



MULTI-STAKEHOLDER APPROACHES FOR ENHANCING COMMAND AREA WATER PRODUCTIVITY IN INDIA

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The Water Resources Department, Government of Maharashtra, responsible for building infrastructure and delivering water to farmers and other users, has so far created irrigation potential of about 5.3 million hectares and the current utilization is about 76%. About 5000 Water User Associations (WUAs) have been established to manage the water supply within their designated areas. However, the water use efficiency and productivity is adversely impacting the overall water security of the state.

2030 Water Resources Group (WRG), a global partnership program hosted within the Water Global Practice of the World Bank, supports the Government of Maharashtra on a state level through the Maharashtra Water Multi-Stakeholder Platform to address water security in the state. Command area water productivity is one of the four thematic areas of work. Since 2018, 2030 WRG has been successful in forging a few public-private-civil society partnerships, covering about 870 WUAs cultivating about 0.30 million hectares of area.

In this Good Practice Note, Jonnalagadda VR Murty, Kavita Sachwani and Ajith Radhakrishnan discuss the importance of multi-stakeholder platforms and specific public-private and civil society partnerships in enhancing water use efficiency and institutionalizing an enabling environment that is critical for forging and nurturing such partnerships.

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CONTEXT

Maharashtra, a western state in India, is vulnerable to challenges posed by climate change, land degradation and market fluctuations. The average landholding of farmers in Maharashtra is approximately 1.34 hectares¹, with varying degrees of use efficiency and productivity. Cotton, soybean, tur dal, sugarcane and cereals are the main crops, in terms of area covered. Maharashtra has about 22.5 million hectares of cultivable area. Of this, the Irrigation Potential Created (IPC) through approximately 3,700 major, medium and minor irrigation projects across the state, is about 5.3 million hectares. The current irrigation potential utilized (IPU) is about 76.4% of the IPC².

The Water Resources Department (WRD), Government of Maharashtra, is responsible for developing irrigation projects and supplying bulk water to a defined area administered by Water User Association (WUAs). Several initiatives, such as affordable tariffs, capacity building support, performance incentives, have been designed and executed to strengthen Participatory Irrigation Management (PIM), through WUAs.

Box 1: Water User Associations

The WUAs are formed and recognized as legal institutions under the Maharashtra Management of Irrigation Systems by Farmers Act, 2005 (MMISF). The MMISF empowers WUAs to manage the distribution of water in an equitable and efficient manner in their areas, and to also fix and collect water user tariffs, based on the bulk tariff determined by the Maharashtra Water Resources Regulatory Authority (MWRRA). Each WUA covers an area of about 300 to 500 hectares. Prior to the adoption of MMISF, WUAs were promoted under the Maharashtra Cooperative Society Act, 1960. To date, about 5000 plus WUAs³ have been established, under both the Acts, and are functioning with varying degrees of effectiveness.

¹The average land holding size decreased from 1.4 ha in 2010-11 to 1.34 in 2015-16 (Economic Survey of Maharashtra 2020-21).

²Water Resources Department, Government of Maharashtra.

³Water Resources Department, GoM.

While the infrastructure is in place and the WUA has helped expand irrigation to several farmers, the overall performance of the irrigation system is below desired standards. The water distribution in canals is not equitable and several times the tail end areas do not receive services as planned. The farmers largely practice traditional irrigation practices resulting in lower levels of water use efficiency and productivity. Last, but no less important, small and marginal farmers are not well-linked to the value chains and therefore earn less due to local market vagaries.

APPROACH

Multi-Stakeholder Platform for Water Management

2030 Water Resources Group (2030 WRG), a global partnership program hosted by the World Bank, has been supporting the Government of Maharashtra through the establishment of the Maharashtra Water Multi-Stakeholder Platform (MSP), through a Government Order issued in May 2017. The MSP is headed by the Chief Secretary, Government of Maharashtra, and comprises representation from public sector, private sector, civil society and academic organizations. The MSP currently works on four thematic areas,



MSP meeting -Chaired by Mr. Ajoy Mehta, Chief Secretary in October 2019 @2030 WRG

called Workstreams. Taskforces are created as needed and agreed upon by the MSP under each Workstream, from time to time for shorter duration policy and/or programmatic interventions.

2030 WRG acts as the Secretariat for the MSP and the workstreams. The details of the MSP are given in Figure 1 below.

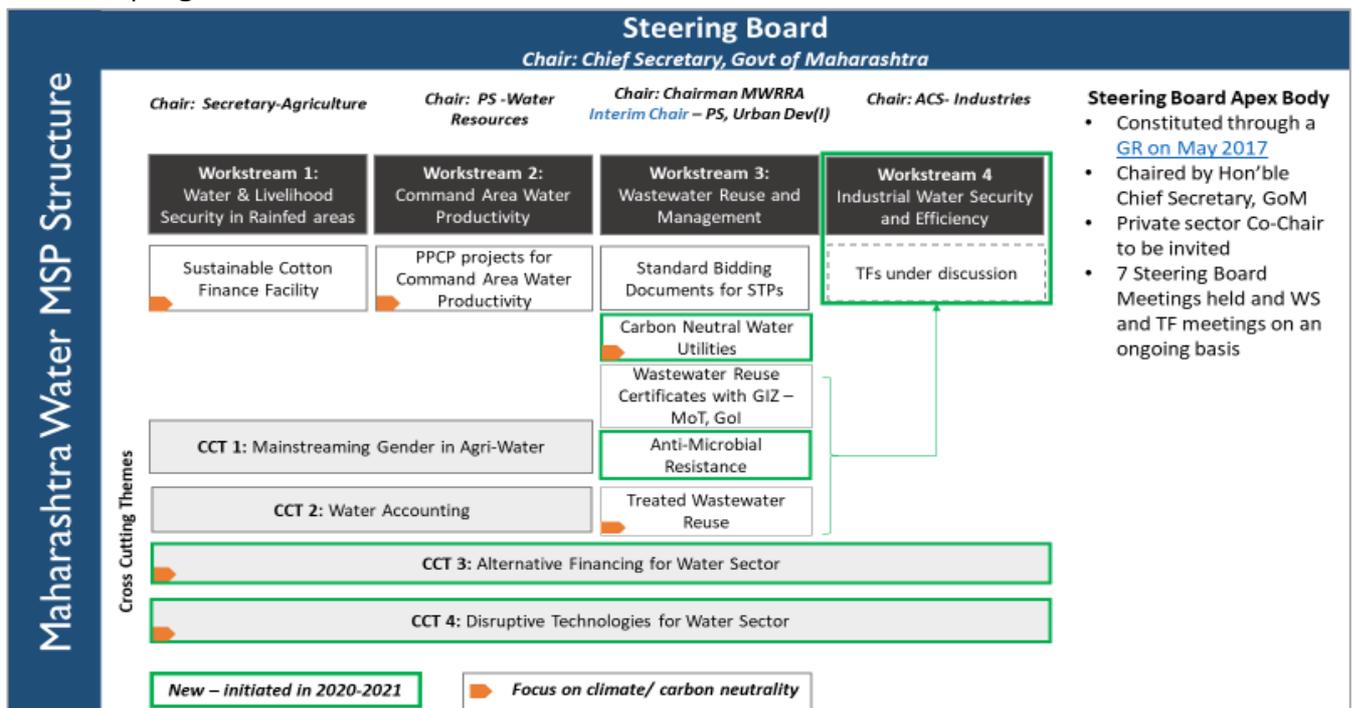


Figure 1: Structure of the MSP in Maharashtra. Source: Maharashtra MSP.

Command Area Water Productivity (CAWP) workstream, which is the focus of this Good Practice Note, is headed by the Principal Secretary, Water Resources Department (WRD), Government of Maharashtra. The other members in the workstream include representatives from private sector, civil society and academia.

Multi-stakeholder deliberations within the CAWP workstream identified the following key issues to be addressed to improve overall water and livelihood security in canal command areas within the state;

- i. low water use efficiency and productivity;
- ii. inequitable distribution; inadequate repairs and maintenance of the canal infrastructure, leading to distribution losses; and

- iv. lower income realization by small and medium farmers due to inadequate market linkages;

Public-Private-Civil Society Partnership (PPCP)

Further deliberations led to the idea of designing and implementing appropriate Public-Private-Civil Society Partnership (PPCP) models to achieve integrated off-farm and on-farm water use efficiency and productivity while also strengthening market linkages. As this would require inputs and coordination with other public sector agencies such as the state Agriculture Department, Soil and Water Conservation Department and others, it was decided to create a Project Implementation Unit (PIU)⁴ with representation from all the concerned departments. The framework for PPCP projects is shown in Figure 2, below.



Figure 2: PPCP Model for Integrated Water Use Efficiency and Productivity

The details of expected roles and responsibilities of different stakeholders are captured in Table 1.

⁴The Project Implementation Unit was established through Government Orders in October 2018 and August 2020, issued by Water Resources Department, Government of Maharashtra.

TABLE 1 | Roles and Responsibilities of Partners under the PPCP Model

PPCP Element	Organization	Role and Responsibility
Off-farm	Public Sector (Water Resources Department, Government of Maharashtra)	-Manage timely and adequate release of water to the WUAs in an equitable manner. This is under WRDs' mandate.
On-farm Water Use Efficiency (WUE) and Productivity	Private Sector/ CSO	-Capacity building of WUAs for better water management; -Promotion of improved agronomy practices; -Promotion of demand management measures, including micro irrigation; -Focus on gender mainstreaming; -Promotion of appropriate disruptive technologies; -Mobilize finances for these activities.
Market Linkages	Private Sector/ CSO	-Establishing appropriate forward and backward market linkages through measures such as establishing FPCs and tying up with established value chain actors. -Coordination with private sector organizations, agencies like National Bank for Agriculture and Rural Development (NABARD) ⁵ and any other related programs, as required.
Convening, Anchoring and Technical Assistance	2030 WRG	-Co-convene partner meetings; -Facilitate partnerships, based on mutual interest of partners, under the MSP umbrella; -Support review of projects and decision making by partners, in a neutral manner; -Provide expert advice, as required from time to time.

PPCP PROJECTS IN ACTION

Starting from May 2019, WRD entered into Memoranda of Understanding (MoUs) with four partners for working in nine command areas admeasuring about 300,000 hectares covering about 230,000 farmers. These projects are spread across eight districts in the state and are at different stages of implementation. The WRD established a Project Implementation Unit for supporting and coordinating

these projects with local offices and other departments⁶. The early results are encouraging and offer lessons for scaling up the PPCP approach within the state, other states, and other countries. Details of the different projects are captured in the following sections. Brief details of the projects and progress made till date are highlighted in Table 2 below.

⁵National Bank for Agriculture and Rural Development (NABARD) provides technical and financial support for establishing FPOs, etc., besides other mandated activities.

⁶The PIU was established through two Government Orders issued by WRD in October 2018 and August 2020.

TABLE 2 | Details of Ongoing PPCP Projects

Partner	Command Area Location	Area (Ha)	WUAs	Progress (Feb 2022)
Mission Sunehra Kal – ITC Pvt. Ltd <i>ITC is one of the leading private sector companies in India, with presence in FMCG, Hotels, Packaging, Paperboards, Agri & IT business. Mission Sunehra Kal ("Golden/brighter tomorrow") is ITC's social investment mission (www.itcportal.com)</i>	Kukadi (Pune and Ahmednagar districts)	71,515	127	Capacity building of WUAs is ongoing in batches to promote demand management measures and also to adopt improved agronomy practices. Farm field schools and custom hiring centers promoted to demonstrate climate smart agronomy practices and to provide access to modern machinery at farmgate on hire. Results in water use efficiency and productivity demonstrated and measured by third party for sugarcane and onion crops. These good practices are being scaled up.
	Tembhu LIS (Sangli, Satara and Solapur districts)	65,914	200	
	Krishna Koyana LIS (Satara and Solapur districts)	61,523	200	
	Dehani LIS (Yavatmal district)	6,968	57	
	Palkhed (Nashik, Ahmednagar and Aurangabad districts)	44,171	159	
Yuvamitra <i>Yuvamitra is a Social Development Organization working in areas related to water resources management, agriculture and livelihoods in rural Maharashtra and Punjab, in the past 25 years. (www.yuvamitra.org)</i>	NM Express Canal (Ahmednagar and Aurangabad)	43,860	121	Completed baseline assessments, mapping, and initiated capacity building activities in three WUAs.
Development Support Centre (DSC) <i>DSC, established in 1994, is a resource organization that provides knowledge-based support to development organizations and community-based organizations in the field of Participatory Natural Resource Management and sustainable livelihoods in Maharashtra, Gujarat, Rajasthan and Madhya Pradesh. (www.dscindia.org)</i>	Minor irrigation projects (Nandurbar district)	11,296	12	Demonstrated water use efficiency, productivity and improved area coverage through capacity building of four WUAs in the first batch. Also demonstrated improved revenue collection and maintenance by WUAs in the first batch.

Partner	Command Area Location	Area (Ha)	WUAs	Progress (Feb 2022)
Blue Earth Water Solutions & Jethro-G <i>Blue Earth Water Solutions is a private special purpose vehicle created to introduce Israeli technology in India in agriculture and allied fields. Jethro-G is an Israeli organization with expertise in turnkey agriculture projects and urban development projects across several countries (www.jethro-g.com)</i>	Bramhagavan LIS (Aurangabad district)			Baseline assessments completed. Community institutions being formed to absorb technology options.
Total	9 command areas (9 districts)	305,247	876	

While WRD and the above-mentioned partners have signed formal MoUs and are working together, 2030 WRG has been regularly engaging with others to add value through the cross-cutting themes related to water accounting, disruptive technologies, and innovative financing, including carbon financing.

This led to further collaborations in two project areas led by Yuvamitra and the Development Support Centre (DSC), to design and adopt disruptive technologies for water measurement, farmer advisories, measuring results, and also voluntary carbon financing. Details are given in Table 3.

TABLE 3 | Value Addition through Agri-Tech and Carbon Financing Partners

Partners	Command Area Location	Progress (February 2022)
WIDYA , a digital startup, supported by Western Sydney University, Australia. <i>Ekatvam Innovations, a social startup focusing on promoting participatory water management through a multi-stakeholder digital platform called MIDAS. (www.ekatvaminnovations.com)</i> <i>Vesatogo, a social startup that provides a platform for agri businesses and their associated farmers. (www.vesatogo.com)</i>	Working with Yuvamitra in the NM Express Canal (Ahmednagar and Aurangabad)	WIDYA is collaborating with Ekatvam Innovations Pvt. Ltd., and designed a digital platform for water management and mobile apps for advising farmers on agronomy practices. The same are under pilot testing with farmers in three WUAs, through Yuvamitra.

Partners	Command Area Location	Progress (February 2022)
<p>VNV Advisory <i>VNV Advisory is a social enterprise working in climate change towards enabling actions on low carbon practices for building climate resilience and using a community approach. (www.vnvadvisroy.com)</i></p>	<p>Working with DSC and other stakeholders in Nandurbar district.</p>	<p>VNV Advisory, along with DSC and other partners, designed a Results Based Carbon Financing pilot under a Consortium for Carbon Financing and Disruptive Ag Tech (C-CFDAT) for agro-forestry outcomes using drones and other Disruptive Agritech (DAT) in Nandurbar district. Baseline surveys to establish benchmarks are going on. Farmers will be incentivized for transitioning from existing agricultural practices to low carbon practices.</p>

EARLY RESULTS

All the projects have been under implementation for less than two years and despite COVID-19 induced disruptions, have been progressing well. Some key results emerging from these PPCP projects are highlighted below.

Water Use Efficiency and Productivity:

ITC has promoted the following agronomy practices for sugarcane and onion crops, through demonstration plots and Farmer Field Schools, which is resulting in water use efficiency and productivity gains.

- Sugarcane: (i) pre-germination of sugarcane plants in nursery and planting them in fields, instead of direct germination in the field; (ii) increased spacing; (iii) mulching; (iv) use of machinery for harvesting and mulching instead of manual harvesting and burning residue; and (iv) drip irrigation.
- Onion: (i) seeding on raised beds, instead of furrows; (ii) spacing; (iii) mulching; and (iv) drip irrigation.



WUA Training- Sangli district -ITC © 2030 WRG

- As per third-party assessment carried out by Vasantdada Sugar Institute, Pune, it is estimated that application of techniques such as pre-germinated seedling through nursery, and wide spacing with micro irrigation saves about 12,622 Cubic meters /hectare water in sugarcane cultivation.

Women Water Champions: The partners have focused on gender empowerment through enabling their participation in decision making within WUAs, training existing SHGs on innovative business opportunities and

training women farmers on appropriate agri-water practices. A few examples are captured here. Two women from the PPCP project areas have been recognized as 'Water Champions' by SIWI and UNDP, in 2021. Ms. Kanchan Jadhav was given the award for her work in water-saving sugarcane cultivation, soil conservation and training of fellow farmers. Ms. Ujjwala Ghadge was given the award for her work in water-saving onion cultivation, community awareness and training of fellow farmers.

Custom Hiring Centers: ITC trained and supported about 26 of the existing Self-Help Groups (SHGs) to setup and operate Custom Hiring Centers (Box 2). Farm equipment and machinery is provided to these CHCs, as a grant, which in turn is rented out to needy farmers for a fee. The fee differs for the type of equipment and hours of use. This activity helped the SHGs to earn more income for their groups, and the use of appropriate equipment helped farmers in precision agriculture and saving labor costs.



Box 2: Siddeshwar Mahila Group (SMG)

SMG is an all-women Self-Help Group (SHG) in Srirampur village in Nashik District. ITC is supporting them since 2018, by providing farm machinery/equipment. The group rents out the machinery (roller, mulcher and tractor) to farmers to help them in their activities, which saves time and financial expenditure. Since every farmer cannot afford to buy such equipment, having them on hire is proving to be a boon to them. The services of SMG have benefitted around 216 farmers to date. SMG is planning to invest the additional income in new business ventures like storage space for onions. Through such interventions, the PPCP projects are mainstreaming gender and supporting women towards holistic water and livelihood management in command areas.



Members of SMG Custom Hiring Center © 2030 WRG

Voluntary Carbon Credits: 2030 WRG catalyzed creation of a Consortium for Carbon Financing and Disruptive Agriculture Technologies (C-CFDAT) under which DSC, VNV Advisory, NABARD and other partners came together for integration and implementation of low carbon practices using disruptive tech for agro forestry in Nandurbar district. The C-CFDAT has designed and initiated a pilot project to pass on carbon credits to collectives of farmers in the district. This pilot will be using drones and other disruptive technologies for measuring results that

can be converted into carbon credits which will improve farmer's livelihoods in addition to making them more climate resilient and reducing GHG emissions.

Integrated Digital Platform: 2030 WRG facilitated another consortium, led by WIDYA, a technology startup, supported by Western Sydney University, Australia, Yuvamitra, and others to develop and deploy an integrated digital solution for managing canal water by WRD, and to advise farmers on appropriate agronomy practices through mobile apps and a marketing platform. The



Improved agriculture practices with micro irrigation -Onion crop - Pune District © 2030 WRG

water platform and mobile apps have already been developed and are being tested. The same will be refined and scaled up, using the lessons and experiences from the pilots.

CHALLENGES AND DISRUPTIONS

There have been several challenges in the entire process of designing and implementing the PPCP projects. Key challenges are listed below.

Challenges

- The entire PPCP program was a first of its kind initiative in Maharashtra in the agri-water sector. Thus, bringing the interested partners together, aligning thematic areas and geographies to form projects, and enabling signing of appropriate MoUs was a challenge.
- While the MoUs have been signed by concerned officers, the message did not percolate

adequately to frontline officers at the site, in the initial stages. This issue was challenging in areas where officers had changed and new people had come in. Periodic coordination meetings enabled addressing this issue to a great extent.

Disruption

- Some of the CSOs experienced difficulties in mobilizing finances, usually grant funds, for their committed roles. This was largely owing to the changing priorities of the grant-making organizations, as they have prioritized focus and commitment to address COVID-19 related issues.
- Last, but not least, severe constraints induced due to the rapid spread of COVID-19, beginning from March 2020 till date, had severely disrupted the entire implementation plans and schedule.



Community meeting in Nandurbar district © 2030 WRG

EMERGING LESSONS AND WAY FORWARD

As mentioned above, the PPCP projects are still a 'work in progress' and will need some more time to realize the designed results. However, there are a few important lessons emerging that are listed below.

1. Multi-Stakeholder partnerships for Innovation: Public sector, private sector and CSOs have largely either worked independently or worked together through a contractual arrangement, but the experience of working in partnership, where each partner has a defined role and also bring their own financing was a new concept.

While the Government has focused on creating infrastructure and maintaining the same, the private sector and civil society sector can bring in their expertise related to community capacity building, use of appropriate technologies, mobilizing alternate

financing, and building market linkages. The impact of a multi-stakeholder group working together in canal command areas to enable the farmers to realize the intended benefits of these projects and improve their livelihoods has been demonstrated, in a few pilot areas. This model is designed as a result-oriented model which goes beyond traditional capacity building/ training initiatives and aims to achieve water use efficiency and productivity gains. The key indicators for measuring results under this model are listed below in Table 4.

2. Enabling Policy Environment: While signing specific MoUs is a good process, there is need for a holistic enabling policy environment to facilitate such collaborations, from a long-term and larger scale perspective. The Water Resources Department does not have any previous experience with PPP projects. While the state government and central government issue policy and operational guidelines for PPP engagements from time to time, there is not much headway on this aspect in the

TABLE 4| Key Indicators for Results under PPCP Model

On-Farm Infrastructure Strengthening	On-Farm Efficiency & Productivity	Market Linkages/Livelihoods
<ul style="list-style-type: none"> • Number of structures repaired / rehabilitated • Increase in water flows to Water User Associations • Investments made by WRD and other stakeholders to support water use efficiency (metering, additional NGOs for specific activities, micro financing, etc.) 	<ul style="list-style-type: none"> • Additional area brought under irrigation • % of area/farmers adopting micro irrigation • Number of functional WUAs (undertaking activities as per the Act, including revenue collection) • Scientific agriculture practices adopted by farmers 	<ul style="list-style-type: none"> • No. of FPOs formed/ strengthened (Turnover and Profit) • Average increase in farmer's incomes (against baseline)

water sector, barring a few examples in urban water supply management. The government is the custodian of water resources and is 'expected' to provide free or low-cost water services, especially to farmers and rural communities. Water charges are levied in the state, but recovery is low. The recovery is found to be satisfactory in areas where the quality and timeliness of service delivery are satisfactory. Second, in a generic manner, any private sector participation in the water sector is viewed from the lens of 'privatization' and is widely criticized in media and other platforms, due to the emotional and social attachment to water. In this political economy of managing water, any private sector participation is perceived to lead to increase in tariffs and hence is a difficult bullet to bite. Thus, though governments, sector professionals and some communities recognize the need for private sector participation for improved management and service delivery, it is not an easy terrain to navigate.

PPCP projects are designed under this larger political economy as a 'mid-path initiative' where government continues to manage water infrastructure and supplies (and hence no perceived privatization) and private sector/civil society bring in their expertise for on-farm activities in a voluntary manner, mobilizing their own resources. However, both the parties work together in a given geography aiming for approved common results. This experiment is still in the early stages, but demonstrates the potential of a policy framework for scaling up.

Embedding innovative financing models with the private sector can help build scalable and sustainable solutions for water resources management as has been widely acknowledged. Alternative financing mechanisms can help mobilise capital through innovative structuring using risk mitigation instruments linked to credit enhancements, guarantees and concessional debt, mostly sourced from multilateral, government or philanthropic sources. Along with carbon financing, such instruments can – in the form of interest-subsidies, assured returns and longer repayment periods – make financing more accessible and affordable and are being embedded in the projects as applicable.

3. Capacity Development: Establishing a PIU and organizing periodic review meetings have been helpful in increased inter-departmental collaboration and agreeing on joint future action plans, from time to time. There is a need to strengthen the PIU with members from other key departments and with appropriate skills. The PIU currently has engineering and project management skills, but needs to be strengthened on agri-related issues, technology, capacity building, groundwater management and communication. The WRD is devising means to onboard sector experts from other government departments such as Agriculture Department and Soil and Water Conservation, and professionals from the open market towards building a holistic team for overseeing project implementation. The PIU can be strengthened by coopting partners as they can onboard skills that are not easily available within the government. Such an arrangement will also demonstrate a holistic approach to

multi-stakeholder approach to managing partnerships.

END NOTE

Based on these lessons, the MSP is in a good position to dialogue with more partners, develop a holistic enabling framework and expand the results-oriented PPCP model across the state to

achieve large scale benefits and impacts. This will go a long way in managing water security and agri-livelihoods, while reducing GHG emissions, important focus areas for the state government at this juncture. In a similar manner, other states in India and countries elsewhere can also adopt this model, with necessary adjustments to suit their circumstances and needs.

CONTACT

Jonnalagadda VR Murty

Technical Consultant, 2030 WRG



Kavita Sachwani

State Program Coordinator,
Maharashtra, 2030 WRG



Ajith Radhakrishnan

India Country Coordinator,
2030 WRG



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The Asia-Pacific Islands and Rural Advisory Services Network (APIRAS), the Asia-Pacific Association of Agricultural Research Institutions (APAARI), in close collaboration with the Research and Extension Unit of the Food and Agriculture Organization (FAO) of the United Nations are committed to strengthen agriculture innovation systems in Asia-Pacific for transforming agri-food systems.

In 2020, APIRAS and APAARI carried out a Joint Rapid Appraisal (JRA) to scope the innovation environment to identify and document initiatives aimed at strengthening Agricultural Innovation Systems (AIS), in a context of the TAP-AIS project.

The [JRA study](#) revealed three main barriers that constrain development of an effective AIS in the Asia-Pacific. These include: a) lack of sufficient partnerships among actors in the AIS, b) inadequate investments and lack of policies that could steer the research and extension agencies to engage with other AIS actors, and c) lack of sufficient capacity development initiatives aimed at enhancing functional capacities of AIS actors. Publication of this series of Good Practice Notes is an attempt by APIRAS and APAARI to document cases that have tried to address development of an effective AIS through addressing the above constraints.

The TAP-AIS project

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For more information see:

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