Traceability and sustainable coconut
Learning from recent digital traceability & responsible SC initiatives

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I. The rise of digital or blockchain-based supply chain traceability initiatives
Blockchain in PHL, disrupting banks and others

Blockchain Association of the Philippines established

“SWIFT is Expensive’: Major Philippine Bank Taps IBM for Japan Blockchain Remittance”

“Ateneo, MediXserve launch 1st university-based blockchain research center”
Blockchain traceability in your smartphone

A grassroots approach to proving fair pay with Fairfood

Together with Fairfood, we used blockchain technology in creating a grassroots approach for proving fair payment in coconut trade. How did we do this? First, we enabled 55 farmers from Yogyakarta, a town on the Indonesian island of Java, to connect with Provenance software via SMS. We then integrated with Fairfood's platform, designing a proof of payment mechanism to verify and display a visual representation of farmers receiving the Living Income Premium (LIP) for their harvest. The premium is derived from the United Nations formula for living wage, which considers location, family size, and modes of transport, to determine a satisfactory living wage per nut, shown in Euros.

PoP (Proof of Payment) webpage displaying the Living income Premium verified by Fairfood, and powered by Provenance blockchain technology.

Arjo Wiyono is one of 55 farmers who took part in a joint effort by Fairfood and Provenance to prove fair pay with blockchain technology.

In the regular sales processes, it’s almost impossible to find out what a farmer receives for the goods they produce. Our work with Dutch NGO Fairfood brings greater transparency to the coconut industry using blockchain to prove fair pay.
Blockchain traceability in your smartphone

Open up your supply chain online and off pack

Knowing the journey and facts behind the things we buy can help us all make more informed choices. At Provenance, we’re bringing the supply chain to the shopper and powering the transparency movement through tech. We work with honest businesses and products to open verified information about their producers, origins and ingredients – creating openness and accountability so your customers can trust what they buy.

Open up your business using the Provenance platform →
IBM Food Trust – the blockchain consortium
GO GO CHICKEN project by ZhongAn, China

Consumers can buy this chicken on JD.com, which is RMB 238 yuan per chicken (1kg-1.5kg) (the price of an ordinary wild chicken is about RMB 60 to 80 yuan). Once you get the chicken, you can scan the QR code on a device bound to the chicken to check its information.

Data collected from the anklets also allow farmers to carry out analytics and improve their rearing methods.

Left to Right: IoT, Blockchain, Artificial Intelligence, Cloud Computing and Anti-counterfeit Intelligence. Source: iFeng News (凤凰网)
Blockchain to empower Vietnam coffee farmers

As part of an exciting new project with the World Bank and Nestle, the Provenance Team travelled to Vietnam in March to meet smallholder coffee farmers to explore how our technology can empower them with access to finance, and a better deal for their product. [PROVENANCE, 27th March 2018]
Blockchain trial w/ Philippine coffee growers
Nestle pilots “public” blockchain

“This open blockchain technology will allow anyone, anywhere in the world to assess our responsible sourcing facts and figures”

Benjamin Ware, Global Head of Responsible Sourcing, Nestlé S.A.

Jul 2, 2019
Cargill for Indonesian cacao: Digital payments and “first-mile” traceability

“In Indonesia, 55% of all farmers now receive premium payments through direct bank transfer.

“We are also developing additional digital tools to facilitate farmer access to market information, best practices and their own historical activity, [including] piloting a farmer app that builds upon our existing digital traceability capabilities in Indonesia.”
Blockchain for worker rights initiatives

Cobalt: blockchain tested in the DRC in an effort to combat child labor
Apps & web platforms for fair & sustainable SCs

TAILOR-MADE FOR YOU
and designed for your company to verify supply chain sustainability and fair working practices from independent smallholder farmers and commodity traders.
Many blockchain-based traceability initiatives were one-time PoC, early stage or results unknown...

Is it just a hype?
Cargill’s traceable turkey program since 2017

More than 200,000 traceable turkeys from Honeysuckle White available to consumers this Thanksgiving and holiday season. This is an expansion from the 60,000 turkeys that were available over the holiday season last year.

WICHITA, Kan. – Nov. 1, 2018

Consumers Drive Demand for Farm-to-table Transparency
Carrefour deployed Blockchain-based traceability (2018)

The 1st full deployment in the commercial SCM among IBM’s global partnership with the supermarket giants
The first batch of 23 product lines has been tested and launched on the platform. Another 100 product lines, covering more than ten product categories such as fresh meat product, rice, mushrooms and cooking oil are expected to be added to the platform by the end of the year. [27 June 2019]
Digital traceability in VN since 2016

HCM City Department of Industry and Trade yesterday inaugurated a system that enables consumers to check the origin of pork they buy at nearly 350 modern outlets, December, 16/2016

TE-FOOD announces a major step forward, its live pig traceability operation became available on a public blockchain, Aug 28, 2018
Traceability apps available in Vietnam

**TE-FOOD Public B2C**

**VFSC-eAgri**

**Fruitchain**

**TRACEverified**

**Hello Mắm - Mở ra là nấu**

**Tra cứu VietGAP, GlobalGAP**
II. Why blockchain for supply chain traceability?
Blockchain is a shared online tamper-proof database.

- **Online** (many users)
- **Distributed** (many copies)
- **Synchronised** (every 10 minutes)
- **Encrypted, Immutable, Tamper-proof**
BC converts fragmented SC databases into one

Current Status

- Origination Farm's Ledger
  - Raw materials detail...
- Processing Factory's Ledger
  - Origination farm’s detail additives detail...
- Sales Market's Ledger
  - Delivery detail
  - Warehouse information...

Blockchain

- Copy of Origination Farm's Ledger
  - Raw materials detail
  - Additives detail
  - Delivery detail
  - Warehouse information
- Copy of Processing Factory's Ledger
  - Raw materials detail
  - Additives detail
  - Delivery detail
  - Warehouse information
- Copy of Sales Market's Ledger
  - Raw materials detail
  - Additives detail
  - Delivery detail
  - Warehouse information

“Food traceability system using blockchain,” Lin, et. al., National Chung Hsing University, Taiwan, Proceedings of 79th IASTEM International Conference, Tokyo, Japan, 6-7 October 2017
Blockchain benefits for supply chain lead firms

Benefits for Farmer and his Community

- Cocoa farmer
- Middle-man
- Co-op
- Buying-station/exporter
- Processing-Industry
- Trade-houses
- Processing-Industry
- Chocolate-industry
- Consumer

Well controlled, realistic and transparent traceability system

- Better farmer engagement
- Ensure food freshness
- Reduce food fraud
- Fast problem identification & recall
- Consumer confidence on food safety
- Better quality control
- Minimize food waste
- Inform compliance
- Consumer confidence on transparency & sustainability
- Enhance brand loyalty
- Supply chain efficiencies (e.g., smart contract)
Blockchain may democratize global supply chain

- Farmers may access consumer (big) data and analytics
- More equitable distribution of profits due to transparency of value addition
- Instant payments
- Fast, receivable-based supplier credit
- Self-selection & repeat purchase → premium price and/or higher profits
- Fair wages to farmers become traceable

Benefits for Farmer and his Community

Well controlled, realistic and transparent traceability system
But industry experts warn on blockchain:

• Whenever human behavior is key factor, Blockchain alone is not a guarantee for food safety and food authenticity. E.g.,
  – Recycling of vintage wine bottles → sample test critical
  – Commingling of organic and non-organic fruits/vege → combine risk reduction strategies on top of analytical laboratories as part of a regular audit
  – Disguised source of origin → idem.

Source: “Blockchain, Provenance, Traceability & Chain of Custody,” an article by John G. Keogh posted at My Food Trust on Aug. 17, 2018
Broad alliance of conventional traceability and regulatory actors is required for a successful implementation of BC solutions that will bring key behavioral changes
Industry experts warn on blockchain:

• Interoperability is difficult across different BC technology platforms.
• The private (permission-based) BC limits the democratic elements.
• The public (open, non permission-based) BC could be slow and costly.
Towards a unified blockchain standard

• May compete w/ existing industry standards (e.g., GS1 for logistics & retail)

• Interoperability challenge between different BC technologies (Hyperledger Fabric, R3’s Corda, Ethereum)

→ Blockchain and DLT standards (ISO/TC 307) to be released by 2021.
Traceability meets tech, sustainability

- ISO 22005:2007 (traceability in feed & food chain)
- EU e-certification system of 2017 for organic imports
- ISO 22000:2018 (food safety management systems)
- GS1 Global Traceability Standard (2017) and Digital Link standard (2018)
- ISO 34101-1:2019 (*Sustainable and traceable cocoa*)
Other use cases of blockchain

• Fast, secure, cheap and traceable payments, e.g.:
  – subsistence cash for refugees/IDPs,
  – wage for (migrant) labour in fishing boats,
  – OFW remittances,
  – wage for police/military in remote/conflict areas,
  – CCT for rural poor

• Fast, movable assets-backed SC/trade finance
III. Responsible and Sustainable Practices behind the traceability discussion
Increasing scrutiny on global supply chains

“Pressure is growing for businesses to engage in sustainable practices. Consumer attitude, NGO oversight, government regulation, and shareholder expectation of the social and environmental impact of company supply chains are shifting at varying speeds around the world. The viability of entire industries depends heavily on maintaining social and environmental resources.”
Growing interests in “sustainability” & social responsibility

Number of academic publications from 1980 to 2015 that contain the keywords “sustainability”, “social responsibility” and “corporate social responsibility”.

Growing interests in “sustainability” & social responsibility

40% of the bestselling coffee brands online in Japan making organic claims, carrying 33-39% price premium. 
Lumina Intelligence (2019) Up to standard: Third-party certification and company programmes compared

Nearly 90% of consumers say that they would purchase a product because a company supported an issue they care about. Roughly 75% will refuse to buy from a company if they learn it supports an issue contrary to their own beliefs. 
2017 Cone Communications CSR Study

73% of (global) consumers say they would definitely change their consumption habits to reduce their environmental impact.
Nielsen (2018) Unpacking the sustainability landscape

(GLOBAL) consumers are willing to pay more for products that are organic (41%), made with sustainable materials (38%) or deliver on socially responsible claims (30%).
Nielsen (2018) Unpacking the sustainability landscape
Carrefour Saw Sales Boost from blockchain tracking

“The pomelo [a citrus fruit] sold faster than the year before due to blockchain. We had a positive impact on the chicken versus the non-blockchain chicken,”

“Carrefour wants to track 20 percent of all of its in-house products on the blockchain by the end of 2019.”

“... intends to add more products to the system, particularly focusing on products for which consumers want reassurance, such as baby and organic products.”
Increasing scrutiny on global supply chains

Rana Plaza collapse, 2013

Amount of cobalt in different devices

- **SMARTPHONE**
  - 5 to 10 grams
  - (as heavy as 2 to 4 pennies)

- **LAPTOP**
  - 1 ounce
  - (a slice of bread)

- **TYPICAL ELECTRIC CAR**
  - 10 to 20 pounds
  - (2 to 3 gallons of milk)

Most auditors in Asia find child labour in supply chains, survey finds
[Reuters, June 22, 2016]
Labour provisions in FTAs/PTAs – key incentive

Trade agreements with labour provisions (percentage of total number of agreements entered into force, 2008–15)

Share of labour provisions in total preferential trade agreements per year, 1990-2014


Source) Labour clauses in trade agreements: worker protection or protectionism? Presentation slides by Damian Raess at “Can trade and investment agreements promote decent work?, ETUI-sponsored event, European Economic and Social Committee, Brussels, 12 Sept. 2017
Growing responsible investment/finance

The PRI has grown consistently since it began in 2006.
Expanding fair trade market

Revenue of Fairtrade International products worldwide from 2004 to 2016 (in million euros)*
SDGs impacting businesses and GSCs

“Labour indicators set out to guide Viet Nam’s 2030 Agenda on Sustainable Development” [01 October 2018]
AICHR-Norway Inter-Regional Dialogue on Business and Human Rights (Bangkok, 4-6 June)

ASEAN upholding human rights in business
Converging international instruments on Biz & HR
IV. State and effects of the voluntary sustainability schemes
Voluntary sustainability schemes well established in the food sector

Voluntary sustainability standards distribution across economic sectors (N=1218)

Leading agro-food voluntary certification schemes w/ labour rights incl. small farmers

- Fairtrade International (FLO) – Small Producers Organizations
- Global G.A.P – Crops
- Social Accountability International (SAI) – SA8000
- Sustainable Agriculture Network (SAN) – Rainforest Alliance
- UTZ Certified

International governance frameworks taken into account in VCS

<table>
<thead>
<tr>
<th></th>
<th>FLO</th>
<th>GLOBAL G.A.P</th>
<th>SAI</th>
<th>SAN</th>
<th>UTZ Certified</th>
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<td>ILO MNE Declaration</td>
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<td>OECD guidelines for MNEs</td>
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<td>UN Convention against Transnational Organized Crime, and its protocols on trafficking and smuggling</td>
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<td>UN Global Compact</td>
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Inclusion of ILO core labour standards in VCS

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<tr>
<th>ILO core labour standard</th>
<th>FLO</th>
<th>GLOBALG. A.P</th>
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<td>Convention No. 87 Freedom of Association and Protection of the Right to Organize</td>
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<td>Convention No. 98 Right to Organize and collective bargaining</td>
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<tr>
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<td>Convention No. 111 Discrimination</td>
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<td>Convention No. 138 Minimum Age</td>
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<td>Convention No. 182 Worst forms of Child Labour</td>
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### VCS coverage and certification costs

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<th>FLO</th>
<th>GLOBAL G.A.P</th>
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<th>SAN</th>
<th>UTZ Certified</th>
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<td>Coverage of identified and differentiated products or industries</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Geographical coverage (by country)</td>
<td>120</td>
<td>94</td>
<td>All</td>
<td>98</td>
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<tr>
<td>Smallholder farm coverage</td>
<td>Extensive</td>
<td>Less than half</td>
<td>Very low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

#### Standard-setting organization
- **FLO**: Fees depend on number of members, workers and production sites.
- **GLOBAL G.A.P**: Registration fee: from €2 to €1000 depending on surface, production, etc.
- **SAI**: $300 fee for the self-assessment; the facility must complete at least once every certification cycle.
- **SAN**: Certification fee: from €25 to €130
- **UTZ Certified**: ✓

#### Certification body
- **FLO**: Average annual fees: €2000 to €3000 for small producer organizations, and €3000 to €4000 for plantations.
- **GLOBAL G.A.P**: Certification body verification and certification fee depending on the certification body, operator structure, country, product, volume, etc.
- **SAI**: Certification costs vary depending on the certification body.
- **SAN**: Costs vary depending on the certification body and contextual factors (size of production unit, volume of product to certify, etc.).
- **UTZ Certified**: ✓

Audit costs US$500-4,500 for large group certification.
Challenges of voluntary certification schemes

“There is growing concern that suppliers in some agro-food industries are becoming overburdened by certification schemes, process standards and corporate codes of conduct.”


“Conventional certifications and standards are too expensive for micro and small producers”

World Bank (2017) Vietnam Food Safety Risks Management: Challenges and Opportunities
V. What are the implications for the Philippine coconut sector?
Sustainable coconut oil: Cargill w/ Rainforest Alliance

A global innovation: Sustainable coconut oil is now sourced for Cargill’s coatings and fillings.

Rainforest Alliance Policy on Administrative Traceability at Producer Level for Coconut

Traceability Guidelines

April, 2019
Version 1
"The demand for coconut products is growing faster than supply, with consumers in industrialized countries increasingly favoring sustainably sourced products. However, coconut production is restricted by a number of factors."

Inge Demeyere, managing director of Cargill’s chocolate activities in Europe
Implications of the previous statement...

1. Sustainability standards is now a must for the coconut sector.
2. VCO operators competing w/ the large CNO producers for coconut will have to aim at high standards of sustainability.
3. VCO MSMEs competing w/ the large CNO producers and the large desiccator plants will have to aim at high standards of sustainability and other claims to justify the premium price.

→ However, this is the segment that have to bear the demand and cost of the voluntary certification schemes (VCS) along with other export requirements while struggling to appeal to the consumers of their differentiated products.
Requirements for coconut exports (EU)

• Traceability code
• Certifications
  – Global GAP – *required by most supermarkets*
  – BRC (British Retail Consortium)
  – IFS (International Food Standard)
  – FSSC22000 (Food Safety System Certification)
  – SOF (Safe Quality Food Programme)
  – [if organic] EU organic logo (or of USDA by 2012 agreement)

“Exporting fresh coconut to Europe,” Center for the Promotion of Imports (CBI), Ministry of Foreign Affairs, Holland
Social & environmental compliance

• “Most European buyers have a social code of conduct”
• “for most large (EU) retailers this is a must”
  – GLOBALG.A.P. Risk Assessment on Social Practice (GRASP)
  – Fair for Life
  – Fairtrade
  – Rainforest Alliance
  – Sustainability Initiative Fruit and Vegetables (SIFAV)
  – (other voluntary certification schemes – see above)

→ What to choose …

“Exporting fresh coconut to Europe,” Center for the Promotion of Imports (CBI), Ministry of Foreign Affairs, Holland
VI. ILO plan and contributions
This proposal is built on EU-OECD-ILO project Responsible Supply Chain in Asia as a research-dialogue-advocacy-training platform with support of ILO Trade & Employment, Innovative Finance, SCORE & Green Jobs.
ILO work & workplan relevant to PH coconut sector

1. **Trade & value chain analysis of non-traditional coconut sector** [forthcoming]
2. Responsible SC CSR good practice study [on-going]
3. Banana value chain analysis for socioeconomic upgrading of small suppliers [on-going]
4. Study on digital traceability and buyer demands for select agriculture SCs [to begin]
5. Further policy dialogue, outreach and training on responsible supply chain [planned] – likely to focus on coconut & banana SCs
6. Proposal update on safe-fair-sustainable supply chain concept focusing on coconut (PH) and fishing (VN)
7. Partnership with private firms/sectoral associations to implement responsible supply chain practices [expected] – e.g., RBC training, TA on labour compliance, harmonization of VCSs and implementation support, value chain analysis and development
8. Support to the operationalization of the Green Jobs Act’s incentive scheme [on-going] – coconut sector may tap the scheme for imports of green jobs-generating capital goods or training once the inter-agency task force gets ready. The coconut sector may also be linked to the DoT initiative on sustainable tourism
Thank You
Salamat po