



# Project: Resilience and Adaptation Planning for Ecosystem and Sustainable Development, RAPESD

Project Timeframe: June 2021 – November 2023

## Case Study

### CAMBODIA CLIMATE CHANGE ALLIANCE

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# BUILDING CLIMATE CHANGE RESILIENCE THROUGH SUSTAINABLE AGRICULTURAL PRACTICES IN KAMPONG THOM AND BATTAMBANG PROVINCES

Approximately 73% of households in Battambang and about 95% of the population in Kampong Thom are involved in agriculture, primarily as rice farmers. These communities face significant challenges from heavier floods and prolonged dry seasons, which have become major issues affecting farmers, food security, and exports. Climate change has exacerbated these problems, particularly during the dry paddy season from May to August, impacting crops like vegetables and fruit trees. Soil erosion and the potential loss of topsoil are additional concerns resulting from unpredictable climate patterns.

The Ministry of Environment, with support from the European Union, UNDP Cambodia, and Sweden through the Cambodia Climate Change Alliance – Phase 3 (CCA3), is collaborating with the Facilitation Association of Economy for Cooperatives (FAEC) to implement the project “Resilience and Adaptation Planning for Ecosystem and Sustainable Development (RAPESD)”. FAEC Cambodia led the RAPESD project in partnership with Husk Ventures Cambodia and the Provincial Department of Agriculture, Forestry, and Fishery (PDAFF) in Kampong Thom and Battambang provinces. This initiative aims to strengthen the resilience and sustainability of agroecosystems and ensure food and economic security for smallholders and vulnerable groups. It involves adaptation planning and training in climate-smart agricultural techniques.

Furthermore, the project offers cost-effective agricultural inputs such as carbon-based fertilizers, biochar, and natural pesticides to improve long-term soil resilience, increase yields, and enhance food security. It also explores pathways for smallholder farmers to access international carbon finance by improving the carbon content of their soil through the application of carbon-based fertilizers and other biochar-based products.

## **FAEC’s Strategic Approach to Moving Cambodia Toward Sustainable Agriculture:**

As the project implementer, FAEC received funding support from the CCA3 to execute the RAPESD project from June 2021 to November 2023. FAEC worked actively to strengthen and support farmers’ organizations in several key areas, including organizational development, women and youth empowerment in the agriculture sector, managerial structure, entrepreneurship, access to finance and markets, collective business and agricultural techniques, innovative irrigation, waste management, and environmental sustainability.





Mr Pen Sony, Executive Director of FAEC

*Mr Pen Sony, elaborated that to successfully implement the RAPESD project, “we supported farmers by providing each community with one ton of biochar fertilizer free of charge. Additionally, FAEC educated farmers about market demand for organic products, emphasizing the importance of food security and consumer preferences for organic food. Understanding the market, we required farmers to develop business plans outlining the type and quality of their products.”*

Mr Sony explained the project implementation in detail, noting that we introduced farmers to Good Agricultural Practices (GAP) and encouraged each member of the farming community to apply for a GAP certificate from the Department of Agriculture.

Once the certificate was received, the department conducted checks and monitoring to ensure that the farming practices met the required standards.

Mr Sony further elaborated that FAEC provided training to farmers on how to design their business plans using a business-to-business (B2B) approach and seek business partners to sell their agricultural products.

To achieve this objective, FAEC organized B2B workshops where each farming community could present their business plans to potential business partners, microfinance institutions, and relevant departments for feedback and collaboration. These workshops and networking activities allowed farming communities to connect with potential business partners to implement their business plans.

Mr Sony stated, “Despite securing business partners after the workshop, farmers still faced challenges regarding financial resources needed to implement their business plans. To address these challenges, FAEC invited microfinance institutions to participate in the workshops to offer financial support for viable business plans. As a result, the project enabled FAEC to shift farmers’ practices to align with market standards and consumer demands. Farmers were motivated to avoid chemical fertilizers, as customers were less likely to purchase crops treated with them.”



## FAEC's B2B Training: Equipping Farmers to Develop Business Plans and Secure Market Partnerships

### Step 1: B2B Workshops



*FAEC organized B2B workshops where each farming community could present their business plans to potential business partners, microfinance institutions, and relevant departments for feedback and collaboration.*

- Present business plans
- Feedback and collaboration
- Networking opportunities

### Step 2: Business Network



- Farming communities connect with business partners for collaboration and support

### Step 3: Challenges Identified



- Farming communities face difficulty in securing financial resources
- Need for additional financial support

### Step 4: FAEC's Response



- Invited microfinance institutions to workshops
- Microfinance institutions provide financial support for viable business plans

### Step 5: Results



- Farming communities shift in practices to align with market standards and consumer demands
- Avoidance of chemical fertilizers





## Cambodia Toward Carbon-Based Fertilizers

To achieve cost-effective agricultural inputs, including carbon-based fertilizers, biochar, and natural pesticides, and to improve long-term soil resilience, increase yields, and enhance food security, FAEC has partnered with Husk Ventures. This collaboration supports farmers' livelihoods by providing training on biochar-based products to regenerate soils, boost yields, and capture carbon.

Husk Ventures in Cambodia transforms rice husk into biochar using pyrolysis, tackling environmental and agricultural issues. This sustainable method renews the traditional application of biochar to align with modern agricultural needs. By sequestering carbon in biochar for over a century, this process adds value to discarded rice husks, decreases dependence on chemical fertilizers, and improves soil quality through better water retention, increased nutrient availability, and filtration of harmful substances. Biochar is pivotal in revitalizing depleted soils and rehabilitating ecosystems. Husk's initiatives showcase substantial resource circularity and efficiency.

*Mr Vin Samea, explained that “carbon-based fertilizers are recognized as an intelligent choice for small-scale farmers because they enable increased yields while ensuring safety for human health, soil regeneration, and the environment by avoiding CO<sub>2</sub>eq emissions.”*



Mr Vin Samea, Senior Program and Stakeholder Manager at Husk Ventures

Mr Samea further elaborated on the significance of carbon-based fertilizers, noting that they help reduce GHG emissions by capturing carbon in the soil, thereby preventing it from negatively affecting the environment and human health.

Biochar is a carbon-rich material that is made from biomass through a thermochemical conversion process known as pyrolysis. Mr Samea emphasized that “Husk Ventures Cambodia provides biochar fertilizer, which is produced from rice husks and feedstock waste because rice husks contain significant carbon content, enhancing the production of environmentally friendly fertilizer that improves soil fertility and promotes plant growth. Importantly, it helps restore soil quality damaged by chemical fertilizers, making soil fertility healthier.”





In the RAPESD project, Husk Ventures provided training to farmers in seven communities in Battambang and three communities in Kampong Thom province. To enhance climate-smart agricultural techniques, Husk Ventures trained community representatives in key sustainable agriculture approaches and facilitated knowledge sharing through Agricultural Cooperatives (ACs) among communities.

Mr Samea stated that during the training, farmers had the opportunity to visit a farm model called the “Demo Farm Visit” to fully comprehend and appreciate the benefits of biochar fertilizer. Additionally, the training fostered networking opportunities among farmers, aiming to explore further beneficial agricultural practices.

Furthermore, Husk Ventures educated farmers on the importance of agricultural product quality for market acceptance, noting that most supermarkets and customers now prefer organic agricultural products.

In addition to the training, Mr Samea elaborated that Husk Ventures implemented the “Super Farmers Network,” which provides more opportunities for women to earn income and promote organic fertilizers in their communities by serving as Husk brand ambassadors. The Super Farmers Network has helped educate community members about biochar fertilizer use and raised awareness about

climate change caused by GHG emissions from chemical fertilizers. Currently, Husk Ventures has 130 women actively working in the Super Farmers Network.



*Ms Mao Sokuntheavy, a farmer in Battambang City*

*Ms Mao Sokuntheavy, explained, “I have joined the Super Farmers Network because I am passionate about advocating for organic farming practices using biochar fertilizers within my family and community. I earn a commission of around 2,000 riels (0.5 cents) per bag sold. However, despite my efforts, many farmers are reluctant to switch from chemical fertilizers due to their preference for quick crop yields for market sale.”*





## Challenges of Carbon-Based Fertilizer Acceptance for Farmers:



*Ms Vann Channa,  
a farmer in Battambang City*



*Ms Soeun Lai Y,  
a cashew farmer in Kampong Thom  
province*



*Ms Mao Sokuntheavy,  
a farmer in Battambang City*

**Ms Vann Channa**, a farmer in Battambang City, mentioned that “agriculture in our community encounters various challenges, particularly concerning technical skills and agricultural knowledge. Additionally, farmers face issues such as inconsistent market supply when crops are available and extreme weather conditions, including heavy rain and drought.”

Ms Channa stated that many farmers prefer chemical fertilizers because they quickly boost crop yields, helping them meet market demand and earn more income. While biochar fertilizers can healthily nourish crops, their productivity is slower in the initial years compared to chemical fertilizers. Furthermore, there are various brands of chemical fertilizers available at lower prices for farmers. As a result, farmers struggle to meet market standards, such as GAP or organic product requirements.

As a member of an agricultural cooperative, Ms Channa has attempted to promote the benefits and significance of biochar fertilizers. However, only a small number of farmers are willing to try it, while others are waiting to observe the results. With the support of HUSK Cambodia, we conduct training to educate farmers on using fertilizers to meet GAP standards. Despite these efforts, we have only managed to change the practices of a few farmers so far.

**Ms Soeun Lai Y**, a cashew farmer in Kampong Thom province, reported, “I have been part of the Husk Super Farmers Network because this initiative allows me to earn extra income by promoting carbon-based fertilizers in my community.”

However, Ms Lai Y shared that encouraging farmers to adopt biochar products is challenging due to their relatively higher cost compared to cheaper chemical fertilizers, which also result in faster crop growth. In Kampong Thom province, farmers have traditionally used chemical fertilizers, which degrade soil quality.

**Ms Mao Sokuntheavy**, a farmer in Battambang City, shared her experience with agriculture, noting that she previously used chemical fertilizers for her crops and faced challenges with soil quality and pests. However, after switching to biochar fertilizers, she observed significant improvements in soil quality and increased carbon absorption, resulting in enhanced soil fertility.

Ms Sokuntheavy explained, “I also attended training sessions on the benefits of biochar fertilizers and climate change, which helped me understand the impact of chemical fertilizers on soil fertility, crops, human health, and the environment.”



Mr Pen Sony noted that during the project implementation, they faced challenges due to the communities' initial reluctance, as the project was new to them. Transitioning farmers from chemical fertilizers to biochar fertilizers was particularly difficult due to their long-standing use of chemical options. Although they are aware of the negative effects of chemical fertilizers, such as soil degradation and reduced yields over time, they continue to use them because of their convenience.

However, Mr Sony highlighted the project's broader impact on the communities. While not all farmers were willing to participate, those who did began working collectively and adhering to organic standards, with some engaging in contract farming. They established yearly and monthly working calendars and transparently shared financial reports among members. Regular meetings with commune authorities helped address farming challenges and fostered good relationships with local officials.

Mr Sony added, "We also observed increased participation from women and youth in agriculture. The introduction of the business plan encouraged older farmers to involve their younger family members, enhancing overall engagement in the project."

This includes 417 households from ID-poor backgrounds and 696 households headed by women. These farmers were effectively reached through a multifaceted approach that involved mobilizing youth and women climate ambassadors, mentorship of model farmers, training of trainers, conducting on-site field visits, and collaboratively developing business plans within the cooperatives.

Additionally, the project has conducted training sessions on climate change resilience for 13 cooperatives in selected provinces, with a total participation of 138 farmers, including 76 females. This training aimed to enhance smallholder farmers' knowledge and skills in climate-smart agriculture practices, enabling them to actively participate in planning for economic and agro-ecosystem sustainability.

The RAPESD project has had a significant impact, reaching over 60,000 individuals. Its primary focus has been on farmers aged between 25 and 44, who have received comprehensive knowledge about carbon-based fertilizers through targeted online outreach and promotional efforts. These activities have profoundly influenced agricultural practices in the provinces of Battambang, Banteay Meanchey, Siem Reap, Kandal, and Phnom Penh, contributing to sustainable development in these regions.

The project's scale-up plan aims to enhance the technical skills of smallholder women, men, and young farmers to produce biochar and process biomass using thermal heat from pyrolysis for on-farm drying. This circular farming approach seeks to optimize residue utilization by converting biomass into biochar, thereby boosting yields, improving soil health, and reducing input costs. Additionally, it aims to facilitate their access to international carbon markets to enhance their economic value.

13 CLIMATE ACTION



## Project Key Milestone of the RAPESD Project:

As a result of the RAPESD project, 2,786 smallholder farmers who are members of 13 agricultural cooperatives in Battambang and Kampong Thom, Cambodia have been actively engaged.





Moreover, the project seeks to implement climate-friendly and gender-inclusive agribusiness practices that prioritize credible, inclusive, and gender-responsive governance, finance, investment, and market solutions for sustainable rural livelihoods and environmental conservation. These planned initiatives will be executed in collaboration with farmers' organizations, including vulnerable groups, indigenous communities, and community-protected areas across various provinces of Cambodia.



## CAMBODIA CLIMATE CHANGE ALLIANCE - PHASE 3 (CCCA 3)

The Cambodia Climate Change Alliance (CCCA)-Phase III builds on the achievements of the first and second phase (2010-2014, 2014-19) and provides a unified engagement point to pool resources for the mainstreaming of climate change in national and sub-national policies and programmes. CCCA is a joint initiative of the Royal Government of Cambodia and a partnership between UNDP, the European Union and the Swedish Government. It is implemented by the National Council for Sustainable Development (NCS) and managed by its Department of Climate Change to address climate change in Cambodia.

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