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CERTIFICATION AND FARMER ORGANISATION: INDONESIAN SMALLHOLDER PERCEPTIONS OF BENEFITS

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Certification and participation in farmer organisations are associated with economic and social benefits for farmers. However, knowledge about the differences in the perceived benefits of participation in different organisations and certification schemes is limited. In this paper, we distinguish between three types of farmer organisations in the Indonesian coffee sector: farmer groups, cooperatives, and KUBEs. We compare the benefits farmers perceive from participating in these forms of organisations, including the benefits for unorganised farmers and farmers in different certification schemes (Fair Trade, UTZ, the Rainforest Alliance, and 4C). We find that certified farmers perceive higher benefits than uncertified farmers, and that organised farmers perceive higher benefits than unorganised smallholders. Farmers who hold dual membership (in a farmer group and a KUBE or cooperative) perceive greater benefits than farmers who participate in farmer groups. Although farmers in different certification schemes significantly differ in the benefits they perceive, we could not identify clear patterns based on the schemes. We conclude that integration of the different organisational forms, as well as a more concentrated collaboration between the ministries underlying each organisational form, may improve the benefits perceived by farmers in the Indonesian coffee sector.

Keywords: *coffee certification, farmer organisations, perceived benefits, ordinal logistic model*
JEL classification: Q01, Q13, Q19

INTRODUCTION

Sustainability standards and certification are regarded as tools to improve smallholders' livelihoods, conditions and positions within the coffee market, and to enhance the environmental sustainability of coffee production (Giovannucci and Ponte 2005). However, research on the actual effects of certification can be considered inconclusive. Some studies on certification note negative effects, such as lower productivity and yields, increased costs, reduced prices, and decreased

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satisfaction with organisational service provision (Carlson and Palmer 2016; Ibanez and Blackman 2016; Ruben and Fort 2012; Valkila 2009; van Rijsbergen et al. 2016). Other studies on certification, however, find positive effects. These include higher prices, better productivity and coffee quality, better education, improved capacity building, better sanitation and networking, and enhanced organisational capacities (Astuti et al. 2015; Bacon 2005; Bacon et al. 2008; Barbosa de Lima et al. 2009; Giovannucci et al. 2008; Reynolds et al. 2004; Ruben and Zuniga 2011). These contrasting findings imply that the actual benefits of certification remain poorly understood and are therefore worth further exploration. Research on farmer benefits from certification in Indonesia occurs at the crossroads of research on certification and organisation. Indonesian coffee smallholders cannot become certified without being organised (Loconto and Dankers 2014), and farmer organisations have been promoted as an important means for linking smallholders to international, certified coffee markets. Organisations are believed to bring a form of collective action (e.g., internal group monitoring and training) that is essential to smallholders' participation in certification (Narrod et al. 2009). Farmer organisations make the certification of smallholders economically feasible by offering economies of scale (Maertens and Swinnen 2009; Mausch et al. 2009) and by reducing the transaction costs for service providers working with smallholders (Thorp et al. 2005). Certification schemes therefore connect to farmer organisations rather than to individual farmers; this is also because connecting to the latter is considered inefficient due to the large number of farmers, and the variation in farmers' financial opportunities, knowledge, and skills. Variations and individual limitations can be overcome by encouraging farmers to organise and work together. Therefore, membership of a farmer organisation has in practice become mandatory for smallholders to become certified (Brandi 2013; Pierrot et al. 2010), which makes it methodologically difficult to differentiate between the effects of certification and of organisation. Further, and though the literature tends to generalise farmer organisations, their manifestations are diverse. They cannot therefore be analysed or compared as homogeneous entities. In Indonesia we observe three types of farmer organisations in the coffee sector: farmer groups (*kelompok tani*), cooperatives, and KUBEs (*kelompok usaha bersama*, or joined business groups). These organisations have different structural characteristics and are managed by different ministries with varying sets of rules.

In this paper, we do not apply an empirical measurement of the actual effects of certification in the field, but we instead focus on the perception of benefits by smallholders. This differs from previous studies that evaluated actual effects in the field with robust longitudinal panel data or case studies (see Carlson and Palmer 2016; Ibanez and Blackman 2016; van Rijsbergen et al. 2016). We focus on the Indonesian coffee sector and analyse the perceived benefits that result from participation in the different types of farmer organisations and certification schemes. Most research on sustainability standards and certifications takes a managerial approach, in that it studies how the schemes unfold in practice and how their performance may be improved. By adopting such an approach, researchers implicitly accept the problematic definitions of the schemes as set by their northern-based initiators (mainly businesses that often collaborate with NGOs), although such definitions do not necessarily reflect the realities that smallholders face in their daily practices (Glasbergen 2018). Aside from this—considering a social

constructivist research paradigm—the reality measured by ‘objective’ indicators in the field may not always correspond with the reality perceived by the farmers themselves (Offermans and Glasbergen 2017). In this study, we focus on farmers’ perceptions of benefits from organisation and certification, as farmers’ perceptions on sustainability standards and certifications are often neglected and this therefore presents a gap of knowledge that needs to be filled (Ibnu 2017).

Our research draws on two strands of literature: certification literature focusing on evaluating farmers’ benefits from participation in certification (Bray et al. 2002; Reynolds et al. 2004; Taylor et al. 2005); and organisation literature focusing on the benefits of organisation for farmers (Fischer and Qaim 2012; Hellin et al. 2009; Kaganzi et al. 2009; Markelova et al. 2009). Although both strands of literature are rich in their investigation and explanation of the effects and benefits of certification or organisation on farmer welfare and livelihood, very few studies consider and further question farmers’ own perceptions of benefits. We consider perceptions important because they significantly determine farmers’ satisfaction, which influences whether they continue participating in certification or not (Bravo et al. 2012; Oktami et al. 2014; Zainura et al. 2016). Furthermore, the existing literature fails to comprehensively understand the differences in potential benefits in different domains, and the extent to which perceived benefits vary among farmers belonging to different organisational forms or coffee certification schemes.

In a more concrete sense, this paper aims to contribute to knowledge about whether farmers participating in different certification schemes and organisational structures perceive variable benefits in differing benefit domains. This paper will address the following research questions:

1. How do different forms of Indonesian farmer organisations differ, and how do they relate to certification?
2. How do differences in perceived benefits relate to membership in differing types of organisations and certification schemes?
3. What do the findings imply for more sustainable coffee production from the smallholders’ point of view?

In the following sections, we provide a literature review on the potential benefits of farmer organisation and certification, including an overview of the division of these benefits into five domains. Based on this review, we propose hypotheses on the influence of organisations and certification schemes on perceived benefits. We then outline our method and provide an overview of our respondents before we present our results, followed by our conclusions and reflection.

LITERATURE REVIEW ON POTENTIAL BENEFITS OF FARMER ORGANISATION AND CERTIFICATION

Although not specifically considering the role of certification, the existing literature extensively presents the benefits of farmer organisations. These benefits vary widely and range, from better job opportunities (Jena et al. 2015; Place et al. 2004; van Rijsbergen et al. 2016) to improved skills (Bitzer et al. 2013; Neilson 2008; Ruben and Zuniga 2011; Utting 2009), better bargaining power (Bacon 2010; Taylor et al. 2005), and greater networking opportunities (Taylor et al. 2005; Reynolds et al. 2004).

In this paper, we divide benefits for farmers into five domains. The first domain comprises economic benefits such as cost savings through collective marketing, better prices for farmer products, improved access to inputs and production facilities, more secure land tenure, better access to credit, and the provision of options for saving money. The second domain is social or community benefits in the form of better education, health and housing, access to public facilities (e.g., safe drinking water and sanitation), support for organising social events, strengthened social relations among community members, and employment provision. The third domain relates to representation, as organisations may represent farmers in formal meetings and negotiate on their behalf with external parties such as the government or private firms. The fourth domain relates to capacity building through improved knowledge and skills; for example, through training, the provision of information and technical support, and encouraging participation in decision making (Bitzer et al. 2013; Neilson 2008; Ruben and Zuniga 2011; Utting 2009). In the fifth domain, we identify benefits in terms of networking, which often takes the form of collaboration with other organisations (such as private companies) to enhance financial capital and secure market access.

Some of these benefits, however, are associated not only with farmers' membership of an organisation but also with their participation in certification. In the domain of economic benefits, for example, certified farmers are found to obtain higher prices for their coffee (Astuti et al. 2015; Bacon 2005), and to have higher productivity and better coffee quality than conventional farmers (Astuti et al. 2015; Ruben and Zuniga 2011). Certification may bring further social benefits such as improved education and sanitation (Barbosa de Lima et al. 2009) and is also found to play a role in improving capacity building (Raynolds et al. 2004), enhancing organisational capabilities (Ruben and Zuniga 2011), and improving networking capacities (Bacon et al. 2008).

In the literature, it is assumed that assets and/or (financial) capital affect an organisation's ability to provide services (cash payment, credit, etc.), which in turn influences its members' perceptions of benefits (Chandler and Hanks 1998; Holagh et al. 2014). As such, members may perceive more benefits in organisations with greater assets and/or capital than organisations with fewer assets and less capital.

THE LANDSCAPE OF COFFEE CERTIFICATION IN INDONESIA

Indonesian coffee smallholders are today faced with different certifications that differ in scope and history. The first coffee certificate in Indonesia was issued by the Rainforest Alliance (RA), implemented in Aceh province in 1993, followed by Fair Trade (FT) in the same province in 1997. UTZ became involved in the coffee sector in 2002, followed by 4C in 2006 (see appendix a). RA aims to support farmers in creating more sustainable livelihoods, improving farm productivity, and becoming more resilient to climate change. RA certification consequently concentrates on how farms are managed, with certification being awarded to farms that meet the standards of the Sustainable Agriculture Network (SAN). FT focuses on realising a better life for farming families in the developing world, through direct trade, community development, environmental stewardship, and guaranteed prices for their products. To further support farmers' economic development, FT requires the first coffee buyers (i.e., cooperatives) to provide pre-financing for long-term

contracts with farmers (Fair Trade 2017). UTZ aims to create transparency along the supply chain and to reward responsible coffee producers (UTZ 2017), whereas 4C aims to achieve global leadership to enhance economic, social, and environmental production, processing, and trading conditions for all who make a living in the coffee sector (GCP 2017). Given its baseline character, 4C is often considered to be the least demanding private certificate. More information on coffee certification schemes in Indonesia can be found in Astuti (2018).

In Indonesia, most coffee smallholders remain uncertified (around 93% in 2014) (Directorate General of Estate Crops 2014; ICO 2017; SCP 2014).

THE LANDSCAPE OF FARMER ORGANISATIONS IN INDONESIA

Organisations can be defined as intelligent systems in which groups of people deliberately cooperate with each other to achieve shared goals (Holagh et al. 2014). Individual smallholders participate in farmer organisations to achieve the benefits of these shared goals. In the Indonesian coffee sector, we distinguish between three types of farmer organisations: farmer groups, cooperatives, and KUBEs.

Farmer groups

In Indonesia, the central government initiated the formation of farmer groups in 1979 to facilitate the distribution of governmental aid to farmers, and, as from 2001, to negotiate the use of protected forests for coffee production (Arifin 2010). Farmer groups have formal status in the country (Nuryanti and Swastika 2011) and are currently regulated by the Ministry of Agriculture. According to a ministry regulation (Law 82/2013 on Farmer Groups), a farmer group is defined as a group of farmers formed on the basis of mutual interest, similarity in commodities, and geographic proximity. On average, a farmer group consists of 30 members, most of whom live in the same village. A farmer group's main functions are to enhance cooperation among farmers, facilitate learning processes, and to help distribute tools, farming inputs, and credit from the government to farmers. Cooperation between farmers in a farmer group may result in economies of scale and improved coffee quality. It may also help the members to process their coffee cherries by providing them with shared access to equipment. We see that certified Indonesian coffee farmers commonly have a dual organisational membership, wherein their membership of a farmer group is combined either with a KUBE or a cooperative. Uncertified farmers may be part of a farmer group but not part of a KUBE or cooperative. They commonly connect to conventional channels involving middlemen and local traders (Astuti et al. 2015).

The establishment of a farmer group requires the participation of smallholder farmers, the village leader, community leaders, and agricultural extension officers. The members need to develop and present a formal agreement that needs to be signed by representatives of the different member groups. The management of a farmer group consists of a group leader, a secretary, and a treasurer. Any changes to the managerial structure need to be approved by the village leader and acknowledged by agricultural extension officers, as outlined in Law 82/2013. There is no need for farmers to contribute individual assets to a farmer group, although some financial contributions are usually made. As a non-legal entity, a farmer group may largely depend on support from the government; for example, to build its initial assets and/or capital.

Cooperatives

Cooperatives are developed based on the principles stated in Law 25/1992 on Cooperatives to increase economies of scale, improve production efficiency, and enhance the bargaining position of members. In practice, we see that cooperatives often help farmers buy inputs, and that they provide credit to coffee producers. According to the law, a cooperative must be founded by at least 20 individuals who contribute some of their wealth to the initial capital of the organisation. Their agreement to form a cooperative must be drawn up by a notary and legalised by the Indonesian Ministry of Cooperatives and Small and Medium Enterprise. A cooperative therefore has authorised rights and responsibilities but can also be sanctioned if it acts against the law.

The management of a cooperative comprises a general assembly, a board of directors, an audit committee, and an election committee. The assembly represents the highest policy-making body and meets at least once a year to decide the organisation's policies and select its board of directors and committees. A cooperative generally prioritises democratic decision-making through voting, although the assembly mostly tries to reach consensus. Unlike in other organisational types, income generated by cooperatives (e.g., income from trading activities) must be equally shared among all members. As a legal entity, cooperatives are entitled to increase their assets and/or capital by obtaining loans from various sources (e.g., banks, private creditors, and other cooperatives), or by issuing obligations, as outlined in Law 25/1992. Therefore, cooperatives are generally more asset- and capital-rich than other organisations in the Indonesian coffee context. Legally, farmers do not have to join farmer groups in order to become members of cooperatives, although in practice most cooperative members do. This enables them to claim government support for things such as tools, fertilisers, and pesticides, and to participate in government programs in rural areas.

KUBEs

The Ministry of Social Affairs initiated the formation of KUBEs in 1983 to support the regulations on welfare services for the poor. The underlying idea was to strengthen existing micro-businesses¹ by integrating them into larger business ventures. KUBEs may differ in size. Conceptually, a small KUBE is a collaboration of five to seven micro-businesses that agree to merge their assets. Medium KUBEs consist of eight to fifteen micro-businesses, while large KUBEs consist of sixteen to thirty. KUBEs are generally smaller than cooperatives in terms of assets and capital, and they mostly pay their farmers after receiving payment from buyers/exporters, whereas cooperatives, if required, can pay their farmers in advance (Ibnu et al. 2015). KUBEs are also considered non-legal entities and therefore, unlike cooperatives, depend on contributions from owners for assets and capital, or on support from external parties, particularly the government.

KUBEs take care of cleaning, drying, and transporting coffee beans from farmer groups to the roasting companies (in the case of conventional coffee) or to exporters (for certified coffee) (Ibnu et al. 2015). Unlike cooperatives, KUBEs always connect to

1. A micro-business is defined in Law 20/2008 as a business owned by an individual or a group with assets up to Rp 50 million (less than \$4,000) in total.

individual farmers through farmer groups. This means that KUBEs require farmers to first organise themselves in farmer groups. To be formally acknowledged by the government, and to be entitled to receive additional capital investments from the Ministry of Social Affairs, KUBEs must be verified by leaders at the village and sub-district levels (Roebyantho 2013; Suradi 2012).

In Indonesia, most smallholders (up to 75%) are still unorganised (Directorate General of Estate Crops 2014; ICO 2017; SCP 2014). Although most literature focuses on the effects of being organised or certified, uncertified and unorganised farmers may also experience benefits—for example, they may benefit from selling their coffee to local markets and maintaining long-term reciprocal connections with local traders or intermediaries (Wahyudi and Jati 2012).

Based on the certification and organisation literature referred to above, we have developed three hypotheses:

1. Farmers participating in the more demanding schemes (RA, UTZ, FT) perceive more benefits than farmers participating in a less demanding scheme (4C).
2. Farmers participating in organisations with more assets and/or capital perceive more benefits than farmers participating in organisations with fewer assets and/or capital.
3. Certified and organised farmers perceive more benefits in all domains than uncertified or unorganised farmers.

METHOD

We used semi-structured questionnaires to randomly survey certified and conventional coffee farmers in the two most important Robusta and Arabica coffee-producing provinces in Indonesia: Lampung (Tanggamus and West Lampung districts) and Aceh (Central Aceh and Bener Meriah districts). Lampung contributes 23.6% to national Robusta production, whereas Aceh contributes 25% to national Arabica production (Directorate General of Estate Crops 2014). In the study sites, most certified Arabica farmers register with cooperatives and participate in FT schemes, whereas certified Robusta farmers typically register with KUBEs and UTZ, RA, or 4C. In the field, and corresponding with what we have presented above, we found that most certified farmers have dual organisational memberships that combine participation in farmer groups with participation in either KUBEs (FGKUBE) or cooperatives (FG cooperative) (table 1). Uncertified farmers either participate in a farmer group (IFG) or act wholly independently (i.e., without organisational membership). From various villages, we indiscriminately selected 14 farmer groups that have affiliations with 5 KUBEs and 3 cooperatives. We then randomly distributed the questionnaires to 80 certified farmers who are members of the selected farmer groups. Together with the 80 uncertified smallholders, our total sample equals 160 respondents that can further be grouped into independent and uncertified farmers ($n = 50$), certified farmers with dual organisational memberships ($n = 80$), and uncertified farmers with single organisational memberships ($n = 30$). The uncertified farmers were randomly surveyed in the same regions (but in different villages) as the certified farmers. Table 1 shows the average characteristics of respondents.

TABLE 1 Characteristics of Respondents, Based on Participation in Certification and Group Membership

Type of respondents	Schemes	N	Average									
			Length of participation in organisation (years)	Length of participation in certification (years)	Age (years)	Education (years)	Family size (number of people)	Farming experience (years)	Land ownership (hectares)			
Certified smallholders												
Members of FGKUBE	4C	20	5.40 (0.00)	3.00 (0.69)	40.00 (9.42)	9.50 (2.09)	5.40 (1.46)	19.25 (9.80)	1.95 (0.83)			
	UTZ	20	7.40 (1.22)	5.60 (1.58)	41.05 (9.66)	9.35 (1.66)	5.60 (1.35)	21.20 (10.16)	2.15 (0.81)			
	RA	20	6.90 (0.47)	5.70 (0.64)	40.65 (8.86)	9.05 (2.21)	6.15 (1.35)	19.40 (9.09)	1.85 (0.81)			
Members of FG cooperative	FT	20	8.20 (0.83)	7.80 (0.83)	40.60 (9.67)	9.60 (1.87)	5.95 (1.32)	20.60 (9.89)	2.05 (0.94)			
Uncertified smallholders												
Members of independent farmer group (IFG)	—	30	7.60 (1.69)	0.00 (0.00)	35.70 (9.54)	8.97 (1.90)	5.87 (1.33)	15.47 (9.92)	2.00 (0.74)			
Independent smallholders (unorganised)	—	50	0.00 (0.00)	0.00 (0.00)	40.74 (8.71)	9.26 (1.94)	5.70 (1.26)	20.30 (8.89)	1.92 (0.83)			
Total respondents		160										

Note: Standard errors are in parentheses.

To answer the first research question about the differences among the organisational forms, and the relation between organisation and certification, we determined organisational characteristics based on the government's rules and regulations, such as Law 82/2013 on Farmer Groups, Law 25/1992 on Cooperatives, Law 42/1981, and Law 20/2008 on KUBEs. We then had open discussions with farmers, internal control system (ICS²) personnel of the certification schemes, and staff members of cooperatives and KUBEs. The aim of these discussions was to obtain a complete and verified overview of the characteristics of the organisation types. We discussed characteristics such as administration, focus of activities and orientation, decision-making processes, leadership, membership, and information flow.

To answer the second research question, we gathered benefits referred to in the literature (see appendix b), classified these into five domains of perceived benefits, and operationalised the benefits in concrete question items. In this process, we paid attention to the applicability of the question items to the Indonesian context. To assure a proper fit, we added questions on Indonesian cultural aspects such as *arisan* (a form of social gathering) and *gotong royong* (a form of communal work). We observed that the literature does not really connect these different benefits to one another. Accordingly, we assumed that some benefits (within each domain) would not be valued more (or considered more important) than others. We therefore treated all benefits (and all domains) equally by adopting equal weighting for all of them.

All question items are directly derived from the literature (see appendix b) and are presented on a five-point Likert scale, ranging from one (strong disagreement towards perceiving the mentioned benefit) to five (strong agreement). We use a *t*-test to analyse whether differences in perceived benefits correspond to differences in organisational membership status (unorganised versus organised smallholders) and participation in certification (uncertified versus certified farmers). We use a one-way ANOVA test to further analyse whether different organisational memberships (IFG, FGKUBE, and the FG cooperative) or participation in different certification schemes (4C, UTZ, FT, and RA) significantly contribute to differences in perceived benefits. We also applied an ordinal logistic regression model for each domain of perceived benefits (five in total) to gain knowledge on the extent to which organisation, certification, and demographic variables explain variation in perceived benefits. The literature shows that demographic variables such as age, education, family size, experience in farming, and land ownership may explain variation in farmers' perceptions (Adesina and Baidu-Forsen 1995; Sherrick et al. 2004; Somda et al. 2002; Wheeler 2008). We test this through the inclusion of these variables in our regression model. In our ordinal logistic model, the perceived benefits are therefore explained by participation in certification, organisational membership, age (in years), education (in years), family size (number of people in a household), experience in farming (in years), and landownership (in hectares).

To quantify the composite dependent variable of perceived benefits, we have summed up farmers' responses, resulting in $n = 160$ scores per benefit domain.

2. ICS staff are hired by cooperatives and KUBEs to work as private extension officers to help farmers (mostly by trainings) to comply with the certification requirements.

TABLE 2 *Test of Parallel Lines*

Perceived benefit	Model*	-2 log likelihood	Chi-square	df	Sig.
Economic	Null hypothesis	569.968			
	General	517.400	52.567	77	0.985
Social/community	Null hypothesis	591.909			
	General	519.012	72.897	91	0.918
Representation &/or negotiation	Null hypothesis	506.194			
	General	463.147	43.048	49	0.712
Capacity building	Null hypothesis	542.581			
	General	512.209	30.372	77	1.000
Networking &/or partnership	Null hypothesis	535.675			
	General	468.006	67.669	56	0.137

*The null hypothesis states that the location parameters (slope coefficients) are the same across response domains and can be confirmed if the P-value is equal to or higher than 0.05.

The higher the score, the more the farmer agrees that benefits are perceived in the respective domain. In theory, the scores could vary between 3 (3 times a score of 1 in the domain of networking) and 75 for the domain of social benefits (covering 15 items that could in theory all be answered with a 5). The results indicate that the span of potential scores is covered relatively well, as the scores fluctuate between 6 (for networking) and 70 (for social benefits). We treat each sum of scores as ordinal. We justify this choice by using the test of parallel lines, which is based on different chi-square tests and assesses whether there are (undesirable) significant differences in the coefficients (Brant 1990). Table 2 shows the results of the test of parallel lines and reveals that all domains of perceived benefits have *P*-values (substantially) exceeding 0.05. This means that there are no significant differences in the coefficients, indicating that the distances between the ordinal scores can be considered the same, thereby justifying the treatment of the dependent variable as ordinal.

The (decomposed) perceived benefits, organisation, and certification are categorical (i.e., nominal). Therefore, we have used dummy codes as an input to the regression model. For organisation, the dummy code 0 refers to independent smallholders, and 1 to organised smallholders. For certification, a score of 0 represents the uncertified smallholders and 1 the certified smallholders. The strength of the influence of certification and organisation on perceived benefits is shown by an estimate (i.e., the regression coefficient) in the regression model, which needs to have a *P*-value of 0.05 or lower to be considered significant. The value of the estimate (positive or negative) reveals the direction of the influences of a predictor variable (either organisation or certification) on the perceived benefits. The interpretation of the estimate is that for a one-unit change in the predictor variable (moving from being unorganised towards being organised, or from being uncertified to certified), the benefits are expected to change by the value of its estimate. The higher the estimate, the stronger the variable's contribution to the perceived benefits.

DIFFERENT ORGANISATIONS AND THEIR RELATION TO CERTIFICATION

Table 3 presents the organisational characteristics of farmer groups (FGs), KUBEs, and cooperatives. Here we see that the different organisations share some similarities (e.g., in their decision-making procedures). The cooperatives tend to be most distinctive, as they differ from the other types of organisation in terms of administration and administrative sanctions, member participation in decision-making, leadership style, membership type, funding source, and legal status. The FGs differ from the other two in terms of their focus (on production only) and their orientation (inward oriented).

In practice, all certified farmers are members of an FG and either a KUBE or cooperative. In the case of FT certification, all farmers become member of an FG cooperative. The interviews revealed that an FG's connection with a KUBE or cooperative—being mandatory for certification—improved the FG's administration in terms of recording the quantity and prices of coffee sold to KUBEs/cooperatives. It also broadened their focus from production-only toward post-harvest and marketing activities, with the aim of delivering good quality beans as requested by the KUBEs/cooperatives. Some FG characteristics are not influenced by FG relations with KUBEs and cooperatives. For example, FGs maintain their methods for recruiting new members, obtaining funding, and making decisions. FGs are also still considered non-legal entities and cannot be confronted with legal sanctions for administrative failures.

For cooperatives and KUBEs, certification requires management practices involving administrative tasks, such as updating farmer profiles, tracking the quantity of coffee sold by every farmer to the organisation, providing regular information on prices, and administering the price premium paid to farmers. Farmers have realised that they no longer need to depend on group leaders for information but can rely on ICS staff for information. Both certification and dual group membership expand the farmers' base of information. In the next section, we elaborate on the perceived benefits of organisational membership and participation in different certification schemes.

THE INFLUENCE OF ORGANISATIONS AND CERTIFICATION SCHEMES ON PERCEIVED BENEFITS

Table 4 shows the descriptive statistics of the mean scores for the perceived benefits in the five domains. If we compare the average scores with the maximum scores within each domain, we see that, in general, farmers perceive relatively high benefits in all domains (with an average score of 3.43 on a 5-point scale for all domains). Differences between domains are small and vary between average scores of 3.3 for perceived benefits in the domain of networking and 3.5 for benefits in the domain of representation and capacity building. We further see that certified farmers perceive higher benefits than uncertified farmers in all benefit domains. Similarly, organised farmers perceive higher benefits in all domains, compared with unorganised smallholders. Overall, in all domains certified farmers have higher average benefits than organised farmers. However, since the certified farmers in our survey are also organised, we cannot methodologically separate the effects of organisation and certification on perceived benefits.

TABLE 3 *Organisational Characteristics of Farmer Groups, KUBEs, and Cooperatives*

Organisational characteristics	Farmer groups (FGs)	KUBEs	Cooperatives
Administration	Rarely record financial activities	Start to record cash flow	Full financial reports (audited if requested)
Administrative sanctioning	Not legally sanctioned for administrative failure	Not legally sanctioned for administrative failure	Legally sanctioned for administrative failure
Activity focus	Focus on production activities	Focus on pre-harvest activities & marketing	Focus on pre-harvest activities & marketing
Orientation	Inward oriented (focus on internal relationships)	Start to become outward oriented	Outward oriented (connect to local buyers, exporters, roasters, etc.)
Decision-making	Make decisions by consensus	Make decisions by consensus	Make decisions by consensus, if not by voting
Member participation in decisions	Tend to be passive, relying on leaders & farmer colleagues	Tend to be passive, relying on a business operator	Tend to be active, with voting rights
Level of formality in the organisation	Low	Low	High
Leadership style	Often follow a group leader	Often follow a business operator	Lead through a general assembly
Information flow	Mostly informed through agricultural extension officers & group leaders	Mostly informed through social workers & business operators	Informed through member meetings, supervisory & executive boards
Membership type	Feature exclusive membership criteria (based on similarities such as neighbourhood, type of farming, ethnicity & language)	Feature rather exclusive membership criteria (for those in nearby neighbourhoods & with similar business types)	Feature inclusive membership criteria (try to include many different types of people from different regions)
Funding sources	Depend highly on internal sources (member contribution) & external sources (government funding)	Use internal sources (members) but still depend highly on additional capital from gov.	Independent; rely on internal (members) & external (private creditors) funding
Legal status	Non-legal entity	Non-legal entity	Legal entity

TABLE 4 Mean Scores of Perceived Benefits

Group	Economic (max. score = 45)	Social/ community (max. score = 75)	Representation and/or negotiation (max. score = 20)	Capacity building (max. score = 55)	Networking and/or partnership (max. score = 15)
Participation in certification					
Uncertified smallholders	26.625	44.375	12.075	32.900	8.875
Certified smallholders	36.062	59.987	16.212	44.850	12.087
Organisational status					
Independent smallholders	23.100	38.500	10.600	28.600	7.700
Organised smallholders	35.091	58.400	15.754	43.545	11.745
Certification schemes					
FT certified	36.750	61.250	16.35	45.350	12.250
4C certified	40.950	60.000	18.300	44.550	13.650
UTZ certified	30.550	68.250	16.050	39.900	12.000
RA certified	36.000	50.450	14.150	49.600	10.450
Form of organisations					
IFG	32.500	54.167	14.533	40.067	10.833
FG cooperative	36.750	61.250	16.350	45.350	12.250
FGKUBE	35.833	59.567	16.167	44.683	12.033

TABLE 5 *Independent Sample t-test for Equality of Means (Participation in Certification)*

Perceived benefits	<i>t</i>	df	Sig. (2-tailed)	Mean difference	Relative mean diff.	Standard error diff.
Economic	-10.794	157.319	0.000	-9.437	20.8*	0.874
Social/ community	-10.800	157.594	0.000	-15.612	20.8*	1.445
Representation and/or negotiation	-10.898	157.129	0.000	-4.137	20.5*	0.379
Capacity building	-11.412	157.875	0.000	-11.950	21.6*	1.047
Networking and/or partnership	-11.019	157.308	0.000	-3.212	21.3*	0.291

* The mean difference is significant at the 0.05 level.

Table 5 and 6 show the results of the *t*-test for certification and organisation respectively. Table 5 shows that the mean scores of certified and uncertified smallholders differ significantly (sig. 0.000) in all benefit domains. Certified farmers perceive significantly higher benefits than uncertified farmers. Table 6 reveals that the mean scores in all benefit domains are considerably higher for organised farmers than for unorganised smallholders (sig. 0.000), implying that the organised farmers perceive considerably higher benefits than the unorganised smallholders. If we compare the relative differences in mean scores as presented in tables 5 and 6, we see that farmers evolving from unorganised to organised are likely to perceive a more profound increase in benefits than farmers evolving from uncertified to certified, although the latter will also experience an increase in benefits. This result is probably influenced by the perception of uncertified, organised farmers (IFG farmers, $n = 30$) who feel the organisation (FG) provides benefits for them.

Furthermore, figure 1 and table 7 show differences in perceived benefits resulting from farmers' participation in different certification schemes (ANOVA test). We found significant differences between the schemes, although we cannot identify clear patterns based on the schemes. In the economic domain, we see that 4C farmers perceive more benefits than FT and RA farmers, and considerably more benefits than the farmers participating in UTZ. In the social/community domain, we see a reversed pattern in which UTZ farmers perceive more benefits than FT and 4C farmers, and considerably more than farmers participating in RA. In the third domain (representation and negotiation), participation in 4C again leads to the perception of greater benefits than in FT, UTZ, and especially RA. Although participation in RA is associated with a relatively low perception of benefits in the domain of representation and negotiation, it is also associated with a relatively high perception of benefits in the capacity-building domain. In this domain, farmers participating in RA

TABLE 6 *Independent Sample T-test for Equality of Means (Participation in Organisation)*

Perceived benefits	<i>t</i>	df	Sig. (2-tailed)	Mean difference	Relative mean diff.	Standard error diff.
Economic	-18.950	156.641	0.000	-11.991	26.4*	0.633
Social/ community	-19.044	156.201	0.000	-19.900	26.5*	1.045
Representation and/or negotiation	-18.117	155.120	0.000	-5.154	26.0*	0.284
Capacity building	-19.577	155.873	0.000	-14.945	21.6*	0.763
Networking and/or partnership	-19.111	156.795	0.000	-4.045	27.0*	0.211

* The mean difference is significant at the 0.05 level.

FIGURE 1 *Perceived Benefits from Farmers' Participation in Different Certification Schemes*

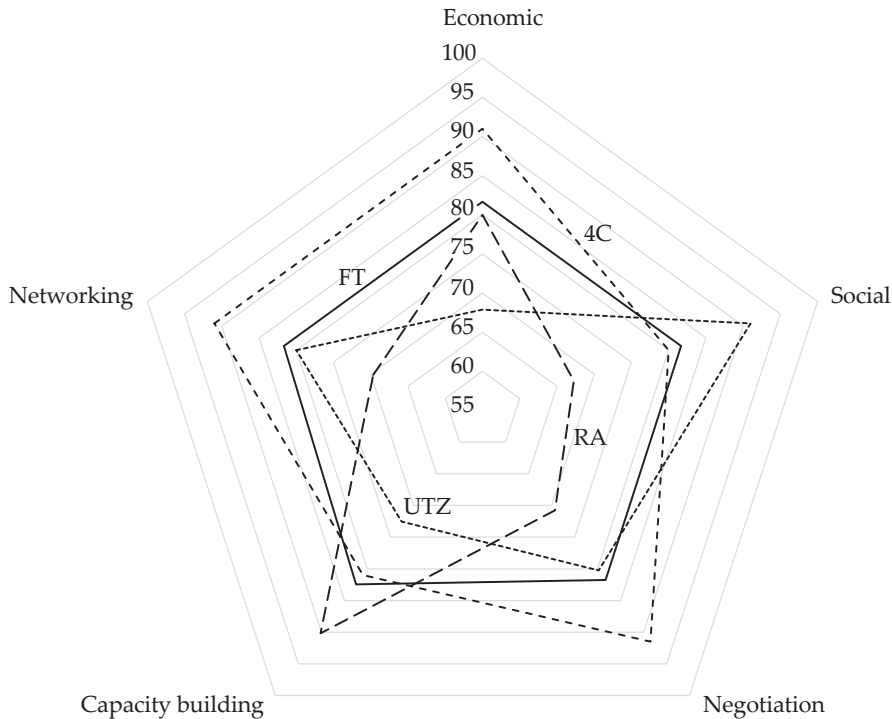


TABLE 7 *Comparisons of Perceived Benefits of Different Certification Schemes (ANOVA test)*

Dependent variable	Certification		Mean difference (I-J)	Std. error	Sig.
	(I)	(J)			
Economic	4C	FT	4.200*	1.113	0.004
		UTZ	10.400*	1.329	0.000
		RA	4.950*	1.217	0.002
	FT	RA	0.750	1.458	0.955
Social/community	UTZ	FT	7.000*	1.855	0.004
		4C	8.250*	2.028	0.002
		RA	17.800*	1.973	0.000
	FT	4C	1.250	2.429	0.955
Representation &/or negotiation	4C	FT	1.950*	0.535	0.005
		UTZ	2.250*	0.583	0.003
		RA	4.150*	0.604	0.000
	UTZ	RA	1.900	0.739	0.065
Capacity building	RA	FT	4.250*	1.436	0.028
		4C	5.050*	1.551	0.014
		UTZ	9.700*	1.913	0.000
	FT	UTZ	5.450	2.115	0.066
Networking &/or partnership	4C	FT	1.400*	0.371	0.004
		UTZ	1.650*	0.406	0.002
		RA	3.200*	0.496	0.000
	FT	UTZ	0.250	0.486	0.955

* The mean difference is significant at the 0.05 level.

score significantly higher than FT and 4C farmers, and considerably higher than farmers participating in UTZ. In the last domain, networking and/or partnership, we see that farmers participating in 4C perceive higher benefits than farmers who are part of FT, UTZ, or RA. Overall, we conclude that participation in 4C seems to lead to higher benefits in three domains (economic, representation and negotiation, and networking), whereas participation in UTZ and RA leads to higher benefits in the social community domain (UTZ) and in the domain of capacity building (RA). UTZ scores relatively low in terms of farmers' perceived benefits in the domains of economy and capacity building, whereas RA scores rather low in the social, representation, and networking domains. Although there are significant differences in benefits between FT and other schemes (see table 7), FT never scores particularly well or badly in comparison with the other schemes. Based on these findings, we cannot accept hypothesis 1: *farmers participating in the more demanding schemes (RA, UTZ, FT) perceive more benefits than farmers participating in a 4C scheme.*

TABLE 8 Comparisons of Perceived Benefits of Different Organisations (ANOVA Test)

Dependent variable	Organisation		Mean difference (I-J)	Std. error	Sig.
	(I)	(J)			
Economic	FG co-op	IFG	4.250*	1.110	0.002
		FGKUBE	0.917	1.251	0.745
	FGKUBE	IFG	3.333*	0.956	0.002
Social/community	FG co-op	IFG	7.083*	1.850	0.002
		FGKUBE	1.683	2.069	0.697
		IFG	5.400*	1.574	0.003
Representation &/or negotiation	FG co-op	IFG	1.817*	0.522	0.004
		FGKUBE	0.183	0.568	0.944
		IFG	1.633*	0.427	0.001
Capacity building	FG co-op	IFG	5.283*	1.370	0.002
		FGKUBE	0.667	1.513	0.899
		IFG	4.617*	1.135	0.000
Networking &/or partnership	FG co-op	IFG	1.417*	0.370	0.002
		FGKUBE	0.217	0.417	0.862
		IFG	1.200*	0.319	0.001

* The mean difference is significant at the 0.05 level.

Next, we found that different types of organisational membership lead to differences in perceived benefits. Table 8 reveals that the members of FGKUBEs and FG cooperatives perceive significantly higher benefits in all domains than farmers who are only part of an IFG. For all benefit domains, the differences in perceived benefits are larger between the FG and the FG cooperative than between the FG and FGKUBE. We could not, however, identify any significant differences between the FG cooperative and FGKUBE. Therefore, we reject hypothesis 2: *farmers participating in organisations with greater assets and/or capital perceive more benefits than farmers participating in organisations with fewer assets and/or less capital.*

Table 9 presents the results of the ordinal logistic regression. The results reveal that both certification and organisation significantly influence all benefit domains. We can also see that the values of all estimates are positive, meaning that a one-unit increase in organisation (i.e., going from 0 = unorganised to 1 = organised) or certification (from 0 = uncertified to 1 = certified) leads to higher perceived benefit scores. Hypothesis 3 (*certified and organised farmers perceive more benefits in all domains than uncertified or unorganised farmers*) can therefore be confirmed. We acknowledge that the effects of organisation on perceived benefits mix with the effects of certification. These effects are more difficult to separate as certified farmers have dual organisational memberships, whereas uncertified farmers have no organisational memberships or only one. We do not suggest further analysing and comparing the strengths of the estimates, as they are counterfactual and

TABLE 9 *The Results of Ordinal Logistic Regression*

Perceived benefits		Estimate	Std. error	Wald	df	Sig.	Exp_B	Lower	Upper
Economic (max. score 45)	Cert.	1.199	0.401	8.957	1	0.003*	3.316	1.512	7.269
	Org.	4.896	0.735	44.340	1	0.000*	133.707	31.647	564.900
Social/ community (max. score 75)	Cert.	1.246	0.400	9.692	1	0.002*	3.475	1.586	7.613
	Org.	4.618	0.664	48.317	1	0.000*	101.254	27.539	372.281
Representation and/or negotiation (max. score 20)	Cert.	1.367	0.406	11.367	1	0.001*	3.924	1.773	8.688
	Org.	5.726	1.092	27.489	1	0.000*	306.881	36.080	2610.175
Capacity building (max. score 55)	Cert.	1.567	0.411	14.538	1	0.000*	4.792	2.141	10.724
	Org.	5.192	0.827	39.430	1	0.000*	179.860	35.572	909.415
	Family	0.229	0.109	4.439	1	0.035*	1.257	1.016	1.555
Networking and/or partnership (max. score 15)	Cert.	1.341	0.405	10.994	1	0.001*	3.825	1.731	8.453
	Org.	5.170	0.828	38.979	1	0.000*	175.853	34.700	891.191

* Significant at P value ≤ 0.05 .

influenced by each other. The influence of certification and organisation on benefits can therefore not be strictly separated.

Regarding the demographic variables, only family size significantly and positively influences the perceived benefit of capacity building (P value = 0.035) (see table 9). The value of the estimate tells us that the perceived benefit of capacity building is likely to increase by 0.229 after adding one person to a household. Although the effect can be considered relatively small, an increase in family members may enable people to share information and to learn from one another. Based on this, we conclude that capacity-building processes, at least partially, may take place inside a household.

CONCLUSION

Participation in organisation, as well as participation in certification, is often associated with benefits. However, both certification and organisation do not represent homogeneous entities and their manifestations are diverse. In the Indonesian smallholder coffee system, three different organisations play a role: cooperatives, KUBEs, and farmer groups. We can also distinguish different certification schemes in the coffee sector. This paper contributes to the literature on coffee certification and organisation by investigating the perceived benefits of farmers in five domains: economic, social and community, representation and negotiation, capacity building, and networking.

From our research, we observe that certification schemes seem to determine organisational structures that evolve in the coffee sector in particular regions. As observed in Aceh province, FT requires the first buyers to collect coffee directly from farmers, implement floor prices, give farmers a price premium, and give payment in advance/credit if the farmers ask for it. The buyers consequently need sufficient financial capital, and in this case it appears that only cooperatives are feasible for doing so. The other schemes (4C, RA, and UTZ) in Lampung do not emphasise FT-like requirements, allowing KUBEs to emerge as an alternative to cooperatives in the province. Comparing Arabica and Robusta, farmers producing the former typically use a wash processing method that requires more skill than farmers cultivating the latter with a dry processing method. Indonesian Arabica is commonly produced as specialty coffee with specific attributes (e.g., tastes and origins) that has further developed a niche market with relatively loyal consumers. This differs from Indonesian Robusta, which is typically produced with little qualitative differentiation from Robusta coffees in other countries, and subsequently the market prefers lower prices. As the price of Robusta (mostly produced in Lampung) is generally lower than that of Arabica (typically produced in Aceh), this may further explain why incentives for stakeholders to develop cooperatives in the Robusta region are also low.

Regarding the benefits of certification, our conclusion is twofold. First, we conclude that certified farmers perceive higher benefits than uncertified farmers in all five domains. Certification creates more market opportunities (economic and representation benefits) and provides training that improves the farmers' skills and knowledge (capacity building). Training mostly takes place in a group, which may further strengthen the feeling of belonging to a community, contributing to a higher perception of social benefits, and benefits in the domain of networking. Second, we conclude that farmers participating in different certification schemes also perceive differences in benefits. Although we cannot distinguish clear patterns based on the certification schemes the farmers participate in, we can conclude that 4C—being known as one of the less strict schemes—scores relatively well in three benefit domains (economic, networking, and representation and negotiation). A plausible explanation is that, according to farmers and ICS staff, participation in 4C is less burdensome for the farmers in terms of compliance with the scheme's requirements. This may result in a rather positive perception of benefits. It is also possible, however, that time alters perceived benefits, such that the benefits perceived by farmers who have participated in certification for more than five years (UTZ, FT, and RA) are lower than those of farmers who are relatively new to certification (4C).

Regarding the benefits of farmer organisations, our conclusion is also twofold. First, we conclude that organised farmers perceive higher benefits than unorganised smallholders. The existing farmer organisations seem to perform relatively well in bringing benefits to the farmers and thereby creating additional value for their members. The different types of organisations seem complementary, rather than overlapping or conflicting. FGs, for example, enhance farmers' knowledge and skills regarding the technical aspects of coffee production, whereas KUBEs and cooperatives link farmers to certified coffee markets. FGs are more product-oriented and valued as a social organisation that strengthens communal relationships (among friends and neighbours). The unique value of a KUBE, which is more

market-oriented, assists the FGs to comply with certification requirements and improve management. In contrast, cooperatives work with individual farmers and assist them on an individual or cluster basis. Given the value of each form of organisation, the question should deal not so much with the prioritisation of one farmer organisation over another, but rather with how to improve their respective strengths. Second, we conclude that organisational forms in which certified farmers participate (FG cooperatives and FGKUBEs) lead to higher perceived benefits than organisational forms in which uncertified farmers participate (IFGs). We can explain this through the KUBEs' and cooperatives' efforts to connect farmers to buyers (e.g., exporters or multinational companies), and through the opportunities they provide to meet and connect with farmers outside their own FGs. However, the benefits farmers perceive from participating in FG cooperatives and FGKUBEs do not significantly differ. Therefore, we conclude that organisational differences in (financial) assets and capital have no significant influence on farmers' perceptions of benefits.

Indonesian coffee farmers in Lampung and Aceh generally perceive a substantive amount of benefits. We cannot distinguish large differences in benefits among the different domains; a positive feeling regarding benefit, in general, seems to translate into a balanced, positive feeling in all benefit domains. Empirical and objective measurement of actual benefits in the five domains may reveal different patterns, or may reveal that the benefits in each domain differ in intensity. However, independent from the actual benefits, the farmers perceive that they benefit from certification and organisation. We consider this information to be relevant in the policy domain, as it is the farmers' perceptions that partially drives the decision to participate in a sustainability scheme or organisation, or to continue or terminate their membership.

This paper is relevant from an academic point of view as it contributes to the debate on the effects of sustainability standards and certification in the coffee sector. While some studies claim that certification effects are limited, our findings suggest that both certification and organisation (from a farmer perspective) lead to perceived benefits in five domains. However, focusing on perceived rather than actual benefits also implies that we must acknowledge that different farmer communities may vary in their interpretation of reality. Perceived benefits may differ among groups, even when the farmers are confronted with the same realities. We noted, for example, that cultural differences may influence the type of benefits that farmers value. In some farmer communities, wedding ceremonies, social gatherings (*arisan*), and communal work (*gotong royong*) are considered cultural cornerstones and are valued for strengthening social relationships. In other communities, however, these events are neither part of the culture nor considered to be important communal activities. Organisational support in arranging such ceremonies will therefore be valued differently by farmers in other communities.

Further reflecting on our research model, we realise that the Indonesian context has challenged our intention to strictly separate (and therefore compare) the different groups of farmers. For instance, this applies to the separation between certified and uncertified farmers, because many certified farmers continue their 'traditional' practices (e.g., selling on the side to local traders to obtain direct payments in cash). Certified and uncertified schemes are also less distinguishable in practice than on paper. Further, it is impossible to isolate the influence of

organisation and certification on farmers' benefits, as certified farmers are part of (dual) organisational structures, whereas uncertified farmers are not organised, or participate only in a single organisational membership. We acknowledge this as a limitation of our study and suggest that future studies should be designed to provide a matching of reliable control groups. This will distinguish the effects or benefits of participation in certification and organisation. Further, we have highlighted some differences in perceived benefits for farmers participating in different schemes. Here we must acknowledge that our sample may have been rather small. However—and following the earlier described connection between cultural similarities and similarities in perceived benefits—farmers joining organisations and certifications tend to live in the same or neighbouring villages and have similar practices and cultures. This means that increasing our sample size by adding respondents from the same population is likely to lead to the same results. We are therefore confident that the results derived from our sample are reliable and reflect the general characteristics of the respective populations. However, as schemes continue to expand their regional scope, increasing the sample size by including coffee farmers in regions that were not covered in this study may lead to a more complete understanding of farmers' perceived benefits.

Another point of critique may be that it is logical that farmers participating in an organisation or certification scheme would perceive benefits. Otherwise, the farmer would have already left the organisation or certification scheme. Even if we ignore the fact that Indonesian smallholders tend not to withdraw from memberships easily, this reasoning would tell only part of the story. This paper not only adds information on the types of benefits perceived but also contributes to knowledge on the differences in perceived benefits resulting from different organisational memberships and certification schemes.

Finally, we reflect on the potential role of certification and organisation in contributing to a more sustainable coffee production. Our research shows that efforts to better organise farmers may, from a farmers' benefits point of view, be equally effective as attempts to involve more farmers in certification. The implication is that improvement of farmer organisations should not only be viewed as part of the certification process but also as a direct means to achieve more sustainable coffee production. What could also be improved is the inclusion of farmers in organisations, particularly in remote areas where thousands of farmers are not yet part of any form of organisation. In some areas, farmers have access to FGs, but participation in KUBEs or cooperatives (and therefore also in certification) remains practically impossible. Farmers in these (remote) areas therefore miss out on opportunities to improve their situation in relation to the five benefit domains. Establishing farmer organisations is not an easy task, because FGs, KUBEs, and cooperatives need to be acknowledged by different ministries within the government, and a dual organisational membership is required for farmers who want to become certified. The Ministry of Agriculture can take the lead in developing FGs, but to establish KUBEs and cooperatives, the ministry needs to collaborate with the Ministry of Social Affairs and the Ministry of Cooperatives and Small and Medium Enterprise. New KUBEs and cooperatives can be established, for example, by supporting prospective members (farmers) and providing them with managerial training and assistance to collect initial capital and attract investors.

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APPENDIX A Comparison of Sustainability Standards and Certification in Indonesia

Programs	RA	FT	UTZ	4C
Starting year in Indonesia	1993	1997	2002	2006
Regions of operation	Aceh, Lampung, South Sumatra	Aceh	Lampung, Aceh	Lampung, South Sumatra
Coffee variety	Robusta, Arabica	Arabica, robusta	Robusta, arabica	Robusta
Main focus	Sustainability	Fairness	Sustainability	Sustainability
Standards	Minimum compliance threshold	Minimum and progress compliance*	Minimum compliance threshold	Baseline common code criteria
Verification	Third-party auditors	Flocert, third-party auditors	Third-party auditors	Third-party auditors
Code elements for coffee production	Best management practices; conservation of natural resources, ecosystems & wildlife; workers' rights & benefits; benefits to local communities	Social, economic, environmental & democratic organisation of cooperatives	Socially, environmentally & economically conscious growing standards; food safety & quality elements	Exclude worst practices & continuously increase the sustainability of coffee production & processing in the economic, social & environmental dimension
Technical assistance/capacity building	Provided by local NGO partners (Sustainable Agriculture Network); training of extension workers (by the program and/or by collaborating institutions)	Provided by TransFair USA for specific projects through its Global Producer Services department, and by FLO (Fair Trade Labelling Organisations International) worldwide through its Producer Business Unit	Provided by the program at very low cost to producers in alliance with other initiatives like the Coffee Support Network (CSN)	Support to 4C Units, members & other interested stakeholders through training of trainer workshops, educational sessions & access to tools/manuals; co-operation with other national/international organisations & between 4C members

Market focus	Mainstream market	Mainstream market	Mainstream market
Pricing system	Market price	Market price	Market price
Credit financing	Through local banks	Unspecified	Unspecified
Target groups	Smallholders & professional farms	Smallholders & professional farms	Smallholders & professional farms
Traceability/chain of custody	Traceable from roaster to producer	Traceable from roaster to producer	Traceable from 4C Unit to producer
Gender equity & youth rights	Equal rights & exclusion of child labour	Equal rights & exclusion of child labour	Equal rights & exclusion of child labour

* Minimum compliance represents minimum practices in social empowerment, economic development, and environmental responsibility to be met prior to initial certification. Progress criteria are fulfilled after the first year of certification, representing continuous development toward increased social, economic, and environmental responsibilities.

APPENDIX B *Question Items for all Farmers**

Perceived benefits	Question items
Economic	<ol style="list-style-type: none"> 1. It is easy for me to sell my coffee (Bacon 2010; Rueda & Lambin 2013). 2. I can sell my coffee at different places (Mujawamariya et al. 2013). 3. The prices I receive for my coffee are good (Bacon 2010; Ruben & Zuniga 2011; Rueda & Lambin 2013). 4. I have good access to farming inputs (Beuchelt & Zeller 2013). 5. I have easy access to coffee processing equipment (Ruben & Zuniga 2011). 6. I have good access to storage facilities (Bray et al. 2002; Raynolds et al. 2004). 7. I have good access to credit (Jena et al. 2015; Ruben & Zuniga 2011). 8. I have enough opportunities to save money (Bacon et al. 2008). 9. I feel secure regarding land tenure (Ruben & Zuniga 2011).
Social/community	<ol style="list-style-type: none"> 1. Access to health services is good (Bray et al. 2002; Jena et al. 2015; Raynolds et al. 2004). 2. People receive proper assistances to build their houses (Bray et al. 2002; Jena et al. 2015; Raynolds et al. 2004). 3. People receive proper assistance to renovate their houses (Bray et al. 2002; Jena et al. 2015; Raynolds et al. 2004). 4. Opportunity to have good education is high (Rueda & Lambin 2013). 5. Working opportunity is good for people in my area (Jena et al. 2015; Valkila 2009). 6. Safe drinking water is available (van Rijsbergen et al. 2016). 7. Sanitary conditions are good (van Rijsbergen et al. 2016). 8. Funerals are well organised in my community (Place et al. 2004). 9. Funerals are well financed in my community (Place et al. 2004). 10. Wedding are well organised in my community (Place et al. 2004). 11. Wedding are well financed in my community (Place et al. 2004). 12. <i>Arisan</i> (i.e., a form of social gathering) is common in the community (Place et al. 2004). 13. <i>Gotong royong</i> (i.e., a form of communal work) is regular in the community (Place et al. 2004). 14. We have strong social relationships in our community (Bray et al. 2002; Jena et al. 2015). 15. People are willing to help one another in my community (Bray et al. 2002; Jena et al. 2015).
Representation and/or negotiation	<ol style="list-style-type: none"> 1. I feel my interests are represented in governmental authorities (Bacon 2010; Taylor et al. 2005). 2. I feel my interests are represented in firms or businesses (Bacon 2010; Beuchelt & Zeller 2013; Taylor et al. 2005). 3. I feel there is enough negotiation with the exporters (Bacon 2010; Beuchelt & Zeller 2013; Taylor et al. 2005). 4. I think I have strong bargaining power over buyers (Bacon 2010; Rueda & Lambin 2013; Taylor et al. 2005).

APPENDIX B *Cont.*

Perceived benefits	Question items
Capacity building	<ol style="list-style-type: none">1. I have good opportunities to enhance my knowledge of farming practices (Bitzer et al. 2013; Raynolds et al. 2004; Ruben & Zuniga 2011; Utting 2009).2. I have a good opportunities to develop my farming skills (Adong 2014; Elder et al. 2012; Ruben & Zuniga 2011; Utting 2009).3. I can easily find information regarding farming inputs (Adong 2014; Bitzer et al. 2013).4. I can easily access information about market price (Ruben & Zuniga 2011; Utting 2009).5. I receive regular training on technical aspects (how to use chemical inputs, new tools, new techniques, etc.) (Adong 2014; Elder et al. 2012; Ruben & Zuniga 2011; Rueda & Lambin 2013).6. I receive regular training on managerial aspects (e.g., how to make bookkeeping, planning, etc.) (Ruben & Zuniga 2011; Rueda & Lambin 2013).7. I meet extension workers regularly (Bray et al. 2002; Raynolds et al. 2004; Ruben & Zuniga 2011; Utting 2009).8. It is easy to get help from agricultural experts (Bray et al. 2002; Raynolds et al. 2004; Ruben & Zuniga 2011).9. Help from agricultural experts solves my problems (Bitzer et al. 2013; Raynolds et al. 2004; Ruben & Zuniga 2011; Utting 2009).10. I can freely express my opinions in meetings (Elder et al. 2012; Jena et al. 2015).11. I can use my rights to vote in elections (Elder et al. 2012; Jena et al. 2015; Parrish et al. 2005).
Networking and/or partnership	<ol style="list-style-type: none">1. I know farmers from other groups pretty well (Bacon 2010; Kilpatrick 2007; Taylor et al. 2005).2. I can easily contact farmers from other groups (Bacon 2010; Kilpatrick 2007; Place et al. 2004; Taylor et al. 2005).3. We collaborate with other groups (Bacon 2010; Place et al. 2004; Taylor et al. 2005).

Note: Responses are measured using the Likert scale, ranging from 1 to 5 (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree).