

Work Package 2

Localized indicators for multi-criteria assessment of agroecological performance

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1 Introduction

On Wednesday August 23, 2023, a workshop was held in the training room of the Centre International de Recherche-Développement sur l'Elevage en zone Subhumide (CIRDES), to identify localize indicators for multi-criteria evaluation of agroecology performance. This workshop is part of the implementation of the Agroecology Initiative Project. One of the specific objectives of the initiative is to produce scientific evidence of the positive impact of agroecology, in order to encourage its large-scale development in local areas. This objective cannot be achieved without the collection of data and evidence on the performance of agroecology. However, the Agroecological Living Landscape (ALL) of the project, of which the Dairy Innovation Platform (PIL) de Bobo Dioulasso is a part, represents diverse farming systems and levels of agroecological transitions in eight countries, making it impossible to use a single uniform assessment tool for all ALLs.

In order to produce locally relevant and globally comparable data on the impact of agroecology, the initiative has developed the HOLPA (Holistic Localized Performance Assessment) framework. The aim of this workshop was to co-develop, with stakeholders, a set of performance indicators that are relevant and adapted to the agricultural systems of the Bobo-Dioulasso ALL. To achieve this, we had to answer the following questions: i) how will we know if we are achieving our objectives through agroecology? and ii) how can we measure the performance of agroecology?

The workshop was attended by several milk producer cooperatives, processors, public sector representatives (Direction Régionale de l'Agriculture, des Ressources Animales et Halieutiques, Mairie), technical and financial partners, NGOs, professional organizations and researchers.

As a reminder, the HOLPA tool is designed to help determine which types of agricultural practices and approaches lead to sustainable results, at different scales and in different contexts, throughout the food chain.

The workshop agenda included the following key points: (i) clarification of the concepts "performance indicator" and "agroecology", (ii) vision and changes envisaged, (iii) identification of local indicators and (iv) evaluation of local indicators.

This report summarizes the work carried out during the workshop.

2 Clarification of the concepts of performance indicators and agroecology

After explaining what is meant by an indicator, we start with this clarification: "An indicator is a piece of information or a set of information that contributes to a decision-maker's assessment of a situation. An indicator provides relevant quantified information for decision-makers, enabling them to measure and assess the results of one or more actions. Indicators can also be used to monitor the evolution of performance and analyze a current situation." Participants were asked to give their point of view on an indicator, using local examples. Participants were able to give answers on the indicators they would consider to determine or measure issues relating to dairy productivity, local milk quality, local milk promotion, etc. This was followed by the presentation of a general definition of agroecology (agroecology



refers simultaneously to a scientific discipline, a social movement and a set of practices), ending with a plenary discussion on participants' conception of agroecology and what they understand by an agroecological farm. Examples from the local context were given by participants, such as the reduction in the use of chemicals on farms, the valorization of natural practices, and so on.

Four dimensions of agroecology (i.e. agricultural/technical, social, economic and environmental) were presented to plenary participants. They were told that it is important for them to ensure that "they are making progress in terms of achieving the vision and objectives in the agro-ecological context at the Agroecological Living Landscape (ALL) level around the Dairy Innovation Platform de Bobo-Dioulasso. It was made clear to participants that the identification of indicators would be based on the LIP's vision and the various changes they wished to see in order to achieve this vision. Discussions thus focused on the development of the vision and the changes desired by the participants.

3 Vision and desired changes

A plenary session was held to draw up the vision, which was unanimously approved, before defining the changes needed to achieve it. The summary is presented in Table 1.

Vision	Produce, collect, process and market 18,000 liters of local milk per day in the Bobo-Dioulasso
VISION	Agroecological Living Landscape by 2028.
	Increase in the number of users of animal and plant by-products (crop residues, cow dung, etc.).
	Improved animal feed
	All-season forage production
	Improved milk production per cow
	Increase in the number of agroecological equipment suitable for local milk processing
	Improved product quality and diversity
	Improving local milk consumption in schools
	Improving household consumption of local milk
	Improving community life
	Improving people's diets by incorporating local milk into rations
	Improved relations with public and private services
Planned changes	Improved exchange of experience
Fidiliteu changes	Capacity-building for local milk industry actors (producers, collectors, processors, etc.)
	Improved breeding conditions
	Improving milk collection and processing
	Improved marketing of local milk and dairy products
	Reducing GHG emissions, especially enteric methane
	Popularization of improved solar cookers in the processing industry
	Adoption of innovative organic manure production techniques (heap compost, mold compost, etc.).
	Restoration of rangeland and cattle tracks
	Promoting the use of bio-inputs
	Improving hygiene at processing plants
	Securing land tenure for producers
	Use of biodegradable/recyclable packaging

Table 1. Vision and future changes envisaged in the Bobo-Dioulasso ALL

4 Identifying local indicators

It was therefore necessary to identify context-specific indicators. To limit themselves to these specific indicators, participants were asked to identify what they would like to see in relation to the various objectives and changes envisaged, and then to discuss how they might measure or monitor the changes.

The participants were divided into four groups. The members of each group, comprising a Facilitator, one or two experts in the field, and 5 to 7 participants, discussed indicators in the Agricultural, Social, Economic and Environmental dimensions. Each group was asked to reflect on the theme in the context of the project. The following guiding questions were used to identify the indicators: (i) what changes {agricultural, social, economic, environmental} do we want to see as a result of agroecology? (ii) how will we know if we have achieved our objectives {agricultural, social, economic, environmental} with



agroecology? (iii) what are the obstacles that could prevent us from achieving these objectives? how can we assess these obstacles?

Using the world café facilitation method, each group took 20 minutes to discuss each dimension, first identifying the changes they would like to see and then the actions to be taken in relation to ALL's objectives and vision, as well as the indicator to be used to evaluate these changes. After 20 minutes, the group moves on to another dimension, with the facilitator and expert remaining on hand to explain to the newcomers the work of the previous group, adding what they felt was missing from the discussion. The indicators identified and the actions to be carried out in the ALL around the Bobo-Dioulasso LIP, according to the four dimensions, are presented succinctly in Table 2.

Dimensions	Desired changes	Actions to be taken	Indicators
	Increase in the number of	Building manure pits	Number of manure pits
	users of animal and plant by- products (crop residues, cow dung, etc.).	Building biodigesters	Number of biodigesters
	Improved animal feed	Propose rations adapted to dairy	Number of rations adapted to dairy cattle farming made available
		cattle farming	Quantity and quality of forage produced all year round
А			Number of storage facilities
G R		Train producers to make rations	Number of producers trained in rationing
I C O	All-season forage production	Install small-scale irrigation systems to make water available in the dry season	Number of small-scale irrigation systems installed
L	Improved milk production per cow	Select and prosphrood high	Quantity of milk produced per cow
		Select and crossbreed high-	Number of dairy farms
		penormance local breeds	Number of milk collection centers
	Increase in the number of agroecological equipment suitable for the collection and processing of local milk	Acquire collection, processing and preservation equipment	Number of agroecological materials acquired
	Improving the quality of dairy products	Provide milk processing plants with basic quality control equipment	Number of milk processing units with equipment
S	Improving local milk consumption in schools	Raising awareness of the benefits of local milk among school authorities	Number of schools using local milk in school canteens
0 C I	Improved consumption of local milk by the population	Raising public awareness of the benefits of local milk	Number of households made aware of the benefits of local milk
A L E	Improving community life	Raising producers' awareness of respect for others and hygiene measures	Number of local milk producers aware of and mastering the rules of living together (respect for others, hygiene)

Table 2. List of indicators identified by ALL Bobo-Dioulasso stakeholders



	Improving people's diets by incorporating local milk into rations	Raising public awareness of the need to include local milk in their diet	Proportion of the population using local milk in their diet	
	Improved relations with public and private services	Sensitize public and private services (catering services) to include local milk in coffee breaks and meals during meetings.	Number of public and private services that have integrated local milk into coffee and meal breaks	
	Improved exchange of experience	Organizing study trips	Number of actors benefiting from experience sharing/study tours	
	Capacity-building for local milk industry actors (producers, collectors, processors, etc.)	Train local milk industry actors (producers, collectors, processors, etc.).	Number of local milk industry actors trained	
		Building improved dairy workshops	Cost of improved dairy facilities	
		Produce forage all year round	Cost of forage production	
E C	Improved breeding conditions	Drilling boreholes for cow watering	Cost of drilling	
O N		Making complementary foods available	Feed costs	
0		Ensuring good health coverage	Cost of health coverage	
M	Improving milk collection and	Provide quality milk collection	Cost of milk collection	
I	processing	equipment	equipment	
U U		Diversifying processing products	Number of products launched	
E	Improved marketing of local milk and dairy products	Organize a promotional day for local cow's milk	Number of partnership contracts	
		Approach new institutional markets	Number of institutional markets	
	Reducing GHG emissions, especially enteric methane	Offer less GHG-emitting rations to dairy cows	Quantity of GHG measured per cow per season	
F	Extension of improved solar cookers in the processing industry	Raising awareness of the need to adopt improved solar cookers	Number of actors who have adopted improved solar cookers	
N V I R	Adoption of innovative organic manure production techniques (compost in piles, compost in molds, etc.).	Raise producers' awareness of innovative organic manure production techniques	Number of actors who have put into practice the production of organic manure (compost in heaps and molds)	
N N	Restoration of rangeland and cattle tracks	Secure unoccupied rangelands and cattle tracks	Areas of rangeland and cattle tracks restored	
E	Promoting the use of bio- inputs	Encouraging producers to adopt bio-inputs	Number of producers who have adopted bio-inputs	
E N T A L	Improving hygiene at processing plants	Equip mini-dairies with appropriate hygienic infrastructures and materials (cesspools, waste garbage cans, personal protective equipment).	Number of mini-dairies equipped	
L	Securing land tenure for producers	Survey and identify areas dedicated to dairy farming activities	Areas secured through title documents	
	Use of biodegradable/recyclable packaging	Use biodegradable/recyclable packaging	Number of users of biodegradable/recyclable packaging	

5 Evaluation of local indicators

Before assessing the indicators, participants were introduced to what constitutes a good indicator. The five criteria selected for easy ranking and evaluation, summarized in Table 3, were presented to the participants.

Criteria	Explanations
Relevance to the sustainability of agricultural systems in the Sahel	The indicator quantifies the effects of a farming system on key sustainability issues for ALL stakeholders.
Scientific relevance	The indicator is transparent and clearly defined (method, data source, assumptions), scientifically validated and recognized, reproducible in different contexts, accurate and robust.
Feasibility	The indicator is easy to fill in, simple to calculate (time and cost of implementation), and adapted to the target users (availability of users at key measurement times, skills, experience).
Usefulness	The indicator covers user needs/objectives, produces results that are understandable to the target users, and can be easily communicated.
Sensitivity	The indicator is sensitive to change when the system evolves towards less or more sustainability (to be able to act before it's too late, or to recognize situations on the right track).

Table 3. List of criteria for assessing indicator quality



Based on these criteria, a ranking procedure was also introduced, with scores such as: low = 1, medium = 2 and high = 3. The ranking was applied according to the five selected criteria, and a final score was calculated by adding up the scores for each indicator. Participants were encouraged to be as rational as possible in their ranking, in order to avoid many indicators obtaining high scores. The results of the evaluation are presented in Table 4.

Dimensions	Indicators	Durabil ity ¹	Scienti fic relevan ce	Feasibi lity	Useful ness	Sensiti vity	Total
	Number of manure pits	High (3)	High (3)	High (3)	High (3)	High (3)	15
	Number of biodigesters	Mediu m (2)	High (3)	Low (1)	Mediu m (2)	Low (1)	9
	Number of rations adapted to dairy cattle farming made available	Low (1)	High (3)	Mediu m (2)	High (3)	High (3)	12
А	Quantity and quality of forage produced all year round	High (3)	High (3)	High (3)	High (3)	High (3)	15
G R	Number of storage facilities	High (3)	High (3)	High (3)	High (3)	High (3)	15
I C	Number of producers trained	High (3)	High (3)	High (3)	High (3)	High (3)	15
O L	Number of small-scale irrigation systems installed	High (3)	High (3)	Mediu m (2)	High (3)	Mediu m (2)	13
E	Quantity of milk produced per cow	Low (1)	Low (1)	Low (1)	Low (1)	Low (1)	5
	Number of dairy farms	High (3)	Mediu m (2)	Mediu m (2)	High (3)	Mediu m (2)	12
	Number of milk collection centers	High (3)	Mediu m (2)	Mediu m (2)	High (3)	Mediu m (2)	12
	Number of agroecological materials acquired	Low (1)	Mediu m (2)	High (3)	High (3)	Mediu m (2)	11
	Number of milk processing units	High (3)	Mediu m (2)	Mediu m (2)	High (3)	Mediu m (2)	12
	Number of schools using local milk in school canteens	High (3)	Mediu m (2)	High (3)	High (3)	Low (1)	12
S	Number of households made aware of the benefits of local milk	Mediu m (2)	Mediu m (2)	High (3)	High (3)	Mediu m (2)	12
O C I A	Number of local milk producers aware of and mastering the rules of living together (respect for others)	High (3)	Mediu m (2)	Mediu m (2)	High (3)	High (3)	13
L E	Number of people who use local milk in their diet	Low (1)	Low (1)	Low (1)	Mediu m (2)	Low (1)	6
	Number of public and private services that have integrated local milk into coffee and meal breaks	High (3)	High (3)	High (3)	High (3)	Mediu m (2)	14

Table 4: Indicator quality assessment

¹ Relevance to the sustainability of agricultural systems in the Sahel



	Number of actors benefiting from experience sharing/study tours	Low (1)	Mediu m (2)	Mediu m (2)	High (3)	Mediu m (2)	10
	Number of local milk industry actors trained	High (3)	High (3)	High (3)	High (3)	High (3)	15
	Cost of improved dairy facilities	High (3)	High (3)	Mediu m (2)	High (3)	Mediu m (2)	13
F	Cost of forage production	High (3)	High (3)	High (3)	High (3)	High (3)	15
ĽСО	Cost of drilling	High (3)	High (3)	Mediu m (2)	High (3)	High (3)	14
0 N O	Feed costs	High (3)	Mediu m (2)	Mediu m (2)	High (3)	High (3)	13
M	Cost of health coverage	High (3)	High (3)	Mediu m (2)	High (3)	High (3)	14
Q	Cost of milk collection equipment	High (3)	High (3)	Mediu m (2)	High (3)	Mediu m (2)	13
E	Number of products launched	High (3)	Mediu m (2)	Mediu m (2)	Mediu m (2)	High (3)	12
	Number of partnership contracts	High (3)	Mediu m (2)	High (3)	High (3)	Mediu m (2)	13
	Number of institutional markets	High (3)	Mediu m (2)	High (3)	High (3)	Mediu m (2)	13
E	Quantity of GHG measured per cow per season	High (3)	High (3)	Mediu m (2)	Mediu m (2)	Low (1)	11
N V	Number of actors who have adopted improved solar cookers	High (3)	High (3)	Mediu m (2)	High (3)	Mediu m (2)	13
R O N	Number of actors who have put into practice the production of organic manure (compost in heaps and molds)	High (3)	High (3)	High (3)	High (3)	High (3)	15
E	Areas of rangeland and cattle tracks restored	High (3)	High (3)	Low (1)	High (3)	High (3)	13
E	Number of producers who have adopted bio-inputs	High (3)	Mediu m (2)	High (3)	High (3)	Mediu m (2)	13
T	Number of mini-dairies equipped	High (3)	High (3)	High (3)	High (3)	High (3)	15
L	Areas secured through title documents	High (3)	High (3)	High (3)	High (3)	High (3)	15
E	Number of users of biodegradable packaging	High (3)	High (3)	High (3)	High (3)	High (3)	15

NB: The 3 priority indicators per dimension have their total score written in red.

6 Conclusion

It emerged from the work that the indicators identified encompass the true realities of the Bobo-Dioulasso dairy innovation platform around which our Agroecological Living Landscape has been built. Following assessment of the quality of the indicators, the three priority indicators per dimension are as follows:

• Agricultural dimension: number of manure pits, quantity and quality of fodder produced in all seasons, number of storage facilities.



- Social dimension: number of actors in the local milk sector trained, number of public and private services that include local milk in coffee breaks and meals, number of local milk producers aware of and mastering the rules of living together (respect for others).
- Economic dimension: cost of fodder production, cost of boreholes, cost of health cover.
- Environmental dimension: number of mini-dairies equipped, areas secured through title documents, number of users of biodegradable packaging.

The 3 priority indicators per dimension will receive particular attention in the implementation of the HOLPA tool at the ALL level in Bobo-Dioulasso.



7 Appendices

Appendix 1: Photos

Family photo	Photo of participants in plenary session
Identification of agricultural indicators	Identification of social indicators
Identification of economic indicators	Identification of environmental indicators



