Agroecology and Safe Food System Transitions

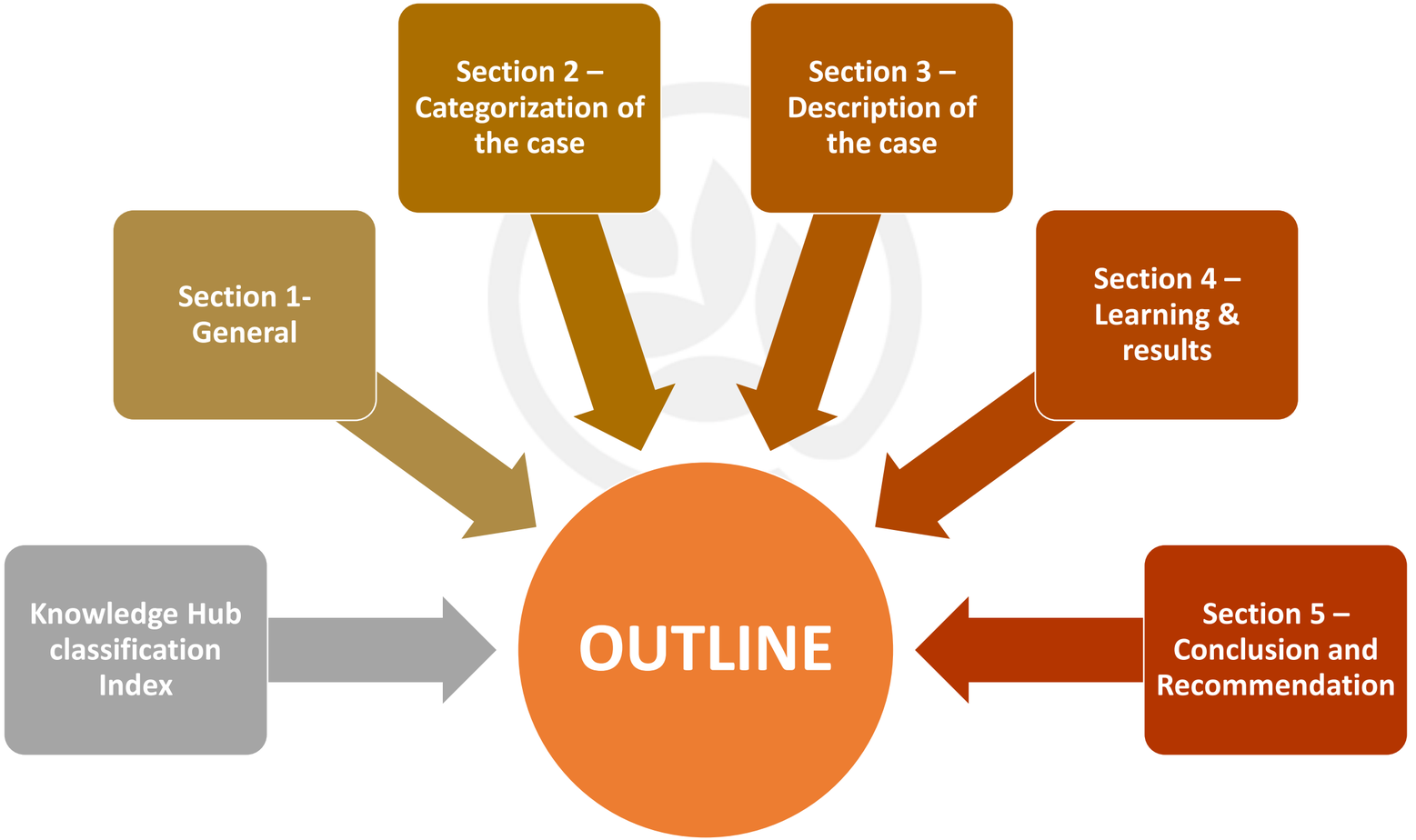
ALiSEA
Agro-ecology Learning alliance in South East Asia

CASE STUDY
Technical brief

Cucumber Seed Production

28 March 2024
Xaysomphone PHAYPADITH, RDA
Knowledge Management

CASE STUDY CONTENT



Knowledge Hub classification Index

Associated KH Categories and Keywords

> Select lexicon categories amongst the 18 categories

> Associate lexicon keywords

Categories	Keywords
AE systems	Agroecological Crop protection Agroforestry
Input reduction	Biological control Chemical inputs control Input reduction Insects plants interactions Plant Health

ALISEA PRODUCT

> Category of product in Alisea site

Check the box
Alisea Knowledge Product

Section 1- General

✓ **Title on the case:** **Producing Cucumber Organic Seed**

✓ **Context of the case**

This case has been documented by CLICK in the Seed Project in 2023 fund from **Oxfam** in collaboration with **Ban Suan Ai Oun farm** in Luangprabang

Section 2 – Categorisation of the case

✓ **Localisation**

Selection menu or entries boxes : Country/Province/District/Village/GPS ref

Laos
Chomphet village
Phomthong District
Luangprabang Province
Latitude: 19.889271” N
Longitude: 102.133453" E

✓ **Agroecological system of the case context**

Zone : Plain
Main activities : rice / vegetable
Climate: Seasonally tropical (rainy season: June to October)
Rainfalls: ~ 1300 mm/year
Temperature: Avg max: 35°C - Avg min: 14°C

Section 2 – Categorisation of the case

✓ Agroecologiness of the case

13 principles of HPLE from 1 to 5

13 Principles	1	2	3	4	5
Recycling					
Input reduction					■
Soil health				■	
Animal health					
Biodiversity					■
Synergy				■	
Economic diversification		■			
Co-creation of knowledge				■	
Social values and diet				■	
Fairness			■		
Connectivity				■	
Land, natural resources governance				■	
Participation					■

Section 3 – Description of the case

✓ Objective of the case

- *To promote cucumber seeds production*
- *To preserve traditional seed*
- *To reduce the cost and difficulties of purchasing seeds*

✓ Rationale/justification

- *Limitation of growing seeds in Laos because of importation of seeds/equipment*
- *High prices of seeds*
- *Context of lack of traditional seeds*
- *Other Alisea members involved into seeds production*

✓ Scale

- *At the farm lever, kitchen level*

✓ Actors

- *farmer, farmers group, local authorities and family members….or anyone who is interested*

✓ Calendar of Seed production

01	02	03	04	05	06	07	08	09	10	11	12

Section 3 – Description of the case

✓ Full description : Technical advices + accurate data

Required conditions

- *Sandy loam with good drainage.*
- *Acidic soil : **pH 5.5- 6.5.***

Planting

- *Soak the seeds in warm water, **30 degrees** for **30 minutes**.*
- *Drop **2 seeds** into each hole.*
- *After the seeding sprout, select only on seed*

Land preparation

- Dig a hole about **60 cm wide, 2 m apart** to allow the vine to crawl)
- Add **3 handful of cow dung**, **3 handful of burnt rice husk,** then mix together before placing the seeding in the hole.
- Watered with biological fertilizer, **Trichoderma fungus** to prevent the diseases
- Put **2 seeds** per hole
- Select the most strong plant and the rest of the plant should be cut.
- Keep **only 2 cucumbers** for the completeness of the cucumber seeds.

Watering and nutrients

- Watering the soil before **2 times /day**

(3 times for dry season) and after planting prevent wilting vegetable.

- After **7 days**, use **0.5 L** of biological fertilizer mixed **200L of water** and spray around the leaves.
- After **10 days**, use compost **1 handful** in each plant and spray around vegetable.
- **15 days** old, use **2 tablespoons** of microbial fertilizer per **5L of water** and spray in to the leaves
- Spray fertilizer and compost **every 7-10 days** to prevent insects and pests until the plant getting bloom

(do not let the disease of insects and pests destroy, if it occurs cut it off so that it doesn't attach to other plants)

Seed collection and preservation

- Cut small vine branch that are not stable
- Select only one stable vine branch which **2 plants**
- Observe the ripe fruit until it turns golden yellow
- Open the shell and remove the seeds,
  wash them clean and bring them to the sun for **about 5-7 days.**
- Keep at a temperature of **18-20 degrees**
- (kept away from sunlight and humid)

Section 4 – Learning & results

✓ Results

- Harvesting has been very good : **100 – 150 of seeds per cucumber**

✓ Strengths

- Save cost to buy news seeds
- High-quality seeds

✓ Weaknesses

- Seed production with imported seeds is not effective (time and quality, etc.)

Section 5 – Recommendations

- To know whether it is a self – combined plant and what kind of flowering or seeding behaviour it has.
- To know the pest, insect disease & prevention/control methods
- To keep the seed strong from the first stage together with protection from insects
- To harvest when the seeds are fully.

✓**Expert Contact : Anouthikone , Ban Suan Ai Oun Farm +856 20 5659 5495**
✓**Sources : www. Lao 44. org**

CASE STUDY _VIETNAM

5 YEARS changed the household **traditional** habitat in **manure waste management.**

The way to raise the **additional income**

Section 1- General

Title: Composting – A model that contributes to clean environment and change the farmer's mind creates additional income for people in Mountainous Areas- Northern VietNam.

Context of the case

❑ Experiment implemented by CISDOMA- NGOs- AliSEA member

✓ Technical training & funding **: BftW project** (2017-2025)
✓ Technical support : LMI-**IRD**-French
✓ Funding : **ALiSEA** small grant (2018-2019) and **Heineken** compagny

❑ Results of various activities that were implemented by **Youth and Women unions**, **local leaders** in the context of climate change adaptation

Knowledge Hub classifica Index

- ✓ **Associated KH Categories and Keyword**

1. Manure waste
2. Composting
3. Woman and youth union,
4. In come management,
5. Ethnic commune
6. Mountainous Areas
7. Viet Nam

ALISEA PRODUCT

> Category of product in Alisea site

Check the box Alisea Knowledge Product

Section 2 – Categorisation of the case

✓ **Localisation**

- *Selection menu or entries boxes : Country/Province/District/Village/GPS ref*
- ***Chu Kheo Hamlet, Tam Duong district/Lai chau province/Viet Nam***

Longitude 22°19'33"N 103°37'02"E

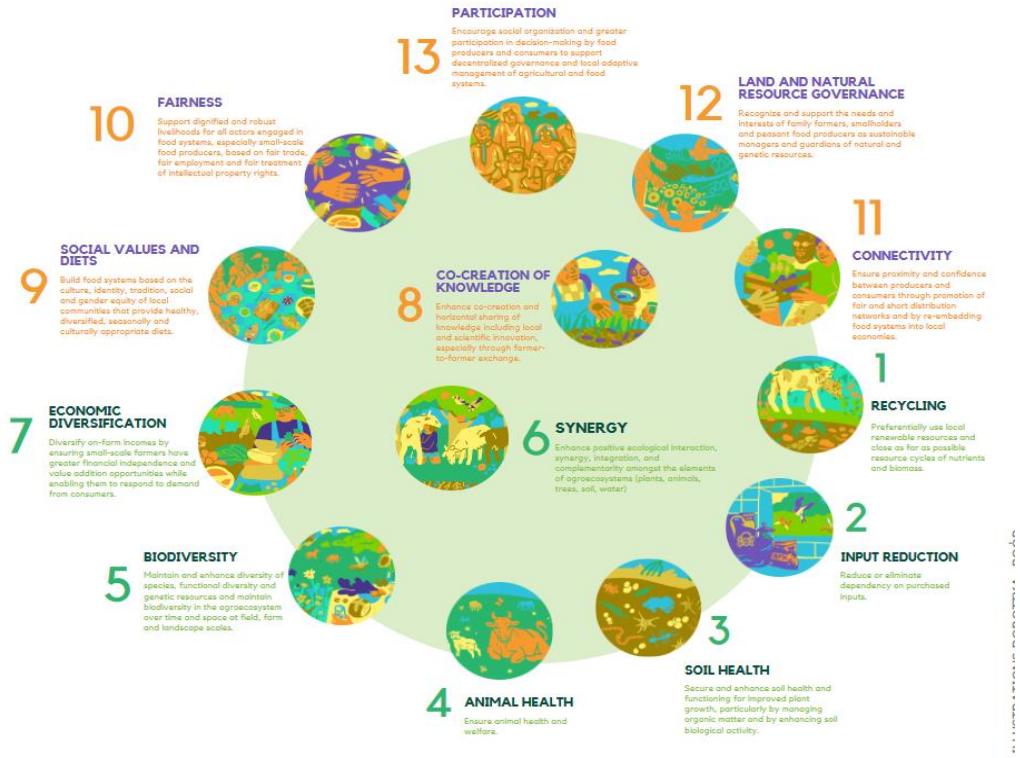
✓ **Agroecological system of the case context:**

- **Selection menu or entries boxes :**

- **Zone:** ***High mountain 1800-2000m above sea level***
- ***Flooding, soil erosion, drought in summer,***
- ***Damaging cold in winter***
- **Main agricultural activities of the zone:** ***rice/maize/ forestry/livestock***
- **Climate : tropical/sub equatorial:** ***Seasonally tropical***
- **Rainy season:** ***April - September***
- **Rainfall per year:** ***av.2800 mm/year***
- **Temperature avg max and avg min:** ***av. Max 35°C- Min 0°C***,

Section 2 – Categorisatic the case

- ✓ **Agroecologiness of the case**
- • **13 principles of HPLE**



13 principles /level	low1	2	3	4	verygoo 5
Recyling					
Input reduction					
Soil health					
Animal health					
Biodiversity					
Synergy					
Economic diversification					
Co- creation of knowledge					
Social values and diet					
Fairness					
Land, Natural resources, Governance					
Participant					

Section 3 – Description of the case

Reasonable

- Main household income: buffalo , cow, pig and chicken
- High risk of disease and pollution from animal waste
- Low acceptance of innovation agricultural practices

Objective of the case

- To protect farmers' health, reduce water and soil pollution,
- To convince farmers changing their traditional habit in animal waste management

Section 3 – Description of the case

✓ Scale

❑ *Household and commune level*

✓ Actors :

❑ Farmer household, women and youth unions, local authorities, researcher, agricultural extension local officer, NGO's staff, consumer.

✓ Calendar and projects process

Year	Process	Grants	Detail activities	Month											
				1	2	3	4	5	6	7	8	9	10	11	12
2018	Awareness and farmer's acceptance	ALiSEA, BtfW1	Integration with local authorities,	■	■	■	■								
			List of Key persons and Famers					■							
			Introduce the good practices								■	■		■	■
2019	Learning by doing	IRD, BtfW1,	Technical training						■	■	■				
			Set up the areas for composting												
2020	Income management	BtfW2	Training the group financial management		■	■	■					■			■
2021	Landscape protection		Training the touris community management				■	■				■	■		
2022			Destination for tourisms												
			Policy maker												

Section 3 – Description of the case

Approach

- Vietnam is undertaking a **strategic transformation of agricultural sector**, with strong direction from government
- Agro-ecology practices is the only way to ensure safe quality of the products and sustainable environment
- Low level of acceptance and adoption by farmers of AE practices
- Lack of effective approaches in communicating and facilitating farmers
- Destination of tourism by villagers, local leaders, NGO staff:

Section 3 – Description of the case

Implementation

❑ Set up the composting areas by youth union, NGO's staff

✓ 3 composting tanks to collect manure

✓ Technical support for manure treating

❑ Find the consumer by local NGO staff

✓ In order to sell compost

❑ Raise budget of the group by woman unions

✓ To buy products for composting

✓ To loan to other households to support income generating activities

✓ To deliver Guidance training

Section 3 – Descriptio the case

Capacity building

- **Simulation games: innovation communication**

AliSEA's small grant 2018-2019 ;

Enhance the Famer's decision = let 'them talk much as they can

Section 3 – Description of the case

Capacity building

- **Technical training**

✓ Composting & vermicomposting (liquid/solid)

✓ Micro- organism preparation and earthworm

✓ Vermifilter system.

Resulting: Organic fertilizer, water reuse

Section 3 – Description of the case

Capacity building

- Setting up of composting areas (youth union and agricultural officer)

Section 3 – Description of the case

Capacity building

- ❑ Guidance document for financial /economical planning (Women's and youth Union)
- ✓ Promote IT applications in the group activities.

Results

1. Communication

✓Tool Simulation game

✓ Trained: 2 key persons

✓ Discussion: 100 villagers/01 month

✓Good practice model: 08/09 (crop & livestock)

✓Video

2. Composting practices

✓3 composting tanks

✓Increase from 20 households to 81 households participated (100%) applied the composting technique

3. Raise budget of the group from selling the compost

✓Budget 35 million VND after 2 years

✓Loan to 20 other households to apply more good practices in livestock

✓Improve the landscape for *a typical community tourism village of Lai Chau province*

✓Guidance notebook

Section 5 – Recommendatic

❑ Target group:

✓Woman and Youth unions

❑ Communication tool:

✓ More Open mind

✓More solutions for addressing the constrain

❑ Technical training:

✓ Learning by doing easily to learn event Viet languages limitation.

❑ Finance management:

✓Guidance book helps good planning for raising the beneficial persons in the village

✓Tourism, communication and market activities: good way to protect landscape and raise income

✓Date of publication: May, 2024

✓Authors: Thuy Doan CISDOMA. thuy.dt@cisdoma.org.vn

✓Expert Contact : Francois ENTEN , Gret , enten@gret.org>

✓Sources : Narrative report of ALiSEA small grants 2018-2019;
CISDOMA' report for BftW1,2

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CASE STUDY

Input Reduction in AE Practices: Case of Local Practices in Horticulture

26 Mar-24

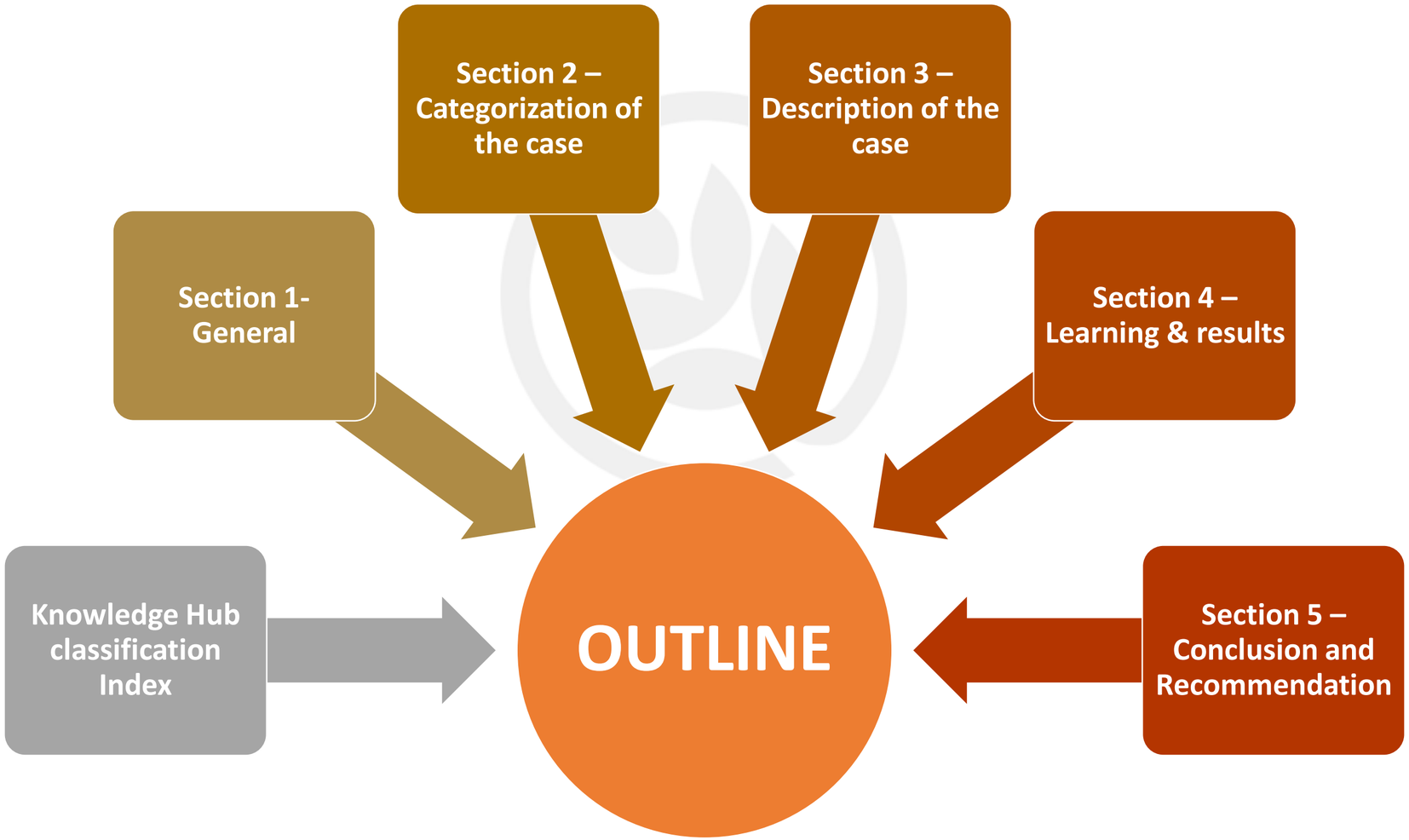
Sorith, ECOLAND

Funded by the European Union and the French Development Agency

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

FFEM FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL

CASE STUDY CONTENT



Knowledge Hub classification Index

Associated KH Categories and Keywords

> Select lexicon categories amongst the 18 categories

> Associate lexicon keywords

Categories	Keywords
AE systems	**Integrated farming, AE performance**
Input reduction	Biological control Chemical inputs reduction Input reduction Integrated pest management - IPM

ALISEA PRODUCT

> Category of product in Alisea site

Check the box
Alisea Knowledge Product ☐

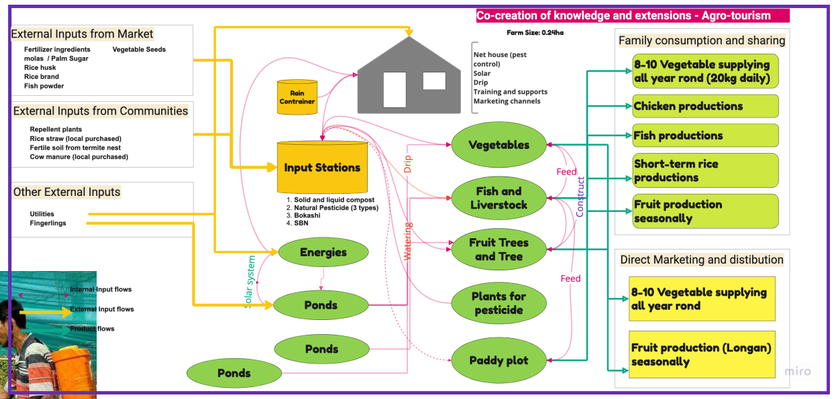
Section 1- General

Title of the case

Input Reduction in AE Practices: Case of Local Practices in Horticulture Production

Context of the case

*This case-study was a part of **ALiSEA small grant** project implemented by ECOLAND called "Multidimensional Evaluation of Agroecological Performance, Cambodia (**MuLAgE**).*



Section 2 – Categorisation of the case

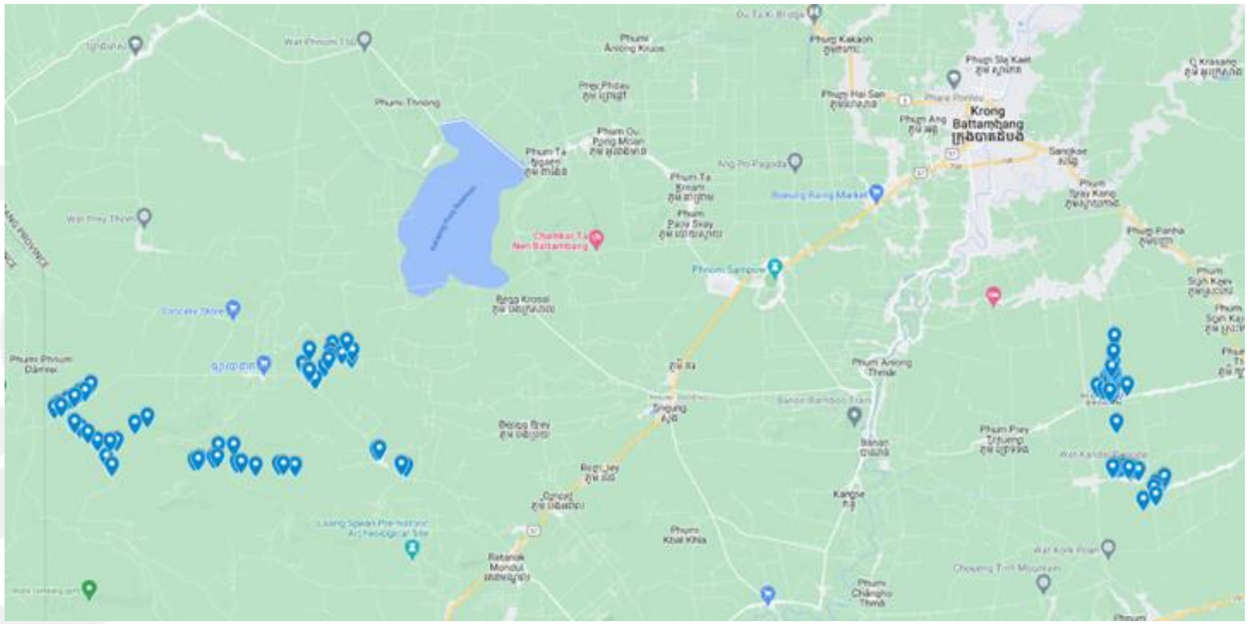
✓ Localization

Selection menu or entries boxes :

Cambodia / Battambang

Sangkae *- 12.9230975, 103.2834974*
(Reang Kesei, Reaksmei Songha and Traeng)

Rotanak Mondol *- 12.9780996, 102.8746753*
(Voat Kandal, Damnak Dangkao, Reang Kesei, Pich Chanva, Reak Smey Sangha, Buor Run)



✓ Agroecological system of the case context

Selection menu or entries boxes :

Main agricultural activities of the zone	***Tonle Sap Plain Zone***
Climate : tropical/sub equatorial	***Rice/Multi-crop***
Rainy season	***Seasonally tropical***
Rainfall per year	***May-Nov***
Temperature avg max and avg	***av.1843 mm/year***
	Avg max: 36°C in April - Avg min: 31°C in November in Battambang

Section 2 – Categorisation of the case

✓ AE Key principles of the case

13 principles of HPLE

13 Principles	1	2	3	4	5
Recycling			■		
Input reduction					■
Soil health				■	
Animal health					
Biodiversity		■			
Synergy		■			
Economic diversification		■			
Co-creation of knowledge					
Social values and diet					
Fairness					
Connectivity					
Land, natural Resources governance					
Participation					

Section 3 – Description of the case

✓ Objective of the case

The main objective of this case study is to elaborate the practices of input reduction in the grassroot of BTB province by highlighting the best practices of Agroecology Transition.

✓ Rationale/justification

- Our empirical finding shows
  - that Overall CAET score was 37.42% which remained low
  - and most farms rely on external inputs
  - Input expenditures (seeds, fertilizer and pesticide) was high (around 45% of total expenditures)
- Traffic light, average input score 1.09 (0-4),
- Pesticide Usage:
  - Average types used: 5.4, no topology-based differences
  - 92.50% did not use organic pesticides
- Farmer Perception:
  - Chemicals is more important for production (78.33%)
  - Neglect of alternatives; minimal mention of ecological management

✓ Scale

Farm level within the Battambang territory.

✓ Actors

Diverse involvement: Farmer, Union of AC, ACs, local authorities, local and international NGOs working in the area, PDAFF staff, consumer and research team (ECOLAND, ALiSEA and Cirad) involved in this case.

✓ Calendar of the case study

01	02	03	04	05	06	07	08	09	10	11	12

Section 4 – Learning & results

✓ Result

- **Technical aspects of AE practices** were comparatively lower than that of social aspects and external input dependency were found (Fig. 1)..
- **3 key areas** mentioned:
  1. **saving and recycling of the nutrients** in their own farms;
  2. **strengthening the AE practices** aiming to reduce chemical use; and
  3. **learning new technologies maximizing the yield and minimize the cost** (Fig. 2).
- Mr. Sin Sivnoeut made his own way to reduce the dependency of external inputs for his vegetable system (Fig. 3).

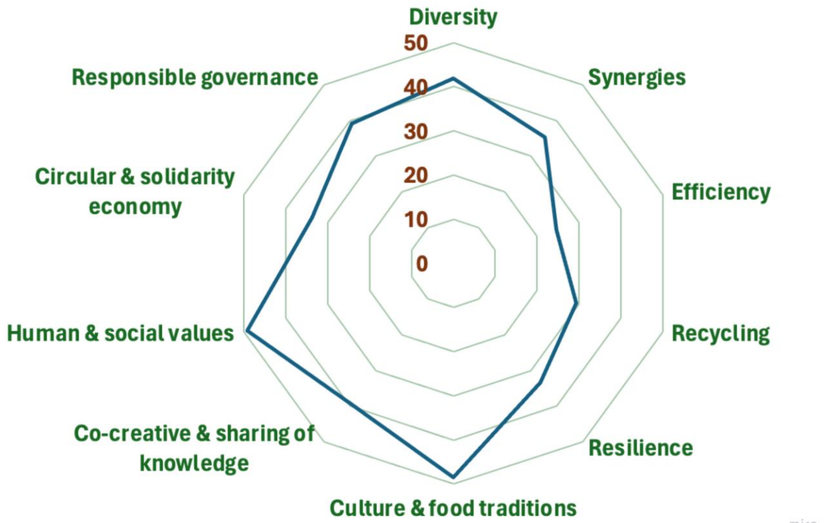


Fig.1 CAET Score of 10 Elements based on TAPE 2023

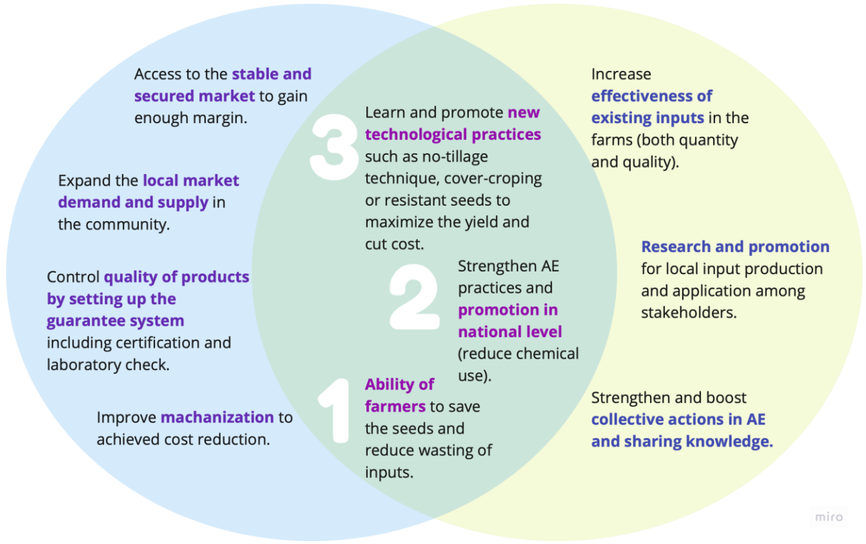
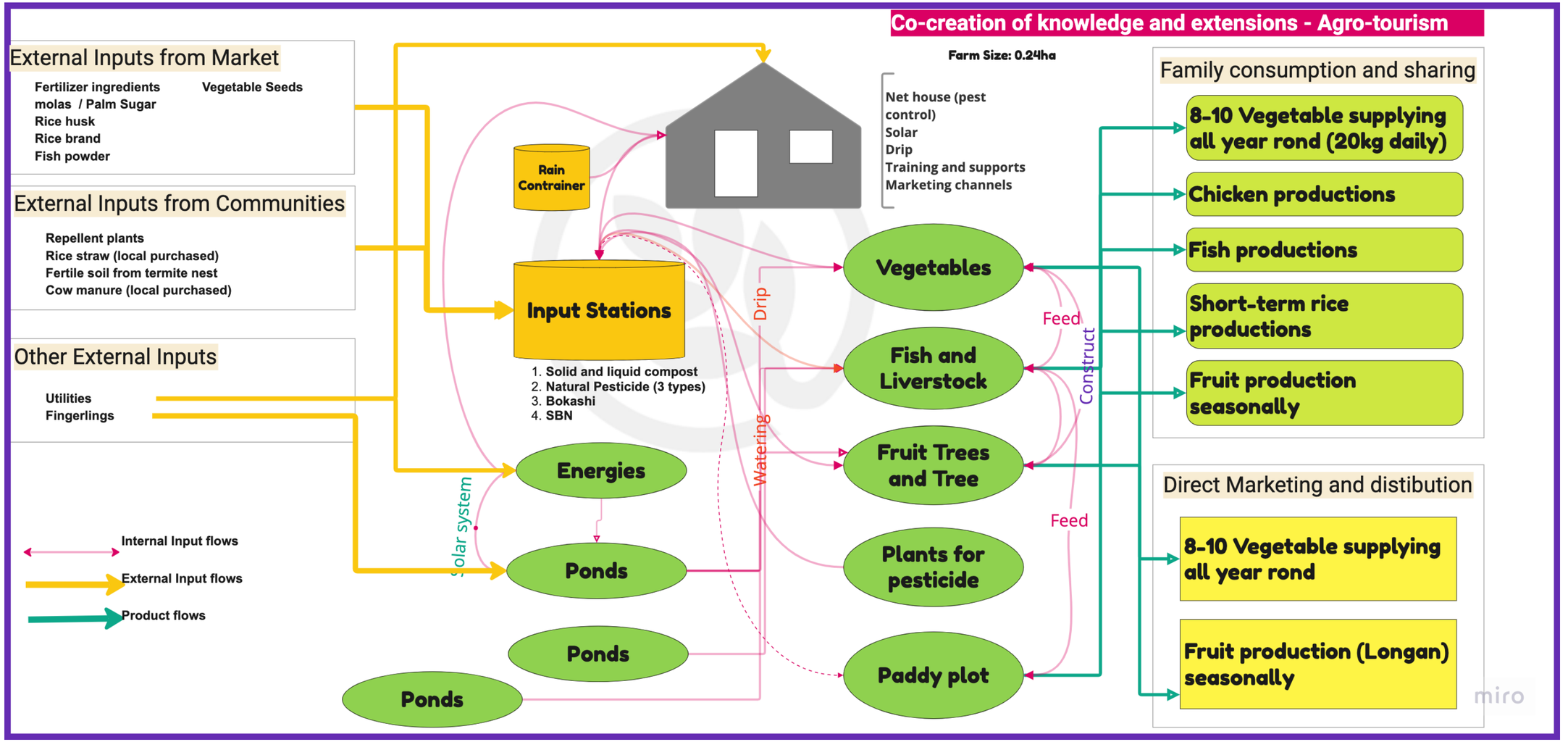


Fig.2 Key area suggested for external input reduction

Section 4 – Learning & results

✓ Result



Section 4 – Learning & results

✓ Result

Practice	Scientific Evidences										System Name: Mr. Sin Sivnourn
	Crop yields	SOM/SOC	N cycling	P cycling	Nutrient retention	NUE	Improved soil tilth	Erosion reduction	Weed control	Pest control	
Crop rotation											Vegetable plot: rotation of varieties of vegetables.
Cover cropping											Farm compound: integrated the plants for pesticide production, fruit tree and vegetables as well as the horticulture.
Reduced bare soil											Vegetable plot: different cropping and mulching regularly with rice straw or other organic matters
Intercropping											Vegetable plot: different varieties of horticulture.
Agroforestry											Fence: coconut, longan, mango, and plant for pesticides
Integrated crop-livestock											Farm compound: chicken, fish
Organic soil amendment											Vegetable plot: compost, bokashi, rice straw mulching
Integrated: Organic + Fi											Paddy rice plot: bokashi, manure and chemical fertlizer

Fig. 3: ENM practices provide multiple ecosystem services. Management effects on desirable ecosystem services are indicated by color, with green indicating positive effects and orange indicating mixed or inconsistent effects. Dark green indicates the evidence is strong and reflects consistent results from multiple meta-analytical reviews while medium green indicates moderate evidence (i.e., ecosystem services that were considered in a limited number of meta-analyses). The lightest shade of green indicates limited evidence, including management effects where results are from the primary literature or a single meta-analysis. Blank cells indicate ecosystem services for which there were insufficient data points to be included in the meta-analytical reviews. NUE: Nutrient use efficiency; Fi : Inorganic Fertilizer; SOM: Soil Organic Matters; N: Nitrogen; P: Phosphorus.

miro

Video on spraying of bio-input

Section 5 – Conclusion and Recommendations

- With the safe vegetable production by using the **microorganism based inputs and direct marketing**, it is both reduce production cost and accessing to local market with higher margin comparatively.
- **Microorganism based input is potential for the input reductions.** The knowledge of microorganism based inputs should be promoted in the horticulture productions.
- **Designing a farm** with a critical consideration to reduce cost of inputs and minimizing the external input dependency.
- As financial aspect is one of the main drivers in adoption of new agricultural technologies and practices, **capacity building and promotion of AE practices** should be centered on **cost reduction**.

✓**Date of publication:**

✓**Author: Sorith HOU, ECOLAND, housorith@gmail.com**

✓**Sources: TAPE- MuLAgE, Farmer (Sineourn), SSLA**