



## INTEGRATED AGROECOLOGY: STUDY, IMPLEMENTATION AND PRACTICE (IASIP)

### AN EDUCATIONAL CURRICULUM FOR HIGH SCHOOL STUDENTS TO ENGAGE WITH AGROECOLOGY TEACHING AND BEST PRACTICES

#### KEY TAKEAWAYS

- Student Outreach to maintain buy-in from all actors for the duration of the project
- Consider working with younger classes to ensure more availability of students
- Start business planning earlier to ensure better execution
- Empower and strengthen Youth involvement in Agroecology through practical activities
- Ensure a mix of experiential learning, critical thinking and conveying interconnectedness
- Strong focus on understanding student cohort, their motivations and engagement styles
- **Bio-Centric Approach:** Taking an ecological viewpoint and designing interventions that balance human needs and natural environment protection.

#### Integrated Agroecology: Study, Implementation, Practice

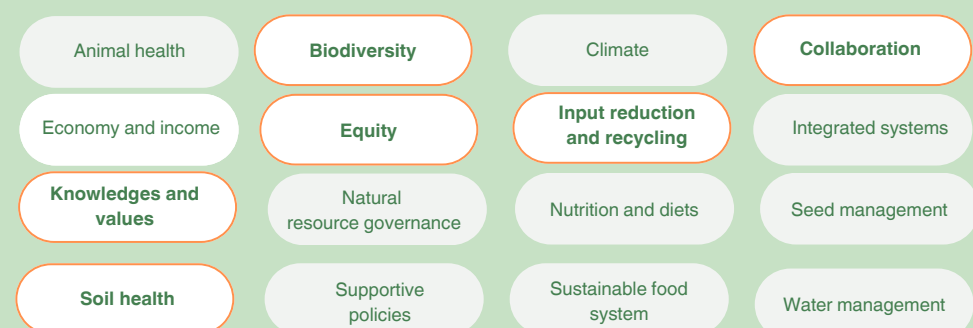
📍 Location: Cambodia 🇰🇲  
📅 Duration: 2020-2025  
👤 Implemented by: GRET & CIRAD

- 🌻 Agricultural system: rice paddy, cassava cultivation, vegetable production
- 🌻 Altitude: 0-100 m above sea level
- 🌻 Rainfall & temperature: 1,340 mm/ year

##### Agroecology Principles:



##### ALiSEA Knowledge Product Categories:



#### CONTEXT

The agricultural sector plays a vital role in the economy of Cambodia. However, the labor inputs in agricultural production has declined substantially in the last decade, caused possibly by the migration to industrial and service sectors. Approximately 60% of Cambodia's population are under the age of 25, making Cambodia the fourth largest youth population in South East Asia.

However, the participation of youth in agricultural development remains low. Youth often perceive agricultural activities as laborious and less profitable. There is also a lack of investment in building an infrastructure for vegetable production (particularly in some provinces)- for example, Siem Reap is a province with greater focus on Tourism industry and hence investments are made in that sector. For Oddar Meanchey, 40 KM from the Thai border, the priority is roads and accessibility to ensure throughways for trade- but less investment in water resource management, electrification of villages and so forth.

This keeps the agriculture-sector mostly a subsistence model and presents itself as a sector that is debt-ridden and exposed to the impacts of climate change. Most youth grow up seeing their parents struggling as farmers- and thus family systems reject agriculture as a viable option for their children.



## The Approach



**Figure 1:** Location for Training in Oddar Meanchey, Cambodia

In response to this challenge, we use biocentric approach to agriculture and food production particularly to showcase its low cost/ low investment and environmentally friendly approach. Firstly, we want to excite and involve youth in agricultural production but with the frame of wild-food knowledge and agroecology. Secondly, we want to encourage personal projects and thirdly, we want to encourage cross collaboration and co-learning between urban and rural populations + overseas educators (academics, influencers and practioners).

Our proposed solution is to work directly with two institutions (i) Samdech Euv High School in Siem Reap province and (ii) The Green Shoots Foundation Agri-Tech Centre in Oddar Meanchey, Cambodia

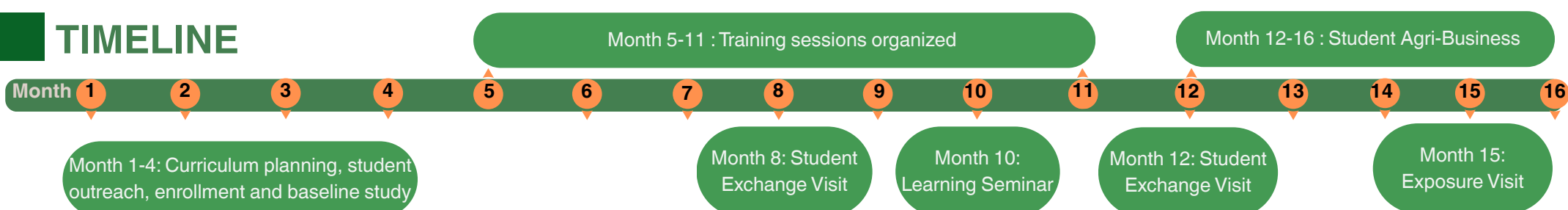
We divided our project into three key areas of work:

**Study:** A five months training schedule for the students on key topics along with agroecology principles. At this stage they are assessed after each training session.

**Implementation:** In this stage, we will organise field visits and field-trips so students can see implementation of agroecology in other projects and sites. They will have inspirational/ motivational speakers from the sector to talk to introduce case studies and projects. They will visit each other and complete a field-visit worksheet.

**Practice:** The last 4 months of the project is dedicated to student groups building their own projects. These will be submitted in January 2025. Student groups will be provided once a week coaching on location for their projects. They can also use the locations to work on their projects.

## TIMELINE



## METHODOLOGY

A key component for carrying out the project is taking a holistic approach towards student outreach- this means working in partnership with local high schools and school directors. Explaining to them the project requirements, time commitments and outcomes and then spending time with students so they understand the components and commitments. 80 Students were enrolled in total (40 per location)

### Curriculum Planning

The curriculum is designed by identifying complementarity topics that provide students a practical and relevant understanding of Agroecology with a bio-centric approach. Ensure topics covered maximum principles of Agroecology and included a mix of theory and practical exercises.

### Monitoring & Evaluation

- 1- *Baseline Survey*- to capture starting point for student cohort
- 2- *Ongoing data collection*- from teachers, trainers and students through survey style forms
- 3- *Student polls*- For quick-style responses student complete polls on telegram groups set-up for the project (with consent).



**Figure 2:** Introduction to Agroecology

### Pedagogical Material:

- Powerpoint presentations
- Group work
- Practical games and exercises
- Student Presentations

## KEY TOPICS INTRODUCED

### INTRODUCTION TO AGROECOLOGY

To ensure clarity of concepts and understanding of the interconnected nature of Agroecology the first topic of training was Introduction to Agroecology adapted for High School Students. During this training they understand farmer choices for a diversified and integrated farm. Students get exposure to topics around circular economy , i.e. resources are recycled and reused to build resilient food systems.



## KEY TOPICS INTRODUCED

Practical exercises included sharing examples of other projects, using soil and soil improvement to showcase the role of traditional ecological knowledge and its importance in Agroecology practice.

### SOIL HEALTH

It all starts with soil.

This topic is engaging and practical as it introduces how soil analysis can be done in a low resources setting. Students grasp indicators for *healthy* soils and how to improve soils without chemicals.

### WILD (FOOD) PLANTS

Learning about wild food plants is essential for Agroecology systems as it supports cultural preservation, enhances nutrition and health, promotes environmental conservation, provides economic opportunities, and builds resilience to climate change. This knowledge is a key resource for sustaining both the natural environment and the well-being of Cambodian communities. Our training included: plant identification through walk-in-the-woods method, nutrition and micronutrient properties and edible parts of plants.

### AQUACULTURE

Topic chosen due to high-demand of aquaculture systems in Cambodia. This training ensures students get an over-view of healthy aquaculture systems, preparing feed for fish and frogs.

Dispelling myths that aquaculture is a high-investment, low maintenance system. Encourage students to think of integrating aquaculture system with vegetable production by circulating waste water which is rich in nutrients.

### SOCIAL BUSINESS PLANNING

Throughout the training topics consciously introduce students to examples as the final product is student groups develop their own projects. For a training dedicated to business planning we adapted the Social Business Canvas model to Agroecology. This was the last penultimate training provided to students. By this time they had become comfortable within their groups and also with the topics they had been learning.

As part of the training, students were then required to design a business plan, create a budget required for start-up/investment and running costs. Upon feedback they were guided to prepare a task list and assign tasks to each team member- as they would in a real-life situation. This was one of the most successful trainings of the curriculum.

## LEARNING SEMINARS

### TRADITIONAL ECOLOGICAL KNOWLEDGE & CLIMATE CHANGE

This was a unique opportunity for the project to partner with speakers for “add on” learning or revisiting a topic already covered in more depth. The most successful learning seminars was on Climate Change and Traditional Ecological Knowledge. Dr Courtney Work, who does research with the Kuy community spent 10 days on the project sharing her own research with students and encouraging them to learn from their *ancestors* and engage in discussion on Khmer Traditional Ecological Knowledge.



**Figure 3:** Practical Exercise to conduct soil analysis during Soil Health Training

#### ☀ Transferable Skills during **Study** part of the project:

- Group Work
- Public Speaking
- Time-keeping
- Project Planning

#### ☀ Transferable Skills during **Implementation** part of the project:

- Working with peers
- Conducting site-tours and showcasing Agroecology implementation
- Co-creating Knowledge

#### ☀ Transferable Skills during **Practice** part of the project:

- Using a Business Canvas model
- Project design and assigning team tasks
- Working in groups for long periods of time
- Taking feedback from focal person of the project
- Book keeping skills
- Basic financial reporting using cash-book
- Presenting successes of their project at closing ceremony

#### Soil Health Session

*“The most memorable moments from participating in this project were witnessing the students' eagerness to learn more about the lesson. And I hope to come back again.”*

**Royal University of Agriculture, Soil Lab**



## EXCHANGE VISITS/LEARNING DAYS

Exchange visits in agroecology offer valuable opportunities for learning, collaboration, and inspiration by allowing students, farmers, or practitioners to observe and engage with successful sustainable farming practices in different communities or regions. These visits promote hands-on learning, expose participants to new techniques and innovations, and encourage the sharing of local knowledge and experiences. They also foster peer-to-peer learning, build networks of support, and help participants adapt proven agroecological methods to their own local contexts. Ultimately, exchange visits strengthen community ties, boost confidence in sustainable practices, and inspire practical action toward more resilient and ecological food systems.

Each exchange visit organised observed a thought-out schedule to ensure maximum learning. Students were encouraged to explore the space. 40-50 minutes of class room time was organised to facilitate working in mixed groups to learn from each other. Topics for the days were decided according to the students training agenda.



## STUDENT FEEDBACK

Overall student participation and feedback has been positive.

For the purpose of this pilot program feedback was vigorously collected at all stages to understand:

- What works and what does not?
- How to improve engagement with students?
- Key-challenges and why they occur?

Mixed methodology for student feedback through:

- Agroecology Trainer observations
- Focal point teacher feedback
- Students complete training feedback and post-test

A detailed monitoring and evaluation plan for this project is available on request and can be adapted to other settings.

**“ It was so good, I could share experience with my friends at Siem Reap. My favourite part, when I visited the actual practice site, there were many crops that I needed to learn from it- Student Feedback on Exchange Visit**

### Case study : Social Business Canvas Model adapted for Agroecology

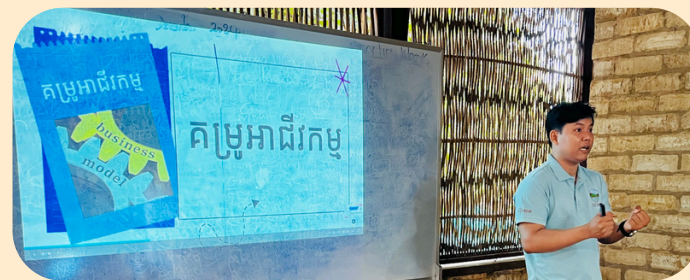


Figure 4: Best-practices for Social Business

Integrating business planning into agroecology training for high school students in Cambodia equips young people with practical skills that combine sustainable farming with entrepreneurial thinking. This approach empowers students to develop financially viable, eco-friendly farming practices, fostering rural employment and reducing urban migration. Based on examples they are familiar with, it promotes financial literacy, decision-making, and market awareness, enabling students to turn ecological knowledge into real-world opportunities.

Adapting the Social Business Canvas Model for agroecology in Cambodia involves tailoring the tool to address both social and environmental goals alongside financial sustainability. This includes defining the local agricultural challenges being addressed—such as soil degradation or youth unemployment—while identifying key beneficiaries like smallholder farmers and rural youth. The value proposition focuses on delivering ecological, economic, and social benefits through products and services such as organic produce, composting, or training. Key activities and resources are rooted in agroecological practices, supported by partnerships with schools, NGOs, and government bodies. Revenue streams may come from produce sales or training services, while the cost structure reflects inputs like tools, seeds, and educational materials. This model empowers students and entrepreneurs to build socially responsible, environmentally sustainable, and financially viable agroecology ventures tailored to Cambodia's context.

### What's next?

We currently have 11 Student business plans underway from two high schools.

- **Two groups-** mixed vegetable production
- **Four groups-** single vegetable production
- **Two groups-** fish raising
- **One group-** frog raising
- **Two groups-** mushroom growing

Guidance being provided to students to use profits to carry on the project after the grant cycle ends.



## CONCLUSION/RECOMMENDATION

The approach outlined in this practical brief demonstrates several key strengths. It emphasizes hands-on learning for Agroecology through practical training, study visits, and business planning. This holistic approach intends to equip students with real-world agroecology skills.

By aligning with local needs, the project supports Cambodia's agricultural economy while promoting sustainable and climate-resilient farming practices. Its entrepreneurial focus encourages students to develop farm-based enterprises, which can enable youth to envision new ways for running agribusinesses. Additionally, the integration of cultural and traditional knowledge reinforces sustainable food systems by building on Indigenous and local farming practices. Finally, the project includes a robust monitoring and evaluation plan that informs curriculum development, ensuring it is effective, replicable, and shareable.

Some of the risks faced while running this project were:

1- Working against a seasonal time-line and academic agenda of schools. We made the use of social messaging platforms to keep in contact and used Telegram for the purpose of broadcasting important dates.

2- Assisting students with the business planning and delivery stage. This involved a more hands on approach particularly for creating templates to do financial reporting and bookkeeping.

Future improvements to the program could focus on strengthening community collaborations by partnering with local farmers and cooperatives to provide hands-on training and mentorship. Aligning the program more closely with Cambodia's agricultural and environmental policies would enhance its support for sustainable farming and climate adaptation. Additionally, scaling the pilot curriculum to more schools and regions could broaden its impact. Expanding the network of trainers would also enrich regional learning and promote greater knowledge exchange.

## REFERENCES

**Ardoin, N. M. ; Bowers, A. W. ; Gaillard, E., 2020**

Environmental education outcomes for conservation: A systematic review, Biological Conservation, Volume 241, 2020, 108224, ISSN 0006-3207, DOI: <https://doi.org/10.1016/j.biocon.2019.108224>.

**Biovision, Agroecology Info Pool, 2023**

F-Act: Farm level agroecology criteria tool  
<https://www.agroecology-pool.org/fact/>

**Levard, L. (coord.), 2023**

Guide pour l'évaluation de l'agroécologie. Méthode pour apprécier ses effets et les conditions de son développement, GTAE-AgroParisTech- Cirad-IRD. Editions du Gret, Editions Quae

**Nelles, W. & Ferrand, P. (eds.), 2021**

Mainstreaming agro-ecology in Southeast Asian higher education for the Sustainable Development Goals: Challenges, opportunities and policy options – Policy brief #3. Bangkok, FAO & Chulalongkorn University.  
DOI: <https://doi.org/10.4060/cb8046en>

**Nicklay, J. A. ; Perrone, S. V. ; Wauters, V. M., 2023**

Becoming agroecologists: A pedagogical model to support graduate student learning and practice  
Frontiers in Sustainable Food Systems Volume 7 - 2023  
<https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2023.770862>  
DOI:10.3389/fsufs.2023.770862

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