ENHANCING INNOVATION AND IMPACT IN ODISHA AGRICULTURE:

Analysis of Key Extension Stakeholders, Capacity Gaps and Ways Forward

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Centre for Research on Innovation and Science Policy

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International Rice Research Institute

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CRISP (The Centre for Research on Innovation and Science Policy) is a non-profit research organization engaged in research and capacity development on Agricultural and Rural Innovation with a special focus on Extension and Advisory Services. It also hosts the Secretariat of the Agricultural Extension in South Asia (AESA) Network (www.aesagfras.net) and is based in Hyderabad, India (www.crispindia.org).

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Enhancing Innovation and Impact in Odisha Agriculture:
Analysis of Key Extension Stakeholders, Capacity Gaps and Ways Forward

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Contents

List of Tables

List of Boxes

Acronyms

AAO	Assistant Agricultural Officers
ABTM	Assistant Block Technology Manager
AESA	Agricultural Extension in South Asia
AHO	Assistant Horticultural Officer
AICRP	All India Coordinated Research Project
AO	Agriculture Overseer
APEDA	Agricultural and Processed Food products Export Development Authority
APICOL	Agricultural Promotion & Investment Corporation of Odisha Limited
ARM	Alternative Rural Movement
ATIC	Agricultural Technology Information Centre
ATMA	Agricultural Technology Management Agency
AVRDC	World Vegetable Center
BPL	Below Poverty Line
BTM	Block Technology Manager
BTT	Block Technology Team
CBO	Community Based Organization
CDVO	Chief District Veterinary officer
CFR	Community Forest Right
CHES	Central Horticultural Experiment Station
CIMMYT	International Maize and Wheat Improvement Center
CPGS	Centre for Post Graduate Studies (CPGS)
CRISP	Centre for Research on Innovation and Science Policy
CRS	Commodity Research Stations
DAESI	Diploma in Agricutlural Extension Services for Input Dealers
DAO	District Agriculture Officer
DDA	Deputy Director of Agriculture
DEE	Directorate of Extension Education
DFID-PACS	Department for International Development-Poorest Areas Civil Society
DoA	Department of Agriculture
DoAFE	Department of Agriculture and Farmers Empowerment's
DoF	Department of Fisheries
DoH	Directorate of Horticulture
EAS	Extension and Advisory Service
EEI	Extension Education Institute
FC	Farmers Club
FES	Foundation for Ecological Security
FFDA	Fish Farmers Development Agency
FFS	Famer Field School
FGD	Focus Group Discussion
FLD	Front Line Demonstration
FPO	Farmer Producer Organization
FRA	Forest Rights Act
GIAHS	Globally Important Agriculture Heritage Site
GO	Government Organization
GoI	Government of India
GoO	Government of Odisha
GPLF	Gram Panchayat Level Federation
GP	Gram Panchayat

GSDP	Gross State Domestic Product
Ha	Hectare
HYV	High Yielding Variety
ICAR	Indian Council of Agricultural Research
ICAR- CSWCRTI	ICAR-Central Soil and Water Conservation Research and Training Institute
ICAR- CTCRI	ICAR- Central Tuber Crops Research Institute
ICAR- IIWM	ICAR-Indian Institute of Water Management
ICAR- NRRI	ICAR-National Rice Research Institute
ICAR-CIFA	ICAR-Central Institute for Freshwater Aquaculture
ICAR-CIWA	ICAR-Central Institute for Women in Agriculture
ICARDA	International Center for Agricultural Research in the Dry Areas
ICAR-IIHR	ICAR-Indian Institute of Horticultural Research
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFFCO	Indian Farmers Fertiliser Cooperative
IMAGE	Institute on Management of Agricultural Extension
IRRI	International Rice Research Institute
ITDA	Integrated Tribal Development Agency
IWMP	Integrated Watershed Management Programme
JLG	Joint Liability Groups
KII	Key Informant Interview
KRIBHCO	Krishak Bharati Cooperative
KVKs	Krishi Vigyan Kendra
MANAGE	National Institute of Agricultural Extension Management
MIDH	Mission for Integrated Development of Horticulture
MoU	Memorandum of Understanding
MPCS	Milk Producers Co-operative Societies
MSSRF	MS Swaminathan Research Foundation
NABARD	National Bank For Agriculture And Rural Development
NGO	Non-Governmental Organization
NHM	National Horticulture Mission
NIRD & PR	National Institute of Rural Development and Panchayat Raj
NPOP	National Programme for Organic Production
OAIC	Odisha Agro-Industries Corporation
OFT	On Farm Testing
OLM	Odisha Livelihood Mission
OMFED	Orissa State Cooperative Milk Producers' Federation Limited
OSOCA	Odisha State Organic Certification Agency
OSSC	Odisha State Seed Corporation
OSSOPCA	Odisha State Seed And Organic Products Certification Agency
OTELP Plus	Odisha Tribal Empowerment and Livelihoods Programme Plus
OUAT	Orissa University of Agriculture and Technology
PD	Project Director
PGDAEM	Post Graduate Diploma in Agricultural Extension Management
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PRADAN	Professional Assistance for Development Action
RITE	Regional Institute of Training on Extension
RKVY	Rashtriya Krishi Vikas Yojana
RRB	Regional Rural Bank
RRTTS	Regional Research and Technology Transfer Station
RRTTSS	Regional Research and Technology Transfer Substation

RSETI	Rural Self Employment Training Institute
SAU	State Agricultural Universities
SC and ST	Scheduled Caste and Scheduled Tribe
SFAC	Small Farmers' Agri-Business Consortium
SHG	Self Help Group
SIRD	State Institute of Rural Development
SOVA	South Orissa Voluntary Action
SREP	strategic research and extension plan
ToR	Terms of Reference
TV	Television
UNICEF	United Nations Children's Fund
VAW	Village Agricultural Worker
VDC	Village Development Committee
VFC	Village Forest Committee
VMC	Village Monitoring Committee
WALMI	Water and Land Management Institute
WC	Watershed Committee
WSHG	Women Self Help Group

1. INTRODUCTION

Agriculture plays a very crucial role in the overall development and transformation of Odisha. 'Covering 35 percent of geographical area as the net cropped area and dependence of more than 60 percent of (the) State's workforce on it for their sustenance, agriculture in Odisha is the sector that is closely connected to the welfare of the citizens. This is reinforced by a sectoral share of about 20 percent in total GSDP of the State. The State Government is keen to increase agricultural production and raise productivity through improved land and water management, scientific rain-fed agricultural techniques, well functioning agricultural markets, application of better technology, higher public and private investments and effective implementation of ongoing programmes in agriculture and allied sectors' (GoO 2018)[1].

'The agriculture sector in Odisha faces several challenges like low productivity, low investment, low returns, severe losses due to natural calamities, fluctuating supply of inputs like quality seeds, fertilizer, irrigation and credit, lack of reliable insurance cover, lack of facilities for postharvest management and marketing etc' (DoAFE 2017)[2]. The State Level Task Force on Agriculture Development of the Department of Agriculture, Odisha (2015),[3] noted that 'due to the changing face of agriculture, farmers have to make a number of complex decisions'. Some of these are as follows:

- Strategy to change farming system (e.g., diversifying from crop production to mixed farming);
- Identification of products for which there is good demand in the market;
- Taking collective decisions on resource use and marketing;
- Quick availability of relevant and reliable 'information'.

The same report argued that 'as the agricultural sector is gradually segregating into two different segments - commercial and subsistence, the extension system will have to adopt different working models and the Extension machinery needs to be strengthened through retraining and retooling of existing extension personnel'. The State Agricultural Policy (GoO 2013)[4] also noted that 'the extension system has to undergo a substantial change in its outlook'.

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[1]GoO. 2018. Odisha Economic Survey 2017-18. Planning and Convergence Department, Directorate of Economics and Statistics, Government of Odisha. http://pc.odisha.gov.in/Download/Economic_Survey_2017-18.pdf

[2]DoAFE. 2017. Activity Report of Department of Agriculture and Farmers' Empowerment during 2016-17 and Programmes for 2017-18. Department of Agriculture and Farmers' Empowerment, Government of Odisha, Odisha. http://agriodisha.nic.in/content/pdf/activity%20report%202016-17.pdf

[3]DoA. 2015. Rejuvenation of Agriculture, Recommendations of State Level Task Force on Agriculture Development. Department of Odisha, Government of Odisha. http://niti.gov.in/writereaddata/files/Odisha_Report_0.pdf

[4]GoO. 2013. State Agriculture Policy. Department of Agriculture, Government of Odisha. http://agriodisha.nic.in/content/pdf/State_Agriculture_Policy_2013_e.pdf

Since 2013-14, the State has a separate agriculture budget so as to lay special emphasis on growth and allocation of funds, thereby enhancing the budget outlay of agriculture and allied sectors from Rs 7,162 crore in 2013-14 to Rs 14,930 crore in 2017-18, and has further proposed that it be enhanced to Rs 16,765 crore for 2018-19 (DoAFE 2018).[5] While these budgetary enhancements need to be appreciated, many have doubts on the capacity of Extension and Advisory Services in Odisha to deal with the new challenges (IRRI, CRISP and ICAR-CIWA 2018).[6]

The International Rice Research Institute (IRRI) has been working with Odisha's Department of Agriculture for almost one decade. The collaboration has resulted in the promotion and dissemination of climate-resilient technologies and high-yielding modern rice varieties to improve and stabilize the productivity of the State's stress-prone areas. The Odisha-IRRI program is a landmark initiative that, among others, is looking at strengthening the seed system, rice crop management, capacity building, and crop monitoring using remote sensing to develop crop insurance. IRRI is keen to work with the Government of Odisha in strengthening the capacities of EAS providers in the State so that the EAS contributes more effectively to Odisha's agricultural transformation.

We also briefly reviewed the IRRI interventions in the State and organized a workshop for IRRI staff to enhance their understanding on different pathways to scaling up new technologies/knowledge which they could consider while up scaling the new technologies IRRI is promoting (Annexure B).[7] This work, commissioned by IRRI, is primarily meant to explore new partnerships in Odisha to strengthen technology promotion among farmers as well as to support the EAS system in Odisha to improve its performance.

This paper is organized as follows: Section 2 presents the methodology (research questions and data collection) followed for undertaking this study. Section 3 focuses on the status of EAS in Odisha as described through the roles played by key stakeholders, such as public organizations, NGOs, international centers, agri-business companies. Section 4 gives the generic challenges in extension delivery in the State, and Section 5 concludes with recommendations and policy implications for strengthening EAS in Odisha for consideration of both IRRI and the Government of Odisha. Additionally there is an Annexure at the end that details the tools and methods used for data collection in the project location, as well as proceedings of the workshops conducted as part of this project.

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[5]DoAFE. 2018. Activity Report of Department of Agriculture and Farmers' Empowerment during 2017-18 and Programmes for 2018-19. Department of Agriculture and Farmers' Empowerment, Government of Odisha, Odisha.

[6]IRRI, CRISP and ICAR-CIWA. 2018. Report on the Capacity Needs Assessment of Extension and Advisory Service (EAS) Providers in Odisha, 3-4 July 2018, Bhubaneswar, Odisha. http://crispindia.org/wp-content/uploads/2015/10/REPORT-IRRI-CRISP-CIWA-CNA-BHUBANESWAR.pdf

[7]IRRI and CRISP. 2018. Proceedings of the Workshop on Scaling Up Knowledge, 15-16 May 2018, Bhubaneswar, Odisha. http://crispindia.org/wp-content/uploads/2015/10/PROCEEDINGS-SCALING-UP-15-16-MAY.pdf

2. METHODOLOGY

We initiated this study by exploring the pluralistic EAS landscape in Odisha (with more focus on rice) to understand the types of EAS interventions from different providers, the constraints/challenges they face in provision of services, and then diagnose the critical bottlenecks in the institutional and policy environment that constrain promotion and application of new knowledge (that would result in increased productivity and income for farmers).

2.1 Research Questions

- Who are all those involved in EAS in Odisha?
- What are their mandates and what main functions do they perform?
- What approaches and tools do they use in EAS provision?
- Are these approaches and tools addressing the key constraints farmers face?
- What constraints do EAS providers face in EAS delivery?
- What types of collaborations do they foster while implementing the EAS interventions?

2.2 Data Collection

At the beginning of the study the team undertook a desk review of secondary literature available. This was followed by an actor mapping at the State level and in three select districts (Dhenkanal, Koraput and Balasore). Both quantitative and qualitative data needed to answer the above research questions were gathered using a checklist developed primarily for this study.

Key informant interviews (KIIs) of secondary stakeholders were supplemented with focus group discussions (FGDs) with the primary stakeholders (i.e., women farmers/men farmers/SHG members, etc.) in all the three districts.

Secondary data sources were referred wherever needed to understand the agricultural scenario of the study locations, and to identify the key actors prior to the study. Data were analyzed and written up in the form of a report. More details of the fieldwork are presented in Annexure A.

3. EXTENSION AND ADVISORY SERVICES IN ODISHA

Over the past two decades or so, the extension and advisory services (EAS) provision in Odisha has become more pluralistic. Beyond the public sector extension providers represented by the line departments of Agriculture, Horticulture, Animal Husbandry, and Fisheries departments, and the ICAR-sponsored Krishi Vigyan Kendras (KVKs) and Agricultural Technology Management Agencies (ATMAs), a wide range of other agencies representing the private sector, such as Non-Governmental Organisations (NGOs) and producer organizations have emerged in this State.

Every district in this region has a KVK and all districts have established ATMAs. Performance of these units varies widely across the districts. ATMA brought in additional funds and manpower for extension. Establishment of an Institute on Management of Agricultural Extension (IMAGE) at the State level also brought about a more systematic approach to training extension staff. Increasingly the Odisha Livelihood Mission (OLM) is also investing in agriculture, especially in strengthening the organizational and technical capacities of rural women engaged in agriculture. These programmes have trained several para extension workers/community knowledge workers. In Odisha, the Department of Forests and the agencies involved in welfare of tribal communities (e.g., Odisha Tribal Empowerment and Livelihood Programme Plus under the SC and ST Development Department) are important players in EAS provision as a large section of the tribal population lives in forest areas where collection and sale of non-timber forest products is a major livelihood option.

Though several new approaches to strengthen extension (use of videos, mobile phone advisories, field schools and video conferencing) have been tried in Odisha, the range of services or the quality of service delivery hasn't shown any remarkable improvement. The State Agricultural Policy of Odisha noted that the 'present system of input-supply oriented extension work, where stress is on supplying inputs like seeds, pesticides, etc., to the farmers, will need to be replaced with knowledge-supply oriented extension work, where stress will be upon providing knowledge input to the farmers about the appropriate technology and appropriate agronomic practices' (GoO 2013)[8].

Though several private agri-input companies, NGOs and producer organizations (producer cooperatives) do exist, and some are involved in EAS provision, there is very little coordination or knowledge flow among the different actors, including those in the public sector. There are several institutional and policy bottlenecks that constrain organizations from collaborating with each other. Odisha has more than 100 Farmer Producer Organizations (FPOs) supported by Small Farmers' Agri-Business Consortium (SFAC) and the National Bank for Agriculture and Rural Development (NABARD) (as of March 2017).

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[8]GoO. 2013. State Agriculture Policy. Department of Agriculture, Government of Odisha.
http://agriodisha.nic.in/content/pdf/State_Agriculture_Policy_2013_e.pdf

With farmers facing new challenges linked to sustainability, climate change, marketing (including remunerative prices, new standards and regulations) and small farm mechanization and diversification to high value crops, there is a need to retrain/re-equip existing extension personnel. The other two challenges EAS faces currently are: increasing involvement of women in agriculture and the need to address nutrition problems. There is also a need for developing new capacities at the individual, organizational, and enabling environment levels among EAS providers (AESA 2016)[9] so that EAS could serve farmers better.

The main roles of these different agencies are presented below.

Table 1: Public sector organizations working directly with farmers on a large scale and having extension as an important role supporting farmers with Extension and Advisory Services

No.	Organization	Roles
1.	**Directorate of Agriculture & Food Production**	Transfer recommended crop production technologies to farmers through demonstrations, training, farmer field schools, personal contact and group meetings; Promote awareness about government schemes/programmes for agricultural development; Apart from these they are also engaged in pest surveillance, distribution of soil health cards, distribution of subsidized inputs, mini kits etc.
	District/Block level	There are 30 agriculture ranges headed by Deputy Directors of Agriculture (DDA) with a group of specialists to help and administer various developmental activities of the range. At the sub-district level, 80 agricultural districts are headed by a District Agriculture Officer (DAO) supported by a group of technical officers to monitor and supervise the various activities for overall development of the agriculture sector. At the block level, there are Assistant Agricultural Officers (AAOs) with a staff consisting of an Agriculture Overseer (AO) and Village Agricultural Workers (VAW) to monitor agricultural activities in all the 314 blocks of the State. The AOs & VAWs mostly function at the Gram Panchayat (GP) **level** and most often deal directly with the day-to-day issues of farmers.
2.	**ATMA**	It is an autonomous institution set up at the district level responsible for coordination and management of extension activities. It develops the strategic research and extension plan (SREP) and organizes several extension programmes from its own budget; and these include exposure visits, trainings, demonstrations, exhibitions, farmer scientist interactions, field days, etc.
	District level	The Deputy Director of Agriculture (DDA) acts as Project Director of ATMA and is assisted by a Deputy Director at the district level. At each block level, there is one Block Technology Manager (BTM) and two Assistant Block Technology Managers (ABTM). The AAO acts as

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[9] AESA. (2016). Assessing Capacity Needs of Extension and Advisory Services: A Guide for Facilitators. http://www.aesa-gfras.net/Resources/file/Facilitators%20Guide%20Final.pdf

		the BTT Convener. Each block has a farmer advisory committee that meets every month. One farmer friend is available for every two villages and he/she supports ATMA activities at the village level.
3.	**Krishi Vigyan Kendra (KVK)**	Odisha has 33 KVKs of which two are under ICAR and the rest are under the administrative control of Odisha University of Agriculture and Technology (OUAT). All KVKs perform the mandated activities funded primarily by ICAR, namely, on farm testing (OFT), front line demonstrations (FLD), training programmes for practicing farmers, farm women, rural youth and extension personnel and different extension activities such as field days, kisan melas, exhibitions, etc. It also organizes Research Extension Linkage meetings every month which has members from DOA, ICAR/SAU institutes, select NGOs and farmers. KVKs also provide mobile advisory service (SMS) to its registered farmers. Each KVK has sanctioned staff strength of one Programme Coordinator and six Subject Matter Specialists.
4.	**Directorate of Horticulture (DoH)**	Promoting horticultural crops (fruits, vegetables, flowers, coconut, spices, potato, betel vine) by making available quality planting materials, and implementing several State and Central Sector programmes (MIDH, PMKSY) that involve infrastructure development; facilitating market linkages and distribution of inputs and subsidies. It also organizes training of farmers (within and outside the State), and gardeners, exposure visits and awareness campaigns. Provides training to departmental staff and rural youth for self employment through its three training centres located at Khurda, Kalinga (Kandhamal) and Nildungri (Sambalpur).
	District level	Activities at the district level are coordinated by the Deputy Director (Horticulture), and at the block level by an Assistant Horticultural Officer.
5.	**Institute on Management of Agricultural Extension (IMAGE)**	This is a State-level training institute under the Department of Agriculture and Farmers Empowerment – set up to train the middle and senior level officials of agriculture and allied sectors on different technical, behavioral and managerial aspects. It has a 12-member faculty to organize training, and it also invites resource persons to supplement training. IMAGE also prepares the State Extension Work Plan under the Sub Mission on Agricultural Extension implemented at the State level. It also supports capacity development of ATMA staff, and organizes State-level Krishi Mahotsava. It also serves as the State resource centre and examination centre for the Post Graduate Diploma in Agricultural Extension Management (PGDAEM) and it conducts the Diploma in Agricultural Extension Service for Input Dealers (DAESI) programmes conducted by MANAGE.
6.	**Regional Institution on Training and Extension (RITE)**	Three such centers in the State (Dhenkanal, Bolangir and Ganjam districts). It offers induction (one year) and refresher training to Village Extension Workers; and vocational training programmes for farmers.
7.	**Directorate of Soil Conservation and Watershed**	Implements the Integrated Watershed Management Programme (IWMP) in selected clusters that involves promotion of community based organizations (CBOs), such as SHGs and User Groups and

	Development	Watershed Committees (WCs); training of CBO members, and organises exposure visits. It also promote soil and moisture conservation measures (e.g., trenching), construction of water harvesting structures (e.g., checkdam), and promotion of dryland horticulture and plantations.
8.	**Department of Animal Husbandry & Veterinary Services**	Concentrates on livestock development activities across the State, such as improving the genetic potential of livestock through organized breeding, provides quality livestock health care services and educates livestock owners on modern animal husbandry practices. It operates through Veterinary Hospitals and Livestock Aid Centres. It provides advice to livestock farmers on care and management, feeding and disease control of animals through skill upgradation trainings, distribution of leaflets, newspaper articles, and radio and TV programmes, as well as organization of infertility camps. It is also involved with fodder promotion and promotion of dairy entrepreneurs.
	District level	Chief District Veterinary Officer (CDVO) leads the activities of the department. Veterinary Dispensaries at the block level and livestock Aid Centres at the Panchayat level are the main points of contact for farmers that offer both veterinary services (artificial insemination, vaccination, deworming, health management, etc.) and animal husbandry services (fodder cultivation, awareness campaigns and feeding management).
9.	**Department of Fisheries (DoF)**	Promoting scientific fishing practices (marine, brackish water and freshwater fisheries) through extension activities (e.g., training); forming SHGs and Cooperatives to support fish marketing and implementation of welfare schemes (e.g., insurance). It has hatcheries that produce better fish seed; and implements the fish farmers' development agency (FFDA) programme in all districts.
10.	**Odisha Livelihood Mission (OLM)**	OLM is an independent society under the Department of Panchayati Raj and Rural Development, Government of Odisha. It aims at mobilization of poor into SHGs that are federated at the Gram Panchayat level as GPLF (Gram Panchayat Level Federation). It aims to link poor households to credit and markets and build their capacities and skills for gainful and sustainable livelihoods development.
	District level	OLM is headed by a District Project Manager at the district level. At the block level, there is a Block Project Manager and two coordinators, and at the community level OLM has community resource persons named as Krishi Mitra, Prani Mitra and Bank Mitra who are trained by master trainers from the State mission.
11.	**Scheduled Tribe & Scheduled Caste Development OTELP Plus (Odisha Tribal Empowerment and Livelihood Programme)**	The Odisha Tribal Empowerment and Livelihoods Programme Plus (OTELP Plus) aims to ensure that livelihoods and food security of poor tribal households are sustainably improved through promoting a more efficient, equitable, self managed and sustainable exploitation of the natural resources at their disposal and through off-farm/non-farm enterprise development. The programme adopts a strategic participatory approach among all stakeholders. Communities are considered as the primary stakeholders who are facilitated by the NGOs followed by technical backstopping from

other institutions. The programme adopts an integrated micro watershed approach covering a cluster of 10-12 micro watersheds situated contiguously with an approximate area of 500 ha. The programme aims to enhance the natural resources-based livelihood activities of poor tribal communities and also enhance all kinds of livelihood-creating wage employment. The livelihood profile of the poor communities in the programme areas covers different activities, such as wage employment, agriculture, sale of forest products, migration, etc.

Though the State has a wide range of public sector EAS providers directly engaged in extension and advisory service provision (as presented in Table 1), many of these organizations face shortage of manpower as several vacancies at the field level remain unfilled. Apart from these, implementation of several Central and State supported development schemes leave little time for staff in these organizations to devote quality time to extension-related functions. These are discussed in greater detail in the next section.

Apart from those discussed in Table 1, there are also other public sector organizations that provide a supportive role in EAS. Though their main task is not about EAS provision per se, their activities do support EAS. These are discussed in Table 2 below.

Table 2: Public sector organizations providing a supporting role in Extension and Advisory Services

No.	Organization	Roles
1.	**National Bank for Agricultural and Rural Development (NABARD)**	A refinancing agency for financial institutions offering production credit and investment credit for promoting agriculture and developmental activities in rural areas; issues district level credit plans for financial institutions; supervises Cooperative Banks and Regional Rural Banks (RRBs); and designs new development schemes for the implementation of GoI's development schemes. Apart from these, it promotes capacity building of farmers by supporting formation of Farmers Clubs (FCs), Joint Liability Groups (JLGs), and SHGs. It also implements micro-entrepreneurship development programmes and livelihood entrepreneurship development programmes among SHG members, which also involves training of entrepreneurs through its partners (NGOs, FPOs, etc.).
2.	**Odisha University of Agriculture and Technology (OUAT)**	It imparts education on agriculture and allied subjects through 10 constituent colleges, one Centre for Post Graduate Studies (CPGS) and ten Agro Polytechnic Centres. Research activities are carried out in 8 Regional Research and Technology Transfer Stations (RRTTS), 4 Regional Research and Technology Transfer Substations (RRTTSS) and 7 Commodity Research Stations (CRS) in addition to 52 All India Coordinated Research Projects (AICRPs) in operation. OUAT has signed MoUs with overseas and national institutes/ organizations to further education and research activities in the university. The Directorate of Extension Education (DEE) transfer technologies to the farmers' field through the 31 KVKs (affiliated to OUAT), Information and Communication Section, University Extension Block Programme, Distance Education Programme, Video Project, ATIC and

		Odisha Gender Resource Centre.
		OUAT has ten Agro-polytechnic centres in 10 agro-climatic zones of the State, out of which six impart trainings in agriculture sector, two in horticulture and one each in animal science and pisciculture. They produce grassroots technical manpower for agriculture and allied sectors by creating para extension workers and para professionals.
3.	**Odisha Agro-Industries Corporation (OAIC)**	This corporation is under the administrative control of the Department of Agriculture in Odisha and engages in executing different schemes/programmes of line departments. Performs distribution of agricultural machineries, improved implements, tools and inputs like chemical fertilizer, bio fertilizer and organic manures; provides irrigation capability to the farmers through energisation of shallow tubewells, deep borewells, dugwells, pumpsets, surface lift project, sprinkler and direct lift projects; promotes manufacturing and marketing of bio fertilizer and feed for cattle, poultry, duck, deer, pig, etc.
4.	**Agricultural Promotion & Investment Corporation of Odisha Limited (APICOL)**	Promotes agro-based industries, and food processing industries including commercial agriculture, horticulture, animal husbandry, fisheries; generally promotes enterprises in agriculture and allied sectors. The corporation acts as the channelizing agency for release of subsidy under various schemes of the State Agriculture Policy 2008 as well as New Agriculture Policy 2013, including farm mechanization under various Central and State Plan schemes including Rashtriya Krishi Vikas Yojana (RKVY), and provides escort services to the houses engaged in agri-business. APICOL acts as the Virtual Office of Agricultural and Processed Food products Export Development Authority (APEDA) and also acts as the State Agency for Small Farmers' Agri-Business Consortium (SFAC) under the Ministry of Agriculture, Government of India.
5.	**Odisha State Seed and Organic Products Certification Agency (OSSOPCA)**	Entrusted to perform certification works for organic farming and farm products in the State of Odisha. It is responsible for quality seed certification and production as well as to make available seeds with the desired quality, of different crop varieties to the farmers of Odisha. It performs its defined activities within six broad phases of certification. It verifies: the genetic identity of different crop varieties, high degree of physical purity and germ immunity, and absence of other crop seeds, weed seeds and all designated seed borne diseases, thereby qualifying seeds for the minimum prescribed standards – both under laboratory and field conditions. A separate agency, namely the Odisha State Organic Certification Agency (OSOCA), has been carved out of OSSOPCA to ensure organic production certification services to the operators/grower groups through a reliable certification programme formulated as per NPOP guidelines.
6.	**Odisha State Seed Corporation (OSSC)**	Focused on production of certified seeds by organizing seed production programmes through seed growers at various places in the State of Odisha which it markets under the brand name 'ORISEEDS'.

		It has been designated as the nodal agency for production, procurement, processing and supply of quality seeds to the farmers of the State. It implements the Seed Village Programme for production of certified paddy and non-paddy seeds through seed growers.
7.	**Orissa State Cooperative Milk Producers' Federation Limited (OMFED)**	An apex level dairy cooperative society with 13 dairy plants. It integrates the milk producers in rural areas with consumers in the urban areas with an enterprising aptitude. The main activities include promoting chilling/processing of procured milk as well as production of milk & milk products through the dairy infrastructures owned and managed by the federation as well as its affiliated unions. It has 1408 OMFED AI Centres functioning in the State. There are 5,579 Milk Producers Co-operative Societies (MPCS) with 2.62 lakh members under OMFED in all districts of Odisha. OMFED is operating the RKVY dairy projects in all the 30 districts of Odisha.
8.	**Rural Self Employment Training Institutes (RSETI)**	Rural Self Employment Training Institutes (RSETIs) are established in all districts of Odisha. RSETIs are managed by banks with active co-operation from the Government of India and the State Government. RSETIs are engaged in skill training and skill upgradation of rural BPL youth to mitigate the unemployment problem. Rural unemployed youth in the age group of 18-45 are trained in these institutes. RSETIs provide short duration residential trainings on skill development and entrepreneurship. The trained candidates are also provided handholding support for 2 years after training is over. The Odisha Livelihoods Mission (OLM) reimburses the training cost of BPL candidates trained at RSETIs.
9.	**Coconut Development Board, State Centre, Odisha**	Supports formation of Coconut Producer Societies and Technology Demonstration in coconut; provides replanting subsidies; supports establishment of regional nurseries for quality coconut seedlings.

ICAR Institutes: Odisha has a number of ICAR institutions which are primarily focused around technology generation but are also involved in limited extension activities. These include: the ICAR-National Rice Research Institute (NRRI), Cuttack; ICAR-Central Institute for Freshwater Aquaculture (CIFA), Bhubaneswar; ICAR-Indian Institute of Water Management (IIWM), Bhubaneswar; ICAR-Central Institute for Women in Agriculture (CIWA), Bhubaneswar; Regional Centre of ICAR-Central Tuber Crops Research Institute (CTCRI), Bhubaneswar; Regional Centre of ICAR-Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Koraput; the Central Horticultural Experiment Station (CHES) of ICAR-Indian Institute of Horticultural Research (IIHR), Bhubaneswar; and the ICAR-Foot and Mouth Disease Lab, Bhubaneswar. All these centres are involved in organization of training, especially of master farmers sponsored by line departments, produce technology bulletins, and also educate visitors seeking technological solutions and those who come for exposure visits. Both NRRI and CIFA have set up agri-business incubation centres on their campus to guide and support agripreneurs. Extension scientists in these ICAR centres are also involved in extension research.

International Centres: Apart from these national research centers, the Government of Odisha has signed MoUs with several international research organizations for the development of agriculture in the State. These include the International Rice Research Institute (IRRI), the International Center for Agricultural Research in the Dry Areas (ICARDA), the International Maize and Wheat Improvement Center (CIMMYT), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the World Vegetable Center (AVRDC).

Collaboration with IRRI specifically focuses on: strengthening the formal and informal seed systems; ensuring local availability of quality seeds of stress tolerant rice varieties; characterization and management of rice fallows by promoting other suitable crops, particularly pulses; promotion of rice crop manager for more efficient and cost effective management of rice crops; establishment of a knowledge bank for the State of Odisha; empowerment of farmers to choose suitable technology options; capacity building of agricultural development officials, extension workers, scientists, progressive farmers and students; reducing crop insurance premium by linking it with risk reducing technologies such as flood or drought tolerant rice varieties; and real time assessment of crop damage to settle claims quickly (DoAFE 2018).[10]

Collaboration with other centres focus on the following:

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): In collaboration with the State government it is implementing various projects – 'Introduction and expansion of improved pigeonpea (Arhar) production technology in rainfed upland ecosystems Odisha', 'Promotion of improved chickpea varieties in rice based cropping systems of smallholder farmers in Odisha', and the 'Bhoochetana' flagship programme for promoting holistic approach of soil management.

World Vegetable Center (AVRDC): It is working in the State by implementing a collaborative project 'Improve mung bean and urd bean productivity in Odisha State'.

International Maize and Wheat Improvement Center (CIMMYT): It is implementing the project, 'Stress-resilient maize for Odisha' in collaboration with the State government.

International Center for Agricultural Research in the Dry Areas (ICARDA): Two projects, 'Enhancing pulse production for nutritional security and strengthening pulse based sustainability' and 'Improved pulse production in Odisha' are implemented in collaboration with the State government.

Most of these programmes involve technology testing, demonstrations, and training of farmers.

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[10]DoAFE. 2018. Activity Report of Department of Agriculture and Farmers' Empowerment during 2017-18 and Programmes for 2018-19. Department of Agriculture and Farmers' Empowerment, Government of Odisha, Odisha.

Odisha has several NGOs working for agricultural development. Table 3 below lists some of these NGOs with whom we interacted during fieldwork. Although not an exhaustive list, it is enough to illustrate the wide range of NGOs and their varied scale of operations.

Table 3: NGOs working for agricultural development in Odisha

No.	Organization	Roles
1.	**ACCESS Development Services, Dhenkanal**	A livelihood support organization with mandated activities – mobilizing farmers into groups and forming FPOs; production enhancement by conducting Famer Field Schools (FFS) and demonstration in association with KVKs; promote value chain and market linkage along with OLM. ACCESS is promoting four FPOs in two districts of the State, funded under DFID PACS.
2.	**New Odisha, Dhenkanal**	Established in 2008 with initial focus on capacity building of forest dwellers; later shifted to promotion of aromatic plants cultivation.
3.	**Pragati, Koraput**	Works in the field of facilitation and strengthening of people's organizations – Village Development Committees (VDCs), Village Monitoring Committees (VMCs), Village Forest Committees (VFCs), Self Help Groups (SHGs), Farmers Clubs (FCs), producers groups and their federations at panchayat, block & district level; Natural resource management-community forest management, soil and water conservation, creation of irrigation infrastructures; sustainable agriculture through organic practices and disaster risk reduction and climate change awareness. Its outreach takes care of 5 Blocks, namely Koraput, Kotpad, Nandapur, Lamtaput and Dashmanthpur in Koraput district covering around 45,000 families, as well as the Forest Dependent People's Network in 14 Blocks of Koraput district.
4.	**South Orissa Voluntary Action (SOVA), Koraput**	Implements programmes on community health, quality education, sustainable livelihood, village governance, child rights; and activities include information dissemination, capacity building and advocacy. SOVA operates in 3 districts of Odisha State: Koraput, Malkangiri and Nabarangpur. SOVA, in collaboration with UNICEF, has established Dhimsa FM radio station based at Chhapar village of Umuri Panchayat in Koraput district, which focuses on rural development issues and provides a forum to the local villagers to air their concerns.
5.	**MS Swaminathan Research Foundation (MSSRF), Jeypore (Koraput)**	Carries out research and development in biodiversity conservation, sustainable agriculture, tribal livelihood, food and nutritional security, grassroot institutions, bio-industrial watershed and knowledge management. It has various interventions in 94 villages belonging to 14 Gram Panchayats in Jeypore, Kundra and Boipariguda blocks, addressing 27,000 people residing in 5,700 households. The work done by MSSRF scientists has led to Koraput being declared by FAO as a Globally Important Agriculture Heritage Site (GIAHS).
6.	**Alternative Rural Movement (ARM), Balasore**	Works in 515 villages of Baliapal, Bhograi and Jaleswar blocks of Balasore in the fields of health, education, women's empowerment, sustainable agriculture, natural resource utilization, environment conservation, information technology, relief and rehabilitation.

No.		
		ARM hosts a community radio station 'ARM Radio Smile' which broadcasts two programmes on sustainable agriculture namely, Krishi Darshan and Krishi Soochana. Organized 300 Women Self Help Groups (WSGs) across 100 remote rural villages in 16 Gram Panchayats, serving a population of 1,018,748 (21,376 families) of Balasore district in Odisha State.
7.	**Sparsha, Balasore**	66 Farmers Clubs formed in Balasore promoting different activities, such as fisheries, mushroom cultivation, custom hiring, etc.
8.	**Balasore Social Service Society (BSSS), Balasore**	Operates in four districts of Odisha - Bhadrak, Balasore, Keonjhar and Mayurbhanj and promotes stress tolerant cultivars, insurance, soil testing, farmers' club, and farmers' hub.
9.	**Professional Assistance for Development Action (PRADAN), Bhubaneswar**	Focuses on social mobilization, food security, natural resource management, livelihood, market linkage and governance. It is present in the six poorest districts of Odisha, divided into two development clusters viz., North Odisha DC and South Odisha DC. It works in 1399 villages of 166 GPs in 16 blocks with 7151 SHGs, 82 GPLFs and six Federations.
10.	**Foundation for Ecological Security (FES), Bhubaneswar**	Works across Angul (2 blocks), Dhenkanal (2 blocks), Keonjhar (2 blocks) and Koraput (3 blocks) districts in Odisha by assisting local communities and habitation-level institutions and their federations on strengthening inter-linkages between forests and farming systems. Tribal villages have been conferred legal rights entitling them to use, access, protect, and conserve forest resources by claiming Community Forest Rights (CFR) under the Forest Rights Act (FRA) with the support of partner NGOs. The essence of the efforts of FES lies in intertwining the principles of nature conservation and local self-governance in order to accelerate ecological restoration, as well as improve the living conditions of the poor.
11.	**Digital Green, Bhubaneswar**	The Digital Green approach for agriculture involves: (a) participatory identification of content and local production of low cost videos to improve agricultural practices; (b) group discussion that uses videos as a basis for mediated instruction, where a mediator encourages the audience to discuss the video content; and c) follow-up home visits to support and monitor the adoption of the practices or behaviors being promoted through the videos.

Some of the input companies are also involved in providing EAS support mainly through their dealers. The notable ones include Indian Farmers Fertilizer Cooperative (IFFCO) and Krishak Bharati Cooperative (KRIBHCO) (Table 4). Again these are only illustrative as a number of other agri-business companies involved in seeds and fertilizers also support organization of demonstrations and farmer trainings on a limited scale.

Table 4: Extension activities of IFFCO and KRIBHCO

No.	Organization	Roles
1.	**IFFCO**	IFFCO has 17 field offices covering all the districts in Odisha State. It promotes pulse production programme along with OUAT; for instance, in 2017 it organized cluster demonstration programmes with KVK-Khurda. It has a mobile soil testing van that provides free

No.		Roles
		services for soil testing to farmers. In 2018, it established an online purchase facility – 'iffcobazar.in'.
2.	**KRIBHCO**	A cooperative society with two branches in Odisha viz., KRIBHCO Cooperative and KRIBHCO Fertilizer Private Limited (KFL), it manufactures fertilizer, mainly neem-coated urea and bio-fertilizers.

Another notable private sector EAS provider is Sakthi Sugars Pvt. Ltd. Its unit established in 1994 at Dhenkanal supports its contractual growers by supplying them with all the needed inputs with assured quality at subsidized rates along with planting material. Moreover it offers technical services like crop demonstration for its members with the collaboration of DoA and KVK experts. Before the harvest season its cane officers conduct a maturity survey within the growing regions and assess the area with harvest-ready sugarcane fields. This is followed by sequential harvesting of the produce from each locality in order to feed the processing factory uninterruptedly. The firm even supplies labor to harvest the crop and later deducts these charges from the payments due, at an interest free rate. Sakthi Sugars believes in having a harmonious relationship with its growers and in keeping with this offers support services to them. This is the fundamental reason for its success. It also works in a convergence mode with district ATMA as the programmes of ATMA are channelized through the firm to benefit the growers.

Media (print, radio and TV) too play an important role in spreading information about new agricultural technologies. Some of these initiatives in Odisha are presented below, in Table 5.

Table 5: Involvement of media in sharing information and knowledge on agriculture

No.	Organization	Roles
1.	**Krishi Jagran**	A magazine exclusively dedicated to agriculture published every month in 11 Indian regional languages (including Odiya), and covers mainly agricultural topics, sustainability, input and services, research events, agricultural events, interviews with different stakeholders in agriculture and allied fields. Its regional office was established at Bhubaneswar in 2018.
2.	**Community Radio Association - Odisha**	Launched on 23 May 2015 with a membership of seven functional radios and another 25 LoI (Letter of Intent) holders. It acts as an advocacy body for all the community radio stations in Odisha. Radio Namaskar, Puri; Voice of SOA Community, Bhubaneswar; Ravenshaw Radio, Cuttack; Radio Sanskar, Jagatsinghpur; Radio Muskan, Kandhamal; and Radio Surabhi, Nayagarh are some of the most prominent community radio stations in the State. Community Radio stations broadcast a number of locally relevant programmes pertaining to agricultural and rural development.
3.	**ETV (Annadata)**	Although E-TV Odia is a variety channel with strong entertainment and news content, it also telecast a special agricultural programme called 'Annadata'. It is an exclusive daily educational, visual based program of ETV network, which is tailored to the current season, relevant to a region/situation, farming centric, and field-based with focus on implementable and economically viable technologies of not only agriculture but a wide range of allied activities.

4.	**All India Radio**	There are 14 All India Radio stations working in Odisha viz., Cuttack, Rourkela, Baripada, Berhampur, Bhawanipatna, Bolangir, Joranda, Jeypore, Keonjhar, Puri, Rairangpur, Sambalpur, Soro and Deogarh. 'Farm and Home' programmes are broadcasted by all stations of AIR. Programmes are designed based on the local day-to-day needs of the farming community, incorporating the latest information and technology for best agricultural output. Programmes are broadcast daily in the morning, noon and evening with average duration of 60-100 minutes/day for rural women, children and youth. In February 2004, AIR expanded its Agriculture Broadcasts with the launch of 'Kisanvani' (in collaboration with the Department of Agriculture & Cooperation, Ministry Of Agriculture), to keep local farmers updated on daily market rates, weather reports, and day-to-day information relevant to their respective areas at the micro level.

Both national TV channels (DD-Odiya and DD-Kisan) also telecast programmes on agriculture daily. Apart from these, the widespread availability of mobile phones and internet has significantly influenced the availability and access to information on agriculture for farmers and extension workers. However, the State still lags behind many other states in India in terms of tele-density as well as rural electrification and these limit the potential of using ICTs in the State. For instance, the overall tele-density in the State (as on 31 December, 2017) was 79.61% compared to 91.90% for all of India (TRAI 2018).[11] Similarly, Odisha, with 94.37% village electrification, lags behind the national average (99.25%). In Odisha only two districts – Sonepur and Jharsuguda – have achieved 100% village electrification. Four districts, Koraput, Malkangiri, Kandhamal and Rayagada have remained among the lowest achieving districts (69-85%) and all others are above 90% (GoO 2018)[12].

As seen from the above discussion, several organizations are involved in agricultural development in Odisha and they employ a variety of approaches. However, majority of the rural producers in Odisha are not accessing any technical information. For instance, as per NSSO survey 70th Round,[13] during the period from January to June 2013 (NSSO 2013)[14] , only 19.2% of the cultivating agricultural households accessed any form of technical advice from the varied sources (extension agent, KVK, agricultural college/university, private commercial agents, progressive farmers, radio/TV/newspaper/internet, veterinary department, NGOs, any agent). This could be due to some of the limitations present in extension and advisory service delivery.

[11]https://trai.gov.in/sites/default/files/PR_No.23_TSD_Eng_16022018.pdf
[12]GoO. 2018. Odisha Economic Survey 2017-18. Planning and Convergence Department, Directorate of Economics and Statistics, Government of Odisha. http://pc.odisha.gov.in/Download/Economic_Survey_2017-18.pdf
[13]NSSO. 2014. Key Indicators of Situation of Agricultural Households in India. NSS 70th Round. National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India. http://mospi.nic.in/sites/default/files/publication_reports/KI_70_33_19dec14.pdf
[14]NSSO. 2013. Some Aspects of Farming in India. NSS 70th Round. National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India. http://mospi.nic.in/sites/default/files/publication_reports/NSS_Report_573_16feb16.pdf

4. GENERIC CHALLENGES IN EXTENSION DELIVERY

Manpower Shortages

Staff shortage for extension activities is widespread across all line departments in the State. More vacancies exist at the block and Gram Panchayat levels. For instance, the vacancy at the AAOs (block level Assistant Agricultural Officers) level is 13.66% and at the VAW (GP level Village Agricultural Workers) level it is 27.75% in the State (MANAGE 2017)[15]

Under DDA, Koraput, 14 out of the 28 positions of AAO (at the block level) are vacant. Out of the 148 positions of Agricultural Overseer, only 89 are filled. In Koraput block, out of the 14 GPs, only 5 GPs have an Agricultural Overseer currently (May 2018). In Balasore, under the District Agriculture Office (that covers three blocks viz., Balasore, Remuna and Basta), only one Agricultural Overseer is present as against the requirement of two, and one VAW is in charge of 2-3 GPs against the requirement of one VAW per GP. In Dhenkanal, out of the 126 posts of VAWs, only 72 are filled (42.86% vacancies). So one VAW has to manage 3-4 GPs instead of just 1-2 GPs. Though ATMAs are supposed to have 1 BTM and 2 ATMs per block, in many districts many of these positions also remain vacant. In Koraput, for instance, only seven blocks have BTM (out of 14 blocks). Out of 28 ATM positions, only 23 are filled.

A similar situation prevails in the Department of Horticulture too. In Koraput, out of the 9 positions of Assistant Horticultural Officer (AHO), only 5 are filled. In Dhenkanal too, out of 8 AHO positions, only 5 are filled. In the case of the Department of Animal Husbandry & Veterinary Services, many of the Livestock Inspector positions are vacant. For instance, in Balasore, out of the 103 posts of Livestock Inspector (under CDVO, Balasore) only 67 are occupied. Almost 50% of contractual livestock inspector positions are also vacant there. Staff shortage is also adversely affecting the performance of the Directorate of Watershed & Soil Conservation too. For instance, in Balasore, out of the total sanctioned staff strength of 67 under PD, Watershed, only 24 positions are filled, leaving 43 vacant.

Odisha has a number of para extension staff – identified and promoted by programmes such as ATMA and OLM. ATMA has two Krushak Sathis (practicing farmers at each GP level) and OLM employs three types of community resource persons (Krishi Mitra, Prani Mitra, and Udyog Mitra) whose minimum qualification is 8th class pass, at the GP level. Both ATMA and OLM provide training to these para extension workers to undertake their functions. However, the morale of Krushak Sathis under ATMA are low, especially due to the very limited remuneration they receive for their services (Rs 6000/year). All NGOs have their own staff, but they too face shortage of manpower (especially for working in remote areas) and they are also facing several restrictions (imposed by the Central Government) in accessing funds from international donors, which also affect their ability to recruit an adequate number of qualified staff.

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[15]MANAGE. 2017. Reforming Agricultural Extension Systems in Odisha (unpublished), National Institute of Agricultural Extension Management. Telangana, India

Though the public sector agencies involved in agriculture and rural development in the State is increasingly partnering with NGOs (Box 1), this is not enough to address the shortage of human resources in these departments. Input companies such as IFFCO and KRIBHCO also do not have adequate manpower for organizing extension activities.

Box 1: Partnerships in extension in Odisha
Unlike some of the other states in India, the collaboration among GOs as well as between GOs and NGOs is more vibrant in Odisha. For instance, ATMA-Khurda and the KVK-CIFA are collaborating on promoting line sowing in paddy wherein KVK provides technical backstopping to ATMA under the Bringing Green Revolution to Eastern India (BGREI) scheme. KVK also organizes sponsored trainings for different agencies, such as Odisha Watershed Development Mission, State Employment Mission-Odisha, Coconut Development Board, State Department of Agriculture, and the Directorate of Fisheries. KVK-Balasore in collaboration with NABARD organized awareness programmes on crop insurance. NABARD has been supporting the formation of farmer clubs and farmer producer companies in collaboration with several NGOs in the State. Balasore Social Service Society-Balasore and Pragati-Koraput have been working with IRRI on promotion of 'stress tolerant rice varieties'. JK Trust and BAIF have been supporting the Department of Animal Husbandry & Veterinary Services in promoting Artificial Insemination (AI) services. The NGO, PRADAN, has been supporting OLM on livelihood promotion. The Odisha Livelihoods Mission (OLM), Department of Panchayati Raj, Government of Odisha signed an MoU with the Foundation for Ecological Security (FES) to improve the livelihood portfolio of the rural poor through efficient and effective village level planning. This partnership aims at increasing productivity in agriculture, livestock and forests through capacity building and information technology based planning by FES. Department of Agriculture and Farmer's Empowerment, Government of Odisha signed an MoU with FES to provide technical training on assessing land capability and crop water budgeting in all districts of the State. OLM gets technical support on agricultural technology promotion from both the Directorate of Agriculture and the Directorate of Horticulture. The special programme for promotion of millets in tribal areas of Odisha is implemented in collaboration with NGOs, where the Directorate of Agriculture acts as a facilitating agency. OTELP also implements many of its livelihood promotion programmes in partnership mode with NGOs.

There is an urgent need to fill the existing vacancies in the public sector as this is critical for strengthening extension and advisory provision to farmers, and also for effective implementation of the State and Central Sector schemes that mainly involve distribution of subsidies and subsidized inputs.

Capacity limitations

With farmers facing new challenges, EAS should have the necessary capacities to support farmers in dealing with these changes. 'Agriculture sector in Odisha faces several challenges like low productivity, low investment, low returns, severe losses due to natural calamities, fluctuating supply of inputs like quality seeds, fertilizer, irrigation and credit, lack of reliable insurance cover, lack of facilities for post-harvest management and marketing, etc.' (DoAFE

2016)[16]. Several documents from the Government of Odisha emphasize the importance for retooling and re-training extension personnel. Keeping these in view, a 2-day capacity needs assessment workshop with key extension stakeholders in Odisha was held on 3-4 July 2018, to help identify the most critical capacity needs that constrain EAS. The workshop identified topics for capacity enhancement at the individual (field level, middle level and senior level) and organizational levels, and the prioritized areas for capacity development are presented in Table 6.

Table 6: Top priority capacity development areas at field, middle, senior and organizational level

No.	Levels	Capacities
1.	Field Level	Technical knowledge and skills Communication skills Market linkage establishment
2.	Middle Level	Team building, leadership, management and liaising Planning, developing programmes, and undertaking Monitoring and Evaluation Convergence, networking, co-ordination and partnership development
3.	Senior Level	Visioning, goal setting, decision making skills, team building, leadership and mentoring Monitoring and Evaluation Policy development and engaging in policy advocacy
4.	Organizational Level	Human Resource Management Adequate infrastructure, adequate logistics and resources to support EAS Leadership and mentorship, team spirit and team building with motivation

Odisha has several institutions involved in capacity development of extension personnel. These include: IMAGE, Bhubaneswar: RITES in three regions namely, Dhenkanal, Bolangir and Ganjam; Water and Land Management Institute (WALMI), Cuttack; Veterinary Officers Training Institute, Bhubaneswar; and Livestock Inspectors Training Institute (Bhanjanagar, Bolangir and Chiplima). IMAGE is also responsible for the two sponsored programmes – DAESI and PGDAEM.

ICAR institutions, SAUs and KVKs are also involved in training of extension personnel. Apart from these the Gopabandhu Academy of Administration, Bhubaneswar, under the Department of General Administration and Public Grievance organises training for senior officers on policy, finance, and administrative aspects. Extension personnel of Odisha also attend the training programmes organised by the Extension Education Institute (EEI), Hyderabad, and also those organised by MANAGE (The National Institute of Agricultural Extension Management), Hyderabad. Staff of OLM attends trainings at the State Institute of

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[16]DoAFE. 2016. Activity Report of Department of Agriculture and Farmers' Empowerment during 2016-17 and Programmes for 2017-18. Department of Agriculture and Farmers' Empowerment, Government of Odisha, Odisha. http://agriodisha.nic.in/content/pdf/Activities_Report_for_2015_16_and_Programme_for2016_17.pdf

Rural Development (SIRD), Bhubaneswar, and the National Institute of Rural Development and Panchayat Raj (NIRD&PR), Hyderabad.

Some of the bigger NGOs, such as PRADAN, FES and MSSRF, have their own staff training mechanisms and smaller NGOs often send their staff for training to many of the above mentioned organisations. IMAGE and RITES organise induction training for newly recruited staff. OLM also has mechanisms for induction training. It has a Human Resource Policy Manual[17] that clearly spells out it strategy on staff recruitment and capacity development.

Even with all these, significant gaps in capacities exist. To address these gaps, it would be useful to organise a review of the existing trainings programmes offered by various organisations to primarily understand their strength and weaknesses with respect to organisation and delivery of training, and to suggest improvements on infrastructure, faculty recruitment and training, quality of different training interventions, human resource planning, developing and mentoring master trainers as well as development of training modules. Though several extension activities, such as training, demonstrations, farm schools and exposure visits are organised by extension staff, there is no specific manual for guidance on how best to organise these. Though the issue is not specific to Odisha,[18] it would be a good idea to develop an extension manual and use that for training field staff engaged in field extension. Field staff get very little training and the weekly/bi-weekly/monthly meetings with the block level officers are not training per se. It is mostly a review of activities and sharing of information on new schemes (implementation guidelines, etc.).

The State level task force on agricultural development (DoAFE 2015)[19] has clearly identified the following gaps in extension delivery (see Box 2). Their report also highlights the need for more emphasis on resource conservation/regeneration technology in land and water management and incentivizing development of irrigation, energy, land shaping, mechanization, and other infrastructures such as threshing floors, godowns, temporary storage houses, value addition units, etc. (in community approach). The report also calls for addressing the poor interaction with extension and farmer system – leading to restricted flow of feedback and technology – and strengthening the Research-Extension-Farmer linkage and feedback mechanisms.

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[17]OLM. n.d. Human Resource Policy Manual. Odisha Livelihoods Mission, Panchayati Raj Department, Government of Odisha. http://olm.nic.in/sites/default/files/hr-manual.pdf
[18]Suresh K. 2018. Extension without an Extension Manual? AESA Blog 89. Agricultural Extension in South Asia. http://www.aesa-gfras.net/admin/kcfinder/upload/files/AESA%20BLOG%2089.pdf
[19]DoAFE. 2015. Rejuvenation of Agriculture, Recommendations of State Level Task Force on Agriculture Development. Department of Odisha, Government of Odisha. http://niti.gov.in/writereaddata/files/Odisha_Report_0.pdf

- Inadequate extension manpower at grassroots level;
- Less focus on material technology/knowledge inputs and more focus on distribution of subsidised inputs;
- Poor availability of appropriate technology specific to micro farming situation;
- Meagre availability of quality inputs at grassroots level in required time;
- Inadequate capacity of extension system in technology dissemination approach;
- Lack of coordination.

Possible strategies

- Develop farmers and farmers' groups to act as facilitator in technology dissemination;
- More focus on use of IT in technology dissemination (information kiosk, community radio, development of crop manager packages);
- GP-level technology demo villages showcasing appropriate farm technologies with direct involvement of KVK, SAU and ICAR research institutes;
- GP-level input outlets involving private partners, rural youth and farmer producer groups;
- Capacity building of all stakeholders.

Need for More Investments

Is the State investing enough on extension and advisory services? Though measuring investments in EAS in the current context is empirically challenging (due to the diverse number of organizations engaged in EAS as well as the difficulty in defining what constitutes investment in extension), a recent ICRIER (Indian Council for Research on International Economic Relations) study noted that "in 2014-15, Odisha spent around 110 million INR on agriculture extension. As a percentage of GDPA, Odisha spends only 0.03 per cent, which is much lower than the national average of 0.16 per cent. Further agriculture extension intensity in Odisha is one of the lowest in the country standing at Rs 19.1 per hectare as compared to the national average of Rs 95.2 per hectare".[20]

Definitely this is a matter of concern as Odisha is spending less on extension and advisory services in comparison to other states in India. Though there has been a quantum jump in the outlay on agriculture and allied sectors (from Rs 7,162 crore in 2013-14 to Rs 14,930 crore during 2017-18)[21] over the years, the public investments in extension seem to be inadequate. The Department of Agriculture and Farmers Empowerment's (DoAFE) field organization is supported by the Non-Plan budget of the State Government. Apart from these the DoAFP receives funds from State Plan and a wide range of centrally sponsored plan schemes and central sector schemes.

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[20]ICRIER. 2018. Agriculture Extension System in India - Review of Current Status, Trends and the Way Forward. Indian Council for Research on International Economic Relations. http://Icrier.Org/Pdf/Agriculture-Extension-System-In-India-2018.Pdf

[21]DoAFE. 2018. Activity Report of Department of Agriculture and Farmers' Empowerment during 2017-18 and Programmes for 2018-19. Department of Agriculture and Farmers' Empowerment, Government of Odisha, Odisha.

If the budgets for agriculture-related livelihood activities of OLM are included, the figures would be much higher. Reliable data related to extension activities of NGOs and private companies engaged in agro-processing and input supply are currently not available. Perhaps it is time to develop a mechanism for tracking investments (both human and financial) in EAS provision in the State, covering all agencies (public, private, NGO etc.).

Though extension-related activities are part of several State and Central Sector programmes, ATMA is the exclusive programme for extension. It is currently funded by the Central Government under the Sub-Mission on Agricultural Extension and Technology. Only 60% is funded by the Centre and the states have to arrange the remaining 40%. ATMA brought in additional funds for extension activities (training, demonstration, exposure visits, exhibitions, farmer-scientist interactions, field days and operational funds for travel, etc). It also brought in additional staff, especially at the block level and below (BTM, ATM, Krushak Sathi), for extension at the district level. For instance, Koraput District spent more than 1.7 crore under ATMA during 2016-17. Over 1.6 crore (Rs 16,893, 115) was spent in Balasore under ATMA during 2017-18. At the district level, each KVK also spent almost 80 lakhs to one crore every year for its core activities, that include technology assessment, demonstrations, and trainings. Some of the KVKs also raised additional funds from ATMA or other line departments. However, it would be useful to note that, while 30-40% of ATMA budget goes for salary and remuneration (BTM, ABTM, Farmer Friend, computer operator, clerk, etc.), more than 80% of the KVK budget goes toward staff salaries and other establishment charges. Lack of adequate operational resources are also constraining KVKs in reaching a greater number of farmers.

Partnerships and Collaboration

Odisha has a reasonably good convergence of line departments and government agencies at the district level. DoA, DoH and OLM collaborate on a number of initiatives. Though Odisha has several cases of GO-NGO collaboration (Box 1), there is scope for more collaboration based on more systematic analysis of capability, expertise, and reach of different agencies. Ideally each district should have a directory of agencies involved in agricultural development with details of their capacities, focus, details of the contact person(s), and programme areas they are interested in. This will definitely help in identifying and nurturing effective partnerships. We observed many a time that selection of partners is not informed by adequate background information and this has been affecting both the quality of delivery and sustained impacts.

District level organizations, such as ATMA or the KVKs, should be responsible for developing this database and it has to be one of their mandated functions. As of now, there is no platform for NGO-GO collaboration at the State or district level, except those for specific programmes where the organizations collaborate to deliver specific results. A few NGOs are also part of the ATMA Governing Board and Research-Extension Linkage Meetings organized by KVKs.

A few organizations shared some of the constraints they face while forging more productive collaborations. For instance, some of the NGOs feel that the GOs are often in a hurry to

achieve targets and are not keen to invest time or resources in strengthening the capacities of user groups. Similarly, most of the partnerships end when the funding is over for the specific tasks (for which partnerships were introduced) and there is no follow up on the deliverables once the funding is over. Another major constraint was the allocation of targets for scheme implementation without examining the location disadvantages (e.g., tribal households having limited capacity to absorb inputs, subsidies and knowledge) or assessment of real demands. Many NGOs also face funding constraints due to restrictions imposed by the Central Government in accessing donor grants from abroad. Though Community Radio is a potential media for reaching far flung regions, they often find it difficult to access details of schemes and programmes of different agencies.

Indeed, there are a lot of lessons and good practices on providing extension services among the practitioners in different organizations, but there is no platform (real or virtual) to share good practices and lessons among EAS providers. In the increasingly pluralistic extension landscape, it would be useful to first create a virtual network of all those involved in EAS provision in the State using a website and through social media (something on the lines of Agricultural Extension in South Asia) so that there can be sharing and learning about ways of organizing and delivering quality advisory services. The virtual network can then emerge as a face-to-face network depending on the interest to tackle common problems and to influence creation of an enabling environment. Ideally Institute on Management of Agricultural Extension (IMAGE) should take a role in this and IRRI could consider incubating this network. CRISP/AESA could be an ideal partner in this initiative.

Scheme implementation vs. Knowledge Support

It appears that most of the extension staff in the different line departments of the State are involved in implementation of schemes that involve distribution of subsidies and subsidies inputs.   For instance, under the National Food Security Mission (NFSM), the activities include distribution of pulse seeds (High Yielding Varieties) at subsidized rate, and subsidized sale of sprayers, sprinklers and pump sets. Pump sets and sprinklers are also distributed under Integrated Tribal Development Agency (ITDA) and National Horticulture Mission (NHM). The Department of Horticulture is involved in supply of seedlings/grafts of fruit trees and vegetable mini kits at subsidized rates to farmers. Under NHM, subsidy is given for mini-tractors, grass cutters and sprayers. Under Jalnidhi 1 & 2, pump sets and accessories are supplied at subsidized rates. VAWs are also involved in collection of soil samples and distribution of soil health cards. Krushak Sathis are most often involved in distribution of demonstration kits among farmers, and collection of information on farmers for insurance registration at AAO office.

Though the staff of these line departments are also involved in organization of demonstrations, farm schools and trainings under many of the central and State sector schemes, it appears that the quality of these interventions are poor and farmers lack information and access to technical support. Vacancies at the block level and below also contribute to this. The focus group discussions we organized at the three pilot districts reveal the lack of reach of EAS in many places. Box 3 has the details.

Box 3: Observations from the FGDs

The research team organized 6 FGDs in the following locations:

1. Mondaguda (Village), Mahadeiput (GP), Koraput (Block), Koraput (District)
2. Madkar (Village), Sunki (GP), Pottangi (Block), Koraput (District)
3. Nagiapasi (Village), Nagiapasi (GP), Dhenkanal Sadar (Block), Dhenkanal (District)
4. Baliamba (Village), Baliamba (GP), Dhenkanal Sadar (Block), Dhenkanal (District)
5. Pakharasuan (Village), Genguti (GP), Sadar (Block), Balasore (District)
6. Gobindpur (Village), Gopinathpur (GP), Sadar (Block), Balasore (District)

Observations regarding reach of EAS in these locations are as follows:

- Input dealers are often their primary source of information on use of seeds and pest management. Progressive farmers are also an important source of farm information;
- Farmers' interactions with VAWs and ATMA staff, such as Krushak Sathis are often unplanned. They need regular interactions (weekly meetings) with such trained staff.
- Considering the increasing labour shortage, there is a lot of demand for small farm machineries (on rental basis), but many farmers are ignorant about such schemes and programmes that promote small farm mechanization.
- Direct Benefit Transfer (DBT) has further limited the access of the poor to subsidies as they have to incur the full costs in the beginning and the subsidy amount is credited later. Share croppers are also affected as they do not have land records in their name.
- Political interference is rampant in the selection of Krushak Sathis as well as in identifying beneficiaries for schemes and other extension activities.
- In tribal areas, there is not enough staff who can communicate in the local languages.

Apart from all these, farmers do face problems in all these locations with regard to access to quality seeds, water availability, and marketing and these aspects haven't received much extension support.

5. CONCLUSION AND POLICY IMPLICATIONS

Odisha has a number of organizations engaged directly or indirectly in supporting farmers with extension and advisory services. While public investments in agriculture, in general, have been going up during the past few years, this hasn't resulted in enhanced access to information and knowledge or enhanced productivity and farm income. Farmers in Odisha continue to face constraints relating to access to quality seeds, water availability for irrigation and marketing of their products. It appears that public investments in extension in Odisha are low compared to many other Indian states. Though the State has been proactively promoting collaboration among GOs and NGOs, there is even more scope to improve their effectiveness

Apart from the large number of vacant positions at the field level (block level and below), too many schemes involving distribution of subsidies and subsidized inputs and limited extension related/functional/delivery capacities of staff at varied levels are also affecting the impact of extension and advisory services. While the State has a number of organizations involved in training staff, there is very limited information on the quality and impact of the training programme as there hasn't been any systematic review of their performance.

Keeping in view the ToR for this study, we would like to place some of these action points for strengthening EAS in Odisha for consideration of both IRRI and the Government of Odisha. These are:

1. **Strengthening partnerships**
   a. Develop a directory/database of different agencies involved in EAS at the district level. A format needs to be developed, piloted and finalized.
   b. The data or information in this database should be made available publicly and periodically updated (Action: KVK/ATMA/IMAGE).

2. **Capacity development**
   a. Develop training modules on different extension-related topics relevant at different levels to support Trainers in different organizations (e.g., IMAGE/RITES/KVKs, etc.).
   b. Review the quality of training (infrastructure, topics, content, training methodology, trainer competence, availability of modules, training of trainers) offered by different organizations in the State.
   c. Develop an HRD Manual for the Department of Agriculture clearly specifying the frequency of training at different levels and on diverse topics for different levels of staff.
   d. Organise training programmes for staff at different levels on prioritized topics identified during the Capacity Needs Assessment Workshop.

3. **Enhance investments and develop new extension programmes**
   a. The State needs to substantially enhance its investments (both human and financial) in Odisha for extension delivery. To start with there is need for an urgent drive to fill the existing vacancies in the various line departments.

    b. There is a need to develop new programmes for extension in two topics – water management and market-led/value chain extension.

4. **Knowledge sharing and networking**
    a. Develop a virtual platform for knowledge sharing and networking for EAS providers in the State (for example, Odisha Agricultural Extension Network).

We believe that IRRI will be able to support the Government of Odisha in undertaking some of the above mentioned tasks.

With regard to IRRI, up scaling new knowledge vis-à-vis new seeds and field-specific nutrient management through rice crop manager is important. It is also trying to use remote sensing/GIS applications for near real-time crop monitoring and yield estimation so as to develop new crop insurance products, and also for identifying suitable fallows for pulse cultivation.

They have been using a number of approaches, such as head-to head trials, evidence hubs, demonstrations, rice check, technical training on rice production to VAWs and Krushak Sathis, etc. IRRI has also been distributing seeds of improved varieties to promote adoption, and has been working with several NGOs to promote these. It has the Rice Knowledge Bank and Rice Crop Doctor that can support field workers, and it has also organized a training programme on 'Leadership and Entrepreneurship Program for Women in Agriculture' for middle level managers in GOs and NGOs. While many of these efforts are interesting and useful, IRRI could enhance the effectiveness of their interventions by adopting some new strategies, which are presented below.

1. **Targeted partner selection**: IRRI should have a strategy for partner selection based on informed decision making that involves short listing, centered on well-defined criteria and final selection.

2. **Support strengthening functional capacities of extension staff:** Extension staff need more targeted training to improve their performance on delivery of knowledge. Development of extension manuals and training modules relating to functional skills (in addition to technical skills) will go a long way in strengthening capacities of EAS which will help in up scaling new knowledge.

3. **Scaling up strategy:** Current scaling up strategies are based on a linear approach that repeats the same old extension methods, such as demonstrations, training and farm schools to more areas. While these may continue to be important, there is a lot of scope for using new and improved approaches to scaling up new knowledge (as discussed during the scaling up workshop).

4. **Promote learning:** There is a need to establish a mechanism for learning from IRRI interventions so as to make improvements every season.

Annexure A: Tools and methods used for data collection

No.	Project location	Methods/Tools	Key Informant Interviews (KIIs) and Focused Group Discussions (FGDs)
1	Bhubaneswar	Desk Review through document analysis Semi-structured interviews with the key informants Focused group discussions, Including institutional ranking	**KIIs** NRRI KVK, Khurdha IMAGE APICOL OLM PRADAN OSSOPCA OSSC IFFCO KRIBHCO FES Krishi Jagaran Community Radio Association-Odisha Directorate of Soil Conservation and Watershed Development, Odisha
2	Balasore	Desk Review through document analysis Semi-Structured interviews with the key informants Focused group discussions, including institutional ranking	**KIIs** KVK, Balasore DDA, Balasore DAO, Balasore DDH, Balasore PD, Watersheds, Balasore RSTEI (UCO) ARM SPARSH BSSS OMFED OLM NABARD CDVO VAW Input Dealer Krushak Sathi **Focused Group Discussions** Pakharasuan (Village) Gobindpur (Village)
3	Dhenkanal	Desk Review through document analysis Semi-structured interviews with the key informants Focused group discussions, including institutional ranking	**KIIs** KVK, Dhenkanal RITE, Dhenkanal DDA, Dhenkanal DDH, Denkhanal CDVO, Denganal Agricultural Polytechnic New Odisha OLM ACCESS Development Services New Odisha

			Sakthi Sugars Pvt. Ltd. OMFED NABARD AAO BTM VAW Krushak Sathi **Focused Group Discussions** Nagiapas (Village) Baliamba (Village)
4	Koraput	Desk Review through document analysis Semi-structured interviews with the key informants Focused group discussions Institutional ranking	**KIIs** KVK, Semuliguda DDA, Jeypore CDVO, Koraput DDH, Koraput PD, Watersheds, Koraput ICAR-IIWSC, Sunabeda NABARD Pragati SOVA MSSRF OMFED Koraput Agro Products Producer Company Ltd. OAIC AO BTM VAW Krushak Sathi **Focused Group Discussions** Mondaguda (Village) Madkar (Village)

Proceedings of the
Workshop on 'Scaling Up Knowledge'
15-16 May 2018, Bhubaneswar, Odisha

International Rice Research Institute (IRRI)

Centre for Research on Innovation and Science Policy (CRISP)

May 2018

IRRI and CRISP (2018) Proceedings of the Workshop on 'Scaling Up Knowledge' 15-16 May 2018, Bhubaneswar, Odisha

IRRI (The International Rice Research Institute) is the world's premier research organization dedicated to reducing poverty and hunger through rice science; improving the health and welfare of rice farmers and consumers; and protecting the rice-growing environment for future generations. The institute, headquartered in Los Baños, Philippines, has offices in 17 rice-growing countries in Asia and Africa (www.irri.org).

CRISP (The Centre for Research on Innovation and Science Policy) is a non-profit research organization engaged in research and capacity development on Agricultural and Rural Innovation with a special focus on Extension and Advisory Services. It also hosts the Secretariat of the Agricultural Extension in South Asia (AESA) Network (www.aesagfras.net) and is based in Hyderabad, India (www.crispindia.org).

CONTEXT

'Scaling up' is not a new concept among development practitioners and academics. Discussions on this concept had started as early as the 1970s. But it has been brought to the forefront of the development agenda within the last decade, especially since the issue of development effectiveness has become a priority for development agencies, donors and governments (UNDP 2011).[22] There is a concern that 'scaling up is often attempted without proper guidance, preparation and tools, leading to a frustrating experience' (Binswanger-Mkhize et al. 2009).[23]

With regard to scaling up, we need to be interested in the magnitude and reach of the impact, the quality of the impact, the impact for whom, and over what time period. Expansion and replication are intentional and planned types of scaling up. According to the World Bank (2005),[24] scaling up means expanding, adapting and sustaining successful policies, programs and projects in different places and over time to reach a greater number of people (also see Holcombe 2012:18).[25] The World Bank also argues that scaling up involves both 'means' (for example, replication, spread, or adaptation of techniques, ideas, approaches, and concepts) as well as 'ends' (that is, increased scale of impact) (Anderson 2012).[26]

The International Rice Research Institute (IRRI) over the past few years has been working towards scaling up several types of new knowledge that its research has generated in Odisha. While it has achieved some success, a lot more needs to be done to scale up new knowledge. This workshop, organized by IRRI in collaboration with the Centre for Research on Innovation and Science Policy (CRISP), was intended to facilitate IRRI researchers and its partners in approaching scaling up systematically. The two-day interactive learning workshop on 'Scaling up Knowledge' held at Bhubaneswar during 15-16 May 2018, aimed to broaden the understanding of scaling up among IRRI staff and help them to deploy a broader set of tools while planning scaling up in the state of Odisha.

Objectives

The specific objectives of this learning workshop were to:

1. Broaden the understanding of scaling up;
2. Provide new tools and approaches for scaling up technologies, processes and policy.

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[22]UNDP. 2011. Poverty reduction scaling up local innovations for transformational change. USA: United Nations Development Programme.
[23]Binswanger-Mkhize HP, de Regt JP and Spector S. 2009. Scaling up local and community driven development: A real world guide to its theory and practice. Washington D.C.: The World Bank.
[24]World Bank. 2005. Reducing poverty, sustaining growth: Scaling up poverty reduction. Case Study Summaries. A Global Learning Process and Conference. Shanghai, May 25-27, 2004.
[25]Holcombe S. 2012. Lessons from practice: Assessing scalability. Massachusetts: The Heller School for Social Policy & Management, Brandeis University.
[26]Anderson I. 2012. Scaling development results. A literature review and implications for Australia's aid program. Canberra: Aus Aid.

Twenty one IRRI staff handling diverse positions in the organization participated in this workshop. Annexure 1 has the detailed list of participants. The workshop used a highly interactive learning methodology to engage participants actively in the learning process, which included case analysis, individual card exercises, and group discussions, supported with a few power point presentations. Each session was interspersed with question and answer (Q&A) slots as well.

Day 1

SESSION 1: INTRODUCTION

The workshop commenced with a brief informal welcome address by Dr Ranjitha Puskar, Theme Leader - Catalysing Innovation for Health, Equity and Resilience, IRRI. She emphasised the need and timeliness for a workshop on scaling up knowledge in light of IRRI's plan to formulate a scaling up strategy for its Government of Odisha Project. Thereafter, each participant was invited to briefly introduce herself/himself (a one-minute self-introduction).

Box 1: Scaling up
Scaling up has multiple definitions. Scaling up can be defined in the sense of 'more money' or 'more impact'. There is confusion in the use of the term, since in some aid literature 'scaling up' refers to 'getting more aid funds out the door' (in total or for specific causes). Thinking about scaling up as 'more impact' is common but not universal. Themes that run through the definitions are: scale of impact, quality of impact, impact for whom, and sustained time frames (Binswanger and Aiyar 2003).[27]
IFAD defines projects as 'scalable' if they can be handed off to partners for potential application at a larger scale' (IFAD 2011).[28] Cooley and Kohl (2006)[29] do not define, but rather describe what is involved in scaling up: 'several distinct strategies including: the dissemination of a new technique, prototype product, or process innovation; 'growing' an organization to a new level; and translating a small-scale initiative into a government policy.'
Creech (2008)[30] concludes that 'the scaling-up process requires a tremendous amount of negotiation, diplomacy, patience, flexibility, time and resources to be successful'. This seems to point to an attempt to steer and control scaling processes. Tayabali in his 'definitive guide to scaling social enterprise' (2010)[31] points to the role of scaling processes that capitalize on partnerships, alliances and networks through mass participation, through co-operation, through open source, through open design, and through collaborative networks. Upscaling can be effected either directly (a given organization is directly responsible for change), or indirectly (the organization influences change).

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[27]Binswanger HP and Aiyar SS. 2003. Scaling up community driven development; Theoretical underpinnings and program design implications. Mimeo. Washington D.C.: The World Bank.
[28]IFAD. 2011. Section XXI: Guidelines for scaling up. Updated guidelines and source book for preparation and implementation of a Results-Based Country Strategic Opportunities Programme (RB-COSOP). Volume 1: Guidelines. International Fund for Agricultural Development.
[29]Cooley Larry and Richard K. 2006. Scaling up – from vision to large-scale change. Washington: Management Systems International (MSI).
[30]Creech Heather. 2008. Scale-up and replication for social and environmental enterprises. International Institute for Sustainable Development.
[31]Tayabali Rizwan. 2010. The definitive guide to scaling social enterprise. www.socialeffect.org

Dr Rasheed Sulaiman V, Director, CRISP, in his introductory presentation acquainted everyone with the context, objectives, and the approach for the two-day workshop. His presentation focused on the various definitions of scaling up (see Box 1), scaling up knowledge for innovation, and raised a number of questions for the participants to ponder on during the two days of the workshop. His presentation set the context for the remainder of the workshop.

SESSION 2: CASE STUDY - SO NEAR YET SO FAR: DEALING WITH SCALING UP

Rasheed presented a case on 'Scaling up electric cars in India' in the first session, after showing a small video on Mahindra's electric cars. Each participant was paired with his/her neighbor and asked to develop an action plan to promote electric cars in India (with at least 40% replacement) by 2030. Each participant had to imagine himself/herself as the Secretary, Ministry of Road Transport and Highways, or as a Member of Niti Ayog, in charge of the Central Government's EV Action Plan, and come up with an action plan clearly indicating three specific actions and earmarking who would implement these. This exercise forced participants to think, reflect, and develop an individual understanding and perception of scaling up.

The participants were actively involved and explored various dimensions of the case in order to design various action plans. They highlighted the need for production and service centres, policy engagements, research investments, input availability, marketing tactics, partnerships and sustainability for scaling up of electric cars in India. This case, being so close to the real life scenario, enabled participants to brainstorm and come up with solutions which indirectly showcased their novice insights into the concept of scaling up.

SESSION 3: CASE STUDY - LEARNING FROM SUCCESSFUL SCALING UP (4 CASES)

Session 3 was comprised of learning from successful cases on scaling up Climate Smart Agriculture (CSA)[32] across the globe, through a group exercise. All the participants were divided randomly into four groups and each group was assigned one case. The four cases were as follows:

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[32]FAO. 2018. Upscaling climate smart agriculture: Lessons for extension and advisory services. Rome: Food and Agriculture Organization of the United Nations. http://crispindia.org/wp-content/uploads/2015/09/Upscaling-CSA-Lessons-for-Extension-and-Advisory-Services-FAO-2018.pdf

- Group I: Conservation Agriculture in Zambia;
- Group II: System of Rice Intensification in Vietnam;
- Group III: Drought-Tolerant Maize in Sub-Saharan Africa in Sub-Saharan Africa;
- Group IV: Agriculture and Climate Risk Enterprise in Eastern Africa.

Participants were asked to read the assigned cases and discuss and reflect on the factors that contributed to the successful scaling up of a particular case within their group. Each case was analyzed within the group, and the group members presented the critical organizational, process, and technical factors for the successful scaling up of the projects in the plenary session. Some of these factors are: relevant research/technology/innovation, sustainable funding, supportive infrastructure, stakeholder consultation, networking, co-ordination, partnerships, policy advocacy, long term vision and building demand, capacity and incentives in the communities to adapt and improve programmes so as to make them more relevant and successful.

SESSION 4: INNOVATION MANAGEMENT FOR SCALING UP

This session dealt with innovation management functions in scaling up – with three different cases of innovation from South Asia[33] viz., Participatory Crop Improvement in Asia, Value Chain Development, and Natural Resource Management. The presentation and discussion that followed brought new insights on several innovation management functions, actions and tools for scaling up of a project/programme. Rasheed affirmed that research/innovation comes into use only through collaborative action among a wide range of relevant actors, by building capacities and networks, and through sharing perspectives within different actors. This presentation also touched upon the fact that the role of research changes in the innovation trajectory; and it also clearly laid out why research is too powerless to bring about innovation on its own without support from other actors.

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[33]Rasheed SV, Andy H, Vamsidhar RTS and Kumuda D. 2010. Studying rural innovation management: A framework and early findings from RIU in South Asia. Research Into Use Programme (RIU), Department for International Development (DFID). http://www.crispindia.org/docs/5%20Studying%20Rural%20Innovation%20Management.pdf

Day 2

Day 2 started with a brief recap of Day 1.

SESSION 5: FROM PILOTS TO SCALE - INFLUENCING POLICIES FOR SCALING UP

This first session of Day 2 focused on the significance of policy changes/advocacy for scaling up of a project beyond pilots. Rasheed described experiences from cases, such as Smallholder Dairying in Bihar,[34] Options for Scaling up Sustainable and Resilient Farming Systems Intensification (SRFSI) in Bangladesh: Agricultural Innovation Systems (AIS) diagnosis,[35] and experiences of the Centre for Sustainable Agriculture (CSA) to draw out the policy narrative. He concluded by citing the importance of implementing interactive policy research, policy communication and training on strengthening policy interface for better policy engagements in scaling up of projects.

SESSION 6: CASE STUDY- WE ARE THE SAME, BUT I AM MUCH AHEAD: ANY LESSONS FOR SCALING UP?

Dr Onima VT, Research Officer, CRISP, presented a case on 'How Nike became successful and the leader in the sports product market'. The presentation discussed on various strategies, such as emotional branding, embracing new technologies, buying out competing brands, and marketing tactics like sports endorsement, co-branding, digital marketing, etc., that Nike utilized to reach the zenith in their industry. This was followed by a group exercise in which participants were divided into four groups. Each group was asked to reflect on the lessons that they could draw from Nike's successful market penetration, and how they could apply these for scaling up knowledge in the context of their own project/knowledge product/organisation.

The participants pointed out numerous strategies that an organization needs to be alert to for scaling up. These include building organizational capacity, charting short and long term goals, process documentation, active collaboration and partnerships, development of business models, pertinent technology, systems and tools for delivering social impact. Interestingly, each group came up with different captions/slogans for the organization, such as "don't just do it, show it".

SESSION 7: APPROACHES TO SCALING UP - INSIGHTS FROM LITERATURE REVIEW

This session took the participants for a journey into the evolution of the concept of scaling up over the years through a narrative on past studies. New thinking on 'scale' and 'scaling up' was showcased to the participants using practical excerpts from an Oxfam programme. Rasheed briefly discussed how innovation, learning and scaling up are linked to each other. He also made a clear-cut differentiation between, 'scaling out - multiplication in terms of more of the same' and 'scaling up: catalyzing institutional and policy change' which are commonly misconstrued.

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[34]Rasheed SV and Vamsidhar Reddy TS. 2015. Policy incoherence in smallholder dairying in Bihar, India. Discussion Paper 33. Nairobi: ILRI. https://cgspace.cgiar.org/bitstream/handle/10568/67182/DiscussionPaper33.pdf?sequence=3
[35]Toni D, Rasheed S, Nimisha M, Kamal D and Peter RB. 2015. Institutional analysis for Agricultural Innovation: Synthesis. Internal discussion document for SRFSI project. http://crispindia.org/wp-content/uploads/2015/09/Darbas-et-al_Institutional-Analysis-Synthesis_Technical-Report.pdf

SESSION 8: FRAMEWORK AND TOOLS FOR DEVELOPMENT OF SCALING UP STRATEGY

During this session various topics, such as drivers and spaces, scaling approaches and steps followed in planning and implementing a scaling up pathway, were presented. The scalability assessment tool was also introduced in this session. Using the ILRI-FIP Project (2007) as an example, the criteria followed for partner selection in scaling up of a project was also illustrated.

SESSION 9: CLOSING REMARKS

Prior to the close of the session, each participant was asked to write his/her feedback on the content, methodology, and the style of the workshop on a card. He/she had to provide anonymous feedback on what they liked and what they thought could be improved. This was followed by open feedback from the participants where they disclosed that the workshop helped them in gaining a clear understanding on the best practices for scaling up agricultural technologies. In her closing remarks Nimisha Mittal, Programme Manager, CRISP, thanked IRRI staff for their energetic and enthusiastic participation in the workshop.

Annexure 1: List of Participants

S. No.	Name of Participants	Divisions/Units of IRRI
1.	Ranjitha Puskur r.puskur@irri.org	Theme Leader Catalysing Innovation for Health, Equity and Resilience
2.	Deiveegan Murugesan d.murugesan@irri.org	Crop insurance (Crop modelling)
3.	Deepti Saksena d.saksena@irri.org	Seed system (Communication and documentation)
4.	Girija Prasad Swain g.swain@irri.org	Seed system (Research and Development)
5.	Kishor Kumar Behera k.k.behera@irri.org	Knowledge management and Capacity building (Partnership management)
6.	Lisa Mariam Varkey l.varkey@irri.org	RCM (Socio economics)
7.	Nasreen Islam Khan n.khan@irri.org	CL for crop insurance
8.	Praveen Kumar p.kumar@irri.org	Officer (Crop insurance)
9.	Parvesh Kumar Chandna p.k.chandna@irri.org	CL for Domain mapping
10.	Poornima Shankar p.shankar@irri.org	Knowledge management and Capacity building (Rice Knowledge Bank)
11.	Preeti Bharti p.bharti@irri.org	RCM (Training and Communications)
12.	Rajeev Padbhushan r.padbhushan@irri.org	RCM (Soil scientist)
13.	Rohini Ram Mohan r.r.mohan@irri.org	Knowledge management and Capacity building (Gender research)
14.	S K Mosharaf Hossain s.hossain@irri.org	Seed system (Monitoring and evaluation)
15.	Swati Nayak s.nayak@irri.org	Seed system
16.	Shakti Prakash Nayak	Knowledge management and Capacity building (RKB and OCD)
17.	Sawara Santosh Rao s.s.rao@irri.org	Finance and Administration
18.	Sheetal Sharma sheetal.sharma@irri.org	CL for RCM
19.	M Sunil kumar sunil.kumarm@irri.org	Knowledge management and Capacity building (Plant Protection)
20.	Uwe Scholz u.scholz@irri.org	Knowledge management and Capacity building (Agricultural Social Enterprise)
21.	VikramPatil v.patil@irri.org	Senior Specialist – Experimental Economics IRRI-GoO project – Crop Insurance

Report on the Capacity Needs Assessment of Extension and Advisory Service (EAS) Providers in Odisha

International Rice Research Institute (IRRI)

Centre for Research on Innovation and Science Policy (CRISP)

ICAR-Central Institute for Women in Agriculture (CIWA)

JULY 2018

IRRI, CRISP, ICAR-CIWA (2018) Report on the Capacity Needs Assessment of Extension and Advisory Service (EAS) Providers in Odisha, 3-4 July 2018, Bhubaneswar, Odisha, India

IRRI (The International Rice Research Institute) is the world's premier research organization dedicated to reducing poverty and hunger through rice science; improving the health and welfare of rice farmers and consumers; and protecting the rice-growing environment for future generations. The institute, headquartered in Los Baños, Philippines, has offices in 17 rice-growing countries in Asia and Africa (www.irri.org).

CRISP (The Centre for Research on Innovation and Science Policy) is a non-profit research organization engaged in research and capacity development on Agricultural and Rural Innovation with a special focus on Extension and Advisory Services. It also hosts the Secretariat of the Agricultural Extension in South Asia (AESA) Network (www.aesagfras.net) and is based in Hyderabad, India (www.crispindia.org).

ICAR-CIWA (ICAR-Central Institute for Women in Agriculture) is an institution under the Indian Council of Agricultural Research exclusively devoted to gender related research in agriculture. It focuses on participatory action research in different technology-based thematic areas involving farm women to make farm technologies suitable for them and is based in Bhubaneswar, Odisha, India (www.icar-ciwa.org.in).

CONTENT

LIST OF BOXES

LIST OF FIGURES

LIST OF TABLE

1 CONTEXT

Agriculture plays a very crucial role in the overall development and transformation of Odisha. "Covering 35 percent of geographical area as the net cropped area and dependence of more than 60 percent of the State's workforce on it for their sustenance, agriculture in Odisha is the sector that is closely connected to the welfare of the citizens. This is reinforced by a sectoral share of about 20 percent in total Gross State Domestic Product (GSDP) of the State. The State Government is keen to increase agricultural production and raise productivity through improved land and water management, scientific rain-fed agricultural techniques, well functioning (*sic*) agricultural markets, application of better technology, higher public and private investments and effective implementation of ongoing programmes in agriculture and allied sectors." (Government of Odisha (GoO) 2018[36])

Extension and Advisory Services (EAS) are critical for agricultural transformation as they help farmers and the rural community to enhance their technical, organizational and managerial skills to better identify practical solutions to the challenges they face in farming and other rural vocations (Box 1).

Box 1: What is EAS?

Extension and Advisory Services (EAS) consists of all the different activities that provide information and services that are needed and demanded by farmers and other actors in rural settings to assist them in developing their own technical, organizational, and managerial skills and practices so as to improve their livelihoods and well-being. It recognizes the diversity of actors in extension and advisory provision (public, private, civil society); much broadened support to rural communities (beyond technology and information sharing) including advice related to farm, organizational and business management; and facilitation and brokerage in rural development and value chains.
Source: (GFRAS 2012)[37]

With farmers facing new challenges, EAS should have the necessary capacities to support farmers to deal with these changes. "Agriculture sector in Odisha faces several challenges like low productivity, low investment, low returns, severe losses due to natural calamities, fluctuating supply of inputs like quality seeds, fertilizer, irrigation and credit, lack of reliable insurance cover, lack of facilities for post-harvest management and marketing, etc" (DoA 2016).[38] The State Level Task Force on Agriculture Development of the Department of

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[36]GoO. (2018.) Odisha Economic Survey 2017-18. Planning and Convergence Department, Directorate of Economics and Statistics, Government of Odisha.
http://pc.odisha.gov.in/Download/Economic_Survey_2017-18.pdf

[37]GFRAS. (2012.) The New Extensionist: Roles, Strategies, and Capacities to Strengthen Extension and Advisory Services (RV Sulaiman and K Davis, eds.). Global Forum for Rural Advisory Services, Switzerland. http://www.g-fras.org/en/knowledge/gfras-publications.html?download=126:the-new-extensionist-position-paper

[38]DoA. (2016.) Activity Report of Department of Agriculture and Farmers' Empowerment during 2016-17; and Programmes for 2017-18. Department of Agriculture and Farmers' Empowerment, Odisha.
http://agriodisha.nic.in/content/pdf/activity%20report%202016-17.pdf

Agriculture, Odisha (2015)[39] noted that "due to the changing face of agriculture, farmers have to make a number of complex decisions. Some of these are as follows.

- Strategy to change farming system (e.g. diversifying from crop production to mixed farming);
- Identification of products for which there is good demand in the market;
- Taking collective decisions on resource use and marketing;
- Quick availability of relevant and reliable information."

The same report argued that "as the agricultural sector is gradually segregating into two different segments - commercial and subsistence, the extension system will have to adopt different working models and the Extension machinery needs to be strengthened through retraining and retooling of existing extension personnel". The State Agricultural Policy (GoO 2013[40]) also noted that "the extension system has to undergo a substantial change in its outlook".

The International Rice Research Institute (IRRI) has been working with Odisha's Department of Agriculture for almost one decade. "The collaboration has resulted in the promotion and dissemination of climate-resilient technologies and high-yielding modern rice varieties to improve and stabilize the productivity of the state's stress-prone areas. The Odisha-IRRI program is a landmark initiative that, among others, is looking at strengthening the seed system, rice crop management, capacity building, and crop monitoring using remote sensing to develop crop insurance. IRRI is keen to work with the Government of Odisha in strengthening the capacities of EAS providers in the state so that EAS contributes more effectively to Odisha's agricultural transformation.

Keeping these in view, it was decided to organize a two-day capacity needs assessment workshop with key extension stakeholders in Odisha in 2018, so as to help identify the most critical capacity needs that constrain EAS and help IRRI to organize better capacity development programmes that address these needs/gaps.

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[39]DoA. (2015.) Rejuvenation of Agriculture, Recommendations of State Level Task Force on Agriculture Development. Department of Odisha, Government of Odisha.
http://niti.gov.in/writereaddata/files/Odisha_Report_0.pdf
[40]GoO. (2013.) State Agriculture Policy. Department of Agriculture, Government of Odisha.
http://agriodisha.nic.in/content/pdf/State_Agriculture_Policy_2013_e.pdf

2 PROCESSES

2.1 WORKSHOP

The Centre for Research on Innovation and Science Policy (CRISP) organized a workshop on 'Capacity Needs Assessment for EAS in Odisha' in collaboration with the International Rice Research Institute (IRRI) and the ICAR-Central Institute for Women in Agriculture (CIWA) from 3 to 4 July 2018, at Bhubaneswar with the following objectives:

1. Identify capacity gaps among EAS providers;
2. Develop a strategy for addressing these capacity gaps.

Thirty-three (33) participants representing over thirteen (13) organizations with diverse backgrounds and experiences across sectors in EAS delivery participated in this workshop. Annexure 2 has the list of participants.

3 OUTPUTS

CAPACITY NEEDS

The workshop identified the capacity needs of EAS providers at the individual and organizational level. These are presented below.

3.1 CAPACITIES REQUIRED AT FIELD LEVEL FOR EAS FUNCTIONARIES

As technical advisor

As technical advisors, EAS functionaries should have the latest knowledge pertaining to the life cycle of crops grown, animals/birds domesticated, and other livelihoods pursued by farmers in the blocks/districts where they are working. Field-level functionaries should also support development of master farmers in specific crops and enterprises in order to enhance farmer-to-farmer extension activities. They should also have knowledge of field-level data collection techniques so as to generate and share reliable data from the field to those at the district and state levels, especially to those who need these for monitoring as well as for new programme development.

Box 2: Strategies to strengthen capacities as a technical advisor

Capacities could be enhanced through the following activities:
- Organizing regular programmes – training, workshops, exposure visits and so on – to enhance knowledge and skills related to technical aspects through the existing training centres, such as Institute on Management of Agricultural Extension (IMAGE), Krishi Vigyan Kendras (KVKs), Regional Institute of Training on Extension (RITE), Directorate of Extension of Agricultural/Veterinary Universities, and other training centres at the district and state levels.
- Conduct evaluation tests for field-level EAS providers every year to assess their technical knowledge as well as their knowledge about the new schemes/programmes implemented in the field.
- Provision of award of excellence to the best performing EAS provider at the field level by concerned Departments.

As communicator

EAS providers have to develop different ways of fostering communication between relevant players in agriculture in order to enhance knowledge sharing, learning and ultimately innovation, in terms of practices and technologies. They should, thus, be able to facilitate flows of knowledge between relevant players in the system by making use of different methods and media. Communication skills need to be seen more as part of the wider facilitation skills called for to promote community mobilization, networking and partnership development. Information and Communication Technologies (ICTs) can play an important role in supporting EAS in providing timely and relevant advice to different stakeholders. For that they should have access to ICTs, resources to make use of the different ICT tools, and develop appropriate Information, Education and Communication (IEC) materials along with the necessary expertise in accessing relevant information and disseminating information through ICTs.

Box 3: Strategies to strengthen capacities as a communicator

Their capacities could be enhanced through the following activities:
- Organizing training on 'Facilitation for Development';
- Providing exposure to successful cases of effective application of ICTs;
- Providing resources to use these (data card, data plans, etc.) and impart training;
- Providing training on effective use of Information, Education and Communication materials (tablets, smart phones and other accessories, such as expert system, online package of practices) by EAS staff at the field level;
- Providing training to enhance written (e.g., writing for social media, designing text messages) and oral communication skills (delivering radio talks, development of videos, use of pictures/images, designing voice messages, etc.).

Market linkage establishment

EAS providers should help farmers to enhance their productivity by using sustainable and climate-smart production methods, and support farmers in organizing themselves to identify and engage with appropriate markets so as to improve their levels and consistency of income. In order to ensure that farmers are successful in improving their production systems and market performance, EAS providers must have a working knowledge of markets, agricultural marketing, agricultural value chains and value chain development.

Box 4: Strategies to strengthen capacities for market linkage establishment

Their capacities could be enhanced through the following activities:
- Upgrade skills on collection, analysis, interpretation and dissemination of market information using market intelligence and undertake value chain analysis
- Design and develop guidelines to organize Farmers' Interest Groups (FIGs) on commodity basis and building their capabilities with regard to management of their farm enterprises;
- Develop facilitation skills to link farmers with input suppliers, credit service providers, transporters, commodity buyers and processors across the value chain;
- Organize training for field level officials on post-harvest management aspects, including value addition, processing technologies, grading as well as certification and standards.

3.2 CAPACITIES REQUIRED AT MIDDLE LEVEL FOR EAS FUNCTIONARIES

Team building, leadership, management and liaising

Middle-level officers work very closely with field-level EAS functionaries and supervise their activities. Therefore they need capacities to build teams, lead the staff and enhance the capacities of their subordinates. They should also have the aptitude to organize Capacity Needs Assessment (CNA) of field-level functionaries and link the staff to appropriate capacity development interventions. They should possess ample soft skills for effective communication, facilitation, collaboration, and conflict management.

Box 5: Strategies to strengthen capacities for team building, leadership, management and liaising

Their capacities could be enhanced through the following activities:
- Organize Management Development Programmes (MDP) for the middle-level functionaries in order to develop/enhance their capacities in team building and provision of leadership;
- Develop their skills in undertaking CNA of their staff;
- Offer awards of excellence to best performing EAS providers at the middle level by the concerned Departments.

Planning, developing programmes and undertaking M&E (Monitoring and Evaluation)

Middle-level officials are often in charge of designing, implementing and evaluating EAS interventions; so to deliver relevant programmes, they should have the necessary expertise on participatory approaches to programme design. In other words, they should know how to develop programmes based on a bottom-up approach. They should also have skills in monitoring programmes, making mid-course corrections, undertaking contingency planning, etc. Furthermore, they should be able to use ICT applications such as Geographical Information Systems (GIS), use of relevant databases, collection and use of field level data, and designing micro-level studies that can support planning.

Box 6: Strategies to strengthen capacities for planning, developing programmes and undertaking M&E (Monitoring and Evaluation)

Their capacities could be enhanced through the following activities:
- Organizing training programmes in planning and monitoring extension programmes, including participatory approaches to programme design;
- Providing training to conduct impact evaluation of different schemes and programmes implemented at the field level;
- Designing guidelines to select the correct knowledgeable person in the planning team for various schemes/programmes;
- Developing training programmes on undertaking socio-economic investigations (field level data collection, statistical analysis, etc.) and use of ICTs in designing and monitoring programmes;
- Organizing monthly interface with senior officials of respective organizations (to explore and build joint/complementary activities around specific interventions), and organizing monthly interface meetings with all the EAS providers at the field level (to familiarize the staff on new programmes, new guidelines, etc.).

Convergence, networking, co-ordination and partnership development

EAS personnel at the middle level should have more of networking, coordination and partnering skills and they need support in identifying the different agencies and organizations working in their area. Ideally they should have access to a database on different EAS providers and their programmes. They also need support in identifying areas for collaboration, developing Memorandums of Understanding (MoUs), access to guidelines on fund sharing and fund flows, and documents that present good practices on partnership management. They also need training on developing convergence (building synergies between inter-sectoral programmes dealing with similar issues and similar regions/communities).

Box 7: Strategies to strengthen capacities for convergence, networking, co-ordination and partnership development

Their capacities could be enhanced through the following activities:
- Developing (locally relevant) database on priorities and programme area of different actors in a geographic region (say, a district);
- Training on identifying and promoting convergence and collaboration based on real case studies;
- Developing good practices in convergences and collaboration;
- Issuing guidelines on promoting collaborative work;
- Organizing face-to-face meetings of key stakeholders at regular intervals;
- Coming up with a clear mandate at the organizational level to be able to try and build capacities.

3.3 CAPACITIES REQUIRED AT SENIOR LEVEL FOR EAS FUNCTIONARIES

Visioning, goal setting, decision making skills, team building, leadership and mentoring

Senior officials should have capacities for visioning (the action of developing a plan, goal, or vision for the future) and should be able to plan different approaches suited to varied scenarios/situations that may emerge. They need capacities to build teams, lead the staff, and enhance the capacities of their subordinates. They should have the abilities to identify the Strengths, Weaknesses, Opportunities and Challenges (SWOC) of different scenarios/options, and design solutions that are appropriate to each of these scenarios. They should also be able to think through the input-output-outcome-impact pathways, and be able to use tools such as logical frameworks, and also have skills related to financial management.

Box 8: Strategies to strengthen capacities for visioning, goal setting, decision making skills, team building, leadership and mentoring

Their capacities could be enhanced through the following activities:
- Organizing Executive Leadership Training Programmes (at national and global levels);
- Deputing/Sponsoring their participation in national and international training programmes meant for senior executives that inculcate/strengthen many of these capacities;
- Organizing regular interactions (experience and knowledge sharing) among senior officials so that they could learn from experiences of others in these areas;
- Organize international training for senior level managers to develop their perspectives on global developments in extension science and experiences with extension reforms in different countries.

Monitoring and Evaluation

Senior officials should have the ability to give direction and make decisions, formulate policies and plans and monitor/supervise the implementation of the formulated policies and plans.

Box 9: Strategies to strengthen capacities for monitoring and evaluation

Their capacities could be enhanced through the following activities:
- Organizing training programmes in planning and monitoring extension programmes, including participatory approaches to programme design;
- Hiring consultants who can work with the senior management and provide strategic advice on planning, implementing and evaluating programmes;

- Developing training programmes on undertaking socio-economic investigations (field level data collection, statistical analysis, etc.) and use of ICTs in designing and monitoring programmes.

Policy development and engaging in policy advocacy

Senior officials should have the necessary competence to influence policy makers and to influence/shape the enabling environment around EAS so that it can better contribute to the effectiveness of the Agricultural Innovation System (AIS), as well as shape policies for market development. They should be able to appreciate the importance of evidence in influencing policies and should have capacities to generate the type of evidence that support appropriate policy changes. They should also have effective communication (written, oral, presentational) skills to influence the policy process and to work as part of inter-departmental and inter-ministerial, multi-stakeholder platforms.

Box 10: Strategies to strengthen capacities for policy development and engaging in policy advocacy

Their capacities could be enhanced through the following activities:
- Developing modules, guidelines and organizing training programmes on advocacy and influencing policy;
- Developing case studies on successful examples of influencing policies;
- Organizing training on enhancing policy- relevant communication.

3.4 CAPACITIES REQUIRED AT THE ORGANIZATIONAL LEVEL

Human Resource Management

Considering the different functions EAS has to perform, to remain relevant to the changing support needs of farmers it needs a broader range of specialization. It also needs a mix of generalists and specialists. To attract and retain relevant staff and to enhance their capacities on a continuous basis, organizations also need a strategic Human Resource Planning and Assessment system. One could use performance management as a tool for team building and motivation and have different kinds of rewards/appreciations, skill games/facilitation skills. Job rotation between cross-functional teams is another option to enhance skills on a broad range of tasks. Several national agencies have capacities to support EAS in this area and their services could be sought to enhance this capacity.

Box 11: Strategies to strengthen capacities for human resource management

Capacities could be enhanced through the following activities:
- Consider education/training in extension as an essential qualification for key extension positions;
- Develop standards to undertake performance-based evaluation of key extension functionaries;
- Consultations with external parties to review the performance of the organization;
- Organizing gender sensitivity training for the staff in the organization.

Adequate infrastructure, adequate logistics and resources to support EAS

The infrastructure and logistics of the organization should be so designed as to get the right people to do the right things at the right time. It should be able to maximize the EAS provider's performance by creating the ability, willingness and opportunity to achieve excellent performance*.*

Box 12: Strategies to strengthen adequate infrastructure, adequate logistics and resources to support EAS
Capacities could be enhanced through the following activities: • Providing adequate financial support for travel allowances and other mobility of the extension functionaries; • Impart training (ICT database, expert system) and access to ICT resources (data card, data plans) at minimal rate.

Leadership and mentorship, team spirit and team building with motivation

The organization should have the capacity to engage in consultations with its stakeholders. For instance, in the case of EAS it should have consultations with farmers, donors, investors, researchers, policy makers and other relevant actors in the AIS for this purpose. External consultants can add much value in organizing consultations, visioning exercises, and developing strategic documents that are critical for development and evaluation of vision, missions, and functions. Conducting such exercises away from the routine place of work (e.g., annual retreats for two days) would also enhance participation of all in such a process. At the organizational level EAS should possess capacities to build teams, lead the staff, and enhance the capacities of their subordinates. They need to assess the knowledge, skills, and experience of each member and what motivates them.

Box 13: Strategies to strengthen capacities for leadership and mentorship, team spirit and team building with motivation
Capacities could be enhanced through the following activities: • Provision of awards and incentives based on performance of the extension functionaries; • Consultation with external organizations/experts to impart training on new capacities of EAS functionaries; • Develop feedback mechanism within the organization – on delegation, interpersonal interactions and performance of the staff.

The proceedings of the workshop are given in Annexure 1.

4 Annexures

4.1 Annexure 1: Proceedings of Workshop on 'Capacity Needs Assessment of Extension and Advisory Service Providers in Odisha', 3-4 July 2018

International Rice Research Institute (IRRI)
Centre for Research on Innovation and Science Policy (CRISP)
ICAR-Central Institute for Women in Agriculture (CIWA)

CONTEXT

Extension and Advisory Services (EAS) need new capacities at different levels to effectively deal with new and evolving challenges faced by rural communities. While the importance of developing new capacities among EAS providers is increasingly recognized, there is very little appreciation and acceptance on the need for a systematic Capacity Needs Assessment (CNA) to guide Capacity Development (CD) interventions. Undertaking CNA is, therefore, critical for organising appropriate CD interventions. CNA is a capacity-strengthening process in its own right, and this process is as important as the outcomes. While several approaches and tools on CNA exist, these are yet to be adapted and used in the context of EAS. Lack of a clearly articulated list of core competencies for EAS adversely affect the recruitment of new staff, the professional development of existing staff, as well as the quality of professional education in extension.

This workshop was organized to achieve the following two objectives:
1. Identify capacity gaps among EAS providers;
2. Develop a strategy for addressing these capacity gaps.

SESSION 1: INTRODUCTION

The meeting started with a very brief formal opening ceremony. Dr AK Panda, Senior Scientist, ICAR-CIWA welcomed the participants. This was followed by brief remarks from Dr Mukund Variar, State Co-ordinator, IRRI-Odisha Project, and Dr SK Srivastava, Director, ICAR-CIWA, and a one-minute self-introduction by each participant. This unique and short ice-breaking introduction helped participants to know each other, along with personal and/or their organization's role in EAS delivery in Odisha. The introductory session revealed that the participants represent over 13 organizations with diverse backgrounds and experiences across sectors in EAS delivery.

Dr Rasheed Sulaiman V (Director, CRISP) in his presentation introduced the context and the objectives of the workshop. His talk focused on the diversity of actors in EAS provision, the

challenges EAS faces, the importance of performing new tasks, and the need for new capacities at the individual, organizational, and systems/enabling environment level. However, to organize appropriate capacity development programmes, we need to undertake a systematic assessment of capacity needs, he argued. This introductory presentation set the background for the entire workshop.

SESSION 2: VISION MAPPING - FUNCTIONAL ASSESSMENT

This session started with a card exercise. The rationale behind this exercise was that before we explore new functions and new capacities, we should assess current functions being performed by different organizations engaged in EAS provision. A review of the displayed functions revealed that diverse jobs were being carried out in EAS delivery across the public, private and NGOs sectors.

This was followed by a presentation by Rasheed that focused on the new challenges before EAS and the new functions to be performed to address these challenges. This was followed by a group exercise.

The participants were divided into four groups and they discussed the current and new functions of EAS based on the following three questions:

1. Are the current functions performed by EAS adequate?
2. What are the other functions that have to be performed?
3. Why are these new functions not being performed/not performed effectively?

The outcomes from this exercise were presented by the facilitator selected by each group:

Table 1: Functional assessment of EAS providers

Group	Are the current functions performed by EAS adequate?	What are the other functions that have to be performed?	Why are these new functions not being performed/not performed effectively?
Group 1	Not adequate	1. Policy advocacy for value chain activity 2. Gap assessment in marketing and production 3. Networking with other EAS providers	1. Involvement of all stakeholders in policy decisions 2. Lack of real-time assessment technologies
Group 2	Inadequate	1. Need assessment 2. Bottom-up approach 3. Timely execution of extension services 4. Single window advisory services 5. Use of ICT for doorstep advisory services	1. Unavailability of field level expertise in human resources 2. Discontinuance of previous extension system 3. Fixed mandates of respective institutions 4. Digital illiteracy 5. Delayed decision making
Group 3	Not adequate	1. Market-based extension 2. Formation of FPOs and CB 3. Infrastructure – storage, value addition 4. Coordination among different departments, NGOs & private sectors 5. Public-private partnership, contract farming 6. Capacity building on climate change adaption at all levels 7. Capacity building of women and youth	1. Lack of proper policy/common platform 2. Lack of political will 3. Proper monitoring/evaluation mechanism 4. Agro-based enterprises
Group 4	Not adequate	1. Business plan development 2. Value chain orientation 3. Demand gap analysis 4. Convergence 5. Monitoring & Evaluation 6. Organisational mapping & gap analysis 7. Information process 8. Need-based extension 9. Impact-led extension 10. Market-led extension 11. Value chain extension	1. Bottom to top planning 2. Over-emphasis on production aspects

The presentations were followed by group discussions.

Introduction to the 'New Extensionist'

Rasheed, while presenting the essence of 'The New Extensionist: Roles, Strategies and Capacities to Strengthen EAS,' summarized the new capacities needed at different levels. This was followed by a group discussion on the three levels of capacity development. The discussion highlighted the importance of technical (knowledge on new technologies/practices/standards/regulations) leadership, problem solving, partnership building, reflective learning, and brokering capacities among EAS providers at the individual level; along with the need for generalists and specialists in EAS provision. As all technical and functional capacities won't be found in one single individual/organization, emphasis needs to be placed on targeting capacity development in accordance with the nature of the task to be performed.

SESSION 3: INTRODUCTION TO CAPACITY DEVELOPMENT AND CAPACITY NEEDS ASSESSMENT

In two brief presentations, Nimisha Mittal (Programme Manager, CRISP) discussed the core concepts of competency, capacity, capacity development vs. training, capacity assessment; capacity needs assessment and types of capacities. The FAO and UNDP frameworks on capacity needs assessment were also discussed.

SESSION 4: CAPACITY NEEDS ASSESSMENT AT THE INDIVIDUAL LEVEL

Asset Mapping

Two exercises were conducted as part of this session.

The first exercise was conducted to assess existing capacities at the individual level. Three cards (in different colours) were provided to each participant (one for each level) and they were asked to list out existing capacities of extension staff in their organisations at three levels:
- field level – yellow card;
- middle management level – pink card;
- senior management level – orange card.

These existing capacities were sorted out by the participants on three flannel boards separately for field level, middle management level, and senior management level.

In the second exercise, the participants were divided into four groups and each group discussed the areas where new capacities are required. The groups also discussed some of the existing capacities that need to be strengthened at the same levels (field, middle management, and senior management) in EAS (irrespective of organisational affiliation). The identified functions were set up on the flannel boards by the four groups and from each group a facilitator presented the exercise outcome.

SESSION 5: CAPACITY NEEDS ASSESSMENT AT THE ORGANISATIONAL LEVEL

This session started with a presentation by Amulya K Khandai (Integrator, PRADAN) on good practices followed by PRADAN as an institution to regularly update skills of the various staff members, and how capacities were developed among newly-recruited staff to transform them into development professionals who offer a wide range of services to farmers.

Rasheed in his brief presentation introduced the new capacities called for at the organizational level:

- Institutions that enable sharing, interacting, learning;
- Strategic management functions;
- Structures and relationships;
- Processes, systems and procedures;
- Values, incentives/rewards;
- Human and financial resources;
- Infrastructure.

Appreciative Inquiry

In this session, through a paired-card exercise, individuals reflected on significant past achievements in their organisations in order to identify factors that led to success. Participants were paired, and each one interviewed the other to find out the organisational elements that contributed to success and recorded this in the cards. The identified success factors were then put up on the flannel boards by the individuals.

The participants were again divided into four groups with one facilitator in each group. Each group identified the desired capacities at organizational level and presented their findings.

SESSION 6: CAPACITY NEEDS ASSESSMENT AT THE ENABLING ENVIRONMENT LEVEL

Rasheed, in a brief presentation, introduced the new capacities required at the enabling environment level:

- Macroeconomic policies, incentives to increase production;
- Political commitment to agricultural development;
- Availability of policy framework;
- Capacity of policy-making bodies to adapt policies based on learning;
- Capacity and willingness of other actors to share resources and engage in joint action;
- Institutions that facilitate collaboration;
- Availability and access to inputs.

This was followed by a group discussion. Everyone agreed that a different set of participants is required at the higher level to assess capacity development needs at the enabling environment level. Moreover, those who can fairly represent different actors in the Agricultural Innovation System (AIS) are also important for a discussion on this topic as capacities needed at the enabling environment cut across different actors in AIS.

SESSION 7: STRENGTHENING CAPACITIES OF EAS IN ODISHA – PRIORITIES AND WAYS FORWARD

The capacity development needs at individual (field level, middle level, and senior level) and organizational levels identified by the four groups in the above sessions were summarized on four charts under the following heads:

a) Capacity development needs of field level individual;
b) Capacity development needs of middle level individual;
c) Capacity development needs of senior level individual;
d) Capacity development needs at organizational level

Dotmocracy -- Priority Setting on Capacity Development Needs

Dotmocracy is a facilitation method used to describe voting with dot stickers. Participants vote on their favourite options using a limited number of stickers. It works well with large groups (e.g., 20-30 participants), in situations when a quick 'read' of the group feelings are required and when participants are not able to engage in very rigorous and analytical
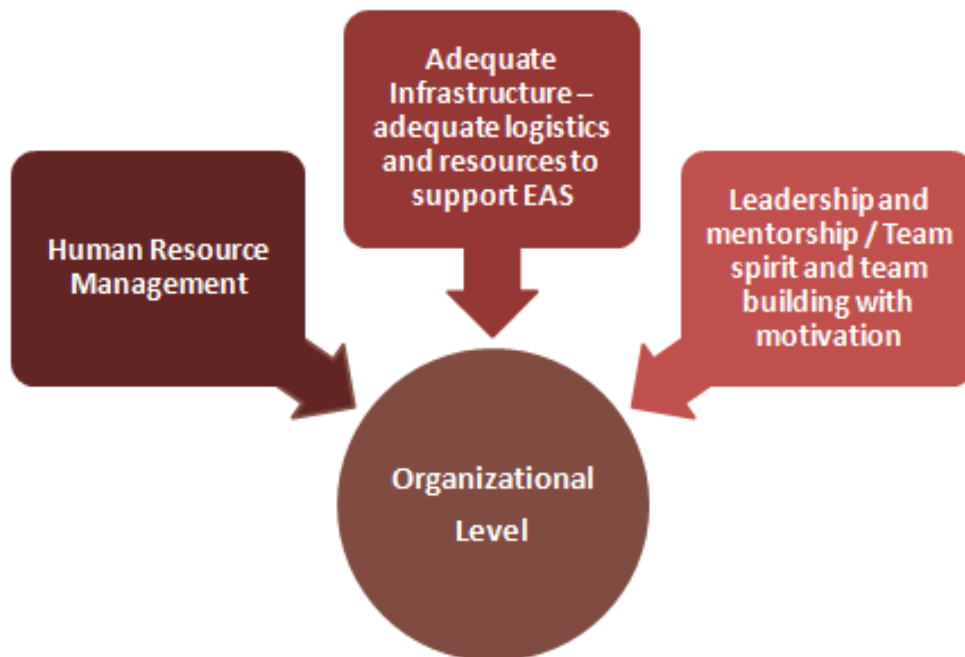

ranking processes.

In this exercise, each participant was provided with three dots (red stickers) per chart and they were invited to place the dots on the top three priority capacity needs in each chart. Thus each participant placed three dots in all the four charts and prioritized the top three priority capacity development needs at the individual (field, middle, and senior) and the organizational level.

Fig. 1: Top priority capacity development areas at field, middle and senior level

Field Level
- Technical knowledge and skills
- Communication skills
- Market linkage establishment

Middle Level
- Team building/ Leadership/ Management/ Liasoning
- Planning, Developing Programmes and undertaking M&E
- Convergence, Networking, Co-ordination, Partnership

Senior Level
- Visioning/ Leadership/ Decision making/ Goal setting/ Mentoring/Team building
- Monitoring and Evaluation
- Policy development and engaging in policy advocacy

Fig. 2: Top priority capacity development areas at the organizational level

SESSION 8: HOW DO WE BETTER ADDRESS THE PRIORITISED CAPACITY DEVELOPMENT NEEDS?

The World Café

This was a group interaction session that focused on conversations to discuss the way forward on how to implement the top three priority areas as identified through the Dotmocracy exercise in Session 7.

Participants were divided into four groups. They sat around a table and held a series of conversational rounds lasting for 10 minutes on the way forward to implement the above three top priority capacity needs at each level. At the end of each round, the facilitator in charge of each table remained there as the host, while the others moved to other tables. The hosts welcomed newcomers to their tables and shared the essence of that table's conversation so far. The newcomers further deepened the conversations held thus far through their insights as the round progressed. This process continued until all the four tables were visited by everyone in the four sessions. Finally the four hosts from the four tables presented the outcome of the discussions on ways to implement the top priority capacity development needs at each level.

These include: organization of regular trainings, workshops and exposure visit to staff at different levels; development of criteria for assessing and rewarding exemplary performance; conducting periodic evaluation on technical skills; organizing Management Development and Executive Learning Programmes for senior officers; promoting cross learning through creating platforms (study groups) to share experiences on specific topics; hiring consultants to technically backstop trainers; strengthening interface and consultation

mechanisms among the wide range of stakeholders in the public, private and NGO/CSO sector; evaluation of existing training programmes; development of good practice notes; strengthen knowledge management through development of learning modules and databases etc. (More details are in section 3)

SESSION 9: CLOSING SESSION

Before the closing session, participants were given one card each for feedback on both the positive and negative aspects of the workshop – anonymously. This was followed by open feedback from the participants about the workshop. In his closing remarks Dr Mukund Variar, IRRI, commended the participants and facilitators of this workshop for their planning and implementation of this workshop.

4.2 Annexure 2: List of Participants

S. No.	Name of Participants	Organization	Contact Detail
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