END OF PROJECT REPORT

JAN 2011 - JUNE 2013

THE PURPOSE OF THIS END OF PROJECT REPORT IS TO DESCRIBE THE FINAL RESULTS OF THE MACBETH PROJECT AGAINST MILESTONES AND THE BROADER GOALS OF THE PROJECT.

Project Name:	**STDF PG 326 – A Southeast Asian Partnership to Build Trade Capacity for Fresh and Processed Fruit and Vegetable Products [Co-branded as: "Market Access through Competency Based Education and Training in Horticulture (MACBETH)"]**		
Executing Agency:	**Michigan State University**	Project supervisor:	**Daniel C. Clay**
PROJECT DESCRIPTION:	Michigan State University in partnership with academic, government and private partners implemented this project focused on building trade capacity for fresh and processed fruit and vegetable products in two key Southeast Asian countries – Thailand and Vietnam. The project delivered capacity building using a combination of traditional face-to-face instruction as well as highly-scalable internet-based eLearning. These technical assistance efforts were designed to improve food safety and SPS compliance of target producers and processors to facilitate improved market access. The MACBETH team is please to report that all of the specific project deliverables identified in the STDF contract described in the initial project proposal were completed. The overarching goals and related deliverables are summarized here below.		
Project Start Date:	**1 January 2011 (Contract start date)**	Project End Date:	**June 30, 2013 (extended by 6 months)**

Budget execution:

Budget execution results is reported in detail under the financial report section

GENERAL END OF PROJECT REPORTING IS PROVIDED IN THE FOLLOWING TABLES:

A. OVERARCHING ACHIEVEMENTS:

Together with industry partners, government units and private sector suppliers, the project developed and tested key components of a harmonized, competency-based educational platform on food safety measures for fruits and vegetables value chains targeted at supplier, manufacturer and primary production levels. In partnership with local experts, the project team members adapted generic educational content and learning materials to make them available in local languages and more appropriate for local cultural norms and practices. All localized materials were pilot tested and refined prior to formal launch of training programs in Thailand and Vietnam. Project partners in Thailand and Vietnam launched web sites to disseminate this

localized educational content to stakeholders as open educational resources.

The project launched materials for improvement of food safety compliance for trainers and the industry in both Thailand and Vietnam. The project also fostered cooperation among stakeholders in various sectors of the food industry (producers, processors, suppliers, retailers, exporters, etc.), institutional partners, and government units in the application of the materials to bolster capacity of value chain actors to meet applicable standards. The project deployed internet-based eLearning solutions to provide a scalable platform for potentially reaching thousands of stakeholders. Participants in capacity building programs were strategically linked to potential high-value market opportunities within the project countries (Vietnam and Thailand) and export destinations. Ultimately, the harmonized, competency-based curricula/learning modules and materials were adapted for local conditions institutionalized through implementing partners (key universities and other training organizations). Lead trainers were identified and trained in use of materials for improved food safety and SPS management. Internet-based eLearning platforms were also made available to institutional partners for sustainability of capacity building efforts.

The key project partners in Thailand (Kasetsart University) and Vietnam (Can Tho University) cooperated extensively throughout the project implementation period. This included mutual visits of project staff to their counterpart institutions, site visits in each country to compare production and processing methods, and sharing of training materials. It is anticipated that this cooperation will continue and expand beyond the end of the STDF-funded project.

As MACBETH activities come to an end, the sustainability of MACBETH-led activities will be transitioned to the follow-on programs that will be implemented by local academic partners in Vietnam and Thailand that are deeply committed to raising their respective country's capacity in food safety and SPS related areas.

This report is supplemented by a set of project deliverables (reports and other materials) that can be made available on the STDF web site. Several of these activities and deliverables are summarized below.

B. SPECIFIC MACBETH PROJECT ACCOMPLISHMENTS

Component 1 – DESIGN

Start –Up

Project start-up steps included initial administrative actions including contracting and financial arrangements as well as key steps on the technical side (development of work plans, finalization of partner staff and their roles in implementing the project, etc.) in working with project partners and horticulture subsector stakeholders in Thailand and Vietnam, followed by Inception workshops in both countries.

Inception Workshops

Inception workshops were held in both Vietnam and Thailand in March 2011. The Inception workshop in Vietnam was attended by several external participants in addition to core project staff from MSU and Can Tho University (CTU). In discussions with key stakeholders prior to and during the Inception Workshop, it was decided by the project team to focus on two value chains in Vietnam – sweet potato and onion. These commodities were selected based on inputs from producers, extension agencies and retailers in response to SWOC (strengths, weaknesses, opportunities and challenges) analyses that focused on a number of factors including their extent of production, potential for export and value addition, and need for technical assistance.

The Inception workshop held at Kasetsart University (KU), Thailand, was also very well attended by producer groups, industry organizations, government representatives and KU faculty and staff, in addition to the project team. Similar to the CTU workshop, in-depth discussions were held to identify and select value chains based on the SWOC analysis of a few commodities that were proposed by the relevant project stakeholders. Following the Inception Workshop and field visits, the MSU and KU team decided to focus the Thailand portion of the project on chili peppers and Chinese broccoli value chains.

Assessment Activities

Value Chain Assessments, Regional Market Requirements and Related Educational Content

The project team conducted initial assessments of fruit and vegetable value chains of focus and available educational content on SPS measures localized for Vietnam and Thailand on selected value chains. An initial desk study was conducted by both partner institutions to determine current and historical trade patterns for fresh and processed fruit and vegetable products and destination countries. In addition, in collaboration with project partners, the team determined specific fresh and processed fruit and vegetable value chains for intervention in this project. In partnership with in-country implementing organizations, the project team had conducted interviews and site visits to assess the current situation and develop linkages between key value chain actors for the commodities and processed products of focus. The stakeholders participating in these consultations included producer groups, packing and processing facilities, retailers and exporters.

Assessments of producers, packers and processors focused on key practices that can influence compliance with food safety or other SPS measures. These included farm production practices, transportation, traceability, packing and processing practices, etc. In addition, value chain assessments for the commodities of focus (Chinese broccoli and chili peppers in Thailand; sweet potato and onion in Vietnam) were completed by the in-country partners.

Assessment of current food safety regulations, national legislation and private standards were conducted via desk studies, questionnaires and visits with relevant authorities and firms in both countries. In addition, availability of educational content and delivery capacity, particularly capacities related to information and communication technology as well as eLearning Surveys were all conducted with institutional partners and other stakeholders in both Thailand and Vietnam.

Educational Materials Development

Educational materials (competency frameworks, training modules, assessment tools) for primary production and processing of fruits and vegetables were developed and these materials built on existing materials pertinent to production and processing of fruits and vegetables. In partnership with implementing organizations and other project partners, the project developed competency frameworks which identified the core competencies required for individuals responsible for managing food safety or other SPS compliance issues in the primary production and processing sectors. For each of the competency frameworks, the project team developed generic training resources (PowerPoint presentations, manuals, supporting materials, etc.) which were specifically designed to convey knowledge against each of the competencies. Generic content was developed in English initially but localized into Vietnamese and Thai languages (under Component 2). Educational platforms for providing eLearning and blended learning solutions based on the harmonized competency frameworks, training modules, etc., were developed at both partner institutions in Vietnam and Thailand and hosted on CTU and KU websites. This eLearning infrastructure was designed so that it can be maintained and

expanded by implementing organizations in Thailand and Vietnam after the conclusion of the project.

Component 2 – LOCALIZE

In partnership with local experts, the project team adapted the generic educational and training materials to make them available in local languages and more appropriate for local cultural norms and practices. All "localized" materials were tested and refined prior to formal launch of training programs in Thailand and Vietnam.

Development of Food Safety Training Materials

The standardized training curricula for the food processing and primary production sectors were completed and project teams in both Vietnam and Thailand adapted and localized these materials for producers and food manufacturers in Vietnam and Thailand taking into account local conditions and considerations specific to the value chains of focus. The food manufacturing training was based on the Codex General Principles of Food Hygiene (including the HACCP Annex) and had two tiers of information – "basic" and "intermediate" levels mapped against a set of core competencies. The basic and intermediate levels were devised to provide a step-wise path for suppliers (manufacturers or farmers) to comply with food safety requirements. The basic level focuses on foundational elements that are essential to producing safe food, and includes elements such as personal hygiene, sanitation, and facilities requirements. Intermediate level requirements are more advanced and incorporate food safety systems elements such as HACCP.

Due to the lack of a generally-recognized international standard for primary production of fruits and vegetables, the training materials for the primary production scope (both basic and intermediate levels) were developed and designed to meet the requirements of Good Agricultural Practices standards prevalent in these countries (ASEAN GAP, ThaiGAP, VietGAP) as well as guidance documents from international organizations including FAO and the Global Food Safety Initiative.

Educational and training materials were developed and localized for the two sectors – Manufacturing and Primary Production – and train-the-trainer programs were conducted in both Thailand and Vietnam. The training modules developed for each of the scopes are outlined below:

<u>Manufacturing Scope – Basic Level:</u>

1. Introduction to the FSKN Process and Modules
2. Facilities and environment
3. Personal hygiene
4. Water quality
5. Pest control
6. Cleaning and disinfection
7. Specifications
8. Product contamination control
9. Control of food hazards – general and specific
10. Control of food hazards – allergens
11. Incident management
12. Corrective action
13. Control of non-conforming product
14. Traceability

Manufacturing Scope – Intermediate Level:

1. Management responsibility
2. Document control
3. Procedures
4. Supplier qualification and
5. Supplies performance monitoring
6. Complaint handling
7. Control of measuring and monitoring devices
8. Product analysis
9. Training
10. Faculty layout, product flow and equipment
11. Facility and equipment maintenance
12. Staff facilities
13. Waste management
14. Transport and storage
15. Hazard Analysis and Critical Control Points (HACCP)
    a) HACCP – Introduction and preliminary steps
    b) HACCP principle 1 – Conduct a hazard analysis
    c) HACCP principle 2 – Identify critical control points
    d) HACCP principle 3 – Establish critical limits
    e) HACCP principle 4 – Establish CCP monitoring procedures
    f) HACCP principle 5 – Establish corrective actions
    g) HACCP principle 6 – Verification activities
    h) HACCP principle 7 – Record keeping activities
16. Food Defense

Primary Production Scope – Basic Level:

1. Introduction to Food Safety – Trade Agreement
2. Agricultural Commodities Standard – Quality Assurance
3. Food Safety Along the Supply Chain – Current Status in Local Market
4. Agricultural Chemicals and Their Safe Use
5. GAP Requirements
    a) Sources of water
    b) Growing / plantation area
    c) Proper use of agricultural chemicals
    d) The quality management process before harvest
    e) Harvesting and post-harvest practices
    f) Transportation and storage
    g) Personal hygiene
    h) Record keeping
6. Specifications

Primary Production Scope – Intermediate Level:

1. Quality control and assurance
2. Production plan
3. Irrigation water
4. Fertilizer use
5. IPM scouting – pests and diseases
6. Using chemicals safely
7. Alternative plant protection products and other methods
8. Available training materials and training principles
9. Hygiene and personal hygiene
10. Traceability – procedure and test run

11. Quality management systems
12. Standard operating procedures
13. Work instruction and relevant forms
14. Risk assessment
15. Food safety checklist and self assessment

eLearning Platforms and Solutions

Capacity for the in-country partners to design and deliver eLearning through sustainable platforms was assessed by the MSU-led project team in 2011. In-country workshops on eLearning technologies were also conducted in both Thailand and Vietnam in 2011. As part of these assessments, stakeholders were also surveyed to determine their capacity to utilize internet-based eLearning materials. Outcomes of these surveys in Vietnam indicated that 90% of the agriculture officers based in the project regions could utilize technology-based learning platform via office computers or personal computers and could access the internet in their office or at home. As anticipated, Vietnamese farmers were less likely to have internet access or to use eLearning with only 30% of them indicating they had computer and internet access. Therefore, the Vietnamese farmers surveyed indicated a preference for paper-based courses or DVDs of training courses as potential alternatives to face-to-face training. A similar survey of stakeholders was conducted in Thailand. The findings indicated that stakeholders in Thailand were relatively more likely to have internet access and utilize eLearning compared to those in Vietnam. As was the case in Vietnam, those working in agriculture production in Thailand were less likely to use eLearning compared to other stakeholder groups.

Based on these assessments, MSU project staff provided recommendations on eLearning delivery options and provided technical support for the KU and CTU teams as each implemented their respective eLearning platforms. The infrastructure for the eLearning platforms was provided by each partner. The eLearning platforms were populated with training modules and presentations (video and audio capture) recorded during train-the-trainer programs conducted in each country.

The training modules and supplemental materials are available for download or viewing at the following web sites:
Global Sites (MSU): http://www.fskntraining.org/ and http://foodsafetyknowledgenetwork.org/
Thailand (Kasetsart University): http://macbeth.agro.ku.ac.th/
Vietnam (Can Tho University): http://fskn.ctu.edu.vn/

The materials maintained on the Global (MSU-maintained) sites include the standardized training modules as originally created in English as well as audio and video captures of training programs. The MSU sites also serve as a repository of adapted and localized materials developed by project partners in a variety of languages. At the time of the writing of this report, the MSU sites are currently undergoing a major revision to improve the categorization and delivery options for the content.

These web-based repositories are designed to provide the standardized educational and training content developed under this project as open educational resources to end users and others who can benefit from the content. This approach was taken to increase the potential scalability of the training delivery such that the benefits are not restricted to participants in face-to-face training programs. The repositories also serve as a set of standardized resources that can be utilized by trainers who are delivering programs for clientele. It also should be noted that other methods for disseminating educational content will continue to be used by MSU and its partners for these materials. For example, KU also has produced DVDs containing the training materials.

Component 3 – DEPLOY

Standardized educational and training materials were adapted by project partners for delivery in Thailand and Vietnam. The training materials focused on improvement of food safety and SPS compliance for targeted horticulture production sectors and food manufacturing establishments. Target audiences of the training programs included lead trainers and members of the broader food industry in both Thailand and Vietnam. The MACBETH project helped foster cooperation between the food industry (producers, processors, suppliers, retailers, exporters, etc.), institutional partners, and government units in the application of the materials to bolster capacity of value chain actors to meet applicable standards. The project also deployed internet-based eLearning solutions to provide a scalable platform for reaching thousands of stakeholders. This will ultimately help strategically link participants in capacity building programs to high-value market opportunities within the project countries and export destinations.

A cadre of lead trainers was first identified by the partner institution and associated stakeholders in each country. Train-the-Trainer programs for lead trainers and other stakeholders were then conducted using standardized and localized training materials. Open participation by industry, NGOs, and other stakeholders was encouraged in these train-the-trainer programs. Training program content (training materials and audio/video recordings of presentations) was captured, produced and made available as internet-based eLearning modules by both partner institutions.

Both CTU and KU partners had sustained interactions with respective government officials and participated in various agriculture-related fairs and trade shows to showcase project activities and pursue market linkages. Project partners were engaged with clientele (producers and processors) as well as partners (government and industry) in both countries. In addition, training programs for the targeted segments of the fresh and processed fruit and vegetable industry were also conducted in select provinces for sweet potatoes and onions in Vietnam and chilli peppers and Chinese kale in Thailand.

Capacity-Building Training Workshops

The project developed and implemented a series of training workshops for the lead trainers as well as for representatives of various stakeholders from the two countries. Participants included faculty from CTU and KU, government units in Thailand (Department of Agriculture, National Bureau of Standards, etc.), government units in Vietnam (Ministry of Agriculture and Rural Development), representatives from food industry associations and from food manufacturing companies, producer groups, certification bodies, laboratory testing services and other academic institutions. A total of fourteen training workshops were organized by both in country partners during which training modules and/or teaching materials on Food Safety, Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP), and HACCP were developed and presented to participants in Vietnamese and Thai, respectively. These training workshops provided food safety managers, technicians from public and private institutional services, extension agents with tools to assist producers' associations and export associations to help implement safety management systems and comply with SPS and safety standards required by the global food industry.

The following is a list of all training programs facilitated under the project and the number of participants in each:

1. January 11, 2012 – eLearning Technology and Skills Workshop – Can Tho City,

Vietnam. 75 participants.

2. January 17, 2012 – eLearning Technology and Skills Workshop – Bangkok, Thailand. 68 participants.
3. May 3-4, 2012 – Train-the-Trainer Program on Basic Level Food Safety Practices for Food Manufacturers – Can Tho City, Vietnam. 48 participants.
4. May 23-24, 2012 – Train-the-Trainer Program on Basic Level Food Safety Practices for Food Manufacturers – Bangkok, Thailand. 47 participants.
5. July 5-6, 2012 – Train-the-Trainer Program on Basic Level Food Safety Practices for Food Manufacturers – Bangkok, Thailand. 43 participants.
6. September 7, 2012 – Conference on "The Solution for Market Access of Sweet Potato Cultivated in Binh Tan and Vinh Long" – Can Tho City, Vietnam. 68 participants.
7. September 14-15, 2012 – Train-the-Trainer Program on Intermediate Level Food Safety Practices for Food Manufacturers – Can Tho City, Vietnam. 49 participants.
8. September 25-26, 2012 – Train-the-Trainer Workshop: Basic Level Modules for Good Agriculture Practice – Bangkok, Thailand. 61 participants.
9. November 7-8, 2012 – Train-the-Trainer Workshop: Intermediate Level Food Safety Practices for Food Manufacturers – Bangkok, Thailand. 67 participants.
10. November 14-16, 2012 – Train-the-Trainer Workshop: Intermediate Level Modules for Good Agriculture Practice – Bangkok, Thailand. 62 participants.
11. December 10-11, 2012 – Training program on best practice of food safety for chili peppers and kale – Nakhon Ratchasima Province, Thailand. 26 participants.
12. January 19, 2013 – Training program on "Food Safety for Fresh Produce Packing Houses" for farmers producing Chinese kale and chili pepper – Tambon Matoom, Prompiram District, Phitsanulok Province, Thailand. 29 participants.
13. March 8-10, 2013 – Basic and Intermediate Level Modules for Good Agricultural Practice – SOFRI (Southern Horticultural Research Insitute), Tien Giang province, Vietnam. 127 participants.
14. June 22-25, 2013 – Basic and Intermediate Level Training for Primary Production and Food Manufacturing Sectors – a Ba Ria-Vung Tau University, Vung Tau, Vietnam. 57 participants.

Nine trainers were identified as lead trainers by CTU and these trainers conducted 7 train-the-trainer and end-user programs for food manufacturers, farmers and other stakeholders in Vietnam. A total of 424 participants went through these trainings. In Thailand, KU developed ten lead trainers and these trainers in turn conducted 7 train-the-trainer and end-user programs for food manufacturers, farmers and other stakeholders in Thailand. A total of 403 participants went through these training programs. Several participants in these programs in turn trained additional end users using the materials developed under the Macbeth project.

Participants included representatives from industry, ministries, and academia. In order to facilitate the participation of small producers coming from various provinces, the project financed the expenditures (travel and meals) for several workshop participants in both countries. Faculty experts, extension experts, and resource persons from the private sector having practical experience in food safety became lead trainers and took part in these training

workshops and helped facilitate discussions.

Various methods were utilized in the training programs including power point slides, hands-on demonstrations, discussions, group work and group presentations. Participants received copies of presentations, supplementary materials, manuals, web links to eLearning platforms and, when possible or where necessary, CD or DVDs of training materials. The delivery methods used involved moderated interactions between the trainers and the participants, dialogues, questions, comments, and group exercises to help highlight key content, principles etc. Most of the training workshops had time built in for a demographic survey and a brief evaluation by the participants at the end of the workshop. Such evaluations, although brief in nature, helped trainers and project coordinators to assess the success of the training, determine areas that require additional attention, revision, or modification and allow for inclusion of additional areas of interest in future training activities. Results from these evaluations overall provided highly positive feedback, especially with regard to potential efficacy of the eLearning platforms to provide scalability of training and eagerness of trainees to use these resources. Participants frequently emphasized the need for further training activities and expansion of training to cover additional value chains.

Market Orientation Workshops

The project teams at CTU and KU also provided training on market orientation and marketing materials for participating producers and processors of the selected value chains. For example, CTU project staff and a group of local authorities from Vinh Long and Soc Trang provinces of Vietnam travelled to Guangzhou province, China to obtain an overview of the Chinese market for purple sweet potato and violet onion. Similarly, the KU team collaborated with retailers such as MAKRO and leading processors and exporters to develop market orientation for the participating producers of Chinese kale and chilli pepper value chains.

Given the relatively short duration of the MACBETH project, there was insufficient time to foster sustainable market linkages for the producers and processors who participated in the program. The overwhelming majority of participants stated that they benefitted from the training programs and other capacity development efforts associated with the MACBETH project, indicating that they had improved knowledge of food safety issues and market requirements. It is anticipated that, in cooperation with KU, CTU and other partners in both countries, project participants will continue to improve their practices with the aim to establish linkages with higher value markets that demand suppliers having formalized food safety programs.

Component 4 – INSTITUTIONALIZE

The project team institutionalized capacity building programs by developing a cadre of trained trainers in both Thailand and Vietnam and by supporting the development and dissemination of localized training content by partner institutions. This training was delivered primarily by using face-to-face training delivery, but training presentation and materials were captured for continued, highly-scalable dissemination on internet-based eLearning platforms. Harmonized, competency-based curricula/training modules and supporting materials were adapted for local conditions and institutionalized through implementing university partners (KU, CTU) and other training organizations. Lead trainers from the universities, producer groups, extension units and other related government units were identified and trained (in-country as well as overseas training) in use of the training materials for improving capacity for food safety and SPS management by end users (processors, producers, etc.). Internet-based eLearning platforms

were made available to institutional partners for sustainability of capacity building efforts.

In cooperation with project partners, MSU faculty conducted workshops in both Thailand and Vietnam to transfer necessary skills and technologies for maintenance and continued development of internet eLearning platforms. The workshops also focused on eLearning pedagogies including blended learning and use of technologies with project partners. The workshops were conducted in computer laboratories in the partner institutions with access to various eLearning technologies. The participants in these workshops in both Vietnam and Thailand were representative of a wide range of stakeholders—industry, academia and government.

Exposure Visits, Training Courses, Networking and Collaborations

In addition to conducting in-country training of trainers and developing a cadre of lead trainers, specialized overseas training and study visits were identified and organized by the MSU project management team in consultation with the project teams at CTU and KU for the faculty lead trainers from the two in-country partners. These trained experts were actively involved as lead trainers coordinating the in-country training sessions. These lead trainers continue to serve as nodal contacts at both institutions and are involved in the implementation of ongoing in-country trainings tailored to the specific needs of producers, processors, food safety managers, front-line officers from government departments including agriculture and food inspectors, technicians in food safety and animal and plant health, etc.

The overseas training provided an opportunity for the participants not only to learn theoretical principles of food safety, but also to immerse in hands-on skills development in some of these programs in the areas of plant health, food safety, animal health, agricultural trade and marketing globally. The training courses and exposure visits also provided a good opportunity to strengthen communication and exchange of information between the two in-country partners with international institutions on food safety and SPS related issues. Furthermore, the project facilitated institutional strengthening and provided opportunities for the in-country partners to seek further collaborations to sustain project activities and long terms goals beyond the project period. Highlights of these visits, training and collaborations are summarized below the full list of exposure visits.

List of Exposure Visits by CTU and KU Project Staff

1. June 2011 – KU faculty (Dr. Chitsiri Rachtanapun and Dr. Sasitorn Tongchitpakdee) visited US to hold meetings with MSU project staff and attend a two-week course on Post-Harvest Technology for Fruit and Vegetable Products at the University of California-Davis.

2. June 2011 – Dr. Joseph A. Kwarteng from University of Cape Coast, Ghana (another WTO STDF project implementer), visited MSU to meet MSU project staff and learn about eLearning technologies for distance education of food system professionals. Dr. Kwarteng's visit also coincided with the visit by KU project partners so he was able to interact with and learn from Macbeth project partners.

3. June 2011 – Dr. Ngo Thi Phuong Dung from CTU travelled to Thailand to meet with the KU project team from and participate in the 12th ASEAN FOOD Conference in Bangkok.

4. September 2011 – Prof. Dr. Ly Nguyen Binh and Dr. Le Nguyen Doan Duy travelled to

Thailand to meet with the KU project team and participate in project-related conferences. Drs. Binh and Duy also attended the Food Ingredients Asia Conference and the Federation of the Institutes of Food Science and Technology in ASEAN meeting in Bangkok during this visit.

5. February 2012 – Prof. Dr. Ly Nguyen Binh and Dr. Ngo Thi Phuong Dung from CTU travelled to the US to participate in the Global Food Safety Initiative annual meeting in Orlando, Florida and to meet with the MSU project team in East Lansing, Michigan. Dr. Dung also visited the offices of the American Society for Microbiology in Washington, DC as part of this visit.

6. June 2012 – Prof. Dr. Ly Nguyen Binh from CTU participated in a Food Defense Collaborative Exchange program at the University of Minnesota's National Center for Food Protection and Defense.

7. June 2012 – Dr. Kanithaporn Vangnai, KU project team member, attended a two-week course on Post-Harvest Technology for Fruit and Vegetable Products at the University of California-Davis.

8. July 2012 – Dr. Sudsai Trevanich, KU project team member, attended three HACCP training courses at the Guelph Food Technology Center in Guelph, Ontario, Canada.

9. July 2012 – a Dr. Roongnapa Korpraditskul and Dr.Chuanpis Aroonrungsikul, KU project team members, participated in a "Food Regulation Current Issues" workshop at Michigan State University and toured GAP-certified blueberry operations in Michigan.

10. September 2012 – Dr. Warapa Mahakarnchanakul from KU participated in a short course on "Fresh-Cut Products: Maintaining Quality and Safety" at the University of California-Davis.

11. October 2012 – Dr. Le Nguyen Doan Duy from CTU participated in a certificate level training on "Basic and Advanced HACCP" at the University of California-Davis.

12. April 2013 – KU team members (Asst. Prof. Dr. Warapa Mahakarnchanakul, Asst. Prof. Dr. Sudsai Treevanich, Dr.Chitsiri Rachtanapun, Dr. Sasitorn Tongchitpakdee, Dr. Kanithaporn Vangnai and Miss Audchara Sankom) traveled to Vietnam to exchange lessons learned through the project with CTU project team members and to visit project sites in Vietnam.

13. June 2013—CTU team members Dr. Le Nguyen Doan Khoi, a group of agriculture authority officers and farmers of Vinh Chau and Binh Tan district visited Guangzhou, China, Jiannan Fruit and Vegetable wholesale market to discuss marketing issues which were relevant to the production and sale of sweet potato from Binh Tan and red onion from Vinh Chau.provinces.

Highlights of Exchange Visits and other Collaboration Activities – Vietnam Project Staff

Project staff from CTU, Vietnam visited Thailand on two occasions to meet with the project team from KU, to present project-related activities at the Food Ingredients Asia Conference, and to participate in the Federation of the Institutes of Food Science and Technology in ASEAN meetings in Bangkok. Furthermore, the lead faculty trainers from CTU participated in several

training courses, workshops, and conferences in the US, Canada, and Thailand related to food safety, HACCP, the Global Food Safety Initiative, and food defense.

The CTU team also collaborated with key partners within Vietnam. CTU staff interacted with the FAO/FAVRI (Fruit and Vegetable Research Institute) team in Hanoi on multiple occasions to learn about STDF PG 259 project and coordinate these project activities when and where relevant. The CTU project team availed multiple opportunities to present in workshops organized by the FAO/FAVRI STDF PG 259 project. Through these collaborations, the CTU project team established relationships with the department of International Relation Affairs of the Vietnam Ministry of Agriculture and Rural Development (MARD). MARD and the CTU team exchanged information on the projects and activities of each organization and promised to further collaborate in the near future. As a direct result of project interactions with MARD in Vietnam, CTU team members were invited to present in a workshop on 'Using Multi Criteria Decision Analysis to Prioritize SPS Capacity Building Needs in Vietnam', organized by MARD in Ho Chi Minh City.

The CTU team also initiated collaboration with SOFRI (Southern Fruit Research Institute), located in the Tien Giang province of Vietnam, on capacity development training courses for farmers and to help secure technical support for sweet potato and onion farmers in selected regions. CTU project team members took an active role in the Vietnam International Agriculture Fair in Can Tho City organized by the Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, and Can Tho City government. The Vietnam International Agriculture Fair is held annually to promote industrialization, modernization of agriculture and to promote the competition of Vietnamese horticulture in export markets in the region. The role of the MACBETH project in this fair was to (a) organize a booth at the fair to advertise activities of the project, (b) to offer consultancy to industry and farmers and distribute manuals of relevant training programs, (c) display sweet potato and onion produced by participating provinces and seek buyers from high value markets, and (d) be an active member of a workshop organizing board on "Value Chains".

Highlights of Exchange Visits and other Collaboration Activities – Thailand Project Staff

Collaborators from Kasetsart University visited the US in June 2011 to participate in a post-harvest technology workshop for fruits and vegetables at the University of California-Davis. While at MSU, the KU collaborators presented a seminar for the Department of Food Science and Human Nutrition at MSU and interacted with Dr. Joseph A. Kwarteng, University of Cape Coast, Ghana (who also was visiting MSU at the time to learn about MSU's distance education capabilities) on the STDF-funded work. KU team members took an active role in the FAO-Department of Agriculture, Thailand, jointly organized Training of Trainers Program on Horticultural Chain Management in Bangkok, Thailand.

Furthermore, the KU project team participated extensively in the "Chili Pepper Annual Festival" at Kham Sakaesaeng District, Nakhon Ratchasima Province, hosted by Office of Agricultural Research and Development. Activities in the festival included exhibition on government and local government sectors, educational information on GAP, and direct market linkages for farmers. Associated with this festival, KU project lead trainers along with lead trainers from the Office of Agricultural Research Development (OARD 1 and 2) jointly organized a workshop on "Chili Pepper Management on Field and Food Manufacturing".

In addition to these national level activities, KU project staff visited the US to participate in short courses and workshops on topics that include post-harvest management of horticultural crops, HACCP, international food regulation, GAP and food safety and quality management for fresh cut produce.

Collaboration with World Bank Global Food Safety Partnership and MARD on Food Safety Capacity Development in Vietnam

The World Bank-organized Global Food Safety Partnership (GFSP) provided funds for MSU to organize a train-the-trainer program on the Codex General Principles of Food Hygiene and HACCP in Hanoi in 2013. This funding was provided to build upon MSU's similar capacity development efforts in Vietnam and Thailand under the MACBETH program as well as MSU's prior capacity development work for The World Bank and APEC FSCF PTIN (Asia Pacific Economic Cooperation Forum, Food Safety Cooperation Forum, Partnership Training Institute Network) in China.

A blended training program on general food safety management and Hazard Analysis and Critical Control Points (HACCP) concepts was conducted in 2013 with financial support provided by the World Bank. The training program began in May 2013 with a one-month eLearning program based on the standardized "Training Modules on General Food Safety Plans" developed by the MSU team in partnership with the APEC/FSCF/PTIN. These modules were adapted from the standardized training content developed and delivered in Vietnam and Thailand during the MACBETH project. The eLearning program was followed by a four-day experiential, skills-focused training program conducted in Hanoi in June 2013. The in-country partner for organizing and delivering this program was the Research Institute for Aquaculture No. 1 (RIA1) based in Bac Ninh, Vietnam. Mr. Mai Van Tai, MS, Director of the Center for Environment and Disease Monitoring in Aquaculture (CEDMA), served as the lead contact from the host institution.

Thirty-nine participants enrolled in the program and 27 completed all aspects of the training including pre- and post-assessments of participant knowledge. The mean score on the pre-assessment for the 27 participants who completed the program was 58.3%, whereas the mean score on the post-assessment was 69.1%. This was a statistically significant increase in participant knowledge and was comparable to similar training programs conducted in other countries. MSU staff have shared these adapted training modules with the MACBETH project partners at CTU and KU and will collaborate with them on future delivery of these blended learning programs.

Component 5 – LEARN

Promoted Regional Cooperation by Project Partners and Stakeholders

The key project partners in Thailand (Kasetsart University) and Vietnam (Can Tho University) cooperated extensively throughout the project period. This included mutual visits of project staff to their counterpart institutions, site visits in each country to compare production and processing methods, and sharing of training materials. It is anticipated that this cooperation will continue and expand beyond the end of the STDF-funded project.

Conducted End-of-Project Lessons Learned Workshop

End of Project workshops were successfully conducted in both countries in June 2013. The project overall goals, objectives, implementation and results, recommendations and follow up were discussed. During the workshops, discussions centred on strengthening respective country's small holder capacity in implementing food safety and SPS measures and improved trade and related issues among the participants. Highlights from the Vietnam and Thailand workshops follow.

Vietnam

The closing workshop was organized at the College of Agriculture and Applied Biology at CTU and had 40 participants from stakeholder groups who participated in the MACBETH project. The participants came from the Department of Agriculture and Rural Development of Can Tho, Vinh Long and Soc Trang, farmers of Binh Tan and Vinh Chau, SOFRI delegation, food processing companies, academic departments and a journalist from Saigon Marketing Newspaper.

The People's Committee of Tan Thanh commune, (Binh Tan district, Vinh Long) expressed their gratitude towards the MACBETH project and indicated that participating sweet potato farmer cooperatives changed from traditional practices and followed best practices taught by the lead trainers and were able to attain higher yield and quality of sweet potato. Depending on various traders, they were able to obtain higher prices for the quality and safe produce. It was suggested that the MACBETH project should help in marketing and branding of Vietnamese sweet potato for regional markets, especially China and Japan. They also requested the Vietnamese government's help to maintain and produce safe agricultural products by supporting the full implementation of GAP recommendations and helping farmers achieve certification against recognized GAP standards.

ANTESCO company thanked the MACBETH project for upgrading knowledge of food safety requirements for agricultural and food producers and processors. Company staff used knowledge packages of food manufacturing and primary production from the MACBETH project eLearning platform to train other internal staff and external stakeholders in An Giang province – up to approximately 700 farmers.

Finally, the project's overall achievements such as changing farmer behavior in producing safer sweet potato and onion produce and bringing about a sense of community and spreading the message to neighboring provinces and the unified approach of academia, government, industry and farmers towards a common goal within a limited time frame were appreciated and lauded by all participants.

Thailand

The purpose of the closeout workshop organized by KU project leaders was to appreciate the dedication of the participants, to sum up project activities, to present output and outcome including the impact on the food safety network in Thailand and brainstorm how to sustain the food safety capacity development activities and further collaboration. The participants represented government sectors including Research Institutes, Department of Agriculture and ACFS, private sector companies and their suppliers, exporters/importers of agricultural products, pack houses and fresh produce production clusters. Highlights from the closing workshop with testimonials from several stakeholders are described below.

Siam Makro Public Co., Ltd, a leading produce company (including Chinese kale, chili peppers, long bean, cabbage, mango, pineapple, banana and longan) adopted the knowledge obtained from the MACBETH project to their company and their suppliers. With the collaboration of food safety networks through the MACBETH project and dedicated Siam Makro staff, at present all of their produce suppliers now have received GlobalGAP certification and the fresh produce from these suppliers are deemed safe. The company has a strong commitment to develop food safety and food quality standard by supporting and educating suppliers throughout their supply chain.

Representatives from OARD2 (Office of Agricultural Research and Development, Region 2)

lauded the work that the MACBETH project had accomplished. Specific impacts such as educating and building food safety management capacity in clusters of fresh produce farms and pack houses in Phitsanulok province, being a consultant for Good Manufacturing Practices for chilli paste processing companies, as well as collaborating with OARD 2 for establishing a GAP training center for clusters of chilli pepper farms and linking with the chilli paste industry in Phitsanulok province. The OARD2 representative also indicated that, as a result of MACBETH program, GlobalGAP was being implemented in farms that produce a variety of crops such as mango, chilli peppers and other organic vegetables and supply to Green market and Q-restaurant (the restaurant which serves food only from GAP-certified farmers).

Representatives from OARD4 (Nakhon Ratchasima Province) indicated that, as lead trainers, they have gained considerable knowledge and benefitted from various connections through the MACBETH project. The knowledge obtained on GAP and GMP, in particular management of pack houses and post-harvest and GMP documentation, were disseminated to a community of organic chilli farmers at Wang Nam Khiao District, Nakhon Ratchasima Province. Moreover, the MACBETH program helped facilitate further collaboration between local farmers to modern buyer/traders such as Siam Makro Co., Ltd. Other remarks noted that through MACBETH project training the farmers learned best practices on chilli pepper production and GAP, such as the use of safe chemical substances and establishing cooporation among farmers for setting up a packing house and collecting the fresh produce, and for pre-market management such as sorting, culling, sizing, etc., to supply produce to larger national and regional markets. OARD4 requested further training from the MACBETH program in partnership with SIAM Makro Co., Ltd, so that the farmers in Ubon Ratchathani and related provinces would get a good opportunity to access new knowledge and gain access to high value markets.

The organic farming community at Wang Nam Khiao praised the MACBETH project's face-to-face training activities and are now committed to installing a new pack house and cooling room to produce a high quality fresh produce and serve larger high value markets such as department stores, as a result of increasing fresh produces values and earning more income.

Ultra Farm Co., Ltd., a supplier to Siam Makro Co., Ltd., underlined the benefits and impacts they received by partnering with the MACBETH program. Benefits include improving farmer production of Chinese kale in Suphan Buri province by reducing unnecessary chemical usage and adopting GAP in their production systems. They now supply directly to a chemical free area in Pa Cheng Center and Talad Thai, the largest wholesale market in Thailand. Furthermore, the MACBETH project supported Ultra Farm by providing knowledge for pack house management and best practices for food handling. Through partnership with Siam Makro Co., Ltd and via MACBETH project participation, the company decided to set up a cooling chamber for fresh produce storage to reduce product loss and extend shelf life. In addition, the company plans to build capacity to can direct-market their products to buyers.

The representative from ACFS (Thailand National Bureau of Agricultural Commodity and Food Standards), Thailand mentioned that the MACBETH project has provided accessible knowledge on safe food throughout the supply chain. In accordance to ACFS policy, the project motivated farmers to implement ACFS standards for agricultural product production, and as a result the safety of their fresh produce and otherproducts has increased.

The representative from Koerner Agro Export Center Co., Ltd., spoke highly of their involvement with the MACBETH program via the GAP train-the-trainer programs. As a lead trainer, this knowledge has been transferred to contract farms and other producers, and as a result high quality and safe products have been produced, meeting specifications for export. These agricultural products are asparagus, leafy vegetables, lemongrass, okra, and baby corn. In the near future, the company plans to have certified GAP and GMP for all fresh and processed products, respectively. Furthermore, as a lead trainer, this representative is now an invited lecturer and trainer on GAP and GMP at many academic institutes such as Nakhon Pathom

Rajabhat University in Nakhon Pathom province.

Extension experts from KURDI in partnership with the MACBETH program have developed the course contents and materials on basic/intermediate levels of GAP training which emphasize food safety principles and are easily understood and implemented by farmers. The contents were designed to address specific challenges to producers in Thailand. The course content provided best practices for chemical usage and using organic substances instead of chemical agents. Furthermore, they used core knowledge in basic/intermediate GAP and food safety as a minimum requirement for Thai standards.

Project Reporting and Evaluation

In compliance with STDF requirements, required project reports which accurately reflect progress on project objectives were submitted. Project reporting has been through regular reporting to the STDF. Altogether, four six-monthly project progress and one inception report were submitted to the STDF prior to this final report. These reports described the progress made in implementation of project activities against the work and delivery plan, and discussed issues encountered which required additional attention during the implementation. Monitoring and evaluation activities have been carried out on a regular basis and on an activity basis against project stated outputs, with supervision by the MSU project team and in-country coordinators. Regular conference calls were organised among the project team members along with the submission of brief progress reports to facilitate the monitoring. External evaluations have not yet taken place.

Internal Evaluation of the Project by Project Stakeholders

An internal evaluation of entire project based on a short survey of participating project stakeholders was carried out by both in-country partners. Responses were sought from a wide range of project stakeholders to assess various aspects of the project. Highlights of the evaluations are reported below.

Vietnam

Responses for the evaluation survey were solicited from forty stakeholders who were engaged in project activities. Out of this pool, 72% of participants had participated in the training workshops on food manufacturing and/or primary production and had become lead trainers. They were lecturers in colleges and universities, farmers, public administrators, personnel from the agricultural office, engineers and workers in private companies/factories from provinces in the Mekong Delta and Eastern Vietnam. Nearly 100% of people surveyed said that the train-the-trainer programs for lead trainers were very useful and that the educational materials (competency frameworks, training modules, assessment tools) for primary production and processing of fruits and vegetables were sufficient. Eighty-five percent of respondents said that the training program content produced and made available as internet-based eLearning was easy to access and use.

Overall, face-to-face training programs taught by project staff, partners and lead trainers for food manufacturing and primary production were highly appreciated. Most people said that the selected regions of Vĩnh Châu and Bình Tân were suitable for capacity development interventions for the sweet potato and onion supply chains. The reasons indicated were that the yield of agricultural products is sufficient in this area but the post-harvest quality of these products is low and markets for these products were unstable. Concerning market orientation programs delivered by the project team, approximately 86% of people agreed that the project

provided sufficient training on market orientation and supported development of marketing materials for participating producers and processors.

Thailand

The overall internal evaluation of the project was obtained by phone and e-mail survey of eighty participants who were involved or engaged in the MACBETH project, including participating in the training workshops, using the eLearning platforms, etc. Most of the surveyed participants came from private companies (i.e., manufacturers, export companies, packing houses, supplier and grower group representatives) and the government sector (i.e., educational institutes, R&D, Department of Agriculture, and the National Bureau of Agricultural Commodity and Food Standards [ACFS]). Job descriptions of participants included owners, farm managers, purchasing officers, quality control officers, R&D, management, marketing, quality assurance officers, and growers.

All participants had attended at least 1-2 training courses and some of them attended 2-3 training courses. Overall, participants thought that the training curriculum will help increase knowledge (99%), increase safety of the produce (86%), increase quality of the product (85%), increase revenue or income (53%), increase in opportunities for new markets or export (68%) and increase network (83%).

Most of participants (98%) thought that the information from the training was useful for their companies and 97% of participants would recommend these training courses to their colleagues.. Most (93%) of the participants had shared the information from the training programs with their colleagues.

C. OTHER COMMENTS:

Challenges and Constraints

Owing to a major transition in the Michigan State University financial management system as well as initial hurdles in obtaining necessary supporting documentation from the in-country partners, the project initially experienced delays in subcontracting and account ledger reconciliation. This resulted in a delay of six months before the sub contracting agreements could be finalized and implementation of the project activities by the partners.

The floods in Thailand also presented a unique challenge for this project. Kasetsart University was closed for several weeks in October through December 2011 and project staff were displaced from their homes. Agricultural production and processing areas were also impacted severely by the floods. For this reason, project implementation was delayed in Thailand. The project was approximately 6 months behind the anticipated implementation schedule, in both countries, due to floods in Thailand, and extensive international work related travel by in-county project personnel in Vietnam. Additional staff were engaged in the project and this enabled catching up from the delays encountered.

Budget expenditures in year one of the project also progressed more slowly than the originally budgeted rate. This was due to delayed project implementation and also due to the original budget to STDF being front-loaded with technical assistance line items.

The project therefore requested and was approved a six-month no-cost extension to compensate for the delays in project implementation for reasons noted above. Taking advantage of the approved extension for six months up to June 30, 2013, there was an increase in effort and cooperation between all members of the project team to implement project activities, expend the appropriate monies allocated to those activities and complete all activities within the project timeframe.

Lessons Learned

Project success is dependent upon a number of factors

While the project succeeded in providing a platform for a harmonized and competency-based food safety education system, this did not immediately provide access to international and regional export markets for the horticulture stakeholders. Capacity to meet food safety requirements, while necessary for market access, may not on its own be sufficient to expand agricultural exports. Vietnam is still developing its national capacity. Currently, the prime controllers of food safety are the companies themselves, which are completely or jointly owned by foreign companies, unlike in Thailand or Philippines. As new local businesses emerge, it is critical that they be properly equipped with sufficient food safety knowledge and skills to meet the expectations of international markets.

Project design and expectations must be realistic and engage both public and private sector partners

By developing a clear institutional framework for collaborations, and robust partnerships, the MACBETH project was able to create the foundations to ensure sustained and scalable food safety capacity development and continued operations, even after the end of STDF support. However, it is important to have the regional, national and local government authorities heavily engaged right from the beginning to ensure alignment with project efforts. It is equally important to engage the private sector stakeholders. However, it takes substantive time for these linkages and relationships to mature and that could not be possibly achieved within the project's time

frame. Ultimately the producers must evolve their capacity to meet the standards that the buyers require, depending on the specific higher value markets they are targeting. As a result the project could not immediately demonstrate successful linkages between the horticulture stakeholders, however it is anticipated that the stakeholders will continue to engage with each other through the partner institutions facilitation efforts. Finally, project design should also actively consider how to manage delays attributed to administrative hurdles, unexpected natural disasters (e.g., flooding in Thailand), that could impede effective implementation of project activities.

Regional partnerships must have a shared vision and need long term institutional support

MACBETH was primarily a project with a regional focus and partnership with two diverse institutions from the region. It was important for the project partners to have a common vision, understanding as well as agree upon similar modalities and timelines of implementation. Clear expectations and indicators of success are necessary and useful to ensure common understanding. Regional cooperation also plays a crucial role in creating new regional visions. Partnerships like those described in the MACBETH project have to innovate across traditional institutional and networking boundaries, along the way creating a broader sense of shared interests among formerly diverse actors. Such partnerships demonstrate the challenges inherent in developing a shared vision. Mutual support has to be provided to a range of rural producers and entrepreneurs that face training and marketing difficulties. It also has to network across traditional institutional boundaries between private and public sectors to the benefit of regional businesses and the regional economy as a whole.

MACBETH DELIVERABLES/TARGETS TABLE *(LOG-FRAME)*

Item ID	Item Description	Target Finish Date	Actual or Forecast Finish Date	Status: (% Complete)	Comments
1	Contract signed	01-2011	01-2011	Complete	Project end date extended to June 30, 2012.
2	Partner Sub-Contracts Completed	02-2011	10-2011	Complete	Sub-contract execution with both KU and CTU was delayed in part due to a major transition in the MSU financial system during 2011.
3	Inception Workshops completed in each country	02-2011	03-2011	Complete	Inception workshops completed on March 22 in Can Tho City, Vietnam (46 participants) and March 25 in Bangkok, Thailand (31 participants)
4	Project staff hired in each country and offices established	02-2011	02-2011	Complete	
5	Selection of value chains of focus for each country	02-2011	03-2011	Complete	
6	Initial value chain assessments completed	06-2011	10-2011	Complete	
7	Educational content and eLearning assessments completed	05-2011	11-2011	Complete	eLearning Workshops completed in both Thailand and Vietnam in January 2012
8	Competency frameworks developed	07-2011	07-2011 (Manufac-turing) 02-2012 (Primary Production)	Complete	Primary production competency framework completed in Feb. 2012 after consultation with GFSI Global Markets Technical Working Group members
9	Local experts identified for localization of training programs	07-2011	07-2011	Complete	
10	Standardized training modules	09-2011	09-2011 (Manufac-	Complete	Standardized training modules for primary

Item ID	Item Description	Target Finish Date	Actual or Forecast Finish Date	Status: (% Complete)	Comments
	completed		turing) 08-2012 (Primary Production)		production scope were completed in collaboration with KU partners
11	Assessment tools developed	09-2011	09-2011	50%; Manufacturing scope complete; Primary production not complete	Assessment tools for primary production scope were not completed due to delay in finalization of competency framework and training materials.
12	eLearning infrastructure developed	09-2011	08-2012	Complete	eLearning infrastructure is complete and web sites have been populated with content from training programs.
13	Localized materials developed	11-2011	02-2012 (Manufac-turing) 08-2012 (Primary Production)	Complete	Manufacturing scope currently under development and will be completed in 02-2012. Primary production scope will be developed after completion of standardized curriculum is finalized.
14	Pilot testing and completion of localized materials	12-2011	02-2012 (Manufac-turing) 09-2012 (Primary Production)	Complete	Pilot testing of primary production content was conducted during the first GAPs training programs in Thailand due to compressed time schedule.
15	Lead trainers identified	12-2011	12-2011	Complete	
16	Train-the-trainer programs executed	12-2011	07-2012 (Manufac-turing) 09-2012 (Primary Production)	Complete	Several train-the-trainer programs completed in Vietnam and Thailand throughout 2012.
17	Training content captured and produced for eLearning	03-2012	09-2012	Complete	

Item ID	Item Description	Target Finish Date	Actual or Forecast Finish Date	Status: (% Complete)	Comments
18	Pilot testing and completion of eLearning materials	05-2012	12-2012	Complete	
19	eLearning platforms completed and launched	06-2012	12-2012	Complete	Web sites launched by both CTU and KU in addition to MSU eLearning sites.
20	Training programs delivered face-to-face	10-2012	06-2013	Complete	Training programs continued until completion of project in 06-2013.
21	Training programs delivered by eLearning or other distance education	10-2012	06-2013	Complete	Delivery of captured modules in Thailand and Vietnam through partner web sites is ongoing. MSU also tested full eLearning program for food manufacturing scope in Vietnam in cooperation with The World Bank and MARD.
22	Market orientation training provide	03-2012	06-2013	Complete	Market orientation training was incorporated into several of the training programs in both countries.
23	Market linkages facilitated	10-2012	06-2013	50% Complete	Work on market linkages is ongoing, facilitated by project partners. Short duration of project precluded development of fully-realized market linkages in all sectors.
24	Evaluation of training programs and other program elements	10-2012	06-2013	Complete	Surveys of project stakeholders completed.

Item ID	Item Description	Target Finish Date	Actual or Forecast Finish Date	Status: (% Complete)	Comments
25	End of project lessons learned workshops completed	12-2012	06-2013	Complete	Project closing workshops in Thailand and Vietnam completed in June 2013.
26	Final workshop reports completed	12-2012	12-2013	Complete	Delay in reporting by some project partners.
27	Final project report completed for STDF	12-2012	01-2014	Complete	Final report delayed by in-country partner report late submissions.

Financial Report

Budget overview:

	STDF contribution (US $)	Other donor contribution (US$) as applicable for co-financing arrangements	In-kind contribution (US $)	Total (US $)	% of Total project cost
Projected Total Project Budget (US $)	$ 581,645	$0	$ 137,610	$ 719,255	100
Total expenditure to date (US $)	$ 578,000	$0	$ 137,610	$ 715,610	99
Expenditure for reporting period (US $)	$ 68,677	$0	$ 15,082	$ 83,759	12
Unspent funds (US $)	$ 3,645	$0	$ 0	$ 3,645	1

ANNEX 1 – Itemized Financial Statement by Major Category

Table 1. Expenses and Cost Share by Reporting Period and Total for Project Year 3.

	Expenses			Cost Share		
	Year 3 Jan-Jun	Year 3 Jul-Dec	Total	Year 3 Jan-Jun	Year 3 Jul-Dec	Total
Project Management	12,851		12,851	15,082		15,082
Sub-Contracts	33,271		33,271	-	-	-
Technical Assistance	20,534		20,534	-	-	-
MSU Travel	2,021		2,021	-	-	-
Materials / Services	0		0	-	-	-
Total	68,677		68,677	15,082		15,082