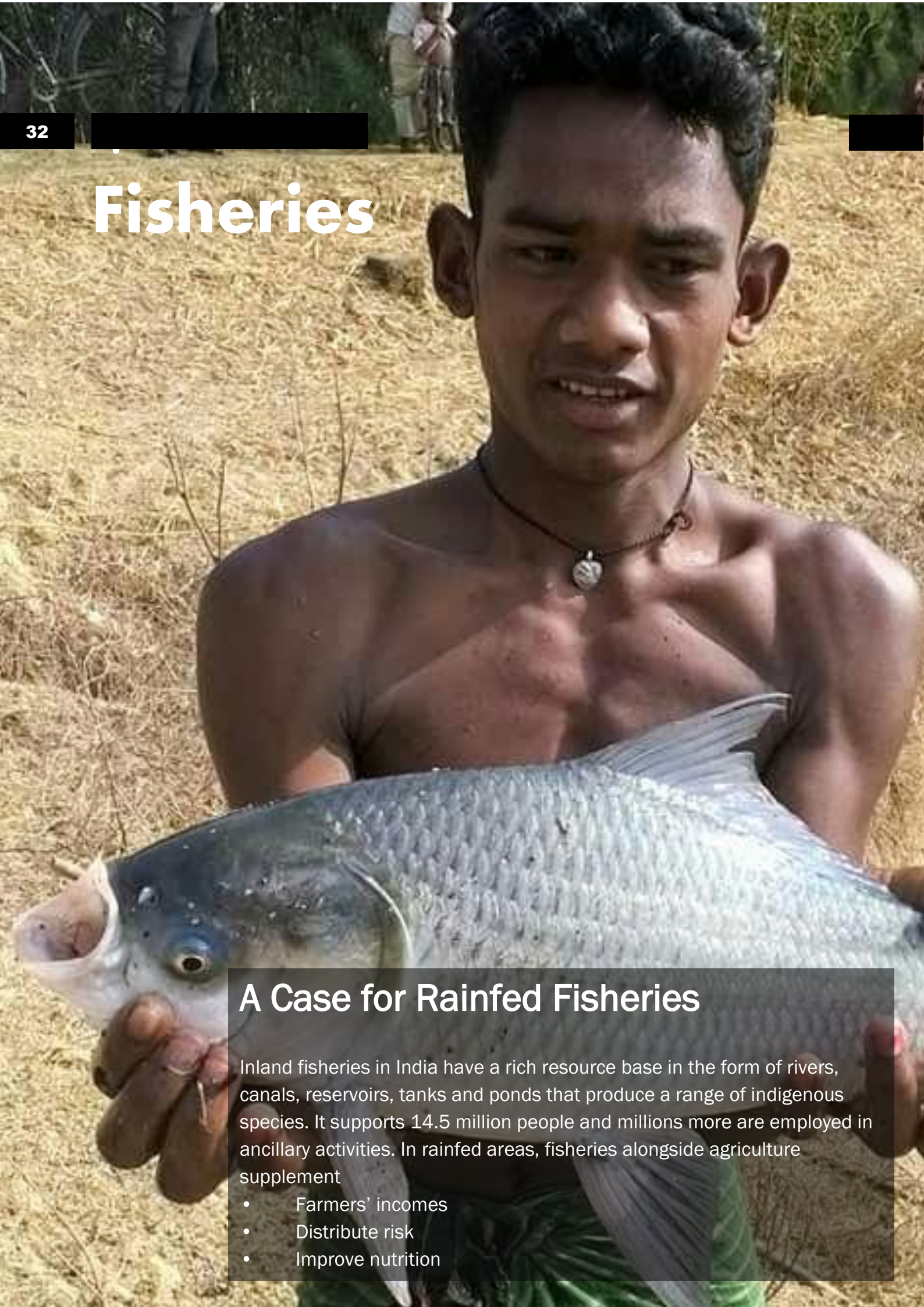
Income from sale of cocks:

Cost / bird (₹)	Number of Cocks Sold	Total income (₹)
1600	2	3200
1200	1	1200
2200	2	4400
	Total	**8800**

The women used this amount as part of the marriage expenses of Narsamma's younger son. Of the total marriage expenses of ₹ 40,000, they contributed ₹ 8800/- and supported the family in meeting the expenses.

Pollama says, "Until now, agriculture was the only source of both food and livelihood. Now with the project support especially for night shelter, there is huge scope to increase our income from BYP."

Fisheries



A Case for Rainfed Fisheries

Inland fisheries in India have a rich resource base in the form of rivers, canals, reservoirs, tanks and ponds that produce a range of indigenous species. It supports 14.5 million people and millions more are employed in ancillary activities. In rainfed areas, fisheries alongside agriculture supplement

- Farmers' incomes
- Distribute risk
- Improve nutrition

Framework for Action

- Prepare an inventory of the water bodies, assess requirements of repairing and enabling fisheries in them.
- Set up fingerling and yearling supply channels; promote private enterprises (using seasonal water bodies) to produce adequate number of fingerlings/ advanced fingerlings and yearlings, used as seeds for aquaculture.
- Organise fisherperson: Establish a fishers' organization (a cooperative or an FPO) at Block level which provides linkages with Fisheries Department, banks and market players.
- Community Resource Persons (CRPs) selected from the fishing community to be trained on best practices, to create awareness among the community.
- Promote various value chain enterprises including those preparing fish-feed using local material, nets and value added products.

Scope of work in 2018-19

CR-ZBNF:

WASSAN developed standardised technical protocols (mapping, seed production, feeding etc.) and modules for scaling up fisheries.

- Covered: 159 water bodies covering 377 acres, using ZBNF methods
- Fingerlings: 3.92 lakhs released in water bodies; convergence with the ITDA and fisheries department.
- Per acre productivity doubled to around 3 quintals
- Enterprises: 2 feed enterprises; 1 fingerling enterprise
- 420 households benefitted

Future Outlook

We did exposure visit of Harsha Trust, photo of that might be useful to say that we are building capacities of other organizations.

Case Study

Community managed fish tank nets a catch of value INR 19200!

A perennial pond of 30 cents was extended into a 0.5 acre tank in 2016 through MGNREGS and a total expenditure of Rs 1,20,000, to benefit 18 ST households in Chintamanguda village of Pedaramma cluster in Srikakulam District. The pond also provides irrigation to 4 acres of agriculture land surrounding it. After the rains, fingerlings were released with the support of ITDA, 75 kilograms of fish was harvested during the year. In 2017-18 too fingerlings were released but they could only harvest 35 kg of fish, as the fish escaped upon the tank flooding.

In 2017-18, under ZBNF, total 500 fingerlings were released in September 2018. For the next four months, the fishermen group adopted a package of practices. They include:

- Cleaning the pond, strengthening the bund, removing predatory fish and aquatic insects before releasing the fingerlings.
- Releasing cow dung and jeevamrutham in the tank to promote plankton formation.
- Lime application to ensure the tank was infection free, to maintain the PH level and help decompose organic matter faster.
- Provision of external feed in the form of rice or millet bran and groundnut oil cake.
- Trail netting at regular intervals to keep a close watch on the health and growth of the fish.

Harvesting was done a total of four times, starting in January. Bairagi, a farmer maintains the books and financial records. The money earned from sale of fish (INR 6000) is kept as a CIG fund and the group members in need can take money on 2% interest per hundred rupees in a year. 192 kg of fish valued at Rs 19200 in the market was harvested over a 9 month period.

Frequency of harvests and Kgs netted and sold/consumed

Frequency of harvests	Month	Harvest in kgs	Self- consumed/sold
First harvest	Jan	75	Consumed by HHs
Second harvest	Feb	60	Sold outside village
Third harvest	Feb	30	Consumed by HHs
Fourth harvest	April	32	Consumed by HHs
Total kgs		**192**	

Trail netting observations during the seven month culture period were as follows:

- Average weight of the fish 450 -500 gram.
- Maximum weight gain was 750 gram for *Catla* (locally called *botchu*) and
- Maximum weight gain was 600 gram for Common carp (locally called *Bangadpapa*)

Future plans for the tank include using it for yearling production as a business to be supplied to adjoining cluster of water bodies. The fisheries intervention in tribal area has had a huge impact on the nutritional security of tribal families. Numerous water bodies have been brought under the fish production impacting the rural livelihood options and also making fresh fish available locally for consumption.

After March 2019, Fish harvested in Adapavalasa village of Sagara CR-ZBNF cluster. Mr. Bidya explained Shri. T. Vijay Kumar, (IAS Retd), Former Advisor, Govt. of AP) how to identify katla and rohu. Each fish average weight is 400 grams. Shri. T. Vijay Kumar is keen to integrate fisheries in all existing ponds in ZBNF clusters.

Water Sanitation and Hygiene (WASH)

A Case for WASH

WASSAN believes that watershed management and improved rainfed farming systems would certainly improve the economic standards of rural communities. However, improving economic standards is not synonymous with improved livelihoods and quality of life. In several villages and peri-urban settlements, basic needs such as safe drinking water and sanitation are still elusive.

Enhancing sustainable and equitable WAter, Sanitation and Hygiene (WASH) services is an integral part of livelihoods enhancement process. When watershed projects are supporting the economic and ecological revival, systems that provide WASH services help in improving the overall quality of life and comfort of communities.

WASSAN strives to build knowledge systems on WASH, which inform policy and practice. Following Life Cycle Costs approach, WASSAN develops a comprehensive framework for provision of WASH services that are community centric, sustainable, affordable and equitable.

Framework for Action

The grounding of a project in WASH involves coming up with a WASH Vision document, a dynamic planning document that captures the problems and solutions at the household and at the village level. Coming up with a WASH vision document usually involves several rounds of household surveys, focus group discussions (FGDs), meetings with the gram panchayat members, gram sabhas, exposure visits of the GP members and opinion makers in the village to model villages etc.

Scope of Work in 2018-19

WASSAN offered to take up the WASH activities in about 30 villages of Anandapuram Mandal on the condition that they collect a corpus fund. The projects were grounded in villages that came up with the corpus fund of 1.4 lakh to 1.7 lakh, (by collecting Rs. 500 or Rs 1000 from each household). Project costs were borne by the households, convergence of government funds under Swatch Bharat Mission and donor funds.

The WASH vision document came up with requirements for household (HH) toilets, HH tap connections, supply of energy efficient wood stoves, improving school kitchens and toilets in the government schools of the village. The ECO vision document involved increasing agricultural productivity by improving access to water (by desilting open wells, construction and improving of water harvesting structures, canal desilting and digging of canals).

S no	Activity	Achievement
1	Drinking water - Water supply pipeline constructed	4054 meters
2	Drinking water - Individual tap connections	325 numbers
3	Drinking water - Ground level storage tanks constructed	20000 & 5000 litres
4	Sanitation - Individual toilets in 3 villages of Mucherla (57 toilets as a complex), Pappulavani Palem, Tarluvada, Veemulavalasa	80 numbers
5	Sanitation - Underground drainage	1134.5 mts

- Dhoopbathi (Incense Sticks) making from flower waste (at the flower market) and cow dung in Mutcherla village was tested successfully, by a 4 member women's group called simhadri group. Four other women were trained in millet based snacks in the village and they begun making snacks to be sold to sweet shops nearby.
- In Mutcherla village, WASSAN helped design and make palm wood block chairs for school children, which received great response from the children. On pilot basis, order was placed for doors to be used in the toilets complex built.
- Smokeless stove was fabricated by local welder in Vizianagram under WASSAN's guidance and is going through a cycle of testing and feedback.
- A few volunteers came together in Kollavanipalem and Mutcherla villages and began cleaning the village every second Sunday.
- The convergence achieved was phenomenal in terms of the land sanctioned for toilet complex construction by the Mutcherla gram panchayat. Mucherla GP allocated 0.5 acres land for the toilet complex.
- Women SHG members in Kolvanipalem and Mutcherla villagers formed a committee to supervise swatch village works such as cleaning the village roads, toilet complex, drainage etc. and conducting regular village meetings of all stakeholders. They are collecting a fine from people not participating in the meetings. They also formed a drinking water management committee to ensure regular water supply to all households, and a committee to look into electricity complaints. A nominal fee is collected from villagers to meet the expenses of the committees and for executing the works required to resolve the issues.
- Non availability of skilled masons and high turnover resulted in extended deadlines and jump in project costs. These jumps may appear as financial inconsistencies but actually were practical problems faced as a result of constant turnover among the masons working on the project.

Future Outlook

WASSAN intends to spread the message of safe drinking water and sanitation to all those villages, where watershed projects are being implemented to make the efforts comprehensive. For this purpose, WASSAN intends to collaborate with a large number of partners who share this vision.

From Dumping Ground to Park – A New Reality!

Jagannathapuram in Anandapuram mandal of Visakhapatnam district is one of the project villages under "Let's construct a New Reality", supported by HSBC. An empty piece of land in the middle of the village has turned into a dumping ground over the years, turning it extremely filthy and unhygienic. Clogged drains led to sewage water flowing onto the roads and into the empty ground. The village development committee (VDC) formed to help implement the other components of the project decided to convert the ground into a beautiful park as a permanent solution. The VDC assured households letting out the water from their bathrooms to flow into the ground, of construction of proper sewage drains and household toilets to control open defecation.

Eight students of Jawaharlal Nehru University of Architecture and Fine Arts (JANFAU), Hyderabad were roped in as interns to design and convert the garbage ground into a park. They participated in behavioral change campaigns, collected discarded household items that could be up cycled and reused in the park. They spoke to the children and women of the village about their requirements from the park.

The village youth also actively participated in the process. The following activities were taken up:

- Levelling the play area.
- Main and rear gates installed with mesh fencing and potted plants on the fence.
- Construction of pavement using fly-ash bricks by skilled masons.
- Construction of open air theatre with a 6 inch foundation, seating and finishing with marbles and tiles.
- Coloring of the monkey bars
- Improving vegetation by planting trees, shrubs, flowering palnts.
- Placing pot structure (Chitti Talli) and seating (benches and stools created with tyres)

The park is now the central place where children congregate to play and have fun. It has become the only place that parents look for their children, if they don't find them at home. The park was inaugurated by Ms. Vandana, Center Manager, HSBC – Vizag on August 15, 2018.

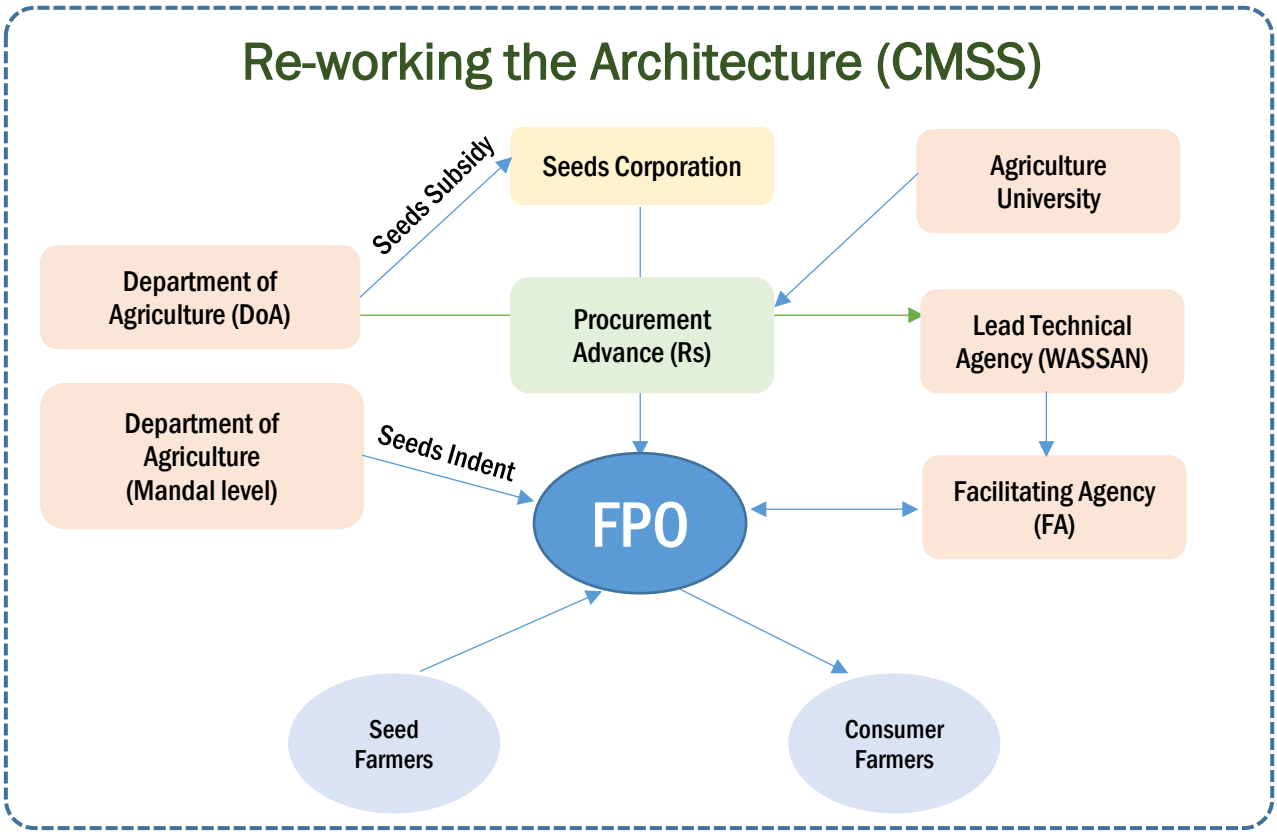
Seeds

A Case for Seeds | Why CMSS?

The government supply of seed is wrought with redtape, corruption and delays and the private seed suppliers are not always trustworthy. Added to this is the factor that the seeds received through these channels are most often better suited for irrigated lands. This puts the rainfed farmer at the receiving end and forced to be self-sufficient with respect to seeds. The fluctuations in rainfall in the rainfed regions results in low productivity leading to shortage of seed for the rainfed farmer. This has resulted in the evolution of region-specific seed systems that act as repositories of diversity and reservoirs of resilience, across the country, particularly in rainfed areas. It is important to conserve and promote these regional seed systems that keep locally adopted seeds available, at affordable price and sufficient buffer quantity to the rainfed farmer.

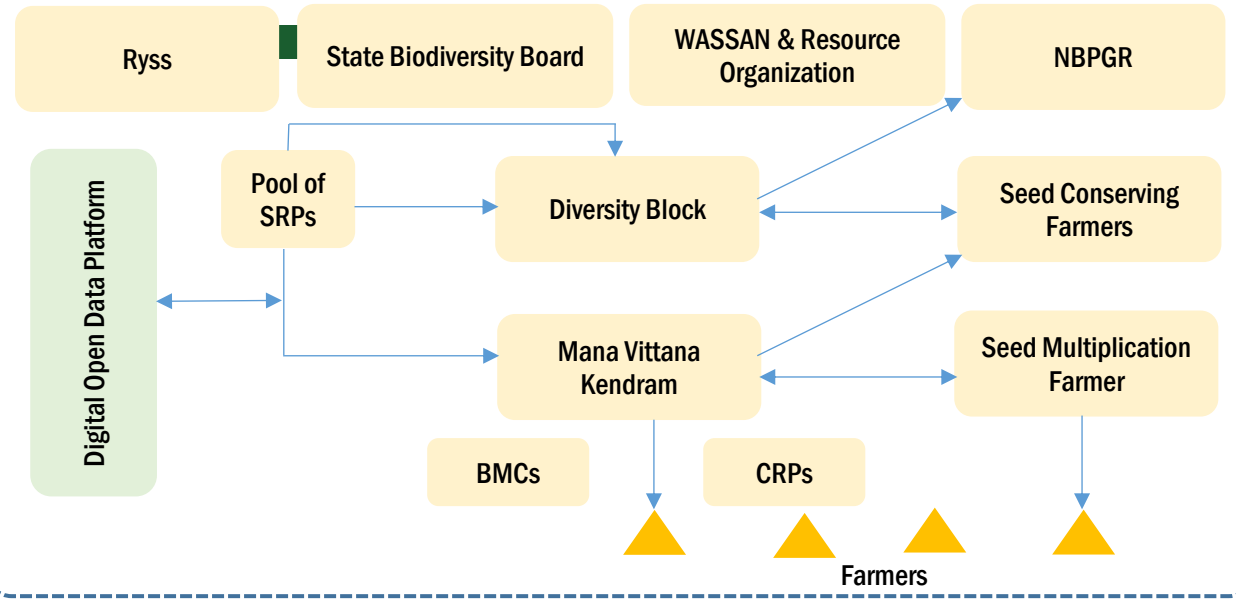
WASSAN has been trying to bridge traditional seed systems with public sector seed system from the time of Andhra Pradesh Drought Protection Initiative (in 2006) to RRA CP [CIKS-led efforts] and the 'Working Group on Seeds'. We, along with Government of Andhra Pradesh, have been doing it through '*Mana Vittana Kendra'*, community-based [farmers] organizations.

Framework for Action



We have been working to strengthen the above structure by setting up biodiversity block for each MVK – or 3-5 clusters. The objectives of the blocks are: conservation and popularization [of landraces]; demonstration and purification; multiplication. Besides these, the idea is to evolve a synergetic seed system for landraces within Agriculture Department.

CMSS – NF : Operational Mechanism



Scope of Work in 2018-19

CR-ZBNF

The objective is to diversify cropping systems and ensure timely availability of seed [seed security] at local-level. WASSAN has been doing it by setting up community-based farmer institutions.

Highlights:

- WASSAN facilitated the collaboration to devise strategy for conservation of local [desi] seeds between Mana Vittana Kendra(s) and National Bureau of Plant Genetic Resources [NBPGR], Department of Agriculture, Government of Andhra Pradesh, Acharya NG Ranga Agricultural University [ANGRAU], Andhra Pradesh State Biodiversity Board, Sanjeevani Rural Development Society.
- 500 farmers from 16 tribal mandals across 4 districts participated in the 'Millets Biodiversity Festival' organised along with SANJEEVANI in Killoguda village, Vishakhapatnam district in April 2018.
- 55 farmers from 5 tribal habitations visited the biodiversity block (114 varieties planted in multiple rows) at Badaika Valasa, Pachipenta mandal, Vijayanagaram district to observe, document the growth of the plants and measure the performance for seed multiplication. It was facilitated by NBPGR technical staff and WASSAN. Workshop was organized by VINOO FPO and ASSRA.
- Navadhanya seed was sown in 3455 acres, across 7 ZBNF clusters in Rayalaseema region through community managed seed system.

RRA National Convention: WASSAN has hosted the Seeds thematic session during the National Convention on Revitalising Rainfed Agriculture – held on 14, 15 February, 2019. Following the convention, a working group was formed to identify the issues and challenges in informal seed system and policy engagement to arrive at an appropriate seed system for rainfed areas.

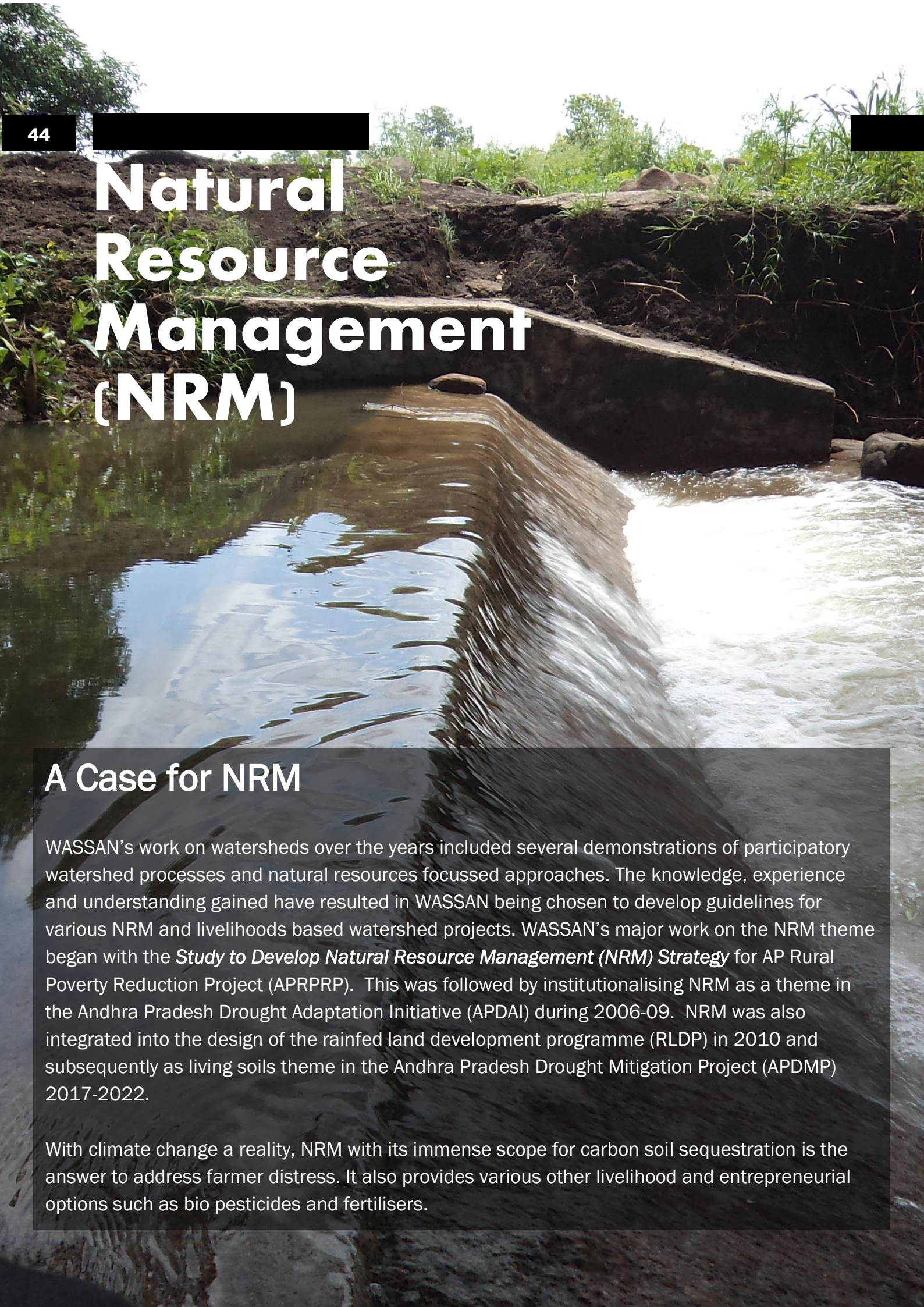
The Working Group constitutes:

Chairperson : Dr. K.S. Varaprasad, Former Director, IIOR, Hyderabad
Member : Dr. Raja Ram Deshmukh, Ex-Vice Chancellor, MPKV, Tahuri
Member : Ms. Kavitha Kuruganti, Founder, ASHA Network
Member : Dr. G.V. Ramanjaneyulu, Executive Director, CSA, Hyderabad
Member : Shri Chakradhar Panda, AAO, Department of Agriculture, Odisha
Convener : Ms S Bhagya Laxmi, Lead (Agriculture), WASSAN

Future Outlook

Ravindra/Bhagya has to write.

Natural Resource Management (NRM)



A Case for NRM

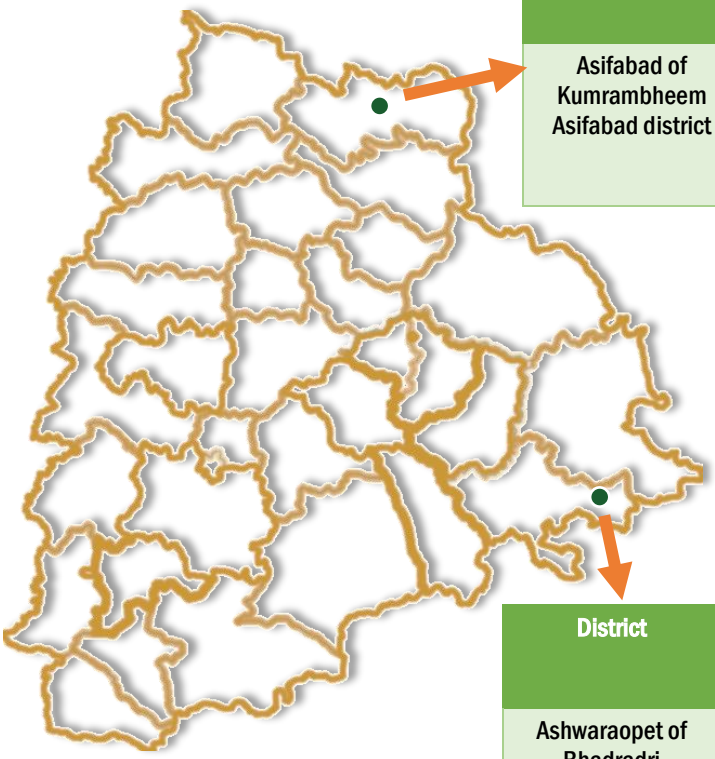
WASSAN's work on watersheds over the years included several demonstrations of participatory watershed processes and natural resources focussed approaches. The knowledge, experience and understanding gained have resulted in WASSAN being chosen to develop guidelines for various NRM and livelihoods based watershed projects. WASSAN's major work on the NRM theme began with the ***Study to Develop Natural Resource Management (NRM) Strategy*** for AP Rural Poverty Reduction Project (APRPRP). This was followed by institutionalising NRM as a theme in the Andhra Pradesh Drought Adaptation Initiative (APDAI) during 2006-09. NRM was also integrated into the design of the rainfed land development programme (RLDP) in 2010 and subsequently as living soils theme in the Andhra Pradesh Drought Mitigation Project (APDMP) 2017-2022.

With climate change a reality, NRM with its immense scope for carbon soil sequestration is the answer to address farmer distress. It also provides various other livelihood and entrepreneurial options such as bio pesticides and fertilisers.

Framework for Action

The major components of NRM across projects would ideally include the following (with slight variations)

1. User-group Centric Programmes
2. Formation of Village Watershed Development Committees
3. Capacity Building of the Village Watershed Development Committees to maintain the assets created (watershed structures, bunds, commons etc.)



District	Watershed Development Fund (WDF)	No of Villages in the WDF	Number of Households Benefited
Asifabad of Kumrambheem Asifabad district	Ringanguda WDF	6	182 households (278 across the project period)

District	Watershed Development Fund (WDF)	No of Villages in the WDF	Number of Households Benefited
Ashwaraopet of Bhadradri Kothagudem district	Mallaigudem WDF	7	210 households (350 across the project period)

These interventions result in water conservation & regulation of usage based on decisions of the village watershed development committees, improvement of greenery in private fallow lands and commons, biomass plantations on commons, mulching in individual farm lands resulting in improvement in soil moisture holding capacity, reduction of soil erosion, increased availability of fodder and improved milk yield among many others.

Scope of work in 2018-19

The sustainability development project (SDP) supported by NABARD is implemented through the village watershed committees (VWC) with WASSAN as the project facilitating agency. The project are implemented.

The following components were grounded in the project area: backyard kitchen gardening to cultivate vegetables, borewell water sharing, soil testing, seed bank (for Jowar and Groundnut), agriculture contingency plan and crop water budgeting, cycle weeders, borewell water sharing, cultivation of fodder and pulses (red, green and black gram), inclusion of millets in the cropping, convergence with animal husbandry department for vaccination training.

Ringanguda WDF:

- The seed bank purchased 600 kilograms of local jowar seed and distributed to 45 farmers to cover 100 acres during Rabi 2018 with conditionality of pay back in 1:2 ratio after the harvest. As on date, 130 kgs has been collected and kept safe with the respective VWC members in the village.
- A network of borewells made to cover 40 acres of farmland belonging to BPL farmers of the primitive Kollam tribe, at a cost of Rs.1.80 lakhs. Farmers contributed Rs.25000/- for digging of trench and refilling works. Convergence with DRDO for sprinkler sets to the borewell water sharing group under RURBAN scheme was made, which is yet to be sanctioned.
- Project grant for vegetable seed to Koyyala Mondi, a SC farmer in Chirakunta Village of Asifabad mandal. He started growing brinjal, tomato and chilli in 0.5 acre in kharif 2018 and now increased it to one acre. He earns an income of Rs.10000 to 12000 per month from vegetables.

Mallaigudem WDF:

- 10 beneficiaries received 1 lakh each through convergence with ITDA TRICOR to set up micro enterprises such as kirana and fancy shops in Ramannagudem and Mallaigudem.
- Promoted finger millet and brown top millet in 7 acres at Ramannagudem village to revive millet cultivation in tribal areas.
- Established millet based cookie and snacks unit with four members (Sri Sai women's group) in Ramannagudem village. They supply cookies, finger millet, foxtail millet, little millet grain to shops in Hyderabad, Khammam, Kothagudem etc. and also participating in melas. They make a profit of 15000-20000 per month as a group.
- 210 families in 6 villages were distributed seeds for backyard kitchen garden. Soil samples were collected from 52 plots. Waste decomposer bottles distributed to compost kitchen waste and use for soil fertility enhancement.
- Regular finance literacy campaigns have inspired members of farmer cooperative to start regular monthly savings.
- Facilitated seven families to get the Kalyana lakshimi scheme benefits for marriages of their girls.

Pilot project on Comprehensive Development of RoFR lands, production systems and livelihoods

- The project aims to develop RoFR lands to increase green cover by providing critical irrigation facilities, horticulture, NTFP plantation, changing cropping patterns, promoting sustainable agriculture practices (such as pesticide free or natural farming to maintain ecological balance), help to diversify from cotton and increase incomes of adivasis. It is an initiative of the District Collector, Smt. Divya Devarjan, IAS. The pilot intends to establish proof-of concept of working in collaboration with the mainstream programs/ departments and come up with a workable strategy along with budget components and institutional mechanisms. Technical support, liasioning and management of the pilot done by WASSAN as lead technical agency.
- Implemented in 1500 acres (across 5 mandals of Indravelli, Narnoor, Gadeguda, Bazarhatnoor and utnoor and form 6% of total ROFR lands in these mandals) of RoFR land in Adilabad District with an estimated project budget of Rs.3.82 crores for 3 years.
- Works are being implemented through convergence with various government departments and agencies. Farm ponds and facilitation costs are from District Collector Discretion Fund.
- FAs and CBOs conducted awareness meetings and made participatory community planning exercises in
- CBOs mobilized the farmers and demarcated area. List of farmers of RoFR block submitted to PD –DRDA.
- Farm pond locations identified along with the community, MGNREGS staff, estimations generated and administrative approvals received.
- Total 64 farm ponds excavated, 15751 trees (7103 mango, 4100 custard apple, 4546 apple ber) planted in 208 acres

Future Outlook

Community Based Institutions

A Case for Community Based Institutions

WASSAN's experience with enterprises, groups or institutions (formed during a project period) has been that they continue to sustain themselves only if they are community-based, and if their capacity building has been thorough in terms of instilling truly participatory and democratic values. Community-based institutions are a way to ensure the community stays invested in the intervention and it does not die down after the end of a project. As a result, WASSAN helped initiate, build capacities and hand hold various community based institutions such as water management committees, farmer producer organisations, common-interest groups (poultry, small ruminants, and fisheries), etc. By making these community-based institutions take on a business role, it ensures their sustainability after the project ends and funds are no longer available.

Framework for Action

Scope of Work in 2018-19

CR - ZBNF

As part of the CR ZBNF project (pilots) in the districts of Srikakulam, Visakhapatnam and East Godavari, WASSAN enabled the formation of

3

Mana Vitana Kendras (MVKs) of partner NGOs were identified and strengthened (provided weighing scales, moisture meter and bags) to meet the seed requirement of the farmer members

2

Poultry Common Interest Groups (CIGs) to ensure desi backyard poultry rearing households and breed farm entrepreneurs have access to vaccination services through the para workers(para vets)

2

Small Ruminant Common Interest Groups to ensure rearers have access to vaccination services through the para workers (para vets)

8

Poultry Common Interest Groups in Rayalaseema

TRICOR

Under TRICOR, 281 CIGs were formed during the year. Turnover of 60 lakhs made by FPO (Federation of 83 Self Help Groups) of 1080 Farmers from 41 villages in Doulathabad mandal by Marketing

20	25	10	15
Tons of Foxtail Grain	Tons of Redgram	Tons of Foxtail Rice (after processing	15 Quintals of Redgram (after processing)

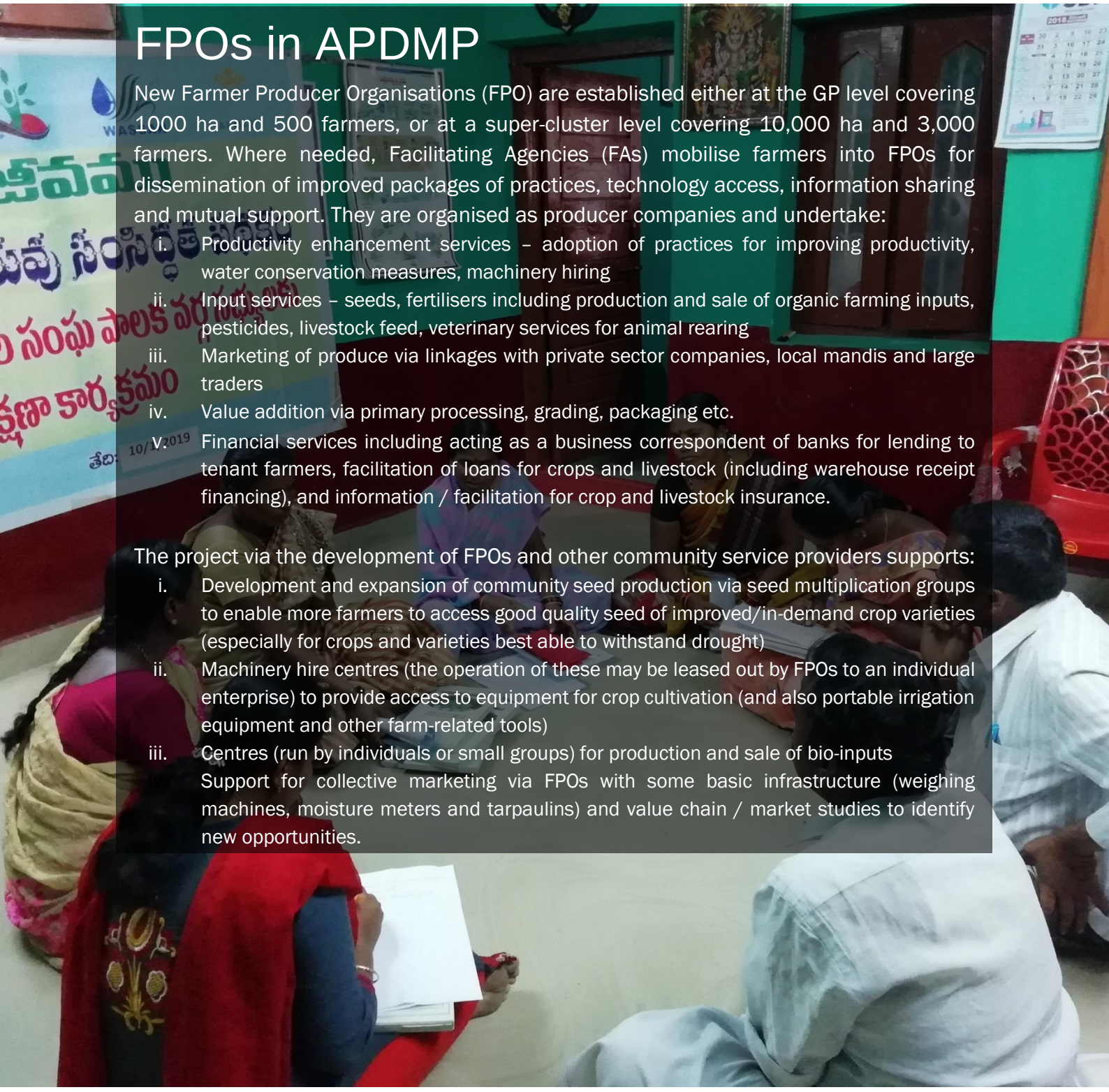
- The FPO was also involved in paddy seed production of MPU1010 paddy variety in 10 acres to be distributed in 300 acres in kharif 2019. It purchased 600 sq yards land at ₹ 3.4 lakh which is now valued at ₹ 6.5- 7 lakhs. It was also sanctioned a NAB Kisan loan of ₹ 25 lakhs.
- Turnover of close to ₹ 40 lakhs made by FPO (federation of 54 SHGs) with 680 farmers across 38 villages in Bumrajpet mandal by selling Tarpaulin sheets to the tune of 15 lakhs and marketing 15 tons redgram. They were also sanctioned NAB Kisan loan of ₹ 20 lakhs.
- Turnover of close to 1crore made by two FPOs (Annadata and Jan Jeevana with a combined membership of 1800 farmers) in Annatapuram through aggregation (95-100 tons), processing and sale of ground nut kernels, groundnut oil, oil cake, groundnut spice powder (value add).
- Registered 25 water sharing institutions (18 with partner NGOs, 6 by WASSAN) with 254 farmers as members. This has enabled water sharing from 262 borewells to irrigate 1159 acres in 17 villages across 6 mandals of Anantapuram district. Crop water budgeting was done in all the groups and crop diversity was achieved through the introduction of navadhanya cropping system in about 625 acres.

APDMP

- 105 FPOs formed with 40,000 members (35% women farmers)
- FPO members trained via Farmer Field schools and Rearer Field Schools
- FPO members receive services of custom hiring center (CHC) at subsidised price
- 105 CLiC Centres opened where livestock vaccinations services have began
- Small equipment and bio inputs available for purchase at CliCs
- Business plan development under progress at FPOs
- Aggregation of inputs planned in K19

Future Outlook

- In north coastal AP, Manyam Grains (a social enterprise incubated by WASSAN foundation) has signed MoUs with 4 FPOs (established and nurtured by partner NGOs) with plans to scale it to a total of 10 FPOs to buy millet grain in *Kharif* 2019.
- Fisheries CIGs to be established to ensure collective culture, harvest and marketing
- Under TRICOR, the plan is to federate the CIGs formed into one FPO per ITDA which will be involved in marketing, sale of feed and vaccinator services etc.



FPOs in APDMP

New Farmer Producer Organisations (FPO) are established either at the GP level covering 1000 ha and 500 farmers, or at a super-cluster level covering 10,000 ha and 3,000 farmers. Where needed, Facilitating Agencies (FAs) mobilise farmers into FPOs for dissemination of improved packages of practices, technology access, information sharing and mutual support. They are organised as producer companies and undertake:

i. Productivity enhancement services – adoption of practices for improving productivity, water conservation measures, machinery hiring
ii. Input services – seeds, fertilisers including production and sale of organic farming inputs, pesticides, livestock feed, veterinary services for animal rearing
iii. Marketing of produce via linkages with private sector companies, local mandis and large traders
iv. Value addition via primary processing, grading, packaging etc.
v. Financial services including acting as a business correspondent of banks for lending to tenant farmers, facilitation of loans for crops and livestock (including warehouse receipt financing), and information / facilitation for crop and livestock insurance.

The project via the development of FPOs and other community service providers supports:

i. Development and expansion of community seed production via seed multiplication groups to enable more farmers to access good quality seed of improved/in-demand crop varieties (especially for crops and varieties best able to withstand drought)
ii. Machinery hire centres (the operation of these may be leased out by FPOs to an individual enterprise) to provide access to equipment for crop cultivation (and also portable irrigation equipment and other farm-related tools)
iii. Centres (run by individuals or small groups) for production and sale of bio-inputs
iv. Support for collective marketing via FPOs with some basic infrastructure (weighing machines, moisture meters and tarpaulins) and value chain / market studies to identify new opportunities.

Farm Implements and Mechanization

A Case for Farm Implements and Mechanization

WASSAN has been involved in implementation and monitoring and evaluation of several agricultural programs such as Comprehensive Revival of Millets Programme (CRMP), Orissa Millet Mission (OMM) and Andhra Pradesh Drought Mitigation Project (APDMP) whose major focus is on enhancing agricultural productivity in tribal and drought prone areas, which also happen to be rainfed. Tribal areas usually have undulating terrain where carrying out agricultural operations by tractors is not possible. Draught animals are the only source of farm mechanisation. A study done by the RRA Network Hub (RRA NH) shows that 79% households own draught animals in rainfed regions of India and most of the agricultural operations are done by these animals. Draught animals provide the necessary services primarily in land preparation and transport in over 100 million ha of farmlands in India (60% of net or gross sown area). Despite high ownership of draught animals in rainfed areas, use of draught animals is limited to not more than 100 days in a year. Feeding the animals' year-long without any work is a major reason why farmers are not willing to keep draught animals.

There is no structured attempt in recent times to take stock of this neglected but essential theme for rainfed agriculture. Price of draught animals is increasing, as the supply is dwindling. Shift in crop patterns and shrinking of grazing areas affects the fodder resources. Family labor constraints also adversely affect this economy. Some structured efforts have shown high success rate in stimulating the small holder agriculture, cost reduction and income generation. An economic

reorganisation of the sector is also taking place; for example, from farmer-ownership to enterprises for hiring out services.

WASSAN intends to promote a policy understanding of the issue and explore ways of strengthening the economy of DAP and small machineries appropriate for rainfed regions, as a support system for small holder rainfed agriculture in appropriate geographies of India.

Framework for Action

As WASSAN is still in the initial stages of grounding this theme, the framework is evolving and no successful framework has been finalised to be replicated in all projects.

Scope of Work in 2018-19

Through a research study done by RRA-NH, status, trends, potential, constraints and use of draught animals in rainfed regions were identified in 12 rainfed states of the country. On basis of this study, a MoU was signed with Central Institute of Agriculture Engineering, Bhopal for research collaboration on use of draught animal drawn implements in rainfed regions.

Future Outlook

A workshop is planned at Central Institute of Agricultural Engineering (CIAE) with fabricators, local innovators, and scientists working on this area in coming 2-3 months. The purpose of the workshop will be to come up with a project proposal in which animal drawn implements and small machineries will be modified as per requirement of the farmers and popularised as per regional requirement. The modalities will be discussed of how to include local innovators/fabricators in design of implements by ICAR.

Audit Report

Staff of WASSAN

Abbreviations

AHD	Animal Husbandry Department
AIRCP	All India Coordinated Research Project
AnGR	Project on Animal Genetic Research
ANGRAU	Acharya NG Ranga Agricultural University
APDAI	Andhra Pradesh Drought Adaptation Initiatives
APDMP	Andhra Pradesh Drought Mitigation Project
APRPRP	Andhra Pradesh Rural Poverty Reduction Project
BFE	Breed Farm Entrepreneur
BRLF	Bharat Rural Livelihood Foundation
BYP	Backyard Poultry
CHC	Custom Hiring Center
CIG	Common Interest Group
CliC	Climate Information Centre
CRP	Community Resource Person
CSOs	Civil Society Organizations
DAC	Department of Agriculture and Cooperation
DFA/LFA	District Facilitating Agency / Lead Facilitating Agency
DoA	Directorate of Agriculture
DoAH	Department of Animal Husbandry
DoH	Department of Horticulture
DoWR	Department of Water Resources
DWMA	District Water Management Agency
ELS	Extensive Livestock System
FA	Facilitating Agency
FFS	Farmer Field School
FPO	Farmer Producer Organisation
GoAP	Government of Andhra Pradesh
GoI	Government of India
HHs	Households
ICAR	Indian Council for Agricultural Research
IPC	Inter-Personnel Communication
ITDA	Integrated Tribal Development Agency
MVK	Mana Vittana Kendram
NBPGR	National Bureau of Plant Genetic Resources
NRM	Natural Resource Management
NTFP	Non-timber forest products
PGWM	Participatory Groundwater Management
PVTGs	Particularly Vulnerable Tribal Groups
RFS	Rearer Field School
RLDP	Rainfed land development programme
RoFR	Recognition of Forest Rights Act
SDP	Sustainability Development Project
SRP	Seed Resource Person
VWC	Village Watershed Committees
WASH	Water Sanitation & Hygiene
ZBNF	Zero Budget Natural Farming

Partners

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