



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

Guide to participatory assessment of socio-ecological tradeoffs and synergies of SAI practices*

Christine Magaju, Leigh Ann Winowiecki, Mieke Bourne, Constance Neely, Patricia Masikati, Boniface Massawe, Emmanuel Temu, Anthony Kimaro, and Sabrina Chesterman

World Agroforestry Centre (ICRAF)

First version: May 2018

Updated version November 2018

Funded by:



Managed by:



and



Table of Contents

I. Objectives of the Activity.....	1
II. Materials Needed for the Activity.....	1
III. Ice Breaker – Tradeoff Discussion (10 minutes)	2
IV. Assessing the Influence of SAI Practices (30 minutes)	3
V. Visualize the Influence on Radar Plots (20 minutes).....	4
VI. Assessing the Indicators that Need Attention (10 minutes).....	4
VII. Assessing Tradeoffs and Synergies at the Various Scales (15 minutes)	5
VIII. Feedback from the Groups (10 minutes).....	6
IX. Reporting on the Activity.....	6
X. Annex One – The Participatory Tradeoff Activity Pack	6

* This guide is adapted from Musumba, M. Grabowski, P, Palm, C, Snapp, S. 2017. Guide for the Sustainable Intensification Assessment Framework. 46 pgs.

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 small-holder 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.

Suggested citation: Magaju C., Winowiecki LA., Bourne M., Neely C., Masikati, P., Massawe, B., Temu, E., Kimaro, A. and Chesterman S. 2018. Guide to assessment of socio-ecological tradeoffs and synergies of SAI Practices. Bringing evidence to bear of negotiating ecosystem service and livelihood trade-offs in sustainable agricultural intensification. World Agroforestry Centre (ICRAF), Kenya. 21 pg

Disclaimer: Neither DFID, nor WYG nor the University of Greenwich- Natural Resources Institute are responsible for the content in this document.

I. Objectives of the Activity

The objectives of the activity are:

1. To gather perspectives from various stakeholder groups on the influence of Sustainable Agricultural Intensification (SAI) practices on socio-ecological domains.
2. To identify key investments needed to minimize negative influence.
3. To identify key data needs to assess the tradeoffs and synergies.
4. To explore tradeoffs and synergies of the SAI practices.

By the end of the workshop, we will be able to produce comparative analyses, such as the radar graph below, by gender, by sector and for the various SAI practices by averaging the level of influence on the indicators under each socio-ecological domain.

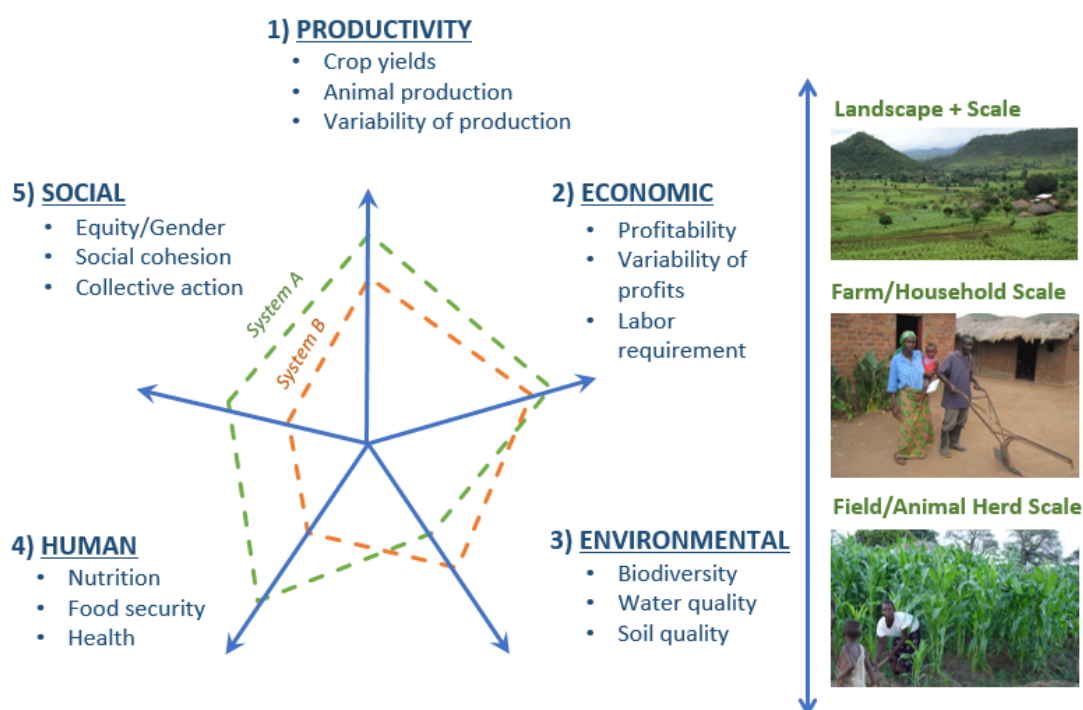


Figure 1: Graphic illustrating the five domains in a radar graph. Taken from Musumba, M. Grabowski, P. Palm, C. Snapp, S. 2017. Guide for the Sustainable Intensification Assessment Framework. 46 pgs.

II. Materials Needed for the Activity

You will need:

1. At least one and a half hours to conduct the participatory tradeoff activity.
2. A5 print-outs of the participatory tradeoff activity pack accompanying this guide, enough for the anticipated number of stakeholder groups.
3. A3 print-outs of the radar graph accompanying this guide, enough for the anticipated number of stakeholder groups.
4. A4 print-outs of the list of SAI practices prioritized during the national and district (or woreda) stakeholder prioritization workshops.
5. Blue stock cards, enough for each participant.

6. Green stock cards, enough for each participant.
7. Yellow stock cards, enough for each participant.
8. Pink stock cards, enough for each participant.
9. Green marker pens enough for the anticipated number of stakeholder groups.
10. Blue marker pens enough for the anticipated number of stakeholder groups.
11. Enough pens for each participant.

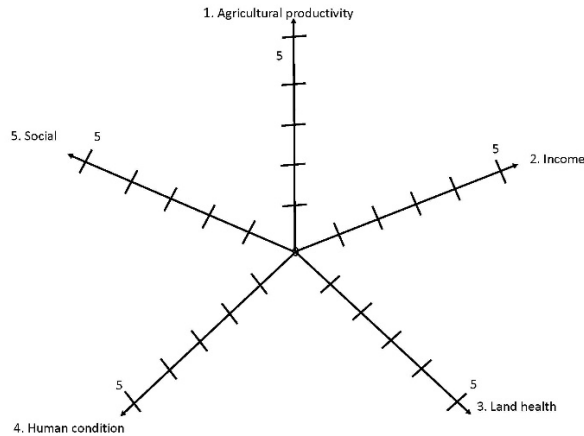


Figure 2: Radar graph, accompanying this guide, to be printed for the trade-off exercise

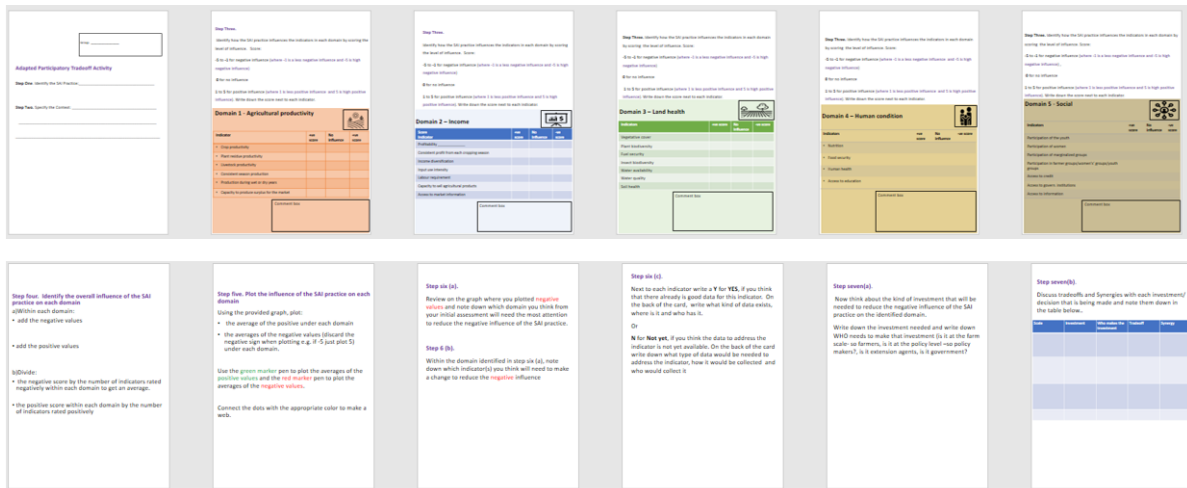


Figure 3: The participatory tradeoff activity pack, accompanying this guide, to be printed for the tradeoff activity.

III. Ice Breaker – Tradeoff Discussion (10 minutes)

Before beginning the exercise, divide the participants into groups based on the various stakeholder categories present in the workshop. For example, government, NGOs, academia, farmers etc. You can also sub-divide by gender. Each group should have a maximum of 6 participants.

To set the tone for the participatory tradeoff activity, lead the participants through the following exercises:

Exercise one. Ask participations the following two questions:

When you came to the workshop today,

1. What did you hope to gain? Record your response on the blue stock card provided.
2. What did you give up? Record your response on the pink stock card provided.

Note 1. Each participant to write down what they hoped to gain and what they gave up attending the workshop.

Select a few participants to report back on what they hoped to gain and/or what they gave up attending the workshop.

Exercise two. In your groups, discuss with colleagues the following two questions:

1. What is your definition of a synergy? Record the responses on the green stock card provided.
2. What is your definition of a trade-off? Record the responses on the yellow stock card provided.

Each group to report back or randomly select a few groups to report back on the definition of a synergy and, the definition of a tradeoff. Link this discussion to the responses from exercise one.

Note 2. Collect all the notecards from the exercises for collation.

IV. Assessing the Influence of SAI Practices (30 minutes)

The second part of the tradeoff activity will assess if the SAI practices have either a positive influence, negative influence or no influence on the indicators within each of the five domains.

Note 3: Have a copy the prioritized SAI practices projected for the participants to refer to. You can also print out the SAI practices if you will not be using a projector to give each group.

Note 4: Provide each group with a copy of the participatory tradeoff activity pack accompanying this guide. This will be used throughout the tradeoff activity. Punch a hole on the top right corner and tie each pack with a string for ease of flipping the pages.

Step one - In the groups, decide on the SAI practice to be evaluated, drawing from those prioritized during the stakeholder workshops at the national and district levels. These can/should include the practices being implemented by the project. Each group should evaluate at least one SAI practice. Write down the identified SAI practice on the provided activity sheet.

Step two- Specify, on the activity sheet, the context targeted by the SAI practice. The context in this case can refer to the specifics of the SAI practice such as the target agro-ecological zone, gender, farm size, specific crops etc.

Step Three – Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score **-5** to **-1** for negative influence, **0** for no influence and **1** to **5** for positive influence. Write down the scores for each indicator on the activity sheet. Write down any

assumptions made during the scoring exercise in the comment box at the bottom of the activity sheet. An assumption could be, deciding to evaluate the influence of the SAI practice after xx years.

V. Visualize the Influence on Radar Plots (20 minutes)

In the third part of the tradeoff activity, we will visualize how the SAI practices influence the indicators under each domain.

Step four - Within each domain, add the negative values separately from the positive values so you will now have one negative score and one positive score for each theme.

Divide the negative score by the number of indicators rated negatively within each domain to get an average. Then divide the positive score within each theme by the number of indicators rated positively.

Step five - Using the provided graph, plot the average of the positive scores under each domain. Then plot the average of the negative values (discard the negative sign when plotting e.g. if the average is -5, just plot 5) under each domain.

Use the **green marker pen** to plot the averages of the positive values and the **red marker pen** to plot the averages of the negative values.

Connect the dots with the appropriate color to make a web. Figure 4 below gives you an example of how the web will look like at the end of the exercise.

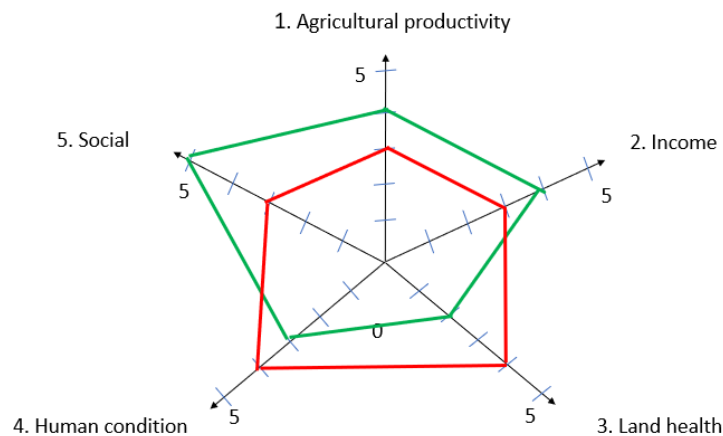


Figure 4: An example of a completed radar graph for one SAI practice. The different colours reflect the scored level of negative and positive influences of the SAI practice on each of the five domains.

VI. Assessing the Indicators that Need Attention (10 minutes)

Step six (a) - Review on the graph where you plotted negative values. Note down on the activity sheet which domain, from your initial assessment, will need the most attention to reduce the negative influence of the SAI practice.

Step six (b) – Within the domain identified in step six (a), note down, on the activity sheet, which indicator(s) you think will need to make a change to reduce the negative influence.

Step six (c) – Next to each of the indicator(s) identified in step six (b), write a **Y** for **Yes** if you think that there is already good data to address this indicator. On the back of the activity sheet, write down what kind of data exists, where it is and who has it.

Or

Write an **N** for **Not yet** if you think the data to address the indicator is not yet available. On the back of the activity sheet, write down what type of data would be needed to address the indicator, how it would be collected and who would collect it.

VII. Assessing Tradeoffs and Synergies at the Various Scales (15 minutes)

In the fifth part of the participatory tradeoff activity, we will determine what investments are needed to effect change, who needs to make that investment, and the stumbling blocks that are hindering us from addressing the negative influences.

Step seven (a) – Now think about the kind of investment that will be needed to reduce the negative influence of the SAI practice on the domain identified in step six (a). On the activity sheet, write down the investment needed, who needs to make that investment. For example, is it at the farm scale- so farmers, or at the policy level- so policy makers, is it extension agents, government?

Step seven (b) – Discuss the tradeoffs and synergies of each investment identified in step seven (a) and fill in the table in your activity sheet.

Table 1: an example of a filled in table on tradeoffs and synergies on investments to reduce the negative influence of SAI practice. This table is adapted from Musumba, M., Grabowski, P., Palm, C., Snapp, S. 2017. Guide for the Sustainable Intensification Assessment Framework. 46 pgs.

Scale	Investment	Who	Tradeoff	Synergy
Farm level example				
Farm scale	Crop residue on farm	Farmer	Fodder vs soil fertility	Integrated system
National level example				
Provincial	Community grazing norms	Community and government actors	Crop growers control residues vs herder with free access	Manure from herders enriches soil of farmers

Step seven (c) - Focusing on the indicator(s) identified in step six (b) as needing change, note down on the activity sheet, if the change will result in the influence of another indicator going up (positive). Specify the indicator(s) or If the change will result in the influence of another indicator going down (negative). Specify the indicator(s).

VIII. Feedback from the Groups (10 minutes)

Depending on the amount of time available, each of the groups to report back or randomly select a few groups to report back.

Report back on: the domain and indicator that most urgently needs an investment to reduce the negative influence of the SAI practice, the investment needed and what is stopping you from making the investment and, one tradeoff and one synergy of the investments needed.

Note 5: Document the discussion by taking rigorous notes on the key points. This will be included in the final report

IX. Reporting on the Activity

After completion of the workshop, prepare a report documenting the tradeoff exercise as well as the feedback from the participants. The report can include, but is not limited to, the following:

1. Introduction: In this section, document: the objectives of the tradeoff exercise, the number of participants, the stakeholder groups represented, as well as a summary of the information collated from the notecards from the icebreaker session.
2. Summary of the results of the tradeoff exercise. Summarise the results of the tradeoff exercise in this section including collating the results of the scoring exercise. In addition, transfer the average scores from the exercise to an excel file. See the table below for an example of filled in excel file

Table 2: An example of a filled in table, from excel, summarising the average scores of the influence of a SAI practice on each of the five domains

Group yy, SAI practice xx, context zz					
	Agricultural productivity	Income	Land health	Human condition	Social
Positive influence	4	4.4	3.3	2	3
No influence	0		0		0
Negative influence		-2	-1		

3. Discussion. In this section of the report, document the key points from the discussion. You can also collate the information from the notecards, if any were used to document the discussion.
4. Conclusion and way forward. Document any action or way forward agreed upon during the workshop. Include dates if any.

Note 6. Remember to take pictures during the tradeoff exercise and include them in the report.

X. Annex One – The Participatory Tradeoff Activity Pack

Print and bind the tradeoff activity pack for each table in order to carry out the exercise.

Group: _____

Adapted Participatory Tradeoff Activity

Step One. Identify the SAI Practice: _____

Step Two. Specify the Context: _____

Step Three.

Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score:

-5 to -1 for negative influence (where **-1** is a less negative influence and **-5** is high negative influence)

0 for no influence

1 to 5 for positive influence (where **1** is less positive influence and **5** is high positive influence). Write down the score next to each indicator.

Domain 1 - Agricultural productivity



Indicator	+ve score	No influence	-ve score
Crop productivity			
Plant residue productivity			
Livestock productivity			
Consistent season production			
Production during wet or dry years			
Capacity to produce surplus for the market			

Comment box

Step Three.

Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score:

-5 to -1 for negative influence (where -1 is a less negative influence and -5 is high negative influence)

0 for no influence

1 to 5 for positive influence (where 1 is less positive influence and 5 is high positive influence). Write down the score next to each indicator.

Domain 2 – Income



Indicator	+ve score	No influence	-ve score
Profitability			
Consistent profit from each cropping season			
Income diversification			
Input use intensity			
Labour requirement			
Capacity to sell agricultural products			
Access to market information			

Comment box

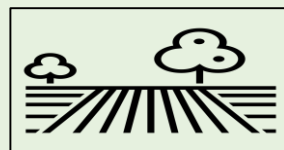
Step Three. Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score:

-5 to -1 for negative influence (where -1 is a less negative influence and -5 is high negative influence)

0 for no influence

1 to 5 for positive influence (where 1 is less positive influence and 5 is high positive influence). Write down the score next to each indicator.

Domain 3 – Land health



Indicator	+ve score	No influence	-ve score
Vegetative cover			
Plant biodiversity			
Fuel security			
Insect biodiversity			
Water availability			
Water quality			
Soil health			

Comment box

Step Three. Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score:

-5 to -1 for negative influence (where -1 is a less negative influence and -5 is high negative influence)

0 for no influence

1 to 5 for positive influence (where 1 is less positive influence and 5 is high positive influence). Write down the score next to each indicator.

Domain 4 – Human condition



Indicators	+ve score	No influence	-ve score
Nutrition			
Food security			
Human health			
Access to education			

Comment box

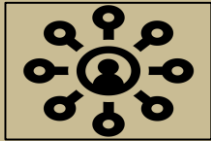
Step Three. Identify how the SAI practice influences the indicators in each domain by scoring the level of influence. Score:

-5 to -1 for negative influence (where -1 is a less negative influence and -5 is high negative influence) ,

0 for no influence

1 to 5 for positive influence (where 1 is less positive influence and 5 is high positive influence). Write down the score next to each indicator.

Domain 5 - Social



Indicators	+ve score	No influence	-ve score
Participation of the youth			
Participation of women			
Participation of marginalized groups			
Participation in farmer groups/women's groups/youth groups			
Access to credit			
Access to govern. institutions			
Access to information			

Comment box

Step four. Identify the overall influence of the SAI practice on each domain

a) Within each domain:

- add the negative values

- add the positive values

b) Divide:

- the negative score by the number of indicators rated negatively within each domain to get an average.
- the positive score within each domain by the number of indicators rated positively

Step five. Plot the influence of the SAI practice on each domain

Using the provided graph, plot:

- the average of the positive under each domain
- the averages of the negative values (discard the negative sign when plotting e.g. if -5 just plot 5) under each domain.

Use the **green marker** pen to plot the averages of the **positive values** and the **red marker** pen to plot the averages of the **negative values**.

Connect the dots with the appropriate color to make a web.

Step six (a).

Review on the graph where you plotted **negative values**. Note down which domain you think from your initial assessment will need the most attention to reduce the negative influence of the SAI practice.

Step 6 (b).

Within the domain identified in step six (a), note down which indicator(s) you think will need to make a change to reduce the **negative** influence

Step six (c).

Next to each indicator write a **Y** for **YES**, if you think that there already is good data for this indicator. On the back of the activity sheet, write what kind of data exists, where is it and who has it.

or

N for **Not yet**, if you think the data to address the indicator is not yet available. On the back of the activity sheet write down what type of data would be needed to address the indicator, how it would be collected and who would collect it

Step seven(a).

Now think about the kind of investment that will be needed to reduce the negative influence of the SAI practice on the domain identified in step six (a).

Write down the investment needed and write down WHO needs to make that investment and at which scale (is it at the farm scale- so farmers, is it at the policy level –so policy makers?, is it extension agents, is it government?)

Step seven(b).

Discuss tradeoffs and synergies of each investment identified in step seven (a) and note them down in the table below.

Scale	Investment	Who makes the investment	Tradeoff	Synergy

Step seven(c).

Focusing on the indicators(s) identified in step six (b) as needing change, note down if the change will result in:

a. the influence of another indicator going up (positive). Specify the indicator

or

b. the influence of another indicator going down (negative)