



The Economics of Ecosystems and Biodiversity (TEEB) AgriFood initiative in Uttar Pradesh, India

First Deliverable Report

Report on First Stakeholder Workshop

20 September 2022

Submitted by: ICAR-Indian Institute of Farming Systems Research, Modipuram- 250110, Uttar Pradesh, India



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Stakeholder Workshop report on TEEBAgriFood Initiative in Uttar Pradesh, India

Background

The food system in Uttar Pradesh, India, is complex with opportunities and challenges that are closely related to environmental and ecosystem factors, such as the impacts of climate change, water quality, biodiversity, management practices, innovation and technology and food security. The complexity of food systems is reflected in each subsystem which includes production, processing and distribution with very diverse drivers of consumption patterns that are influenced by nutritional needs and preferences for food. The Government of India and Uttar Pradesh are looking to promote alternate production strategies to ensure safe, healthy and sustainable food production in Uttar Pradesh through Organic Farming and Agroforestry based systems. The UN Environment Programme in partnership with ICAR-Indian Institute of Farming Systems Research (ICAR-IIFSR) in Modipuram, has initiated The Economics of Ecosystems and Biodiversity (TEEB) AgriFood initiative in Uttar Pradesh, India, applying a food systems approach beyond the production centric approach. Two alternate sustainable production strategies have been chosen to assess under alternate scenarios for their upscaling: organic farming and agroforestry. Organic farming and agroforestry can generate and diversify incomes in addition to providing safe, healthy food to people and livestock, as well as the generation of healthy soils by reducing synthetics in farming such as pesticides and fertilizers.

The TEEBAgriFood analysis focuses on four different capitals - natural capital, human capital, social capital and produced capital as well as external factors to reach the outputs: i) promoting production of diverse and nutrient-rich safe food, ii) respecting both socio-cultural and local community context, iii) ensuring social inclusion and household resilience, from an income and risk perspective. TEEBAgriFood in Uttar Pradesh focusing on major crops for organic farming and agroforestry will be studied and modelled by covering 5 administrative districts namely Aligarh, Bulandshahr, Hamirpur, Meerut and Mirzapur in Uttar Pradesh State of India. With various challenges and problems in the organic farming and agroforestry sectors, this research is expected to provide insights for the future development of organic farming and agroforestry promoted by the Government of India and Uttar Pradesh through schemes such as Parambharaghat Krishi Vikas Yojana, Namami Ganga, Har Med Par Pad (Tree on every bund) and National Agroforestry policy thus developing dynamic adaptive strategies concerning the sustainability and resilience to support the competitiveness of the sector.

In addition, this activity is expected to maximize the construction of the body of knowledge to encourage investment patterns in the organic farming and agroforestry sector in the future. There is also an urgency to involve stakeholders who are directly engaged in the product flow as well as the external stakeholders such as the government and the academic community (universities/institutions), in order to accelerate the creation of added economic value and to ensure a thriving, sustainable and resilient agri-food production flow.

Objective

The TEEBAgriFood stakeholder workshop was organised by ICAR-IIFSR on 20th September 2022 in hybrid mode (in-person and virtual). The major objective of the stakeholder workshop was to describe the TEEBAgriFood program and to bring together all stakeholders to gather input regarding strategies and plans to implement the activities of the TEEBAgriFood initiative in Uttar Pradesh. Experts and participants contributed towards the:

1. Identification of elements that can be part of the implementation of the research, including future practices scenarios for developing organic farming and agroforestry in the State of Uttar Pradesh;
2. Identification of ecosystem related variables and other drivers;
3. Provide ideas, insights and analysis to formulate a strategy around organic farming and agroforestry in Uttar Pradesh and determine how the TEEBAgriFood initiative in Uttar Pradesh could contribute to the development of the policy portfolio of the competitiveness and resilience of alternate production strategies conceived and implemented by Union and State governments of India.

The main theme of the workshop was to discuss the scoping report of the project “The Economics of Ecosystems and Biodiversity: Agriculture and Food initiative in Uttar Pradesh, India” with stakeholders and invite their valuable suggestions and inputs for the best possible implementation of the project and the maximum input in the study area.

Programme schedule

20 September 2022, Tuesday (10.30 to 16.30 hrs (IST), Hybrid mode (Physical and Virtual)

Venue: Conference Room, ICAR-IIFSR, Modipuram

Organized by

ICAR-Indian Institute of Farming Systems Research (IIFSR), Modipuram
in Collaboration with TEEB, UNEP

Programme

10.30 hrs	:	ICAR song	
10.32 hrs	:	Felicitation, Welcome and brief about stakeholder workshop	Dr. A.S. Panwar , Director, ICAR-IIFSR Dr. N. Ravisankar , PS, PC(A) & PI, TEEB
10:35 hrs	:	Self Introduction	All the Participants
10.40 hrs	:	Opening remarks (<i>5 minutes each</i>)	1. Dr. Salman Hussain Coordinator, TEEB, UNEP 2. Shri Rajesh Kumar DFO, Meerut 3. Dr. Ashish Kumar Srivastava JS(NRM), MoA&FW, GOI 4. Dr. A. S. Panwar Director, ICAR-IIFSR 5. Shri Gaurav Chaudhary Chairman, District Council, Meerut 6. Dr. S. Bhaskar ADG (AAFCC), NRM, ICAR
11.10 hrs	:	TEEB Initiative: TEEBAgriFood Evaluation Framework and the global EUPI TEEBAgriFood Project	Mr. William Speller Programme Manager, TEEB-UNEP

		<i>(15 minutes presentation followed by 5 minutes discussion)</i>	
11.30 hrs	:	TEEB Initiative in India: Objectives, milestones and expected outcomes <i>(15 minutes presentation followed by 5 minutes discussion)</i>	Mr. Reuben Gergan Country Coordinator, TEEB-India
11.50 hrs	:	TEEB Initiative in Uttar Pradesh: Scoping and Scenario setting report <i>(15 minutes presentation)</i>	Dr. N. Ravisankar Principal Scientist & PI, TEEB, ICAR-IIFSR
12.05 hrs		Tea Break	
12.15 hrs	:	Scenario setting for TEEBAgriFood Evaluation in Uttar Pradesh: Discussion on scenarios identified in Uttar Pradesh on organic farming and agroforestry and its policy implications <i>(Moderator: Dr. Meraj Alam Ansari, Senior Scientist & Mr. Reuben Gergan, TEEB)</i>	All the participants/stakeholders
13.00 hrs	:	Lunch	
14.00 hrs	:	Discussion on ecosystem services identified, and methodologies, data sources for evaluation <i>(Moderator: Dr. Meraj Alam Ansari, Senior Scientist & Mr. Reuben Gergan, TEEB)</i>	All the participants/stakeholders
15.00 hrs	:	Discussion on the elements of human and social capital identified for evaluation including methodologies and data sources for evaluation <i>(Moderator: Dr. Meraj Alam Ansari, Senior Scientist & Mr. Reuben Gergan, TEEB)</i>	All the participants/stakeholders
16.00 hrs	:	Concluding remarks	Chair and Co-Chair
16.10 hrs	:	Vote of thanks	Dr. A.K. Prusty Senior Scientist
16.15 hrs	:	Tea	
Programme moderator: Dr. Poonam Kashyap , Senior Scientist			

Participants

Sl.No.	Name and designation of participants	Organization
A. Physical (Offline)		
1.	Shri Gaurav Chaudhary, Chairman, D.C.	Chairman, District council, Meerut
2.	Dr. Reuben Gergan, Project Officer – TEEBAgriFood, India	UNEP India
3.	Dr. Jitendra Vir Chikara, Director	Future Plus Hospital, Meerut
4.	Dr. Anil Sirohi, Director Research	Sardar Vallabhai Patel University of Agriculture and Technology, Meerut
5.	Dr. A.N. Misra, Joint Director (Agriculture)	Government of Uttar Pradesh
6.	Dr. Harendra Prasad, Deputy Director (Fisheries)	Government of Uttar Pradesh
7.	Dr. Vineet Kumar, Deputy Director (Horticulture)	Government of Uttar Pradesh
8.	Shri. Pramod Sirohi, District Agriculture Officer	Government of Uttar Pradesh
9.	Shri. Rajkumar, Farmer	Village Bafawat, Meerut, Uttar Pradesh
10.	Sh. Manish Bharti, Farmer	Village Arnawali, Meerut, Uttar Pradesh
11.	Shri Vinod Saini, Chairman	Organic FPO, Kushavalli, Neer Adarsh organic, Meerut
12.	Shri Dharpal, farmer	Village Bafawat, Meerut
13.	Ms. Sangeeta Rani, Member	Global Social Connect NGO, Meerut
14.	Ms. Richa Singh, Chairperson	Global Social Connect NGO, Meerut
15.	Ms. Anita Sane, Director	Janhit Foundation, Meerut
16.	Danik Jagran (daily)	Media
17.	Amar Ujala (daily)	Media
18.	Hindustan (daily)	Media
19.	Danik Janwani (daily)	Media
20.	Dr. Peyush Punia, Principal Scientist & Head (Acting), IFS	ICAR-Indian Institute of Farming Systems Research, Modipuram
21.	Dr. L.R. Meena, Principal Scientist & Head (Acting), CSRM	ICAR-Indian Institute of Farming Systems Research, Modipuram
22.	Dr. R.P. Mishra, Principal Scientist & Head (Acting), OAS	ICAR-Indian Institute of Farming Systems Research, Modipuram
23.	Dr. P.C. Jat, Principal Scientist & Incharge, TTA	ICAR-Indian Institute of Farming Systems Research, Modipuram
24.	Dr. Debasis Dutta, Principal Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
25.	Dr. Chandra Bhanu, Principal Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
26.	Dr. Poonam Kashyap, Sr. Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
27.	Dr. Sunil Kumar, Sr. Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
28.	Dr. Nisha Verma, Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
29.	Dr. P. C. Ghasal, Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram

30.	Dr. A.L. Meena, Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
31.	Dr. Nirmal, Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
32.	Mrs. Deepshikha, STO	ICAR-Indian Institute of Farming Systems Research, Modipuram
33.	Mrs. Jailata Sharma, PA	ICAR-Indian Institute of Farming Systems Research, Modipuram
34.	Shri Rahul Kumar, SRF	ICAR-Indian Institute of Farming Systems Research, Modipuram
35.	Mr. Vimal Kumar, YP-II	ICAR-Indian Institute of Farming Systems Research, Modipuram
Project Team		
36.	Dr. A. S. Panwar, Director, Project Nodal Officer	ICAR-Indian Institute of Farming Systems Research, Modipuram
37.	Dr. N. Ravisankar, Principal Scientist, PI, UNEP Project	ICAR-Indian Institute of Farming Systems Research, Modipuram
38.	Dr. Meraj Alam Ansari, Senior Scientist & Co-PI, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
39.	Dr. M. Shamim, Senior Scientist	ICAR-Indian Institute of Farming Systems Research, Modipuram
40.	Dr. A. K. Prusty, Senior Scientist & Co-PI, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
41.	Dr. Raghuvveer Singh, Scientist, & Co-PI, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
42.	Dr. Raghvendra K.J., Scientist & Co-PI, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
43.	Dr. Poonam Yadav, RA, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
44.	Dr. Meenu Rani, RA, UNEP	ICAR-Indian Institute of Farming Systems Research, Modipuram
B. Online participation (Virtual)		
45.	Dr. S. Bhasker, ADG	Indian Council of Agricultural Research, New Delhi
46.	Dr. Salman Hussain, Coordinator	TEEB, UNEP Geneva
47.	Mr. William Speller	Programme Manager, TEEB, UNEP
48.	Dr. Michael Bucky	European Union
49.	Dr. Namdev Mhaskar, Scientist	BSKKV, Dapoli, Maharashtra
50.	Dr. Suja G., Pr. Scientist,	ICAR-CTCRI, Thiruvananthapuram, Kerala
51.	Dr. Shaon Kr Das, Sr Scientist	ICAR-Sikkim Centre, Gangtok, Sikkim
52.	Jasveer Singh Teotia, DAO	Muzaffarnagar, Uttar Pradesh
53.	Dr. Lakshmi Priya, Sahoo, Sr Scientist	ICAR-Central Institute for Women in Agriculture, Bhubaneswar, Odisha
54.	Padam Shri Bharat Bhusan Tyagi, Progressive farmer	Padma Award winner, Bulandshahr
55.	Dr. S.B. Bhagat	DBSKKV, Dapoli, Maharashtra
56.	Mr. Rajesh Kumar	District Forest Officer, Meerut
57.	Dr. D.G. Jondhale,	DBSKKV, Dapoli, Maharashtra

58.	Dr. Anil Kumar, Director,	ICAR-Central Institute for Women in Agriculture, Bhubaneswar
59.	Dr. Veena, Senior Scientist	ICAR-CTCRI, Thiruvananthapuram, Kerala
60.	Dr. Alka Sharma	
61.	Dr. Ashish Kumar Srivastava	

Deliberations made in the workshop are given below.

Dr N. Ravisankar briefed the participants about the project and concept of the stakeholder workshop on the TEEBAgriFood Initiative in Uttar Pradesh. He talked about the value of the environment, ecosystem services and the role of agriculture in achievement of the UN's Sustainable Development Goal agenda. Dr Ravishankar explained that TEEB is a global initiative that seeks to recognize, demonstrate and capture the values of ecosystems and biodiversity in both monetary and non-monetary terms. The project aims to evaluate the role of organic and agroforestry systems and related services under various schemes for the promotion of organic farming and agroforestry in the implementation of flagship programmes of the Government of India, such as Parambharaghat Krishi Vikas Yojana, Namami Gange, National Agroforestry Policy, Trees on Every Bund (Har med par Ped) etc., in Uttar Pradesh. Dr Ravisankar also highlighted the importance of the goal of the TEEBAgriFood India project on capturing and evaluating the significant hidden costs and benefits of organic farming and agroforestry interventions in the state.

Dr Salman Hussain, TEEB Coordinator, UNEP-TEEB, Geneva, expressed that the invisibility of nature's values and ecosystem services in our economies has resulted in economic and social degradation. Dr Hussain informed the participants about the TEEB initiative and what it aims to achieve. TEEB is working to make visible the significant contributions of nature to the wellbeing of humans by recognizing, demonstrating, and capturing the values of nature and biodiversity in decision-making. It seeks to make the case in economic terms to give nature a seat at the decision-making table. As such, the initiative in this context aims to support sustainable ecosystems by evaluating interventions for the TEEBAgriFood process at both state and national level and for the benefit of the farmers and the local population as well.

Dr S. Bhasker, Assistant Director General (ADG), ICAR, talked about problems related to farming in India, where the vast majority of the farmers are small/marginal farmers whose needs and interests are currently not taken into consideration, but should be. Farmers should be taken into consideration in all decision-making processes related to the climate crisis, the economy, climate change mitigation etc. to support them. Dr Bhasker also shed light on the Government of India's new mission "National mission on natural farming", the role of Pranav in organic farming, natural farming, as well as the accelerated certification process for organic farming at the national level. Dr Bhasker also highlighted the importance of filling the gap in order to achieve the targets of organic farming as well as the importance of organic farming and Indian farmers both in India and at a global scale, noting that India has the potential to fulfil the national organic produce demands.

Mr William Speller, Programme Management Officer, UNEP-TEEB, Described food systems as complex processes that are not easy to measure. He informed about the role of TEEB. explaining that TEEB is working holistically and looks across the entire value chain, including production and distribution, at how these processes are impacting the four so-called capitals - natural, human, social and produced capital. Further he added that we need to identify the most important aspects in the context of these four capitals. The value chain is very important with respect to organic farmers and should thus be evaluated.

The importance of national agricultural policy and other schemes for policy development and decision making were also mentioned. Mr Speller pointed out that transforming our food systems is crucial if we are to address all the SDGs towards the Global Agenda 2030. Recognising the policies is an important step to transform our food systems and for this, TEEB is working on helping decision-makers take more informed decisions that are based on evidence and science.

Dr Jitendra Chikara noted that the ultimate goal of a TEEBAgriFood project should be a healthy population. Dr Chikara therefore suggested including the aspect of health in the study (focusing mainly on cancer), as he finds the use of pesticide to be a major cause of cancer among the visiting patients at his hospital. The cancer cases have been increasing along with the increasing use of pesticides. He also added that cancer is one of the major health issues observed in the population of Meerut district of Uttar Pradesh and cases of cancer have increased drastically due to the recent excessive use of pesticides in the region. As such, there is need to educate farmers and make them well informed about the harmful effects of pesticides. The outcome of the project needs to be publicized through meetings with farmers, awareness programmes or other ways which will reach the local population and be the ultimate success of the project. The heavy use of harmful and cheap pesticides has been popular among farmers due to the easy access and quick results. Dr Chikara suggested using gloves when working with inputs, noting that the benefits of gloves should be popularised. Air, water and soil pollution are very high, and efforts should be made to reduce the pollution load in these elements. Strategic waste management technology should be developed further for both public health and support. Milk and milk products are highly loaded with chemicals, and therefore farmers should be informed about the harmful effects of these chemicals. Awareness programmes in consultation with Indian Medical Association (IMA) doctors and scientists should be developed while health related data should be discussed and shared more widely.

Dr Michael Bucki, EU, expressed the importance of biodiversity and of developing the models for agriculture that support nature, noting how this is working in practice. Dr Bucki also provided the example of the European Union agro-ecology model that was developed over a long process, underlining the importance of working out how to contribute to living in harmony with nature in the longer run. Further, the impacts of climate change in India were emphasized and it was also noted that India is particularly vulnerable in face of climate change, climate variability and temperature changes. Green agriculture projects by FAO are working on “Trees Outside Forests”, trees in farm as agriculture initiative projects. Dr Bucki also appreciated the idea of developing the local supply chain and bringing it to global level, including through certification schemes.

Mr Gaurav Chaudhary, Chairman, District Council, Meerut noted his appreciation of UNEP’s work and the TEEB initiative. He highlighted the importance of working towards a sustainable future, taking nature, ecosystem services and sustainable environment into consideration in decision-making, underlining that working on initiatives related to these aspects is an honour. Mr Chaudhary expressed his interest and full support for the project.

Dr A.S. Panwar, Director, ICAR-IIFSR welcomed the guests, dignitaries and participants to the workshop and conveyed his sincere thanks to Dr Salman Hussain, Mr William Speller and Mr Reuben Gergan, from UNEP. Dr Panwar explained that IIFSR is working on improving the farming systems by making them more productive and sustainable simultaneously. He also appreciated the progressive farmers of the state and appreciated their achievements as agri-entrepreneurs. Dr Panwar also shed light on the importance of trees, agro-forestry systems, natural farming for sustainable agro-ecosystems, and explained about their role within ecosystem services, as well as the work conducted by UNEP and TEEB

in this regard. Dr Panwar also stressed the importance of developing the value chains for farmers and on behalf of IIFSR he also promised continued cooperation and support for the farmers' benefit.

Mr Reuben Gergan, UNEP-TEEB, suggested to correlate the cancer prevalence data with pesticide use data in Meerut district to develop a concrete conclusion and solution. He also presented the milestones of the TEEBAgriFood project in Uttar Pradesh focusing on organic farming and agroforestry for evaluation processes of ecosystem services and schemes. Further, Mr Gergan shed light on the various scoping and scenario settings and presented the details of the Business as Usual scenario as well as the optimistic and pessimistic scenarios under the various climate projections and existing conditions over the predetermined timeline. Based on these scenarios and input from farmers, the project will scale up the potential of various Government schemes and implementation of policies worldwide. In this context, Mr Gergan explored the importance of scenario setting, consequences of implementing the policy and without implementing the policy, whilst various barriers related to the farming practices were discussed in addition to the ecosystem services that will be evaluated, as well as the methodology. Emphasis will be placed on the water quality and quantity modelling as well as on soil health, policy evaluation, and how organic farming and agroforestry practices contribute to improved soil health. The Indian Government is focusing on doubling farmer income and increasing livelihood options for the farmers, and against this backdrop, the methodology has been developed. Mr Gergan also added that female empowerment is one of the most important agenda items which will be analysed in the study. In addition, he also talked about the importance of human health related to the farming practices and as such, a human health impact assessment will also be evaluated and addressed through this project.

Mr Manish Bharti, a progressive farmer and agri-entrepreneur from Meerut, raised his concern about farmer benefits and showed concern about advocacy of some agricultural policies by the United Nations. He also mentioned that New Zealand farmers have been experiencing various problems that were brought up during the workshop discussion. Mr Bharti shared his experiences from foreign visits, explaining that the farmers in New Zealand are struggling due to current governmental policies in place, as well as the lack of effective policies that are needed. Finally, Mr Bharti pointed out that due to some international policies, farmers are being put in trouble while the environment is being negatively affected, highlighting that we cannot impose our agendas on people and environments without first ensuring a holistic understanding of the context.

In response, **Dr Salman Hussain**, responded to Mr Bharti and informed that UNEP in collaboration with the Indian Government are working to increase the livelihood options and income of the farmers of India in compliance with a sustainable future and the SDGs. Secondly, he added that TEEB aims to increase both the farm productivity and livelihood options through agroforestry farming practices. **Mr Bharti** added that the study should look into cattle population, and districts with high cattle population. Further he added that weed control is one of the major issues related to farming and that better weed control and management solutions must be suggested to the farmers.

He also proposed to include fruits and vegetables in the study that are grown in the districts with high pesticide use data such as Aligarh, Meerut and Bulandshahr. Mr Bharti also advocated the development of government authorities' organic market and price guaranteed systems that should be aligned with the policies promoting organic farming.

Dr N Ravisankar, Principal Scientist and Principal Investigator, ICAR-IIFSR: presented the project scoping report under the TEEBAgriFood initiative for Uttar Pradesh. The aims, purpose, scenario settings and various important ecosystem services were presented that were selected under the 4 capitals,

natural, human, social and produced, in addition to deliverables and assessment issues that arose during the said project. Dr Ravisankar explained the importance of the Sustainable Development Goals agenda with respect to both agriculture and the environment. Further, it was noted that more attention should be paid to reducing the pollution load and optimising agriculture and related practices, which is therefore the main purpose of the study. Rice-wheat cropping systems are major in the state, covering large land areas which is why this angle has also been added to the study for impact assessment under the project. Dr Ravisankar also shed light on the issues related to organic farming, explaining that there is a loss in yields and a lack of quality input for organic farming. As such, there is an urgent need to evaluate the schemes and modify the policies, while supporting the decision-making support systems through scenario development with lower and higher emissions.

Dr Pramod Sirohi (District Agriculture Officer): added his input to the scoping report presented by Dr Ravisankar and raised his concern that there are many districts and 9 agro-climatic zones in the State, noting that it may prove to be challenging to extract the desired data from these 5 districts only, with so many objectives to be reached. As Uttar Pradesh is a very large state with 75 districts, all the agro-climatic zones should be covered, or at least more districts covering all the agro-climatic zones should be considered. Dr Sirohi also added that nutritional security as well as unutilised resources such as sodic soil and barren land should also be considered for organic farming and agroforestry practices. that the importance of including consumers in this project was also brought up, for better assessment and improved consumer level awareness.

Mr Padma Shri Bharat Bhushan Tyagi, Padma Award winner, Bulandshahr, Uttar Pradesh: talked about the success and importance of integrated farming systems and advocated that this Integrated Farming Systems (IFS) science and data must be shared with farmers. Further, he added that agriculture must be treated as a co-existing unit rather than as a production unit. In addition, focus should not only be on organic farming but also should be linked to farmer's livelihood options and value benefits.

Dr Lakshmi Priya Sahoo, CIWA: presented her perception of the role of tribal women in protecting the ecosystems, who also worship ecosystem services. She added that for ecosystem services and environmental sustainability to be fully accounted for, the project must ensure the inclusion of knowledge from some tribal people/women in the study. Further, Dr Sahoo presented her views that agriculture in the future will need and involve more women than men, which should be better accounted for. A methodology for ecosystem services measurement specifically of female activities was mentioned, which could be useful to include in the project.

Mrs Richa (Global Social Connect, NGO), suggested organizing awareness programmes to popularize the TEEB initiative, informing about the role of farmers and agriculture in ecosystem services, as everyone should be informed about this. Increasing the awareness about this issue throughout the Meerut district is very important for environmental protection. Children must be educated, about organic farming and agroforestry practices as part of Ecosystem Education in the school curriculum. Mrs Richa also pointed out that her organization is ready to collaborate to create awareness about the TEEB initiative among stakeholders in the targeted districts.

Mrs Anita Rana, Global Social Connect: suggested to organise regular meetings with farmers and that NGOs should also be involved in these activities.

Mr Dharmpal Saini and Mr Manish Bharati, Progressive farmers from Meerut are involved in promoting organic farming and expressed their concern about not including the vegetable and fruit in cropping systems in different districts for the study, as the majority of organic farmers grow vegetables

and other short-term crops. They also highlighted the importance of developing a market for organic produce in Meerut, with a MSP (minimum selling price) guarantee. On average, there is more than a 30% yield loss within organic farming, and as such, the government should share that loss with farmers or provide compensation in this regard, as it is difficult for the farmers to survive for a long period of time (initial 4-5 years) while practicing organic farming until they are comfortable with the new production process..

Mr Vinod Saini suggested that ready-made biopesticides should be provided to farmers and that increased awareness is needed as there is currently a lack of awareness about various options available to farmers. On-farm technical support should also be provided to farmers.

Dr Harendra Prasad, Deputy Director, Fishery Department, added that soil and water are very important aspects of environment and water health, that should not be ignored.

Dr Anil Sirohi added that an ecology-based holistic approach should be taken when evaluating ecosystems and ecosystem services. The assessment should also include ecological aspects to be able to develop the economics of ecosystem services related to agriculture.

Dr Peyush Punia, ICAR-IIFSR, expressed his concern about the uncertainty, variability, and changes in terms of climate change and adaptation measures. He added that as the current scenarios will change by 2050, crop patterns will change as well as water use patterns, and therefore availability scenarios will change; making it increasingly difficult to make the assessments for 2050 accurate, with respect to present scenarios. Dr Punia also mentioned including vegetables in the study as most organic farmers are currently opting for short-term crops or vegetables. Dr Punia further added that predicting the pest extent alongside growing organic farming should be included in the scenario setting.

Dr Nirmal, Scientist, ICAR-IIFSR, raised his curiosity about the measurement methodology to measuring ecosystem services such as temperature, water purification etc. through agroforestry or trees.

Dr Nisha Verma, ICAR-IIFSR, added her views on including social inclusive groups/women groups in the study, through collective action. As self-mobilization and community mobilization has changed female empowerment, employment index, gender equity and other similar aspects should all also be incorporated into the study.

Dr N. Ravisankar, Dr M. A. Ansari, A. K. Prusty and Dr M. Shamim (Project team) addressed the queries of the stakeholders and explained the reason behind the selection of the mentioned study area, the selection of crops and various parameters being assessed under the project.

Dr Raghuvveer Singh, ICAR-IIFSR, shared his perceptions that small farmers are forced to engage in organic farming practices due to financial issues. Their land-holding capacity is small and may increase when engaged in organic farming and decrease when engaged in agroforestry practices. As such, it is also important to evaluate the land-holding status in the coming years.

Dr PC Ghasal, ICAR-IIFSR, added that under the climate change scenarios and increasing population, land-holding should also be considered for the evaluation of the impact assessment.

Mr William Speller, presented the closing remarks for the workshop and wished great success for the project and the team. He thanked members for their attendance and noted his appreciation for the workshop, saying that discussions with stakeholders are very productive and important for the project outcome.

The stakeholder workshop was concluded with a vote of thanks presented by Dr A K Prusty, Senior Scientist, ICAR-IIFSR and workshop moderator Dr Poonam Kashyap, Senior Scientist, ICAR-IIFSR.

A glimpse of the stakeholder workshop





Field visit to IFS model including multi-layer farming field