Charles Sturt University

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Agriculture Water Environment

Stakeholder Engagement for Research and Learning (SERL): Theoretical Underpinnings and Guidelines for Facilitators

Sandra Heaney-Mustafa, Mohammad Yousif Channa, Tahira Baloch, Mohsin Ali Channa, Benazir Kumbhar, Iqra Mohiuddin, Muhammad Faisal Riaz, Arzoo Rubab, Akhtar Hussain Samoo, Syed Muhammad Ali Zahid, Babar Zaman

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Disclaimer

The views expressed in this report are solely the authors, and do not necessarily reflect the views of Charles Sturt University or any other individual or organisation consulted or involved in the research.

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Working together for Improved Rural Livelihoods and Agricultural Practices and Policy

Background

Technologies and tools exist in Pakistan for agriculture, horticulture, aquaculture, animal husbandry, and water and irrigation management. Tools represent a mechanical/technological means of measuring/observing how to improve farming practices, and they may give confidence to farmers' existing skills in observation and interventions. However, for sustainable practices, farmers must also develop knowledge, skills and attitudes to adopt or adapt the technologies.

The knowledge and communication gap often existing between researchers and farmers has traditionally been bridged by top-down 'extension' approaches, where a technological innovation or practice change is developed by scientists and technicians and communicated to farmers with the expectation that some will 'adopt' it and others will gradually follow. There is, however, growing recognition of the limitations of top-down extension approaches, and a global move towards more participatory and collaborative approaches to research and extension (Spriggs et al., 2019; Allan et al., 2022). An example of a more collaborative approach is a new learning model that emerged in the *Developing Approaches to Enhance Farmer Water Management Skills in Balochistan, Punjab and Sindh in Pakistan* (LWR-2014-074) project supported by the Australian Centre for International Agricultural Research (ACIAR) between 2016 and 2021. This model – the Farmer Integrated Learning Model (FILM) (Hussain et al., 2019) – helped achieve more sustainable water and irrigation management practices.

As well as facilitating farmers in learning about irrigation and water management, and thus enhancing their capacities, FILM helped farmers learn about how they are learning so that they can teach others. FILM also assisted with the engagement of other relevant stakeholders from Government of Pakistan ministries and departments, NGOs, researchers and private service providers. Reflecting on the importance of this as a means to enable collaboration with farmers on practical on-ground research, FILM then evolved into the Rural Research Engagement and Learning Model (R^2EaLM) as part of the ACIAR funded *Adapting to Salinity in the Southern Indus Basin* (LWR-2017-027) project that started in 2021, and has continued to evolve. Realising that the engagement of the broadest range of stakeholders, from farmers to policymakers, had been enhanced using R2EaLM, the name has undergone another iteration to become **Stakeholder Engagement for Research and Learning (SERL). This new title, with its reference to stakeholders, acknowledges that all those who have a stake in further improving rural livelihoods and agricultural practices and policies are to be actively engaged in both learning and teaching each other about how these improvements can be achieved.**

Such an approach is essential as it actively involves ALL stakeholders as equal participants. It is not the top-down curriculum or approach that rural community engagement facilitators may have previously used. Instead, it will be a research and learning program co-designed collaboratively by farmers, researchers, agricultural service providers, policymakers and other stakeholders to meet the needs farmers have identified, and to address the issues they face **when the time is right**. This means that all stakeholders need to be flexible, with workshop processes in place that enable all involved to at times be led by the farmers.

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Section 1 – Theoretical Underpinnings

Stakeholder Engagement for Research and Learning (SERL) is based on some fundamental theories. Firstly, **adult education principles and co-production of knowledge** are of prime importance when enabling adults to bring about the change they want in their lives and practices. Secondly, **Organic Research for Community Development** (ORCD), incorporating **participatory research practices**, draws on all stakeholders' knowledge. Thirdly, Asset Based Community Development (ABCD) notions promote a positive attitude for enabling change as it draws on the existing assets and capacities of women and men farmers and stakeholders.

Successful adult education rests on six principles as outlined by Knowles (1980):

1. Need to know – why, what, how, *e.g. How can I get a better crop yield? Why is policy change needed?*
2. Self-concept – autonomous, self-directing, *e.g. I am a good farmer and want to discover and learn more. I want to improve the livelihoods of farmers by making sound policies.*
3. Prior experience – resource, mental models, *e.g., I have a suitable land area and work hard. I am an experienced soil scientist with good laboratory resources to assist farmers.*
4. Readiness to learn – life related, developmental task, e.g. *I need to educate my children, so I want to improve my farm and earn more. I want a promotion in the Agriculture Department.*
5. Orientation to learning – problem-centred, contextual, *e.g., some parts of my land are waterlogged, and good seed is hard to get. I want to work with farmers more cooperatively.*
6. Motivation to learn – intrinsic value, personal payoff, *e.g. I want my family to be proud of the farm. I want farmers to adapt new technologies into their farming practices.*

Education allows learners to regain their humanity in overcoming their conditions (Freire 1972). Consistent with these principles is the use of **Discovery Learning**, which can occur whenever people are not provided with exact solutions or methods but tools and resources. As Paulo Freire (1921-1997), a leading advocate for critical pedagogy, espoused, prior knowledge and personal experience play a vital role in this approach of largely unguided detection of new patterns and possibilities. Discovery learning differs from other formal and guided learning methods because it relies on inductive reasoning or discovering insights and generalisations from instances rather than deduction or working from general principles first. Freire (2016, p. 15) believed that:

> *Education makes sense because women and men learn that through learning they can make and remake themselves, because women and men are able to take responsibility for themselves as beings capable of knowing—of knowing that they know and knowing that they don't.*

Learning together or **co-learning** is a hallmark of SERL and is challenging in the rural research context as it involves farmers, who are often illiterate, working together with highly educated researchers and others to identify improved agricultural practices and ways to adapt to them. However, as Jasanoff (1987) indicated, social processes affect the perception of knowledge, and the language used by diverse stakeholders varies; thus, "differing interpretations of the same facts" (p.195) will arise. Carolan (2006, p. 664) couches his claims of knowledge in terms of expertise and focuses on:

> *Contributory expertise in the form of either abstract/generalisable or local/practical knowledge while also having enough expertise to interact interestingly with those who possess contributory expertise of the other form.*

The co-construction of knowledge requires SERL to aid in breaking down the language barrier and acknowledge all stakeholders' contributory knowledge. SERL aims to enable change, which requires knowledge and understanding of what already exists for all stakeholders. Thus, a research-based model is required. Organic Research and Collaborative Development (ORCD) methods are crucial for galvanising an effective and sustainable development program (Spriggs and Chambers, 2011; Spriggs et al., 2019). With its roots in Freirean pedagogy, ORCD **respects all participants as equals and experts in their own areas** so that the fundamental issues that need to be addressed are brought to the surface. Similarly inspired by Freire, Roth et al. (2023) have more recently sought to establish an ethical community engagement framework for conducting their research, which involved engaging with communities and working with researchers and practitioners. SERL also provides an ethical framework to engage all stakeholders.

As shown in Figure 1, ORCD assumes that knowledge comes from a range of stakeholders, and is based on two Participatory Action Research (PAR) cycles (Allan et al., 2007), one with local stakeholders, including farmers, and the other with national and international researchers.

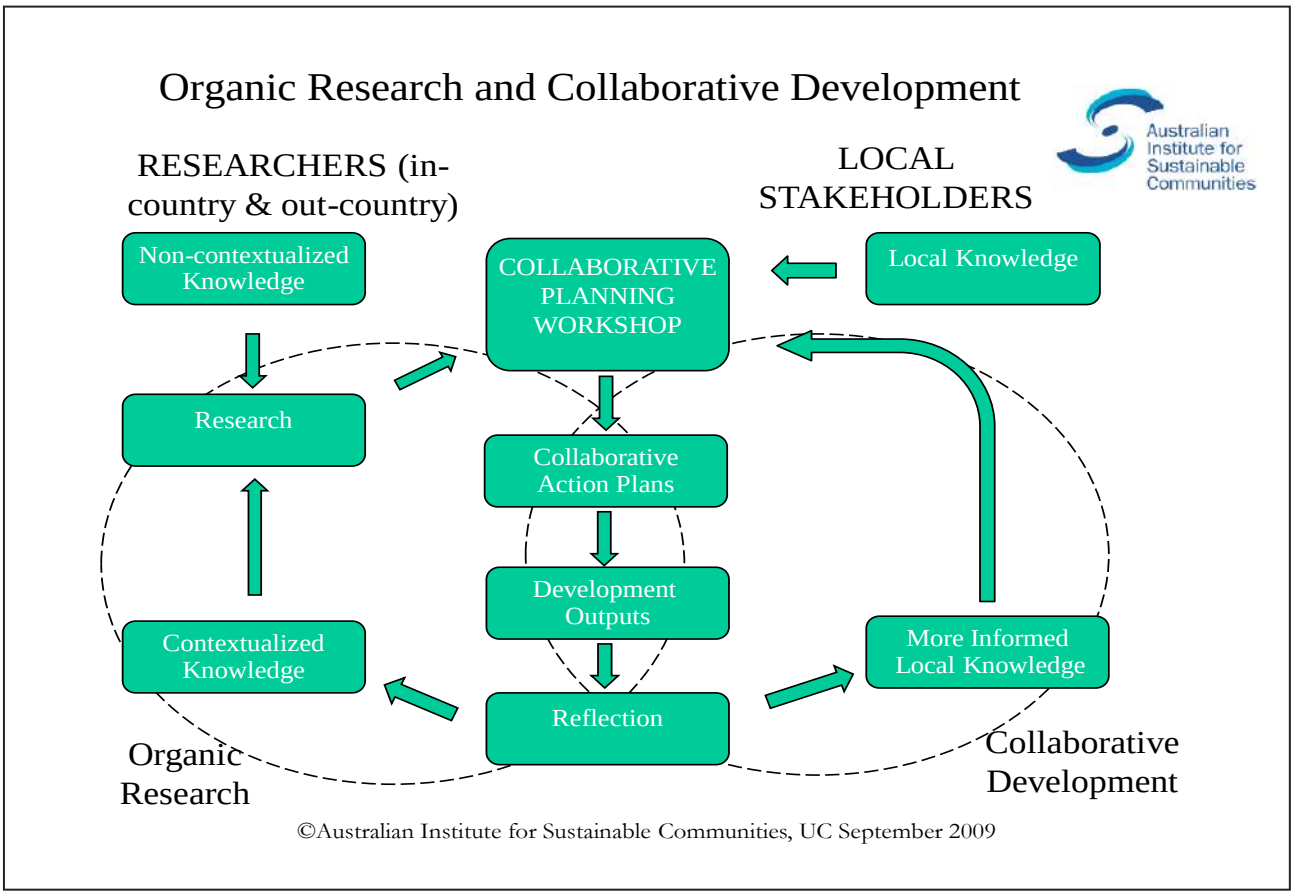


Figure 1: Organic Research and Collaborative Development (ORCD) Process (Spriggs and Chambers, 2011; Spriggs et al., 2019). Used with permission.

These two PAR cycles are brought together in the collaborative workshop phase. **This acknowledges the farmer as "expert"** and **enhances the collaboration and multi-disciplinary perspectives.** Ultimately, all stakeholders agree on an action plan and associated research questions that lead to development outputs evaluated by the project team and local stakeholders during the reflection phase. This reflection is expected to lead to a subsequent round of research activity; hence, the research is adaptive. Using this process, we expect to maximise the chances that research outputs will be developed that align with the requirements of farmers and other local stakeholders. Hence, they are also likely to have a high rate of adoption or adaptation.

A variety of social research methods may be employed within each PAR, including Participatory Rural Appraisal (PRA) (as per Chambers, 1994), Critical Institutional Analysis Development (CIAD) (Whaley, 2018), village and farmer profiling, and capacity analysis surveys. Again, the context determines the specific methodology. Similarly, various science-based methodologies, e.g., soil and water analyses, can be employed.

Asset Based Community Development (ABCD)

ABCD views communities as valued equally with all others in workshops used in SERL. An excellent way to show that you value and respect the farmers and others in the workshop is to open your workshop with a short exercise highlighting each person's assets or strengths (Kretzman and McKnight, 1993), using a half full glass. The ABCD exercise included below is a very short format of what is known as a capacity inventory which social researchers may do in some of the villages. However, it works well in the shortened form to give respect and value to all workshop participants.

Remember we always see the glass half full – a community abounding in assets and resources. As enablers of change, we facilitate the recognition and utilisation of these.

The principles of adult learning, co-construction of knowledge, ORCD and ABCD draw together the threads of research, engagement, and learning threads. The research becomes a process of ***co-inquiry*** which varies from traditional research approaches that create clear distinctions between the 'researcher' and the 'subject'. Traditional research is carried out on the subject. The co-inquiry approach involves working **with** people throughout the research process. **This approach attempts to achieve equality between participants regarding their input to the research focus, design, methods and results.** All participants are 'co-researchers', whether from government departments, universities, or the community. This relationship is built on **valuing and respecting** each person in the research process. All have knowledge, skills, capacities and resources; while they may differ, those assets are of equal value. Sharing such assets as equals **builds trust** (Caruso et al., 2015; Foster et al., 2019) and is an ethical way of engaging communities in research and development.

As the assets and capacities of a community are explored, the institutions operating among and between all stakeholders emerge. ***Critical Institutional Analysis*** offers a framework for analysing formal and informal institutional arrangements. It captures how commons government is rooted in culture where specific social, historical and ecological conditions exist. The Critical Institutional Analysis and Development (CIAD) framework focuses on social situations and their outcomes (Cleaver, 2012; Whaley, 2018).

Rural engagement and learning require whole communities to become involved in enabling change. Women and youth of both genders are significant members of all communities.

Women's Engagement

While there is a focus globally on engaging women in all development projects, we must not disrupt the local cultural practices, which, as we know in Pakistan and other countries, vary significantly at the provincial, village, clan and family level. **Respecting and valuing the local** is an essential principle in working with communities. One way of possibly overcoming this but not excluding the voice of women is **to run the SERL workshops with the women first** and get their views, issues and ideas and then take them to the workshops with the men.

Meeting with women first is considered a legitimate way of running such workshops and gives a voice to the women. We have found that meeting women first often gives men a different perspective on issues and ideas and helps shape meaningful research questions and action plans for their villages and farms.

Youth Engagement

The age of technology is here, and young people of both genders are like sponges soaking it up and leading the way. So, if you have farmers who do not like technology or lack access to it, recruit some young men and women to act as photographers, monitors, story recorders and writers, etc. Invite them to the workshops, encourage participation as equals, value their ideas, and harness their energy to engage with the research.

Other Stakeholder Engagement

To get **sustainable adaptive change** in farming/fishing practices, we need more than farmers/fishers. Many people need to be involved. Opportunities and challenges need to be explored from many different perspectives.

Everybody views the matter from their position. For example, the farmers of a particular area are frustrated because there is not enough canal water reaching their farms. The person controlling the water flow in the canals might have a different perspective on how such water shortages arise. The water engineers who have invented an excellent tool to measure soil moisture see their tool as the solution, and they want every farmer to install one on their farm to reduce overall water used. However, the agent from the agricultural service provider thinks that if the farmer starts conserving water, they won't be able to sell so much fertiliser.

So, each one has different views about the same situation and a different set of ideas for a solution – none of which, in isolation, will form a meaningful and sustainable solution.

These issues are known as "**wicked problems**" – multiple views and ideas with multiple solutions. We can only arrive at realistic, manageable, cost-effective solutions for all concerned by bringing all stakeholders together to expose all the differences. SERL offers a paradigm to seek a common language to expose the wicked problems and for each to share their contributory knowledge.

Therefore, you need to invite multiple stakeholders to the workshops. Of course, we already have farmers, other villagers, water engineers, soil scientists, agronomists, economists, community engagement facilitators and social scientists. However, in each district, the relevant local people need to be considered and invited to come for at least the first workshop in each village to expose the problem to its fullest extent and find manageable and achievable solutions. Extension agents and field assistants, long regarded as the bridge between the researcher and the farmer, are vital to adapt practices. Their inclusion in SERL will ensure sustainable change.

Engaging multiple stakeholders to solve wicked problems leads to **Citizen Science**. Citizens, our local communities and relevant stakeholders are all involved in the research process with varying degrees of control and participation. Citizens can be contributors, collaborators or **co-creators** in the research process. As the diagram indicates, co-created projects engage citizens in all stages of the research process. Research aims to reach solutions often via traditional, contributory or collaborative pathways.

The traditional research pathway involves only the researcher throughout the whole research process. Stakeholders have some input in the contributory pathway but are not involved in defining the research. There is some ongoing dialogue with stakeholders in the collaborative process, but they are not involved in the whole process, as Figure 2 indicates. In all three pathways, the researcher has the dominant voice.

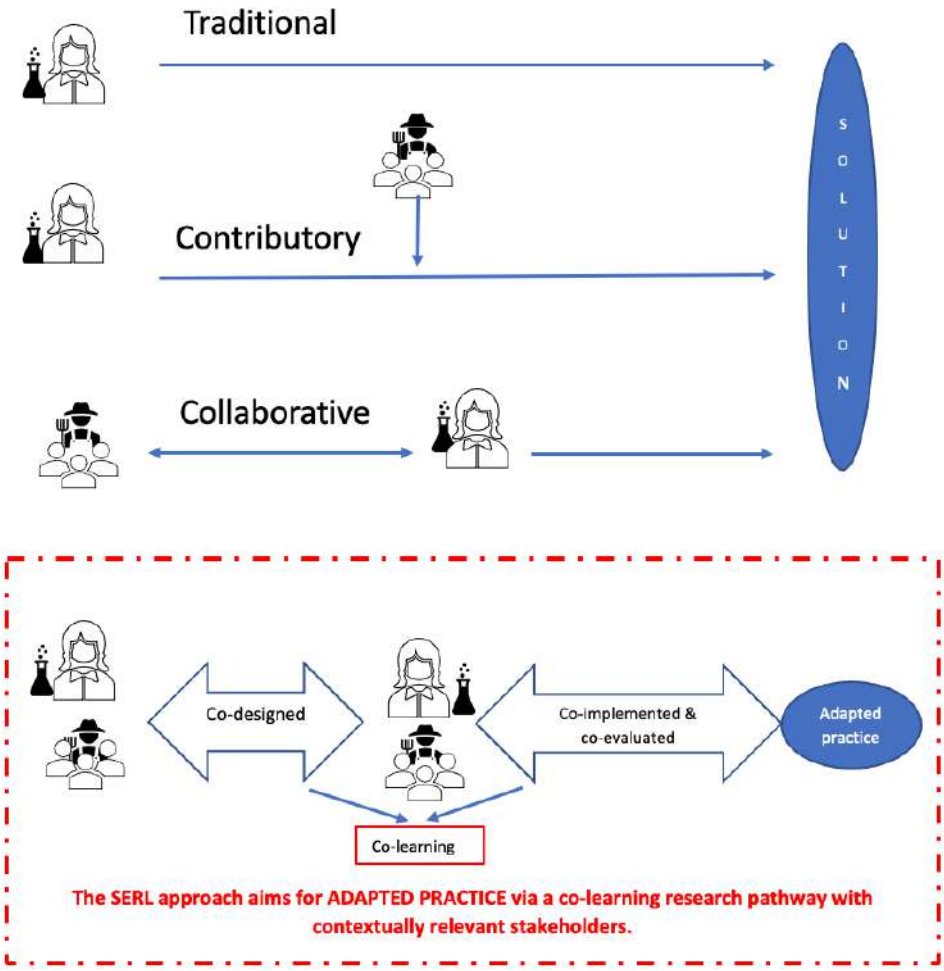


Figure 2: Four research pathways. Adapted from Hodgkinson et al. (2022).

Ensuring stakeholder engagement and learning occurs requires researchers and all other stakeholders to be actively involved throughout the SERL pathway, thus ensuring adaptive changes to practice are undertaken and sustainable.

Figure 3 shows just some stakeholders who could be involved in the multi-stakeholder co-inquiry research journey. It will depend on the community context and the changes they wish to make as to the make-up of each stakeholder group.

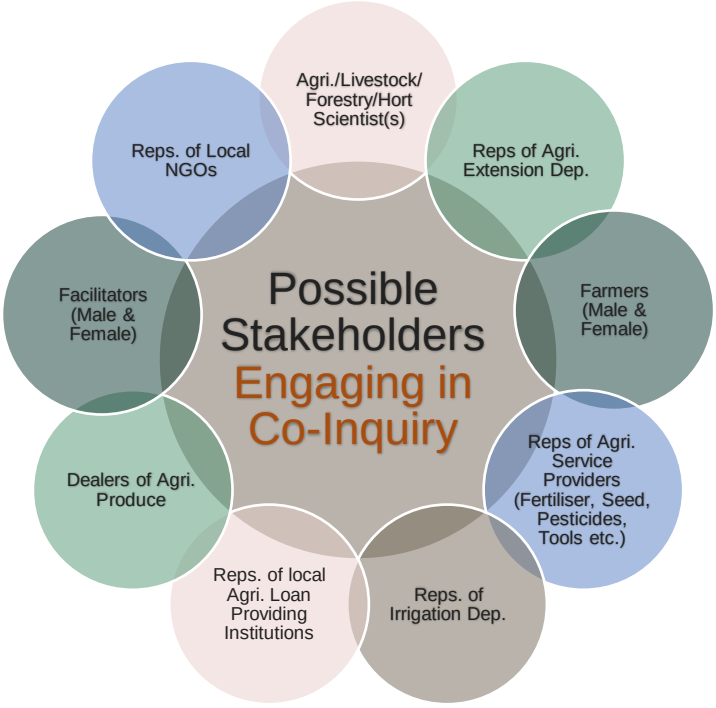


Figure 3: Possible stakeholders.

Stakeholder Engagement for Research and Learning (SERL)

SERL resulted from a four-year project where various adult learning approaches were trialled and refined into one model known as FILM (Hussain et al., 2019). Always intended to have a research-based approach, it was again refined to emphasise its use for research and broader community engagement. To embrace a more comprehensive range of stakeholders and work towards policy development, it has now emerged as Stakeholder Engagement for Research and Learning (SERL).

There are three phases: pre-research, workshop and action/evaluation/reflection. The examples provided below relate to salinity and water resources management, but the principles remain the same regardless of context. When implementing SERL for other places and purposes, develop examples specific to the community and its opportunities and challenges for change. Figure 4 indicates the iterative nature of the model.

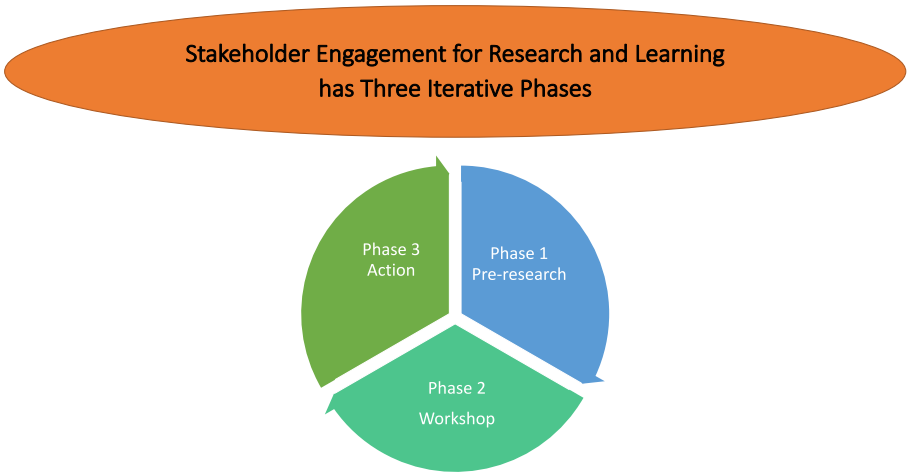
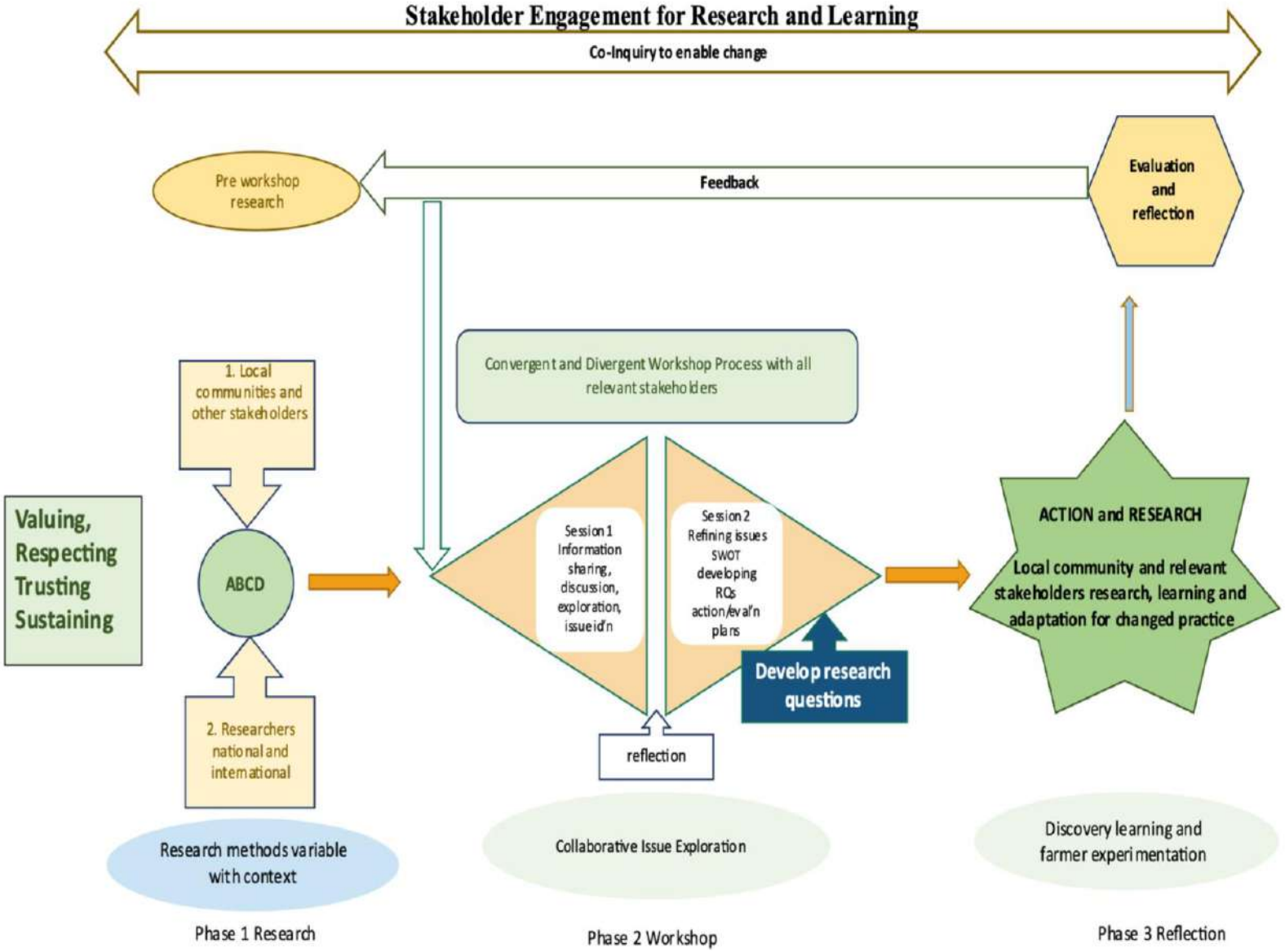


Figure 4: The three phases of SERL.

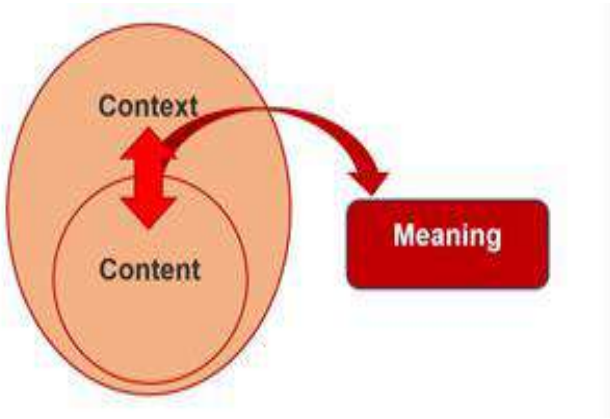

Stakeholder Engagement for Research and Learning
Co-Inquiry to enable change
Pre workshop research
Feedback
Evaluation and reflection
Convergent and Divergent Workshop Process with all relevant stakeholders
1. Local communities and other stakeholders
Valuing, Respecting Trusting Sustaining
ABCD
2. Researchers national and international
Session 1 Information sharing, discussion, exploration, issueid'n
Session 2 Refining issues SWOT developing RQs action/eval'n plans
Develop research questions
reflection
ACTION and RESEARCH
Local community and relevant stakeholders research, learning and adaptation for changed practice
Research methods variable with context
Collaborative Issue Exploration
Discovery learning and farmer experimentation
Phase 1 Research
Phase 2 Workshop
Phase 3 Reflection

The three phases are summarised below. Further details on the procedures used in the three phases is provided as Facilitator Guidelines in Section 2.

PHASE 1 – Pre-Workshop Research

1. Imprecise Problem Identification

   While project team facilitators and researchers are stakeholders in the research to be undertaken in collaboration with farming communities, they should never presume to fully understand the problems faced by farming families, nor what solutions should be investigated. Those outside the community are thus likely to have an imprecise understanding of the problems farmers face in their particularly locality. This means time must be spent at the outset undertaking basic research to better understand the context before engaging the community through a SERL workshop.



2. Stakeholder Analysis

   The first step is to identify who are the stakeholders that need to be involved and to analyse who has what information, who has the power to make decisions, and consider who might benefit from the process, and who might be adversely affected.

3. District and Village Information and Preliminary Data Collection

   The next step is to ask questions of the community to develop an understanding of the local socio-economic and institutional contexts, as well as past agricultural management practices. The use of the Critical Institutional Analysis and Development (CIAD) framework (Whaley, 2018) can add considerable depth to the understanding of the local socio-economic and institutional contexts.

4. Collect Pictorial Data

   A great way to engage the community in this pre-workshop research phase is to ask them to take photos they capture their understanding of what their lives are like. This may be a good way to engage youth of both genders. The photos can be used to create discussion about their community, which can inform the workshop process, issues and outcomes.

Through this phase, a rich picture can be developed of the communities as key stakeholders in the research and the context in which they live. This can then be used to inform the meaning or purpose of the research.

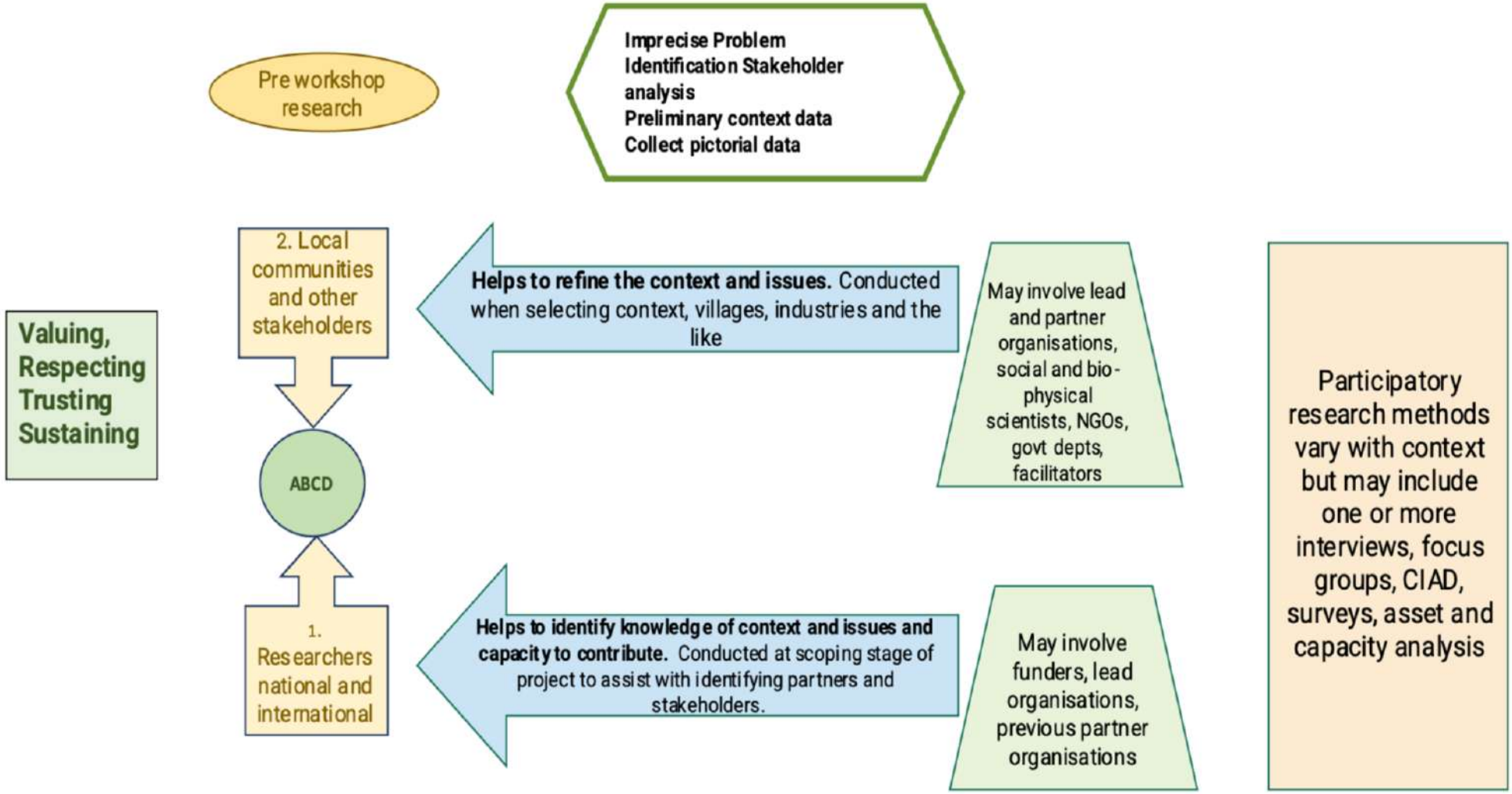
PHASE 2 – Workshop Format

The workshop involves two processes – a convergent process where information is shared leading to problems being identified and ideas in response to those problems followed by a divergent process where these ideas for co-inquiry research action are refined, assessed and articulated with responsibilities assigned.

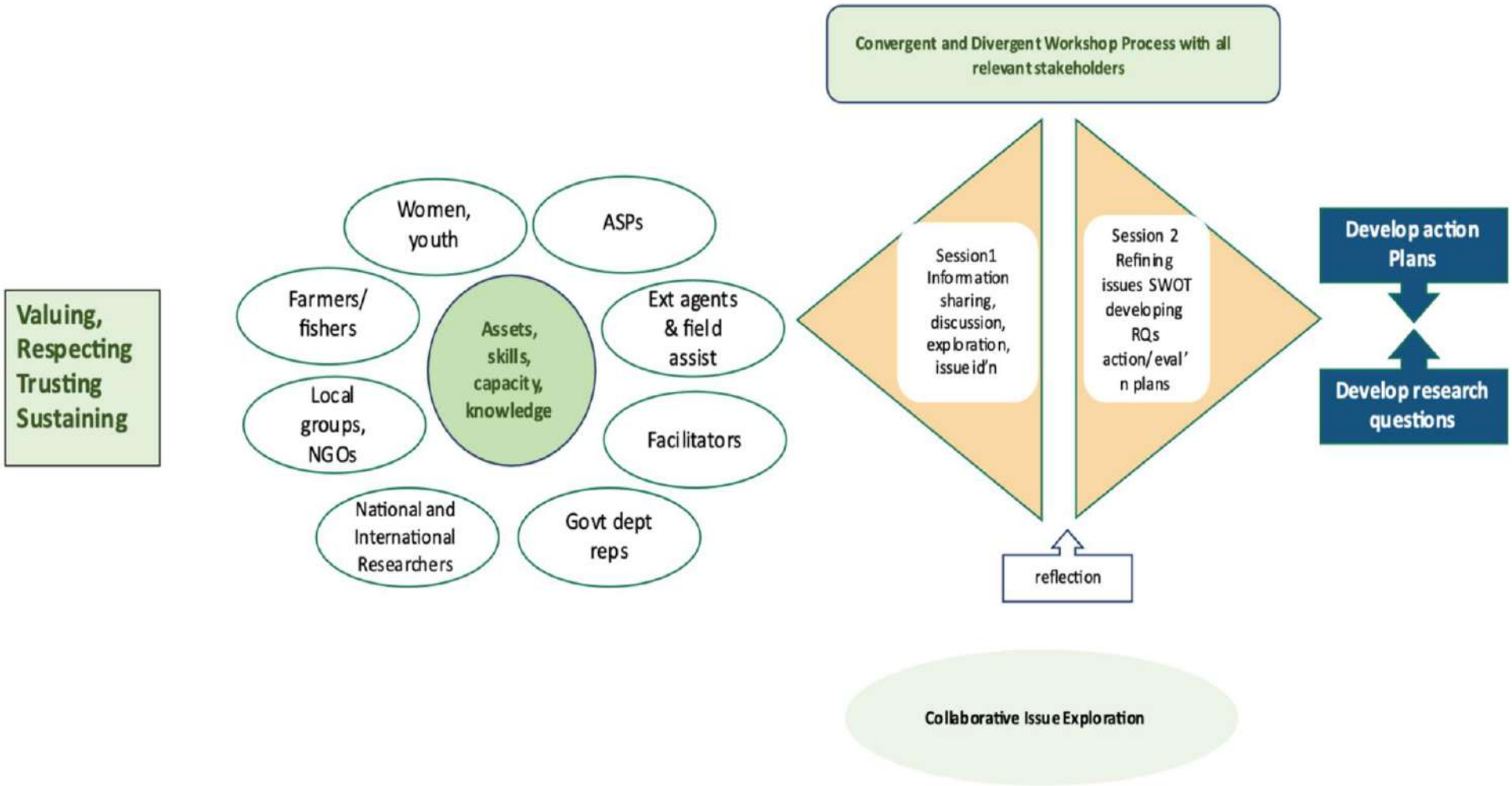
Given these two processes, the workshop is therefore best conduced over two days, especially when it is the first time all the stakeholders have met together. This allows all participants to have a night to reflect on the discussions and outcomes from the first day of the workshop and make any additions. An alternative is to conduct the workshop over one day, but to give all participants a long lunch break where they have time to themselves to reflect on the morning session.

If the workshop is the second or subsequent engagement with the community, the process will be different on Day 1 or the morning session as the focus will be on learning from the outcomes of past actions, where ALL stakeholders will be given the opportunity to provide their feedback.

Phase 1 – Stakeholder Engagement for Research and Learning



Phase 2 - Stakeholder Engagement for Research and Learning



Farmer/Fisher to Farmer/Fisher Learning (FF2FF)

It is worth remembering that the original FILM was designed to facilitate farmers to become facilitators for other farmers. This notion should not be lost as research is more explicitly built into the Stakeholder Engagement for Research and Learning (SERL) approach. Phase 2 of the model serves this purpose well and lead farmer and/or fishers into doing their own experiments in Phase 3. Thus, if farmers and/or fishers are identified as willing to work with their counterparts in other villages, the approach will allow facilitators to give them additional training to become FF2FF facilitators.

Some Other Methods Used in SERL Workshops

1. A **Strengths, Weaknesses, Opportunities and Threats (SWOT)** analysis is a useful way to structure stakeholder evaluation of the ideas being suggested to address key problems that have been prioritised.
2. First draft of an **Action Plan** can be quickly develop based on some key question prompts (why, what, when, where and who). This will then form the basis for further, more detailed elaboration, including the formulation of clear research questions (see point 4 below), and methods that can be used to answer the research question.
3. A **Research Observation and Feedback Plan** can similarly be developed to ensure all stakeholders take responsibility for deciding who will monitor progress related to the research investigation and to evaluate, report on and learn from its outcomes.
4. **Formulating Research Questions**: Researchers are familiar with forming research questions, but it is a new concept for farmers. It is, therefore, vital that these questions be co-developed with all stakeholders. Some examples are included below, and the do's and don'ts may help.

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The following examples emerged from a workshop in Village Meer Kot, Tehsil Jalalpur Peerwala, District Multan, Punjab. The tables show how activities and experiments co-developed with all stakeholders can articulate meaningful research questions with valid research outcomes. Citizen scientists partnered with researchers can do reputable science worthy of publication.

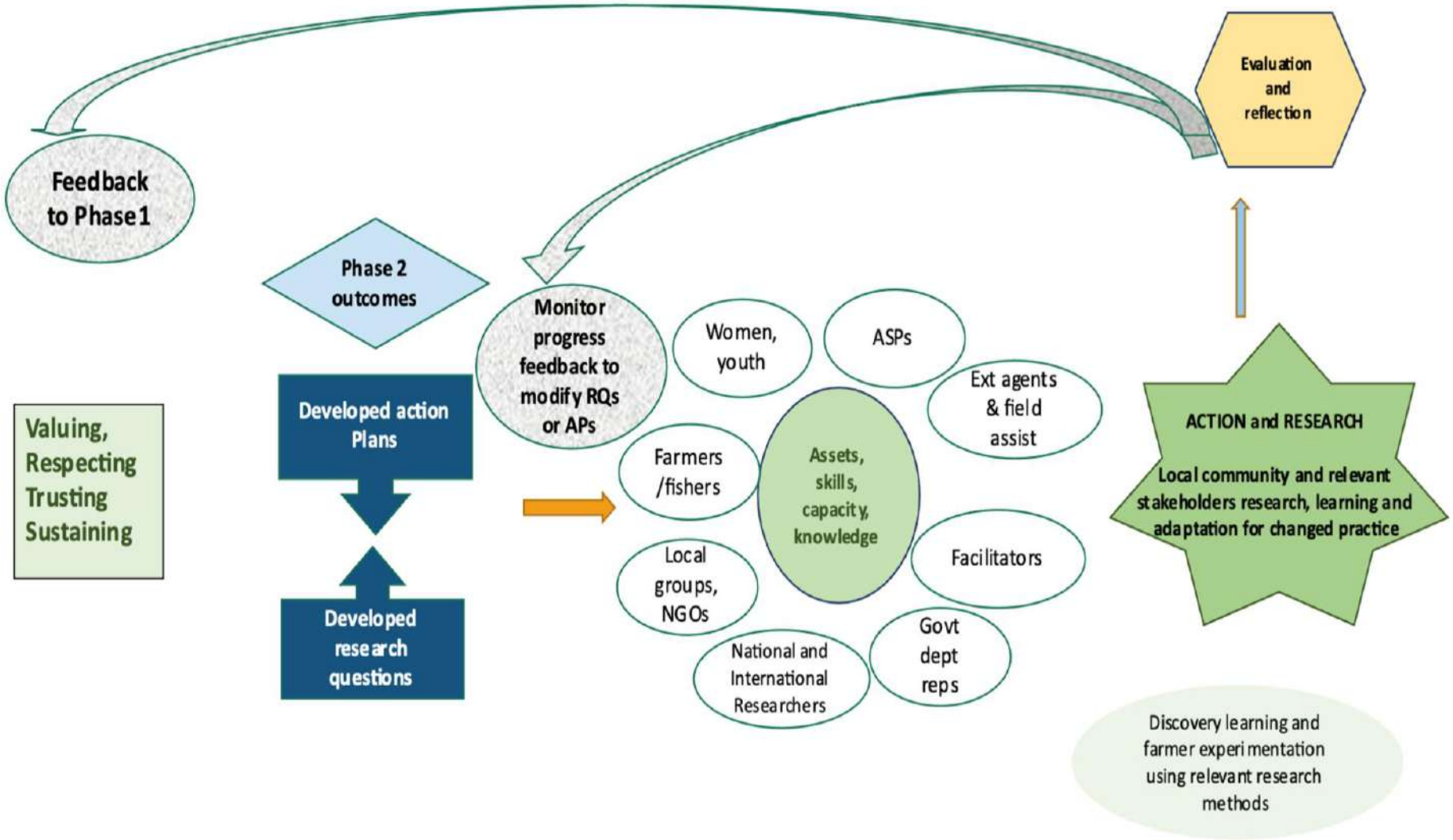
Jalalpur Action Plans (men)	
Experiment/ Activity	**Research questions**
5. Testing variable applications of gypsum to reduce soil salinity	RQ1: What are the current best available reclamation options for this type of salinity affected landscape (e.g., use of gypsum and/or drainage etc.), and what would the costs be?
4. Laser levelling & deep ploughing for crop cultivation	RQ2: Assuming reclamation has unbearable ongoing costs, what are the options for living with salinity: a. What are the best 'land forming' options for growing crops in this type of salinity affected landscape (ridges, raised beds, role of laser levelling etc.), and how can we maximise the benefit for different types of crops/ contexts? b. How can we improve irrigation scheduling (and rainfall capture?) for improved outcomes? c. What are the best mulching practices to enable growing salt sensitive crops necessary for improved nutrition and/or source of income?
1. Wheat sowing on raised beds	
2. Ridge-sowing of winter vegetables – small scale (this is the same activity as Action Plan No. 2 for women)	
6. Experimental cultivation of canola (oilseed)	d. Can canola as an adaptation option assist small farmers improve livelihoods?
3. Experimental plantation of high-density *Acacia nilotica*	e. Growing acacia: how do we best categorise this option: adaptation? Reclamation? or transformation (i.e., is it an option for land that could never be used for cropping – instead of aquaculture)?
7. Village level Farmer Organisation	

Jalalpur Action Plans (women)	
Experiment/ Activity	**Research questions**
1a. Kitchen gardening of all seasonal vegetables (for landholder women)	RQ1. What seasonal vegetable varieties are most suitable to grow in this type of salinity affected landscape? a. What are the best mulching practices to enable growing vegetables necessary for improved nutrition and/or source of income? b. What are the best 'land forming' options for growing vegetables in this type of salinity affected landscape (ridges, raised beds, role of laser levelling etc.)? c. What are the water requirements for growing vegetables?
5. Training on Good Agricultural Practices	
1b. Kitchen Gardening of all seasonal vegetables with Pot cultivation (for landless women)	RQ2. What seasonal vegetables are best suited for pot cultivation?
4. Training on value addition of dairy and agriculture produce 6. Training in vegetable processing	RQ3. What are the best activities for women to improve nutrition and or income?
2. Nursery raising of summer fruit and vegetables with healthy seedling production	a. What fruit and vegetable seedlings are most likely to thrive in salinity affected conditions?
3. Household Poultry farming (PM Hen Scheme)	b. How is egg production impacted in a saline affected landscape?

Phase 3 – Research and Action

The Adapting to Salinity in the Southern Indus Basin" (ASSIB) project has been investigating strategies for improving how research action plans co-designed through the Phase 2 SERL Workshop are conducted as a co-inquiry where farmers, researchers and all stakeholders have a stake in the process, learnings and outcomes. Facilitators have a key role to play to facilitate the co-inquiry by meeting with farmers as research participants on a regular basis to ask them how they are progressing – waiting for a reaction, what they have learned etc. These reactions and learnings can be documented for other stakeholders, so that expert feedback can be provided as required. They can also be brought to and discussed at second and subsequent workshops so that all stakeholders can benefit.

Phase 3 - Stakeholder Engagement for Research and Learning



Section 2 – Facilitator Guidelines

The first section covered theory and outlined the overarching principles and processes of the approach. The following generic example suffices and reduces the need to modify the guidelines for each new locality or context. Key to the approach is that **ALL STAKEHOLDERS NEED TO BE FLEXIBLE AND WILLING TO ENABLE ALL INVOLVED TO AT TIMES BE LED BY THE FARMERS – people learn best when they need to know** – "just in time learning". For example, you go to a training program to use Excel spreadsheets but do not need them in your research or work for another six months – so you forget what you learned. Nevertheless, if you had done the training the week before you need to use it – "just in time" – you would remember and adapt to it quickly.

PHASE 1 – Pre-Workshop Research

1. **Imprecise Problem Identification**

   Before visiting with communities, you and the researchers may have an imprecise idea of what problems exist for farmer families in a district, for example, poor water and irrigation management, lack of sanitation and hygiene, low crop yields, poor education for girls etc. So, it would be best to consider the issues, what you may encounter, and who may help address them before you set out.

2. **Stakeholder Analysis**
   - Identify ALL stakeholders:
     - Who has the information?
     - Who are the decision makers?
     - Who could benefit?
     - Who could be losers?

3. **District and village information and preliminary data collection** (surveys and interview questions designed for specific purposes will be provided, or a social scientist may be part of the team to assist with this). Explore the formal and informal institutional arrangements by creating discussions based on the CIAD framework. If community-based groups are identified, explore with them the group's capacity strengths and needs using the capacity assessment survey. Refer to volume 1 for more detail and references for further information.

4. **Collect Pictorial data – images, videos and the like**

   In the research phase before the workshop, you can get villagers to take photos of things they like or do not like about their village, their farming practices, irrigation practices etc. These images should reflect the opportunities and challenges the community and other stakeholders identified. They can be used to generate discussion in workshops as well as a record of progress and pace of change. If they do this on a mobile phone and send it to you before the workshop, you can make up a sample to take to the workshop and get them to tell you the story of each image and why it is a problem or an asset. This modified form of visual ethnography helps engage people – it is particularly useful for engaging youth of all genders in the workshops and the project overall. Using visual ethnography, you can take photos along the value chain (VC) for the various commodities farmers produce and engage them in a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to help identify how they can better manage the VC and where they need help. Remember that other stakeholders will have different views, and that is when discussion fully explores matters.

Visible salinity (salt on upper layers of land) which is most prominent in the summer season.

Fodder crop (Jantar) struggling to grow on saline land.

Example of pest attack of fruit suggesting need to build greater awareness of how to take care of horticultural crops.

Barren land around houses can be used for many purposes (e.g., kitchen gardening).

Training sessions to improve agricultural practices often do not acknowledge women's experiences and knowledge even though they have knowledge and are interested to learn more.

Fish farmers empty their ponds in the off-season leaving water on the fields of farmers which badly affects their crops.

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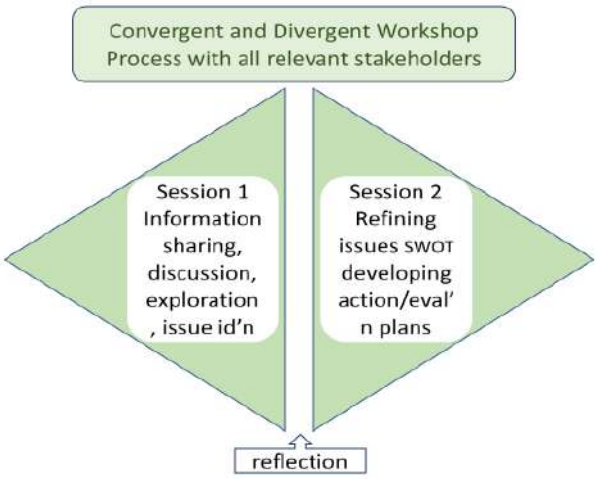
PHASE 2 – Workshop Format

Day-1 or morning session

- Getting to know you (ABCD introductions)
- Informing
- Discussing
- Exploring
- PROBLEM IDENTIFICATION AND CLARIFICATION
- Prioritising problems
- Generating ideas for action
- THINKING AND REFLECTING



Day-2 or afternoon session

All participants working together for

- Considering new ideas from the reflections
- Refining the issue
- Reconsidering ideas for research and acti
- SWOT analysis
- Co-developing research questions
- Co-developing the action plan
- Assigning responsibilities
- Co-developing the feedback plan
- Assigning responsibilities

RESEARCH and ACTION

using DISCOVERY LEARNING and SELECTED RESEARCH METHODS

Detailed Format

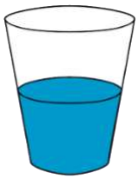
DAY-1 (or morning session)

FACILITATOR ROLE

1. Divide the participants into 2-3 groups, with each group having 6-8 members.
2. Groups should be mixed – e.g., farmer, facilitator, researcher etc. – ideally, none from the same organisation in each group.
3. Finding out the assets in the group can be done with a few key questions:
   a. Ask each person to tell the group (this includes any stakeholders not from the village):
      i. Their names,
      ii. What they do (e.g., their job),
      iii. What they like about living in (or working with) the village,
      iv. What they are good at doing,
      v. How many years they have been engaged in agricultural activities (years of experience).

Example Flip Chart Documenting Participant Introductions (as translated)								
No	**Name (Age)**	**Education**	**Occupation/ Skill**	**Total Land (Acre)**	**Saline Land (Acre)**	**Agriculture Experience**	**Benefits & reasons for living in this village**	**Expectation or Desire**
1	Sajjad Hussain (37)	Middle	Agriculture	5	3.5	21	Ancestral village	Availability of sufficient canal water
2	Javaid Hussain (27)	Intermediate	Agriculture	8	1	15	Personal land	As above
3	Haji Imran (33)	Metric	Agriculture	11	-	25	Personal land	Availability of good quality seed
4	M. Shahid (27)	Intermediate	Agriculture	25	-	14	Personal land	Availability of sufficient canal water & agriculture machinery
5	Shahmir Maki (18)	Intermediate	Agriculture	15	-	8	Personal land	Availability of good quality advanced seeds
6	M. Mubeen (28)	Middle	Agriculture	4	3	20	Personal land & Business	Availability of resistant seeds
7	M. Shakir (18)	Middle	Agriculture	2	2	10	Personal land & Business	Availability of resources to get maximum production
8	M. Safdar (21)	Primary	Agriculture	5	3	15	Personal land	Availability of sufficient canal water
9	M. Ahmad (30)	Intermediate	Agriculture	10	10	20	Personal land	As above
10	M. Akbar (29)	Primary	Agriculture	3	-	21	Personal land	As above
11	M. Imtiaz (23)	Primary	Agriculture	1	-	15	Personal land	As above
12	M. Nadeem (22)	Primary	Agriculture	4	-	14	Personal land	Availability of advanced resources
13	M. Saeed (27)	Primary	Agriculture	5	1	18	Personal land	Availability of sufficient canal water
14	Haji Arif (58)	Middle	Agriculture	20	20	42	Personal land	Availability of advanced resources according to land condition
15	Khadim Hussain (40)	Middle	Agriculture	12	6	25	Personal land	Availability of sufficient canal water
16	Kashif (28)	M.Phil.	Agri Officer					As above
17	Yousuf Chana (59)	M.Phil.	SOFT Master Facilitator					Society welfare
18	Syed Ali Zahid (27)	M.Phil.	SOFT Facilitator					Facilitating farmers to solve their problems

b. As they answer iii and iv, make a list on a flip chart or the wall, and you will have a list of assets of those in the groups.
c. ABCD assets and capacities within the people, the village and the wider area, are also drawn out at this stage – remember to focus on the glass half full, but in doing so, the needs will also be identified.
d. All participants including researchers and other stakeholders in the workshop, should also have their assets included in the list, NOT ONLY the men and women in the community.

Example Flip Charts documenting Asset Based Community Development (ABCD) (as translated).	
Half-empty glass 	 Half-filled glass
Required Resources (Needs)	**Available Resources (Assets)**
1) Paved water channels 2) Sufficient canal water 3) Good employment conditions 4) Availability of cheap fertilisers 5) Advanced agricultural machinery 6) New fodder for livestock 7) Vegetables 8) Good quality semen and vaccines for animals 9) Veterinary specialist 10) Solutions for using saline groundwater 11) Subsidised solar systems 12) Drinking water (RO plants) 13) Local agriculture officers	1) Tubewells 2) Tractors and other machinery 3) Clean environment 4) Educated people 5) Orchards 6) Labour 7) Elders have vast experience in agriculture 8) Good variety of pomegranates

Asset-Based Community Development (ABCD)		
 **The glass half full (assets)**	• Agricultural land • Citrus orchards • Mutual cooperation among farmers • Canal and tube well water available for irrigation (limited quantity) • Traditional methods of orchard management • Capacity for experimentation • Traditional tools for orchard management • Local information, knowledge and skills • Chemical control methods for diseases and pests • Working capacity • Strength to make decisions • Will to improve productivity • Livestock	
• Modern tools and machinery • Adequate supply of irrigation water • Knowledge and skills for modern irrigation methods • Identification, reasons and integrated management of diseases and pests • Good quality seeds available in the market • Strategies for using low quality (unfit) groundwater • Advanced information and training for management of citrus orchards • Training on compost formation		**The glass is still half full but now ways to top it up have been identified (needs)**

4. What we **think** we know about the issue –
   a. Information presented – various formats – PowerPoint, video, pictures etc.
   b. This information is what we know about the village, the water situation, i.e., the research you have done to prepare for the workshop.
   c. Other stakeholders may present what they know about the issue, e.g., researcher, engineer. **N.B. those presenting will need to be given a time limit to speak so as not to impede the flow of the workshop.**

FACILITATOR ROLES

5. **The group facilitators make clear that the information is representative of the issue** (it may not reflect the reality in a particular village; this is what further discussion will reveal). **The participants discuss the information, explaining to each other and the facilitator what the different information means to them.** For example, a farmer, engineer, and policymaker see things differently, so this is an opportunity to share their understandings.
6. Next, the facilitator asks participants to Identify problems/concerns for each person at the table.
7. The facilitator keeps track of the discussion, noting the concerns and comments on flip charts.

Example Flip Chart on Identification and Prioritisation of Problems (by voting)			
List of Problems	**Priority Score**		
	1st (Red)	**2nd (Blue)**	**3rd (Green)**
1) Saline lands	● ● ●	●	●
2) Poor quality groundwater is used; canal water is not available	● ● ● ● ● ●	● ● ●	
3) Good quality seed is not available		● ● ● ●	● ●
4) Fodder issues for animals			●
5) Veterinary specialist is not available	●	● ● ● ●	● ●
6) Fruit and vegetable market is not available			● ● ● ●
7) Paved canals and roads are not available	●		

Shared Identification of Problems
Local community perceptions
• Shortage of canal water • Tubewell (ground) water is unfit (high concentration of salts) • Fields are not uneven (not levelled) • Unlined water channels, cleaning is not done regularly • Irrigation without need (no planning is done) • Problems of mealybug, flower fly, fruit fly, gummosis • Farmyard manure is wasted
Researcher and external stakeholder perceptions
• Small farmers lack resources or are unwilling to try new things • Difficulty in getting to villages • Field assistants do not have the latest information

PARTICIPANT ROLES

8. ALL participants then prioritise issues using the coloured stars or dots (red major, blue medium, green minor). If there is a significant difference between how farmer participants and other participants voted, these differences should be discussed to enhance shared understanding. For example, researchers believe the shortage of canal water, which will reduce the water required, can be overcome using drip irrigation. Farmers, on the other hand, lack the resources to install drip irrigation and consider that researchers do not understand their issues. This will require the facilitator to ask those present to explain their opinions in more detail to try to reach an understanding and help plan a way forward.
9. ALL participants are then asked to focus on the major or medium concerns discussing ideas that are most likely to work to help address the issues.
10. The two categories (major and medium concerns) are posted on the flip charts separately so that other groups can see them and compare what each group concluded. The workshop facilitator will then lead a discussion about group similarities and differences.
11. Each person decides what ideas are the highest priority and the second highest priority for action. Each person is allocated one blue (priority one) sticker and one green (priority two) sticker to place on the relevant item in the preceding table.

FACILITATORS' ROLE

12. The facilitator then seeks assistance to count the number of blue and green dots, thus identifying the first and second priorities for action.

PARTICIPANTS' ROLE

13. The workshop is asked to agree or disagree with the facilitator's assessment. If there is not group agreement with the facilitator's assessment, then there needs to be more discussion. The facilitator could ask them why the group feels that way to get a deeper understanding. If that does not clarify the disagreement, ask the group to indicate again where they want to put their coloured dots.

NB: this generalised format may be modified as the workshop progresses and ideas emerge.
BE FLEXIBLE!

At the end of session (day) 1, REMEMBER to ask workshop members to think about what they have discussed and see if there were any other things they would like to raise at the start of session (day) 2. This is a bit of valuable homework as it often brings fresh ideas to the conversations.

Day 2 will be slightly different for the development of an action plan is worked through
Reconvene into one big group from the previous session smaller groups

Day 2 (or afternoon session) after everyone has had a chance to think about the first day/ half day

1. In the original large group, discuss any new ideas which may have come up for people.
2. Ask each small group for a brief report of their previous day's discussions.
3. Note common ideas on a new flip chart. Ensure NO ideas are lost.
4. Participants are then asked to explore the **Strengths, Weaknesses, Opportunities and Threats** to evaluate the ideas.

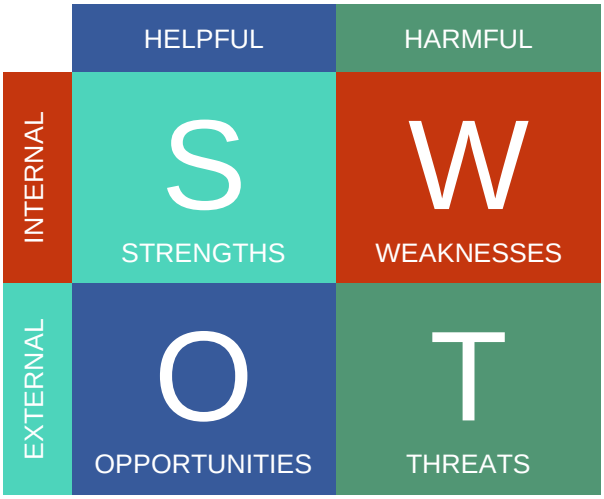


Image adapted from https://www.business-to-you.com/swot-analysis/

- **Strengths** are internal resources and capabilities that are valuable, rare, hard-to-imitate and community (village)-wide – they give you an advantage.
- **Weaknesses** are internal factors which may be harmful or place you at a disadvantage.
- **Opportunities** are external factors which may positively affect the outcome – they may be political, economic, social, technological or environmental (this is where the critical Institutional Analysis done in the preworkshop phase is helpful).
- **Threats** are those external factors which could cause trouble and may also be political, economic, social, technological or environmental *(this is where the critical Institutional Analysis done in the preworkshop phase is helpful).*

Example Flip Chart Documenting a SWOT Analysis			
Idea 1: Conserving water by sowing crops on beds/ridges using mulch		**Idea 2:** Water-wash technique to reduce the soil salinity	
Strengths	**Weaknesses**	**Strengths**	**Weaknesses**
• More germination is expected • Less salt accumulation • Less salinity • Conservation of water	• Mulching material will not be sufficiently available • Extra workload/ manpower for spreading mulch	• Less saline soils due to leaching of salts • Lands may be improved	• Huge amount of water is required • Inexperience • Don't know actual procedure
Opportunities	**Threats**	**Opportunities**	**Threats**
• Soil condition can be improved • Good crop • Water conservation • More profits by less salt accumulation	• Unavailability of irrigation water on time • Unavailability of mulching material on time • Sowing on beds may cause more salt accumulation in centre of beds	• Less salts in soil • Improved yield	• Shortage of water • This method may not work • All efforts may be wasted

Work through Steps 11 to 13 above to reach consensus – this may alter the first and second priorities reached at Step 12 before.

Project selection by mutual consultation following SWOT:

1) Conserving water by sowing crops on beds/ridges and using mulch.
2) Water-wash technique to reduce the soil salinity.

5. Develop research questions (where appropriate):

The following are possible examples of research questions, but these will change according to the context and issue analysis.

- Will the beds/ridges conserve water, solve the salinity problem, or reclaim the land?
- Will the mulch practice conserve the water, solve the salinity problem, or reclaim the land?
- Which mulch type will be suitable for which crop?
- What are the best mulching practices to enable crop growth necessary for improved nutrition and/or source of income?
- What are the best 'land forming' options for growing crops (ridges, raised beds, role of laser levelling etc.)?

6. Develop action plans for the two main priorities and their associated research questions:

a. Why – is this action going to be done? (has been established in setting priorities; and through the above exercise where priorities have been reframed as a researchable research question)
b. What – is going to be done? (at each step in the process)

c. How – is it going to be done?
d. When – is it going to be done?
e. Where – is it going to be done? (if necessary, e.g. which field will be used and why?)
f. Who – is responsible to do it?
g. Who – is responsible to see that it is being done (this needs to be one person even though this responsibility ultimately involves ALL stakeholders, from local community members to researchers, government officials etc.)
h. Set a time and place for the farmers and researchers to meet after the workshop to consolidate the plan devised.
i. Your action plan should be SMART which relates to the five key points within the action plan. These are as follows:

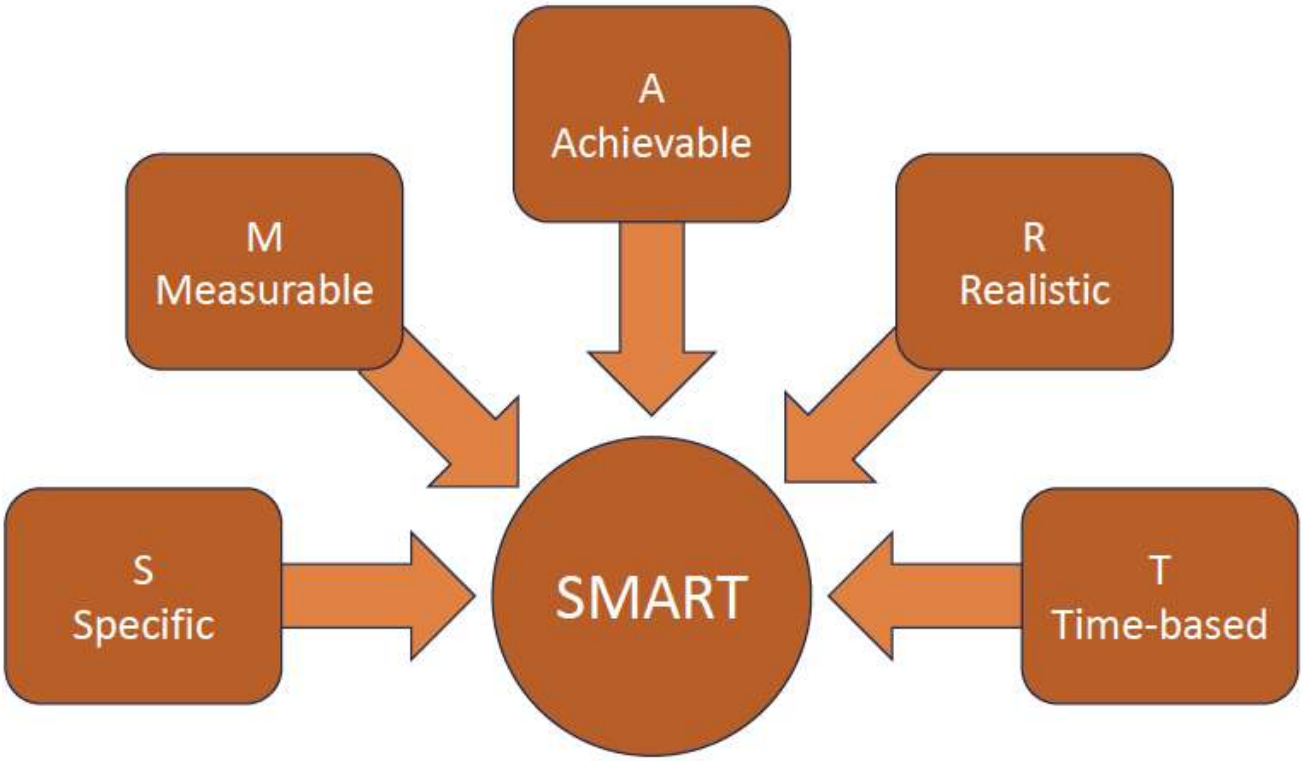


Image adapted from material sourced from https://www.sqaacademy.org.uk/

Example Flip Chart Where Ideas to Overcome Issues have been Prioritised (by voting)		
List of Ideas	**Priority Score**	
	1st (Blue)	**2nd (Green)**
1) Conserving water by sowing crops on beds/ridges	●●●●● ●●●●●	●●●● ●●●●
2) Conserving soil water by using mulch (Water-wash technique to reduce the soil salinity)	●● ●● ●● ●●	●●●●● ●●●●●

Example Action Plan (as developed during a SERL Workshop with farmers at Jalalpur, Multan)

Translation of Above Action Plan			
What	**Who**	**When**	**Where**
1) Undertake deep ploughing	Ashiq Hussain (2 acres) Muhammad Madni (1 acre)	In October (2021)	On land of respective farmers
2) Establish village level farmer organisation	All farmers and facilitators with support from other local stakeholders	In next workshop with SOFT facilitators	At farmhouse of Haji Arif
3) Ridge sowing of crop(s)	All farmers with support of facilitators	From Oct. to Dec. (2021)	On land of respective farmers
4) Laser levelling of land	All farmers	From Oct. to Nov. (2021)	On land of respective farmers
5) Experimental application of gypsum	All farmers	From Oct. (2021)	On land of respective farmers
6) Grow new variety of pomegranate	Farmers and stakeholders with support of facilitators	From Feb. to March (2022)	In farmers' own nurseries on their properties

Note: the above action plan was developed during the workshop. In some cases, a more detailed plan is developed later. An example of such a more detailed plan is provided as Appendix 1.

7. Develop a research observation, feedback and reporting plan:
Feedback is a loop of action and reaction, though there are several steps between the two.
A simple schematic loop will assist you and all stakeholders monitor progress and evaluate outcomes.

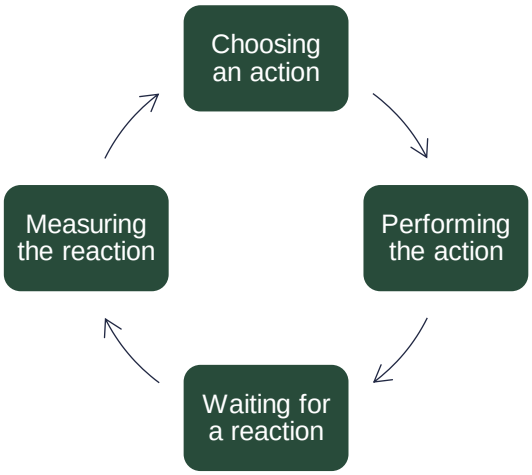


Image adapted from a blog at https://circleci.com/

- Farmers, stakeholders and you need to determine the following:
  a. How – will we know it worked/did not work?
     (e.g., reduced irrigations, improved plant health, increased income)
  b. What – information do we need to know if it worked?
     (e.g., before and after acres irrigated, income figures)
  c. When – will we monitor our plan?
     (e.g., at the end of citrus season)
  d. Who – will be responsible?
     (e.g., farmer, facilitator and other stakeholder)
- All stakeholders to decide what is to be reported, how it will be reported and who will be responsible.

PHASE 3 – Research and Action

Once you have developed your research and action plan, for example, by choosing an action "to experiment on conserve water by sowing crops on ridges/beds with mulch application" and identified what stakeholders are responsible for the actions. Together you can perform the action to work in the fields with farmers demonstrating the various tools and techniques using the Discovery Learning (DL) approach and teaching them about the correct installation and how to use the tool/s they have chosen.

- DL methods will get the farmers to experiment and play with equipment.

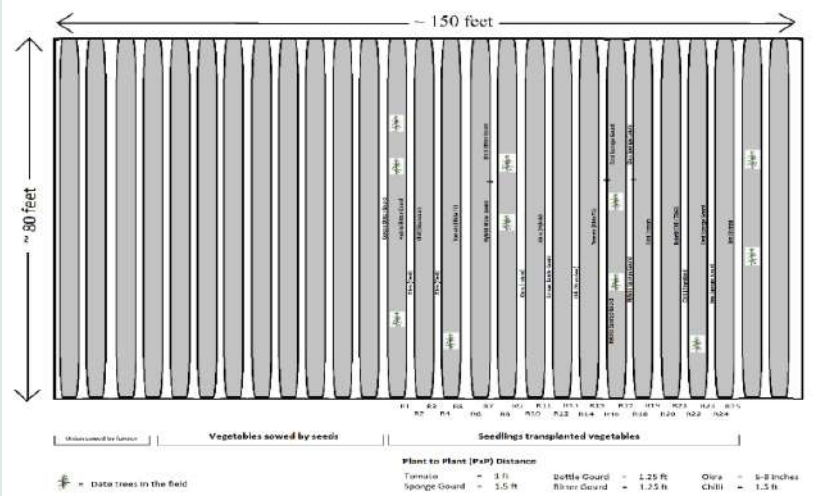
You will then meet with them in the fields on a regular basis to ask them how they are progressing – waiting for a reaction, what they have learned etc. and teaching them using DL other aspects of beds/ridges management with mulch application (organic and inorganic).

Performing the Action and Waiting for the Reaction

SOFT Team Multan and researchers from MNSUAM (Dr Nazar Fareed) organised and conducted training on Mulch usage practices for different crops

- SOFT Team Multan and MNSUAM experts discussed with the concerned farmers and co-develop the co-inquiry work plan for mulch usage on beds/ridges for crop cultivation to conserve water and reduce salts accumulation

A researcher from MNSUAM offered guidance to farmers on use of organic and inorganic mulch application and the project provided inputs to initiate the activities.



Experiment layout co-developed for co-inquiry investigation with mulch, non-mulch and inorganic mulch rows

MNSUAM expert and SOFT team guiding the farmer in organic and inorganic mulch application on raised beds/ridges for okra and onion

Haji Arif was the first farmer who adopted the practice of applying mulch.

After that, the farmers from nearby communities were also attracted to this activity and asked the team to work with them on such practices to solve their salinity related issues.

M. Haneef from a nearby community also started this activity, and after seeing his success, other farmers from that community also started to adopt the practice.

They shared that due to the usage of organic mulch, 40% of their time for irrigations was reduced as compared to not using mulch.

There was a 70% cost reduction in weeding in mulched areas compared with non-mulched.

At the start of the Project, no farmer applied mulch; now, ten farmers are using this practice to conserve water and reduce salt accumulation.

Remember the feedback plan you developed in the initial workshop – here it is again to remind you:

- Farmers, stakeholders and you need to determine the following:
  - How – will we know if it worked/did not work?
    e.g., reduced irrigations, improved crop yield, increased income, reduced salt accumulation
  - What – information do we need to know if it worked?
    e.g., mulch, non-mulch and inorganic mulch area separately, time to be noticed of irrigation in all parts (mulch, non-mulch and inorganic mulch
  - When – will we monitor our plan?
    e.g., at the end of the crop season, after each irrigation
  - Who – will be responsible?
    e.g., farmer, facilitator and other stakeholders

Together you will assess the outcomes of their actions – **measuring the reaction and reporting on the process and the outcomes**.

Farmers who had engaged with the project team in the co-inquiry investigations to improve how they lived with salinity shared the successes of their experiments with other farmers. Many farmers from other nearby communities interacted and adopted the mulch practice without the involvement of the project due to this farmer-to-farmer learning approach. Women farmers shared that weeding is reduced due to the practice of mulching, saving their time for other activities.

Another full workshop can then be conducted as new issues arise or farmers start to talk about problems – this should happen once every month to six weeks.

Again, you follow a similar process for the second and subsequent workshops.

Second and Subsequent Workshops

The **purpose** of second and subsequent workshops is to assess:

- What has happened since the last workshop?
- What opportunities arose?
    - Did ALL the farmers, researchers and other stakeholders make the most of those opportunities?
- What if any challenges were encountered?
    - What caused these challenges to arise?
    - What did the farmers, researchers and other stakeholders do to overcome them?
        - Was that successful? – if so, why? – if not, why not?
- Did farmers seek help to overcome the challenges?
    - If so, from whom?
        - Was that useful? – if so, why? – if not, why not?

Emerging or continuing problems are then worked through using the steps of the usual workshop process. As most of the stakeholders will have been at the first workshop, you will only need to introduce new people to the group and get them to share with the group why they have come along.

The workshop will run like the first one, but the group will focus on the above dot points to monitor progress and share successes and failures that may have occurred. **Remember**, we learn as much from what did not work as we do from what did, so encourage people to share the good and the bad. This should mean you spend a long session with farmers about every six weeks, and your other visits will be shorter to work alongside them in the field using DL. This will mean the farmers will learn "just in time" about new technologies and practices, but they will also come to understand the learning model.

Remember, if other stakeholders were also responsible for any actions, you would need to follow up and encourage them to visit the farmers with you.

Day-1 or morning session

- Getting to know you (ABCD introductions of **any new people in the group**)
- Finding out from ALL stakeholders **what has happened since the last workshop**
- Discussing together **opportunities and challenges that have arisen**
    - Some ideas to help this discussion:
        - What has happened since the last workshop?
        - What opportunities arose?
        - Did ALL the farmers, researchers and other stakeholders make the most of those opportunities?
    - Identify challenges encountered:
        - What caused these challenges to arise?
        - What did the farmers, researchers and other stakeholders do to overcome them?
        - Was that successful? – if so, why? – if not, why not?
        - Did farmers seek help to overcome the challenges?
            - If so, from whom?
        - Was that useful? – if so, why? – if not, why not?
- Exploring together **how these opportunities and challenges have been addressed**
- CLARIFICATION of **the situation NOW** – identify new issues/problems
- Prioritising problems
- Generating ideas for research and action
- THINKING AND REFLECTING (**BETWEEN SESSIONS**)

Day-2 or afternoon session unchanged

Stakeholder Engagement for Research and Learning for Other or Special Purposes

SERL can be used for purposes other than agricultural matters. It can be used to help communities resolve other issues in their villages. For example, in one village, the women were concerned that the poor in the village could not afford the cost of funerals when someone died. So, the more financially able women and the poorer women sat together and used the collaborative problem-solving workshop (PHASE 2) to reach a solution.

Also, in other countries, it has been used to get all stakeholders together to reach agreed actions, one example being in Australia when a company wanted to establish an abattoir in a regional town, but many locals objected. A team from the University of Canberra did some background research to learn how all stakeholders viewed the issue and then held Phase 2 to get the stakeholders to reach an agreement on actions as to how the abattoir could be built and also the many concerns the community had could be addressed. The forerunner of FILM, R^2EaLM, and SERL, ORCD has been used in Pakistan in previous projects, in Papua New Guinea, Vietnam and Cambodia to help bridge the gap between researchers, farmers and other stakeholders.

No matter the country, the community or the purpose, the steps in the model are the same – the Phase 1 research is followed by the Phase 2 Collaborative Workshop, with the resulting actionable plan and research questions devised, followed by Phase 3 the implementation, evaluation and reporting steps being undertaken.

How Well Do You Understand Stakeholder Engagement for Research and Learning?

The following are some other examples, BUT this time you are asked questions about each section to see if you are developing an understanding of the model. Headings are missing, and you are asked about the activity, some why, who, what and how questions.

Refer to the detailed example to assist you with answering the questions. It is NOT A TEST it is only for your benefit to see how you are developing as a facilitator.

Example 2: Vegetable cultivation at the household level (Kitchen Gardening)

What does this table reveal to you?

District: Bahawalpur **Tehsil:** Yazman **Village**: Chak No. 86-DB. **Season**: Rabi (Winter)

Name	Education	Age (Y)	Profession & skills	Land (acre)	Expectation & Desires
Hurmat Bibi	Nil	40	Housewife, stitching, livestock	1.5	Pesticide free food & environment, children education
Faizan Bibi	Nil	38	Housewife, livestock	4	Profitable income from livestock, pesticide free food
Attya Aziz	Nil	37	Housewife, livestock	5	Safe food for family, clean environment, children education.
Zeenat Bibi	Nil	30	Housewife, livestock	8	Livestock management for profitable production, pesticide free food.
Arshad Bibi	Nil	35	Housewife, livestock	20	Pesticide free food & environment, children education
Zahoor Begum	Nil	40	Housewife, livestock	13.5 (rented)	Livestock management for profitable production, pesticide free food and healthy family
Ameeran Bibi	Nil	55	Housewife, livestock	12	Pesticide free food for family, clean environment, children education
Sobia Bibi	Nil	25	Housewife, livestock	4	Good livestock production for profit, pesticide free food
Manzooran Bibi	Nil	40	Housewife, livestock	5	Pesticide free food, good health & production of livestock
Azharaan Bibi	Primary	30	Housewife, livestock	12	Pesticide free food for family, clean environment, children education
Sabiha Bibi	Matric	26	Housewife, livestock	3	Health & education of children, good breed, health and production of livestock
Manzooran Bibi	Nil	45	Housewife, livestock	8	Children education, pesticide free environment & food

What happens at this part of the workshop?
• Vegetables are not cultivated at local (village) level • For vegetable purchase, the males have to travel to market, which results in waste of their time & loss to work and incur extra expenses on travel fare or petrol cost. • The vegetables available from the market are not fresh, inferior in quality, and impregnated with pesticides. • The prevalence of diseases is high in children and adults due to low quality food • The village lacks a good quality hospital • No proper drainage system in the village • There used to have animal dung dispersed in the streets, giving an ugly look & environmental pollution as well as waste of useful organic matter

WHAT do you learn about the community at this stage of the workshop?	
 **How do you see this glass?**	• Land is available for cultivation of vegetables at household level • People are worried about their health and desire to have quality food. • Land/soil is suitable • Capacity to work • Strength to make decisions • Capacity for experimentation • Available traditional tools for vegetable cultivation • Local information, knowledge & skills • Appropriate supply of water • Animal manure is available locally • Women carry skills and recipes for preparing tasty traditional vegetable dishes, pickles & jams
• Sparing time from an already busy daily schedule • Provision of quality seeds • Regular care/looking after stock • Demand hard work • Training on advance methods of cultivation and management • Awareness and training of advance irrigation methods • Identification, reasons and integrated management methods of pests and diseases • Advanced harvesting and produce preservation methods • Selling/marketing of extra produce	• **How does the glass look to you now?** 

This exercise is helpful to determine priorities BUT how do you do this?			
Problems	**1st (Top)**	**2nd (Mid)**	**3rd (Low)**
Vegetables are not cultivated at local (village) level	♦♦♦♦ ♦♦♦♦	♦♦	♦♦
For vegetable purchase, the males have to travel to market which results in waste of their time & loss to work and also incurs extra expenses on travel fare or petrol cost.	♦♦♦♦ ♦♦♦♦ ♦	♦♦	♦
The vegetables purchased from the market are not fresh, inferior in quality, and impregnated with pesticides.	♦♦♦♦ ♦♦♦♦	♦♦♦	♦
Prevalence of diseases is high in children and adults due to low quality food	♦♦♦♦ ♦♦	♦♦♦♦	♦♦
The village lacks a good quality hospital	♦♦♦	♦♦♦♦ ♦	♦♦♦♦
No proper drainage system in the village	♦♦♦♦ ♦	♦♦♦♦ ♦	♦♦
Animal dung dispersed in the streets, giving an ugly look and environmental pollution as well as wastage of useful organic matter	♦♦♦♦ ♦	♦♦♦♦ ♦	♦♦

Two Priority Problems:

1. Poor quality, pesticide impregnated, and expensive vegetables purchased from the market are bad for the health of children and adults
2. The environment of the village is polluted by poor drainage system and the spread of animal dung in the streets

What is happening at this stage of the workshop?
How do you facilitate this activity?

Proposed Creative Ideas:

1. Designate some land for vegetable cultivation near the house
2. Designate some parts of the house lawn for vegetable cultivation
3. The houses without lawn facility can use portable pots for cultivation of vegetables
4. Use of fresh cow dung (animal manure) shall be replaced with compost
5. Control of weeds, diseases and pests by synthetic pesticides should be replaced with alternate effective and safe integrated pest management methods

Strengths

- Required land is available
- A favourite hobby of women and they have the capacity to do it
- Can cultivate as per need and desire
- Capacity to do experiments
- Available traditional tools for vegetable cultivation
- Local information, knowledge and skills
- Appropriate supply of water
- Animal manure is available locally
- Women carry skills and recipes for preparing tasty traditional vegetable dishes, prickles and jams

Weaknesses:

- Spare time from an already busy daily schedule
- Provision of quality seeds at the local level
- Require regular care & hard work
- Not aware of advanced methods of cultivation and management
- Quality seeds, fertilisers and pesticides are not available
- Modern machinery and tools are not available
- Need awareness and training on advance irrigation methods
- Need training in identification, reasons and integrated management methods of pests and diseases.
- Needs training in the preservation of extra produce
- Arrangement for selling/marketing of extra produce

Opportunities:

- Pesticide free and hygienically produced vegetables will be available
- Saving time & money for purchasing vegetables from the market
- Additional income
- Training in the cultivation and management of vegetables
- Betterment of family health
- Landless women will be able to grow vegetables on house lawns and roofs in pots.
- Use of compost in place of chemical fertilisers

Threats

- On time availability of quality seeds, fertilisers and pesticides
- Losses due to diseases and pests
- Possibility of the ineffectiveness of prosed methods for control of weeds, pests and diseases
- Unavailability of suitable water
- Difficulty in regular look after
- Theft of machinery and vegetables
- Possibility of wastage of extra produce

What is the purpose of this activity? How do you assist with this activity? Who makes the decisions?		
Ideas	**1st priority**	**2nd Priority**
Designate some land for vegetable cultivation near the house	♦♦♦♦ ♦♦♦♦♦♦	♦♦
Designate some parts of the house lawn for vegetable cultivation	♦♦♦♦	♦♦♦♦ ♦♦♦♦
The houses without lawns can use portable pots for cultivation of vegetables	♦♦♦	♦♦♦♦ ♦♦♦♦♦
Use of fresh cow dung (animal manure) shall be replaced with compost	♦♦♦♦ ♦♦	♦♦♦♦ ♦♦
Control of weeds, diseases and pests by synthetic pesticides should be replaced with alternate effective & safe integrated pest management methods	♦♦♦♦♦♦♦♦ ♦♦	♦♦
Decision: Getting skills in production of pesticide free and hygienically safe vegetables using local resources.		
Project selection by mutual consultation: better utilisation of local resources for vegetable production at the household level		

After mutual discussion and with support of a SOFT Facilitator, the women's group decided that initially, they should carry out the vegetable cultivation experiment at a common plot so that the participants could have hands-on training covering all crop growth stages i.e., from sowing to harvesting (as given below). Manzooran Bibi, with her husband's consent, volunteered the plot for this practical training.

- **Selection of vegetables, time & methods of cultivation:**
  The SOFT facilitators helped the group decide on the selection of vegetables according to the season and their domestic requirements. For this purpose, an agricultural expert's locally developed vegetable calendar was considered for support, which was followed for time and methods of cultivation.

- **Land Preparation:** The women obtained the help of male farmers in ploughing/hoeing and applying farmyard manure in the plot. After this, the group developed a map of the plot based on the different vegetable verities, their methods of cultivation and irrigation conservation (water saving) strategies. The plot area was distributed into furrows, beds and plains, as per requirements.

- **Compost Preparation:** Compost is usually prepared from tree leaves, left-over livestock fodder, household fruit and vegetable waste and cow dung. It is highly recommended for small-scale vegetable production, fruit plants and pot cultivation of flowers, ornament plants and vegetables. Therefore, the SOFT Facilitator invited a local expert for conducting practical training to empower the participants in compost preparation. The exercise was considered essential to add value and make beneficial use of all these waste materials.



- **Selection of Quality Seed**: The participants were informed about quality seed identification – i.e., the seeds should have optimum uniform size and be good in appearance/texture. Seeds smaller than average, or shrunken, diseased, damaged by insects & pests should be considered defective. In addition, before sowing the seeds should be tested by dipping in a water bucket; good seeds will float, while the bad ones will settle at the bottom of the container. The participants were advised to get skills in preparing their own seeds.

- **Irrigation:** Efforts were made to get good production by adopting water/irrigation saving strategies/practices. For this purpose, the plot area was distributed into furrows, beds and plains, as per the requirements of different selected vegetable varieties, to irrigate the maximum possible area with the limited available water. The participants were also apprised of the negative effects of over-flooding on soil nutrients and were advised to avoid it.



The participants employed irrigation tools (Chameleon and Tensiometer) meant to determine soil moisture in crop fields for appropriate irrigation. The purpose was to make the women aware and trained in determining the soil moisture level in relation to root depths of various vegetables. Traditionally farmers are used to irrigate vegetables on a weekly basis, but with the use/help of these tools, they were able to save two irrigations.

- **Hoeing and weeding**: The women regularly visited to look after and maintain vegetable plots. They performed the hoeing and weeding activity collectively on a need basis.

- **Identification and prevention of pests and diseases**: For timely information on the occurrence and prevalence of pests and diseases, the group members and SOFT facilitators regularly observed the pants. The facilitator enabled them to identify diseases and pests and to distinguish between pests and beneficial insects. To produce safe (from pesticides) & healthy vegetables, the participants were trained in integrated pest management methods to control pests and diseases.

- **Harvesting**: As the vegetables were ripening and ready to harvest, all the participating women were regularly called to participate in harvesting, so they should be aware of the quantity and quality of the produce.

- Benefiting from this initial practical training and experience, ten women of this group decided to prepare a 5 Marla plot (each) near their homes to grow vegetables. The males of their families helped prepare the land/plot. A SOFT Facilitator contacted local resources and suppliers to provide quality seeds.

Vegetable Production (Kg) Village: Chak No. 86-DB Season: Rabi (Winter)											
Farmer's name	Plot size (Marla)	Radish	Carrot	Coriander	Spinach	Turnip	Fenugreek	Radish Pods	Garlic	Beet Root	Total
Manzooran Bibi	5	53	7	5.5	34	8	6.5	12	3	1	130
Arshad Bibi	5	65	18	5.5	38	11	6	7	3	2.5	156
Atya Azeem	5	60	24	5.5	20	14	4.5	8	3	6	145
Faizan Bibi	5	81	40	6.5	38	17.5	5	9	3	4	204
Sughra Bibi	5	52	15	6.5	26	16	4.5	14	3	2	139
Zaiban Bibi	5	46	2	5	21	10	8.5	2	3	0	97.5
Ameeran Bibi	5	18	8	5.5	9	2	2	2	3	0	49.5
Saima	5	22	8	5.5	13	2	2	5	3	1	61.5
Hurmat Bibi	5	24	6	5.5	10	1	6	2	3	1	58.5
Sabeeha Bibi	5	42	12	6.5	29	14	4.5	5.5	3	1.5	118
Total weight (kg)		463	140	57.5	238	95.5	49.5	66.5	30	19	1,159
Market based prices (PKR/kg)		20	20	20	20	20	50	40	80	50	35.5
Total amount (PKR)		9,260	2,400	1,150	4,760	1,910	2,475	2,660	2,400	950	27,965
Average income per family (PKR)		926	240	115	476	191	247.5	266	240	95	2,797
Total area: 50 Marla; Total irrigations: 6; Chemical Fertilisers: 10 kg; Hoeing: 2; Farmyard manure: 80 kg											

- **The details in this table could also be considered results or _____?**
- **Who should be responsible for collecting this information?**
- **When should it be collected?**
- **Why is such information required?**
- **How do you collect this information?**

- After meeting their domestic needs, the women gave their neighbours and relatives produce.
- Some women dried and preserved the extra vegetables for off-season use.



- One participant (Farzana Bibi) of this group did a unique experiment to assess income and saving from her vegetables. According to her, she used to spend PKR 25-30 (average per day) to purchase vegetables from the market before growing the vegetables. After producing her own vegetables, she started putting the same amount in a money-saving pot and saved PKR 750-900 per month. She used this money to meet expenses on clothes and education for her children, and for other domestic needs.

What might be the benefit of telling stories such as the two above?

IMAGINE You must teach a new facilitator how to use SERL, and so you need to develop, from your experience working with stakeholders adapting to salinity, an example like the ones above to assist their learning. This is how you take theory and build on it via practice to engage in PRAXIS and co-learn with your new colleagues.

As defined by Freire (1972), PRAXIS in education is "reflection and action directed at the structures to be transformed." A valuable read to get a brief overview is available via the following link: Paulo Freire: dialogue, praxis and education – infed.org:

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Appendix: Example Action Plan

Adapting to Salinity in the Southern Indus Basin (ASSIB) Project
Village: Basti Kulab and Meer Kot, Jalalpur Pirwala, Multan

Experiment/Activity Title: Oilseed (Canola) Crops Sowing on Ridges
Purpose of the experiment: To introduce cash crop and ridges cultivation of canola crop
What is going to be studied in this experiment?

Production comparison of ridge vs. flat sowing of canola crop

- In this experiment the team is going to study the sowing methods of canola
- One plot of 1 kanal will be as control plot (with traditional sowing) and 7 kanals plot will be as experimental plot with ridges

Stakeholders involved:
Name(s) of farmer(s):
Basti Kulab: Haji Arif (1acre) and Haji Ashiq (1 acre)
Meer Kot: M. Ghulam Fareed (1 acre)
Name(s) of SOFT Facilitator(s): Muhammad Faisal Riaz, Syed M. Ali Zahid, Arzoo Rubab and Iqra Mohiuddin
Name(s) and Organisation(s) of other Stakeholder(s)/Experts: Dr. Tanveer ul Haq (Soil Science expert, MNSUAM)

#	What – is going to be done	How – is going to be done				When – is it going to be done	Where – is it going to be done	Who – is responsible to do	Who – is responsible to see that it is being done
	Activity	**Method**	**Work and input(s) by farmer**	**Input(s) from ASSIB project**	**Estimated costs of input(s) and operation from ASSIB**	**Date/Period**	**Place of activity**	**Person(s) responsible to do the activity**	**Person(s) responsible to monitor and feedback**
1	Background information of respective plots	The purpose of collecting this information is to note down for feedback cards and technical reports what the farmers were doing with this plot before the sowing of this crop, and their views about this	Farmers will provide the information related to the plot	ASSIB SOFT Team will document and report the information	-	October	Basti Kulab and Meer Kot	SOFT Team Multan	ASSIB Team MNSUAM and SOFT Team Multan

2	Soil sample collection and note down coordinates	By random sampling techniques will collect soil samples from the experimental plot and note down the coordinates of the respective plot	Identification of plot	Soil sample analysis in the lab	-	October	Basti Kulab and Meer Kot	SOFT Team Multan will collect the soil samples and note down the coordinates, Dr. Tanweer ul Haq will conduct the soil analysis in MNSUAM lab and will provide soil analysis report	SOFT Team Multan, Dr. Tanweer ul Haq (MNSUAM)
3	Land preparation	By ploughing, cultivation, preparation for ridges making by ridge planter	Arrange mechanical machinery for land preparation	If mechanical machinery for land preparation is not available, then local stakeholder may be asked to provide	-	October	Basti Kulab and Meer Kot	Technical Guidance of Expert/ Stakeholder (Dr. Tanweer ul Haq) Facilitation by SOFT Team Multan Field work by farmers themselves	Expert/Stakeholder Dr. Tanweer ul Haq and Team, MNSUAM SOFT Team Multan And farmers themselves at the time of preparation
4	Manure application	Highly decomposed livestock dung will be used, collected from their own animal farms	Manual application at the time of land preparation	A session on compost preparation with the help of local extension department may be conducted if needed	-	October	Basti Kulab and Meer Kot	As above	Expert/Stakeholder Dr. Tanweer ul Haq and Team, MNSUAM SOFT Team Multan And farmers themselves at the time of preparation
5	Fertilizer application	Manual application of fertilizer according to the requirements And sulphur application at the time of land preparation 3 kg/acre	Fertilizer will be applied by the farmers	Fertilizer application guidelines from the experts according to soil conditions and sulphur provided by the MNSUAM expert team	-	As per requirement on suggestion of expert(s)	Basti Kulab and Meer Kot	As above	Expert/Stakeholder Dr. Tanweer ul Haq and Team, MNSUAM SOFT Team Multan And farmers themselves for data recording
6	Seed sowing	Certified good quality hybrid seed from ASSIB inputs	Broadcasting of Seeds in prepared land	Provision of certified good quality and guidelines for cultivation		October	Basti Kulab and Meer Kot	As above	As above

7	Irrigation	Preference will be given to mix (tube-well plus canal) water if it is available	Timely irrigation when needed according to soil requirements and meteorological prediction	Guide farmers about the meteorological prediction and weather forecast when needed	-	Throughout the growing season as per crop demand	Basti Kulab and Meer Kot	As above	As above
8	Weedicide/ pesticide application	Control methods will be taught by experts to farmers	Control methods will be applied according to the disease and pest attack by the guidance of expert	Guidance of the expert	-	As per requirement on suggestion of expert(s)	Basti Kulab and Meer Kot	As above	As above
9	Harvesting	Manual harvesting will be done by male and female farmers	Manual or mechanical harvesting	Harvesting will be done as per crop harvesting protocols.	-	In late March and April	Basti Kulab and Meer Kot	As above	As above
10	Reporting	Technical report and feedback cards preparation (collection/recording of data throughout the season)	Farmers will share the data accordingly as it will be asked by the team and what the farmers have done throughout the season with crop	SOFT Team will record the data and will share with entire team	-	Throughout the cropping season	Basti Kulab and Meer Kot	SOFT Team Multan	As above

Note:

Monitoring and evaluation of each experiment/plot will be carried out separately because:

1. Each plot may have variable soil salinity level and irrigation sources
2. The farmers may vary in input resources, interests, knowledge, skills etc.

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