SCPP Knowledge Brief
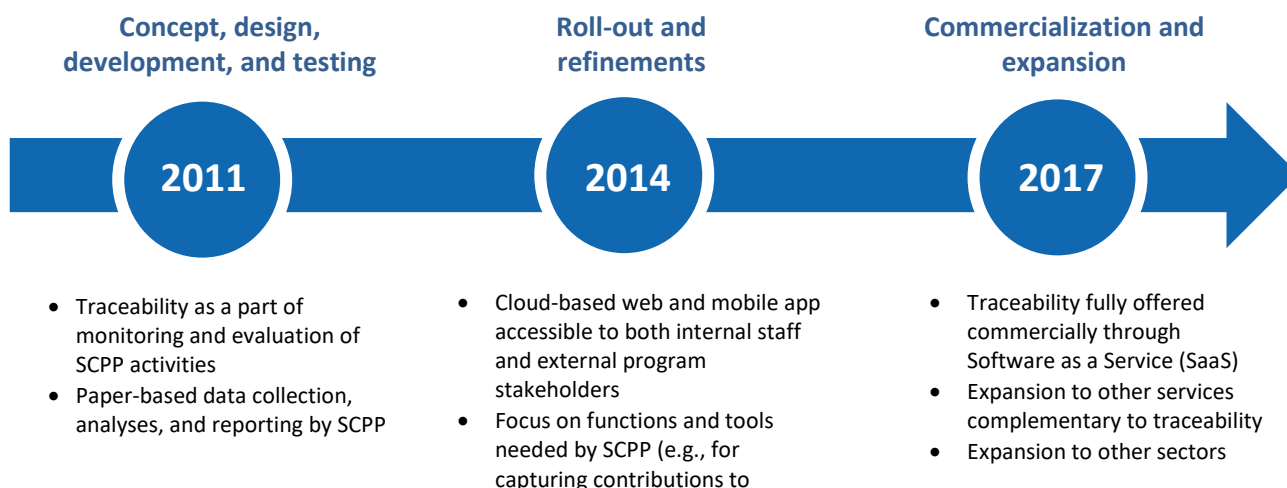Traceability for Sustainability

RESULT HIGHLIGHTS
- 92,000 cocoa farmers certified on 123,000 ha of cocoa farms
- 165,000 cocoa farmers trained by >1,600 Master Trainers on GAP (Good Agricultural Practices), GEP (Good Environmental Practices), GFP (Good Financial Practices), and CoC (Code of Conduct) and/or Certification Training
- CoC and/or Certification Training offered by Koltiva and cocoa companies included key aspects of GAP, GEP and GFP modules developed under SCPP
- Major cocoa industry players have pledged to source 100% of cocoa from traceable and sustainably produced sources by 2025

SUMMARY

"There is no sustainability without traceability" was the SCPP motto in persuading cocoa companies in Indonesia to invest in developing traceable supply chains. SCPP has since made this ethos a reality in the Indonesian cocoa sector through the development of CocoaTrace, a cloud-based traceability platform; and farmer training programs aimed at certification. Through certification premiums, farmers and other market actors along the supply chain were incentivized to adopt improved practices in accordance with sustainability standards.

Supply chain traceability is "the ability to identify and trace the history, distribution, location and application of products, parts and materials, to ensure the reliability of sustainability claims, in the areas of human rights, labor (including health and safety), the environment and anti-corruption."

International Organization for Standardization (ISO)

CONTEXT

International cocoa companies were facing a growing demand for sustainable production and responsible sourcing practices. Consumers were concerned about the availability and quality of products they consumed, but also wanted assurances that the production of cocoa beans was neither harmful to the environment nor exploiting smallholder producers in developing countries.

Another global trend was the increasing pressure to provide traceability information on products. Cocoa manufacturers needed to demonstrate full traceability of the cocoa they use in chocolate drinks and bars back to the producing countries and the farm where the cocoa was grown. Traceability was vital for substantiating claims related to food safety issues: to be able to trace any source of contamination, information was needed on how the cocoa beans were cultivated, harvested, handled and processed, and who was involved in the exchange of cocoa beans along the supply chains.

Certification standards are established to help industry players meet sustainability and traceability goals. These standards provide guidance on key aspects, principles and requirements for farmers, suppliers and processors alike. Through independent audits by authorized certification bodies, consumers are assured that these standards are met by industry players.

Nevertheless, the implementation of traceability and sustainability standards in the Indonesian cocoa sector was a daunting task. Market players along the cocoa supply chains, especially smallholder farmers as the weakest link, did not have the capacity or the incentive to comply with these standards. The operationalization of traceability also required an integrated platform with functions such as data recording, management and reporting, which had to be accessible to all actors along the supply chains. None of these were in existence when SCPP started in 2012.

Concept, design, development, and testing

Roll-out and refinements

Commercialization and expansion

2011

2014

2017

- Traceability as a part of monitoring and evaluation of SCPP activities
- Paper-based data collection, analyses, and reporting by SCPP

- Cloud-based web and mobile app accessible to both internal staff and external program stakeholders
- Focus on functions and tools needed by SCPP (e.g., for capturing contributions to

- Traceability fully offered commercially through Software as a Service (SaaS)
- Expansion to other services complementary to traceability
- Expansion to other sectors

INNOVATION

The core concept of traceability was initially developed in the PEKA project. PEKA recorded data from more than 12,000 farmers who participated in the training. By assigning each farmer a unique ID, PEKA could measure yield and estimate production. This served as a basic framework that would eventually allow for full traceability in Indonesian cocoa supply chains for the first time.

Building on PEKA, SCPP then embarked on developing a comprehensive Management Information System (MIS) to collect, evaluate and report relevant data points from all beneficiaries. Unable to find off-the-shelf solutions, SCPP tried to build up the system using in-house capacity, yet soon realized a dedicated service provider was needed for such specialized solutions.

In 2013 SCPP engaged a start-up company, Koltiva, to develop CocoaTrace; a cloud-based data management system, accessible through web and mobile applications. SCPP's decision to help an external service provider build the traceability system paved the way for the commercialization of traceability services in future, thereby ensuring the sustainability of the cocoa sector.

Initially, CocoaTrace was mainly used within SCPP for recording data related to program activities. Data collected by SCPP field staff underwent strict verification and integrity checking before being entered in the MIS.

- **Farmer profile**: Basic demographic data incl. farmer group membership.
- **Garden data**: Farmers may have more than one cocoa garden. All data were recorded separately, including their GPS position. This was crucial for determining whether gardens were located inside conservation or protected areas; if so, they would be excluded from the certification scheme.
- **Production data**: Production and yield indicators in the first year served as a baseline, while those in subsequent years as post-line data. Longitudinal data was invaluable for measuring the changes in farmers' behavior and performance.
- **Training participation:** Farmers might participate in different trainings at different times.

"There is no sustainability without traceability" was the motto promoted by SCPP. To convince cocoa sector stakeholders (particularly cocoa buyers) that this idea was feasible, SCPP offered training geared towards certification by the end of the Program.

SCPP worked with UTZ Certified and Rainforest Alliance (RA) to harmonize the training curriculum with their certification requirements. To efficiently reach a large number of cocoa farmers, a cascade four-tier training model was established:

1. Master Training, conducted by UTZ and RA staff, for SCPP and private sector staff, who in turn train
2. ICS (Internal Control System) managers of certificate holders (e.g., cocoa companies, co-ops, or traders) at district level, who in turn train
3. ICS inspectors and representatives at sub-district and village level, who in turn train
4. Cocoa farmers on Code of Conduct (CoC) or Certification Training.

By supporting all actors along the supply chain, and not only farmers, SCPP raised the overall capacity of the cocoa sector to comply with sustainability standards and pass the external audits.

COCOA FARMER PROFILE

BASIC DATA

FARMER ID 530600065	NAME PETRUS PEDRO COREBIMA	AGE 63	PHONE NUMBER 82340293693
GENDER Male	FARMER GROUP Tali Tulun	FARMER COOPERATIVE None	PROVINCE Nusa Tenggara Timur
DISTRICT Flores Timur	SUB DISTRICT Wulanggitang	VILLAGE Hokeng Jaya	

FARM PRODUCTIVITY

BASELINE (2016)

2.00 ha
FARM SIZE

1
NO. OF COCOA GARDENS

1,540 kg
PRODUCTION

800
NO. OF PRODUCTIVE CACAO TREES

770 kg
AVERAGE YIELD/HECTARE

1.93 kg
AVERAGE YIELD/CACAO TREE

FARM DATA

GARDEN	CERTIFICATION	LAND OWNERSHIP	LAND CERTIFICATE	LAND USE
1		Owned	Sub District	-

Map data ©2017 Google

TRAINING PARTICIPATION

NO.	TRAINING	START	END	DAYS	TYPE
73.	GEP Good Environment Practices	01 Dec 2016	03 Dec 2016	3	FFS

In 2014, SCPP rolled out CocoaTrace as the sector's farm management and traceability platform after completing the first iteration of development and testing. SCPP field staff switched from paper-based to digital data collection using Android handheld devices. This reduced the risk of invalid data entry and allowed real-time data tracking. To ensure full transparency, program donors, supply chain partners and other stakeholders were given access to collect, edit and review farmer data according to their needs.

- **Tracking GAP adoption rates**: Key GAP elements (e.g., replanting, pruning and sanitation practices) were recorded and tracked over time. This enabled the early identification of struggling farmer groups and knowledge topics requiring reinforcements.

- **Estimating the volume of beans**: Supply chain partners could estimate and monitor in real time the supply volume of certified beans in their own areas. This was indispensable for supply chain management and business planning.

CocoaTrace enabled fully transparent and traceable cocoa sourcing. Farmers used an ID card with a barcode when selling their traceable/certified production: Buying units scanned the card; checked the farmer profiles, including farm data with exact location; recorded the transaction directly in the system; and printed the invoices. The same process applied when beans were sold by farmers or buying units to certificate holders, cooperatives, warehouses or exporters. The calculation of bonuses, premiums and prices based on quality happened automatically in the Program. All transactions with unique ID were available online and the whole process could be traced at any time, including historical records.

Within the first SCPP phase (2012-2015), 12,000 farmers were certified by either UTZ or Rainforest Alliance certification labels. This figure grew by eight times to 92,000 by the end of the Program (2020).

SCPP, Annual Report 2015 and 2020

In April 2015, certification premiums and bonuses totaling US$170,000 were paid to the farmers, cooperatives and buying station of a supply chain partner in Southeast Sulawesi.

SCPP Annual Report 2015

In addition to these basic functions, CocoaTrace was continuously refined to eliminate errors, improve user-friendliness and add new features to meet the growing needs of the Program and partners. Features included:

- **Polygon mapping**: Instead of tagging GPS points, SCPP staff walked the farm borders to record area coordinates. The re-calculation of actual farm sizes helped clarify the inconsistencies in yield data due to the under- and overestimation of land sizes.

- **Measuring progress and contribution to multi-dimensional sustainability**: to report GHG emission reduction, SCPP developed an estimation model that measured carbon footprint from the use of chemical fertilizers and carbon sequestration from above ground, below ground, litter and soil (organic carbon[a]). Other aspects included poverty (PPI - Progress out of Poverty Index), nutrition status (WDDS – Women Dietary Diversity Score) and finance (e.g., access to formal loans).

- **Other functions,** including profiles and administration for supply chain actors (farmer groups, cooperatives, traders, warehouses) and farm input providers (nurseries and input kiosks).

Full commercialization of the traceability service was marked by the integration of farm inspection or internal audit functionality into Koltiva in 2017, a function that had hitherto been delivered by SCPP. The Koltiva team had expanded from 15 to 250 people. Two years later, Koltiva added into their offering Chain of Custody (ChoC) trainings for supply chain actors and CoC/Certification Training for farmers, which contained simplified aspects of GAP and GEP modules developed under SCPP.

The traceability model and experiences from the Indonesian cocoa sector were disseminated to other sectors. Building on CocoaTrace, Koltiva expanded its service offers to include commodities such as palm oil, coffee, coconut and rubber for various clients in more than 15 countries worldwide.

As traceability became the new norm in the sector, cocoa companies found different solutions. Some fully outsourced it to Koltiva, while others only used CocoaTrace as Software as a Service (SaaS) and had their own field teams for training and internal inspection. At least two multinational cocoa companies developed their own, in-house traceability platform, and established or expanded their field teams.

a) See Knowledge Brief on Promoting Polyculture Model for Plantation Commodities and Public-Private Partnerships.
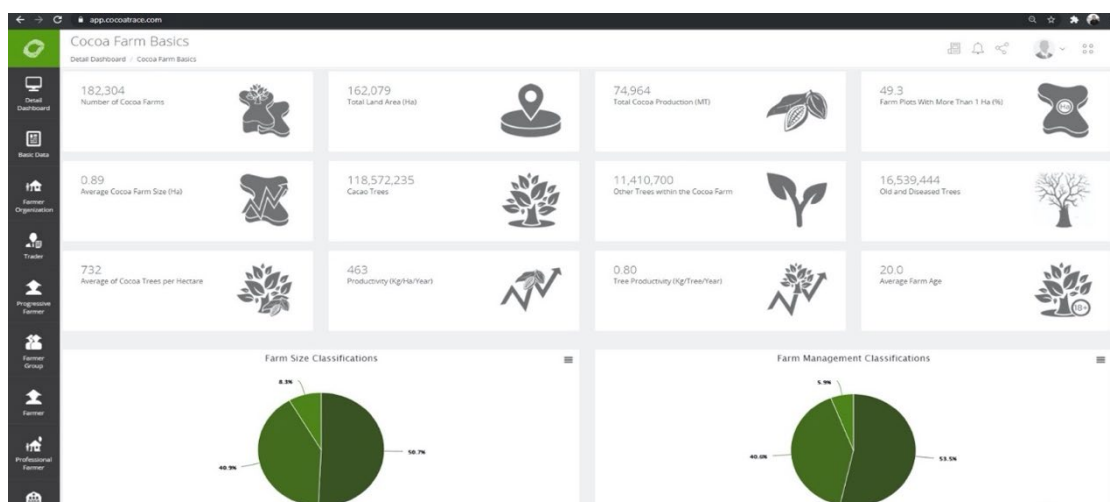
KEY LESSONS

- **Consider outsourced vs. in-house service delivery arrangements**. In the early phase, SCPP anticipated each certificate holder would have their own field staff. Such arrangements have proven to not always be feasible. To perform effectively, field staff needed training, periodic upgrading and professional remuneration. These requirements could hardly be fulfilled by small-sized cooperatives and traders. In such cases, cocoa buyers would be better off purchasing full traceability services for their smaller-scaled certificate holders. In contrast, cocoa suppliers with large operations – as certificate holder – would achieve higher cost efficiency by having their own field teams.

- **Beware of distractions brought by administrative requirements of certification**. Especially in the initial phase of certification, farmers, buying agents and ICS inspectors were overwhelmed with comprehensive administrative issues (e.g., filling out forms, documentations and record keeping). This could distract from the ultimate goal of certification (i.e., to induce practice changes at farm level towards sustainability and stronger resilience).

- **Verify incentives periodically**. Farm-gate prices and certification premiums are subject to heavily fluctuating global prices. Cocoa buyers need to re-calculate the net benefits of certification adoption for smallholder farmers, because compliance costs are high (additional efforts, labor and cash). Any failure to adjust incentives could lead to farmers abandoning the certification schemes.

- **Be flexible with organization type – forms follow functions**. Initially, SCPP intended to have farmer cooperatives performing the full role of a certificate holder, including management of ICS and delivery of CoC/Certification Training. This, however, proved to be difficult, as many cooperatives were fraught with internal issues of power struggle and corruption. Some traders, on the other hand, were better suited for this role. Programs need to be open and work with any type of market actor – as long as they have the incentive and capacity to perform the functions.

- **Devote serious attention and resources to improve user acceptance**. Getting users to understand, try, and regularly use a new system is often more daunting than the technical challenges in developing the system itself. Besides training, 24/7 technical support is essential for easing adoption frustrations. Responding to user feedback and dissatisfaction is also key to success.

- **Develop functionality for working offline**. Internet connection in many rural areas is often weak and intermittent. Users need to be able to use the app offline, store data in the device temporarily, and then synchronize when internet connection is available again (e.g., in capital cities).

WAY FORWARD

- **Use of traceability data to inform supply chain strategy**. Data collection for responsible sourcing has been revolving around proving traceability and compliance, but not yet improving supply chain performance. Swisscontact sees the opportunity for introducing data-driven innovations. For example, by using Social Network Analysis[b], commodity companies can identify specific farmers with strong influencing power in their networks. By targeting such influencers, commodity companies can leverage the pre-existing social relationships to disseminate improved practices more effectively, thereby boosting the adoption rates among farmers in the networks.

b) See Knowledge Brief on FarmNetX.