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ASSESSMENT METRICS FOR AGRICULTURAL INNOVATION SYSTEMS (AIS) AND EXTENSION AND ADVISORY SERVICES (EAS)

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FREQUENT ABBREVIATIONS

AIS = Agricultural innovation systems

EAS = Extension and advisory services

ICTs = Information and communication technologies

M&E = Monitoring and evaluation

R&D = Research and development

RAS = Rural advisory services

SDGs = Sustainable Development Goals

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1. BACKGROUND AND OBJECTIVES

Innovations in agriculture emerge from collective action, which accelerates the pace and enhances their impact on the agrifood sector and farming communities. Multi-actor engagement requires a systems approach to upscale innovations. Innovation outcomes such as increased agricultural productivity, sustainable management of natural resources, improved livelihoods, and food and nutrition security are largely dependent on the effectiveness and performance of agricultural innovation systems (AIS) and the real impact those brought to the farming community.

While an AIS perspective has been widely adopted by international development organizations and put in use by many countries, most of these countries have a long way to go towards having well-functioning AIS in which all subsystems, such as research, education and extension, and actors, both public and private, interact and collaborate effectively. There is therefore a need for an assessment of AIS and a proper diagnosis of the interrelations among different actors, institutions, policy and socio-economic environment at the country level – something which was recognized during the first International Symposium on Agricultural Innovation for Family Farmers, which took place on 21-23 November 2018 at FAO headquarters¹. The AIS assessment should generate evidence-based information for improved decision-making, and support the formulation of policy, by collecting quantitative and qualitative data and information on key features of AIS.

Without adequate assessment of the properties and performance of an AIS and its sub-systems, such as the agricultural extension and advisory services (EAS), it is difficult for policy-makers and practitioners to design approaches, promote policies and investments that foster greater innovation in agriculture². Guidelines and methodologies are pertinent to assess the properties and performance of AIS and EAS. Furthermore, as countries face difficulties and capacity constraints to elaborate those methodologies and valorize the diagnosis' findings by themselves, it becomes increasingly evident that a tailored global tool to assess agricultural innovation and support systems around it is thus needed.

The overall objective of the technical workshop was to present the guidelines on AIS and EAS assessments, the results at country level and to design and develop a framework of indicators to complement those assessments. Specific objectives were to:

- Present and discuss the draft AIS and EAS assessment guides and the results/feedback from country implementation and testing;
- Map and analyse existing indicators and metrics approaches with relevance to both AIS and EAS;

¹ FAO. 2019. Proceedings of the International Symposium on Agricultural Innovation for Family Farmers: -

² Spielman, D.J. and D. Kelemework. 2009. Measuring Agricultural Innovation System Properties and Performance Illustrations from Ethiopia and Vietnam. IFPRI Discussion Paper 00851. <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/26401>

- Identify gaps in the existing indicators and recommend a revised set/framework of indicators for the AIS and EAS assessment that track progress, provide insights on the performance evaluation and allow for knowledge and experience sharing among countries facing similar challenges.


Tables summarizing group discussions are included in Annex 1, the agenda of the 3-day workshop is provided in Annex 2 and the list of participants in Annex 3.

2. OPENING



The workshop was opened with a presentation of the background and objectives by Mr Selvaraju Ramasamy, Head of the FAO Research and Extension Unit. It was noted that the workshop builds on recommendations from the 25th Session of FAO's Committee of Agriculture (COAG) in 2016, a review of global indicators for AIS in 2017 and the International Symposium on Agricultural Innovation for Family Farmers in 2018. Since December 2017, the FAO Research and Extension Unit (AGDR), together with partners, has been developing a guideline for assessing AIS, which was tested in Tanzania and Thailand. AGDR has also developed guidelines for assessing EAS to provide specific insights into the functioning and operationalization of the EAS system at the national level. This assessment guide has been full-scale tested in Ecuador, Uganda and India.

After the opening presentation, Ms Nevena Alexandrova, Agricultural Extension Officer, introduced the participants and facilitated a panel discussion on the demand, issues and challenges related to metrics of AIS and EAS to support decision-making and investment. The panelist of this first discussions were: *Christian Grovermann, FiBL; Sanne Chipeta, FAO expert; Rasheed Sulamain, GFRAS; Kate Kuo, BMGF; Patience Rwamigisa, Ministry of Agriculture, Animal Husbandry and Fisheries, Uganda.*




Mr Christian Grovermann pointed out in his presentation the importance of using metrics for reducing the complexity of AIS, increasing transparency and robustness and promoting informed decisions. He emphasized that metrics can also help define which configuration of AIS systems can be really effective, and help quantify different AIS key characteristics that could be scaled up. He also pointed out the importance of “measuring the right thing”. For this, a theory of change might be needed. He also identified key challenges in the selection and collection of relevant indicators: unintended consequences and tradeoffs of interventions need to be taken into account for a holistic picture as well as issues with measurement and contextual analysis, stakeholder involvement and utilization of the findings.

Ms. Sanne Chipeta pointed out that progress towards SDGs, especially SDG 1 and 2, is slow and EAS can address many related issues. In particular, ensuring efficiency and measuring effectiveness of EAS is crucial to make informed decisions, investments and improve the system. In her presentation she referred to the work done by GFRAS since its inception and the limited results achieved. In particular, she underlined the tremendous changes in the situation of smallholders and EAS in the last 2-3 decades and the new roles of EAS which have moved from just a technology transfer. As a consequence, we have now even less data. Nowadays, there many more stakeholders (governments, farmers organizations, development partners, private sector) who have expectations from EAS and they need to be understood to measure EAS. Finally, Ms. Chipeta pointed the importance of systemic measures and a framework to embrace multiple outcomes and impacts of different stakeholders.

Mr Patience Rwamigisa in his intervention brought up the Uganda perspective on the subject of metrics for AIS and EAS. He pointed out that getting reliable data is very difficult, as different institutions are generating different data, and it affects policy making. He emphasized that often evaluation is made in a project mode and not in a systematic way. Mr Patience Rwamigisa also raised the important issue of national capacities of statistical institutions, farmer and education institutions which tend to focus on the structure and not on managerial roles/capacities, which are very important.

His presentation also pointed out key reasons why metrics are needed, such as the need to evaluate the performance of technologies in the field, contextualization of global and regional policies to the local context, market information. Furthermore, metrics should also provide evidence for investments and on returns to investments.

Mr Rasheed Sulaiman in his presentation clearly stated the need to have metrics to evaluate. With regards to EAS, he reported that many indicators have been produced but the volume and nature of those are not meaningful, e.g. extensionist-farmer ratio, public investments etc. These indicators mostly refer to numbers and to public EAS, while now we deal with pluralistic EAS, including also civil society organizations, private sectors, etc, among EAS providers. In his intervention, Mr Sulaiman pointed also the issue of lack of ownership: much of evaluations are project-focused; GFRAS recognizes the lack of national capacities for evaluation, and there is a need to strengthen capacities at country level. GFRAS country fora can be used for this, as they should be a place where country data are collected, processed and disseminated. Also, capacities need to be considered at individual, organizational and enabling environment level; more qualitative data are needed to support quantitative data.



Ms **Kate Kuo** brought into the discussion the BMGF perspective and agreed with comments from other speakers that not having standardized methods makes it difficult to measure project performance. This is especially true in the context of pluralism which implies many new approaches. Better metrics would enable BMGF to better contribute and inform governments/donors about EAS.

Regarding challenges, as stated by the other panelists, Ms Kuo also reported the need for prioritization of indicators and the issue of sustainability: who could fund the collection of data at local level, which is quite costly. She pointed that there should be publicly available globally accepted set of standardized indicators and the BMGF can also support a global learning agenda especially with regards to digital approaches.

After the five presentations, the moderator opened the floor for questions by the participants. A very rich discussion followed. Some of the points raised included that: there is huge insufficiency in capacities in countries to conduct regular surveys; human factors and human behaviors are missing; it is important to look at cumulative effects and interactions and at the end users as data sometimes can be manipulated for political purposes.

The panelists, Patience Rwamigisa, Rasheed Sulaiman, Kate Kuo, Christian Grovermann and Sanne Chipeta, as well as the audience contributing to the discussion agreed on the following key aspects:

- Reliable data and systematic evaluation are needed for policy-making and planning;
- Diagnostics and related metrics are needed, and are becoming crucial for governments and agrifood stakeholders to advance on innovations. The metrics can increase the transparency and help target policy and investment efforts, based on evidence. Metrics reduce the risks in governance and performance of AIS and EAS, e.g. metrics are important to draw lessons from global and regional policies for national and local decisions;
- Current approaches for both assessments and metrics of AIS and EAS are not sufficiently exploring the complexity of the actors, their interactions, nor address efficiently the new political economy models, related to globalization, global challenges, democracy and pluralism.
- Harmonized approaches and frameworks are pertinent to better guide the policy and investment processes in general and data collection at national level as routed in the national systems. Standardized measurement methods are essential to measure performance and benchmark across projects, programmes and countries;
- Country ownership, and hence, country relevance of data, and systemic evaluation are crucial for policy-making and planning;
- There is a need to simplify at different levels, and translate the AIS complexity to meaningful, tangible, feasible and accurate metrics. Prioritization and reduction of complexity is needed to increase transparency and robustness of evidence for informed decisions;
- Cross-country comparison is not among FAO's immediate objectives. At this stage, we are focused on assisting countries to advance on their agricultural innovation agenda towards achieving the SDGs. However, FAO will fulfill its mandate to act as a neutral meeting platform for countries to share knowledge, good practices and lessons learned and in this sense supports harmonized metrics frameworks on AIS and EAS;
- "Less is more": there is a necessity be pragmatic and start with a set of priority indicators, based on existing and sustainable global data sources, whereas possible and introduce a

small number of new indicators in the areas of must, such as, linkages of different AIS subcomponents, multi-stakeholder processes etc., provided that clear commitments and responsibilities by partners are made;

- Assessment of AIS and EAS impacts is challenging with many existing indicators, unintended consequences and trade-offs;
- There is a need to strengthen national capacities for monitoring and evaluating AIS and EAS at the country level and not only at the at project level;
- To assess EAS, it is important to go beyond simple numbers (e.g. extension-farmer ratio, investments) and also measure qualitative elements (e.g. demand-orientation, connectedness);
- EAS country data can be collected and disseminated through the rural advisory services (RAS) observers;
- A multitude of stakeholders and goals require an understanding and measurement of EAS and AIS as a system;
- A harmonized AIS and EAS metrics framework can be achieved only through cooperation and partnerships that included international actors but also, regional organizations and networks and national stakeholders and governments.

Conclusions of the Opening Session:

From the panel discussion a consensus emerged that metrics are essential for AIS and EAS assessments, but should go beyond current data collection initiatives to account for system characteristics and context.

Standardized and harmonized approaches, **innovative implementation modalities, including partnerships, capacity development** and effective data systems are needed to this end.



3. ASSESSMENT METRICS FOR AGRICULTURAL INNOVATION SYSTEMS (SESSION I)

Mr. Selvaraju Ramasamy introduced the speakers of the first session. After the opening presentation, Ms Manuela Bucciarelli- Capacity Development and Monitoring Consultant, FAO introduces herself, and the outputs of the session: to get an overview of the AIS guidelines and to hear feedback of two pilot testing.

The moderator introduces Mr. Abdoulaye Saley Moussa. Agricultural Research Officer, FAO, who has been leading the development of the AIS assessment guide.



Overview of the assessment guidelines of Agricultural Innovation Systems

In his presentation of the AIS assessment guide³, Mr. Abdoulaye Saley-Moussa introduced the main elements of the proposed approach for a structural and functional analysis of AIS. The focus of the guide is to provide directions on in-depth assessments of a country's AIS rather than country comparison and benchmarking. This framework aims to make it easily applicable at a country level, operational and flexible so that can be adapted to every situation and contexts.

The assessment includes a structural, functional and enabling environment analysis. Key questions that the assessment will answer, include: what are the functions in the system, how the actors should perform these functions; how agricultural innovation systems have evolved over time, where did it start and how it is evolving, what are the formal and informal rules, capacities?

Ownership, a skilled assessment team and clear framing questions were identified as key considerations for the operationalization of the assessment guide. Qualitative appraisals can be complemented by quantitative indicators that can capture the linkages and the system.

These need to be carefully selected to reflect linkages and relevance to the **Sustainable Development Goals (SDGs)**.

³Assessing National Agricultural Innovation System: Guidelines for Practitioners. Draft 1.0 – revised (Aug 2019). Circulated to participants before the workshop.

Feedback from piloting the AIS assessment guide

The moderator introduced the two presenters and pointed out that, prior to the workshop, the AIS guidelines had been tested in two contexts, Tanzania and Thailand, so that lessons learnt from the piloting could be shared. It was noted that the two assessments pilots were carried out in a short notice with limited time for preparation.

Ms **Catherine Msuya**, Sokoine University of Agriculture, presented feedback from pilot testing of the AIS assessment guide in Tanzania. An initial scoping study (through in-depth review) revealed major trends, challenges and opportunities. A semi-structured questionnaire based on adapted framing questions was used, after a pre-testing. After that, the team proceeded with the assessment in three regions, using FGDs and interviews with policy makers. The information was then analysed and a report with recommendations was drafted. Ms. Catherine Msuya suggested that in the guide an option should be given to have two different teams, one doing the scoping study and one doing the AIS assessment. Also the Terms of Reference for the assessment team was not included in the guide. She also pointed out that sources of information were missing and the concept of AIS was not clear enough, including a definition of the key actors in AI. Among the findings from the pilot exercise, Ms Catherine Msuya reported that it is important to address the different AIS components (structural, functional and enabling environment analysis) in an integrated way. With regards to indicators, she suggested to consider quantitative indicators that can describe the performance of AIS taking into consideration gender, (number of women , youth, etc.), diversity of actors and also the impact of the agricultural sector development (for instance contributions to GDP). The following recommendations were shared to make the assessment more useful for policy makers:

- To introduce the concept of AIS, its assessment and importance to policy makers
- To identify clearly the entry points to assess local needs and gaps
- To involve all actors from planning assessment to providing feedback
- To define better roles of actors
- Use easy to collect quantitative data

After this presentation, the pilot in Thailand was presented by Mr. **Ravi Ketharpal**, Executive Secretary APAARI. He used a reduced assessment approach, and worked with a mini team and started a pre assessment, collected lots of data which gave a good consolidation of Thailand's AIS. Mr.Ravi Ketharpal reported that in the initial workshop the entry points were presented and validated by the interviews later on. The framing questions were refined and adapted. The following key challenges were faced: the team took more time than planned to understand the AIS and to harmonize all understandings; in general some informants lacked interest and time. Little time was also available to properly plan and conduct in depth consultations. Mr. Ravi Ketharpal also pointed the limited understanding of the AIS concepts, difficult framing questions and a too generic functional analysis. He suggested to simplify and to add a two pager summary.

In terms of indicators, GDP exports and imports were used; ASTI data and agriculture census data can be used to collect detailed information; AIS visual map of innovation can be a powerful tool for policy and advocacy, by type actor group and locations. Some recommendations to make the AIS assessment more useful were shared:

- need to include and involve key stakeholders
- consult and integrate all factors, including farmers who are not included in the guideline

- provide clear documentation to address the entry point
- key policy makers are important to be part of AIS validation workshop
- Promote the AIS tool as a regular decision maker.

Lastly, Mr. Ravi Ketharpal suggested to have a simplified and shortened guidelines document, and to have a detailed guideline for operationalization.




Then Mr. Ravi Ketharpal thanked the guideline developers, and commented on the importance of the guideline. The moderator thanked the presenters and noted that these were pilots rather than tests and were done on a short notice.

The presenters as well as the workshop participants who asked questions after the presentations, pointed the following main **challenges** encountered during the pilot testing which relate to a range of operational and methodological aspects:

- Confusion arose due to the innate complexity around the AIS concept;
- Insufficient time was allocated to the team to follow all steps in the guide;
- Framing questions were difficult to understand and did not provide guidance on quantitative approaches to assessing AIS;
- Guidelines used inconsistent language and were vague on data collection and other elements of the assessment process.

In the discussion that followed the presentations, participants raised the issue of how to compare the results, given the adaptation of the methodology to the country specificities. It was clarified that the assessment does not aim at comparison, but to do assessment at country level, and addressing the country level issues.

One of the participants, Ms Catherine Moreddu, OECD, provided some concredited suggestions to improve the guidelines, based on the previous OECD experience. She pointed out that it takes three months to understand what to do, and another three months to conduct the assessment and therefore it is important to have a good implementation group. OECD provides the data commonly



available indicators to have cross-country harmonization. She also pointed that Advisory Services are part of the AIS and should be integrated in the assessment.

Participants asked how to select entry points: the presenters clarified that these are identified during the scoping study and then refined during the workshop by all the actors together. In terms of the profile of people who should be engaged to carry out the assessment, it was recommended to consider someone who has a broader perspective and understanding of the agriculture sector.

Several **recommendations** for the improvement of the AIS assessment guide were suggested by the presenters and during the discussion following the presentations:

- Simple and coherent explanations are needed to introduce the AIS concept and clarify the assessment steps, including information sources;
- Entry-points and indicators should be clearly specified and take into account gender aspects;
- Collection and analysis of quantitative data is important to increase objectivity and effectively communicate findings to decision-makers, but metrics need to be straightforward and partly rely on existing databases;
- Roles of team members in the assessment need to be well defined and at least 6 months are needed to be assigned for the implementation;
- Involvement of stakeholders and holistic assessment needs time, interest of all parties in the assessment outcomes and country ownership;
- EAS and AIS assessment guides need to be integrated, as advisory services are part of the innovation system;
- Assessment of system functions and structures should be linked to agricultural innovation impacts based on theories of change/impact pathways.


Panel discussion on the complementary use of qualitative and quantitative AIS performance methods

The moderator opened the session by giving the floor to Ms. Aurelie Toillier, Cirad visiting Scientist at FAO, who introduced the topic of the discussion: *“Improving the robustness and relevance of performance metrics by using mixed quanti-qualitative methods”*. She stated that metrics are needed to develop a dashboard for **assisting countries** in the development of their AIS strategies and policies through: a comprehensive diagnosis of AIS and needs assessments. She also referred to the recommendations from the Paris experts’ workshop regarding performance indicators at system level including the recommendation to mix qualitative and quantitative measuring approaches for a better understanding of what makes an AIS performant. Ms Aurelie Toillier introduced the panelists: *Murat Sartas, IITA; Margaret Mangheni, Makerere University, Uganda; Simona Cristiano, CREA, Italy* and asked them to provide some insights into the following questions, based on their research-for-development experience:

Q1. Why do we need mixed approaches to track performance and progress in innovation systems?

Q2. How qualitative approaches, *such as Theory of Change and MEL system*, could help to collect robust indicators for tracking progress in performance? What are the challenges and pitfalls?

Q3. Reversely, how some quantitative measures can support qualitative approaches, *such as actors network analysis*, for performance assessment? What are the challenges and pitfalls?



Mr. **Murat Sartas**, IITA, presented his current work on multi-stakeholder Innovation Platforms in Uganda and pointed that participation of stakeholders in innovation processes is necessary for high performance AIS

However, participation itself is not sufficient. To achieve high performing AIS, among others, engagement of stakeholders is necessary. By using text analysis, a quantitative metrics can be constructed from qualitative data. Metrics with qualitative inquiry explains why and with “who” change happens; Improves capacity of stakeholders to make informed decisions; Improves group decision making.

Ms **Simona Cristiano**, CREA, gave a presentation focused on “Complementarity of qualitative and quantitative assessment approaches in multi-actor innovations”. The framework presented includes the analysis of expected /observed effects/changes on farms, a self-assessment on interactions and the analysis of performance of innovation at farm level.

Ms Cristiano concluded that the complementarity of qualitative & quantitative methods helps capturing the different types of information, through addressing different evaluation purposes. The use of a participatory approach allows to achieve a common understanding on M&E purposes and the commitment of all the stakeholders (farmer, data collector, public administration); the self-assessment tool enables self-reflection and double-learning loops. She pointed also that the interviews helped farmers achieving a major consciousness of the process and of the influential role of the partnership on farm’s performances.

Group discussion on country-level AIS assessment metrics

To enhance the AIS assessment guide, which so far has a focus on qualitative analysis, with metrics for more quantitative analysis, the moderator asked participants to do a brainstorming on relevant indicators, Four groups were formed, as described below.

Group 1: indicators for AIS properties

Group 2: indicators for AIS performance (consider performance as an “intensity” of innovation activities (lots of activities mean high performance of the system)

Group 3: indicators for measuring progress, regarding country aspirations

Group 4 indicators for measuring processes of change (drivers of changes at system level, such as: "what are the level of habits to use evidence for policy making, as just suggested by Murat)

For each group, three questions were posed:

Q1 : Brainstorm and propose 10 indicators max

Q2. What qualitative approaches do you recommend to enhance the robustness, and quality and relevance of data for measuring indicators?

Q3. What do you recommend for the design of an easy-to-apply and cost-efficient approach?

A preliminary list of indicators emerged from discussions in four groups and it is presented in details in Annex 1, table 1. The list was the result of the four groups discussion and includes indicators such as “the existence of agricultural innovation policy”; “number of digital tools used in value chains” as indicators of the AIS properties; “access to markets for farmers” as part of the AIS performance indicators; “Platform collaboration, Partnerships / joint activities” as indicators of the AIS process

and progress (these two categories have been merged as they refer to how changes happened and their evolution).



Conclusions (Day 1)

The usefulness of the AIS assessment guide can be increased by simplifying the content in terms of concepts and implementation process. Metrics at different levels (AIS properties, performance, process and progress) can complement the qualitative assessment approach outlined in the guide. These shall include concrete indicators and scoring tools, in particular to address farmers, gender and youth, address functions (targets) and allowing for better integration of the structural, functional and enabling components. Different interests and needs exist around metrics, which include in-depth country analysis through context-specific method(s) as well as cross-country, cross-project comparison through a standardized method. Data for certain important metrics is available from existing sources, but several other relevant metrics require additional data gathering or data mining.

4. ASSESSMENT METRICS FOR EXTENSION AND ADVISORY SERVICES (SESSION II)



Outline of EAS assessment guide


The second day of the workshop started with an overview of the EAS assessment guide⁴ provided by **Ms Delgermaa Chuluunbaatar**, Agricultural Extension Officer, FAO. The development of such a guide was considered necessary to fully reflect the pluralistic systems perspective on the delivery of advisory services and the demand of clients. The document consists of a set of core principles tailored to the country context and outlines a multi-stage assessment process (preparation, implementation, consolidation). The analysis of enabling factors and relationships among EAS actors as well as the identification of capacity and service gaps are emphasised in this process. After the recent test phase, the further development of the guide will involve the development of a scoring tool to measure qualitative characteristics of EAS and the development of a communication strategy. Accurate and easy to understand indicators along with effective visualization are considered crucial for fostering evidence-based decision-making on EAS.

Feedback from piloting the EAS assessment guide

Similar to the AIS guidelines, the EAS assessment guide was also subject to a rapid testing in concrete country contexts, in this case in India (Odisha state), Uganda and Ecuador, where Ms Nimisha Mittal, CRISP, Ms Margaret Mangheni, Makerere University and Ms Maria Isabel Paredes, RELASER respectively shared their experiences with piloting the guide.

Ms. Nimisha Mittal, presented the experience from EAS assessment in the state of Odisha, India, characterised by 35% net cropped area, 60% of the state workforce employed in agriculture and presence of a pluralistic EAS system. Against this background, the agricultural EAS providers in Odisha state have felt the need for reform and innovation from within to be able to better respond to both the government focus on transforming agriculture and farmers having new challenges that

⁴ Guide for a multidimensional assessment of national Extension and Advisory Services (EAS). Draft - September 2019. Circulated to participants before this session of the workshop.



require more dynamic extension. Furthermore, Ms. Mittal elaborated on the policy dialogue and in-depth interviews with key stakeholders, which have been conducted in the course of the assessment process. Fragmentation, rent-seeking and lack of interactions were identified as major issues for a well-functioning advisory system. With reference to the methodology of the guide, Ms. Mittal highlighted the good practices and lessons learned from their experience, in particular for careful preparation of the interviews, taking into account that they take time (two hours in their case), should be preferably face-to-face in particular with managers, prepared templates as well as reference letters help. She also reported some unwillingness in sharing information from the side of private sector and in particular on budgets. To overcome this constraint, the creation of an advisory board with the participation of the managers of EAS, including private sector is recommended (also part of the guide). In general, Ms. Mittal highlighted the need to dedicate more time to the assessment process than usually previewed taking into account meteorological conditions while collecting data from the field (such as cycloning disasters), and more time for consolidation and sharing. She also highlighted the potential of the platforms to collect and share information and concluded with the need of clarity on predefined indicators for understanding or calculating EAS budgets across actors.

Ms. Margaret Mangheni presented the experience of the EAS assessment in Uganda, which involved a literature review, field work in one district, a national workshop, key informant interviews and an organizational assessment. She underlined the assessment comes in line and contributes significantly to the implementation of the National Agricultural Policy (2013) and National Extension Policy (2016) for a sustainable, farmer-centred EAS for increased productivity, household incomes and exports. Using the country forum as an entry point for the assessment proved valuable in reaching a diverse set of EAS actors. She validated the importance of the FAO methodology, in particular with respect to the participatory engagement and national ownership elements (multiactor national assessment team, advisory committee and national workshop); and its holistic nature encompassing supply and demand side, system linkages and enabling factors, as well as developing national capacity to undertake the assessment. In parallel, she noted that more time and skills in data collection and management are necessary.

Ms. Maria Isabel Paredes introduced the findings and observations from the assessment process in Ecuador, based on the EAS assessment methodology. The approach chosen by the national team combined the national workshop with focus group discussions around four country cases: two in the coast zone (maize and cacao) and two in the Andean region (milk and vegetables). Similar to India, a lack of interactions among EAS stakeholders was a key finding of the assessment. As added value of the FAO methodology, she distinguished the consideration of personal, organisational and production unit perspective, its flexibility to be tailored to different contexts, national ownership and building national capacities but pointed out the need to extend the timeframe of the assessment process. She suggested in future to find a way to involve the GFRAS regional networks, such as RELASER. The following observations regarding indicators and metrics were made: countries need simple metrics to advocate for investments in EAS and demonstrate the result of their work, focus on public good and main clients- family farmers and build on what already exists.

Some important **lessons learned** emerged from the three pilots:

- The pluralistic perspective on EAS provides a useful conceptual framework and adds value to an assessment of the advisory system in a given country;
- Certain stakeholders are difficult to involve. It is therefore important to contact and brief stakeholders well in advance of any assessment activities;
- The list of tools is large and partly confusing, which makes it difficult to select appropriate tools for the assessment;
- Considerable time is required to create common understanding, train the assessment team in applying tools and carry out qualitative data analysis, and to mobilize stakeholders.

Several **recommendations** for the improvement of the assessment guide were suggested:

- Specific guidance on prior consultation of stakeholders is required;
- Well-defined, clear and systematic tools should be provided to the assessment teams;
- Realization of national ownership of the assessment process needs to be clarified;
- Guidelines on developing assessment capacities and conducting national workshops should be elaborated;
- Simplification of the assessment routine and a focus on public goods and main clients can streamline the assessment process and produce clearer results.

In a discussion of the country experiences, participants highlighted the prerequisite to translate qualitative assessment routines into quantitative metrics for more systematic diagnostics. Outcome indicators related to client satisfaction and uptake of agricultural innovations are required and need to be linked to EAS capacities and service delivery. This should be achieved without “heavy” data collection tools. Network analysis and text mining were mentioned as promising assessment instruments. The importance of communicating assessment results effectively was also pointed out. FAO stressed the usefulness of cross-country learning, without necessarily producing country rankings.

Key findings of the background study on measuring EAS properties and performance

The presentation and discussion of the EAS assessment guide was followed by the presentation of a background study on EAS indicators carried out by Ms Sanne Chipeta⁵. EAS metrics need to address the complex realities of stakeholders and unpack the different expectations. EAS outcomes include increased access to advice, improvements in capacities and knowledge and technology change. In addition to measuring these outcomes, metrics need to focus on the functions in the systems that enable impact. A comprehensive set of indicators is essential to evaluate effects and ultimately cost-effectiveness of policy, capacity development and financing interventions. Evaluation in EAS should be participatory, incorporating the voice of clients. Participants also stressed that EAS metrics need to be embedded in the wider context of AIS diagnostics, capturing research-enterprise-extension linkages, timing of knowledge dissemination and innovation adoption at the farm level (keeping in mind adoption intensity, dis-adoption, feedback loops). In this regard, local farmer-led innovations as well as innovation goals (agroecology, industrial farming, or other production modes) need to be considered.

⁵ Development of indicators for Extension and Advisory Services. Background Study. First Draft. Nov 10, 2019. Sanne Chipeta. Circulated to participants before the workshop.

Group discussion on measuring expected EAS results

Participants were split into four groups representing different EAS stakeholders and asked to reflect from the perspective of that stakeholder group on what outcomes to measure in order to assess the effects of EAS interventions. Participants were then asked to come up with suggested indicators for each of the outcomes. The results of this group discussion have been grouped into themes. Each group's table, representing one particular stakeholder type, is presented in details in Annex 1, table 2.

Group discussion on measuring EAS system functionality and performance

Based on the most important expected results identified in the previous group work, participants discussed related roles and functions of EAS and suitable indicators for measuring performance, according to the main outcomes emerged in the previous discussion. This exercise allowed to identify a set of EAS performance indicators which are listed in table 3, Annex 1.





Conclusions (Day 2)

EAS assessments need to integrate the pluralism of EAS. Simple and valid indicators that can capture the complexity of the advisory landscape are a major challenge when attempting to measure EAS functionality or performance. Starting with a small set of well-defined indicators is preferable to a large set of indicators that are difficult to measure or for which data is difficult to collect. Capacities, access to advice and network linkages are important elements in any EAS assessment that require an accurate assessment routine. Expected outcomes from EAS interventions range from food and nutrition security and productivity increases to environmental safety (among others). This implies a need to consider trade-offs as well as awareness about maximising synergies among different outcomes. When analysing innovation uptake as a result of well-functioning EAS, it is important to go beyond a simple analysis of binary adoption effects. An important open question relates to responsibility and funding of any systematic data collection efforts.

The workshop participants have made also comments and suggestions related to both AIS and EAS assessments and metrics, namely to:

- Improve clarity of focus; set clear targets, strengthen the relation between the assessment and the metrics; improve the coherence between the two guides;
- Consider both baseline and gap analysis in the assessment guides;
- Consider the use of data mining, big data, open linked data sources in the data collection and validation;
- Better integrate gender and youth perspectives (metrics);
- Include digitalization perspective into the metrics.

5. TOWARDS A GLOBAL INDICATOR FRAMEWORK (SESSION III)

Background study and panel discussion on applying global AIS metrics


The third day of the workshop was dedicated to highlighting approaches for global diagnostics of AIS, building on the discussions from days 1 and 2 and paving the way towards a global AIS indicator framework.

To set the scene, Mr **Christian Grovermann** presented a background study⁶ which provided an overview of available data sources for measuring AIS properties and performance and pinpointed gaps in global AIS metrics. Data for more generic innovation system characteristics, such as patent applications, university-industry collaborations, or time required to start a business, are generally available. However, considerable gaps exist for data on agriculture-specific and system- or action-oriented properties, e.g. related to connectedness of AIS domains or EAS investments and capacities. Based on a review of existing initiatives measuring innovation, a flexible diagnostic method for cross-country AIS assessment is proposed. It consists of complementary data modules and a multi-criteria scoring methodology. Through a combination of existing and optional added data sources a comprehensive and systematic AIS profile can be generated, enabling succinct policy messages through metrics. Ms Christian Grovermann pointed that the diagnostic method, along with other initiatives, such as EBA or the Agricultural Science and Technology Indicators (ASTI) initiative, can serve as an example and provide a building block for global AIS diagnostics.



After presentation of the background study, a panel of experts shared their experiences with measuring innovation and innovation systems. Several important existing initiatives on collecting and analysing innovation data at the global and national level were showcased during the panel discussion.

⁶ Measuring Agricultural Innovation System Properties and Performance: State of the Art and Design Elements. Draft 10/11/2019. Christian Grovermann and Manuela Bucciarelli. Circulated to participants before the workshop.



Ms **Francesca Guadagno**, WIPO, briefed participants on the Global Innovation Index (GII) which is at country-level and measures innovation at the aggregate level in the whole economy, albeit some indicators focus on certain industries within manufacturing or services.

She pointed out that the GII provides insightful data on innovation, assisting economies in evaluating innovation performance; helping shape innovation measurement and the policy agenda of the economies it analyses; it is meaningful tool for action to improve innovation performance.

The GII considers eight different dimensions: institutions, human capital and research; infrastructures, market sophistication, business sophistication, knowledge and technology outputs, creative outputs. It aggregates several indicators and data sources, measuring both quantity and quality of innovation.

The presenter highlighted some challenges with measuring agri-food innovation systems, such as the fact that agriculture and food systems span many sectors, products, services, actors; key innovation data (e.g. Innovation surveys, based on Oslo Manual) focus on manufacturing and services; there is need to integrate firm-level data with household-level data and the issue of ensuring global data coverage. Ms. Francesca Guadagno concluded her presentation with the following key messages:

- Perfect indicators and metrics do not exist
- Any metric and indicator has to be taken as a proxy
- To measure a phenomena at the global level (in a reasonable amount of time and under budget constraints), we often need to make choices and start from somewhere
- Fortunately, a lot of things are already being measured..

Ms **Daniela Behr**, World Bank, provided information on Enabling the Business in Agriculture (EBA). This work was initiated by the World Bank, following a G8 demand in 2012; in 2016-17 data collection was done in 62 countries and in 2019 the methodology was refined and comprised 101 countries.

Ms Daniela Behr explained the methodology which includes questionnaires targeting farmer organizations, private sector, government officials, lawyers, CSOs, academia; a desk review which focuses on relevant laws and regulations; validation and follow up correspondence with World Bank specialists from country offices and country visits. The EBA dataset has 60 data points for 101 countries for the following indicators: Supplying seed, Registering fertilizer, Securing water, Registering machinery, Sustaining livestock, Protecting plant health, Trading food, Accessing finance.

Ms **Catherine Moreddu**, OECD, introduced OECD activities on measuring AIS and in particular how they managed to embed metrics into policy and investment process. She presented the OECD daft Framework for analysing the role of governments in improving agriculture innovation which includes: objectives and analytical base on drivers of performance; contextual indicators, including productivity, sustainability performance. For each policy area, the framework contains a few paragraphs discussing the likely effect on innovation, productivity and sustainability; a list of questions aiming to obtain a neutral description of the policy; a list of cross-country comparable indicators, and suggestions for possible national indicators and 2 page notes for policy makers. Ms. Catherine Moreddu in her presentation noted that the framework was applied in 12 OECD countries and shared some key lessons:

- Non-sectoral policies affect agriculture and agriculture specific information on these policies not readily available.
- Distinguish indicators of efforts, outcomes and impact
- Additional analysis to confirm pathways
- Start with factual information, confirm with existing evaluation, opinions and perception. Cross-checking among sources.
- Cross-country vs national sources: complementary
- National sources provided by government or consultants
- Benchmarking important for member countries
- Material to be adapted to different audiences

Ms **Mary Kamau**, AFAAS, also presented the Kenya Agricultural Extension Policy, released in 2012 and developed over 12 yrs. She reported that, before the policy was done, a stakeholder mapping was done, including a mapping of extension providers. She stressed the fact that it is important to know well the farmers in the country and each extension office needs to provide the number of farmers in the area. This is important also for the agricultural subsidies program because it is based on the land (area) owned by the farmer. In her presentation she also stressed the importance of funding for extension: we need to make sure officers have the resources to help farmers. In addition, a good platform is necessary to disseminate technology through the regions; data on the technologies that have been disseminated and adopted are needed.

Mr **Andres Montero Aparicio**, Universidad Carlos III, outlined an AIS scorecard used for policy advice in Spain. He pointed out that in Spain, the AKIS has been strengthened using indicators. The data collected allowed the identification of the types of existing advisory services, e.g. more public or private, in the country. Also, the data allowed to measure or get an inclusive view of how advisory services were aggregated. The scores measured the different level of interaction between the actors.

Ms **Kate Kuo**, BMGF, demonstrated how the Bill and Melinda Gates Foundation has been developing indicator dashboards for cross-country assessments in different areas. For what was originally internal purposes, the Agricultural Development (AgDev) Team in BMGF developed 10 dashboards of indicators in different areas. Six are now being used. For example, on nutrition (now used by SUN), fertilizer, seeds, gender. Four are not being used – one of these is on extension which should be further refined and put into practice. Ms Kate Kuo presented a scorecard comparing countries on high-level metrics capturing health, maturity, and inclusiveness of different sub-sectors of agriculture and pointed that this is used as an accountability tool for governments and civil societies to compare agricultural performance and stages of transformation. In addition the framework includes a set of dashboards providing deeper level views and “actionable indicators” of agricultural sub-sectors represented in the Scorecard. This serves as the underlying data for the higher-level metrics presented in the Scorecard and is used as decision and policy-making tool to increase data-driven decision and policy making.

Panellists further delivered the following **key messages**:

- The GII is based on secondary data sources (e.g. data collected by the World Economic Forum) and reflects general innovation characteristics, but it is possible to customize this framework for the agrifood sector;

- EBA data is collected annually across a large number of countries through a standardized survey for comparison of enabling factors for agribusiness and analysis of the association of these factors with development outcomes;
- Perfect indicators and metrics do not exist, but, if well defined, they can serve as good proxies for intricate constructs and can meaningfully reduce complexity;
- Consultation on indicator selection and cross-country data gathering as well as internal review and external validation of collected data are important in any global initiative on measuring innovation;
- Progress monitoring and benchmarking across countries on specific indicators can be instrumental for initiating policy dialogue and promoting learning, just like informed decision-making;
- A global AIS framework should be developed pragmatically, starting with available data and then adding carefully selected elements step by step.

Group discussion on selecting metrics for global indicator framework


Participants were split into four groups according to the four main components of the conceptual diagram of the AIS shared with participants before the workshop, i.e. research and education, bridging institutions, business and enterprise, and the enabling environment. On the basis of the group work on indicators performed on the first day of the workshop, participants specified suitable indicators for each domain, which should be taken into consideration for a global AIS indicator framework. Indicators relate to existing data sources and supplementary data collection. Group B has already identified priorities (marked in bold). The suggestions listed below will form the backbone of the draft global indicator framework, which will present them in more detail.

Group A: Research and education

- (1) Connectivity between innovators and research actors
- (2) Incentives for research and innovation.
- (3) Number of international patents used from global innovators in a single country.
- (4) Incentives for disseminating innovations
- (5) Incentives for scaling innovations through agribusiness actors
- (6) Non-locally owned local resources
- (7) Number of grassroots innovations recorded and validated in the country
- (8) Use of innovations developed by farmers within the countries
- (9) Understanding of innovations among decision-makers.

Group B: Bridging institutions

- (1) Investment in agricultural innovation
- (2) Public investment in extension
- (3) Existence of innovation and extension policy
- (4) Patents developed
- (5) Export-import ratio
- (6) Farmer organized in groups
- (7) Access to ICTs
- (8) Households and percentage of farmers reached by extension services
- (9) M&E capacity

- 
- (10) Farmer literacy rate / education level
 - (11) Number of service providers
 - (12) Farmer – service provider ratio
 - (13) Number of non-farmer actors receiving advice
 - (14) Number and type of capacity development interventions received by farmers
 - (15) Number of digital platforms widely available
 - (16) Number of farmers' queries addressed / problems solved
 - (17) Number of research outputs tested on farms
 - (18) Existence of certification and licensing for EAS
 - (19) Source and amount of financing for extension
 - (20) Enabling policies for farmer organizations
 - (21) Documentation of good practices
 - (22) Number of public-private partnerships and investments
 - (23) Client satisfaction score
 - (24) Cost-effectiveness of service delivery (in terms of innovation uptake)
 - (25) Existence of feedback mechanism

Group C: Business and enterprise

- (1) Number of patents
- (2) Number of project collaborations
- (3) Number of multi-stakeholder platforms
- (4) Number of start-ups (lasting over 3 years)
- (5) Public investment in agricultural innovation
- (6) Public spending on professional vocational training
- (7) Number of farmers trained
- (8) Number of mobile phone subscriptions
- (9) Number of farmers using ICT tools
- (10) Number of ICT providers
- (11) Distance to closest relevant market
- (12) E-commerce platforms
- (13) Number of farmers with certification (e.g. Global GAP)
- (14) Cost to obtain export certificate
- (15) Number of producer organisations
- (16) Number of machinery service providers

Group D: Enabling environment

- (1) Existence, implementation and updating of agricultural innovation policy
- (2) Agrifood R&D expenditures
- (3) Digital tools used in value chains
- (4) Inclusiveness of agricultural innovation process
- (5) Agrifood patent applications
- (6) Agrifood scientific publications
- (7) Citations of agri-food scientific publications
- (8) Start-ups in the agrifood sector

- (9) Farmer groups
- (10) Export value
- (11) Financing for innovation (credit, ODA etc.)

6. WRAP-UP

In a final round participants remarked that innovation is not value-neutral, so that AIS indicators should be linked to clear policy goals (tackling the question of what the AIS should deliver). Improving innovation systems, accelerating the co-creation and uptake of innovations (social platforms, farming practices, ICTs, etc.) and contributing to SDG achievement need to be addressed jointly, while taking into account the AIS capacity to cope with disruptive innovations. Furthermore, it is important to avoid an isolated perspective on agricultural innovation (silos), but utilize synergies across sectors (agri-food, health, etc.) and across approaches (qualitative, quantitative, etc.).

Overall participants agreed that the identified indicators and metrics, especially when applied for cross-country knowledge sharing and learning, can provide crucial evidence for understanding and taking action on key development challenges. It was however stressed that a consultation and validation process is needed to enhance the relevance of the indicators framework and the buy-in of stakeholders.

In his closing statement, **Mr Selvaraju Ramasamy**, thanked all participants for their contributions, which are instrumental for moving forward in terms of finalising the AIS and EAS assessment guides and for formulating a global framework on AIS indicators. He defined some immediate follow up actions, such as finalisation and distribution of the workshop report, as well as the finalisation and validation of the AIS framework.



ANNEX 1: GROUP DISCUSSIONS

Table 1: AIS Suggested Indicators

<p><i>AIS Properties</i></p>	<ul style="list-style-type: none"> • Existence of agricultural innovation policy [Y/N] • Implementation of agricultural innovation policy [Y/N] • Regular update of agricultural innovation policy [Y/N] • Investment in agricultural innovation (public and private, USD per capita) • Digital tools used in value chains [#] • Inclusiveness of innovation for women, youth, marginalized groups • Patents related to agriculture developed [#] • Articles related to agriculture published [#] • Citations related to agriculture [#] • Start-ups in agriculture [#] • Training courses/workshops attended [#] • Staff turnover [%] • Vacancies [%]
<p><i>AIS Performance</i></p>	<ul style="list-style-type: none"> • Access to markets for farmers [%] • Access to services for farmers [%] • Access to information for farmers [%] • Access to ICTs for farmers [%?] • Farmers organized in groups [%] • Farmers reached by interventions [%] • Farmer/client satisfaction/problems solved [%] • Co-creation/Uptake/adoption of institutional/social/technical innovations [%] • Export-import ratio [volume/volume]
<p><i>AIS Process/Progress</i></p>	<ul style="list-style-type: none"> • Degree and intensity of interaction [meeting frequency, diversity] • Multiplication of knowledge / Knowledge sharing platforms • Platform collaboration • Partnerships / joint activities / R&D Collaborations • Responsiveness to stakeholders needs • Capacity to innovate, • Monitoring and evaluation capacity • Professionalism • Policy engagement • Diversity of financing • Institutionalized mechanisms

Table 2: EAS Suggested Indicators

Group A: Producers/Producer organizations

Groupings/themes	Expected Outcomes	Suggested Indicators
1 Innovation aspects	<ul style="list-style-type: none"> Capacity to innovate 	
2 Sustainable Production intensification	<ul style="list-style-type: none"> Profitability/business 	<ul style="list-style-type: none"> Reduced cost Increased income
	<ul style="list-style-type: none"> Produce more with less 	<ul style="list-style-type: none"> Return on investment Total factor productivity
	<ul style="list-style-type: none"> Appropriate technologies 	<ul style="list-style-type: none"> Number of adopted technologies Number of implemented technologies
3 Social aspects	<ul style="list-style-type: none"> Linking agriculture to culture 	
	<ul style="list-style-type: none"> Producing while protecting the environment 	<ul style="list-style-type: none"> Pesticide reduction
	<ul style="list-style-type: none"> Quality of life 	
	<ul style="list-style-type: none"> Succession of the farm 	<ul style="list-style-type: none"> Percentage of youth involvement
4 Competitiveness	<ul style="list-style-type: none"> Linkages to other actors and services 	<ul style="list-style-type: none"> Number and type of linkages developed and secured
	<ul style="list-style-type: none"> Improve association and cooperative linkages 	
	<ul style="list-style-type: none"> Organization of markets and links to markets 	
	<ul style="list-style-type: none"> Solving problems of farmers 	<ul style="list-style-type: none"> Number of requests from farmers to environmental sustainability Number of problems reported Number of solutions reported Number of issues assigned to expert Categories of problems
	<ul style="list-style-type: none"> Emergency support 	

Group B: Investors and donors

Groupings/themes	Expected Outcomes	Suggested Indicators
Increased productivity and food security	<ul style="list-style-type: none"> Increased productivity and income Decrease poverty and malnutrition 	<ul style="list-style-type: none"> Farmers', clients' and partners' satisfaction Number and type of partnerships
Environmental sustainability	<ul style="list-style-type: none"> Sustainable agro-ecological resilience 	<ul style="list-style-type: none"> Increased adoption of new technologies and knowledge
	<ul style="list-style-type: none"> Compliance to good environmental guidelines 	
EAS as a system	<ul style="list-style-type: none"> Organizational performance capacities Performance Coordination Partnerships 	<ul style="list-style-type: none"> Diverse EAS More secure providers with better capacities Farmers' satisfaction

Group C: Policy-makers/government

Groupings/ themes	Expected Outcomes	Suggested Indicators
Environmental sustainability	<ul style="list-style-type: none"> Environmental Sustainability 	<ul style="list-style-type: none"> # of advisors providing advice on environmental aspects # of practices introduced by farmers Surveys, statistical data # of environmental protocols on environment developed and applied Reductions in greenhouse gas emissions (biodiversity, pest management, etc..)
Increased productivity	<ul style="list-style-type: none"> Productivity 	
	<ul style="list-style-type: none"> Enhance capacities of farmers to become competitive 	<ul style="list-style-type: none"> In domestic, international markets Increase in volume of commodities
Social aspects	<ul style="list-style-type: none"> Territorial balance/retain producers 	<ul style="list-style-type: none"> Employment especially rural youth in agriculture sector Number of enterprises, agribusinesses Departure from traditional roles to meet the demands of producers
EAS as a system	<ul style="list-style-type: none"> Effective, efficient and responsive 	<ul style="list-style-type: none"> Cost effective budget Coverage Able to respond to demand How extension supports policy
Economic aspects	<ul style="list-style-type: none"> Income of farmers 	<ul style="list-style-type: none"> Household income Access and control to income by gender Position of farmer in value chains Increase of margins in value chain

Group D: Private sector/value chain

Groupings/ themes	Expected Outcomes	Suggested Indicators
Information and knowledge	<ul style="list-style-type: none"> Decreased cost of information and knowledge Increased access to information and knowledge 	<ul style="list-style-type: none"> Cost of information and services Frequency of update /reliability and relevance
Profit/sales	<ul style="list-style-type: none"> Increased profit/sales 	<ul style="list-style-type: none"> Sales and profitability/volume
Market access	<ul style="list-style-type: none"> Increased market access 	<ul style="list-style-type: none"> Margin of profit (total return from sales)
Producers	<ul style="list-style-type: none"> Increased capacity of producers 	<ul style="list-style-type: none"> Payment rates Number of approved credits
Household income	<ul style="list-style-type: none"> Increased household income (purchasing power) 	
Rural development	<ul style="list-style-type: none"> Increased rural development and community engagement Shorter value chains 	
Productivity	<ul style="list-style-type: none"> Increased productivity and quality (stability) 	<ul style="list-style-type: none"> Volume of sales Household income

		• Tonne/ha
Farmers' capacities	<ul style="list-style-type: none"> • Increased business and management skills of farmers 	

Table 3: EAS Performance Indicators

Outcome	Role/function of EAS	Performance Indicators
Environmental sustainability	<ul style="list-style-type: none"> • Facilitate farmer to farmer exchange • Awareness on environmental sustainability • Capacity building of farmers on environmental sustainability • Promotion of climate-smart agriculture/climate-resilient agriculture practices for sustainable natural resource management (promotion of energy saving technology) 	<ul style="list-style-type: none"> • Frequency of exchange • Multiplication of knowledge • Usage and application of technologies for climate-smart agriculture/climate-resilient agriculture
Increased productivity	<ul style="list-style-type: none"> • Promotion of technology (seeds, knowledge, mechanization) • Linkage to credit/market/social promotion 	<ul style="list-style-type: none"> • Yield per unit area • New value chains • Number of innovations facilitated - effectiveness of these innovations • Backward and forward linkages
Increased income (household level)	<ul style="list-style-type: none"> • Facilitator role • Gender responsive extension • Business development services • Mobilize farmers • Bring together value chain actors • Development of farmer institutions • Post-harvest handling advisory services 	<ul style="list-style-type: none"> • Increased household income of farmers • Development of rural institutions, including POs (number and quality – self-sustaining etc.), number of processing enterprises • Reduced loss/waste of produce • Access and control over income by gender
Increased competitiveness of producers	<ul style="list-style-type: none"> • Market information regulation/intelligence/access • Facilitate/build capacities of producers 	<ul style="list-style-type: none"> • Access to market information (number of access) • Market (domestic/export number and value of exports)
Food and nutrition security	<ul style="list-style-type: none"> • Create awareness • Facilitate behavioural change • Facilitation of nutrition-sensitive agriculture • Build capacities of producers on nutrition-sensitive agriculture 	<ul style="list-style-type: none"> • Reduction in malnutrition • Adoption of nutrition-sensitive agriculture practices

ANNEX 2: FINAL AGENDA

TECHNICAL WORKSHOP ON ASSESSMENT METRICS FOR AGRICULTURAL INNOVATION SYSTEMS (AIS) AND EXTENSION AND ADVISORY SERVICES (EAS) 18-20 November 2019

MONDAY 18 November 2019 - Ethiopia room (building C, 2 nd floor, room C209)	
Time	Item
08:30-09:00	Registration of participants
09:00-09:30	Welcome remarks, background and objectives of the workshop, by <i>Selvaraju Ramasamy, FAO Research and Extension Unit</i>
9.30-10.30	Panel discussion: What do we know about the demand, issues and challenges related to metrics of AIS and EAS to support decision-making and investment? Panellists: <i>Christian Grovermann, FiBL; Sanne Chipeta, FAO expert; Rasheed Sulamain, GFRAS; Kate Kuo, BMGF; Patience Rwamigisa, Ministry of Agriculture, Animal Husbandry and Fisheries, Uganda</i> Moderator: <i>Nevena Alexandrova-Stefanova, FAO</i>
10:30-11:00	Coffee break
Session I: Assessment Metrics for Agricultural Innovation Systems (AIS)	
11.00-11.45	Overview of the assessment guidelines of Agricultural Innovation Systems by <i>Abdoulaye Saley Moussa, FAO</i> Moderator: <i>Manuela Bucciarelli, FAO</i>
11.45-12.30	Feedback from pilot testing of the AIS assessment guidelines <ul style="list-style-type: none">• Feedback and methodological recommendations from Tanzania by <i>Catherine Phillip Msuya, Sokoine University of Agriculture</i>• Feedback and methodological recommendations from Thailand by <i>Ravi Ketharpal, APAARI</i> Moderator: <i>Manuela Bucciarelli, FAO</i>
12:30-13:45	Lunch
13:45-14:30	Panel discussion on the complementary use of qualitative and quantitative AIS performance methods

	<p>Panellists: Murat Sartas, IITA; Margaret Mangheni, Makerere University, Uganda; Simona Cristiano, CREA, Italy</p> <p>Moderator: <i>Abdoulaye Saley Moussa</i>, FAO</p>
14:30-15:30	<p>Group discussions on assessing performance and tracking progress at multi-stakeholder innovation partnership level</p> <p>Ethiopia room (building C, 2nd floor, room C209) and Nigeria room (building C, 2nd floor, room C283)</p>
15:30	Coffee available outside the Ethiopia room
15:30-16:00	Feedback from the group discussions
16:00-17:00	<p>Shift and Share Session: Participants share their experiences of using indicators related to agricultural innovation and extension</p> <p>Facilitator: <i>Delgermaa Chuluunbaatar</i>, FAO</p>
17:00-17:15	Summary and recommendations
19.30	<p>Informal dinner (self-funded)</p> <p>Restaurant La Villetta, address: Viale della Piramide Cestia, 53</p>

TUESDAY 19 November 2019 - Ethiopia room (C209)

Session II: Assessment Metrics for Extension and Advisory Services (EAS)

Time	Item
09.00-09.20	<p>Presentation of the Guidelines for assessment of Agricultural Extension and Advisory Services (EAS) by <i>Delgermaa Chuluunbaatar</i>, FAO</p> <p>Moderator: <i>May Hani</i>, FAO</p>
09.20-10.15	<p>Feedback from pilot testing of the EAS guidelines</p> <p>Ecuador: <i>Maria Isabel Paredes</i>, RELASER Uganda: <i>Margaret Mangheni</i>, Makerere University, Uganda India: <i>Nimisha Mittal</i>, CRISP, India</p> <p>Moderator: <i>May Hani</i>, FAO</p>
10.15-11.15	<p>Presentation of the background study on EAS indicators: Guided discussion on the demands for metrics, analysis of existing indicators and identification of gaps on metrics for EAS (<i>interactive discussion based on the presentation by Sanne Chipeta</i>)</p>

11.15-11.30	<i>Coffee break</i>
11.30-13.00	<p>Group discussions on expected results from EAS assessment by different stakeholders</p> <ul style="list-style-type: none"> • Producers • Investors/donors • Policymakers/Government • Private sector/valuechain • EASproviders/research <p>Facilitator: <i>Delgermaa Chuluunbaatar, FAO Ethiopia room (building C, 2nd floor, room C209) and Nigeria room (building C, 2nd floor, room C283)</i></p>
13:00-14:00	<i>Lunch</i>
14:00-14:45	Feedback from the group discussions
14:45-16:15	<p>Group discussions on possible indicators related to system functionality and performance outcomes of EAS assessment, building on the previous set of group discussions</p> <p><i>Ethiopia room (building C, 2nd floor, room C209) and Nigeria room (building C, 2nd floor, room C283)</i></p>
15:30	<i>Coffee available outside the Ethiopia room</i>
16:15-17:15	Feedback from the group discussions
17:15-17:30	Summary and conclusion

WEDNESDAY 20 November 2019 – Nigeria room (building C, 2nd floor, room C283)

Session III: Towards an indicator framework

Time	Item
08:30-09.15	<p>Presentation of the background paper on AIS metrics – by Christian Grovermann</p> <p>Moderator: <i>John Preissing, FAO</i></p>
09.15-10.30	<p>Panel discussion on data collection and embedding metrics into policy and investment processes</p> <p>Panellists:</p> <ul style="list-style-type: none"> • The business perspective: <i>Francesca Guadagno, WIPO</i> • The R&D perspective: <i>Andres Montera Paricio, Universidad Carlos III, Madrid</i> • The Investment perspective: <i>Daniela Behr, EBA/WB</i> • The policy perspective: <i>Catherine Morredu, OECD</i> • Country perspective: <i>Mary Kamau, Kenya</i>

	Moderator: <i>John Preissing, FAO</i>
10:30	<i>Coffee available outside the Nigeria room</i>
10:30-12:30	<p>Group work on existing and new metrics to be included for an indicator framework:</p> <p>Group 1 – What indicators are available from global data sources?</p> <p>Group 2 – What indicators are missing from global data sources?</p> <p>Group 3 – What indicators emerge from country level assessment of AIS?</p> <p>Group 4 – What indicators emerge from country level assessment of EAS?</p> <p>Facilitator: <i>Brenda Ortiz, Auburn University, USA</i></p> <p><i>Nigeria room (building C, 2nd floor, room C283) Pakistan room (building A, 1st floor, room A127)</i></p>
12:30-13:30	<i>Lunch</i>
13:30-14:15	Feedback from group discussions
14:15-15:00	<p>Conclusions and way forward</p> <p>Facilitators: <i>Delgermaa Chuluunbaatar and Nevena Alexandrova-Stefanova FAO</i></p>
15:00-15:30	<i>Coffee break</i>
15:30-16:00	Closing remarks, by <i>Selvaraju Ramasamy, FAO</i>

ANNEX 3: LIST OF PARTICIPANTS

	Name	Organization/Affiliation	Country	Email
1	Andres Montero Aparicio	Universidad Carlos III, Madrid	Spain	andres.monteroaparicio@gmail.com
2	Anna Maria Augustin	Evaluation Innovation Systems	Poland	annamaria.augustyn@yahoo.com
3	Baqir Lalani	University of Greenwich	UK	B.Lalani@greenwich.ac.uk
4	Catherine Moreddu	OECD	France	Catherine.MOREDDU@oecd.org
5	Catherine Phillip Msuya	Department of Agricultural Extension and Community Development, Sokoine University of Agriculture	Tanzania	cat_msuya@yahoo.com
6	Christian Grovermann	FiBL	Switzerland	christian.grovermann@fibl.org
7	Deniela Behr	World Bank/EBA	USA	dbeh@worldbank.org
8	Francesca Guadagno	WIPO	Switzerland	guadagno@merit.unu.edu
9	John Preissing	FAO Investment Center DPI	Italy	John.Preissing@fao.org
10	Laszlo Papocsi	St. Istvan University , Godollo	Hungary	lpapocsi@gmail.com
11	Margaret Mangheni	Makerere University	Uganda	mnmangheni@caes.mak.ac.ug mnmangheni@gmail.com
12	Maria Isabel Paredes	RELASER coordinator, testing RAS assessment in Ecuador	Ecuador	mparedes@relaser.org
13	Mary Kamau	AFAAS	Kenya	mnjenga08@yahoo.com
14	May Hani	FAO ESP	Italy	May.hani@fao.org
15	Murat Sartas	IITA	Rwanda	M.Sartas@cgiar.org
16	Nimisha Mittal	AESA network East Asia, Testing RAS assessment in India	India	nimisha61@gmail.com
17	Patience Rwamigisa	MoA, Directorate of Agricultural Extension Services	Uganda	rwamigisa@gmail.com
18	Patrice Djamen	RESCAR	Burkina Faso	p.djamen759@gmail.com
19	Piero Conforti	FAO Statistics Division	Italy	Piero.Conforti@fao.org

20	Rasheed Sulaiman	GFRAS/CRISP	India	rasheed.sulaiman@gmail.com
21	Ravi Khetarpal	Executive Secretary APAARI	Thailand	ravi.khetarpal@apaari.org
22	Sanne Chipeta	RAS M&E expert	Malawi	sanne@chipeta.dk
23	Simona Cristiano	CREA AIS/ RAS indicators	Italy	simona.cristiano@crea.gov.it
24	Sara Holst	FAO Office of Evaluation	Italy	Sara.Holst@fao.org
25	Xiangping Jia	CAAS	China	jia.xiangping@outlook.com
26	Abdoulaye SaleyMoussa	FAO AGDR	Italy	Abdoulaye.SaleyMoussa@fao.org
27	Aurelie Toillier	FAO AGDR	Italy	Aurelie.Toillier@fao.org
28	Brenda Ortiz	FAO AGDR	Italy	Brenda.ortiz@fao.org
29	Delgermaa Chuluunbaatar	FAO AGDR	Italy	Delgermaa.Chuluunbaatar@fao.org
30	John Ruane	FAO AGDR	Italy	John.ruane@fao.org
31	Manuela Bucciarelli	FAO AGDR	Italy	Manuela.bucciarelli@fao.org
32	Matheus Lima	FAO AGDR	Italy	Matheus.lima@fao.org
33	Mounia Barakat	FAO AGDR	Italy	Mounia.Barakat@fao.org
34	Nevena Alexandrova	FAO AGDR	Italy	Nevena.Alexandrova@fao.org
35	Per Rudebjer	FAO AGDR	Italy	Per.rudebjer@fao.org
36	Selvaraju Ramasamy	FAO AGDR	Italy	Selvaraju.Ramasamy@fao.org
37	Sonia Ricardo Dias	FAO AGDR	Italy	Sonia.RicardoDias@fao.org
38	Tessa Adamson	FAO AGDR	Italy	Tessa.adamson@fao.org
39	Zofia Mroczek	FAO AGDR	Italy	Zofia.Mroczek@fao.org