**Outcomes of HORT/2014/094: Developing the Cocoa Chain in Bougainville**

Phil Simmons[[1]](#footnote-1)

1. **Introduction**

Today I will discuss the outcomes of the project in five sections. The first section provides an overview of how the project contributed both directly to productivity in the cocoa industry through conventional agricultural extension methods and, indirectly by enhancing the enabling environment with improved human, social and agricultural capital at village level. Secondly, I assess how these outcomes comply with international notions of development using the World Bank themes approach. It turns out the project outcomes do well in this regard. In the third section I consider how the outcomes from the project measure up to the 2015 Sustainable Development Goals. Finally, I consider whether the trans-disciplinary approach used in the project was the right approach for improving the cocoa industry on Bougainville. I argue that it turned out to be the correct one.

1. **List of Project Outcomes**
2. Productivity (Part 1: Budwood garden hubs)
   1. Three Resource ’hub’ Centres & 33 ‘spoke’ villages ~ institutional capital
   2. Plant material ~ local budwood gardens & nurseries
   3. Training facilities ~ business & small loan principles, pruning, composting, fermentation, grafting, health
   4. Village Extension Workers ~ human capital -> ST & LT labour productivity impacts
3. Productivity (Part 2: Human capital development)
   1. Hub training days: farming practices, improved business & marketing and health & nutrition indicators
   2. App increases extension information with potential for app development: economic prices inputs & outputs, local selling opportunities etc
   3. FB page: Improved social capital with higher levels of trust in the project objectives & goals and trust in project local opinion leaders
4. Productivity (Part 3: Establish Dept Primary Industry in regional hubs and school links)
   1. Improved regional institutional capital aka capacity building
   2. BACRA labs in Toniva and Kubu, Field station in Buin
   3. Potential long-term benefits from embedding parts of project in AOB Government entity
   4. Plots near schools and incorporated CB Cocoa curriculum to improve long-term human capital
5. Gendered employment across project ~ improved human capital & empowerment
6. Health & Nutrition (Part 1: Baseline Survey)
   1. Linked AOB Government Depts of Health & Dept Primary Industries and Dept Local Government
   2. Increased mutual understanding between Village Extension Officers (VEWs) and Health Department officers
   3. Indirect outcome of survey: Improved focus & design of project feeding into other Final Outcomes
7. Health & Nutrition (Part 2: Village vegetable gardens, training of VEWs and at village level)
   1. Improved nutrition
   2. Improved household income diversity
   3. Empowerment of women from vegetable profits
8. Strengthened cocoa value chains
   1. Training: Marketing efficiency improved at village level: pricing, timing of sales and logistics
   2. Downstream processing (cocoa powder, chocolate lab, chocolate drinks…)
   3. Chocolate Festival: improved farmer understanding of manufacturer demands for product quality and links with chocolate makers and importers
9. **Project Compliance with World Bank Development Indicators**

What form should economic development take in the context of foreign aid programs? It is interesting to examine the ‘themes approach’ of the World Bank in tackling this difficult question and then to consider how consistent the project is with it. World Bank cast their choices of development indicators in terms of six themes which I quote[[2]](#footnote-2). The italics and underlining are mine.

1. Poverty and shared prosperity, which presents indicators that measure progress toward the World Bank Group’s twin goals of ending extreme poverty by 2030 and promoting shared prosperity in every country. *The project contributed directly to this through improvements in farm productivity, health & nutrition and income.*
2. People, which showcases indicators covering education, health, jobs, social protection, and gender and provides a portrait of societal progress across the world. *The project had a strong emphasis on training which also recognised the need for gender equality.*
3. Environment, which presents indicators on the use of natural resources, such as water and energy, and various measures of environmental degradation, including pollution, deforestation, and loss of habitat, all of which must be considered in shaping development strategies. *The project did not focus on this theme.*
4. Economy, which provides a window on the global economy through indicators that describe the economic activity of the more than 200 countries and territories that produce, trade, and consume the world’s output. *Ditto: the project focus is micro or industry level reform, not macro reform*
5. States and markets, which encompasses indicators on private investment and performance, financial system development, quality and availability of infrastructure, and the role of the public sector in nurturing investment and growth. *Section 4 of our project concerning marketing, value chain development and increased commercial savvy at a village level fits well as do those parts of the project focusing on links to the public sector in Bougainville.*
6. Global links, which presents indicators on the size and direction of the flows and links that enable economies to grow, including measures of trade, remittances, equity, and debt, as well as tourism and migration. *Commercial training of farmers in the project emphasised their role in the broader context of the global cocoa market.*

In conclusion, the outcomes from the project are consistent with four of these six World Bank themes, reflecting the broad targeting of the One Health approach and the trend in design of aid projects internationally. Targeting the enabling environment facilitates adoption of new ideas and cultural adaptation.

1. **2015 Sustainable Development Goals (United Nations General Assembly)**

Australia is a signatory to the 2015 SDGs so it is interesting to ask how the outcomes from the project ‘measure up’ in regard to that agreement? Keep in mind the SDGs are not legally binding however the Australian Government is an enthusiastic supporter. There are 17 goals and the project outcomes credibly contribute to achievement of eight of these:

[GOAL 1: No Poverty](https://www.un.org/development/desa/disabilities/?page_id=6226&preview=true)

[GOAL 2: Zero Hunger](http://www.un.org/development/desa/disabilities/envision2030-goal2.html)

[GOAL 3: Good Health and Well-being](http://www.un.org/development/desa/disabilities/envision2030-goal3.html)

[GOAL 5: Gender Equality](http://www.un.org/development/desa/disabilities/envision2030-goal5.html)

[GOAL 8: Decent Work and Economic Growth](http://www.un.org/development/desa/disabilities/envision2030-goal8.html)

[GOAL 10: Reduced Inequality](http://www.un.org/development/desa/disabilities/envision2030-goal10.html)

[GOAL 12: Responsible Consumption and Production](http://www.un.org/development/desa/disabilities/envision2030-goal12.html)

[GOAL 15: Life on Land](http://www.un.org/development/desa/disabilities/envision2030-goal15.html)

1. **Importance of the Trans-Discipline Approach**

I joined the project in 2019 and then had little direct contact with it due to the pandemic. I undertook a review of previous research work on cocoa in PNG after an in-country tour of project activities. The starting point for my curiosity was the apparent enigma of slow to non-existent yield growth in cocoa production over the last 50 years in Bougainville and, more broadly, in the Pacific. First, why hadn’t the cocoa industry in Bougainville modernised like, say, the industries in Thailand and Guatemala did?[[3]](#footnote-3) Second, does the trans-disciplinary approach used in the project offer a solution to the enigma of low yields[[4]](#footnote-4)?

**Why are yields “sticky”?**

One of the mysteries of cocoa production in PNG and across the Pacific is why yields have not improved over the last 50 years despite better varieties and husbandry, extension efforts and development of useful industry infrastructure such as the PNG Cocoa Board. There are three likely reasons from an economic perspective:

1. **Opportunity cost of labour in cocoa production is too high:** Over the last 50 years the PNG economy grew at around 2.5% p.a. in inflation adjusted terms and, since PNG is a labour-intensive agricultural economy, returns to farm labour across the economy can safely be assumed to have grown at around the same rate. Returns to cocoa haven’t kept up. There is stiff competition from other cocoa producing countries who, through intensification, have steadily reduced unit production costs resulting in downward pressure on international cocoa prices. In addition, PNG has large mining interests resulting in strong exchange rates that have squeezed farmgate prices for export crops like cocoa and copra. Essentially, a mild case of Dutch Disease. So, farmers do not see producing cocoa as the best use of their time. There is more money to be made from other on-farm and off-farm activities where returns to labour have kept up with national growth.
2. **Risk:** Cocoa production involves longer production lags than most other agricultural crops so there is more time for things to go wrong before returns are realised. Other traditional farm crops provide more immediate returns to effort and, in recent years have become less catastrophically prone to pests and diseases. This production risk, combined with market risks from fluctuating exchange rates and uncertain international market conditions, makes cocoa production riskier than production from most other agricultural activities.
3. **Slow technical change:** Technical development in the PNG cocoa industry has been slower than in countries like Thailand where the industry has modernised by adopting capital intensive production. This has not occurred in PNG due to failed capital markets in borrowing and saving. This failure results from difficulties of collateralising land for borrowing/investment purposes and from the negative impacts of *Kostom* on private saving for farm investment at the village level.

**Does the One Health approach offer a solution?**

Cocoa production in Bougainville has the potential to provide balanced economic growth and improved livelihoods by contributing directly to household cash incomes and indirectly through stronger terms of trade. However, if the cocoa industry is to thrive as a source of cash income for villagers and as AROB’s major export, the industry must reduce unit production costs by making more use of machinery and undertaking other capital development such as land consolidation. This can only occur if formal investment markets are reformed so farmers can easily buy and sell land, purchase equipment and hold working capital. This requires markets for saving and borrowing *ie formal capital markets* that can be easily accessed by individuals. Land needs to be able to be collateralised and effective saving instruments developed. Such reforms must have support at village level to be successful. Such grassroots support requires strengthening of individuals and social ties so that villagers have the confidence to make governance changes favouring commercial interests. The types of cultural adaptation necessary for such reform in investment markets cannot be imposed from above. It can only occur if villagers become more empowered and willing to create grassroots pressure for change. In this regard, the trans-disciplinary approach empowered individuals by increasing choices and opportunities for individuals and groups by improving human and social capital at village level.

More traditional approaches to foreign aid favouring extension of technical information remain important and many of those principles were embodied in the project. However, the trans-disciplinary approaches to industry level reform of cocoa in Bougainville provided an entirely appropriate emphasis on the enabling environment so that adoption of new ideas and, ultimately adaptation at a cultural level, were possible. These are necessary if the cocoa industry in Bougainville is to modernise.

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2. https://datatopics.worldbank.org/world-development-indicators/themes.html [↑](#footnote-ref-2)
3. Average yields (kg/ha) in Thailand and Guatemala are around six times larger than yields in PNG. See FAO (2022) Food Price Index Database, Food and Agriculture Organisation, [www.fao.org/worldfoodsituation/FoodPricesIndex/en/](http://www.fao.org/worldfoodsituation/FoodPricesIndex/en/) [↑](#footnote-ref-3)
4. It is not the case that just because cocoa yields in the Pacific have stagnated in recent decades extension efforts by Pacific nation governments, NGOs and foreign governments like Australia have been to no avail. Cocoa yields would be much lower than they are today without technical improvements such as managing varieties, pests and diseases. [↑](#footnote-ref-4)