**Examining the interface of sustainability programs and livelihoods in the Semendo highlands of Indonesia.**

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**Abstract**

Voluntary sustainability standards are used as both a means of securing coffee supply by large coffee firms and a development intervention to address rural poverty and improve environmental management in the global south. Using a case-study approach, we have examined the interface between a value chain sustainability program and the livelihood trajectories of smallholder coffee producers in upland Sumatra. Our research found the program has had minimal impacts for coffee producers to date. The level of commitment required of producers appears incompatible with the particular way that coffee is embedded within local landscapes, livelihoods and poverty alleviation pathways. Various sustainability standards articulate a narrative of rural development underpinned by an assumption that agricultural modernisation is the preferred pathway out of poverty for rural households. As a result, there is some risk that sustainability programs may be inadvertently encouraging household investment in a particular kind of agriculture, which is intended to assist sustainability of supply for the exporter, but is poorly aligned with prevailing processes of poverty alleviation. These observations are based on a detailed study of agrarian change amongst the Semendo people of South Sumatra province, where processes of rural development are far more complex than the assumptions presented by mainstream sustainability standards.

**Keywords**: Coffee, Voluntary Sustainability Standards, Certification, Livelihoods, Sumatra, poverty alleviation, smallholders, 4C.

## 1. Introduction

It is increasingly common for rural development initiatives to be enacted through value chain interventions. Voluntary sustainability standards (VSS), for example, enable consumers to directly preference coffee products certified or verified by a third party as meeting particular social, economic or environmental standards. These VSS schemes include 4C verification (previously the Common Code for the Coffee Community), which accounts for the greatest proportion of verified sustainable coffee on world markets (Panhuysen and Pierrot, 2014), along with other VSS such as organic, Fairtrade and Rainforest Alliance. Either explicitly or implicitly, these schemes suggest that improved farm practices and farmer organisation are an assumed means for improving rural livelihoods. Using a combination of the livelihoods framework presented by Chambers & Conway (1991), Scoones (1998) and Bebbington (1999), and global value chain analysis (refer to Neilson, 2014 for a discussion in relation to development practice, and Neilson et al., 2014 for review of conceptual frameworks), this study explores to what extent such value chain interventions are affecting smallholder livelihoods in the Semendo coffee-growing region in South Sumatra, Indonesia (Figure 1), and how VSS programs

interact with aspirations of agrarian transition and rural poverty alleviation. The key VSS program in our Sumatra case-study is the 4C program.

Typical of most VSS, 4C (2013, p2) presents a theory of change, which aims to ensure, "a baseline level of social, environmental and economic sustainability" with the hope that "[T]he ultimate impact contributed to will be improved quality of life through higher incomes amongst producers and an ecosystem that sustains coffee's livelihood". Understanding the realised on-farm outcomes of VSS is important, as are the village-level dynamics within which VSS schemes are rolled out, particularly with regards to any effect on conventional poverty alleviation pathways, or conventional trade networks, that have become embedded over time. In particular, the upgrading of production processes required by value chain interventions like VSS may not be compatible with the diverse livelihood portfolios common among coffee smallholders (who rarely rely on coffee income alone). From cases in Nicaragua and Mexico, it has been reported that VSS is unable to protect against other significant factors contributing to a lower quality of life (Bacon, 2005; Barham *et al.*, 2011). In southern Sumatra, off-farm income generation frequently contributes to poverty alleviation, which is achieved by moving away from primary production and allocating labour to where it can generate more consistent returns. However, training provided as part of value-chain interventions like 4C relies on an upgrading strategy specific to coffee, focusing on improving on-farm efficiency and reducing negative externalities.

Our paper unpacks these tensions by firstly giving context to the VSS roll-out across the Semendo region. Secondly, the study reports on several aspects of Semendo coffee production in which the program has sought to induce change. Finally, the study discusses the interaction between the VSS program and broader processes of agrarian change, particularly with regards to conventional pathways of poverty alleviation, risk management and livelihood diversification. We argue that there is a tendency for value chain interventions for development, including VSS schemes, to underestimate the importance of broader processes of rural change, which are inevitably locally specific. Moreover, this tendency appears to have emerged as lead firms embrace narratives of sustainability to enable stronger upstream coordination of their supply chains. As such, sustainability programs are mobilised by lead firms to ensure long-term supply reliability, producing a tension between associated narratives of agricultural modernisation and the lived realities of agrarian change.

## 2. Sustainability Programs, Value Chains and Rural Livelihoods

Development agencies and practitioners eagerly embrace the concept of 'value chains for development' (Neilson, 2014). This approach suggests that strengthening the linkages between otherwise marginalised producers and downstream lead firms (often large food processors), provides

opportunities for producer upgrading and poverty alleviation. This can occur through such mechanisms as improved technology and skills transfer, quality improvements, higher prices, and access to credit and more reliable markets. In a global trading environment of tightened resource competition, climate change and increasing consumer demand, large agribusiness firms are further seeking to engage more directly with producers to ensure long-term supply certainty. For many commodity sectors, including coffee, the value chain linkages between agribusiness (coffee roasters and international commodity traders) and farmers in the Global South are both encouraged by, and mediated through, various VSS schemes.

We use the term VSS to encompass a wide range of programs, including third-party certification schemes (e.g. Rainforest Alliance), industry-wide verification programs (the Common Code for the Coffee Community, or 4C), and company-specific programs (including Starbucks CAFÉ Practices and the Nescafe AAA program). In practice, such programs are often implemented alongside, or as part of, broader corporate sustainable sourcing initiatives, such that it is not always possible to distinguish the impacts due to a VSS program from a particular lead firm sourcing strategy. Indeed, one international food and beverage company representative explained to us that, "*We essentially consider certification to be a tool that allows us to mobilise resources towards meeting our objective, which is to ensure long-term supply, but alone certification is not enough*". At the same time, there is a growing literature attempting to assess the impacts of VSS programs on producers in the global south, many of which are specifically related to the coffee sector (as recently reviewed by Bray & Neilson 2017).

The ability of VSS programs to improve rural livelihoods is highly context-dependent, and the potential impact pathways are shaped by the specific ways in which production of the target commodity (coffee in our case) is embedded within local landscapes, supply chains and social systems. For coffee exporters in southern Sumatra, a value chain intervention like VSS offers both unique marketing channels and the potential for product differentiation through improved quality. Some exporters are using VSS not only as a ready-made method of introducing good agricultural practices to their suppliers, but also as a means of removing the lowest quality coffee from their supply chains. Both scheme proponents and firms also suggest that VSS challenges local trade networks that allegedly extract excessive profits along the coffee supply chain from farm gate to port. This is indicative of the "web of interests and incentives" at the interface of value chain interventions and producer livelihoods (Ortiz-Miranda and Moragues-Faus, 2014), much of which overlooks the interests of producers. Even with the active involvement of producers in such schemes, Riisgaard et al. (2010) argued that this may not be sufficient to pose a viable challenge to the control and power exerted on the value chain by lead firms.

The field of global value chain (GVC) analysis assesses a lead firm's influence over the whole value chain. Ponte (2002) and Daviron & Ponte (2005) applied the approach to highlight the influential role performed by roasters in the coffee value chain, who act as lead firms and exert an indirect influence far upstream in coffee producing regions. For example, the 4C program introduced to the Semendo region was funded by a multinational coffee roaster, and a local farmer training centre was effectively branded by the roaster, even though the program was implemented locally by an international commodity trader. This notion of control is termed 'governance' by GVC scholars (inter alia Gereffi 1994; Gereffi et al. 2005). Gereffi (1994) initially introduced the term 'buyer-driven global commodity chain' to denote how global buyers (lead firms) used explicit coordination to develop a competent global supply base without the need for direct ownership. More recently, Yeung (2015) applied the insights of lead firm control (of Global Production Networks, akin to GVCs) to better understand processes of regional development. Yeung argues that in an era of economic globalisation, regional development occurs when the strategies of global lead firms 'strategically couple' with place-based institutions and regional assets. This research has been informed by processes of industrialisation in East Asia (South Korea, Taiwan, and Singapore) dominated by high-tech industries and advanced manufacturing. Our assessment of VSS programs in this paper can be conceptualised within this overall schema of GVCs, where our assessment of rural development in Sumatra is informed by understanding of processes of 'strategic coupling' in a rural context.

Our case study explores processes of rural change where a VSS program is introduced along a value chain and interfaces with livelihood strategies, producing particular outcomes for rural households. Analytically, we are interested in the interface between GVCs and livelihoods. Scoones (2009) identified how prominent global influences (such as those identified by various GVC studies) had been largely excluded from earlier application of the sustainable livelihoods framework. Challies & Murray (2011) attempted to address this lacuna by integrating value chain structures with livelihood outcomes through supporting institutions and training of smallholders to meet market demands. We are interested in the possible causal relationships between enrolment in a VSS, the introduction of preferred production methods through training, and impacts on livelihoods. Impacts from value chain interventions, however, may be positive or negative for poverty reduction depending on the nature of engagement from lead firms, and changes in vulnerability and risk are good indicators of these impacts (Bolwig *et al.*, 2010).

In a recent review article, Bray & Neilson (2017) used the livelihoods framework for an analysis of empirical case studies regarding the impact of certification on coffee smallholders. For the majority of producers in the global south, the prospect of improved prices is the primary incentive for enrolling in

certification (Gómez Tovar *et al.*, 2005; Rueda and Lambin, 2013; Ibnu *et al.*, 2015), although price improvements do not guarantee poverty alleviation (Jena et al. 2017), nor are they always sufficient to offset certified production costs (Beuchelt and Zeller, 2011) and economic downturns (Jena *et al.*, 2012). Indeed, improvements in yield may be as important for livelihoods as price premiums (Barham and Weber, 2012). The literature suggests that while certification may be able to contribute to poverty alleviation, this is dependent on its ability to integrate with local and geographic contexts (Barham and Weber, 2012; Bose, Vira and Garcia, 2016), and this often involves supporting livelihood options beyond coffee production (Gitter *et al.*, 2012).

VSS has the potential to provide greater access to information and technology, via training, to help farmers improve the sustainability of production (Bray & Neilson 2017). While some evidence indicates capacity building can improve livelihoods more effectively than price mechanisms (Ortiz-Miranda and Moragues-Faus, 2014), VSS tend to encourage farmers to specialise in coffee production (Vellema *et al.*, 2015), which is problematic if it occurs at the expense of food production, diversified (and resilient) livelihoods, or agro-diversity (Barham and Weber, 2012; Stoian *et al.*, 2015). Another recent systematic review of the effectiveness of certification schemes for improving socio-economic outcomes (Oya et al., 2017) found that, although there was evidence for improvements in intermediate outcomes (producer prices and agricultural income), there was less evidence of impacts on endpoint outcomes (wages, household income and assets). This clearly hints at the complex way the target commodity is contextually embedded within livelihood strategies, and Oya et al. (2017, p.iii) further suggest the potential of ethnographic research to better "grasp the complexity of the local dynamics and explain successes and failures in more depth". Our study addresses this challenge and contributes to the broader literature on assessing the impacts of sustainability programs on rural livelihoods in the Global South.

## 3. Methods

Field work for this paper was conducted in the three Semendo sub-districts of South Sumatra province (Semendo Darat Laut, Semendo Darat Ulu and Semendo Darat Tengah). The location of the Semendo sub-districts, collectively referred to as "Semendo", is presented in Figure 1. Qualitative methods were used to collect data in 2015, 2016 and 2017 over a combined total of 45 field days in a particular study village (which we will refer to as "Bukit Subur"), interspersed with day visits to other Semendo villages. An international coffee exporter ("The Coffee Exporter") introduced 4C to farmers in Bukit Subur in 2012. Participant observation was used throughout this period, in addition to 115 interviews with coffee-producing households, 8 interviews with local government representatives, 4 interviews with coffee exporter employees (in addition to a series of informal conversations) and 6 interviews with

representatives of various coffee exporting companies in Bandar Lampung. 10 focus group interviews with coffee farmers were also undertaken. While Blackman & Rivera (2011) question the validity of impact studies that do not include a counterfactual, our methodology intentionally sets aside an ostensibly objective appraisal of livelihood change in Bukit Subur in favour of a local view that encapsulates local attitudes towards 4C verification. The research relied upon triangulation as a verification method, and elicited insights from representatives of government and industry to ensure we had captured the fundamental processes associated with 4C's introduction into Bukit Subur. An understanding of the content, method and format of training activities events was established through key interviews with implementers, as well as participant-observation at numerous training sessions.

This paper draws upon, and complements, quantitative analysis of a large household survey conducted across the Semendo area in 2015 as part of an integrated, mixed-methods research project. Results of that quantitative analysis are reported elsewhere as Donoghoe et al. (2018), and involved a survey of 979 4C-verified households and 609 households not directly involved in the sustainability program (spanning three Semendo sub-districts and 24 villages). Donoghoe et al (2018) use propensity score matching to establish "treatment-control" comparisons to evaluate the impacts of 4C on various impact indicators.

**<Figure 1 near here>**

## 4. Coffee and Rural Change in Semendo

Coffee was introduced to Semendo in the late 19$^{th}$ century. Semendo smallholders, however, did not significantly embrace coffee cultivation until the early 20$^{th}$ century, with Huitema (1935) describing the introduction and expansion of Robusta coffee planting in Semendo in 1911. Favourable market conditions in 1925-35 then triggered the widespread incorporation of coffee planting within the agricultural systems of Semendo, where it was initially integrated with swidden rice farming as a fallow crop, and remained less intensively grown in Semendo than elsewhere in Java and Sumatra. Robusta coffee has remained the primary cash crop produced in the Semendo highlands ever since.

The Semendo agricultural system has long been focused primarily on rain-fed rice (*sawah*) cultivation and fish ponds, and secondarily on dryland rice (*ladang*) using swidden techniques and planted alongside fruit trees. Coffee has, over time, become integrated into, and partially replaced, this swidden system. Coffee production is now estimated to cover approximately 181,000 hectares across

the entire South Sumatra Province, the majority of which is low quality Robusta, making it the most significant coffee-producing province in Indonesia (the adjacent province of Lampung produces a comparable volume). Individual plots, however, are small and average less than two hectares in Semendo with productivity of around 700 kg per hectare, which is well below average yields of between 2,300-2,700 kg reported in Vietnam (D'Haese, Vannoppen and van Huylenbroeck, 2006; Agergaard, Fold and Gough, 2009). Bukit Subur is broadly representative of production in the three Semendo sub-districts of South Sumatra, although it is also a small commercial trading centre. There are approximately 967 households in Bukit Subur, over 80% of whom rely on mixed income sources involving coffee.

Four earlier studies of the South Sumatran highland districts (Tsubouchi 1980; Takaya 1980; Godoy & Bennett 1988; Potter 2008) are useful in examining the extent of agricultural change in the South Sumatra uplands over the last 40 years. Both Takaya (1980) and Tsubouchi (1980) note the widespread presence of the swidden system throughout their southern Sumatra research areas, which focused on tributaries of the Musi[1] and Komering Rivers. Takaya (1980) describes how coffee was not consistently considered a major source of income in these upland regions until it replaced rubber as the region's main cash crop in the second half of the 20th century. Drawing on colonial-era forestry debates, Potter (2008) identifies the Semendo agricultural system as somewhat unique in the region, with a combination of intensive *sawah*, long-cycle swidden fallows and forests protected by customary law known as *rimboe larangan.* In the Pasemah lands immediately north, where coffee production was affected more directly by "modern" European techniques, coffee monocropping appears to have been more widespread. Even in Pasemah, however, Godoy & Bennett (1988) describe an agricultural system where coffee functions as a low-input, reserve income source.

Life goal aspirations in Semendo were widely reported to encompass growing rice, getting married and taking the pilgrimage to Mecca, and maintaining strong cultural traditions and an adherence to customary law (*adat*). An important aspect of Semendo *adat* is *Tunggu Tubang*, referring to a matrilineal system of indivisible inheritance whereby the eldest daughter inherits family land, including rice fields, fish ponds, housing, and sometimes coffee farms (Salmudin, 2012). Our informants estimated that approximately 40% of land in the districts is held under *tunggu tubang* tenure, constituting the basis of traditional cultural values in Semendo. Traditional territorial claims over forest and fallow land in Semendo are often contested by the state, whereby the 1967 Forestry Act effectively declared *adat* forests to be the property of the state (although a 2012 ruling by the

[1] Semendo lies within the Musi catchment

Indonesian Constitutional Court appears to have reversed this). The zoning of much land in Semendo remains contested, with Ministry of Forestry and Ministry of Planning maps in disagreement on forest boundaries, and with various forms of community forestry agreements emerging over the last decade. Around 90% of Semendo coffee farms are directly managed by land owners (the remainder were rented, lent without fee or sharecropped), although formal registration of land with the Lands Agency is rare (around 7% of respondents claimed to hold formal title), and is severely complicated by the *Tunggu Tubang* system. *Tunggu Tubang* land is not considered primarily as a productive asset, but is rather imbued with patrimonial and cultural value, with Potter (2008, p185) describing how, "the large amount of temporarily unused rice land and simply vacant land in Semendo villages [in 2002] was striking".

Semendo farmers performed a pivotal role in stretching the coffee frontier further south into Lampung province during the 1950s and 1960s (and even earlier according to Suyanto et al., 2005), where they continued extensive swidden-style practices, and have been associated with forest clearing (Verbist, Putra and Budidarsono, 2005). Several informants claimed that this out-migration from Semendo was triggered by the *tunggu tubang* inheritance customs, which effectively left many men landless. While the establishment of new coffee-related swiddens is still evident in the more remote villages of Semendo today, land shortages appear to be encouraging more sedentary coffee cultivation in some parts of Bukit Subur. Coffee is still a popular source of income, due to its relatively stable price and low maintenance requirements relative to other cash crops like vegetables. Coffee farming has become an important part of the Semendo identity, with all villagers, from landless labourers through to the mayor of the district declaring, "I'm a coffee farmer too!". It is, however, important to emphasise the contingent role of coffee in livelihoods. During a period of low coffee prices in 2002, Potter (2008) reported how coffee farms were effectively abandoned and household resources were re-oriented towards *sawah*, the collection of non-timber forest products such as rattan, and (we assume) out-migration.

Tsubouchi (1980) noted the increasing out-migration among the children of local elites some 40 years ago, and many informants stated their aspirations to escape relative rural poverty through migration. Strong cultural and familial ties, however, partially restrain the extent of out-migration, with one participant complaining that "*even if I didn't like living here, I would still live here as I have to*." Without *tunggu tubang*, this respondent claimed he would "*follow economic prospects out of the village without thinking twice*". Even so, migration outside Semendo offers no guarantees and is a higher-risk strategy, and the villagers see continued access to land as constituting an important lower-risk social

safety net. Land access and ownership was of great value to those households who just 15 years ago were using their rice fields and forest product collection to endure the 2001-2002 coffee crisis (Potter, 2008).

There have been broader structural shifts in the Indonesian economy over the last decade, where the contribution of agriculture to the economy and the absolute number of farming households are both in decline (Neilson, 2016). Major off-farm sources of employment in Semendo include work as motorcycle taxis / couriers (*ojek*), working as construction labourers, and receiving government salaries as bureaucrats, police officers, teachers and politicians. The presence of a new vocational senior high school in the village adjacent to Bukit Subur has prompted opportunities for student rental accommodation. This demonstrates the influence of broader state-driven development interventions, and how education has long been considered a "transformative intervention… to unlock potential by shifting structural constraints" (Scoones, 2015, p. 31). Such supports have been contrasted (by Barham et al. 2011) with the much more targeted nature of value chain interventions. Other villagers engage in petty trade, and ownership of a *warung* (small store) is a sign of relative wealth in Bukit Subur. Many *warung* owners noted that good coffee harvests translated into good sales, and in 2016, several villagers had opened shops in their homes following a successful 2015 harvest. In Bukit Subur, initial accumulation of capital was widely viewed as an opportunity for petty trade, as a foothold into a poverty alleviation pathway, rather than an opportunity for agricultural investment.

## 5. Introducing "Sustainability" to Semendo

Coffee is typically dry processed and traded through several sets of hands before reaching export warehouses in Bandar Lampung, many of which are owned by international trading companies. This port is responsible for approximately 65% of Indonesia's total coffee exports (Neilson, Labaste and Jaffee, 2015). The introduction of the 4C program to Bukit Subur by The Coffee Exporter occurred in partnership with, and was financed by, a large international coffee roaster as part of their corporate sustainability commitments. The Coffee Exporter established a trading warehouse on the outskirts of Bukit Subur in 2012, followed by a training centre in 2014 as part of the sustainability program (the buying station subsequently ceased operations in 2016). This was the first farm-level investment by a large coffee buyer in Semendo, and by 2016, the initiative was directly employing a regional manager, a team of six agronomists and several security guards, most of whom were locally recruited. The program was the first dedicated source of coffee-specific training (except for sporadic government extension activities) in recent decades. The company financially supported the roll-out and audit process of 4C verification for existing government-facilitated farmer groups, and then actively

promoted the formation of additional farmer groups. In 2012, 2437 households were listed as being part of the 4C production unit. The Coffee Exporter offers registered farmers up to six training events per year (each three to four hours), although training is not dependent upon sales to The Coffee Exporter. External 4C verification audits are undertaken every year, which extends to every three years if verification is obtained. A subset of these farmer groups was encouraged by The Coffee Exporter to obtain Rainforest Alliance certification in addition to 4C from 2015 onwards.

## 5.1 The 4C Code of Conduct

The code is a self-styled "entry-level" verification, which aims to "gradually raise the social, economic and environmental conditions of coffee production and processing worldwide" (The 4C Council, 2014, p. 3). This implies a large gap between current (or "traditional") agricultural practices and improved practices, sometimes referred to as Good Agricultural Practices. The code comprises 27 principles, including 8 economic principles, 9 social principles and 10 environmental principles, which "are based on good agricultural and management practices as well as international conventions and recognized guidelines accepted in the coffee sector" (4C 2015, p3). Each principal is audited by a third party against a traffic light system of compliance: green indicates the group completely meets the principle; yellow indicates improvements are required, and red indicates the principle has not been met (any red scores must be matched by the same number of green scores). There are also 10 Unacceptable Practices, such as "Bonded and Forced Labour" and "use of pesticides banned under the Stockholm convention", which invalidate verification if present. In addition, producer groups must meet organisational and managerial standards (The 4C Council, 2014).

Direct training of farmers by value chain actors is considered "standard implementation", as identified in the 4C (2013) Theory of Change, and facilitates the provision of specific requirements and prohibitions of 4C to farmers. Semendo farmers attended training on topics such as agronomy, soil management, pest control, and safe use of chemicals. The Exporter is also responsible for modifying and translating the relatively technical language of the Code to be easily understood by the producers. For example, producers require explanation of the concepts of "Coffee Farming as a Business" and "Good Agricultural Practices". Farmers are generally positive about training provision, given the minimal levels of past training and support, although the extent to which training has actually resulted in practice change appears to be limited (Donoghoe et al. 2018). We identify five main areas where the VSS scheme has sought to induce change in Semendo coffee production: systems of quality control; coffee income; labour requirements; social organisation; and trade networks. These will now be discussed.

## 5.2 Systems of Quality Control

The Robusta coffee grown across southern Sumatra is dry processed and generally of poor quality. The harvest and post-production training implemented by The Coffee Exporter has, however, emphasised improved quality control. This was described by a number of participants as, "ripe-harvested cherries dried to a moisture content of below 18%." These standards are considered onerous for many producers, as selective harvesting significantly increases labour requirements and transport costs as coffee cherries on any tree tend to ripen gradually over a 1-2 month period. An older producer complained, "*If I don't pick cherries before they are red, they might fall to the ground and rot*." This helps explain why Donoghoe et al. (2018) found little difference in harvesting practice (i.e. claims to harvest selectively) between enrolled and non-enrolled farmers (~95% and ~91% respectively).

For another aspect of quality management, however, approximately 70% of 4C-enrolled farmers reported using tarpaulins for drying, compared to 46% of non-4C farmers (most of whom continued to dry cherries directly on the ground). The coffee exporter gives subsidised tarpaulins to many of its enrolled producers as a means of lowering coffee moisture content and removing foreign debris (stones and unwanted organic matter). The VSS program has involved, or has at least been closely associated with, an attempt by the Exporter to impose quality governance on producers, thereby removing lower quality coffee from its supply chain. While conceivably this could also provide price benefits for producers, coffee quality improvements generally remain a low priority for coffee producers in Bukit Subur due to the perceived higher costs. During the research period, there was strong resistance amongst producers to implementing improved quality practices such as extended drying periods to reduce moisture levels. Shorter drying times (as little as five days) persist as producers attempt to increase cash turnover at the earliest opportunity (i.e. to local traders). One woman noted, "*If we need to eat, we'll sell coffee, but if times are good, we can focus more on quality and wait for an increase in price*." While the Exporter can claim to have been partially successful in introducing quality improvement measures alongside the VSS program in Semendo, producers remain unconvinced of any benefit.

## 5.3 Coffee Income

4C-verified coffee is purchased at a premium (up to 300 IDR/kg above local market prices) in Semendo in an attempt to encourage farmer uptake, but the buying station also imposes quality standards, which acts as a disincentive for many producers. Only 33% of enrolled farmers identified "receipt of a price premium" as a benefit of verification (against 42% who considered training beneficial, and 63% who considered price information beneficial). Most farmers do not consider the price premiums sufficient to overcome what they perceive to be the negative terms of payment (an electronic

transaction that could be delayed). "*If I need money quickly*," commented one producer, "*I sell to local traders*." Furthermore, this requires access to a bank account, which is still uncommon in Semendo. Over 90% of non-enrolled farmers in Semendo reported being satisfied with the conventional cash-in-hand sales process, despite receiving an average of 500 IDR/kg less than their enrolled counterparts (based on the survey work). The price premium, therefore, does not seem sufficient to offset the perceived appeal and convenience of traditional trade channels.

Coffee-related income is a function of prices and production volume, offset by costs. 4C (2013) expects training in improved 'good agricultural practices' to result in increased yields, and that this will subsequently translate into higher farm incomes. However, Donoghoe et al. (2018) found that 4C-enrolled farmers (average yield of 3.04 kg of cherries /tree) did not report either higher yields or coffee profits than non-enrolled farmers (average yield of 3.53 kg/tree). The benefits of training, practice change, yields and income may require more time to be felt, however it was clear (at this stage) that farmers in Bukit Subur were not perceiving a noticeable impact on income from the program from either price or increased productivity. There was also a perception among many farmers that the implementation of good agricultural practices was expensive, thereby restricting the usefulness of 4C to wealthier individuals.

## 5.4 Labour Requirements

Donoghoe et al (2018) shows greater investment of labour and capital into coffee production among 4C-enrolled farmers. Average labour expenses (i.e. paying workers) are greater among 4C-enrolled farmers (~5 million rupiah per year) than non-enrolled farmers (~3.5 million rupiah per year). 4C requires active soil management and the establishment of buffer zones, and these require additional labour (although, admittedly, there was also little reported difference between 4C-enrolled and non-enrolled producers in their uptake of these practices). Producers across Semendo are generally unable (or unwilling) to allocate extra labour, either by employing others or their own time, to these practices. One wealthier land owner noted, "*The VSS standards are too hard to implement and I don't always have time, as I have to attend to other things, including my rice crop*."

Although labour costs vary depending on seasonality, wages (during the peak harvest season in 2016) were reported to range from as little as 25,000 IDR/day (~US$1.90) to 50,000 IDR/day (~US$3.75), occasionally supplemented with food and cigarettes. This is below the 60,000 IDR/day (~US$4.50) minimum wage of South Sumatra (WageIndicator.org, 2017), and there is little evidence of upward pressure on wages for agricultural labour (especially outside the harvest season). While the apparent availability of labour during the non-harvest period could presumably be allocated to farm maintenance (a company calendar distributed to all enrolled producers recommends tasks such as

weed removal and fertiliser application), many producers are reluctant to invest in these tasks. The appeal of coffee production for many households in Semendo lies in its perceived low labour intensity once farms have been established, and initial plantings often follow a life cycle pattern, coinciding with family establishment and then with declining investment towards old age. One farmer group head claimed to spend less than a month per year managing his coffee plants in favour of working on construction sites, while a landless labourer noted that owning a coffee farm was less time intensive than laboring, although he also reported that "*the capital costs and human labour required to start growing coffee are too high*." An older couple emphasized the cultural importance of owning a coffee farm, but conceded, "*Now we are older, having a shop is very helpful*".

The unwillingness to invest labour in coffee farming is also reflected in the considerable visual evidence of soil erosion across Semendo, and the apparent absence of meaningful soil management practices. This appears to be a legacy of swidden-style farm management, which is generally favoured in environments of low labour availability. Other producers had converted their rice fields to coffee to capitalize on coffee prices while avoiding the up-keep of terraces, highlighting the appeal of farm systems with relatively lower labour demands. However, it is possible that Boserupian pressures (where increased population densities catalyse technological change and agricultural intensification) may already be encouraging a shift towards more intensive production systems. Indeed, greater population densities in Bukit Subur, which is also at a lower altitude and with less forest frontier than other Semendo villages, appear to be encouraging a shift to a more sedentary form of agriculture, where the environmental practices of 4C may be better suited.

## 5.5 Social Organisation

Many of Indonesia's farmer groups (*kelompok tani*) were established as a tool of the state during Suharto's authoritarian New Order regime (1966-1998), when they were used to extend government authority and influence. Today, VSS frequently use the same groups in an attempt to introduce improved agricultural practices. Where the farmer groups were formerly used to extend political patronage, such as through the distribution of subsidised fertiliser and other inputs, they are now also used to spread technical knowledge delivered by private industry. This reflects the shifting influence in rural Indonesia away from government towards private industry, while the use of farmer groups to disseminate training has also prompted new modes of social organisation in the village.

The heads of 4C-enrolled household attend farmer group meetings more regularly than non-enrolled farmers household heads, and spend, on average, more time per week talking about coffee production (Donoghoe et al 2018), such that program participation may have triggered improved social capital amongst Semendo producers. Several villagers claimed that farmer groups previously met

infrequently, when their discussions would be limited to fertiliser distribution or, less frequently, training related to rice production. Regular training sessions related to coffee production have now become an expectation for many VSS-enrolled farmers. As a result, many 4C-enrolled farmers expressed their greater confidence in both their ability to produce coffee and their general outlook on life since the presence of a VSS in the village. Meanwhile, non-enrolled farmers felt excluded from information-sharing networks and new ideas regarding crop management, with one claiming, "*I never speak to other farmers about growing methods as I am not yet a member of a farmer group*", and another, "*farmers don't know how to join farmer groups. Farmers are passive and have to be encouraged into membership*." Notwithstanding the still undeveloped capacity of farmer groups in Semendo, both new group formation and increased activity of existing groups have been triggered by the VSS program, with the potential for new social relationships as a result.

Social capital is a crucial determinant of people's ability to be agents of change (Bebbington, 1999), and can act to rectify power imbalances in the value chain (van Wijk and Kwakkenbos, 2012). Several farmers in Bukit Subur, who were not yet members of farmer groups, identified group enrolment as a strategy to access certain benefits and potentially improve their livelihoods. Despite generally low satisfaction with group governance amongst those already involved in groups, membership of farmer groups was seen by the extremely marginalised as a pathway towards improved social access. Even if impacts of training are insubstantial, as appears to be the case to date, group members have access to this information and therefore have further options for implementing new livelihood strategies. Being unable to join a group, which requires an invitation from a head of farming group, and approval from the head of the village, remains a barrier to progress for many farmers. This reflects the low social capital among the most vulnerable individuals in the community, regardless of the presence of VSS, and VSS does not appear to be reaching these individuals in this case.

## 5.6 Altered Trade Networks

Many villagers in Bukit Subur aspire to become a shop owner or trader, as an important initial step towards poverty alleviation, and traders are seen as power centres with enhanced financial resources. In the words of one farmer, "*It's expensive to become a trader, as your food source needs to be secure and you need to have a good store of capital*." Coffee traders are powerful members (patrons) of the Bukit Subur community, as they not only buy and transport the highest volumes of coffee at a local level, but also act as sources of credit, and provide other agricultural services, such as sale of fertiliser, tools, rice and rent of capital goods (e.g. hulling machines). Their control of market information has also been closely guarded as a means of leverage and, as argued by Ribot & Peluso (2003, p169), can be used "to prevent dependent producers from becoming independent of their patrons".

Traditionally, local elites, like traders, accrued economic power through systems of patronage and social connections with larger extra-local entities, including their own down-stream buyers. But the positions of authority held by both elites and government in the village are being challenged by the relative reliability of information and transparency of the Coffee Exporter. In particular, The Coffee Exporter established an efficient and popular system of daily price updates via SMS, which improved price transparency and is encouraging a shift away from conventional bargaining measures. One trader, however, shrugged this challenge off, saying, "*I compete with the coffee exporter by being far less selective with the coffee I buy*."

While VSS may attempt to cut out middlemen (Arce 2009), local traders in Bukit Subur are still maintaining control, by either heading up farmer groups, or establishing an informal "preferred supplier" pathway between producers and the coffee exporters. This attempt to control the sale of coffee to The Coffee Exporter is still occurring despite the latter's best efforts to buy directly from farmers. "*There are* always *middle-men*," sighed one warehouse manager, with the coffee exporter acting as the first buyer for less than 5% of enrolled farmers (Donoghoe et al., 2018), while many farmers expected that their buyer would on-sell their coffee to The Coffee Exporter. In the initial years following the establishment of The Coffee Exporter's buying station, several local traders protested this presence as a threat to their trade, and attempted to enlist local government authorities to protect their interests. The VSS program was, however, subsequently associated with altered local trade networks, with established local traders being primary beneficiaries by being less selective in buying coffee, and on-selling coffee to the exporter following additional drying. New opportunities have also emerged for "preferred suppliers" (often farmer group leaders) who are entrusted by The Coffee Exporter to collect 4C coffee on behalf of other farmers in a village, creating an effective rent for those individuals. Overall, the VSS program does appear to have had negative (albeit minimal) impacts on some local traders, and in some instances may have limited local off-farm poverty alleviation pathways. However, these relatively well-financed individuals appear well-placed to reassign their capital towards other profitable business activities.

## 6. The VSS Program and Livelihood Strategies

In assessing the interaction of VSS and livelihoods, we have attempted to juxtapose the process of modernisation (or "improvement") promoted by VSS in Semendo and the resistance this meets from producers reliant on traditional practices derived from swidden agriculture and diversified livelihoods. Producer capacity, as defined by 4C (2013), is focused on improved and efficient farming practices, which differs from a broader livelihood perspective. According to Bebbington et al. (2006, p1962),

> "Capacity is the 'power to' do something, but the likelihood that that power will in the end be realized is dependent on the power of others to influence both one's ability to act, and the likelihood that that action will have the effects that the actor hopes for."

The desire of Semendo producers to "do something" through coffee production is tempered primarily by low-risk livelihood strategies (diversification and low labour inputs), which shapes the interaction of VSS and livelihoods in the area. Even the International Coffee Organization (ostensibly established to promote coffee production) recommends diversification to other crops during times of price deflation (Watson and Achinelli, 2008). Furthermore, conventional paths of poverty alleviation in Semendo are not typically associated with on-farm, labour intensive activities with uncertain financial outcomes, such as soil terracing, intensive pruning, and selective cherry picking. All of these activities, however, are advocated by the sustainability program as part of their emphasis on improved and efficient coffee production.

Such a shift in production focus is seen as an experimental strategy in Semendo. A young farmer expressed his conservatism by explaining that "*Trying new things is too risky*", and that "*I already know enough because my father is a farmer*", while another said, "*Farmers are not educated and don't really want to change their minds*". Coffee producers in Semendo are finely attuned to risk minimisation, which appears to be embodied within risk-averse traditional attitudes towards farming, and the reliance on natural capital (exemplified by swidden-type farming systems). A local government leader felt that "*The standards of [the Coffee Exporter] are too complex and confusing; it's just easier to sell to the local trader*." The increased agricultural workload associated with the VSS program in Semendo was identified as the primary reason why some producers (four groups in Bukit Subur to date) have quit the program after two years involvement. Initial interest in the program was followed by internal debates and questioning within the groups about the tangible benefits of 4C, which then led to a split in opinion and subsequent withdrawal.

Traditional practices derived from swidden systems encourage diverse, low-maintenance, low-risk production. According to one producer, "*People's ability to deal with shocks to the coffee system is better if you have capital, as you can buy fertilizer and pesticide. But people here are not wealthy, so they use traditional practices*." This is in contrast to the more modern, high-maintenance, agricultural "upgrading" practices encouraged by the VSS, which appear better suited for more resilient communities willing to absorb risks (Rosset, 1999). 4C (2013, p2) explicitly identifies its expectation that "stakeholders commit resources to ensure more coffee meets the requirements of 4C" and that "committed members then concentrate on the production [of coffee]". 4C therefore encourages a greater focus on coffee and an expectation of improved, modern agricultural practices.

Coffee contributes around 50% of total household income to both 4C-enrolled and non-enrolled households, all of whom appear unwilling to abandon diversity in the search for higher coffee-derived income, even though better capitalized farmers could intensify coffee practice without losing diversity of production. Food production (rice) continues to be prioritised in Semendo, while on-farm income is frequently supplemented by off-farm work. Most farmers in Bukit Subur rely predominately (but not solely) on their own labour for farm work, although there are a few who pay labour or hand their farm over to share-croppers. Those individuals with additional financial capital, however, frequently invest this in non-farm activities (such as trading or shop-keeping, or in one case – construction of a small hotel). Thus, producers with greater capital and potentially greater risk tolerance, who are well-positioned to adopt good agricultural practices and invest in coffee production, are also better resourced to move away from agriculture, where more consistent, higher returns are likely. Land-owning villagers with substantial off-farm income, such as traders, skilled labourers and public servants, subsequently have little interest in attaining greater agronomic knowledge or devoting *any* additional time to farm work.

Semi-skilled, non-farm occupations can be attractive alternatives to coffee-farming in Semendo when locals can compete with outsiders. A local carpenter earned the equivalent of a 2,000 kg coffee yield (more than double the average in Bukit Subur) over a period of less than 6 months. Individuals who have worked as labourers and tradesmen are often unwilling to return to farm work, preferring to operate *warung* stores, or work as *ojek* drivers. The success of VSS in Semendo essentially depends on convincing producers that greater effort on-farm can be made simultaneously with, or instead of, these off-farm pursuits.

Our discussions with Exporter representatives indicate they are aware of the challenges of introducing new technologies into communities that favour low-input, low-output coffee farming, and that they have a general awareness of the challenges presented by broader processes of rural change occurring at a local level. Indeed these challenges have, more recently, contributed to shifts in corporate policy. The Exporter's operations in Semendo have recently been scaled back in favour of its operations in Vietnam, where productivity is significantly higher and transport costs much lower, which result in much lower per unit costs of implementing 4C and other VSS programs.

## 7. Conclusion: Sustainability Programs and Poverty Alleviation?

The livelihood strategies of rural households living in Semendo have been in flux for at least the last one hundred years, and this paper has attempted to contextualise the changing position and function of coffee within these livelihoods and the broader physical landscape of Semendo. This is helpful for

properly explaining the potential impact of a VSS program on processes of poverty alleviation as cultural and livelihood norms become entangled with an attempt to modernise and improve coffee production. Traditional and conventional systems of agriculture, derived from swidden systems, are favoured by most producers as part of a diversified livelihood portfolio. At the same time, quality standards and training in good agricultural practices, representative of modernisation, have been introduced by The Coffee Exporter using Voluntary Sustainability Standards (VSS). There is an apparent contradiction in the way coffee is embedded in Semendo livelihoods as a low risk, low maintenance cash crop, with the high input, focused production methods advocated by VSS.

The VSS program is attempting to encourage the diversion of (what is perceived to be) surplus labour towards coffee production, without due consideration of producer livelihood decisions, which are generally low-risk. The ambivalence with which many producers have adopted modern agricultural practices has been justified in their eyes by the perceived limited impact from VSS on income. In particular, producers are unwilling to devote additional labour or capital to coffee, particularly if they have already reoriented their livelihood strategy away from agricultural production through an off-farm poverty alleviation pathway. Those participants who *do* have the capacity to adopt good agricultural practices are those with available resources and capital, and these same individuals are also those best placed to exit agriculture as a means of poverty alleviation. The theories of change for several VSS, such as 4C, are therefore poorly aligned to the distinction between rural and agricultural livelihoods, and appear to systematically ignore the importance of off-farm income in rural communities, and the central role this often performs in poverty alleviation.

This is not to claim that the VSS program in Semendo has not induced positive change. It has positively impacted price transparency, provided a mechanism for knowledge transfer through training, increased adoption of modern financial practices, encouraged the active participation in farmer groups, and has provided new income-earning opportunities within the community for select individuals. However, the particular way coffee production is embedded within livelihood strategies and landscapes across Semendo suggests that VSS is unlikely to significantly contribute to poverty alleviation. The impact of VSS on poverty is also marginal when assessed against the broader processes of development and the direct poverty alleviation programs instigated by the state (including conditional cash payments, infrastructure projects, universal health care provisions and educational scholarships). Rather than expecting VSS programs to result in poverty alleviation (as optimistically presented in their Theory of Change documents), these interventions should be more realistically considered as a means through which the livelihood capitals of producers can be supported, providing greater options and assets for households that will ultimately choose from a suite of different

livelihood strategies available to them. In Semendo, however, it is unlikely to entail a wide-ranging shift towards intensified, improved coffee farming.

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