PROJECT: STDF/PG/381

"COCOASAFE": CAPACITY BUILDING AND KNOWLEDGE SHARING IN SPS IN COCOA IN SOUTH EAST ASIA

FINAL REPORT

SEPTEMBER 2016

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PROJECT INFORMATION

Title: "COCOASAFE": CAPACITY BUILDING AND KNOWLEDGE SHARING IN SPS IN COCOA IN SOUTH EAST ASIA
Implementing Agency: CABI
Partners: Indonesian Coffee and Cocoa Research Institute (ICCRI); Malaysian Cocoa Board (MCB); Papua New Guinea Cocoa and Coconut Institute Limited (PNG-CCIL) International Cocoa Organization (ICCO); International Cocoa Organisation (ICCO); Mars; CropLife Asia
Start Date: November 2013
End Date: April 2016
Beneficiary: Indonesia, Malaysia and Papua New Guinea
Budget: Project value: US$945,279 STDF contribution: US$652,851

LIST OF ABBREVIATIONS

AARD	:	Agency for Agriculture Research & Development (Indonesia)
AESA	:	Agro-ecosystem Analysis
CABI	:	Centre for Agriculture and Biosciences International
CABI SEA	:	CABI Southeast Asia
CDP	:	Cocoa Diseases and Pests
CH	:	Crop Husbandry
CPB	:	Cocoa Pod Borer
CQ	:	Cocoa Quality
DOA	:	Department of Agriculture (Malaysia)
FELDA	:	Federal Land Development Authority
FFS	:	Farmer's Field School
GAP	:	Good Agriculture Practice
ICCO	:	The International Cocoa Organization
ICCRI	:	Indonesian Coffee and Cocoa Research Institute
IPM	:	Integrated Pest Management
MARDI	:	Malaysian Agriculture Research & Development Institute
MCB	:	Malaysian Cocoa Board
MDG	:	Millennium Development Goal
MF	:	Master Facilitator
MPOB	:	Malaysian Palm Oil Board
MRB	:	Malaysian Rubber Board
NIA	:	National Implementing Agency
NPIA	:	National Project Implementing Agency
PAH	:	Poly-acrylic hydrocarbon
PEA	:	Project Executing Agency
PIA	:	Project Implementing Agency
PNGCCIL	:	Papua New Guinea Cocoa and Coconut Institute Limited
PSB	:	Project Supervisory Body
PSC	:	Project Steering Committee
RPU	:	Rational Pesticide Use
SE	:	South East
SPS	:	Sanitary and Phyto-sanitary Agreement
STDF	:	Standards and Trade Development Facility
TOF	:	Training of Facilitator
TOMF	:	Training of Master Facilitator
VSD	:	Vascular Streak Dieback

1. EXECUTIVE SUMMARY

The project entitled 'CocoaSafe': Capacity Building and Knowledge Sharing in SPS in Cocoa in South East Asia (STDF/PG/381) started in November 2013 and ended in April 2016. The project was led by CABI and implemented in the participating countries (Indonesia, Malaysia and Papua New Guinea) by the national institutions and by CABI. The International Cocoa Organisation (ICCO) was the Project Advisory Body for the project. Funding was provided by STDF (US$ 652,851) and co-financing provided by the participating country partners. The project was managed through a Project Steering Committee with members from CABI, ICCO, country partners, FAO and STDF. National steering committees were also set up to coordinate activities in participating countries.

The project originated because of concerns by the cocoa sector about food safety issues in the cocoa supply chain. Pest and diseases remain significant constraints to cocoa growing in these countries and consequently, pesticide use remains one management strategy for dealing with these constraints. However, consumers are becoming increasingly concerned about pesticides residues in food. Responding to consumer concerns, policy makers have enacted legislation to limit harmful substances in food products including in raw commodities such as cocoa. One consequence of this is that producing countries have to comply with the increasing number of legislative and regulatory measures on SPS standards on food safety or face the possibility of losing access to lucrative markets in Europe, the US and Japan. Other food safety concerns in cocoa include contamination with fungal toxins (mycotoxins) produced during post-harvest processing and storage of beans, harmful levels of heavy metals (particularly cadmium) and contamination by polycyclic aromatic hydrocarbons (PAHs) which can result from inefficient or poorly maintained diesel dryers used to dry cocoa beans. Infestation with insect pests in cocoa shipments is another food safety concern with the US market imposing automatic detention of shipments from some cocoa producing countries so that physical inspection can take place.

Therefore, developing capacity along the supply chain both to understand the need for compliance to SPS measures and, to conduct best practice to reduce pesticide residues, mycotoxin production and other contaminants is now a priority in many developing countries; any removal of access to lucrative markets will affect GDP and impact on producer livelihoods. Hence, the main goals of the project were to:

(i) Improve the quality of cocoa through capacity building in SPS;
(ii) Promote and facilitate knowledge sharing between stakeholder groups participating in the project; and
(iii) Raise awareness among cocoa stakeholders on food safety concerns in the whole supply chain (and how to address them)

In Indonesia, the project was implemented as a joint project between Indonesian Coffee and Cocoa Research Institute (ICCRI) and CABI. The project adopted a collaborative regional approach and activities included: (1) Formation of the national steering committee (NSC); (2) Development of locally adapted training syllabus; (3) Training of Master Facilitator (TOMF); (4) Training of Facilitators (TOF) for farm leader and local extension, agro-dealers and processors; (5) Training in best practices in postharvest techniques; (6) Training impact survey; and (7) Development of a website to disseminate agricultural and food safety standards. Dissemination and sharing of knowledge on good practices in SPS and food safety was a key element running through all of the project activities i.e. publicity campaigns, training and knowledge-sharing approaches targeting the various actors of the cocoa value chain.

The CocoaSafe training syllabus was adapted from the CABI training manual to fit local farm management practices, application of GAP and SPS, and translated into Bahasa Indonesia. Topics on recommended cocoa planting materials in Indonesia, shade management, diversification system, soil fertility and health, pest/disease management, cocoa safety and quality standard of cocoa bean, and ICCRI's standards and recommended best practices were also included in the manual. The manual for the Training of Master Facilitators (TOMF) (ISBN: 978-979-8745-23-2) is entitled, "Panduan Pelatihan: Pelatihan Fasilitator Utama". The training of master facilitators (TOMF) was attended by 20 participants, and held at ICCRI, Jember (15-25th September, 2014). The master facilitators subsequently implemented a series of training of facilitators (TOF) for local extension and farm/cooperative leader, agro-dealers, trader/processor in selected regions of cocoa growing areas/developing cocoa growing areas across Indonesia provinces. In total 500

participants attended the TOMF and TOF events. Participants were given additional copies of the training manuals and posters to distribute to other stakeholders in the cocoa supply chain.

A separate component on capacity building in Good Agricultural Practice (GAP) was a key element in the CocoaSafe project in Indonesia. This initiative focused on improvements in plant and human health, the latter through better-targeted use of agrochemicals minimize harmful contamination of soil and water. The project also raised awareness of contamination of food crops by heavy metals, pesticide residues and aflatoxins. Results from surveys immediately after training and 18 months later indicated that the TOFs for farmer leaders improved farmers' knowledge on GAP, pest and disease control, and safe use of pesticide. TOFs for agro-dealers increased retailers' awareness of regulations of sale of pesticides while TOFs for agro-processors improved knowledge of compliance of cocoa storage systems to the required SPS standards.

As part of raising awareness about food safety issues, a project website was created to share information and related materials of the CocoaSafe project in Indonesia (http://www.cocoasafeindonesia.id/.) The project also facilitated stakeholder linkages with both private enterprises and public organizations, to make the whole approach to food safety in cocoa more cohesive.

To implement the recommendations of the End Project Meeting held in Kota Kinabalu, Sabah, Malaysia in February 2016, a situation analysis workshop was organized by ICCRI from 26-27 June 2016 involving major cocoa stakeholders from Indonesia with the objective to gather information about what they are doing in-country, what the main constraints are, and how to work together (as additional activity of 3.1.).

In Malaysia, the project was implemented by MCB and CABI with Crop Life Asia also providing some as resource personnel. TOMF and TOF was conducted in various locations across Peninsular Malaysia, Sabah and Sarawak. A total of 152 participants were involved in the TOF sessions and 17 agrodealers were also trained in a separate TOF for agrodealers. The pre- and post-evaluation on the TOF course by the lead farmers, local extension staffs and agro-dealers showed increased understanding on GAP, including integrated pest management (IPM), safe use of pesticides and international SPS regulations after undergoing training. Many participants scored above 75% in their post-TOF evaluation.

Other project achievements in Malaysia included the development and distribution of training manuals (for both TOMF and TOF) and information posters in two languages – English (ISBN 978-967-2433-27-9) and in Bahasa Malaysia language (ISBN 978-983-2433-26-2) as well as the actual training of researchers, extension and agricultural officers, farmer leaders, agro-dealers as Master Facilitators (MF) and Facilitators. Curriculum content included GAP, SPS, pesticide issues and Malaysian regulations and the latest EU and Japanese regulations on maximum contaminant levels for pesticide residues, heavy metals, PAHs and mycotoxins. Videos were produced and disseminated demonstrating best practices for cocoa production, harvesting, grading and export procedures. All activity logs and outputs, training materials and presentation, information and communication materials/resources (e.g. posters, videos) were uploaded onto the national CocoaSafe website (http://www.koko.gov.my/cocoasafe/), hosted and maintained by MCB. The CocoaSafe training modules have been adopted and included in MCB's Advance Course of Cocoa Technologies at MCB Malaysia to increase cocoa farmers' productivity and quality.

An evaluation study to assess the efficacy of the training was conducted with a baseline survey conducted with the TOF participants at the start of the project and a second survey carried out 18 months later (with the same group of respondents). Major problems identified in 1st survey eg Cocoa Pod Borer was perceived to have decreased in importance at the time of the second survey. This may indicate that the respondents/participants of TOF had adopted the practices they had learned in the TOF programme and felt more confident in managing this pest. Survey results also indicated that the majority of producers were now only harvesting fully mature, ripe, non-diseased pods and the quality of their cocoa had improved and consequently their income (as determined by their sale records). Chemical analyses carried out on samples of cocoa beans produced by farmers who participated in the TOF sessions showed that beans produced by the participants were compliant with international SPS standards.

In PNG the CocoaSafe training syllabus was again adapted to fit local practices in collaboration with staff from the Papua New Guinea Cocoa and Coconut Institute Limited (PNGCCIL). In addition to country specific information 21 major pests and diseases were added into the manual. One

hundred copies of the training manual were printed and forty copies have been given to PNGCCIL during the recent visit to Madang in September 2016 and ready for dissemination in country. The manual will be use in the TOMF Training of the ACIAR Cocoa Project to be held in CCIL-Rabaul in early 2017.

In addition to the activities in the individual countries, CABI hosted and maintained the project website where all of the training materials and resources can be accessed (www.cocoasafe.org) which has links to the country partner websites and to the ICCO SPS website. Further, hard copy manuals and posters etc. are also available.

Sustainability of capacity building projects is vital in international development and in Malaysia; some of the TOF modules developed for the project have been integrated into MCB's cocoa training courses eg the Advanced Course of Cocoa Technologies in the Technologies Transfer Programme. Maintenance of the websites will need to be done and it is suggested that the websites should be integrated with social media tools (e.g. Facebook, Instagram) to complement and generate higher levels of traffic and appeal to younger cocoa farmers

It is recommended that the project should be scaled up across all participating countries especially using the FFS approach. MCB has piloted the first CocoaSafe FFS at Pos Yom, Perak, with the aim of building farmer capacity to make well-informed crop management decisions through increased knowledge and understanding of the agro-ecosystem.

2. BACKGROUND

The project titled **"CocoaSafe: Capacity Building and Knowledge Sharing in SPS in Cocoa in South East Asia"** commenced in 1st November 2013. The project was implemented in Malaysia, Indonesia and PNG by various stakeholders, with MCB (Malaysia), ICCRI (Indonesia) and PNG-CCIL taking the lead as the National Project Implementing Agencies (NPIA's). CABI assumed the role as the Project Executing Agency (PEA) supported by The International Cocoa Organization (ICCO) as the Project Advisory Body. Project funding from STDF was initially for a period of 24 months; starting 1st of November 2013 until 31st October 2015 however the project was subsequently given a no-cost extension until 30th April 2016 as some activities required extra time for completion.

Cocoa in the SE Asia region is an important source of income to thousands of smallholder farmers who depend on it for their livelihood. Indonesia is the world's third largest cocoa producer after Côte d'Ivoire and Ghana. An estimated 774,000 tonnes of cocoa was produced on an area of 1.74 million/ha during 2013/2014, with 95% of producers identified as smallholder farmers (MOA Indonesia, 2014). There are approximately 1.72 million cocoa smallholder farmers in Indonesia with about 500,000 of these in Sulawesi. Sulawesi is the main cocoa-producing area (984,000 ha with production of 460,000 tons, representing about two thirds of the country's output), while the remaining production is distributed between North Sumatra, West Java and Papua, with lower level production in Bali, Flores and other islands. Cocoa represents Indonesia's fourth largest agricultural export in terms of foreign exchange earnings. Exports from Indonesia include some fine flavour cocoa, e.g. Java cocoa which is used for the production of speciality chocolates owing to its unique flavour and aroma characteristics. Despite being one of the leading cocoa producers, the country still imports cocoa (mainly from Africa which is used for blending). In 2014, Indonesia imported 109,409 tons of cocoa.

The Indonesian Cocoa Association (ASKINDO) expects that Indonesia's cocoa exports will decline by 37 percent to 25,000 tons in 2016 from an estimated 40,000 tons in 2015 and 60,000 tons in 2013. As such, Indonesian cocoa exports are set to continue their slide. In 2014, the country's cocoa exports have been falling as the government set a tougher tax regime in mid-2014. The export tax for cocoa is 10 percent, VAT at 10 percent and the income tax is 0.5 percent. In 2014, the domestic consumption by local industries has increased from 50 to 75% and therefore produced a negative impact on cocoa bean exports. Due to the tax environment, more and more cocoa output is consumed domestically. In the January-October 2015 period, Indonesia's cocoa imports stood at 48,109 tons, down significantly from 2014 imports. In 2016, a new challenge will occur in Indonesia's cocoa industry as a new government regulation will come into effect in May 2016. This new regulation requires local farmers to ferment cocoa beans to increase value before being allowed to sell their products.

Cocoa bean production in Malaysia has declined from 247,000 tons in 1990 to 16,000 in 2010 due to declining prices internationally, higher labor costs, loss of production due to pests and diseases, and a switch in relative competitiveness to other crops (particularly oil palm and rubber). The area under cocoa cultivation is now estimated at just over 20,000 ha, of which 95% is smallholdings. However, Malaysia now aims to address this decline and enhance production in-country: under the National Commodity Policy 2011-2020, it was planned that the cocoa planted areas will be increased from 20,070 Ha in 2010 to 30,000 Ha in 2015 and to 40,000 Ha in 2020.

Most of the cocoa in Malaysia is produced by smallholder farmers, who mostly form farmer groups or clusters. Productivity is typically low, with average to good quality of cocoa beans. In these systems, best practice is rarely applied in cocoa production. Input suppliers in Malaysia (mostly agro-dealers) sell inputs for a range of crops depending on the locality. Agro-dealer outlets are excellent intervention points in the cocoa value chain for improving knowledge and training capabilities to improve best practices in Sanitary and Phytosanitary (SPS) issues, in particular relating to pesticide use. They may have been trained in the related issues, but this is likely to have been through a chemical company, and the training will not be specific to cocoa. Local collecting and bulking by collectors and traders is followed either by local processing or export by local and multinational exporters.

The important production constraints in SE Asia, particularly in Malaysia include cocoa pod borer (CPB) and vascular streak dieback (VSD) as the biggest pest and disease problems. CPB has had a devastating impact on cocoa production in Malaysia in 1990 which led to a decrease in production from 247,000 MT to 200,000 by 1993 and was one reason for the virtual disappearance of cocoa from Peninsular Malaysia during the 1990s. The first recording of VSD was in the 1960s in Papua New Guinea, causing severe losses in yields, but was eventually brought under control by the development of resistant germplasm. In recent years, VSD has re-emerged as a major problem for farmers and phytosanitary authorities, adding a further challenge to the sustainability of cocoa production in the country. It is now present in all cocoa-producing countries in Asia and the Pacific and is also a major problem in the commercial plantations in West Malaysia and Sabah. *Phytophthora* pod rot is another constraint to primary production in Malaysia.

In Papua New Guinea, cocoa is one of the most important agricultural export crops, it contributes up to 17% of the nation's agriculture sector's revenue equivalent to about K250-K300 million annually (US$1.5 million). The crop is grown predominantly in the low lying costal and island provinces, only 14 provinces in PNG participated in the production of cocoa with varying levels of productions per province. Production averages 45,000 tons of exportable beans annually with a peak of 56 thousand tonnes in 2008. This contribution, though insignificant in volume (1-2% of the world's cocoa production) represents up to 95% of the world's fine flavour cocoa (ICCO RATING, December 2007). Most of the beans are exported to countries within Southeast Asia, particularly to grinders in Malaysia, Indonesia and Singapore. A small portion is exported to countries in European Union and United States. Cocoa bean production in PNG has been dominated by smallholder farmers since the 1970s, producing 80% of the total volume of cocoa. Production in the plantation sector declined due to increased cost of production, labour shortages and growing awareness of land acquisition issues.

The project originated because of concerns by the cocoa sector about food safety issues in the cocoa supply chain. Pest and diseases remain significant constraints to cocoa growing in these countries and consequently, pesticide use remains one management strategies for dealing with these constraints. However, consumers are becoming increasingly concerned about pesticides residues in food. Responding to consumer concerns, policy makers have enacted legislation to limit harmful substances in food products including in raw commodities such as cocoa. One consequence of this is that producing countries have to comply with the increasing number of legislative and regulatory measures on SPS standards on food safety or face the possibility of losing access to lucrative markets in Europe, the US and Japan. Other food safety concerns in cocoa include contamination with fungal toxins (mycotoxins) produced during post-harvest processing and storage of beans, harmful levels of heavy metals (particularly cadmium) and contamination by polycyclic aromatic hydrocarbons (PAHs) which can result from inefficient or poorly maintained diesel dryers used to dry cocoa beans. Infestation with insect pests in cocoa shipments is another food safety concern with the US market imposing automatic detention of shipments from some cocoa producing countries so that physical inspection can take place.

Therefore, developing capacity along the supply chain both to understand the need for compliance to SPS measures and, to conduct best practice to reduce pesticide residues, mycotoxin production

and other contaminants is now a priority in many developing countries; any removal of access to lucrative markets will affect GDP and impact on producer livelihoods. Hence, the main goals of the project were to:

As cocoa pests and diseases continue to be a major challenge for production in Indonesia, Malaysia and Papua New Guinea, the use of pesticides remains the most effective means of controlling them. Measures are therefore needed to minimize the levels of harmful substances in cocoa products arising from the use of pesticides, particularly as cocoa-producing countries face potential trade barriers as a result of increasing numbers of legislative and regulatory measures on SPS standards on food safety, enacted by cocoa-consuming countries. Contaminants are of great concern for both importing countries and exporting parties, as ever more stringent limits are applied. Developing capacity in conforming to SPS and imposed maximum contaminant levels is now a priority in many developing countries, especially in the context of accessing high value markets in the developed world.

3. PROJECT GOAL

The overall goal of this project is to ensure the continued production and trade of cocoa that meets food safety and international SPS standards. Promotion of best practice at all stages of the cocoa value chain from production to export will result in production of good quality cocoa that complies with international regulations and legislation on pesticide residues and other harmful substances. As with other foodstuffs, consumers of cocoa and cocoa products all over the world are becoming increasingly concerned about the use of potentially harmful chemicals in cocoa production and processing. Many countries have enacted legislative and regulatory measures and established sanitary and phytosanitary standards; compliance of imported cocoa and cocoa products to these standards is required for continued access to their high value markets.

4. PROJECT IMPLEMENTATION AND MANAGEMENT

CABI was responsible for the overall coordination of project implementation and delivery of project outputs against the log frame and within budget. Through the appointment of a project manager CABI provided strategic guidance, technical advice, and backstopping to ensure smooth implementation of the project and efficient use of resources in the participating countries. Additional scientific, administrative and logistical support was provided by CABI staff from the Southeast and East Asia Centre in Malaysia and the UK. The PEA was also responsible for reporting directly to STDF on project activities (see progress reports and meeting minutes in Annex 9.2.1.)

The International Cocoa Organization (ICCO) was appointed as the Project Advisory Body (PAB) and worked with the PEA to ensure the project was properly implemented and ensuring outputs were of good quality. They monitored progress and offered support and advice, if necessary. This includes accountability to the STDF and other donors regarding technical, administrative and financial management of the project. The PAB received regular progress reports from the PEA to which their inputs were included before submission to STDF and other partners.

The NPIA's in each of the participating countries (MCB, ICCRI and CCIL) were responsible for the day-to-day implementation of project activities and for providing regular reports (see Annex 9.2.2. & 9.2.3.) to the PEA and the PAB. Each NPIA appointed a national co-ordinator to be responsible for implementation and management of the project on a national level. ICCRI and MCB formed their own National Steering Committee which comprised of several senior management/technical officers from their institutions to provide guidance and technical advice on country activities.

Project Steering Committee (PSC) was also set up, this committee was responsible for providing strategic direction to each of the partner agencies and provide backstopping. The seven core members of the PSC included the project manager on behalf of the PEA, the national coordinators from each of the NPIAs and a representative from ICCO, experts from FAO's regional office in Bangkok and a representative from the STDF Working Group. Key stakeholders representing farmers, government bodies and private sector were also included as a part of the Steering Committee. Effective communication was very essential between all partners on the PSC, and between the project partners at institutional and the individual level. Work plans and budgets were

finalised and detailed at the project inception workshop. The PSC met during the inception and end of project workshops, and had a mid-term review meeting at month 12-13 at ICCRI, Indonesia which coincided with TOMF training events (to reduce travel costs of the NPIA from Malaysia and PEA).

5. PROJECT OBJECTIVE, OUTPUTS & ACTIVITIES

5.1. Project Objective: To produce and trade cocoa that meets food safety and international SPS standards and increase awareness of SPS issues among supply chain stakeholders through innovative knowledge dissemination.

Activities:

Component I: Improved Capacity of SPS and GAP knowledge amongst project stakeholders.

Improved capacity of relevant cocoa stakeholders along the cocoa supply chain (from farm to export point) in Indonesia and Malaysia to provide training on SPS and GAP practices in-line with international standards.

Activity	Description	Date implemented	
		Indonesia	Malaysia
Activity 1.1	Development of locally adapted curricula for training of trainers	September 2014	March 2014
Activity 1.2	Train agricultural officers / researchers / extension officers as master facilitators	September 2014	April 2014
Activity 1.3	Training of facilitators: farm group / cooperative leaders	December 2014 and January 2015	June and August 2014
Activity 1.4	Training of facilitators: local extension staff	December 2014 and January 2015	June and August 2014
Activity 1.5	Training of facilitator: agro-dealers	April 2015	August 2014
Activity 1.6	Training of facilitators: storage/processing (Indonesia)	June 2015	-
Activity 1.6	Training in best practices postharvest: traders and processors (Indonesia)	June 2015	-
Activity 1.7	Training in best practices storage and processing: traders and processors (Indonesia)	June 2015	-
Activity 1.8	1st Baseline surveys	December 2014	June and August 2014
	2nd Baseline survey for impact study on farmers and agro - dealers	November 2015 and January 2016	January 2016

Component II: Knowledge Exchange Platform for Project Stakeholder Groups and Awareness Raising Beyond Direct Project Interventions

To enhance cooperation among relevant stakeholders in Indonesia and Malaysia, to address food safety requirements and international standards on SPS.

Activity	Description	Date Implemented	
		Indonesia	Malaysia
Activity 2.1	Analysis of website user accessibility / requirements	February 2015	August 2014
Activity 2.2	Design, creation of website / knowledge exchange platform	February 2015	October 2014
Activity 2.3	Updating, maintenance and monitoring of website / knowledge exchange platform	January 2016	April 2016
Activity 2.4	Best practices and lessons learned from training activities shared via the knowledge platform	April 2016	April 2016
Activity 2.5	Production of printed materials for dissemination (TOMF Manual = 200 units)	September 2014	April 2014
	Production of printed materials for dissemination (TOF Manual = 500 units)	December 2014	May 2014
	Production of printed materials for dissemination (3 Posters = 100 copies each) in Bahasa Melayu version	April 2015	September 2015
	Production of printed materials for dissemination (3 Posters = 10 copies each) in English version	November 2015	November 2015

Component III: Coordination, management and Evaluation of the project

Strategic guidance, technical advice and backstopping for implementation of the project were provided by PEA (CABI). In addition, backstopping, quality assurance and support was available from ICCO. Additional administrative and logistical support, including regular liaison with the NIOs, was also provided. Day-to-day financial management was provided by the NPIAs.

Activity	Description	Date Implemented
Activity 3.1	Project coordination and monitoring	November 2014-April 2016
	1st Progress Report	May 2014
	2nd Progress Report	October 2014
	3rd Progress Report	April 2015
	4th Progress Report	October 2015
Activity 3.2	Project inception workshop	November 2013
	1st Project Steering Committee Meeting	November 2013
	2nd Project Steering Committee Meeting	September 2014
Activity 3.3	End project workshop/Meeting	February 2016
	Cocoa Partnership Workshop (ICCRI, Indonesia)	June 2016
	Final Project Report	September 2016

5.1.1. Output 1: Development and production of locally tailored Training curricula and manuals

CABI prepared the TOMF manual based on existing material and available references related to SPS/GAP and food safety. The manual comprised of three parts, i.e. Part 1–Theory, Part 2–Practical, Part 3 & 4-Appendices. In Part 1, four chapters were discussed, i.e. on General aspects of TOMF, General introduction on cocoa, Food Safety and HACCP, and Steps to plan, organize and conduct training of facilitators. In Part 2 – Discovery learning exercises were divided into 6 (six) modules, i.e. Starting FFS, Agro-ecosystem Analysis (AESA), Crop husbandry, Managing cocoa diseases and pests, Rational pesticide use, and Cocoa quality. Part 3 contained eleven major pests and diseases of cocoa, e.g. cocoa pod borer, black pod and pink diseases. Part 4 covered all recording forms to be used in the exercises, e.g. farm plan, chemical inventory, spray record, harvesting and packing records. This manual has been adopted by NIA with revision and inclusion of additional materials based on the local practices related to cocoa production, post-harvest and safety.

INDONESIA
The CABI TOMF Manual was adopted and translated into Indonesian by a team of ICCRI's officers. Local IPM and GAP practices as well as quality standards were added into the manual with title "**Panduan Pelatihan: Pelatihan Fasilitator Utama"** (ISBN 978-979-8745-23-2). 525 copies of the manual were printed to be used in the TOMF and TOFs as well as for distribution to relevant institutions in Indonesia.

MALAYSIA
Fifty (50) copies of the training modules and curricula on GAP/SPS/safety were produced under activity 1.1. The training modules were printed in English and distributed to Training of Master Facilitators (TOMF) trainees as the reference manual. Meanwhile the training manuals were also translated into Bahasa Malay and 500 copies were printed. This manual was used by participants from the Training of Facilitators (TOF) and also distributed to other cocoa stakeholders in Malaysia.

Papua New Guinea
The CABI TOMF Manual was adopted to be used in PNG by a team of CCIL's officers. Local cocoa production in different provinces of PNG, quality standards from PNG Cocoa Board and also 21 major pests and diseases in PMG were added into the manual. The manual has been printed and 50 copies has been given to PNGCCIL. The manual would be used in the TOMF training of the ACIAR Project on Improved Management Strategies of Cocoa in PNG (HORT/2012/026) to be held in PNGCCIL, Rabaul in January/February 2017.

5.1.2. Output 2: Training of master facilitators

INDONESIA
Training of master facilitator (TOMF) was conducted at ICCRI during a 10 day workshop from 15-26 September 2014 and the local adopted manual was used as the reference manual for the training. Twenty participants who represented local extension services, cocoa nursery services, outstanding farmers and junior scientists of ICCRI were selected to participate in the training. The selection was carried out by the national SC based on the recommendation given by ICCRI's collaborators (extension service of the provincial estate crop agencies or farmer's groups) and also through the personal contact of ICCRI's partners. The participants were selected from 11 different cocoa growing provinces in Indonesia namely West Sumatra, Lampung, West Kalimantan, East Kalimantan, North Kalimantan, South Sulawesi, West Sulawesi, Central Sulawesi, Southeast Sulawesi, Bali, East Java and ICCRI's junior scientists. The resource persons conducted the TOMF program were from CABI, and experts from ICCRI and the provincial estate crops agency. The age of participants varied from 26 to 51 years old but the group was predominantly 40's year olds with a good potential for continuing the program as trainers. Based on the gender perspectives, 20% of female participants attended this training. The education backgrounds also varied from elementary school level to master degree level but in terms of skills in the cocoa sector, they had similar ability, i.e. doing cocoa farming as the main criteria in selecting the participants.

To evaluate the trainees' knowledge (before and after training) questionnaires were distributed and completed by the trainees. The scores from the pre–training tests and post training-tests varied from 32% to 90% for the pre-test and from 40% to 97% for the post training-test with an average of 61% and 69% for pre-test and post-test results indicating a general trend that their

knowledge had increased with training (although individual scores varied). There were a few participants with existing excellent understanding of the theory of food safety agendas in cocoa (before the training) and they were the individuals who had the highest pre test scores.

The participants that graduated from the TOMF as master facilitators (MFs) were tasked with implementing the training of facilitator (TOFs) for local extension officers, farm leaders, agro-dealers and processors and post harvest practices. The outputs from the TOMF were (1) 20 trained-persons as MFs for TOFs, (2) adopting the training syllabus for TOFs, and (3) some recommendations concerning cocoa sustainability, cocoa safety and cocoa business that were used to improve the local syllabus/manual.

MALAYSIA
Twenty seven master facilitators (MFs) were trained in the Training of Master Facilitators (TOMF) under activity 1.2. The master facilitators consisted of 5 scientists from the Malaysian Cocoa Board; 22 extension staff (14 from Malaysian Cocoa Board and 8 from Department of Agriculture). The participants came from three regions, namely Peninsular Malaysia, Sabah and Sarawak. The TOMF training was held in the Cocoa Research and Development Center, Hilir Perak, Perak from 07th to 17th April 2014. The resource persons conducted the TOMF program were from CABI, MCB and CropLife Malaysia. The syllabus used in TOMF program included, theoretical and practical work. The participants were divided into small groups for more effective, practical learning. Almost 100% of the facilitators trained successfully scored above 80% in their post training evaluation on the TOMF course on GAP which included integrated pest management (IPM), safe use of pesticides and international SPS regulations. This indicated that the master facilitators understood GAP and international SPS standards which can be later used to form the basis of the curriculum for training the facilitators.

5.1.3. Output 3: The lead farmers, local extension staffs and agro-dealers trained and capable to train their peers and associates in issues and best practice relating to topics of SPS, GAP and safety

INDONESIA
A series of TOFs were conducted in the cocoa growing area of Indonesia. The selected locations were divided in two categories, namely Sulawesi representing the most intensive cocoa growing area and in the second category, representing less intensive cocoa farming areas e.g. in Sumatra, Bali and Java where farmers use pesticides less intensively. TOF for farm/cooperative leaders and local extension officers were conducted in parallel in the selected cocoa growing areas, namely Soppeng District of South Sulawesi (4-12 January 2015), Konawe District of Southeast Sulawesi (14-22 December 2014), Polewali Mandar District of West Sulawesi (6-15 January 2015), Lima Puluh Kota District of West Sumatra (15-22 December 2014) and Blitar District of East Java (4-12 January 2015). In each location of the 5 provinces 40 participants were trained.

TOF for agro-dealers was conducted in West Sulawesi (13-18 April 2015) and West Sumatra (20-27 April 2015). Both of the selected locations represent the cocoa growing areas with more intensive use of pesticides (West Sulawesi) and less intensive use pesticides (West Sumatra). TOF for agro-dealers mainly involved participation by pesticide retailers who seldom attend training or meetings organized by agricultural services but who form a core group providing advice to farmers. The numbers of participants were 60 people in each province.

TOF for traders/processors and for post-harvest best practice were conducted in South Sulawesi (8-13 June 2015), Central Sulawesi (2-7 June 2015) and Lampung (8-14 June 2015). Lampung is a fast expanding cocoa growing area in Sumatra that needed a simple approach to aid adoption of best practice on post-harvest handling and processing of cocoa beans and product, in order to allow conformation with SPS regulations. Sulawesi is the center of intensive cocoa growing in Indonesia and they needed support on processing in order to maintain high quality cocoa production that met requirement of SNI (National Standard for Indonesia). Sixty (60) participants were trained from each of these provinces.

MALAYSIA
A total of 152 participants consisting of 109 lead farmers and 43 local extension staff from Malaysian Cocoa Board (MCB) were involved in the training of facilitators (TOF). Activities 1.3 and 1.4 were conducted in four locations in Malaysia, i.e., Sabah (16th – 20th June 2014), Sarawak (11th – 15th August 2014), Perak (22th – 26th June 2014) and Pahang (16th – 20th June 2014). For these activities, participants included 30 farmers and 16 local extension staff from MCB in

Sarawak; 22 farmers and 12 local extension staff from MCB in Sabah; 27 farmers and 10 local extension staff from MCB in Hilir Perak; and 30 farmers and 5 local extension staff from MCB in Jengka, Pahang. The training of farmer group leaders and local extension staff of MCB focused on SPS, Good Agriculture Practices (GAP), safety, production and postharvest practices. In addition, 17 agro-dealers participated in activity 1.5 (Training of agro-dealers as sources of knowledge for farmers in appropriate pesticide use) at the Cocoa Research and Development Center, Kota Samarahan, Sarawak (22th – 26th August 2014). The 17 agro-dealers were selected from three regions in Malaysia, namely, Sabah (3 participants), Peninsular Malaysia (7 participants) and Sarawak (7 participants). The training of agro-dealers covered SPS, GAP and details on pesticide such as pesticide regulations in Malaysia, pesticide classification & formulation, pesticide labelling & registration, registered pesticides for cocoa in Malaysia and pesticides & human health.

The selection of agro-dealers was based on their involvement in supplying agriculture inputs such as pesticides and fertilizers to the cocoa farmers. The agro-dealers attended the TOF course (activity 1.5) to provide sound advice to their customers relating to best practice in GAP/SPS/safety, particularly with respect to the inputs they supplied.

The agro-dealer participants in TOF have learned about pesticide regulations set by the Malaysian government. This includes the regulation that the pesticide dealers in Malaysia must be registered with the National Pesticide Board and that they need to attend pesticide training on pesticide usage (to gain basic information on pesticides). In addition, the National Pesticide Board monitors the correct usage of pesticides on commodities (only products registered for those commodities are allowed to use on the crops). Also, all pesticides to be used in Malaysia must have label registration and all pesticides purchased must be recorded by enforcement officers from the National Pesticide Board.

The pre and post training evaluation on the TOF course by the lead farmers, local extension staffs and agro-dealers showed increased understanding of GAP and international SPS standards with all participants. Most participants (80%) managed to score above 75% in their post-evaluation. These lead farmers, local extension staff and agro-dealers involved in the training were successful in understanding GAP, including integrated pest management (IPM), safe use of pesticides and international SPS regulations.

5.1.4. Output 4: Results of the baseline survey and impact study on farmers and agro-dealers/processors

INDONESIA
The baseline surveys for farmers' leaders were conducted in 5 cocoa growing provinces of South Sulawesi, SE Sulawesi, West Sulawesi, West Sumatra and East Java; for agro-dealers in 2 provinces of West Sulawesi and West Sumatra; and for agro-processors in 3 provinces of Central Sulawesi, South Sulawesi and Lampung. The impact assessment study was only conducted in 2 provinces for farmers, i.e. in East Java (in January 2016) and SE Sulawesi (in November 2015), for agro-dealers only in West Sumatra and for agro-processors in Lampung and Central Sulawesi.

A. FARMER'S LEADER

a) Basic characteristics of farmer's leaders and their cocoa
Female participants were 16% and 12.5% of the total surveyed farmers in East Java and Southeast Sulawesi respectively. The average age of farmers in both areas is 56 in East Java and 37 years in Southeast Sulawesi respectively. This data suggests that the younger generation in East Java prefers to work in non-agricultural sectors. This may be partly due to the small parcels of land owned by farmers in East Java (0.62 Ha with less than 1000 cocoa trees) and also indicating low income generation from agriculture in this region. In contrast, in Southeast Sulawesi, farmers own more land (2.34 Ha with more than 2000 trees) which allows a better income. This has prompted more interest by the younger generation to grow and manage cocoa plantations. The average age of cocoa trees in East Java was about 8 years and in SE Sulawesi is 13.5 years. The productivity of cocoa in SE Sulawesi (825 kg/Ha/year) was higher than in East Java (510 kg/Ha/year). Farmers in East Java have cocoa gardens with trees of around 8 years old while in SE Sulawesi the average age of trees is slightly older (13.5 years). The productivity of cocoa in SE Sulawesi (825 kg/Ha/year) was higher than in East Java (510 kg/Ha/year).

b) Impact of TOF on the production system

In East Java, the average usage of fertilizers was increased (from 250 kg/Ha/year before the TOF to 580 kg/Ha/year after the TOF). In SE Sulawesi, however, no increase in fertilizer usage before and after the TOF was noted. Usage remained at around 315 kg/Ha/year. Although no difference was observed (before and after TOF) almost 90% farmers in East Java were using organic fertilizers which may reduce the use of chemical fertilizers. Also no difference was observed in the numbers of farmers using pesticides before and after TOF (45%). In SE Sulawesi the % of farmers using organic fertilizers were reduced from almost 70% to 30%. Pesticide usage was reduced from 100% to 80%.

c) Impact of TOF on farm sanitation, post-harvest handling and fermentation

In East Java and SE Sulawesi, the percentage of farmers removing and burying all diseased pods increased from before and after TOF, from 25% to 65% in East Java and from 75% to 93% in SE Sulawesi. This suggested a greater understanding of the value of good sanitation in the management of the crop. Although no differences in the percentage of farmers harvesting only the ripe pods before and after the TOF, but the % were higher in East Java (85%) as compared to SE Sulawesi (50%). In both provinces, farmers did pod breaking directly after harvest with >80% farmers from SE Sulawesi as compared to 50% farmers from East Java. There was no difference in the % of farmers pod breaking directly before and after TOF in either province while in both provinces, farmers selling fermented beans increased to >70% in East Java and 40% in SE Sulawesi (after the training). The farmers are now fully aware of the higher price of fermented beans and therefore they are implementing the fermentation. The fermentation of cocoa beans in East Java involved using wooden boxes (60% of farmers) but in SE Sulawesi bamboo baskets (45%) were used.

d) Impact of TOF on cocoa drying and storage

In East Java, farmers dried their cocoa beans mainly using sun-drying on concrete cement floors (50% before TOF to 63% after TOF), and in SE Sulawesi farmers used sun-drying on bamboo racks (87% before TOF to 94% after TOF). 75% of farmers in SE Sulawesi used fire-wood to dry their beans. About 50% of the storage of beans was done in gunny sacks inside the store house in East Java while for SE Sulawesi, farmers stored their beans as loose beans in the store house (20%). No beans (100%) were stored alongside other products in either province

e) Impact of TOF to other farmers

In both provinces, East Java and SE Sulawesi, information received from TOF were shared with other farmers, i.e. through their neighbors (77%) in East Java and through group meetings (94%) in SE Sulawesi. The most important topics their shared with other farmers were pruning, GAP, pesticide usage, post-harvest handling and fermentation.

B. AGRO-DEALERS

The impact assessment survey (18 months after TOF) in agro-dealers was conducted in West Sumatra (7 people responded). These respondents were mainly (71%) retailers of chemicals, while the rest (28%) was from farmer groups/cooperatives. There was no change on how the agro-dealers source their pesticides; the majority of respondents source and purchase pesticides directly from retailers. One hundred (100) percent of the respondents reported that their main customers are cocoa farmers. This is because the majority of cocoa farms in West Sumatra are managed by smallholder farmers. In contrast, only 14% of respondents said that their main clients were farmer groups/cooperatives and processors. The agro dealers in West Sumatra not only sell pesticides, they also sell fertilizers, spraying equipment, seeds and other agricultural products. The number of agro-dealers selling fertilizers is increasing (64% before TOF and 71% after TOF). This suggests fertilizer demand in this area is increasing. Therefore, in order to respond to the demand and improve their profits, the agro-dealers in this area are also selling fertilizers to the farmers.

In the field, many agro-dealers act as village collectors and around 28% of agro-dealers act as buyers of farmers' products. Also, 29% of agro-dealers provide credit for farmers. The sales of agro-chemicals increased after training (from 7% before TOF to 43% after TOF. In addition, the agro-dealers also provided more information to farmers after attending the TOF (3% of agro-dealers provided information gathered from TOF). This information was mainly shared with farmers. The main topics shared with farmers were on the safe use of pesticides and the use of bio-pesticides.

C. AGRO-PROCESSORS

The majority of respondents (78%) in Lampung were local buying companies, while the majority of respondents (89%) in Central Sulawesi were farmer's groups. The majority of the respondents in these two cocoa producing areas purchased cocoa beans sourced mainly from smallholder farmers. The volume of cocoa handled by processors after the TOF in these two provinces was slightly increased, i.e. for Lampung, the volume handled by agro-processors before TOF was about 50,000 kg/year, and after TOF, it was 56,000 kg/year. In Central Sulawesi, the cocoa volume handled by processors increased significantly from 28,000 kg/year before TOF to 64,000 kg/year after TOF.

a) Cocoa storage and pesticide usage

From the baseline surveys conducted in Lampung and Central Sulawesi, cocoa beans are mainly stored in sacks. In Lampung, there was positive impact on how processors stored their cocoa. Before TOF, ca.79% of respondents stored cocoa as loose beans in a warehouse, but after they had received information through TOF, the number of processors storing their cocoa as loose beans in a warehouse decreased significantly (29 %). In Central Sulawesi, before TOF was conducted, the number of processors storing cocoa beans in sacks on the floor was higher than the number of processors storing cocoa beans in sacks on the racks. However, after TOF was conducted in this area, the number of processors storing cocoa beans in sacks on the floor was less than the number of processors storing cocoa beans in sacks on racks. These results suggest that the information and knowledge shared through TOF were well received and well adopted by the processors in Lampung and Central Sulawesi.

The impact assessment survey in Lampung showed that before TOF, 21% of agro-processors sprayed fungicides on cocoa in storage but this number decreased after TOF to zero (none of the processors sprayed chemicals into their cocoa beans after training). In contrast, the use of traps in the cocoa storage facilities in Lampung was increasing. In Central Sulawesi, the number of processors who used pesticides in storage facilities was higher than that of in Lampung (33% of processors used rodenticides and insecticides, while 22% used fungicides). Numbers of processors who use pesticides in Central Sulawesi is slowly decreasing after TOF. In contrast the number of processors using traps increased slightly from 22% to 33%.

b) Agro-processors' awareness on the new regulations related to food safety and pesticide application

The survey showed that in Lampung, before TOF was held, 64% of processors were aware of new regulations relating to food safety while 21% of processors were not aware. However, after TOF was held in that area, 100% respondents are now aware about the new regulation relating to food safety. In Central Sulawesi, before TOF was held in that region, 66% of processors were aware about the new regulations related to food safety, while after TOF was conducted, 100% of respondents were aware the new regulations relating to food safety that had been introduced in several consuming countries. This means that TOF had increased processor awareness of food safety. It is expected that agro-processors will now alter their behavior in using chemicals indiscriminately and have already started to use chemicals more judicially.

In Lampung, the number of agro-processors who apply chemicals (pesticides) directly to cocoa beans during storage has been reduced significantly. Before TOF, 7% agro-processors applied chemicals directly to cocoa beans but this number were reduced to zero after TOF. The reasons given by the agro-processors in not applying chemicals (after the TOF) were that it is too dangerous for human health (65%) as compared to before TOF (only 7% commented on the impact on human health). This indicates that the knowledge of agro-processors on food safety had been increased after the TOF. In Central Sulawesi, there was no changes in the number of agro-processors using chemicals in storage before or after TOF.

C) Sending cocoa beans for chemical analysis

Analyzing cocoa beans is rarely done by agro-processors in Indonesia, particularly small scale agro-processors. The impact assessment surveys showed that no chemical analysis had been done for cocoa beans in either province (Lampung and Central Sulawesi) for pesticides, toxins (myco and alpha-toxin), PAH/smoke, or heavy metals (Pb, Cd).

MALAYSIA

The baseline survey was carried out twice (just after completing the TOF program and then after 18 months of TOF training under the activity 1.7). The first baseline survey was conducted after

the participants completed their TOF course in four places, Sarawak, Sabah, Hilir Perak and Jengka.

A. FARMER'S LEADER

The results from the baseline survey on the farmers were based on 96 respondents which were selected from 3 regions [West Malaysia (45), Sabah (21) and Sarawak (30)].

Some profiles of the respondents to the baseline survey are as follows:

- The majority participants attending the TOF training are in the age range 51 to 60 years old.
- The highest education level among the majority participants is secondary or high school level.
- Data showed that 56% of the participants have their children to help in the farm during school holidays.
- Data showed that 60% of the children's participants were willing to take over the farm when their parents are older.
- The average cocoa tree age among the respondents is 6.4 ± 5.4 years.
- Monthly cocoa bean production among the respondents is 120.7 kg with monthly income from cocoa beans selling is RM970 per month.

Based on the 1st survey results on farmers, knowledge of P&D management is high among the farmers and they can identify problems which affect their production and generally management of these problems through cultural practices. However, knowledge of the fermentation process was low with 34% of the participants' not practicing fermentation. Participants' awareness on information relating to regulations that prohibit the presence of toxic chemicals in cocoa beans was at a moderate level (56%) and most of the information on GAP and food safety was provided by the agricultural extension service.

After 18 months a 2nd baseline or impact survey was carried out on the same respondents and the results indicated that 76% and 51% of the respondents considered mammals (i.e. squirrels and rats) to be the main threat to cocoa farmers causing major losses to their yields on cocoa farms. This was followed by cocoa diseases such as cocoa black pod disease and VSD (55% and 50% respectively). Only 40% of the respondents thought CPB to be a major problem in cocoa farms as compared to 58% in the 1st baseline survey. It appeared from the responses in the impact survey that major constraints identified in 1st baseline survey had decreased. This would indicate that the TOF program attended by the respondents/participants had an influence on these constraints and that participants felt more confident in attempting management of these pest problems and had successfully adopted the practices discussed in the TOF.

With regard to farm sanitation practices undertaken by the responding cocoa farmers, many preferred to remove all the diseased pods which included those infected with black pod. 75% of respondents removed all the diseased pods and 56% of respondents buried all the diseased pods that had been removed from the farms 49% preferred to apply insecticide or fungicide within a 2 week interval as recommended by the chemical company (directions label on the bottle). However, some respondents preferred to select a 1 month interval in pesticide application as this could be used in conjunction with biological control.

The impact survey indicated that there is an improvement in knowledge gained from the TOF program about the way cocoa pods were harvested. 10% increase in number of respondents was observed (from 70% in the baseline survey to 80% in the second survey) concerning the need to harvest only fully mature, ripe and uninfected pods. While there was a 1% reduction in respondents mixing mature and immature pods with disease pods.

40% of respondents in the survey chose to bulk the harvested pods until there were enough for breaking (normally not leaving for more than 1 week). 32% of respondents preferred to break the pods immediately after harvesting and only 26% of respondents chose to gather the pods until 3 days before breaking it. 38% of respondents preferred to sell their cocoa beans as wet beans to a middle man in order to receive cash immediately and not having to wait for few days while the cocoa is fermented and dried.

The 2nd survey also indicated that the TOF participants were adopting the fermentation process following training; 40% respondents chose to turn the beans every day for 5 days compared to 20% in 1st baseline survey. Besides that, the majority respondents only mixed cocoa beans harvested from day 1 and day 2 (for fermenting). The respondents preferred to dry the cocoa

beans by laying them on the plastic sheets (with 38% on cemented floors, 35% on bamboo racks or 19% on tables and 8% using tarpaulins. The 2nd baseline survey also indicated ca 90% of respondents knew the correct way to store their cocoa beans.

B. AGRO-DEALERS

Around 24% of agro dealers responded to both surveys, i.e. baseline and impact surveys. The respondents came from chemical retailers, chemical dealers and co-operatives. The main reason for this low response is because the companies/organisations are often reluctant to share information related to pesticides or other agricultural inputs they are selling. Also, many owners of the companies did not attend the TOF training because the training time was too long (owners sent only their managers for training). However, managers who attended the training could not provide information on pesticides or other agricultural inputs available in the company. The 1st baseline survey results did show some useful information (based on 24% respondents) with insecticides and herbicides being popular sales in their companies beside other agriculture inputs. Participants also received information on safe use of chemicals besides the information on pesticide use, GAP and food safety. They did attend the formal training before the TOF on the safe use of pesticides, pesticides residues and toxins except for GAP and PAH. The training was provided by the chemical suppliers, Ministry of Agriculture, MCB, Pesticides Board and also manufacturers. Dissemination of information on safety issues by the respondent's company via leaflets, visit clients, training and field days.

In the impact survey, the agro-dealers were met personally and information needed was collected. The results of the 2nd survey were based on 11 respondents selected from 3 regions (West Malaysia (3), Sabah (5) and Sarawak (3) in Malaysia. The profiles of the respondents to the agro-dealer baseline survey are as followed;

- The respondents in the agro-dealer baseline survey ranged in age from 30 to 60 years old. 64% out of 11 respondents are above 45 years old and 36% are below 45 years old.
- The highest education level among the respondents is tertiary education level but majority of respondents have secondary education level.
- The respondents answering the questionnaires are in position to make decision as most of them holding managerial position.
- All respondents have their organisation / company officially registered with Ministry of Agriculture Malaysia as a chemical retailers (5), chemical dealers (8) and Co-operative (1).
- Majority of chemicals are supplied by the local chemical manufacturer and imported.

The survey conducted with the agro-dealers indicated that there are various chemicals being sold including herbicides, insecticides, fungicides and nematicides. The top sales of agro-chemicals in the last 2 years are herbicides are Touch-up (Glyphosate 41%), Glyphosate (ammonium 33.6%), Power (Glyphosate issproylamine 41%), Fosion 188 (Glyphosate monoammonium 59.5% & metsulfuron methyl 1.5%), Punch (Glyphosate 41%), Sentry (Glyphosate isopropylamine 41%) and Ecomax (Glyphosate 41%). Meanwhile the top sales for insecticides in past 2 years are Cypersing 550 (Cypermethrin 5.5%), Cypersing 550 (Cypermethrin 5.5%), Contest 50EC (Cypermethrin 5.5%), Starfos 505 (Chlopyrifos 45.9% & Cypermethrin 4.6%), Pestban (Chlopyritos 2.9%), Nurelle 505 (Chlorpyrifos 45.9% & Cypermethrin 4.6%) and Kencis (Cyepermithrin 5.5%). For fungicides, the top sales are Antracol (Propinel), Copcide (Copper oxychloride 84%), Monceren (pencycunon 25%), Parasol (Copper hydroxide 77.0%), Mamcozeb (Disan 45%), Dithane NT (Ion manganese, Ion zink & Ion Ethylenebis (dithiocarbamate)) and Dithane M45 (Mancozeb). For nematicides, the top sales are Anfulen (Carbofuron), Pofer 3g (carbofuran 3%) and Halex carbofuron 3g (carbofuron 3%).

Meanwhile the top sales of agro-chemicals for **cocoa** in the last 2 years are divided into four categories:-

Herbicides: Touch-up (Glyphosate 41%), Glyphosate (Ammonium 33.6%), Basta 15 (Glutosurate ammonium 13.5%), Ammo Alpha (Glyphosate mono-ammonium 33.6%), Punch (Glyphosate 41%), Roundup (Glyphosate isopropylammonium 41%) and Ammo Supre (Glyphosate monoammonium).

Insectides: Safari (Cypermethrin & Chlopyrifos), Cypersing 550 (Cypermethrin 5.5%), Contest 50EC (cypermethrin 5.5%), Shieldmate 2.8 (Deltamethrin 2.8%), Contest 50EC (Cypermethrin

5.5%), Nurelle 505 (Chlorpyrifos 45.9% & Cypermethrin 4.6%) and Heytar cyper (Cyepermethrin 5.5%).

Fungicides: Halexyl (Metalaxyl), Copcide (Copper oxychloride 84%), Benocide 50wp (benomyl 50%), AGR dua 25wp (Metalaxyl 25%), Disan 45 (Mamcozeb) and Copper oxy (Metallic copper 50%).

Nematicides: Pofer 3g (carbofuran 3%), Anfluron (Carbofuran) and Malathion 84%.

In addition to the best-selling agro-chemicals for cocoa, the agro-dealers also sell, Trast 15 (Glufosinate-ammonium 13.5%) for herbicides, Starfos 505 (Chlorpyrifos 45.9% & cypermethrin 4.6%), Regent 505C (Fipronil) and FC Delta (Deltamethrin) for insecticides, Headlines 42 SC (carbendazim 42%) and Thiram 80 (Thiram 80%) for fungicides. Three chemicals ar sold as rodenticides (Arakus, Matikus and Warfarin).

The majority of their customers are cocoa farmers, food and perennial crop farmers, farmer's cooperatives, local institutions involved in agriculture such as Department of Agriculture (DOA), Malaysia Agricultural Research and Development Institute (MARDI), Malaysia Cocoa Board (MCB), Federal Land Development Authority (FELDA), Malaysian Palm Oil Board (MPOB) and Malaysian Rubber Board (MRB).

The agro-dealers were asked about the problems faced by their cocoa customers. Pests and diseases problems were still the major concern to the agro-dealer's customers (72% agro-dealers agreed with this). Two further issues (low cocoa price and usage of ineffective pesticides) were highlighted by 55% of the agro-dealers as being important constraints to their customers. The problem of using ineffective chemical (pesticides or fungicides) could be due to improper techniques being used in applying the chemical at the farm level and poor understanding on the instructions printed on the chemical's label.

All agro-dealers respondents supplied spraying equipment and fertilizers and 82% respondents also sold seeds; only 18% sold other agriculture equipment. Few agro-dealers took the initiative to assist farmers to market their products by providing space for agro-dealers to show and sell their products besides, or acting as a middle-man in selling farmers' products. Some of agro-dealers also provided credit to farmers in terms of agriculture inputs to ensure the farmers have good returns from their planting.

The impact survey with agro-dealers showed no complaints of fake agro-chemicals for cocoa in the last 2 years. The agro-dealers never supply the mixture of several individual chemicals to their customers. 82% respondents did receive information on the safe use of chemicals which included the proper way of pesticide use, GAP and food safety. However, only 50% of the respondents received posters/flyers regularly for distribution to farmers on pesticide use, GAP and food safety.

Most of the information on safe use of pesticides are provided by the chemical manufacturers (73%) and followed by the chemical importers (36%). This is part of the chemical manufacturers and importers responsiblities to ensure their customers receive the latest update on safe use of pesticides. However, there was less information on GAP being dessiminated to the agro-dealers; where only 18% agro-dealers obtained information on GAP from chemical importers. Most of the agro-dealers need to search through internet to obtain the informatin on GAP. There are also other sources to obtain the GAP information through chemical manufacturers, chemical retailers and newspaper or magazines.

Respondents also indicated that the information on food safety can be obtained from chemical importers, chemical manufacturers, leaflet/flyers, newspapers/magazines and television. In Malaysia, the chemical retailers, importers and manufacturers that are involved in providing the information on safe use of pesticides, GAP and food safety are Bayer Co (M) Sdn. Bhd., Syngenta, ACM, Farm, G-Planter Sdn. Bhd., Agrosciences (M) Sdn. Bhd. Zagro chemicals Sdn. Bhd., Bayer Crop Science & Crop Protection and Hextar chemicals. The magazines that share information on safe use of pesticides, GAP and food safety are Agro-Worlds and the Planters.

Almost 50% of the respondents have received formal training on safe use of pesticides but only 18% respondents received training on GAP and pesticide residues and most of that training had been received in the last 5 years. 36% of respondents indicated that their companies only provided information on safe use of chemicals such as pesticides to their customers (without any

training) and less than 10% respondents mentioned that their company provided training as well as disseminating information to their customers on safe use of chemicals. The approaches used to disseminate the information on safe use of chemicals and proper of handling pesticide residues included:

- Leaflets (27%)
- Visits and discussion with clients (technical assistance to farmers) (18%)
- Demonstration plots (9%)
- Field days (9%)
- Face to face with the customer during their visit to the shop (9%)

There are still a very low percentage of chemical suppliers or agro-dealers providing advice to cocoa farmers on how to manage pests and diseases. Most of the agro-dealer respondents didn't know whether their employer are aware of the new regulations that being introduced in Europe and Japan concerning the levels of chemical residues, levels of heavy metals and mycotoxins permitted in cocoa beans. Only 18% of the respondents were aware of new regulations introduced in Europe and Japan.

5.1.5. Output 5: A website on the Cocoasafe project has been developed to share knowledge and information on activities carried out in Indonesia and Malaysia

CABI

The official website for the project 'CocoaSafe' (http://www.cocoasafe.org) was established at the start and maintained throughout the duration of the project. The website serves three main purposes: repository for all activities, updates, news and reports for the project; communication, publicity and awareness where the project is publicized to stakeholders and project partners communicate and interact on the project; knowledge exchange where the website serve as a platform for knowledge exchange and resources for cocoa.

The website has sections on project activities, news and updates, media resources where any press clippings or news about the project appearing in media outlets are kept, photo and video gallery, resources on training manuals, SPS regulations and legislations, pesticide use manuals, GAP guide, warehousing practice and pest datasheets for cocoa, articles on cocoa, and links to cocoa resources and other cocoa stakeholders. The website was also linked to Indonesian (www.koko.gov.my/cocoasafe) and Malaysian websites (www.koko.gov.my/cocoasafe).

Mobile specific pages have been created for the website for almost all the sections. The sections for Home, Project Updates, Media, Resources, Gallery and about have all been formatted specifically for mobile devices like smartphones so that the website is displayed optimally on these smaller screen devices whether in portrait or landscape mode. All major smartphone platforms are supported.

INDONESIA

ICCRI has developed a website dedicated for CocoaSafe project in Indonesian language (www.koko.gov.my/cocoasafe), i.e. to share knowledge and information generated from the project (TOMF manual, TOF activities and training materials, posters and videos). The website was updated regularly and will be maintained beyond the Project.

MALAYSIA

MCB has developed a website on cocoasafe project to share knowledge and information on activities carried out in Malaysia under Activity 2.1 – 2.2. The development of the Malaysia cocoasafe's website can be accessed at www.koko.gov.my/cocoasafe.

The activities 2.1 and 2.2 have been completed with designing and developing website for Cocoasafe Malaysia as knowledge exchange platform where information on activities carried out during TOMF and TOF training were uploaded to share with all cocoa stakeholders especially cocoa farmers and agro-dealers. Content of the website included slide presentations in the TOMF and TOF training, training manuals, participants' profiles, photo gallery, posters and videos

5.1.6. Output 6: Production of Videos on best practice of cocoa safety

CABI
Videos from the training of master facilitators workshop held in Teluk Intan, Perak, Malaysia are presented on the website (http://www.cocoasafe.org/Gallery.asp?f=Videos) under the Gallery section. The shoot captured work in the classroom and fields; they include class sessions, discussion on heavy metals, sketching exercises, pest capture and labelling of insects, bagging of cocoa pests and diseases, insect specimen preparation, field workshop, examination of cocoa pods, setting up of spraying equipment, suiting up in protective clothing for pesticide spraying, demonstration of pesticide spraying techniques and bean sorting and overall view of the cocoa plantation. The videos were edited for content length, and formatted to fit website download and viewing speeds.

INDONESIA
One video on "Pesticide application – safety and rational" was produced by ICCRI for Indonesia. The objective of this video production (5-minutes of duration) is to deliver the message and knowledge on how to use pesticides properly and safely. The video is prepared in Indonesian to be used by extension officers and also farmer's leaders (they will play the video at the community hall of their district). The video was distributed to TOF participants so that they will have a better understanding on how to use pesticide in their cocoa farms.

MALAYSIA
Two videos on best practices in cocoa safety (activity 2.6) were produced in Malaysia (Video 1: The fermentation technique in cocoa and Video 2: Quality cocoa beans – beans grading and storage) as agreed during the inception meeting in Jember, Indonesia. The video shooting was carried out in Ranau and Tawau Sabah and a final version of both videos has been uploaded at www.koko.gov.my/cocoasafe to be shared with all the cocoa stakeholders. The crew involved in the production of the videos are the TOF participants and Master facilitators. The videos covered all the practices taught in the TOF course on postharvest process and cocoa beans grading till export. It took almost 3 months to complete the video which each video length is 6 to 8 minutes.

5.1.7. Output 7: Posters on the best practices in cocoa production and post-harvest activities in Indonesia and Malaysia have been produced for distribution and online.

INDONESIA
Two posters in Indonesian were produced by ICCRI for uploading to the website and distribution to all participants of the TOFs, as well as for relevant stakeholders. One poster on "Gunakan Pestisida Secara Aman (Safe Use of Pesticides)" and the other on "Gunakan Pestisida Secara Tepat (Correct Use of Pesticide)". These posters would be placed in their community hall or in the house of the farmer's leaders.

MALAYSIA
Three posters (each in English and Bahasa) on the best practice in cocoa safety for Malaysia [Poster 1: Pods harvesting, storage and breaking procedure (English)/Prosedur penuaian, penyimpanan dan pembelahan buah koko (Bahasa), Poster 2: Procedure of shallow box fermentation (English)/Prosedur fermentasi kotak cetek (Bahasa) and Poster 3: Procedure of storing dry cocoa beans (English)/Prosedur penyimpanan biji koko kering (Bahasa)] have been designed and 100 copies of each have been printed and distributed. The posters already being disseminated to the cocoa stakeholders and the softcopy of the posters can be accessed at: http://www.koko.gov.my/cocoasafe/resources/posters.html.

MCB has taken an initiative to organize the first Farmer Field Schools (FFS) in Malaysia at Pos Yom, Perak using the Cocoa Safe Training Manual. The main objective of conducting FFS in Pos Yom is to build farmers' capacity to make well-informed crop management decisions through increased knowledge and understanding of the agro-ecosystem.

5.1.8. Output 8: Cocoa Partnership Workshop in Indonesia

INDONESIA
During the End Project Meeting held in Kota Kinabalu, Malaysia in February 2016, it was recommended that a situation analysis workshop should be organized by ICCRI involving major cocoa stakeholders from Indonesia with the objective to gather information about what they are

doing in-country, what the main constraints are, and how to work together. As a result of this recommendation, the Cocoa Partnership Workshop was organized at ICCRI from 26-27 June 2016 (as additional activity of 3.3.).

The workshop was attended by 16 participants from CABI, ICCRI and different NGOs operating in Indonesia, e.g. Cocoa Sustainability Partnership (CSP), IDH-The Sustainable Trade Initiative, World Cocoa Foundation, MARS Cocoa Sustainability Research, and Swiss Contact. This meeting was able to bring together key NGOs working in the cocoa sector, who, together with ICCRI, willingly shared information on their activities, programs and direction of their initiatives. This augurs well for the industry, and the momentum generated by interest to work together to create synergies should be maintained and built upon.

Organisation of the workshop was a collaborative effort between ICCRI and CABI, and held in Indonesian to secure participation of key NGOs working in Indonesia. CABI played a key role in conducting a pre-workshop survey for the NGOs as a primer to workshop discussions, and in the consolidation of the recommendations that came out of the workshop. CABI's contribution to the workshop is part and parcel of our understanding with ICCRI that we will partner with them in the implementation of the recommendations in which ICCRI has been identified as a key player. A concept note integrating these will be prepared for comments and approval by ICCRI before submission to appropriate external donors for funding.

6. FINANCIAL OVERVIEW

The summary of the Project Finance is given below and a more detailed account of the financial breakdown for PEA and NPIAs is given in Annex 9.2**.**

	STDF	**In kind / Other**	**Total**
Total project budget (US$)	652,851	292,428**	945,279
Total amount received to date (US$)	620,208	215,632	835,840
Total expenditure during the reporting period*	83,553	38,159	121,712
Total expenditure to date (US$)	652,851	208,072	860,923
Unspent/(Overspent) funds (US$)	(32,643)	7,560	(25,083)

*Please submit a separate financial statement with a more detailed description of expenditures during the reporting period, based on the approved project budget and planned outputs/activities.

** Including cash contribution from CABI amounting of US$ 72,560.-

7. OVERALL PROJECT RESULTS AND LESSONS LEARNED

The TOMF manual has been prepared in English and translated into Malay and Indonesian and used in the TOMF Training in Indonesia and Malaysia. Twenty Master Facilitators (MFs) have been trained in Indonesia and 27 MFs in Malaysia (so exceeding the projected target of 20 MFs). 100 facilitators have been trained in 4 provinces in Indonesia and 112 facilitators (exceeding the target of 100 facilitators) have been trained in Malaysia in 4 states, i.e. Pahang, Perak, Sabah and Sarawak. All facilitators in Indonesia and Malaysia were then able to train farmers in the farmers field schools (FFS). The training of facilitators for extension officers in Indonesia managed to train 100 extension officers from 4 provinces, i.e. 100% of the target. However, in Malaysia, MCB only

have 40 extension officers nationally and although all these extension officers were trained, the project target of 80 extension staff was not met. The same also for TOF agro-dealers in Malaysia, only 17 agro-dealers selected from Sabah, Sarawak and Peninsular Malaysia participated in this training (as opposed to 40 numbers in the logframe). This is due to limited number of agro-dealers registered in the Ministry for cocoa and in addition, some of them are not willing to participate as there are afraid of losing their business if their office closed for 5 days (they suggested to have only 2 days training). In Indonesia, TOF for agro-dealers was implemented in two provinces, i.e. West Sumatra and West Sulawesi. Each training session was attended by 20 agro-dealers and in total 40 agro-dealers were trained (100% of the target in the logframe). 180 participants attended the TOF training for traders/agro-processors with 60 participants each from Lampung, Central Sulawesi and South Sulawesi.

The project has benefited many cocoa stakeholders included cocoa farmers, agro-dealers, traders/exporters, processors, extension and research officers. Specifically the benefit for each group of stakeholders can be elaborate further as follows:

Cocoa farmers: Cocoasafe project has helped them to understand how to sustain their cocoa planting through discovery learning exercises which covered Farmers Field School (FFS), Agro-Ecosystem analysis (AESA), Crop husbandry (CH) and Managing cocoa diseases and pests (CDP) and production of beans that comply with international SPS standards, Rational Pesticide use (RPU) and Cocoa quality (CQ). Producers have also become more aware of food safety issues and the need to implement best practices to allow access to markets.

Agro-dealers: The TOF training attended by the agro-dealers enhanced their knowledge of SPS and GAP which will be used to provide accurate information to their customers, e.g. farmers. The project has identified that although this group receives some information on chemicals and residues, they were lacking in knowledge of SPS and GAP and this represents an opportunity for further interaction as they are such a key group for producers.

Traders/Exporters and processors: The Cocoasafe project has benefited the traders/exporters and processors in that now when the beans are produced by farmers' beans will now be compliant with international SPS standards. Since raising awareness of food safety issues through the project, a change in behavior was demonstrated e.g. changes in the way traders use pesticides in storage facilities. Also raising awareness of food safety issues with processors has led to changes in the ways they process beans including the drying of beans. All these changes will help enable exporters to export beans to Europe and Japan that are compliant with the importing country regulations so addressing consumers concern about food safety.

Extension and research officers: The TOMF and TOF training provided for extension officers from Provincial Estate Crop Agencies in Indonesia and from Department of Agriculture in Malaysia together with Researchers and Extension officers from ICCRI and MCB will have enhanced their knowledge and understanding of SPS and of GAP. The theory and practical modules in the training could be adopted in these two institutions, e.g. for Advance Course of Cocoa Technologies at MCB Malaysia to increase cocoa farmers' productivity and quality.

Lesson Learned

Table below showed the lessons learned from the project implemented based on its activities.

Components & Activities	Problem/Success	Impact	Recommendation
<u>Component 1:</u> Enhanced Capacity of Stakeholders to Improve Quality of Cocoa and meet SPS Standards			
Activity 1.1. Development of locally adapted curricula for training of trainers.	**Success:**The syllabus provided by CABI is very comprehensive with most practices generalised from major producing countries including African countries.	**Impact:** With several additions on the local practices in Indonesia and Malaysia, such as fermentation and grading system the TOMF manual is now available to be used for CocoaSafe training in these	**Recommendation**: Best practice on post-harvest activities (fermentation and drying methods) and beans quality grading system from South East Asian countries and PNG should be included in the training manual. The TOMF manual should include more pictures/diagrams and posters to better explain best practice in

	The manual is very useful for those farmers who able to read and write (at least standard six – primary education).	countries and also in PNG. Several sections/ chapters in the manual could be used as materials in cocoa training regularly organised by ICCRI and MCB.	crop management, crop protection and post- harvest technologies.
Activity 1.2. Train agricultural officers (research and extension staff) as master trainers.	**Success:** The TOMF training methodology has helped to change the understanding of improved training approaches of participating researchers and extension officers In many cases their first participatory training experience(20 in Indonesia and 27 in Malaysia). More emphasis now on farmers as the experts and discovery learning by farmers. The extension officers from Provincial Estate Crop agencies (in Indonesia) and plant quarantine officers of the Department of Agriculture (in Malaysia) were able to understand the cocoa farmers in Indonesia and Malaysia and ready to assist farmers to practice the Sanitary and Phyto-sanitary (SPS) in their farm through the TOF training.	**Impact:** The master trainers have better knowledge and understanding of SPS and GAP issues in cocoa, in handling chemicals and its residual effects as well as how to successfully run a farmer's training (TOFs) using discovery learning techniques. Adoption of TOMF approach by the NPIAs and improve communication between the stakeholders will reduce the likelihood of beans being not compliant with the SPS rules and regulations.	The TOMF modules can be adopted into ICCRI and MCB's extension training program for farmers in Indonesia and Malaysia. **Recommendation**: ICCRI and MCB should establish and strengthen a network among the cocoa stakeholders (government officers from central and provincial, research institutions, industries, NGOs, and farmers) to share information on latest SPS issues either from consuming and producing countries
Activity 1.3. Training of facilitators: farm group/cooperative leaders.	The TOF were using adult and discovery learning techniques – in Malaysia it was difficult to deliver the content through the presentation in the classroom. The topics given were very comprehensive but in a very limited time. Farm group leaders from some producing areas of Indonesia (South Sulawesi, SE Sulawesi, West	TOF methodology was accepted by group leaders as a good methods of imparting the knowledge on SPS issues and they will use this to train other farmers in their own communities/ villages. Understanding SPS method by a few farmers should start to show impact on the understanding SPS and will be	'Hands-on Training' with multi approaches and techniques should be adopted for skills training. To prolong the training from 12 days to at least 14 working days. In Indonesia, a follow up training on farmer's field school (FFS) for farm leaders should be organized. To increase the number of TOFs for farm leaders from different cocoa growing areas in Sulawesi, Sumatra

	Sulawesi, West Sumatra and East Java) were trained on Cocoa Safe with focus on SPS and GAP. The participants were too few to represent all cocoa farmers in Indonesia the (cocoa area covered is approximately 1.7 million Ha).	delivered to other farmers step by step through FFS.	and Bali.
Activity 1.4. Training of facilitators: Local extension staff.	Able to train inexperienced extension agents (new staff). Local extension services from some producing area in Indonesia (South Sulawesi, SE Sulawesi, West Sulawesi, West Sumatra and East Java) were trained on SPS The participants of local extension services were not specialized for cocoa extention but also facilitating other commodities	The training developed more confidence among extension agents prior to their give training to the farmers. Understanding SPS methods by a few local extension staff will start to impact on the implementation of SPS and GAP on cocoa farms in Indonesia. MCB and ICCRI agreed to use TOMF manual in their training for farmers and extension officers.	All new staff of extension officers in MCB and ICCRI will need to attend the TOMF and TOF courses where the course will be organised once a year or every 2 years depending on the availability of budgets.
Activity 1.5. Training of facilitators: Agro-dealers.	The training was able to update the agro-dealers on national policy towards chemical use/food safety such as procedures for registering new pesticides with the National Pesticide Board/Committee and type of training/monitoring given by National Pesticide Board/Committee to ensure the correct usage of pesticides on the right commodities. TOF for agro-dealers were more difficult to organize in Indonesia than TOF for farm leader as the dealers could not spend as much time attending the training. TOFs were conducted in the area were	The agro-dealers attended the TOF training are now more aware of the importance of selling only registered and branded pesticides to their customers. Agro-dealers will sell pesticides following the Government regulation and relevant and correct information on the use of these to the farmers.	Disseminate updated/ latest information on new regulation set by the National Pesticide Board/Committee or government via CocoaSafe's website, pamphlets, posters and brochures. Training and re-entry (refresher) training for agro-dealers should be organized regularly, especially in relation to extension of Permit to Sale Pesticides by government. Awarness on selling the proper pesticide with lower class (e.g. III or IV) with less toxicity and negative impact on cocoa farming.

	farmers spent more pesticides on cocoa such as in West Sulawesi.		
Activity 1.6. Training of facilitators: Storage/Processing.	The training enabled agro dealers to update and increase their awareness on national policy towards chemical use/food safety such as procedures to register new pesticides with the National Pesticide Board/Committee and type of training/ monitoring given by National Pesticide Board/ Committee to ensure the correct usage of pesticides on the right commodities.	The storage and process companies are now more aware and understand more about the best storage of cocoa beans which will improve the quality of cocoa.	SPS standard on cocoa safe should be syncronized with the decree of Indonesian Ministry of Agriculture #67/2013 on cocoa quality.
Activity 1.7. Training in best practices postharvest: Traders and Processors.	Training in postharvest best practice was carried out in parallel with TOF for processors. The participants were farmer's groups who managed postharvest handling of cocoa for the groups.	Understanding the proper method on postharvest handling contributes to the improvement of the quality of the cocoa beans and with better quality cocoa, the farmers are more able to compete in the international market.	Cocoa processing by farmers should be carried out in UPH (unit processing of harvested beans) of the farmer's cooperatives/groups to ensure similar standard of bean fullfiling safety and SNI.
Activity 1.8. Baseline and Impact surveys	Less cooperation received in Malaysia from agro-dealers in answering the baseline and impact survey questionnaires as they are mostly not in position to make decision related to their company. Successfully identified major pests and diseases faced by the farmers In Indonesia, the TOF training has given a positive improvement in their practices related to farm sanitation, post-harvest handling, fermentation and storage of cocoa beans by farmers. For agro-dealers, the information received from TOF especially on SPS and GAP	Not much information was collected from the agro-dealers especially related to their sales including volume of agriculture inputs, different types of pesticides and fungicides. The information from the TOF can be used to guide the farmers, agro-dealers and processors to take necessary steps and action as to the safety of the beans from the farm to storage.	More face-to-face interviews with the company owners should be conducted. The baseline and impact survey will be continue to be conducted every 1 or 2 years by ICCRI and MCB. More TOMF and TOF should be organized especially in Indonesia as the total number of farmers and cocoa acreage is huge and the project only covered even less than 1%.

	were very useful as they are using these to inform farmers who came to purchase pesticides. For agro-processors, the training was proven to be very useful as they are now properly aware of bean storage s and the use of pesticides in the storage areas is slowly reducing.		
<u>Component 2</u>: Website/ Knowledge Exchange Platform and Awareness Raising			
Activity 2.1. Analysis of website user accessibility/require-ment	**Problem**: Majority farmers attending TOF program have limited internet access as poor network coverage in their area. Project partners have no issues accessing the website from feedback and user analytics	**Impact**: The information on CocoaSafe website might not reach as many of the the target groups as anticipated (especially farmers) because network coverage is poor in areas where they live Project partners can derive benefits from using the website to obtain the latest updates on project activities and the resources available. The resources on the website comprise documents, articles, videos and discussion board. Statistics from analytics data show they form around 12% of total page views on the website.	**Recommendation**: Producing more posters or pamphlets on Cocoasafe latest information to be disseminated to farmers and farmers gathering centers In Indonesia and Malaysia. Mobile version of the website was created to cater for smartphone users allowing for easier and quicker access
Activity 2.2. Design, create website/ knowledge exchange platform.	Using both English and national languages (Indonesian and Malay) in the creation of the website was very important to attract more users to access information on Cocoasafe. Currently, the Malaysian Cocoasafe website design in the English version has received few visitors (farmers). Project stakeholders find the website useful for accessing	Most of the farmers in Malaysia and Indonesia preferred the version in their national languages in order to understand the content. Keeping up to date with the project and using the website to access resources enabled stakeholders to make full use of the knowledge exchange platform created	Create a Malay version (translation from English version) of Cocoasafe website for Malaysia. To engage users / stakeholders for more interaction on the website by having messaging boards and forums. An early beta of discussion board feature has been made available on the website (http://www.cocoasafe.org/DiscussionBoard.asp)

	what they need on the project and the web site functions well as a knowledge exchange platform		
Activity 2.3. Updating, maintenance and monitoring of website/ knowledge exchange platform.	Important to have forum platform to share knowledge on SPS and cocoa safety issues in Indonesia, Malaysia and other countries. Maintenance and update of the website was easily facilitated	The cocoa stakeholders from farmers and agro-dealers can discuss on the latest pesticides available for pest and disease management in cocoa. Proper and timely updates bring the very latest news on project activities for the benefit of users of the website	Create a forum platform in Indonesian and Malaysian version of the Cocoasafe website to enable the cocoa stakeholders in these countries and also other countries to share their views and knowledge of cocoa SPS and GAP. Timely updates of project activities and provision of related documents are essential.
Activity 2.4. Best practices and lesson learned from training activities shared via the knowledge platform.	The pictures of activities conducted in TOF by Master Facilitators in different regions/provinces/states of Indonesia and Malaysia have been uploaded in the website to share knowledge gained from the training. From user feedback, more images on the website are preferred to highlight activities carried out in the project	The knowledge and experiences gained during TOF training in different regions can be shared with all cocoa farmers in Indonesia and Malaysia where different regions might have different SPS/quality issues. Good quality and relevant images of project activities can added to learning by providing visual cues eg. pest identification	The knowledge sharing should be extended to farmers that did not attend the TOF. They would benefit from knowledge sharing from those that did attend the training. Interactive features like discussion boards and forums can provide more interactive ways to share best practices and lessons learned by way of having access to experts and the ability to post questions and having them addressed via replies
Activity 2.5. Production of printed materials for dissemination.	Several posters have been printed in Indonesian, Malay or English versions. In Indonesia, the posters were used in the TOFs training for farmers, agro-dealers and agro-processors.	Farmers, agro-dealers and agro-processors gained more knowledge on SPS, GAP and food safety.	The TOMF should be re-produced as posters with more pictorial guides and should also be published in multi local languages.
Activity 2.6. Production of multimedia videos for distribution and online.	The production of two short videos on the best practices of post-harvest activities in Malaysia and one video on pesticide have attracted farmers to practice the methods in their farms. The video on "Safe Use of Pesticides" in Indonesia has been widely used by farmer's leaders to train ordinary	More cocoa beans are being produced that are in compliant to Malaysia quality grading. More farmers are aware on the proper and judicious use of pesticides in their own farms. Users are aware of the dangers and hazards of improper safety equipment and spraying techniques,	More videos from planting to harvesting (related to SPS approaches) should be produced for TOF training in Indonesia and Malaysia. Videos to be made available in bi – lingual language (Malay and English) for the benefit of end users eg. farmers and other project stakeholders MCB does pesticide analysis on a need basis as it is a very expensive procedure to do. Part of the project understanding was that MCB can do pesticide analysis for other countries

	farmers in applying pesticides. The videos on proper spraying techniques, use of protective equipment, setting up spraying equipment, cocoa bean sorting, etc. are useful and valuable resources that can be used to train and educate farmers	the importance of proper protective equipment	with a cost.
Activity 2.7. Awareness raising in PNG through website and availability/ distribution of publicity materials, need assessment study in PNG.	TOMF Manual adopted for cocoa farmers were produced. Posters produced by ICCRI and MCB were given to PNG-CCIL to be produced in local language.	Cocoa farmers in PNG are more aware of the CocoaSafe manual especially topics related to SPS and GAP.	TOMF and FFS training should be organized by PNG-CCIL.
<u>Component 3</u>: Coordination, Management and Evaluation of the Project.			
Activity 3.1. Project Coordination	Effective collaboration and coordination by CABI to ensure that all activities planned were implemented on schedule and satisfactorily. Four progress reports have been prepared and submitted to STDF.	Most of the objectives set in the CocoaSafe project were successfully achieved.	Looking forward for more collaborative projects with project partners.
Activity 3.2. Project Inception Workshop/Meeting	CABI successfully organised the project inception meeting in Malaysia in September 2014.	Sharing of the project achievement between NPIAs (MCB and ICCRI) enabled NPIAs to understand knowledge gained on SPS/quality cocoa from farmers in other countries. Comments given by ICCO and CABI further improve the activities carried out by NPIAs in Cocoasafe project.	Involve International body such as FAO and cocoa processing industries from Europe and Japan to attend the inception meeting to convince them on the initiative taken by producing countries such as Malaysia, Indonesia and PNG are serious in handling the SPS issues on cocoa safety.
Activity 3.3. End Project Workshop/ Meeting	CABI in collaboration with MCB as the local counterpart organised the end project meeting in February 2016 in Kota Kinabalu, Sabah.	Sharing lessons learned from NPIAs and PEA showed the project achieved most of the target concerning to SPS/quality issues and GAP.	To have a 2nd phase of the Cocoasafe Project with a focus more on conducting the international certified chemical analysis on beans produced by the TOF farmers and to sustain the Cocoasafe activities through farmer field school. To organized a gap analysis workshop at ICCRI, Indonesia to

			identify activities that need to be done after the CocoaSafe Project with consultation of all players in cocoa sector (This was organized in June 2016 and see 5.1.8. for details).

8. RECOMMENDATIONS

8.1. Specific recommendations to the project

Provide specific recommendations related to this project, for instance, addressing the future use, dissemination, scaling-up, ownership and/or sustainability of key outputs and results produced under the project.

- The Cocoasafe website created by CABI and corresponding pages on the PIA related websites need to continue be updating the information related to sanitary and phytosanitary (SPS) issues on cocoa in order to continue to disseminate and share this information among the cocoa stakeholders. Information produced on SPS topics can be made available in the resource section of the website, and SPS topics can be created in the discussion board to stimulate information and knowledge exchange between stakeholders, users and experts

- The number of visitors to the three Cocoasafe's website (administered by CABI, ICCRI and MCB) remains low and messages created in the website might not fully reach the target groups. Cocoa Safe website administered by CABI has received only 12,434 visitors in 2 years of the project. One reason is because stakeholders such as cocoa farmers often have limited ability and facility to access the official website. Many farmers favor more tangible outputs such as multimedia videos, posters and flyers. Therefore, one recommendation is to use a range of different approaches such as facebook, instagram and others which are popular trend used by most people. The use of social media can help farmers by providing alternative means to access information on cocoa but it makes little difference if farmers have problems related to internet access. Social media relies on the same internet networks as for websites.

- Best practices in cocoa value chain, created by each of the NPIAs in printed materials (posters) and electronic media (videos) can be compiled into single document for future used as teaching materials in all NPIA countries.

- The TOMF and TOFs for farmer leaders, extension and research officers, agro-dealers and agro-processors have contributed to improved knowledge of SPS and GAP related issues from the farm to the market. However, with only limited fund available from the project relatively a few participants form each of the stakeholder groups were trained. Therefore, similar activities should be done with much wider participation of these groups in Indonesia and Malaysia.

- TOF's modules used in CocoaSafe project has been agreed and adopted by MCB and ICCRI in any Cocoa Training Courses conducted in future, for example in the Advance Course of Cocoa Technologies in Technologies Transfer Program of MCB and in ICCRI's regular training. The advantage of using TOF's modules is it is very practical oriented applying the concepts of Discovery Learning Exercises that helps the farmers to experience, themselves, the importance of GAP and SPS in their cocoa planting. For Indonesia an additional activity was added, a workshop on "Cocoa Partnerships" was carried out in July 2016 inviting about 20 companies, institutions and NGOs working on cocoa in Indonesia. The objective of the workshop was to gather as much as possible information related to their project activities related to cocoa agronomy, pest and diseases, GAP, pesticide usage and cocoa safety as well as training of farmers in this area, areas of the project, who is the funding, etc. It is expected that a set of recommendation for future activities would be drawn and ICCRI together with CABI would prepare a PPG for submission to STDF, specifically for Indonesia.

8.2. Broader recommendations

Provide any other recommendations which may help implementation of other, similar projects and contribute to increases the effectiveness of SPS technical cooperation.

- The project should extend its scope to also cover the farmer field school (FFS) in Indonesia and Malaysia as this can give a better impact to the project by ensuring the farmers really implement the activities taught to them in TOF training. It is recommended that in Malaysia the examples of FFS should be repeated in different cocoa growing areas in Malaysia and Indonesia.

- It was recommended that chemical analysis (pesticides, heavy metals, PAH, etc.) on beans produced by the TOF farmers should be done annually by internationally certified laboratories. This is done to increase the effectiveness of SPS implementation by tracking the farmers whether they have adopted the lessons learned from TOF training or not. In addition the chemical analysis can also be used as references for the exporters.

9. ANNEXES

9.1. **Logical Framework** (Revised after the Inception Workshop and 1st Steering Committee Meeting)

	Project description	Measurable indicators	Sources of verification	Assumptions and risks
Overall objectives (goals)	*What are the broader development objectives (goals) to which the project contributes?* To produce and trade cocoa that meets food safety and international SPS standards.	*How are overall objectives to be measured (quantity, quality and time)?* Reduction of rejections of imports of cocoa produced in Indonesia, Malaysia and PNG by consuming countries New markets accessed for cocoa from Indonesia, Malaysia and PNG	*What are the sources of information (and methods to collect and report it) for these indicators?* Statistics from importing countries showing sourcing from project countries. Source, number and reason of rejected cocoa produce consignments; Data on exports from government authorities (SPS authorities, trade and economic ministries, etc), including percentage of cocoa exports that complies with international regulations. 1.1.	*What are the external factors and conditions necessary to sustain overall objectives in the long run?* Importing countries propose food sanitary regulations based on standardized and realistic measuring methods Importing countries introduce international food safety standards based on scientific and verifiable foundations
Immediate objectives (purpose)	*What are the immediate and specific development objectives at the end of the project?* Food safety and SPS practices along the cocoa supply chain in Indonesia, Malaysia and PNG are improved. Increased awareness of SPS issues among supply chain stakeholders through innovative knowledge dissemination.	*How are objectives to be measured (quantity, quality and time)?* 1. Amount of beans/cocoa that complies with international SPS standards of food safety 2. Increased awareness amongst project stakeholders of SPS and GAP issues from knowledge sharing 3. Increase in wider stakeholders'	*What are the sources of information (and methods to collect and report it) for these indicators?* 1. Sales of cocoa beans by producers, agro-dealer sales figures, export volume from project participants (Number of rejected batches *in project areas:* issues flagged up by failure to meet standards at	*What are the external factors and conditions necessary to achieve objectives? Which risks should be taken into consideration?* Government policy related to cocoa production does not change during or immediately after the project period *Risks* Security risks or political situations may change during

		knowledge and understanding regarding the effect of the use of harmful substances in cocoa production (and presence of contaminants)	national and provincial levels). Collect by surveying project participants and report in project reporting. As compared to baseline information (from public and private sector; using existing data collected) 2. Surveys of project stakeholders regarding awareness of issues and knowledge platform use , reported in project documentation 3. Website/publicity usage presented in end of project reporting	the project period. This is thought to be unlikely as the project countries are well known and project work will be implemented by local partners with whom we have good working relations.
Expected results	*What are the tangible products and services delivered by the project to achieve its purpose*? 1. Improved capacity of SPS and GAP knowledge amongst project stakeholders Output 1.1. Training modules and curricula on GAP/ SPS/safety produced Output 1.2. master facilitators capable of training stakeholders as facilitators Outputs1.3., 1.4., 1.5., 1.6 Trainers and stakeholders at key intervention points in the value chain trained in best practices for GAP/SPS/safety in cocoa production Output 1.7. Impact survey of training participants 2. Effective knowledge sharing and flow	*How are results to be measured (quantity, quality and time)?* 1. Laboratory analysis of pesticide residues, OTA, etc. from SPS and health authorities demonstrating compliance with international SPS standards pre and post project. 80% of facilitators trained are successful in evaluation on GAP, including integrated pest management (IPM), safe use of pesticides and international SPS regulations. 2. Number and type of users accessing the website, periodical exchange of information among participating countries.	*What are the sources of information (and methods to collect and report it) for these indicators*? 1. Training reports, survey carried out during TOT sessions. Evaluation of impact survey following training activities. Measures of increased quality captured. e.g. through case studies, most significant change. 2. Usage metrics for platform: number of users,	*What external factors and conditions outside project control must be met to obtain the expected results on schedule*? Cooperation of authorities with project activities and permission to carry out project interventions Relevant stakeholders can access the network (use of a low bandwidth alternative would encourage this) Group participants' inherent attitude towards the project:

	between organizations, project stakeholders, regional and international SPS authorities, and beyond, in Indonesia, Malaysia and Papua New Guinea Output 2.1., 2.2. A website/knowledge exchange platform for SPS/GAP/food safety information sharing Output 2.3. Lessons from project activities shared via platform Output 2.4, 2.5. Output 2.7. PNG partners/stakeholders knowledge enhanced via access to platform 3. Project coordinated and evaluated in an effective manner, with immediate objectives evaluated and indication of progress towards overall objective	3. Comparison of project achievements with initial indicators	number of documents uploaded, number of comments/shares, number of queries/answers, feedback from users. List of producer groups, number of meetings held, meeting minutes, reporting from project staff, attendance of SPS authorities and officials to international fora Reports of implementation of knowledge acquired through content or interactions on the platform Project website online and available, with links to and from other sites e.g. ICCO, CABI, ICCRI, MCB & PNG-CCI, ASEAN Cocoa Club. Website usage metrics Online surveys of SPS awareness 3. Project reports and impact evaluations	they must be convinced that it is worthwhile and be keen to become and stay involved Security issues in the project countries. Where any concerns are present, locations targeted by project interventions will consider security risks International external factors that could affect the results of the project, e.g. relative favour of oil palm over cocoa
And Activities	*What are the key activities to be carried out, and in what sequence, to produce expected results*? <u>Enhancing capacity for improving quality of cocoa and meet SPS standards</u> 1.1 Development of locally adapted curricula for training of trainers, tailored for key intervention points in the value chain	*What are the work programme targets (milestones)? What are the means and costs required to implement these activities (provide summary for each)?* 1.1. curricula produced/compiled in English by month X: Manual for TOMF to enable them to train facilitators developed by month 3,	*What are the sources of information to measure progress in implementation*? 1. Training reports, feedback questionnaires available via knowledge exchange platform, surveys	*What external factors and conditions outside project control must be met to implement the planned activities on schedule?* Financing from all sources is made available on a timely basis in line with proposed

	1.2 Train agricultural officers (research and extension staff) as master facilitators (TOMF) in the context of GAP, SPS, safety and quality. 1.3. Training of facilitators: local extension staff 1.4. Training of facilitators: farm group/cooperative leaders 1.5. Training of agro-dealers as sources of knowledge for farmers in appropriate pesticide use 1.6. Training of facilitators in best practices postharvest: traders and processors 1.7. Training in best practice postharvest 1.8. Baseline/Impact survey: carry out surveys of impact of the activities <u>Facilitating knowledge sharing between project stakeholders</u> 2.1. Analysis of project stakeholders' user accessibility/requirements 2. 2. Design of website/knowledge exchange platform on website, content uploading 2.3. Maintenance and monitoring of knowledge exchange platform, encouraging interactions and sharing of lesson learned 2.4. Best practices and lessons learned from training activities shared via the knowledge platform (see component 3) 2.5. Production of printed materials 2.6. Production of multimedia content 2.7 Needs analysis and awareness raising in PNG <u>Coordination and evaluation</u> 3.1. Project co-ordination 3.2. Project inception workshop 3.3. Regional workshop at end of project	50 copies of training manuals made by month 6 (each country-Indonesia/Malaysia) 1.2. 2 training courses run by end of month 8 40 master facilitators (agricultural extension staff) trained 1.3. 5 training courses run by end month 18 (Indonesia). 1.3. 4 training courses run by end month 18 (Malaysia). 1.4. 5 training courses run by end month 18 (Indonesia). 1.4. 4 training courses run by end month 18 (Malaysia). 1.2. 2 training courses run by end month 18 (Indonesia). 1.5. 2 training courses run by end month 18 (Malaysia). 1.6. 3 training courses run by end month 18 (Indonesia). 1.7. Local training o 20 participants in Indonesia 1.8. Surveys of all participants during training events. Surveys in 5 provinces of Indonesia, 3 provinces of Malaysia following project interventions (month 22). 2. Website/knowledge exchange platform to be online by month 4. Will initially contain # documents with up to date information on SPS and GAP issues/advice. Best practice and lessons learned added on a regular basis (content added/pushed to users *<u>monthly</u>*). Website updated with links to articles fortnightly.	and reports, evaluation report. 2. Report of user requirements, feedback questionnaires. Website usage metrics, articles, publications and presentations. Regular monitoring of knowledge exchange platform usage data. 3. Monitoring documentation, as presented in six-monthly and end of project reports Reports and publicity from inception and end of project workshops.	activities. Acquisition of additional financing of training of facilitators from actors such as provincial governments can be made. Training venues and facilities are available. Stakeholder involvement and participant compliance are active throughout. Successful and timely development of materials, adequate publishing and dissemination resources.

		500 manuals Malaysia 200 posters Malaysia 500 manuals Indonesia 200 posters Indonesia 2 (in 2 languages) videos collated, edited and produced # broadcasts in year 1, year 2, distribution of materials in # provinces 500 manuals to PNG counterparts 200 posters to PNG counterparts 3.1. Project being coordinated as intended with six monthly reports 3.2. initiation meeting held 3.3. Regional workshop in month 23 and final report produced , Evaluation carried out in month 22		

9.2. List of Appendixes

9.3.1. Reports from CABI

1. 1st Progress Report
2. 2nd Progress Report
3. 3rd Progress Report
4. 4th Progress Report
5. Report of the Project Inception & 1st SC Meeting, Kuala Lumpur, Malaysia
6. Report of the 2nd PSC Meeting, ICCRI-Jember, Indonesia
7. Report of the End Project Meeting, Kota Kinabalu, Malaysia
8. Report of the Cocoa Partnership Workshop, ICCRI-Jember, Indonesia

9.3.2. Reports from ICCRI, Indonesia

1. 1st Progress Report
2. 2nd Progress Report
3. 3rd Progress Report
4. 4th Progress Report
5. Final Project Report

9.3.3. Reports from MCB, Malaysia

1. 1st Progress Report
2. 2nd Progress Report
3. 3rd Progress Report
4. 4th Progress Report
5. Final Project Report

9.3. List of Project Outputs

Output / Activity	Indicator / Target:	Actual performance: (% complete)	Comments (results and challenges faced)
OUTPUT 1: 1. Improved capacity of SPS and GAP knowledge amongst project stakeholders			
Activity 1.1: Developing locally adapted curricula for training of trainers, tailors for key intervention points in the value chain.	**Target:** Manual for TOMFs to enable MF to train facilitators developed in English (50 copies) and translated into Malay and Indonesian languages.	100%	50 copies of the manual for TOMF training for extension officers, farmer's group/cooperative leader and agro-dealers has been prepared in English. The manual has been translated into Malay and produced in 500 copies and in Indonesian (25 copies) and has been distributed and used in TOMFs and TOFs (Malaysia). 500 copies of TOMF Manual were reprinted in Indonesia and distributed to all TOF Participants 210 copies of TOFs Manual for Indonesia were printed (modified version of TOMF Manual).
Activity 1.2: Training of agricultural officers (research and extension staff) as master facilitators (TOMF) in the context of GAP, SPS, safety and quality.	**Target:** 20 MFs in Malaysia 20 MFs in Indonesia	>100% 100%	**In Malaysia** 27 Master facilitators has been trained from the TOMF. The master facilitators consisted of 5 scientists from MCB; 22 extension staffs (14 from MCB and 8 from Department of Agriculture). **In Indonesia** 20 MFs have been trained with 15 MFs from 10 provinc In Indonesia and 5 MFs from ICCRI.
Activity 1.3: Training of facilitators: farm group/cooperative leaders.	**Target:** **80** facilitators in Malaysia **100** facilitators in Indonesia.	>100% 100%	**In Malaysia** 112 Facilitators (from farmer leaders) have been trained in Pahang, Perak, Sabah and Sarawak states. **In Indonesia** TOF managed to train 100 facilitators from farm group/cooperatives in 4 provinces in Indonesia. All facilitators from Malaysia and Indonesia are now ready to train farmers in farmers field schools (FFS)
Activity 1.4: Training of facilitators: local extension staff	**Target:** **80** facilitators from local extension staff from Malaysia 100 facilitators from Indonesia	50% 100%	**In Malaysia** MCB only have 40 extension officers and therefore TOF were conducted only for 40 officers in 4 states, i.e. Sabah, Sarawak, Pahang and Perak. **In Indonesia**

			TOF managed to train 100 extension officers in 4 provinces in Indonesia. They are ready to implement Farmer Field School (FFS) if the budget is available.
Activity 1.5. Training of facilitators: agro-dealers.	**Target:** 40 facilitators' representing agro-dealers/ retailers from Malaysia and Indonesia, respectively.	40% 100%	**In Malaysia** The TOF for agro-dealers was organized at the Cocoa Research and Development Centre Kota Samarahan, Sarawak, from 22-26 August 2014. A total of 17 agro-dealers participated in the training. Agro-dealers were selected from the three main cocoa producing areas: Sabah (3), Peninsular Malaysia (7) and Sarawak (7). **In Indonesia** TOF for agro-dealers has been implemented in two provinces of Indonesia, i.e. in West Sumatera (20-27 April 2015) and in West Sulawesi (13-18 April 2015). In each province, 20 participants were participated in the TOFs (in total 40 participants).
Activity 1.6. Training of facilitators in best practices postharvest: traders and processors	**Target: 6**0 facilitators' in best practices of post-harvest in Indonesia.	300%	**In Indonesia** **TOF for Trader/Processor** were conducted in 3 locations each in Central Sulawesi, South Sulawesi and Lampung. Participants for each of the TOF were 20 invited traders and processors per location with 60 participants per selected province. In total 180 participants attended the training.
Activity 1.7: Designing survey questionnaires for baseline and impact studies.	**Targets:** 1)3 questionnaires for farmer leaders, agro-dealers and processors/collectors 2)Baseline surveys for farmer leaders, agro-dealers and processors/collectors 3)Impact surveys after 2 years of the project	100%	CABI has prepared the 3 questionnaires in English. **In Malaysia** 2 questionnaires for farmer leaders and agro-dealers have been translated into Malay by MCB and used in TOFs for all participants of these TOFs in Malaysia. Almost 90% farmers attending the TOFs responded to the project impact survey. Only 24% agro-dealers responded to the survey. The impact surveys has been completed in March 2016. **In Indonesia** 3 questionnaires for farmer leaders, agro-dealers and processors have been translated into Indonesian by ICCRI and used in TOFs for all participants of these TOFs in Indonesia. Impact surveys has been conducted, i.e. for farmers in 2 provinces, for agro-dealers only in one provinces and for agro-processors

			in 2 provinces.
OUTPUT 2. Effective knowledge sharing and flow between organizations, project stakeholders, regional and international SPS authorities, and beyond, in Indonesia, Malaysia and Papua New Guinea			
Activity 2.1. Analysis of project stakeholders' user accessibility/ requirements	**Target 1:** User feedback and accessibility forms from MCB and ICCRI (20 users from each organisation)	100%	Work was carried out to enable users with disabilities to access CocoaSafe website based on 'W3C Guidelines for Accessibility'. Work carried out include tagging images and videos with text descriptions, ensuring site is navigable by keyboard alone. Other accessibility requirements / assistive technologies were investigated eg. speech input for future consideration and implementation as it requires additional hardware / equipment on the users' side
Activity 2.2: Designing and creation of website/knowledge exchange platform. **Activity 2.3:** Updating, maintenance and monitoring of website/ knowledge exchange platform	**Target 1:** Website online in Malaysia: www.koko.gov.my/cocoasafe. Website online in Indonesia: www.cocoasafeindonesia.id/ Website (www.cocoasafe.org) online	100%	The MCB and ICCRI websites captured all activities to date from the inception meeting to the latest TOF training workshop in Indonesia. The CABI website was updated regularly with content preparation, latest activity feeds, accessibility, videos and discussion board. The mobile version of the website has been completed with pages formatted and re-flowed to display correctly on smartphones running on mainstream mobile platforms (iOS, Android and Windows Phone).
Activity 2.4. Best practices and lessons learned from training activities shared via the website.	**Target:** Video on best practices in cocoa safety in Malaysia and Indonesia.	100%	**In Malaysia** Two videos on best practices in cocoa safety in Malaysia were produced. Video 1 is on "The fermentation technique in cocoa" and Video 2 on "Quality cocoa beans – beans grading and storage". **In Indonesia** One video on "Pesticide Application – Safety and Rational" was produced.

Activity 2.5. Production of posters for dissemination.	**Target:** **Malaysia** **Indonesia** 1 TOF Training Manual 4 posters for TOFs 2 posters for TOF Agrodealers	100%	**In Malaysia** Three posters, i.e. "Pods harvesting, storage and breaking procedure", "Procedure of shallow box fermentation", and "Procedure of storing dry cocoa beans" were printed 100 copies each respectively, in English and Malay. **In Indonesia** The manual (in Indonesian) for TOF training for extension officers, farmer's group/cooperative leader and agro-dealers in Indonesia has been printed as posters and distributed to trainees in hardcopy. 4 posters in Indonesian related to "post-harvest" topics of the TOMF manual were published and distributed to TOF participants. Additional 2 posters were also produced on how to use pesticides safely and their rational use. The posters were printed and distributed to the participants.
Activity 2.6. Production of multimedia videos for distribution and online.	**Target: See Activity 2.4** Video on best practices in cocoa safety in Malaysia and Indonesia.	100%	**In Malaysia & Indonesia** **See Activity 2.4.**
2.7. Needs analysis and awareness raising in PNG	**Target:** To prepare TOMF manual for TOMF	100%	Training Manual published and delivered to PNGCCIL in September 2016. TOMF would be conducted at CCIL in early 2017 and funded by ACIAR Project.
OUTPUT 3. Project Management, Supervision and Evaluation			
Activity 3.1. Project Coordination	**Target:** International and National Steering Committee established Six monthly reports produced	>100%	Project Steering Committees established 1. International Project Steering Committee was established during the Project Inception Meeting held in Malaysia in November 2013. 2. National Project Steering Committee for Malaysia was established in December 2013. 3. National Project Steering Committee for Indonesia was established in January 2014. 4 (four) Progress Reports prepared and submitted

			Additional activities on Cocoa Partnership was held in June 2016 in ICCRI, Jember, Indonesia.
Activity 3.2. Project Inception Workshop	**Target:** Project Inception Meeting organised and the report produced	100%	Project Inception Meeting were organised in November 2013 in Kuala Lumpur, Malaysia and the report produced.
Activity 3.3. Cocoa Partnership Workshop	**Target:** Workshop organized and the report produced.	100%	Organized in June 2016. This is additional activity of Output 3.3. (Decision made during the End Project Meeting held in February 2016 in Kota Kinabalu, Malaysia.
Activity 3.3. End Project Workshop/ Meeting	**Target:** End Project Meeting organised End Project Meeting Report produced Final Project Report produced	100%	Organized in February 2016. End February 2016 End of September 2016

9.4. List of materials produced during the project

Title	Type of resource	Corresponding project outputs	Attachment number[1] and link when applicable (such as blog or website link[2]
CABI CocoaSafe Project Inception Meeting and Report	Report	Output of Activity 3.2.	http://cocoasafe.org/News.asp?NewsID=1
CocoaSafe 2nd Steering Committee Meeting and Report	Report	Output of Activity 3.2.	http://cocoasafe.org/News.asp?NewsID=8
CocoaSafe End Project Meeting and Report	Report	Output of Activity 3.3.	http://cocoasafe.org/News.asp?NewsID=16
CocoaSafe Final Project Report	Report	Output of Activity 3.3.	Not uploaded yet
TOMF Manual in English to be adopted in Indonesia and Malaysia	Training Manual	Output of Activity 1.1.	http://cocoasafe.org/Resources/TOMFManual-English.pdf
1st STDF Project Progress Report on "Cocoasafe": Capacity Building and Knowledge Sharing In SPS In Cocoa In South East Asia - 23 May 2014	Progress report	Output of Activity 3.1.	http://cocoasafe.org/News.asp?NewsID=24
2nd STDF Project Progress Report on "Cocoasafe": Capacity Building and Knowledge Sharing In SPS In Cocoa In South East Asia – 30 October 2014	Progress report	Output of Activity 3.1.	http://cocoasafe.org/News.asp?NewsID=25

3rd STDF Project Progress Report on "Cocoasafe": Capacity Building and Knowledge Sharing In SPS In Cocoa In South East Asia – 08 April 2015	Progress report	Output of Activity 3.1.	http://cocoasafe.org/News.asp?NewsID=28
4th STDF Project Progress Report on "Cocoasafe": Capacity Building and Knowledge Sharing In SPS In Cocoa In South East Asia – 18 September 2015	Progress report	Output of Activity 3.1.	http://cocoasafe.org/News.asp?NewsID=29
Cocoa Partnership Workshop - 15 August 2016	Workshop Report	Output of Activity 3.4.	Not uploaded yet
INDONESIA			
Panduan Pelatihan – Pelatihan Fasilitator Utama (Training manual for TOMF – In Indonesian produced by ICCRI)	Training manual	Output of Activity 1.1.	http://cocoasafe.org/Resources/TOMFManual-Indonesia.pdf
TOMF Training at ICCRI, Jember, Indonesia	Activity summary and photos	Output of Activity 1.2.	http://cocoasafe.org/News.asp?NewsID=9
TOF for Lead Farmers in Soppeng, South Sulawesi, Indonesia	Activity summary and photos	Output of Activity 1.4.	http://cocoasafe.org/News.asp?NewsID=10
TOF for extension officers in Sopeng, South Sulawesi, Indonesia	Activity summary and photos	Output of Activity 1.3.	http://cocoasafe.org/News.asp?NewsID=11
TOF for Lead Farmers and extension officers in Polewali Mandar, West Sulawesi, Indonesia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://www.cocoasafe.org/News.asp?NewsID=17

TOF for Lead Farmers and extension officers in Blitar, East Java, Indonesia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://www.cocoasafe.org/News.asp?NewsID=18
TOF for agrodealers, Padang, West Sumatra, Indonesia	Activity summary and photos	Output of Activity 1.5.	http://cocoasafe.org/News.asp?NewsID=13
TOF for agroprocessors, Lampung, South Sumatra	Activity summary and photos	Output of Activity 1.6. and 1.7.	http://cocoasafe.org/News.asp?NewsID=15
TOF Manual (in Indonesian)	Training Manual	Output of activities 1.3. to 1.7.	http://cocoasafe.org/News.asp?NewsID=23
Website/knowledge exchange platform on cocoasafe.	Website	Output of activity 2.1 – 2.4.	http://www.cocoasafeindonesia.id/
Video on Safe Use of Pesticides (in Indonesian)	Videos	Output of Activity 2.6.	http://cocoasafe.org/News.asp?NewsID=27
ICCRI Posters (In Indonesian) • *Penggunaan Pestisida Secara Aman* • *Gunakan Pestisida Secara Tepat*	Posters	Output of Activity 2.5.	http://www.cocoasafe.org/News.asp?NewsID=26

MALAYSIA			
Training of Master Facilitators Manual (in English), Produced by MCB.	Training manual	Output of activity 1.1.	http://cocoasafe.org/News.asp?NewsID=2
Manual Latihan Projek STDF – CABI – ICCO 'KESELAMATAN KOKO': Pembangunan Modal Insan dan Perkongsian Pengetahuan Dalam Piawaian Sanitari dan Fitosanitari (SPS) Koko di Asia Tenggara (STDF/PG/381). (Training manual for TOMF – In Malay by MCB)	Training manual	Output of activity 1.1.	http://cocoasafe.org/Resources/TOMFManual-Malay.pdf
TOF for farmer's leader and extension officers in Kundasang, Sabah, Malaysia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://cocoasafe.org/News.asp?NewsID=3
TOF for farmer's leader and extension officers in Jengka, Pahang, Malaysia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://cocoasafe.org/News.asp?NewsID=4
TOF for farmer's leader and extension officers in Hilir Perak, Perak, Malaysia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://cocoasafe.org/News.asp?NewsID=5
TOF for farmer's leader and extension officers in Kota Samarahan, Sarawak, Malaysia	Activity summary and photos	Output of Activity 1.3. and 1.4.	http://cocoasafe.org/News.asp?NewsID=6

TOF for agrodealers in Kota Samarahan, Sarawak, Malaysia	Activity summary and photos	Output of Activity 1.5.	http://cocoasafe.org/News.asp?NewsID=7
Website/knowledge exchange platform on cocoasafe.	Website	Output of activity 2.1 – 2.2.	http://www.koko.gov.my/cocoasafe/
MCB videos (in Malay) • Harvesting and processing dried cocoa beans (5.21 minutes) • Video on Grading and exporting dried cocoa beans	Videos	Output of Activity 2.6.	http://cocoasafe.org/News.asp?NewsID=12
MCB Posters • Dry cocoa beans storage practices • Shallow box fermentation • Pod harvesting, storage & breaking • *Prosedur Penuaian, Penyimpanan & Pembelahan Buah Koko* • *Prosedur Penstoran Biji Koko Kering* • *Prosedur Fermentasi Kotak Cetek*	Posters	Output of Activity 2.5.	http://www.cocDoasafe.org/News.asp?NewsID=31

PAPUA NEW GUINEA			
Meeting to discuss training materials to be developed for PNG		Output of activity 2.7.	http://www.cocoasafe.org/News.asp?NewsID=14

9.5. List of Contacts

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9.6. Financial Report