CGIAR INITIATIVE ON Agroecology

Guidelines to the Agroecology-I Context Document

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IMPLEMENTED BY

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Table of Contents

Purpose of the Context Document

The purpose of the Context Document is threefold: first, to characterize the environmental, social and economic context of each Agroecological Living Lab (ALL); second, to understand the data and information currently available in each ALL; and third to characterize how and the extent to which agroecological principles are already being employed in each ALL. The Context Document is not meant to be a quantitative baseline or an exhaustive report, but rather a broad overview of the situation in each ALL. The data collected during the Context Document can be utilized during the visioning and assessment phases and is fundamental to describe the situation in each ALL and will inform the impact assessment. It will also be valuable to all other WPs as it will provide foundational data for their investigation.

Timeframe

The information and data collected in this Context Document will be used across the project in most Work Packages (WPs). Much of this information will be necessary for most WPs in the early stages of the project development thus the short timeframe.

Where possible the report should be completed by – 30th September 2022.

Format of the Context Document

The Context Document should produce both a report and a database/metadatabase of information available in each ALL.

We do not envision the Context Document to require onerous collection of primary data in the field, rather the Context Document should rely on a desk review of published and grey literature, as well as stakeholder consultations or key information interviews as necessary. Note the intention is not to produce a highly detailed report, but rather an overview that will direct the project towards the unique issues around AE as it progresses. Thus a few pages for each of the below headings, with attendant metadata/data. Remember, what goes into this Context Document is what is needed by the ALLs and WPs to carry out their work, it is the foundational information on which a case can be built. Thus, the detail is just enough to satisfy what you need for development of this project in the ALL, right now in the project cycle – no more than that. With regards to the appropriate scale of data collection, it is up to each ALL team to set the boundaries, but if farms within a single ALL are widely divergent, then perhaps data is needed to distinguish those.

The database should be a repository of either the metadata OR actual maps, photo plates, data files, scientific articles, etc. that would provide the essential data required to evaluate the performance of AE in that All over time. The scale of the data should be focused on the ALL, even where global datasets are used.

Approach of the Context Document

The Document is centered around the 13 agroecological principles (Refer to the Excerpt below from Wezel et al. 2020). The Annexure at the end of the document contains useful definitions (I.e. - agroecology, territorial food systems, agroecological principles, agroecological transformation, agroecological transition, agroecological innovations, and agroecological living laboratories) that should be kept in mind when collecting data to inform the agroecology context Document in each ALL. These guidelines are not meant to be exhaustive, but highlight the minimum data required across ALLs to facilitate cross-comparison but also self-evaluation. Note that some of these will not be relevant in your ALL, that is ok and itself is informative. These principles are simply to remind you during information collection, of all the various perspectives on AE that need to be considered. The Context Document is NOT an assessment, just a collection of data and information.

Table 1 Consolidated set of 13 agroecological principles, their scale of application and correspondence to FAO elements of agroecology. *FI*, field; *FA*, farm; agroecosystem; *FS*, food system

Principle	Scale of application	Correspondence to FAO elements
1. *Recycling*. Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.	FI, FA	Recycling
2. *Input reduction*. Reduce or eliminate dependency on purchased inputs and increase self-sufficiency.	FA, FS	Efficiency
3. *Soil health*. Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.	FI	Reflected in diversity, synergies and resilience
4. *Animal health*. Ensure animal health and welfare.	FI, FA	Reflected in resilience
5. *Biodiversity*. Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.	FI, FA	Part of diversity
6. *Synergy*. Enhance positive ecological interaction, synergy, integration and complementarity amongst the elements of agroecosystems (animals, crops, trees, soil and water).	FI, FA	Synergies
7. *Economic diversification*. Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.	FA, FS	Parts of diversity as well as circular and solidarity economy
8. *Co-creation of knowledge*. Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.	FA, FS	Co-creation and sharing of knowledge
9. *Social values and diets*. Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets	FA, FS	Human and social values Culture and food traditions
10. *Fairness*. Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.	FA, FS	Part of human and social values
11. *Connectivity*. Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.	FA	Part of circular and solidarity economy
12. *Land and natural resource governance*. Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources.	FA, FS	Responsible governance
13. *Participation*. Encourage social organisation and greater participation in decision-making by food producers and consumers to support decentralised governance and local adaptive management of agricultural and food systems.	FS	Part of human and social values

Text in italics show the titles of the repective principle

Below we highlight potential data to be collected for each agroecological principle.

Context Document for Agroecology in the Living Labs

Section I: Overview of the ALL

This section should provide a narrative description and key resources to characterize the food and farming systems in the ALL. Some guiding questions and topics are included under each main heading below.

1. Environmental Context

-What is the climate/climatic zone of the ALL?
-What are the main climate change impacts projected or being currently experienced?
-What are the main environmental challenges?
-Is there information on the state of natural resources, land/soil, water and biodiversity? Describe the location, state, levels of degradation, trajectory, and anything that is characteristic of the ALL.
-Is there information that describes the ecosystems?
-Describe any forests, nature reserves, protected lands.

2. Economic Context

-What are the main farming systems/food production systems/value chains in the ALL?
-What are key limiting factors for agricultural/food production?
-Do farmers/food producers have access to credit or savings and loan groups?
-Do farmers have land tenure and how is land inherited?
-What assets do farmers/food producers generally have access to?
-What are the main markets in the ALL? Both in terms of geographic location and nature of market (basic food / food / agricultural inputs / clothes / appliances etc.). What is the distribution of markets across the ALL / what is the distance to markets across various reference points in the ALL.
-Available infrastructure for storing grain, refrigerating produce etc on and off-farm.
-What is the road network like? How is the ALL connected to major cities, how are villages within the ALL connected?
-What is the access to electricity like? What are main sources of electricity?
-What is access to drinking water like? What are main sources of drinking / household water?
-Is migration important in the ALL? What is the percentage of men who emigrate? And for women? Is there immigration? What are push / pull factors behind migration? Is it permanent or temporary?
-employment opportunities within and outside agriculture

Remember to consider all economic aspects including agricultural production, value chains, poverty and wealth, economic empowerment, participation of women in value chains, etc.

3. Social Context

-What is the typical household structure? The family structure and size including single parent households etc.
-Describe the ethnicity of the ALL and fluxes over time.
-What are common educational levels? Are they similar for women / men, across different ethnic groups?
-How are health levels and do they impact on the food chain?
-What are the gender relations in the ALL? (see this link to guidelines on this. https://cgspace.cgiar.org/handle/10568/120076)
-How do farmers get information and make decisions?
-At what age do men typically get married and at what age do women?
-How are communities / public life in communities organized?
-What are the power relations in society and how do they impact on agriculture?

Remember to consider all social aspects, including health and wellbeing, gender, equity and social inclusion, access to information, household decision making, etc.

4. Political Context

-How does the national political scene and dynamics materialize itself at the All level?
-Can women be local leaders?
-Are there social groups excluded from the political decision-making domain (e.g. women or ethnic groups)?
-Who exerts "real" decision-making power in the territory and what is the basis for such power
-Are there any other unique political factors at play?

Section II: Current State of Agroecological Principles in the ALL

Remember to consider scale in this information – perhaps include large scale for some information and farm or even field scale for other information. Whatever is most useful for this project.

1. Recycling

It is important to understand the level of recycling in the ALL including constraints. Below are selected data/topics for consideration:

1.Resources available at farm level that could be recycled for production such as crop residues, animal manure, wastewater, harvested rainwater
2.Competition for use of such resources (e.g., biomass use as fuel versus fertilization or soil improvement or even as forage)
3.Estimated quantities of each resource at the farm level, based on the intended recycling option.
4.Any other locally relevant information.

2. Input reduction

The data below would be useful when assessing input reduction:

1.Type of inputs used for production, and how producers acquired such inputs (at a cost or not; generated on farm or not)
2.Typology of producers and their practices related to agricultural inputs.
3.Trend of input use, to make a difference between input reduction and absence of input use
4.Limitations and options available to farmers to reduce the dependance on synthetic fertilizers and pesticides (i.e., compost, manure, ash, fish meals, guano, biofertilizers, biopesticides, etc.)
5.Water use for production in the case of irrigated production systems and an inventory of various techniques used for irrigation
6.Inventory of water retention techniques that enhance water availability in the production systems and reduce the frequency of irrigation, without significant impact on ecosystem services (e.g., zai technique, use of mulch, or use of furrows)
7.Sources of energy used at farm level
8.Substitution of fossil energy by renewable energy on farm (e.g., solar panels)

3. Soil health

The focus would be on understanding ALL producers' farming practices and how they are related to soil health. Data would include among others:

1.Existing practices that enhance the quality and sequestration of soil organic matter versus practices that accelerate the loss of soil organic matter.
- This would include an estimate of fires, of grazing, of compaction

2.Farming practices that enhance and protect soil health e.g. minimum tillage, mulching, conservation agriculture, resting land etc.
3.Evaluation of the state of the soil and changes over time, including physical, chemical, and biological properties as affected by farming practices (if reports or data exist)
- Soil organic carbon content
- Soil erosion situation
- Soil acidification potential as related to farming practices
- Soil compaction
- Soil aggregation
- Nutrient balance
- Soil biota and their activity
- Soil productivity based on crop performance.

4. Animal health

Data for the ALL would include:

1.Livestock description, types and numbers
2.Types of feed and quality including signs of degradation
3.Animal rearing conditions and feeding regimes
4.Methods for managing pests and diseases
5.Natural occurring solutions used for pests and diseases control to substitute synthetic products (bio-control agents)
6.Water used for animal feeding and its quality

5. Biodiversity

Data for the ALL would include among others:

1.Wildlife, natural biodiversity on land, water and wetlands, summarised at large scale (e.g. from the National NBSAP), and where possible with more detail at the field and farm scales

- A measure of the state of the natural biodiversity, the stressors, and the change over time

2.Efforts by farmers to maintain natural biodiversity, e.g. inact riparian vegetation, forest patches, wind-break trees, hedge-rows etc
3.Access to agricultural genetic material, improvements, modifications, local practices
4.Plant/crop diversity (including genetic diversity)
5.Livestock and aquatic animal breeds (including genetic diversity)
6.Soil microbial diversity including functional diversity
7.Practices and policies adopted to maintain a high level of biodiversity
8.Diversity of species and resistance to biotic and abiotic stresses
9.Occurrence of invasive species

6. Synergy

Gathering evidence of how animals, crops, native and exotic trees, soil and water are integrated to optimize food and nutrition security, enhance adaptation and mitigation to climate change, while minimizing environmental degradation, e.g. use of cover crops, live fences, crop rotations and functional associations.

1.Mixed farming, including animal manure for crop production
2.Occurrence of agroforestry and shade enhancement
3.Water to support natural ecosystems and also for irrigation, including irrigation techniques
4.Integrated production of crops/livestock/aquatic animals/NTFPs (may be integrated at plot, farm, or landscape scale)
5.Any other synergies in the ALL.

7. Economic diversification

Understanding of the various sources of farm income and value addition available to farmers on and beyond their farm. Data would include:

1.Diversity of crops and livestock and aquatic animal breeds
2.Diversity of clients for the on-farm products
3.Crops and livestock and aquatic animals that generate regular income within a year
4.Crops and livestock and aquatic animals that generate one annual income or income after a couple of years following establishment
5.Income from activities beyond the farm level, including wild products such as NTFPs
6.On-farm processing such as preparation (and local sale) of local dishes.
7.Other economic diversification including wage labour, temporary or more permanent migration of some family members etc.

8. Co-creation of knowledge

This is how knowledge is shared and developed across the ALL, the import of knowledge, sharing of new developments and innovations etc. Data would include:

1.Existing networks or platforms (formal and informal) for knowledge and experience sharing
2.Actors in the networks/platforms and their roles and responsibilities
3.Opportunities for farmers (between themselves) to share experience and knowledge
4.Strategic alliances between farmers, local communities, and researchers to add value to traditional and indigenous knowledge, and for participatory learning
5.Power dynamics that may positively or negatively affect the participatory learning (e.g., cultural considerations versus equally participation of men, women, and youth as well as vulnerable groups) - this will be investigated in-depth in WP5 Activity 2.

9. Social values and diets

People in different areas have different priorities and preferences when it comes to food, which will impact on the options that are available for development of AE in each ALL. Data would include:

1.Information on local food-crops and livestock as well as wild harvest food preferences including history and shifts over time and their seasonality
2.Social and gender equity in terms of consumption of such food products
3.Information on food preference by the local communities and changes over time of consumption patterns
4.Information on local production of food commodities versus importing
5.Knowledge of the nutritional facts of such food products
6.Level of dependance to food import (i.e., food produced out of the boundary of the ALL)
7.The diversity of diets and diet composition building on local food commodities
8.Any other locally relevant social preference.

- E.g. routine vs. festive food consumption and consequent production.

10. Fairness

In the context of the ALL, determination of the level of fair trade, employment, and fair treatment of intellectual property rights to improve the livelihood of all actors of the food systems. Data would include:

1.Farm-gate versus market prices of agroecological produces
2.Wages for workers along agroecological value chains
3.Segments where intermediaries are involved in the supply chains of selected farm products
4.Access to high-quality market information and involvement of all key actors in market assessment, based on farmer typology, disaggregated by wealth, land ownership, gender, and age groups also: ethnic considerations when relevant
5.Access to fair employment disaggregated by gender and age groups
6.Access to production/ value chain assets and financial instruments, disaggregated by wealth, land ownership, gender, and age groups
7.Profitability (Production costs versus outputs prices at farm-gate) and risk (e.g., indebtedness, crop/farm failures, loss of land ownership, etc.)
8.Information on how co-creation and knowledge sharing benefits all actors and does not result in inequity

11. Connectivity

Understanding the distribution chain of food commodities, and its effects on the direct linkage between producers and consumers and the local economies as well. Data would include:

1.Information on the length of the distribution chains of farm products (e.g., a few or many segments involving intermediaries)
2.Disaggregation of the above information by gender and age groups, taking also into consideration the farmer typology
3.Existence of infrastructure to facilitate access to markets (e.g., rental rate of transport vehicles, transport vehicles, road and road conditions, storage facilities to minimize post-harvest losses, etc.)
4.Existence of communication channels between food systems actors, particularly producers and consumers

12. Land and natural resource governance

Understanding the institutional arrangements available to promote effective participation of all actors of food systems, particularly smallholder farmers, in managing natural and genetic resources. Data would include:

1.Local community involvement level in natural resource management
2.Disaggregation of the above information by gender and youth and land ownership
3.Inventory of existing policies (at various scales i.e., local, county/province/state, national and regional) supporting sustainable land-use and sound natural resource management, as well as policies that may hinder the same (to be collected by WP4?)
4.Financing mechanisms towards effective governance of land and natural resources, including effective management of the same
5.Scientific evidence used to inform the governance of land and natural resource
6.Land and natural resource use patterns, state and trends of change
7.Institutional structures responsible for promoting the adoption of the agroecological principles
8.Any other institutional arrangements.

13. Participation

It is important that all actors have the opportunity to participate in decisions that impact the food chain. Data would include among others:

1.Evidence of effective participation of food producers and consumers in decision-making processes related to decentralized governance of agricultural and food systems (see WP5)
2.Inventory of social organizations, platforms, or networks involved in the transition to agroecological transformation (see WP1)
3.Level of participation of small-scale producers and consumers in decision-making processes related to food systems (see WP5)
4.Existence of social organizations active in local management of food and agricultural systems
5.Any other locally important initiatives.

Annexure

The definitions below are copied from the Initiative proposal.

Agroecology encompasses the science, practice and social aspects of working towards transformation to sustainable and equitable food systems, from production through to consumption. Agroecology emphasizes use of biodiversity, natural processes and recycling to reduce impact of environmentally disruptive inputs and increase resilience of farming systems, the co-creation of knowledge with local stakeholders to ensure culturally relevant innovation, and responsible and inclusive governance of natural resources. Agroecology recognizes the importance of agency for all actors involved in food systems and of connecting producers and consumers to ensure that methods of production and processing match consumer expectations[i].

Territorial Food Systems: Food systems "encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and food industries, and the broader economic, societal and natural environments in which they are embedded"[ii],[iii]. A territorial approach to food systems contributes to define boundaries to the food systems, and then to define well the building blocks, actors and linkages that will be analyzed in this initiative. Defining boundaries to food systems avoids the risk of a concept that is fuzzy ii, and then difficult to operationalized. In this initiative, the territorial food systems are circumscribed to a group of jurisdictions at the district or municipality level (depending on the country) in each selected country.

Agroecological principles are explicit statements comprising normative and/or causative aspects, that guide decisions and action towards meeting agroecological objectives. There are 13 widely accepted agroecological principles derived from the HLPE report, which are complementary to FAO's ten elements of agroecology, but more explicit and, therefore, more consistently interpreted[iv],[i].

Agroecological transformation describes the change of whole food systems to sustainable and equitable states, involving change in norms and institutions in the public and private sector that govern how food is produced, processed, transported, sold, and consumed, as well as the relationship between consumers and other actors along food chains, including producers. A transformation may be triggered by a number of incremental transitions occurring over time.

Agroecological transitions describe how agroecosystems or food systems change over time - through application of agroecological principles - to become more environmentally and economically sustainable and socially equitable. Transitions may focus on the application of some but not necessarily all agroecological principles and encompass parts of whole food systems, for example, farming, business models, services provided, consumption, etc. Transitions are grounded in the state of the system at the starting point for the transition and the specific geopolitical context that shapes its change trajectories[i]. Transitions can spring from different starting points and at different paces. Depending on local context, AE-I conceptualizes three transition pathways that require support from various food system components and actors, namely: (i) agroecological 'intensification' (in current low-production systems with low inputs); (ii) the 're-design' of small-scale farming, currently with low profitability with high external inputs use; and (iii) 'conversion' (of profitable medium-scale enterprises with high external inputs use). This initiative focuses on I and II during the initial 3-year timeframe.

A**groecological innovations** are technological and institutional innovations that contribute to reducing impact of environmentally disruptive inputs and, increasing resilience of food system components (including farming), and are the result of the co-creation of knowledge with local stakeholders and other food system actors to ensure culturally-relevant innovations are promoted and that natural resources are managed responsibly and inclusively. Examples include practices, business models and other institutional arrangement that contribute to these aspects.

Agroecological Living Labs (ALLs) are a mechanism or vehicle for a diverse set of actors (e.g., producers, traders, processors, consumers and institutions) who are part of the territorial food systems and landscapes in which ALLs are embedded to exchange their views and knowledge, and codevelop and adapt agroecological innovations. ALLs also allow researchers to learn what works and what doesn't as part of the effort to build a scalable model capable of scaling agroecological transition out and up to other LMICs (2024-2030). The ALLs will integrate agricultural, environmental and socioeconomic research as part of a continuous innovation cycle with a territorial approach. Partners will be involved in the design of agroecological adaptive scaling strategies (business models, policies, economic mechanisms, etc.) and in multi-stakeholder dialogue to promote these[v].

References

[i] HLPE. 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
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[iv] Wezel, A., Herren, B.G., Kerr, R.B. Barrios, E., Goncalves, A.L.R., and Sinclair, F. 2020. Agrecological principles and elements and their implications for transitioting to sustainable food systems. A review. Agronomy for Sustainable Development https://doi.org/10.1007/s13593-020-00646-z
[v] European Commission. 2020. Building a partnership on agroecology living labs and research infrastructures. Webinar report. June, 2020.

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