



Bringing evidence to bear on negotiating ecosystem service and livelihood trade-offs in sustainable agricultural intensification in Tanzania, Ethiopia and Zambia as part of the SAIRLA program



Lusaka, Zambia National SHARED Workshop,
May 22nd – 23rd 2017
Workshop report

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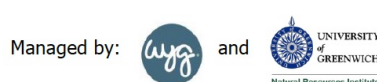


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The Sustainable Intensification of Agricultural Research and Learning in Africa (**SAIRLA**) Programme is a UK Department for International Development-funded initiative that seeks to address one of the most intractable problems facing smallholder farmers in Africa - how to engage in the market economy and to deliver sustainable intensification of agriculture, that is, which avoids negative impacts on the environment. SAIRLA will generate new evidence to help women and poor African smallholder farmers develop environmentally and financially sustainable enterprises and boost productivity. The research will focus non-exclusively on 6 countries (Burkina Faso, Ethiopia, Ghana, Malawi, Tanzania and Zambia), thus complementing other research efforts in these regions.

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1. Official opening

Mr. Moses Mwale, the Director at the Zambia Agriculture Research Institute (ZARI), officially opened the workshop. He provided some background to the workshop in which he made mention that ICRAF is a not-for-profit organization that improves people's lives by providing information and applying scientific expertise to solve problems in agriculture and the environment. He further added that the engagement of ICRAF with the Government of the Republic of Zambia can be traced back to the 1980s when the thematic focus was Agroforestry. The partnership between ICRAF and the Government through ZARI and the Department of Agriculture (DoA) remains strong and this is evidenced by the following two projects being implemented for example in Solwezi, North Western Province.

- The first one is “Developing value chain innovation platform for food security” and the goal for this project is to identify the drivers that support scalable establishment of effective and equitable innovation platforms that enhance food security through greater engagement of small holder farmers with markets.
- The second one is “Bringing evidence to bear on negotiating eco-system service and livelihood trade-offs in sustainable agricultural intensification (SAI) in Zambia”.

Mr. Mwale acknowledged the generous support of the funders of this project of which we are very grateful that is, UKAid and all the partners involved in the different project countries.



Photo: Mr Moses Mwale, Director of Zambia Agriculture Research Institute (ZARI)

In his remarks, he stated that, it is important to ensure the right knowledge is in the hands of small holder farmers, policy makers, extension agents, both public and private, and the wider research community. Identification of appropriate technologies is key to raising farm productivity.

Over one million people in Zambia are small holder farmers who rely entirely on agriculture to feed their families. He also mentioned that he was aware that the project seeks to generate new evidence and design tools to enable Government, investors and other key actors to deliver more effective policies and investments in SAI, thus strengthening the capacity of poorer farmers especially women and youth to access and benefit of SAI. Mr Mwale said that the SAIRLA project has commissioned research and will facilitate multi-scale learning to understand different ways of achieving SAI and its developmental implications and outcomes. He noted that in Zambia, the research project being implemented is bringing evidence to bear on negotiating ecosystem service and livelihood trade-offs in Sustainable Agricultural Intensification. This he said, is being led by ICRAF to empower small holders with knowledge for sustainable production and risk management.

Mr. Mwale informed the group that the overall objective of the ICRAF led SAIRLA project is to build an interdisciplinary research programme that will increase the uptake of context appropriate SAI innovations in East and southern Africa through evidence generation, data analytics and the development of innovative tools for stakeholder engagement with evidence.

Mr Mwale underscored his confidence that the findings and results of these activities that are being implemented in Zambia, North Western Province, will provide the added knowledge, technical knowhow and capabilities for Zambia to better conserve and manage land resources, as well as to ensure that proper land resource utilization is sustainable in the long term to the benefit of our small holder farmers

Finally, he thanked ICRAF Zambia office in particular, as well as the organizers for their excellent arrangements for holding the National SHARED Workshop and wished the group fruitful deliberation in bringing evidence to bear on negotiating ecosystem service and livelihood trade-offs in sustainable agricultural intensification in Zambia Project and for UK Department of International Development for continued support and funding.

2. Introductions and workshop objectives

Dr. Constance Neely asked individuals from the national and local government, NGO's, research centres and farmer organisations to introduce themselves.

2.1 Workshop objectives and flow

Dr. Neely shared the workshop objectives which included:

- Engage country stakeholders using the SHARED methodology to reflect on current Sustainable Agricultural Intensification (SAI)-relevant interventions, scaling mechanisms and indicators including evidence and gaps.
- Capture and discuss current and potential policy and investment decision making approaches to enhance scaling of SAI-relevant interventions in Zambia.
- Reflect on important tradeoffs themes and indicators for SAI interventions in Zambia.
- Discuss the SAI dashboard

This project has five major thematic activities which are outlined in the project conceptual framework (Figure 1) and specified below:

1. Baseline assessment, including use of and existing evidence on the effectiveness of SAI
2. Engage stakeholder groups using the SHARED approach to reflect on SAI-relevant policies & interventions
3. Multi-scale, socio-ecological trade-off analysis conducted on promising SAI interventions and results communicated and assessed with stakeholders using the SHARED approach.
4. Facilitate piloting of promising, innovative SAI interventions, using mixed methods to assess their cost-effectiveness
5. Develop an interactive, open access platform—'SAI Dashboard'— for project action sites to support the engagement of decision makers to interact with evidence.

Mr. Tembo outlined that the project works across multiple scales:

- Incorporating spatially explicit analyses of indicators of land and soil health as well as human well-being across scales.
- Co-producing socio-ecological datasets to conduct multi-scale trade-off analysis to inform and prioritize SAI interventions.

Project activities to date:

- Stakeholder workshop in Solwezi , September 2016
 - Developed a Stakeholder Mapping Guide using SHARED approach
 - Gaps and opportunities for SAI at multiple scales (district, regional, national)
- Baseline survey and stakeholder mapping exercise, September 2016
- Participatory Farmer Identification of Prioritized SAI Practices and Indicators of Success in Solwezi, February 2017
- Initial collation of appropriate data for socio-ecological trade-off analysis on SAI interventions, February 2017

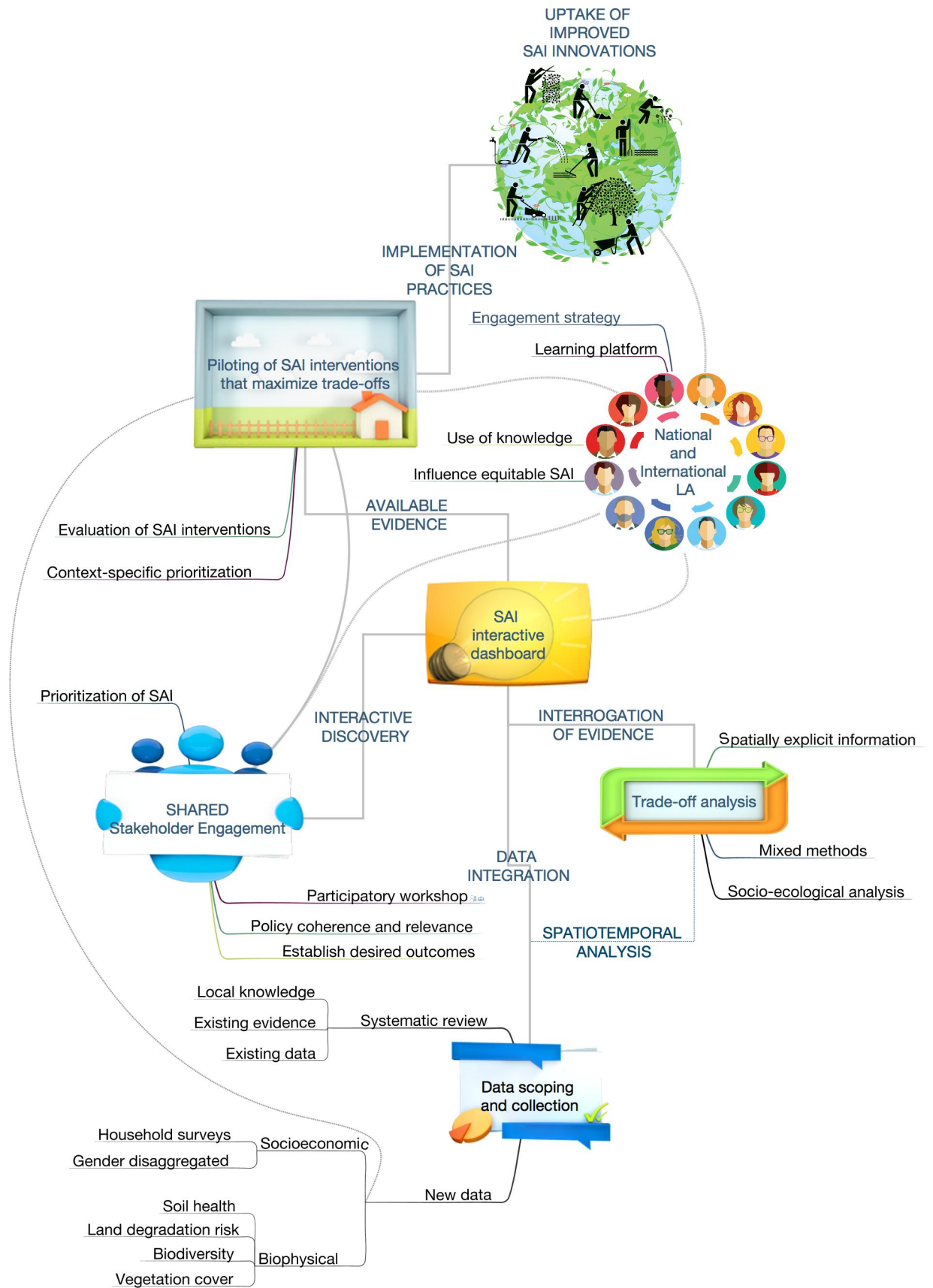


Figure 2: Conceptual Framework for the project with the Stakeholder Engagement action highlighted.

2.3. Gathering perspectives

Dr. Constance Neely asked participants to respond to a number of statements and move themselves to a place in the room, next to a card that reflects their view. This exercise aims to start the conversation on sustainable agricultural intensification among participants.

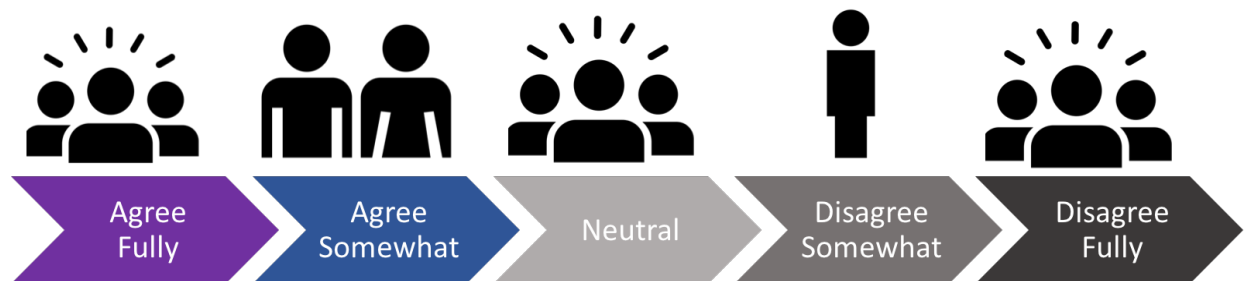


Figure 3: Illustration of the gathering perspective activity.

Statement One: Sustainable Agricultural Intensification (SAI) is building upon what is already being practiced in the country

In response to this statement, many participants moved to agree fully, agree somewhat and few on neutral or disagree.



Strongly agree

Some of the explanations for agreeing with the statement included:

- SAI activities are already going on so what needs more work is the intensification part
- Farmers are already trying because they have limited land and SAI is already being practised so the issue is to help the farmers sustain the production
- There could be some farmers that are adopting SAI interventions

Agree somewhat

- One explanation from this group was that while the commenter agreed that these activities are going on and the information is being shared, what he did not know was whether there was a deliberate platform under which information is shared.

Disagree fully

- One explanation for disagree was that in all his years of working in research, the commenter had not seen any evidence of SAI. All research he had seen points to unsustainability that he has not seen any data on any technologies that are being promoted as SAI, pointing that we are actually turning around from being less sustainable to more sustainable. But in reaction to this another participant noted that the previous commenter was only focussing on the aspect of research but if small holder farmers were visited, there is work that is already being done by the farmers. She also added that we may not have the information or proper

database of the exact production levels but if you look at how much farmers produce in the limited space of land that they have, they could be already practising SAI.

- A question was then raised for the commenter who disagreed to help the group understand what he thought was sustainable. In response to this, he said that soil organic matter has a huge bearing on crop productivity and the general productivity of the whole system that is, infiltration, nutrient holding capacity etc. He further explained that if soil organic matter is going down, it comes to a level where production goes down and leads to unsustainability. He further stated that in our tropical environment, soil organic matter gets lost easily and he added that it is very difficult to build it. So basing a system on something which does not take into account building of soil organic matter, then ultimately it is unsustainable. He added that he had not seen any sustainable systems that are being promoted which builds soil organic matter.

Statement Two: Sustainable Agricultural Intensification (SAI) involves Trade-offs across our economic, social, environmental and cultural dimensions



Most participants agreed with this statement. Some of the reasons included:

- Trade-offs are definite because we have to look at the socio-economic as well as the environmental aspects in the agro-ecological regions in which we are working so we need to have some kind of trade-offs as we look at SAI
- If we look at interventions that we are undertaking those such as soil improvement, we have to look at the effect on the forest as an example, deforestation, therefore, trade-offs are there.
- Sustainable Agriculture Intensification is about practicing sustainable agriculture methods but then. We do not intend to benefit there and then, but we look to the future benefits. So we forego some benefits now, in order to gain in future.

Some participants agreed strongly and the comments were:

- The major reason we have low adoption levels of SAI is a trade-off. Socially for example, there is a situation where there is a tragedy of the commons where “everyone owns everything but no one owns anything”
- With long term systems such as agro-forestry, there is an economic hit on the farmer in the first few years or depending on how long the agroforestry system takes to start working which is unacceptable and because they are many who are managing the forest in the first place, and it is difficult to convince them on the proper management of forests.
- In the livestock aspect, a farmer might be interested in the number of animals he would have, rather than the quality of animals.
- With the intensification, as we are striving to produce more, we tend to degrade the system.

Statement Three: Sustainable Agricultural Intensification (SAI) has not been adopted widely due to a lack of information and evidence

Participants had varied responses to this statement. For those that disagreed, some opinions are highlighted:

- Information is there but it is difficult to access some information is there and the farmers know about the practices but they do not practice them due to reluctance to practice.
- Information is there but the format is a problem leading to low adoption. Information needs to be transformed into a format that a farmer can easily understand
- Evidence from NGO's is usually area specific.
- Lack of information on the benefits of adopting
- Weak link between the researcher, farmer and extension
- It might take long to realize the full benefits of sustainable intensification as compared with conventional agriculture
- The cost of adopting some technologies is high
- The lead farmer approach which seems to empower one farmer by providing inputs at the expense of other farmers might affect the levels of adoption so the mode of conveying this information needs to be looked into.

3. Stakeholder Approach to Risk Informed and Evidence Based Decision Making (SHARED)

Dr. Neely gave an introduction and overview of the Stakeholder Approach to Evidence Based and Risk Informed Decision Making (SHARED) methodology.

What is SHARED?

The SHARED methodology is a tailored process that builds interaction between people and accessible evidence for decisions that yield sustainable impacts.

It is very much about facilitating on the integration of different sectors, different institutions and different knowledge systems and perspective. It includes both scientific and local knowledge focuses on communicating that information and building partnerships to co.negotiation efforts and advance mutually agreed outcomes.

It is a four phase process (see figure 2);

Phase 1. Decision Makers and Context. Evaluate the decision making context, unpacking socio-political and environmental dynamics and key stakeholders to support desired outcomes.

Phase 2. Evidence integration. Within the defined context of the decision case, widely scope and organize evidence (as an integrated representation of data, information and knowledge domains). Rapidly prototype and iterate on evidence synthesis and visualization with relevant decision stakeholders.

Phase 3. Planning and Prioritizing. Active process management and sequencing of dialogue with key actors to use evidence in negotiating and prioritizing activities or interventions related to the decision case.

Phase 4. Monitoring, Evaluation and Learning. Monitoring and adaptive learning plan for implementation, sustained use of evidence and rapid feedback on decisions

One of the premises that SHARED holds is that we must pay attention to the underpinning ecosystem functioning services, water cycle, biological diversity etc and the different services that eco-systems offer us.

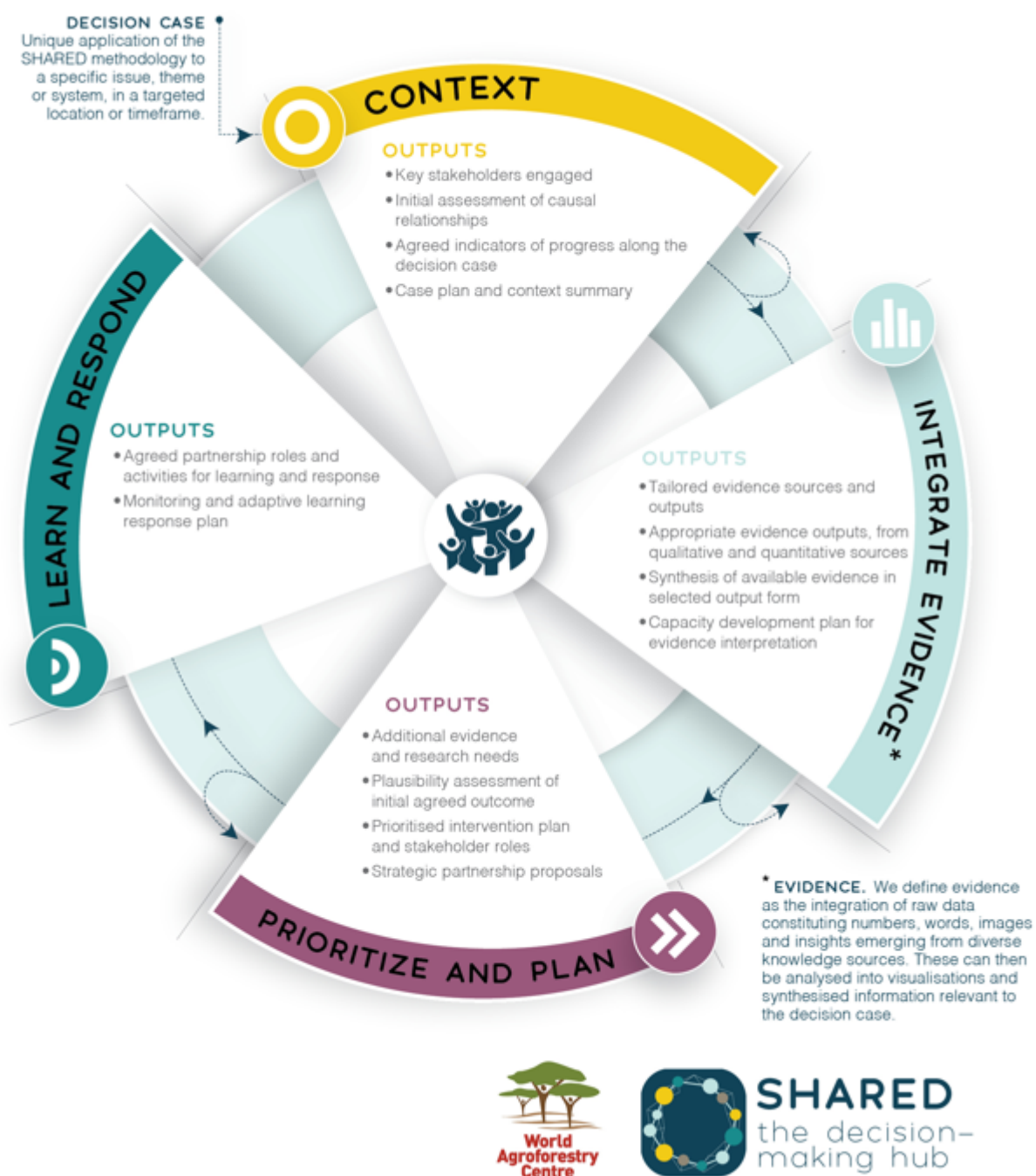


Figure 4: Four interlinked phases of the SHARED methodology.

She then gave an example of the Resilience Diagnostic and Decision Support Tool or dash board from Northern Kenya which has provided the government and non-government actors a sense of the evidence across different sectors so that they can plan together. This with the SHARED process has influenced how decisions are taken in terms of their landscapes, livelihoods and their resilience.

4. Process for developing policies and investment decisions related to SAI

Participants were asked to form groups according to their affiliations (government (national and provincial), research and academia, and NGOs). The different groups were then asked to discuss their experiences related to policy development, planning or investment decisions responding to the following:

- How are objectives or goals decided?
- Who is involved the process?
- When is evidence used in your decision making process and what types of evidence?

The different group responses were recorded on flip charts and presented here as follows;

Group 1: Government (national and provincial)

In the development process the matters are brought to different stakeholders (that includes technocrats) and this assists in giving direction on what can be done. The formulated policy directions have to fit into the political will. The whole process upto implementation normally takes about 5 years.

How are objectives/goals decided?

- Policy directions
- Stakeholder consultations
- Technocrats

Who is involved?

- Technocrats
- Farmers
- Private sector
- Traditional leadership
- Political leadership
- Faith-based organizations

When is evidence used?

- At policy formulation
- At strategic plan

What evidence?

- Research based evidence (actual products and reports)

Group 2: NGOs

How are objectives/goals decided?

- Through a consultative process
- Donor priority driven

Who is involved?

- Target beneficiaries
- Implementing partners
- Policy makers
- Supporting partners (e.g. NGOs)

When is evidence used?

- Throughout the project design cycle (design, implementation M&E)

What evidence?

- Research results
- Adoption levels
- Baseline and evaluation
- Case studies
- Results assessments
- Policy briefs

Group 3: Research and academia**How are objectives/goals decided?**

- “Don’t bite the hand that feeds you”
- Donor driven objectives and goals
- Scope within call to which to focus
- Policy context at national and institutional level

Who is involved?

- Everybody who is relevant to farmers and farmers (ideally)

When is evidence used?

- Ideal – global strategy setting process
- Context characterization
- Multi-discipline/sectoral

What evidence?

- Scientific/multidisciplinary
- Local to global

General discussion**Influence**

An important discussion took place around influence in decision making, taking into account that often in government, there is political influence with or without evidence and that “big guys” have an influence on policy.

The process of policy formulation depends on what is being formulated, mostly during the process big entities are always involved and they can have stronger influence. Smallholder farmers, for example, most of them do not have livestock so they might not have much to say whilst the large scale livestock producers (those who feel the heat the most) will always be consulted. However if we look at statistics, smallholder farmers constitute the majority of

producers and they need to be considered as well. In Zambia smallholder (0-5ha) farmers constitute 75%, while medium (5-20 ha) and large (>20 ha) constitute 17 and 8 %, of total number of farmers, respectively. It is therefore important to consider them during policy formulation processes.

Evidence

Scientific evidence is also very important in the process however it can be difficult to get the evidence and also if you would consider that evidence can be conflicting or with different results, it can be difficult to get trusted information for the whole region. There are also problems with time lag - when evidence is needed and when it is generated. Challenges with evidence include:

- Evidence – who is bringing there are often divergent views
- There are multiple interpretations of data
- There is not the capacity to digest all of the information so it is ripe for elite capture
- We need a symposium for sharing evidence with a proceedings for sharing widely
- We need transmission of information across organizations – knowledge management
- We often use evidence that is considered “known” but do not question it
- There is a time gap on evidence generation and directors using the evidence. Research is behind
- Multiple terminologies exist
- Lack of proper presentation for different audiences
- Not accessible (maybe only in journals or in shelves)
- Lack of interdisciplinary evidence

5. Sustainable Agriculture Intensification (SAI) interventions and scaling successes in Zambia

5.1 Examples of SAI scaling in Zambia

There were a number of presentations from different organizations, where they elaborated on some of the SAI technologies that they are promoting in smallholder farming systems of Zambia. We had presentations (see Annex 4) from the following organizations:

Catholic Relief Service: Sustainable Agriculture in Zambia: A case of soil improvement through green manure and cover crops.

These are on-farm research experiments (66 farmers) that focus on soil fertility improvements using green manure/ cover crops (GM/CC) such as lablab, cowpeas, pigeon pea, gliricidia and jack beans. Research questions being asked are: does inclusion of GM/CC in crop production systems lead to increased crop production; which of the proposed GM/CC has highest effect on soil improvement; and which combination of GM/CC produces highest crop yields? Preliminary conclusions show that GM/CC improve most soil fertility parameters such as organic carbon, nitrogen and cation exchange capacity. Lablab has so far shown superiority in improving soil fertility in the sampled soils.

World Vision International: Brief background and WVZ focus area: Building Improved and Resilient Livelihoods for the targeted households in order to enhance child well-being

World vision Zambia promotes sustainable agriculture through climate smart agricultural practices that cover

1. Farmer Managed Natural Regeneration (FMNR) or Conservation Agriculture with Trees,
2. Conservation Farming (Farming God's way),
3. Water harvesting for irrigation purposes and
4. Forest management interventions that aim at addressing the unsustainable use of natural resources among the Zambian farmers to respond to climate change and variability.

WV is scaling up FMNR and CA using different approaches such as; Lead farmer or FMNR champions, Village/Chiefdom/Local Traditional Leadership and Citizen Voice Action (CVA) which is a social accountability and local level advocacy.

Department of Livestock/NKUKU4U: Strengthening food security through family poultry and crop integration in Tanzania and Zambia

The project objectives are:

- To assess the existing family poultry-crop systems and poultry value chains.
- To test appropriate interventions for improving the integration and efficiency of family poultry/crop systems and poultry value chains.
- To assess the role of women and impact of improved family poultry-crop systems interventions on childhood undernutrition.
- To support capacity building of and catalyse strategic long-term partnerships between key institutions and individuals associated with family poultry, food security, and sustainable agriculture.

Success of the project to date include:

- Stakeholders (government , the non-governmental organisations and traditional leadership) have all welcomed and embraced the project
- No Newcastle Disease clinical signs observed in vaccinated flocks, this was publicly appreciated by traditional leadership
- Capacity has been built in government and the communities i.e. community assistants, vaccinators and enumerators
- Promotion of multidisciplinary approach improving interaction between government ministries.

Zambia Agriculture Research Institute (ZARI): Overview of SAI Approaches in Zambia-ZARI experience

The presentation highlighted national level SAI related experiences, past challenges and the way forward. The scope of the adaptive research work in Zambia has focused on a number of key thematic areas that mainly aimed at improving soil fertility and these include green manuring, cover crops, rotations, intercropping, and agroforestry among others. However outscaling of the SAI approaches has been limited/isolated, there are no monitoring sites to address, improve, or refine SAI. There is a need to integrate various SAI approaches to assume "true intensification". ZARI has realised that due to ecological differences across the country it is important for national agriculture research systems to carry out regional relevant and location specific research to address critical farming systems based constraints.

International Institute of Tropical Agriculture (IITA): SAI Scaling Success

Sustainable Agricultural Intensification (SAI): production of more food from the same land area while reducing the environmental impacts.

- Input intensification: Crop varieties/ animal breeds, agrochemicals and feed to improve system production
- Knowledge/innovation intensity: skills and management
- Technology intensity: Mechanization, ICT and aspects of precision operations
- Institutions intensity: farmer associations, innovation platforms, value chain actors and policy makers

It is important to consider gender and other social sectors and also to consider farmers' versions when developing and implementing SAI technologies. For example most farmers practice mixed cropping/intercropping in their farms, how would we intensify in such systems?

Lessons have been drawn from work on crop value chains:

- Balanced soil nutrition support sustainable crop production and reduce soil degradation
- Improved management and skills are required for farmers to apply innovations
- Mechanization supports scale of production however smallholder farms are fragmented and lack resources
- Institutions are important in supporting innovations along the value chain
- Policies and enabling environment

After presentations by the different organization a short presentation was given by Dr. Patricia Masikati reporting on the earlier SAIRLA work. SAI practices were prioritized by men and women in St. Francis and Mutanda where two groups of men and women at each site ranked the practices from 1-5 with 1 being the highest.SAI interventions identified in Solwezi (Table 1).

Table 1:SAI Practices preferred by farmers in St.Francis and Mutanda vilages in Solwezi district (from the SHARED district level workshop in 2016).

SAI practices	Males St Francis	Females St Francis	Males Mutanda	Females Mutanda
Conservation agriculture compost manure and its uses	1,1	1,3	1,5	2,2
Crop rotation	3,5	2,1	2,3	1,1
Integrated farming	2,3	4	4,1	5
Conservation agriculture basins	5			
Use of permanent planting stations (minimum tillage)	4	3,5		
Moisture management practices (mulching)	2	4,2	3	3,3
Organic farming utilization of crop residues		5	2	5
Use of bamboos in staking in tomatoes			5	4,4

Use of agroforestry			4	
Intercropping				
Fisheries- fish cage farming				
Intercropping with agroforestry species				

After the presentation, the participants were then asked to form three working groups responsible for discussing the following themes:

- Indicators of successful scaling of SAI
- SAI practices (add to existing list, which are national priorities and group if appropriate)
- Mechanism for Scaling SAI

5.2 SAI Practices

SAI option additions and practices (Table 2).

Table 2: Additional SAI to be added to the list originally created at the district level.

Conventional	Conservation	Integrated Farming	Soil Nutrient Management	Agroforestry	Forest Interventions
Fertilizer application	Organic farming and use of plant residues	Livestock integration	Green manure	Intercropping with Agroforestry species	Wood lots
Inoculation of legume crops	Moisture management practices	Fish cage farming	Intercropping	Bamboo stakes for tomatoes	Zero burning
Bio-fertilizer			Strip cropping	CA with trees	Mushrooms
Liming					Insects and African polony (Chikanda) made from forest products

5.3 Indicators of successful scaling of SAI

It is important to understand how to measure successful scaling interventions. Participants grouped successes into four categories: Economic, Social/cultural, Political and Environment and listed key indicators under each.

Economic

- Health, Education
- Increased income per unit of production
- Nutrition/Food security
- Financial capital
- Diversification of enterprises (beyond agri- business)

Social/Cultural

- Land tenure security
- Governance
- Social capital
- Capacity building
- Institutional uptake
- Health, Education
- Enhanced gender participation
- Women in decision making
- Family planning
- Diversified diets

Political

- Governance
- Enabling policies
- Capacity building
- Institutional uptake

Environment

- Land productivity
- Carbon stores
- Soil quality
- Deforestation
- Natural capital
- Forest products

5.4 Mechanisms for scaling SAI

In order to scale SAI, clear mechanisms are needed, this includes engagement as well as policy. Participants identified and discussed needed mechanisms for the scaling of SAI in Zambia:

- Lead farmer approach should be participatory
- Workshops that should involve all stakeholders
- Exchange visits
- Out grower schemes that is influence of agribusiness agro- dealers
- Media programs
- Field days
- E-Extension systems (SMS)
- Building evidence based systems

- Demo plots
- Method of delivering message i.e should be simple with illustrations
- Study cycle methodology that is constantly update content and improved facilitation

6. Root cause analysis of key barriers to scaling SAI practices

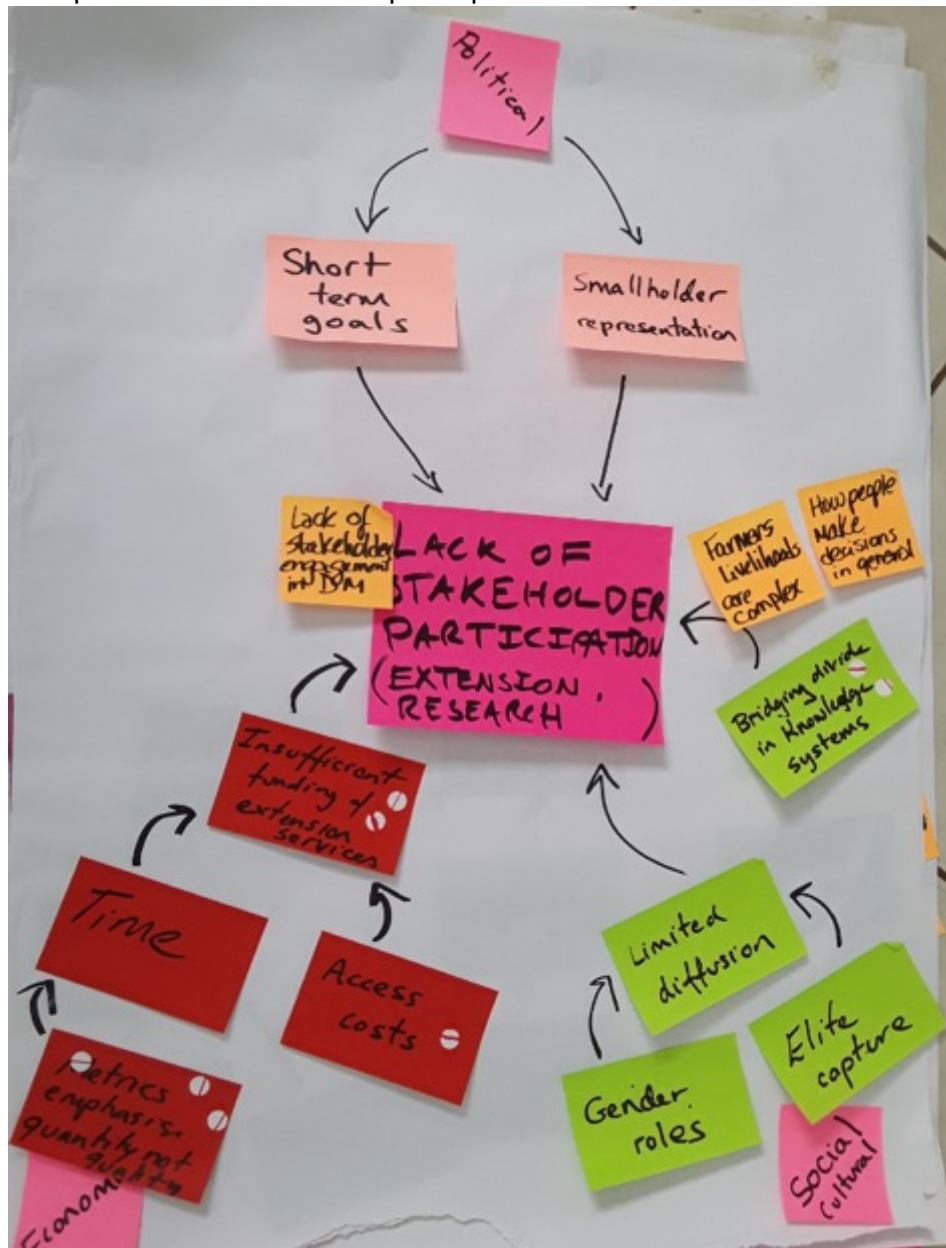
Participants worked in groups to identify barriers to scaling SAI and then the root causes of these barriers as outlined below.

Barriers

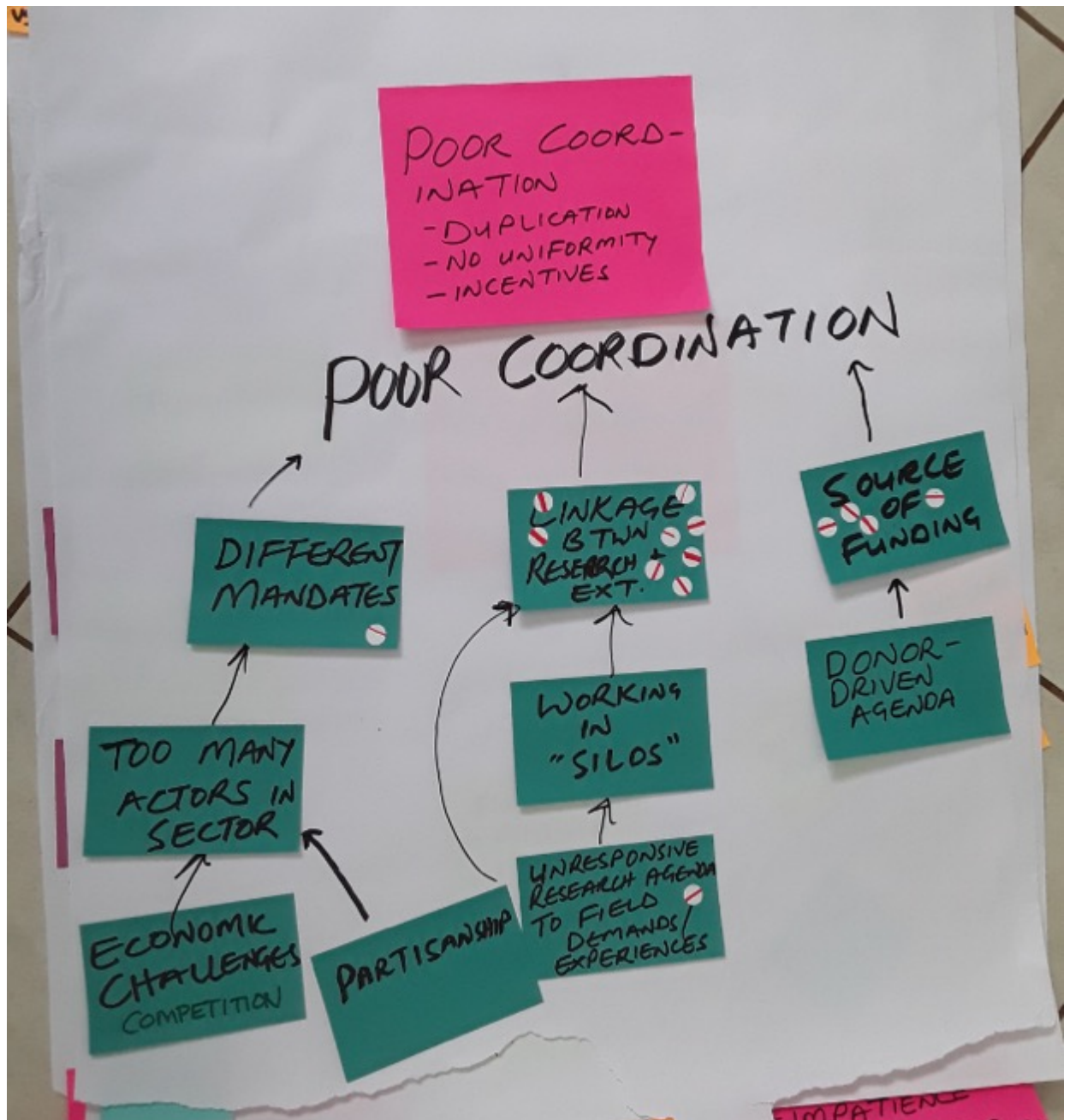
- Limited information sharing and learning)
- Inadequate investment
- Lack of educational capacity
- Illiteracy
- Inadequate investment by farmers
- Farmer's wants do not fit into some of the models
- Lack of finance to scale up interventions
- Poverty
- Poor financial management
- Lack of land collateral
- Poor access to loans
- Poor savings culture
- Farmer dependence syndrome
- Lack of post-harvest technologies
- Poor farming practices
- Gender conflicts
- Less interaction between husband and wife
- Political campaign favours
- Household economy
- Land tenure
- Unresponsive research agenda to field demands
- Working in silos
- Weak linkage between research and extension
- Too many actors in the sector
- Economic challenges
- Donor driven agenda
- Different mandates
- No uniformity
- Lack of stake holder participation
- Limited diffusion
- Gender roles
- Elite capture
- Socio-cultural
- Metrics emphasize quantity and not quality
- Low governance investments

Root cause analyses by the different groups

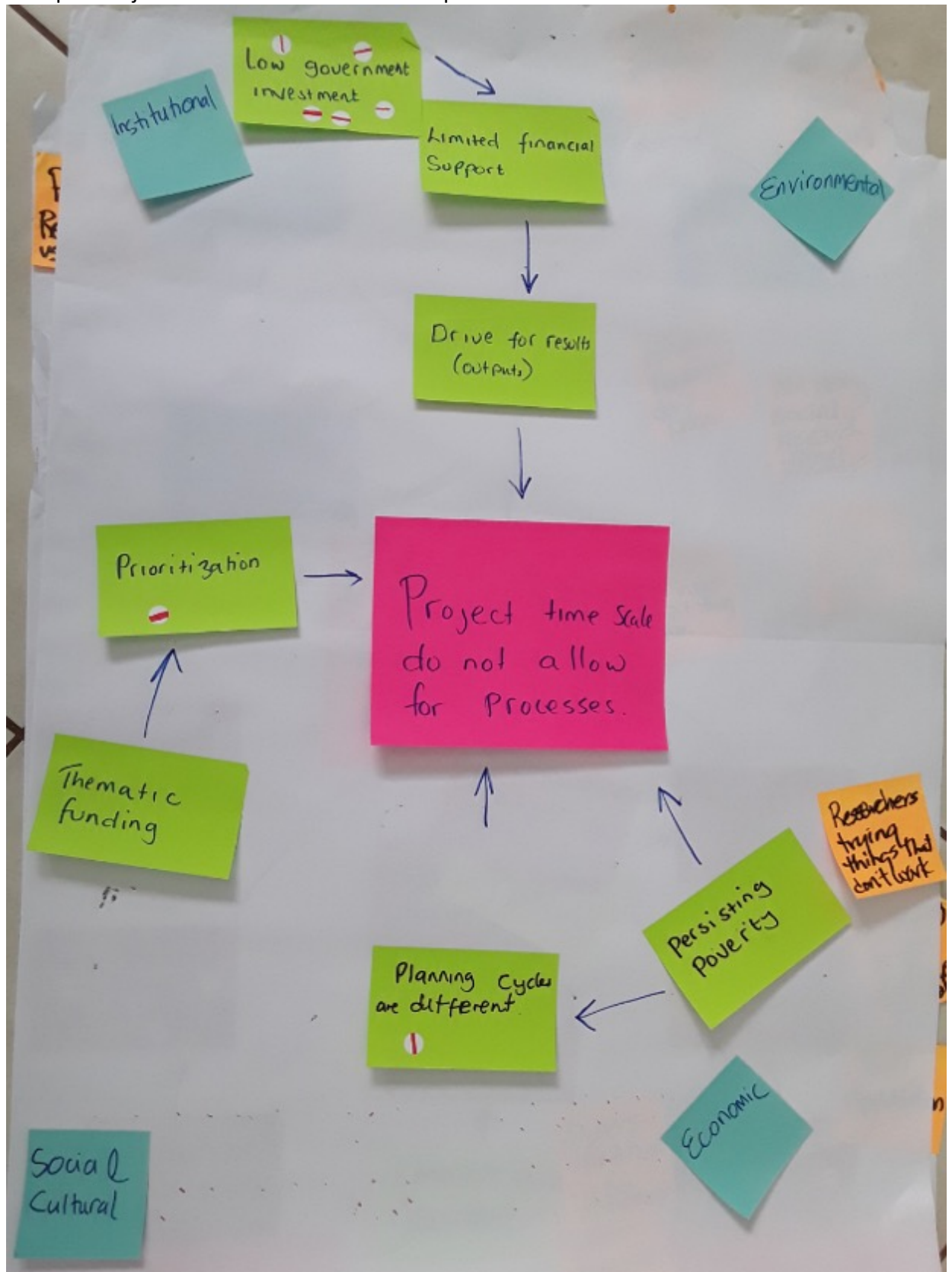
Group 1: Lack of stakeholder participation



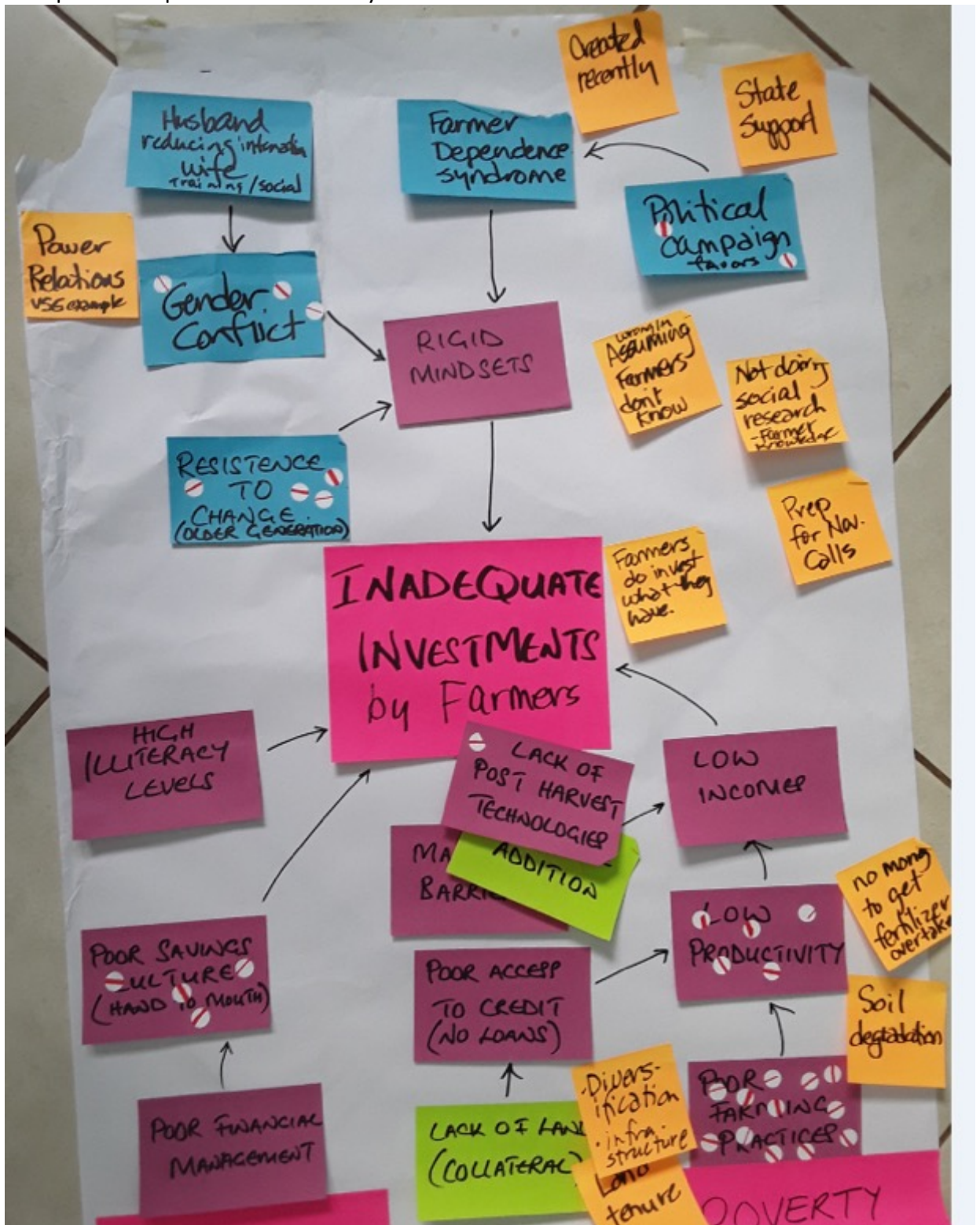
Group 2: Poor coordination across institutions or agencies



Group 3: Project time scale do not allow for process



Group 4: Inadequate investments by farmers



After the root cause analyses, participants were asked to prioritize those causes where interventions could be made. Those were marked with dot votes. The majority of the “votes” identified poor farming practices and the lack of linkage between research and extension as important intervention areas. Other areas for interventions included: addressing low productivity, poor savings culture, low government investments and sources of funding.

7. Policies in support of SAI

Dr. Patricia Masikati presented different policies that support scaling SAI at national level. Below is a table with some of the different existing frameworks under different government ministries.

Table 3: List of various policies to support the scaling of SAI and the government sector responsible.

Sector	Approach/ Main provisions	Legal and Policy framework
Agriculture competitive and sustainable	<ul style="list-style-type: none"> -Government driven -Agriculture is a major economic driver -Focused on smallholder farmers -Moving towards diversification commercialization, market orientation and inclusive growth 	<ul style="list-style-type: none"> - Second National Agricultural Policy (SNAP) addressing challenges and short comings identified during the implementation of the National Agriculture Policy (NAP) -Agricultural Sector Policy to promote competitiveness, stimulate efficiency, -Increased productivity and profitability of the agricultural sector -National Food Security, employment creation, increased rural incomes and reduced poverty -Linked to National vision 2030 - Policy implementation plan through the strategic plan and National Agriculture Investment Plan (NAIP) under the CAADP framework
Environment	<ul style="list-style-type: none"> -In practice ministry too weak to fulfil its mandate to coordinate environmental and natural resource management -Lack of enforcement of national environmental legislation 	<ul style="list-style-type: none"> -Zambian Sixth National development Plan (SNDP) (integration of environmental concerns and climate change) -Enforcement of existing environmental laws for illegal commercial timber and wildlife harvesting and for large polluters such as mines (governance, implementation and enforcement)
Water resource management	<ul style="list-style-type: none"> -Policy, direction and framework for management, development and utilization of water resources -National water policy covers all sectors (cross-cutting nature of water) and using catchment approach -Contribute to wealth creation, equitable provision of adequate water 	<ul style="list-style-type: none"> -National water policy -Comprehensive framework for management of water resources -Efficient, equitable and sustainable use of water across sectors
Rural economy (market and finance)	<ul style="list-style-type: none"> -Inclusive economic growth and wealth creation -Investment in labor intensive sectors -Enhanced human capital 	<ul style="list-style-type: none"> -Zambia’s vision 2030 (prosperous industrial middle-income country) -Development of agriculture, manufacturing and tourism -Investments in education, health and other social sectors -Promoting good governance and accountability in use of public resources and service delivery

7.1 Baseline data and stakeholder maps feedback

Patricia presented the project baseline data. Important to note from the participants was that farmers were not mentioned. Response was that it was because of the way the question was asked and also how it was understood by the respondents during the survey. The question was; *“Please provide details on any other organizations or persons your organization works with or is in contact with on sustainable agricultural intensification issues over the past year”*. All respondents mentioned organizations only.

8. The SAI Interactive Dashboard

Dr Neely outlined that an open-source SAI interactive dashboard will be developed for Solwezi to allow users to interact with data in a meaningful way:

- as a data-driven platform
- to integrate existing and new data and
- to provide robust data management and graphical tools

The dashboard will contain both social and ecological datasets and it will use a combination of both spatial (maps) and non-spatial data analytics and graphics.

She presented some elements of a dashboard created for Turkana County in Kenya. See <https://prezi.com/ke-myjnuet3a> for more information or access the dashboard at: <http://landscapeportal.org/sharedApp/>.

Discussion on dashboard

Key points that were raised included:

- Relevance period of data differ hence the need to keep on updating
- Available data sets mostly focus on crops, and climate and not much on other aspects
- Need to increase sectorial sharing of data
- The dashboard is a good tool for gathering and storing information
- It has to be user friendly
- Are institutes willing to share the data they list?
- Are the data discussed actually available?

Data potentially available for Solwezi include:

- Developing value chain innovation platforms to improve food security in East and Southern Africa (VIP4FS)
- Solwezi Landcare Masterclass Report
- Multi-stakeholder Workshop Report, Solwezi Zambia
- Guidelines for identifying and designing planned comparisons: Developing value chain innovation platforms to improve food security in East and Southern Africa (VIP4FS) Project
- Scoping Study Report on Potential Value Chains and Institutional Arrangements in Solwezi, Zambia (Developing value chain innovation platforms oi improve food security in East and Southern Africa)

- Zambia Project Inception Workshop Report: Developing Value Chain Innovation Platforms to Improve Food Security in East and Southern Africa

Table 4: Potentially available data relevant to SAI for possible inclusion into the dashboard.

Theme + variable	Type of data	Scale of Data	Who has it
Food Security	-Basic Needs Basket -Survey reports -No. of households -National food balance sheet -Nutrition Availability accessibility -Livelihoods (FLES) -PEN -National Food and Nutrition Production + consumption -Food security	-Nationwide -Nationwide -National/District -National/District Provincial	JCTR FAO/WFP/CSO Min. of Agric (HQ. Province, DACO) CRS, MoH, NFNC,CSO
Agricultural Productivity	-Yield -Input -Labor -Livelihood -Agricultural-livelihood -fertilizer, yield etc -Survey reports -Research reports -Yield/ inputs -Hectarage	-Nationwide -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide/Regional /District	IITA/SCCI/FAO, ZARI, MoA. & Livestock, ACF, ZNFU Seed houses, Fertilizer companies, UNZA, Economics -IAPRI -CIAT, CYMMIT -IITA -FD, World bank -World bank,MoA -UNZA - CSO/ZNFU/MoA/IAPRI
Income	-HDI Reports -BNB -GDP/GNP -HH incomes -HH survey -Savings from farm produce -Labour survey (2012) -Livelihoods	-Nationwide -Nationwide -Nationwide -Nationwide -National/Provincial -National/ District -Nationwide -Nationwide	-UNDP/WB -JCTR -GRZ (MoA) -ZIPAR -IDE (HQ), CSO -IAPRI, UNZA, KASISI -CSO -IAPRI/CSO
Social Equity	-Access to markets -Survey reports	- Nationwide/District	- MoG, IDE, Oxfarm, WVI -JCTR

	-Labour requirements -Capacity Development -Gender inclusion		-Mo.Labour -GRZ -Mo. Gender
Land Health	-Soil Survey reports -Soil maps -Research reports (soil fertility) -Land use maps -LDSF -Climatic data -Forest Survey (ILUA) -Soil organic matter -Soil erosion -Soil fertility	-Nationwide -Nationwide -Districts -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide -Nationwide	-ZARI -ZARI -KATC -NRSC -ICRAF -NDA -FD -ZARI -Forestry, MoA, ICRAF -ZARI, Agroforestry, Fertilizer companies,ICRAF

A number of participants said they would like to be involved in the dashboard development and outlined their area of interest and preferred method of communication

Table 5: Working Group for the Dashboard development.

<u>Name</u>	<u>Organization</u>
<u>Sebastian Scott</u>	<u>Grass Root Trust</u>
<u>Siame Chishala</u>	<u>SASCAL</u>
<u>Gillian Kabwe</u>	<u>CBU</u>
<u>Nhamo Nhamo</u>	<u>IITA</u>
<u>Richard Bupe</u>	<u>WVZ</u>
<u>Howard Tembo</u>	<u>ZARI</u>
<u>Rhett Harrison</u>	<u>ICRAF</u>
<u>Frank Kayula</u>	<u>NUSFAZ</u>

9. Trade-off analysis

Constance Neely outlined that:

- The concept of SAI, which aims to increase agricultural production in an environmentally sustainable way, implicitly involves trade-offs.
- Understanding the social, economic and environmental trade-offs of SAI is inherently complex, especially across diverse agro-ecological landscapes and over time
- Focus on spatially explicit interdisciplinary trade-off assessments - incorporate space and time elements as well as interdisciplinary datasets, including gender preferences and equity, to conduct socio-ecological trade-off analysis.

The tentative themes and indicators for the SAI trade-off analysis were shared with participants, Figure 5, and feedback was requested.

Tentative Themes for the Trade-off Analysis and Associated Indicators from the Datasets

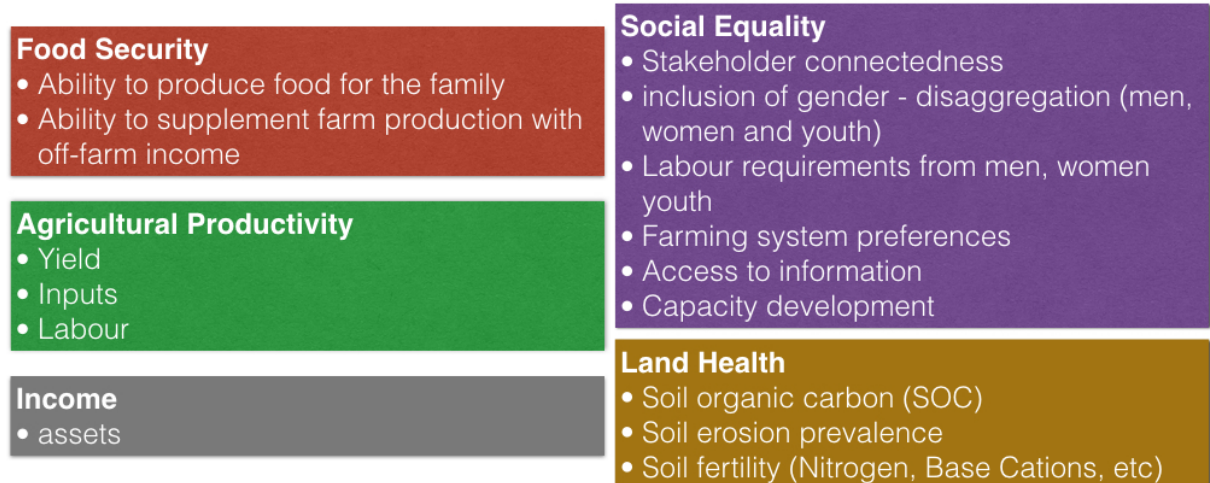


Figure 5: Tentative themes and indicators for SAI trade-off analysis.

Comments on these themes and criteria are as shown below:

- Food security
 - Diversity-produce different crops
 - Nutritional diversity
 - Nutritional security
- Agricultural productivity
 - Yields of different products and services (that include livestock and trees)
- Income
 - Risk
 - Diversity of income sources
 - Alternative income generation activities
- Land health
 - Soil physical properties (soil texture, structure, infiltration, bulk density etc)
 - Biodiversity (organic matter content)
 - Soil moisture
 - Range management
- Two new themes were suggested
 - Biodiversity (seed security)
 - Non-agriculture related livelihoods (charcoal burning and saw milling, transportation, alcoholic beverage brewing)

10. Next steps, evaluation and close

Immediate Next Steps of the Project

- a. Trade-off analysis into the dashboard
- b. By end of year, first form of the dashboard
- c. Demonstrations and interventions of community prioritized practices in Solwezi
- d. Communications among those involved in the dashboard development

Following the workshop

- e. The organizers will share the report to all who have provided an email address within 2 weeks.
- f. This report will include annexes of the data presented

Participant Responses to What will you do differently after this workshop?

- Targeting of SAI to different groups (e.g. gender, land sizes)
- Use an integrated approach
- Involvement of stakeholders
- Sharing information
- Have a feedback loop
- Networking (functional)
- Include more indicators of SAI
- Understand policy gaps and lack of synergy: check if these hinder SAI significantly
- Developing specific SAI technologies to each target group of farmers and dependent on their needs
- I will share the information I have gathered from this workshop on the successes of SAI to the farmers I work with
- Involving more stakeholders in the implementation of sustainable agriculture
- Sharing of information to farmers and making sure the farmers also share among themselves
- SHARED to help with decision making
- Coordination with institutions doing SAI. There is a need to upscale collaboration with all stakeholders implementing SAI.
- Need to ask data from farmers in what SAI activities are preferred
- Include training of farmers on SAI
- Use and sharing of available data on SAI across partners
- Linking the study circle methodology to practical learning (e.g. demo plots/lead farmers)
- Considering farmers indigenous knowledge
- Broaden the basket – use of a number of SAI technologies to enhance productivity (e.g. avoiding loner approaches)
- How to mitigate the effects of climate change on agricultural production
- Developing a dashboard
- Stakeholder network analysis
- Stakeholder engagement
- Packaging of information to be disseminated to farmers; include SAI methods in land preparation and pasture management
- Information management system

- SAI should be taken up by the central government as a deliberate policy alongside FISP, and e-voucher
- To continue to share the SAI in to many more communities and organizations involved in agriculture
- I will enhance my collaboration with other actors interested in SAI
- Focus on extension research
- Focus on livelihoods systems

Workshop evaluation

Each participant was asked to share, on a card, their rating score from 1 (lowest) to 5 (highest) for each of these categories:

- Content
- Objectives
- Facilitation
- Time Management
- Representatives and participation
- Logistics

Key: On a scale of 1-5: 1=very poor; 2=poor; 3=f air; 4=good and 5=very good.	Overall score	4.5 or 90%
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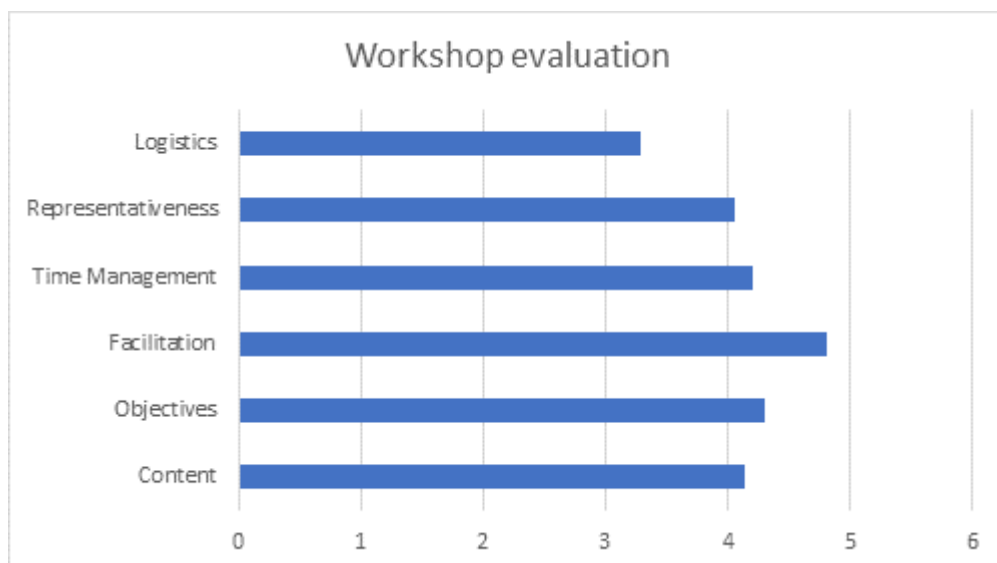


Figure 6: The outcome of this evaluation.

Comments following evaluation

- Well done!
- Everything went well. Just ensure that the dashboard fits with the launched NLA on SAI
- We have work to do to ensure a better and productive earth for our children's children.
- A wonderful eye opener to the way to organize and obtain useful information. Bravo!
- Package the presentation (Solwezi) by the key presenters to resonate the project objectives/expectation. There is a weak link.

- How best to make the dashboard live beyond the project life.
- SAI: the approach is very good. Maybe spend more time on indicators. Develop strong policy linkages. Developed markets may pull intensification
- Everyone needs to drive the agenda of SAI and not leave it to a particular group of people to implement SAI activities
- Scaling up SAI to other parts of the country
- The message was encouraging and lot with respect to tragedy of the commons/what issues were disclosed require urgent attention. To make it possible that SA is well intensified. Next time involve more stakeholders
- A bit more detail on housekeeping needed otherwise all went well.
- Somehow programming needs to reflect more on the situation on the ground with respect to tragedy of the commons/what is sustainable.
- It was interactive and thought provoking workshop. It also served as a learning platform for the participants
- Link SAI to other Sustainable ag concepts. Where does SAI sit on the SA continuum. It is important to be inclusive in all SAI activities and different individuals, gender and institutions exhibiting different capacities, capabilities and contributions.
- Include learning from different countries (cross learning). Next dialogue to include experts from other countries.
- We should have invited the farmers (a few) to participate and give their own view and opinions
- Great workshop. Look forward to the presentations. Wish soft copies were available during or immediately at close of workshop.

Closing remarks

Finally, closing remarks were made by Mr. Tembo in which he mentioned that he hoped this was not the end of our dialogue and that communication should continue and that going forward, this was not the end. He appreciated active participation of stakeholders and encouraged they keep working together. He also wished God's traveling mercies for those who were traveling far away.

Appendices

Appendix 1 Participant list

No	Name	Gender	Organization	E mail	Mobile No.
1	Gillian Kabwe	F	Copperbelt University	Gillian.kabwe@cbu.ac.zm	0967355949
2	Aggie Chama	F	International Development Enterprise	achama@ideglobal.org	0955855371
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5	Pupe Richard	M	World Vision Zambia	Richard_pupe@wvi.org	0976909110
6	Derrick Simukanzye	M	Ministry of Agriculture – North Western Province	dsimukanzye@hotmail.com	0977152750
7	Rodgers Kabit	M	Zambia Agriculture Research Institute	rkabiti@yahoo.com	0976442897
8	Constance Neely	F	ICRAF	C.Neely@cgiar.org	+254717743496
9	Sebastiaan Scott	M	Grassroots Trust	sebtree@hotmail.com	0977313318
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18	Chishala L Siame	F	SASSCAL	Chishala.siame@sasscal.org	0967965646
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23	Humphrey Elekani	M	SAIRLA-NLA	Elekanihm2009@yahoo.co.uk	0977410162

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25	Patricia Masikati	F	ICRAF	P.Masikati@cgiar.org	0968027217

Appendix 2 Agenda for the Workshop

Workshop Agenda for the Zambia SHARED Workshop at **Cresta Golfview**, Lusaka
22-23rd May 2017

Bringing evidence to bear on negotiating ecosystem service and livelihood trade-offs in sustainable agricultural intensification in Tanzania, Ethiopia and Zambia as part of the SAIRLA

Objectives of the workshop:

- Engage country stakeholders using the SHARED approach to reflect on current Sustainable Agricultural Intensification (SAI)-relevant interventions, scaling mechanisms and indicators, including existing evidence and gaps.
- Capture and discuss current and potential policy and investment decision making approaches to enhance scaling of SAI-relevant interventions Zambia.
- Reflect on important tradeoff themes and indicators for SAI interventions in Zambia.

Time	Day 1	Responsible persons
08.30-09.00	Registration	
09.00-10.30	<ul style="list-style-type: none"> ○ Opening ○ Introductions & objectives, Introduction to the project and SAIRLA ○ Gathering perspectives on Sustainable Agricultural Intensification ○ Introduction to the SHARED methodology 	Mr Mwale (ZARI Director) Patricia Masikati Constance Neely
Tea/coffee Break and group photo		Organizers
11.00-12.00	<ul style="list-style-type: none"> ○ Current policy development and investment decision making approach for SAI in Zambia 	Constance Neely Patricia Masikati
12.00-13.00	<ul style="list-style-type: none"> ○ SAI scaling successes in Zambia ○ National priorities for SAI interventions, scaling mechanisms and indicators (reflecting on inputs from Solwezi) 	CRS WVI IITA, Min. Livestock ZARI (Mutanda & Mt PACO (Solwezi) Forestry Department
Lunch		Organizers
14.00-15.15	<ul style="list-style-type: none"> ○ Key barriers to SAI scaling and the root causes of these barriers 	Facilitators and participants
Tea/coffee Break		Organizers
15.30-16.30	<ul style="list-style-type: none"> ○ Policies in support of scaling SAI and national and international targets 	Facilitators and participants
16.30-17.00	<ul style="list-style-type: none"> ○ Presentation on the baseline results for evidence access, use and stakeholder networks ○ Close day 1 	Patricia Masikati
Day 2		
09.00-09.15	<ul style="list-style-type: none"> ○ Recap day 1 	Facilitators and participants
09.15-10.00	<ul style="list-style-type: none"> ○ Opportunities to enhance access to and ownership of evidence for decision makers, a SAI dashboard for Solwezi 	
10.00-10.30	<ul style="list-style-type: none"> ○ Trade-off analysis themes and indicators 	
Tea/coffee Break		Organizers

10.45-12.00	○ Intervention options to promote scaling of SAI	Facilitators and participants
12.00-12.30	○ Next steps, workshop evaluation and close	Mr Tembo/Mr Mwale/
Lunch		
Participants depart		