

# Climate-Smart Agriculture in Southeast Asia NOTES

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RESEARCH PROGRAM ON  
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**Joint assessment in  
Vietnam to inform  
future climate-smart  
agriculture investments**



The assessment team interviewing a farmer in the SCC. The rapid joint assessment team comprised local experts and researchers working in Vietnam.

# Joint assessment in Vietnam to inform future climate-smart agriculture investments

by Amy Cruz (CCAFS-ICRAF)

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**CGIAR centers and partners in Vietnam have assessed climate issues in the South Central Coast and are guiding investments in climate-smart agriculture.**

Climate change is both a challenge and opportunity for communities in Southeast Asia, especially the smallholder farmers across the different countries. Sustainable development and resilience to changes in the climate need to be based on the introduction and adoption of innovative climate-smart agriculture (CSA) solutions at the appropriate scales.

In Vietnam, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has been working with other CGIAR

centers, international research and development organizations and national institutions to respond to the climate challenges in the country's regions. Rapid assessments have been conducted in the provinces severely affected by drought and salinity intrusion in 2015 and 2016.

## **"The driest area in Vietnam"**

The South Central Coast (SCC) in Vietnam has experienced drought each year, but impacts in the region were especially severe during the 2015-2016 dry season. The provinces of Khanh Hoa, Ninh Thuan and Binh Thuan were particularly affected. Water levels in the reservoirs in Khanh Hoa were reduced by 50%, while Binh Thuan reservoirs saw 60% reductions and Ninh Thuan 75%.

This does not bode well for the communities as water for agricultural and domestic use is mainly sourced from the reservoirs. About 23,000 ha of rice fields in the three provinces were left as fallow, and 32,000 households in Ninh Thuan and Binh Thuan were affected due to the severe drought. "In light of the increasing negative impacts of climate change, identifying appropriate solutions for agricultural production of the region is an urgent requirement," notes the joint assessment team for the SCC.

CSA options should be identified and incorporated into the short-, medium-, and long-term action plans for the region. In this regard, DCP and CCAFS had organized a rapid assessment of the SCC, to analyze the challenges and opportunities in the region, as well as provide technical recommendations to MARD.

## Impacts of climate change in the SCC

The rapid joint assessment team comprised local experts from DCP, MARD and the Agricultural Science Institute for Southern Central Region of Vietnam (ASISOV), as well as researchers from the International Rice Research Institute (IRRI), World Agroforestry Centre (ICRAF), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Water Management Institute (IWMI) and Center for Agriculture and Biosciences International (CABI).

Between 1 and 5 April 2017, the members of the team visited select districts in Khanh Hoa, Ninh Thuan and Binh Thuan provinces. They conducted field observations, key informant interviews with provincial and district-level government officials, and interviews with farming households and local government representatives.

Many farmers in the lowlands, which is the rice production area, still use too much water for farming, poorly balance fertilizer inputs and apply substantial amounts of pesticides. Limited groundwater sources in the coastal areas result in over-extraction of ground and surface water, and salinity intrusion. On the other hand, the hilly areas experience soil erosion and flooding due to the generally low vegetation cover in the region.

Farmers also have to deal with either heavy rainfall, flooding or severe drought during the peak crop growth stages. All these factors ultimately affect crop productivity and the livelihoods of these smallholders.

## Opportunities for CSA in the SCC

As discussed in the assessment report, agricultural water management should be the main focus of CSA options because the SCC region mainly experiences the effects of climate change in terms of water-related issues.

The assessment team suggested the following seven actions: (1) agricultural drought mapping; (2) development of a more effective water-resource infrastructure; (3) increased nutrient and water productivity through improved agronomic practices; (4) strengthening water users groups; (5) promotion of agricultural diversification with crops suitable to the drought conditions; (6) improvement of watershed and agroforestry area management; and (7) development of an integrated systems master plan for adaptation in each of the provinces and the region as a whole.

“Given the region’s exposure to natural hazards, a piecemeal approach is unlikely to have the desired effect,” the team puts it in the report.

If managed correctly (and not in a piecemeal approach), the integrated solutions would not only help the agricultural sector adapt to climate change, but also to transform it towards increased productivity and sustainability.

These recommendations should be considered in formulating the policies and regulations, especially those regarding crop diversification, land use plans, irrigation policies and loans. These can also inform the development of incentives for implementing innovative technologies and practices, and investment prioritization and capacity development initiatives.

The team also recommended that the outputs of historic and ongoing collaborations among CGIAR, other international and local institutions have helped Vietnam respond to the needs of the different regions, and the country as a whole. Such partnerships are important in increasing the uptake of CSA, for the improvement of farmers’ livelihoods and resilience to climate change.



One of the sites visited during the assessment in the SCC. The region experiences drought, which is one of the main issues to be addressed.



A plant assistant of Plant Clinic in Rohal Suong is recently recruited as an agricultural extension worker for her commune. Women can help reach more sectors in the communities.

## Working with women farmers to make Cambodian communities “Plantwise”

by Dyna Eam (WorldFish)

### Greater involvement of women in plant clinics has improved the climate resilience of the farmers in Rohal Suong village, Cambodia.

Women farmers play a critical role in agricultural production and food security, as well as household welfare in most Southeast Asian countries. According to a Census of Agriculture in Cambodia in 2013, of the 82% of Cambodians engaged in the agriculture sector, at least half of them were women.

Female youth and women, however, have limited access to education, agricultural extension services and social events, as they often have low education backgrounds, and are frequently busy with household activities and other unpaid work. They are historically underrepresented in agriculture decision-making and community leadership as well.

Agricultural development projects are now seeking to increase women’s involvement. The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), aims to improve gender equality and women farmers’ decision-making in agriculture through the establishment of Climate-Smart Villages (CSVs). Rohal Suong Village in Battambang, Cambodia is one of the six CSVs in Southeast Asia.

As such, the Rohal Suong CSV has emphasized the inclusion of women farmers in its activities

and strategies, such as the Plant Clinic. Operating since June 2016, it is a meeting place where plant advisors and assistants help farmers who are faced with issues of plant pests and diseases. The Clinic has been supported by WorldFish and Center for Agriculture and Bioscience International Southeast Asia (CABI-SEA). Plant advisors and assistants, who are trained through CABI’s Plantwise program, provide diagnoses, treatment advice and recommendations to farmers. Women farmers are encouraged to join the program.

The Plant Clinic is currently led by plant advisors from Battambang Provincial Department of Agriculture and Aphivat Strey (AS), a local NGO, and supported by plant assistants. Plant assistants who are recruited from local farmers play an important role in engaging local farmers to bring their crop issues to the clinic and also in following up with client farmers.

One woman farmer, Ms Savet, was recruited to join the Plant Clinic as a plant assistant. Through her involvement in the project, she has learned several things, such as plant disease identification, plant treatment, and community engagement. She has also had more opportunities to work closely with other community committees and to deliver services to local farmers, particularly other women. Ms Savet was not only able to help local farmers to improve their plant management technique, but has also applied the techniques and treatment methods she learned on her own farm.

"I am so happy to work as a plant assistant because I have learned many things about plant disease, pest and treatment methods from the plant advisers and trainings, such as training in Phnom Penh. Now I can provide the advice on some plant diseases to my villagers," said Ms Savet.

As a result of her experience in the project, Ms Savet has been recruited as an agricultural extension worker for her commune. Now, she is organizing groups of community members for an agricultural demonstration project run by the Battambang Provincial Department of Agriculture, Forestry and Fisheries, and the Agriculture Services Programme for Innovation Resilience and Extension (ASPIRE). ASPIRE is a program of the Ministry of Agriculture, Forestry, and Fisheries, and is funded by the International Fund for Agricultural Development.

"I thought that I was recruited as a commune extension worker because I could answer well the questions from examination committees, actually this knowledge came from my experiences at Plant Clinic," added Ms Savet.

She is now trying to understand the common and different needs of women and men farmers in agriculture. Ms Savet is keen to learn more about agricultural technologies and extension service methods, and to transfer her knowledge to her villagers.

Engaging local farmers through the Plant Clinic and extension work is an approach that has helped to successfully build local farmers' capacities and also help local farmers, particularly women farmers, to get better access to agricultural services. In doing so, the project has helped improve the livelihoods of farming households and increase the resilience of agriculture-dependent communities.



Training and field practices on rice pest and diseases provided by Cambodia's General Directorate of Agriculture and CABI's Plantwise program. Women farmers join the program.

Photo: Dyna Eam (WorldFish)



Photo: B. Joven (CCAFS)

Mr Louie Tabing, a Filipino rural broadcaster, during an interview in Ma CSV. Tabing is the president of the Philippine Federation of Rural Broadcasters, which has a radio campaign on climate change and agriculture.

## Vietnamese farmers, media share their climate-smart agriculture experiences with Filipino broadcasters

by Amy Cruz (CCAFS-ICRAF)

**Farming communities and media practitioners in Vietnam share their experiences on climate-smart agriculture with visiting rural broadcasters from the Philippines.**

Rural communities in Southeast Asia largely depend on the climate; however climate change is posing a number of challenges to their productivity, livelihoods and food security. Communities could better adapt to the negative impacts of climate change, if they are provided with the information necessary to address the issues.

Rural broadcasters, who serve as information conduits to farmers, therefore have an important role in raising awareness and understanding regarding climate change and climate-smart agriculture (CSA). The Food and Agriculture Organization defines CSA based on the three pillars of improved food security, climate change adaptation and mitigation.

A team of seven rural broadcasters from the Philippines visited communities and demonstration sites of different CSA practices and technologies in Vietnam from 27 March to 3 April 2017. Aside from learning about the best practices in CSA in Vietnam, the Filipino broadcasters would be interacting with farming communities, thus giving the broadcasters a broader perspective of CSA.

One of the highlights of their trip was the visit to the Ma Climate-Smart Village (CSV) in Yen Bai province of Vietnam. One of the six CSVs under the CGIAR Research Program on Climate Change, Agriculture and Food Security in Southeast Asia (CCAFS SEA), Ma CSV is a testing center for different CSA practices and technologies that could also be implemented in other areas. Some of the practices showcased in the village are vermiculture and composting, living bed technology and advanced livestock management practices, and the loud speakers which service as the village information system.

In Soc Son district, the group heard from the farmers and management board of the Thanh Xuan Organic Vegetable Farmers' Cooperative how they switched to organic vegetable farming, which has increased their incomes by more than seven to eight times, compared to their previous practice of rice production. Other demonstration sites the group visited included the fish pond and livestock system in Soc Son, the lychee/longan model in Bac Ninh and the CSA models of Cuu Long Rice Research Institute in southern Vietnam.

I am very impressed by what I see in this village about how people are adopting technology that is related to improving their income... and taking care of the environment. It is almost the same thing... Quite a lot of parallels, likeness between the situation in Vietnam and the Philippines," PFRB Chairman Mr Louie Tabing commented during an interview with the local press.

The Filipino group also had the opportunity to exchange experiences on broadcasting climate change and related issues with Vietnamese media practitioners. It is hoped that this trip would help broadcasters better amplify their learning on CSA and CSV concepts among their audiences.

Cross-learning events have proven to be effective in sharing information on CSA practices and

technologies, especially among CSVs in Southeast Asia. CCAFS SEA has supported a number of roving workshops and cross-visits with selected farmers and local government officials from Vietnam, Cambodia, Laos and the Philippines.

This educational trip was an incentive for the outstanding broadcasters who participated in a CSA information campaign in the Philippines. The three broadcasters who were awarded during the trip were Regional Agriculture and Fisheries Information Division Chief Dr Kadiguia Abdullah of DXMS (Cotobato, southern Philippines); Ms Gloria Parong of DZWM (La Union, northern Philippines), Aksyon Radio and DZNL; and Ms Ronald Omang of DYVL (Tacloban, central Philippines). PFRB Chairman Tabing, PFRB President Mr Rogelio Matalang, campaign manager Ms Cherrie Lyn Masicat, and Ms Salembai Abdullah of DXMS Cotobato City also joined the field trip in Vietnam.

The said campaign was held across the country in 2016 by the Philippine Federation of Rural Broadcasters, and was supported by CCAFS SEA. A set of 156 ready-to-air interviews and 165 scripts in five local languages in the Philippines were distributed to 153 rural broadcasters. At least 63 radio stations used the prepared materials, which reached about two million listeners (estimated based on radio station listenership).

According to Dr Leocadio Sebastian, regional program leader of CCAFS SEA, this climate information campaign would continue in the Philippines. In the future, they will pick another batch of outstanding climate-smart broadcasters who would have the opportunity to go on a similar educational trip. All these activities seek to improve communication of climate change to rural communities.



A demonstration of the vermiculture in Ma CSV during an interview with the media. This is just one of the many climate-smart practices showcased in the CSV.

Photo: B. Joven (CCAFS)



Louie Tabing of PFRB explains how they use radio to broadcast information on climate change to farmers. Such sessions help the participants identify practices which could work in their respective countries.

## Sharing experiences on climate information services to help decision-making in agriculture

by Amy Cruz (CAAFS-ICRAF)

Climate information services are seen as vital to the decision-making process in agriculture. Knowledge sharing events facilitate cross-learning and collaboration.

When should farmers plant which types of crops during a specific season? What would be the best management practices to adopt? When should fisherfolks go out to sea? While these are some of the basic questions the agriculture sector should address, these depend largely on the available climate information. Aside from distributing accurate information, climate information services (CIS) should provide advisories and forecasts that are easily understood by the end-users, which include the farmers and agricultural extensionists.

"CIS is vital to the agriculture and fisheries sector... Translating such information into easily understandable advisories will guide farmers and fisherfolk. Localized climate information is a necessity," said Mr Leroy Panes, Assistant Secretary of the Philippine Department of Agriculture.

Member states of the Association of Southeast Asian Nations (ASEAN) rely on a number of practices and technologies for accurate climate information. For example, in Vietnam, a community-based system was established in My Loi Climate-Smart Village of Ha Tinh province for providing agricultural advisories and weather forecasts to farmers. This is supported by the

CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS) in Southeast Asia.

Another team is working on developing risk maps for the climate-sensitive zoonotic diseases (i.e. diseases that can spread across species, such as Japanese encephalitis, leptospirosis and aflatoxins) in Vietnam. Also supported by CCAFS, the Philippine Federation of Rural Broadcasters (PFRB) uses radio to broadcast programs and spots on climate change and climate-smart agriculture.

Such technical solutions for providing climate information to farmers are welcome; however these should also be supported by institutional and political frameworks. Institutional support would help to bring these services to scale and encourage the wider application of the information in all stages of the agricultural value-chains.

The Philippines, Thailand and Vietnam have experiences in including CIS in their National Adaptation Plans (NAPs). NAPs, which identify adaptation strategies for countries, could provide the framework for planning and providing services to communities.

These experiences, including other initiatives for promoting CIS, were shared during a Knowledge Exchange Event for ASEAN member states, held on 21-23 March 2017 in Cebu, Philippines. Representatives from the respective ministries of agriculture, ministries of environment and hydrological institutes participated in the event. Development partners and civil society organizations involved in the generation and provision of CIS in agriculture were also invited.

Hosted by the Department of Agriculture of the Philippines, the knowledge exchange event was organized by the ASEAN Climate Resilience Network (ASEAN-CRN) and supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the Food and Agriculture Organization (FAO) and CCAFS.

During the event, the participants were able to discuss different initiatives for generating and providing CIS to the agricultural sector. Marketplace sessions were held and presentations given on the role of CIS in agricultural productivity, market access, financial inclusion, risk management and gender inclusion. Sessions for group work provided participants with the opportunity to develop actionable country plans for improving CIS in agriculture. They also identified activities for supporting CIS initiatives across the ASEAN member states. Representatives from the Philippines, Thailand and Vietnam shared how their respective

countries made institutional arrangements for CIS and how CIS is promoted in the NAP process.

“We hope that this knowledge exchange event could identify policy interventions and institutional frameworks for increasing investment, technologies and management systems to support CIS for agriculture as well as activities for regional collaboration in ASEAN,” said Dr Margaret Yoovatana, Senior Policy and Planning Specialist of the Thailand Department of Agriculture.

Participants also visited Ormoc City in the nearby Leyte province to see one of the many communities which are a part of the Philippines' Climate Resiliency Field Schools. They exchanged their experiences and thoughts on the effective provision and use of CIS. Communities in Ormoc are supported by the Rice Watch and Action Network and the local government unit in pushing for climate-informed, sustainable and resilient agriculture.

After seeing how the Ormoc farmers work together in using CIS to make informed decisions, Ms Tran Thanh Thuy of the Vietnam Institute of Meteorology, Hydrology and Environment commented that they are looking to bring Vietnamese farmers to Ormoc. She believes the farmers can learn more on downscaling CIS from the Philippines' model.



Photo: GIZ

During the marketplace sessions. The event aims to generate actionable learnings and collaboration which participants can use to promote the effective provision of climate information services for agriculture in ASEAN.



Photo: Minh Tuan Duong/ICRAF

Mr Thai from the My Loi CSV explains to other CSV leaders how he writes the temperature and rainfall records for the other villagers to see. This is essential for providing accurate climate information to the farmers.

## Farmers, agricultural advisors need more detailed, area-specific climate information for climate-smart farming

by Amy Cruz (CCAFS-ICRAF)

### Climate and weather forecasts all have their strengths and limitations that farmers and agricultural advisors need to be aware of.

Farmers rely on experience and weather forecasts to make decisions for their farm managements. Although a number of organizations and agencies offer agro-climatic information, many lack the details to be useful for farmers. Over 95% of 400 interviewed farmers in Dien Bien and Ha Tinh province of Vietnam get weather forecasts from the provincial television, which are often given with a few days of lead time and may not cover the geographic variations in upland areas.

There is therefore a need to improve climate services and forecasts in a bid to help farmers improve their productivity and respond proactively to changes in the climate. Their previous experiences would prove to be an inaccurate source of information for decision-making of farmers, especially in the light of climate change. Relying on daily observations of the weather would also not provide them enough lead time to implement appropriate adaptive and mitigating measures.

Improved daily weather forecasts would help them identify which management practices to implement, while seasonal forecasts and agro-advisories inform farmers which crops could be planted during a specific period of time. However, such services would cost money to establish and maintain.

Researchers from the World Agroforestry Centre (ICRAF) and CARE Vietnam surveyed 400 male and female farmers in Ha Tinh province to find out whether they would be willing to pay for more

detailed, area-specific climate information. This study was done as a part of the project, Using Information to Enhance the Adaptive Capacity of Women and Ethnic Minorities in Southeast Asia, under the CGIAR Research Program on Climate Change, Agriculture and Food Security.

“Sixty percent of the farmers said they were willing to pay for seasonal weather forecasts that included agricultural advice. But when asked how much, only half of them were prepared to pay up to USD 1 a month,” according to Elisabeth Simelton, an ICRAF scientist. So, as more and more farmers have access to internet and smartphones, could farmers use free online services, such as AccuWeather, Windyty, or even that of the national meteorological office?

For two months, the research team compared the forecasts from AccuWeather, Windyty and the National Hydrometeorological Service (NHMS) against the actual weather observations in My Loi climate-smart village, Ha Tinh province. They found that temperature forecasts were generally under-predicted, and that forecasts in general became less trustworthy after only two days’ lead time.

As no single source could sufficiently forecast all weather aspects at all given lead times, it is important to communicate to communities and other information users, including agricultural advisors, the limitations and uncertainties of these forecasts. As studied, it would have to be identified which services would be accurate for forecasting rainfall and temperature (both during normal conditions and during extreme weather conditions such as drought) would be especially helpful in the decision-making of farmers. Researchers and other organizations can help in this respect.

# Farmers in Ma Village to lead in outscaling climate-smart agriculture

by Bernadette Joven  
(IRRI and CCAFS SEA)



Mr. Tran Van Dai shows, through his photos, the value of growing and processing forage as feed for his cattle over the traditional practice of free-range.

**Farmers in Ma Village set out to form a communication group to spread the climate-smart agriculture approach in villages across Yen Bai province.**

VIETNAM—Farmers in Ma Village in Yen Bai province, Hanoi agreed to take on the task of disseminating climate-smart agriculture (CSA) information to other farmers within and beyond their village through a communication group. This was the consensus among the 16 farmers who participated in the Photovoice project which was implemented in Ma Village on October-December 2016, with support from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

The Photovoice, *Tiếng nói qua ảnh* in Vietnamese, is a tool that allows people to identify local issues and problems and work for solutions, and communicate these through images and photos. It is a participatory action research where participants reflect and document on community needs visually, promote dialogue, and reach policymakers toward village improvement.

“We can establish a group here at Ma, through the agriculture extension office, so we can visit and interact with other villages and share with them the climate-smart practices that we are implementing here at Ma,” said Au Thi Thanh, a

Photovoice participant, during the post-activity assessment of the Photovoice project.

Ma Village is selected as one of the three Climate-Smart Villages (CSVs) across Vietnam under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) due to its vulnerability to specific climate challenges like drought, cold snaps, and declining soil fertility.

The climate variability affects its 197 households, of which 75% depend largely on farming upland crops (e.g. maize, cassava, tea, etc.), forestry and agroforestry, rice crops, and other agriculture-based livelihoods. Thus, it is paramount that farmers are provided with relevant CSA information to better adapt to climate change impacts, take part in reducing greenhouse gas emissions in their farming systems and ensure a food-secure future.

Under the CCAFS program, the International Center for Tropical Agriculture (CIAT) has been leading the testing and implementation of CSA practices and technologies in Ma Village since 2013. The CCAFS program is being hosted by the International Rice Research Institute (IRRI) in Southeast Asia.

The Photovoice project implemented a series of workshops which culminated to a village exhibit with dialogue, where village people, leaders of other villages and officials from the Department



Through the Photovoice project, farmers were able to raise their issues and potential solutions to government officials. Here, a farmer-participant presents his exhibit and story to a government official.

Photo: B. Joven (CCAFS)

of Agriculture and Rural Development (DARD) in Yen Bai participated.

Ms. Au Hong Nhat explained that during the exhibit, she was able to introduce her business and the living bed concept. Photo: Bernadette Joven (CCAFS SEA/IRRI)

The event paved the way for meaningful discussion and interaction, and important outcomes manifested. "When I meet some friends and they mention the Photovoice, I take that opportunity to explain the climate change adaptation practices that I'm applying in the village," said Mr. Ha Van Duc.

Ms. Au Hong Nhat explained that during the exhibit, she was able to introduce her business and the living bed concept. The living bed makes use of saw dust, rice husks, and decomposing microorganisms (EM) as floor cover in poultry raising; chicken manure mixed with the living bed turned into compost that is used as crop fertilizer.

Some participants explained that farmers in their village and from neighboring villages now come to them to ask about specific CSA practices (e.g. vermiculture, living bed) that they use so that they too could apply them.

These were some inspiring stories which served as an impetus to the soon-to-be-formed Ma CSV communication group. The Photovoice farmers will further discuss the facets and nuances in forming the communication group and develop a work plan for the current year.

Mr. Nguyen Van Tam, leader of Ma Village, raised an important issue that will be included in the agenda: "The activity should be done on more villages to have a broader participation."

To this, the leaders of the neighboring villages concurred.



Ms. Au Hong Nhat explained that during the exhibit, she was able to introduce her business and the living bed concept.

Photo: B. Joven (CCAFS)



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## Climate-Smart Agriculture in Southeast Asia

# NOTES

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### Editorial Team

Eisen Bernardo ([e.bernardo@irri.org](mailto:e.bernardo@irri.org))

Amy Cruz ([a.c.cruz@cgiar.org](mailto:a.c.cruz@cgiar.org))

Bernadette Joven ([b.joven@irri.org](mailto:b.joven@irri.org))

### Editorial Adviser

Leocadio S. Sebastian ([l.sebastian@irri.org](mailto:l.sebastian@irri.org))

### CCAFS SEA Regional Office

International Rice Research Institute Vietnam Office

Agricultural Genetics Institute

Km 2, Pham Van Dong Street, North Tu Liem District, Hanoi, Vietnam



Photo by Georgina Smith, CIAT