Forest or oil palm plantation? Interpretation of local responses to the oil palm promises in Kalimantan, Indonesia

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A B S T R A C T

Global land use/land cover change is dominated by the expansion of cash crops plantations, replacing natural ecosystems including forests. International trade is an important factor in this process. Increasing demand on certain crops has triggered plantation expansion and deforestation, and influence local land use in other countries (land teleconnections). Oil palm expansion is one of the most prominent examples of land teleconnections. In Indonesia, oil palm plantations area increased from 1.1 million ha in 1990 to 11.2 million ha in 2015. According to the Indonesian Law on Plantation, the indigenous people's decisions play important roles in land use decisions. This paper investigates what were the factors (drivers) determining the individual-level responses to the oil palm promises in West Kalimantan. These questions are not only important for the future of Kalimantan's rainforest but will also enrich deforestation and conservation-development discourses. We selected 49 respondents for interviews and focus groups such that people who opposed and people who supported the conversion were both well represented. Much attention was paid to arrive at a balanced set of operational variables, such as the economic resilience, agency and embeddedness of actors and the degree to which actors had appreciated and believed the oil palm promise. Data were analyzed through the QCA method. The outcomes show a perfect association of appreciation of the oil palm promises, belief in them and the decision to support the oil palm. This was not strongly associated with low economic resilience however; economically less resilient respondents could reject the oil palm conversion, while economically resilient respondents could support it. In other words, the data do not point to a poverty/deforestation nexus. Rather, the data suggest the existence of an 'embeddedness / rejection nexus'; people that were well-connected to community, traditions and nature held long-term motivations and rejected the oil palm promise, and *vice versa*. More attention to this phenomenon will help bridge conservation-development objectives in Kalimantan.

1. Introduction

Global land use/land cover change is dominated by the expansion of cash crops plantations, replacing natural ecosystems (Kongsager and Reenberg, 2012; Meyfroidt et al., 2013; Xiao et al., 2015; Su et al., 2016). In the tropics between 1980 and 2000, more than half of the new agricultural land was established at the expense of intact and disturbed forests (Lambin and Meyfroidt, 2011). International trade is an important factor in this process. In fact, countries that experience a net growth of forest areas such as Vietnam, Bhutan, France and China do so because through food and timber imports, they can 'export' deforestation and the expansion of cropland to countries with high deforestation rates such as Indonesia and Brazil (Meyfroidt et al., 2010). The situation where demands in distant places significantly influence local land use at the place of production is described as 'land teleconnections' (Haberl et al., 2009; Seto et al., 2010), or the displacement (or leakage) effect (Meyfroidt et al. 2010; Lambin and Meyfroidt, 2011).

In this global phenomenon, the expansion of oil palm plantations is one of most prominent examples of land teleconnection and is the most rapid (Thoenes, 2007; Gibbs et al., 2008; Kongsager and Reenberg, 2012); the total oil palm area expanded from 6.1 to 20.3 million ha between 1990 and 2015 (FAO, 2019). Although oil palm is grown in 43 countries, Malaysia and Indonesia are by far the largest producers, representing over 80 percent of the global production (Pirker et al., 2016). In Indonesia, the area used for oil palm plantations increased from 1.1 million ha in 1990 to 11.2 million ha in 2015 (Directorate General of Estate Crops/DGES, 2017), with the average rate of expansion between 1995 and 2015 at a level of 450,000 ha/yr (Austin et al., 2017).

1.1. Consequences

The oil palm expansion in Indonesia had positive effects such as increased formal employment and district revenues (Susilo, 2004; Rist et al., 2010), but negative effects as well, such as the loss of forest cover and biodiversity and their associated ecosystem services, displacement

and land loss of local people, loss of cultural assets and diversity, and livelihood depreciation (e.g., Potter and Lee, 1998; McCarthy and Cramb, 2009; Sheil et al., 2009). The negative effects often seem to outstrip the positive ones, especially on the longer run when the risks of unsustainability and the impacts of ecosystem service losses will deepen and accumulate; see Pye (2019) for an impressive overview.

1.2. Drivers

In their global analysis of tropical deforestation, Rudel and Roper (1997) found two basic deforestation 'models', which were poverty-driven and capital-driven deforestation. In the poverty-driven model, small farmers expand into the forest due to lack of other alternatives. In the capital-driven model, large external agents create deforestation frontiers for financial or political profit. A follow-up study (Rudel et al., 2009) concluded that capital-driven forces had grown even more in strength. Of the five fundamental driving mechanisms proposed by Lambin et al. (2003), market opportunities now appear to dominate the global scene.

In South-East Asia, the oil palm expansion is no exception, caused as it is by the increasing global markets for vegetable oil, ingredients for processed food and non-edible products such as detergents and cosmetics (Thoenes, 2007; Pirker et al., 2016). Not all countries are the same, however. Wicke et al. (2011) show that in Malaysia, oil palm expanded not only on forest land but to a large extent also on land devoted to other permanent crops such as rubber and coconut. In this context, Varkkey et al. (2018) note that contrary to Indonesia, the expansion of the plantations into the forests in Malaysia is to a large degree held back by state involvement in the industry and the state's pledge to protect the forest. As a result, palm oil production increase is sought primarily in expansion on other cropland and intensification of the production process. Indonesia however "has few incentives for intensification, leading to expansionist policies" (p. 149).

In Indonesia, Law no.18 on Plantation (Government of Indonesia, 2004), was promulgated in 2004 as part of the country's decentralization policy to regulate plantation operations. Under its land utilization article, the law states that any oil palm business desiring to acquire new land in indigenous people's territory has to seek agreement from the indigenous people and, if the people accept the land transfer, to pay the agreed compensation. In land teleconnection situations, local factors are no longer the most significant determinants of agricultural land use decisions (Kongsager and Reenberg, 2012). However, according to the Indonesian Law on Plantation, local factors, in particular the indigenous people's decisions, play important roles in land use decisions. How, if in any way, did this law act as a brake on the oil palm expansion?

The community decision to accept or reject oil palm expansion on their land is a crucial one, implying as it does a basically total and irreversible livelihood and landscape system change (Sheil et al., 2009; Merten et al., 2016), involving all impacts described above. There is a dearth of empirical studies, however, on what really happens on the ground in the encounter of the oil palm companies and the local people, and how these events may be explained. Thus, the background question of the present paper is how the people's legal right to negotiate worked out in practice. We will do so by studying four communities in Kalimantan, focusing on the period when the oil palm companies arrived in the villages to start the negotiation process.

1.3. Research question

In negotiations with the legally empowered people, the market-based drivers of the oil palm expansion translated, as they still do, into promises by the oil palm companies to the communities. The promises usually comprised infrastructural improvements, financial compensations and employment as plantation worker as compensation for the land conversion. In the communities then, the promises interacted with other decision factors, such as non-economic desires. The community decision may be seen as composed of two steps. The first is that individual community members make up their mind on how to respond to the promises. The second then is the making of the community-level decision. The present paper focuses on the first, one could say most fundamental step. The research question, therefore is: *what were the factors determining the individual-level responses to the oil palm promise in the Kalimantan study villages?* What, for instance, was the role of people's trust in the promises and the role of people's wishes and capacities to maintain traditional ways of life? It should be noted that our research question is not about what people may have come to think of the oil palm conversion after the fact, i.e. after their land was converted or not and the impacts had become clear.

2. Site Description

The research was conducted in the Kapuas Hulu district (3.116 million ha), West Kalimantan, Indonesia, where Indonesia's longest river, the Kapuas, originates. The forests and wetlands in the district are rich in biodiversity and provide crucial hydrological regulating services. Commercial oil palm companies started operating in the Kapuas Hulu District in the 1990s, but these companies in fact only logged precious timber under the guise of "land preparation" for the oil palm, and then left (Wadley et al., 2000; Eilenberg, 2012). The oil palm really penetrated after 2000, with hundreds of square kilometers of the district's forests and wetlands cleared by 2014 (Hansen et al., 2015).

The study focuses on four villages in Kapuas Hulu, inhabited by indigenous Iban people (summarized in Table 1). Older studies (e.g. Padoch, 1988; Sather, 1994; Wadley et al., 1997), depict the traditional land use of the Iban as swidden farming and forest gathering, resulting in a landscape mosaic that has all the characteristics of a complex agroforestry system, comprising swidden rice and vegetable cultivation, mixed gardens of subsistence and cash crops, and communal forests (Wadley, 2002). Traditionally, the main forest products used are wild animals such as boar and deer, wild fruit and edible plants, timber for domestic use, and clean water which until the mid-2000s was carried with buckets from forest streams. In the course of the past decennia, the Iban have changed or added elements to their traditional livelihood system, such as involvement in commercial logging, petty trade and, in some villages, *arwana* fish breeding (Asian bonytongue fish, *Scleropages formosus*, with market values of up to US$ 2000).

At the time of oil palm discussions (from the end of 2007 to the end of 2009) the study villages were situated in a landscape mosaic that included the traditional elements and secondary forest created between 1970 and late 1990s, when many primary forests in this area had been logged by large-scale commercial concessions. Most of these closed in late 1990s, but some logging was continued by the communities either with or a without small-scale logging license. Data on village boundaries was not available; the indigenous territories were marked informally by natural features such as big stones, hill crests and rivers.

Table 1
Summary of sites.

Site	Population*	Livelihoods**	Housing	Distance to nearest oil palm plantation**	Note
Village A	129 (64 men, 65 women)	Subsistence farming and hunting, small-scale rubber garden, work in Malaysia, small sawmill	Long-house	15 km	Adjacent villages. Shared village administration.
Village B	117 (60 men, 57 women)	Subsistence farming and hunting, small-scale rubber and pepper gardens, fishing, grocery shops, car/speedboat/truck rental	Individual houses	26 km	
Village C	151 (73 men, 78 women)	Subsistence farming and hunting, small-scale rubber, work in Malaysia	Long-house and individual houses	30 km	Not adjacent. Own village administration.
Village D	145 (70 men, 75 women)	Subsistence farming, fishing and hunting, small-scale rubber, work in Malaysia	Long-house	45 km	

* At time of data collection (2014-2016.). ** At time of oil palm decision (2007-2009).

3. Approach, Framework and Methods

We opted to use Qualitative Comparative Analysis (QCA), a method specifically designed for situations with a small to intermediate number of cases or respondents (Ragin, 1987; Rihoux et al., 2013; Sehring et al., 2013). It enables systematic cross-case comparison without neglecting case complexity, allowing modest, medium-range generalization and theorizing. In the same vein, Jordan et al. (2011) summarize that QCA provides a middle ground between the two options (in-depth studies of small-N cases or statistical large-N studies), as QCA allows researchers to analytically determine different combinations of conditions that produce an outcome in comparative studies.

The choice for QCA is also justified in the statistical literature. We refrained from the use of statistical methods such as Principal Coordinate Analysis (PCO) or Factor Analysis (FA), because the most common rule of thumb for the application of those methods is that the number of observations should be much larger than the number of variables, which is a condition that our study cannot comply with. More sophisticated treatments of the minimum number of observations (e.g., Preacher and MacCallum, 2002; Mundfrom et al., 2005; De Winter et al., 2009) suggest that matters are in fact more subtle but remain unconclusive, implying that our analysis would forever remain in the statistical risk zone.

3.1. Crisp-set Qualitative Comparative Analysis (QCA)

In the most straightforward ('crisp-set') type of QCA, all variables are assessed in a binary way: 0 if absent/false, or 1 if present/true. We used crisp-set QCA to interpret the causal relations between the independent variables (e.g. variables of motivation) and the outcomes (support or rejection of the oil palm). For the Outcome variable of the present study, for instance, if a respondent supported the oil palm we marked a 1 (yes), if he/she rejected it a 0 (no). All other variables were transferred to 0 or 1 as well, as discussed in the section on Local indicators and QCA variables. The analysis used the Tosmana software made for QCA (Cronqvist, 2016).

3.2. Grounded construction of the QCA variables

As detailed in the preceding section, QCA (Qualitative Comparative Analysis) is a method for the explanatory analysis of a relatively small number of cases. Once the variables of the analysis are known, the QCA analysis itself is usually relatively straightforward. To arrive at a valid result therefore lies primarily in the way the variables that enter into the analysis have been constructed. For these objectives, our methodological framework followed a field-based, grounded theory approach (Glaser and Strauss, 1967; Bowen 2006, p.2) to define the QCA variables. As detailed by DePoy and Gitlin (2016), the researcher starts with a set of broad concepts on a particular topic (in our case, a set of sensitizing concepts), collects relevant information and simultaneously reviews, compares and contrasts with other information. Through this process, a theory (in our case, the set of operational variables) is inductively developed.

Sensitizing concepts are often used to "give the user a general sense of reference and guidance in approaching the empirical instances" (Blumer, 1954, p.7; Faulkner, 2009). We felt a need to start out with sensitizing concepts that would especially help our interviews and interpretations to do justice to all local visions – see the next subsection. In order to give the 'continual interplay' between data gathering and analysis a coherent structure, we designed the methodological framework depicted in Fig. 1.

The figure shows that after selection of the sensitizing concepts, these were confronted with area knowledge (e.g. of Iban culture, literature on oil palm, knowledge from preceding field visits such as reported in Yuliani et al., 2010, 2016), to form the localized version of these general concepts. These were used in the design of focus group discussions (FGDs) and informal discussions in the four fieldwork villages. The concepts emerging from these were then incorporated in the more formal data-generating interviews with individual respondents. Outcomes of these interviews necessitated a relatively technical intermediary step, called the 'appreciation/belief analysis' here – see later in this section. On that basis, we formed 19 local indicators and, out of these, seven aggregated variables to enter into the QCA analysis.

3.3. The general and localized sensitizing concepts

Setting the study's substantive frame, the sensitizing concepts for our research were sought with the specific aim to prevent the data gathering and interpretation from sliding too easily into mainstream western ideas of human motivation, more specifically rational choice theory in which the actor is supposed to maximize personal utility in some form of weighing the positive and negative consequences of a considered action (such as being for or against forest conversion) that are expected to accrue to him or her (Elster, 1989). The sensitizing concepts should include this idea, but add other perspectives on human choice as well.

The first additional sensitizing concept was found in classic Greek philosophy (e.g., Aristotle 1999; Fowers, 2012), in which *hedonic* motivations that roughly stand for today's rational choice theory are juxtaposed with *eudaimonic* motivations, in which *eudaimonia* denotes the good, meaningful life, embedded in relationships, community, virtues and autonomy (MacIntyre, 1985; Ryan and Deci, 2001; Fowers, 2016). Eudaimonic motivation is whether a possible action fits into the actor's vision of a meaningful life. For most people, this will be different from unlimited hedonic consumption (O'Neill, 1992, 2002).

The second additional sensitizing concept was found in the agency concept of Bandura (1989, 2009). The reason to adopt this concept was that although being in favor or not of oil palm conversion might at first
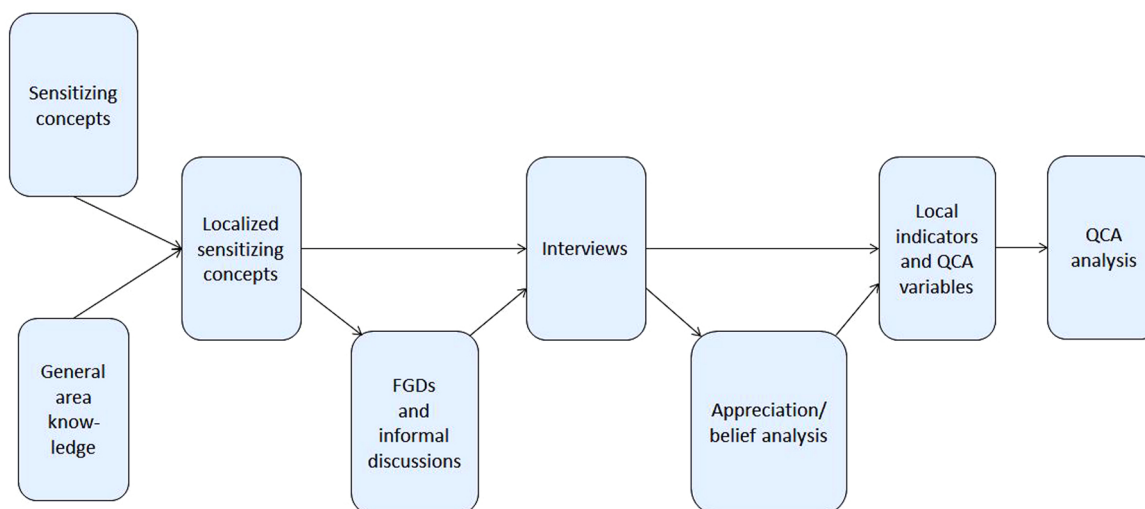
Fig. 1. The methodological framework: the interplay of data gathering and variables construction, from the initial sensitizing concepts to the QCA analysis.

sight look like a simple preference, for the concerned villager it is not. A simple preference is more or less independent from capacities. However, capacities often do influence motivations (Elster, 1989, p.17; De Groot and Tadepally, 2008). More systematically, Bandura's (1982, 1989, 2009) studies of human agency uncovered the important roles of the belief in self-efficacy, which in turn is grounded in people's capitals (intellectual, economic, social etc., e.g., Bebbington, 1999; Bebbington et al. 2006) and self-perceived resilience (Adger, 2000; Berkes and Ross 2013).

As per the methodological framework, this three-concept substantive framework (that could be called HEA for Hedonic/Eudaimonic/Agency) was "localized" to fit the research situation of this paper, based on preceding studies (Yuliani et al., 2018). One example of the fitting process, for instance, is that when talking about a meaningful life with Iban people, assuring the livelihood of descendants often turned to be at center stage. This way, we arrived at the following set of localized HEA concepts:

- Hedonic motivation (H): the expected net benefit, mostly short-term, of the oil palm conversion, e.g. in terms of expected compensations, wages, outgrower revenues and infrastructure.
- Eudaimonic motivation (E): the expected fit of the oil palm conversion in community life, Iban traditions and care for descendants (thus including ecological sustainability).
- Agency (A): the access to multiple capitals (economic, intellectual, social, physical and financial) and livelihood strategies, adding up to felt resilience in the risky and complex oil palm decision situation. Later in the research process, this concept was split into one more subjective (called agency) and one more objective (called economic resilience).

Known rights should normally be a component of agency. For instance in the oil palm situation, the legal option of communities, based on the Indonesian Law on Plantations, to reject the oil palm conversion is of course essential for any choice to be available at all. This option was known to all villagers however, implying that this parameter was invariable across the dataset. With that, it cannot play a role in any inductive analysis, either in the econometric or the QCA style. In our localized HEA concepts therefore, the legal rights remain a contextual factor.

3.4. Village selection and fieldwork timing

In order to arrive at a rich variety of decision-influencing factors, respondents were selected in four villages, two of which were chosen because they were among the few in the district that had rejected the oil palm. One had successfully resisted to oil palm independent from its neighbors, and the other had rejected the oil palm as member of a larger group of villages doing so. The other two villages has accepted the oil palm, but had similar demographic (population, ethnicity, livelihood activities) and geographic conditions (land cover, land use, topography) with the first two villages in order to assure a basic comparability.

The field researcher (first author) was already acquainted with the area for many years, but the key data gathering for the present paper took place during four months between 2014 and 2016, which was seven to nine years after the discussions on whether to accept or reject the oil palm. In keeping with the aim of this paper we focus here on the circumstances and the opinions of the villagers at the time these discussions took place, i.e. in 2007-2009. To help respondents memorize what really happened at that time and to avoid possible bias in their answers, we used life history techniques and triangulation, detailed below.

3.5. Methods for data collection and analysis

As per the methodological framework, focus group discussions (FGDs) were used to set the topics (variables) of the interviews, making the localized HEA concepts more operational. We conducted seven focus groups discussions (FGDs) spread over the villages. Each FGD took between two to four hours in Indonesian and Iban language, with five to seven official participants. In practice the number of participants was higher because many villagers joined and enriched the discussions. The FGDs centered on issues of traditional land-use systems, natural resources, income-generating activities, changes over time and major causes including history of logging and oil palm, and roles of formal (state) and informal (customary) institutions. We did not limit the topics only to the oil palm, as we wanted to understand the causal relations with other possible factors. During the FGDs, we used the participatory village sketch method (Pretty et al., 1995; Boedhihartono et al., 2015) as a tool to (i) identify the places being discussed and other important parts of the villages; (ii) document customary rules and institutions; and (iii) check the terms and language used.

For the interviews, we used the 'conversation with a purpose' technique (Burgess, 1984; DiCicco-Bloom and Crabtree, 2006) where questions and issues of concern were posed in a natural sequence, in accordance with the flow of the conversation (see the list of topics in Table 2). To help respondents memorize what happened in the past, we used the life history technique (Atkinson, 1998; Adriansen, 2012), starting with the time of their childhoods. We used the same techniques to establish the time reference of the cases we studied, referring to important social, family, political or environmental events.

Table 2
List of conversation topics in the interview with respondents.

Topic	Information probed during the interview, using local terms
Livelihood activities over time	• Activities over time, sources of knowledge, values, motivation to learn and topics found interesting.
	• Influential people or other decisive factor over time on decisions over land use, natural resources management and other sources of income.
	• Work (all income generating activities).
	• Income, financial capital and access to the market.
	• Expenditure patterns (consumptive, but also investments such as small business or child education).
Human-nature relationships:	• Use and management of natural resources and changes over time..
Condition and use of natural resources	• Perceived causes of the occurred changes.
	• Actions undertaken (individually and collectively) to preserve natural resources.
	• Motivation to take action to preserve natural resources.
Traditional knowledge (knowledge and application)	• The role of traditional institutions (customary leaders, traditional knowledge and land-use systems, customary rules, sanctions).
	• Changes over time and examples of customary rule violation.
	• The role of formal institutions and the differences between traditional and formal institutions.
Ideas about the good life, and ways to realize it	• Ideas about the 'good life', and the best ways to realize it and cope with setbacks.
	• Key influencing factors (e.g. values, traditional and external knowledge) conditioning the idea of the good life.
Introduction of oil palm in the area	• Events, location and discussion at the time.
	• Respondents' opinions and arguments with regard to oil palm at the time.
	• Activities of the oil palm companies (and others) to win people's approval.
	• Viewpoints and arguments of other villagers.

To investigate what happened when the oil palm came in 2007-2009 and what made up their reasons, we used oral history interviews (Howarth, 1998; Sommer and Quinlan, 2018) with the following questions in sequence: what time did the respondent first hear the oil palm was coming, from whom, what did the respondent feel, what did the respondent do, and so on. For validity analysis, we checked conformity of respondent's answers with information from other respondents, government officials, NGOs, scientists, official documents, scholarly literature and forest cover change analysis reported in Yuliani (forthcoming). We drew a timeline and diagram to clarify the sequence of events and to understand the causal connections. No noteworthy differences between the respondents and the other sources were found.

In selecting respondents, we used snowball sampling (Goodman, 1961; Morgan, 2008), first identifying potential respondents by consulting village heads, and then expanding the lists. During the initial interviews, we identified more potential interviewees, or names of villagers who could offer more detail, corroboration or possibly opposing views for involvement in the FGDs. The final selection was done on the basis of one of the following criteria: they had either (1) accepted the arrival of oil palm plantation; or (2) rejected it; or (3) had hesitated; or (4) had no outspoken opinion. Respondents who hesitated or had no outspoken opinion were asked about their first reactions (feelings, thought and actions) when they heard that oil palm was coming. We then classified them based on their first reaction. The number of respondents was not pre-determined. We continued interviewing until we reached a saturation point, i.e. when additional interviews started to add no new information with regard possible motivations and agency (Glaser and Strauss, 1967; Rubin and Rubin, 2012; Saunders et al., 2018). We reached the saturation point after interviewing 54 individuals (22 females, 32 males). Later on we discarded data from 5 respondents who were only twelve years of age or younger at the time the oil palm discussions took place; therefore in total, n = 49, distributed by gender as 19 women and 30 men, and distributed over the villages more or less evenly, guided by the saturation criterion.

We used informal discussions for triangulation of the information we got from the FGDs and interviews, checking for (in)consistencies between interviews and practice, and observing relations, trust, interactions and social cohesion among community members, familiarity and obedience towards traditional institutions, and connectedness with the community and nature. We shaped the discussions using 'moderate participation' (DeWalt and DeWalt, 2011) where we mingled, observed, listened and joined people's work activities as well as conversations when they gathered and chatted in front of their house or in the traditional coffee shops, usually during the afternoons and evenings. In each village, we stayed around one month.

All information gathered from the above methods was manually documented, largely as *verbatim* records.

3.6. The appreciation/belief analysis

As said earlier, the outcomes of the interviews necessitated a relatively technical intermediary step we called the 'appreciation/belief analysis'. The situation at the time of the discussions regarding the oil palm was heavy with promises and uncertainties. Therefore basically each motivational factor (variable) could be decomposed in two factors: (1) whether the villager appreciated what was being discussed (e.g. the infrastructure, the employment in the oil palm plantation or the loss of forest); and (2) whether the villager believed it would really come true. For most of these factors, either the belief or the appreciation turned out to be shared by all villagers however. The promised infrastructure, for instance, was appreciated by all villagers, but the belief was variable; many doubted if it would really materialize. The reverse held for a factor such as the presence of clean water after oil palm conversion. All villagers believed that water supply would deteriorate, but not all of them cared. In all these cases, only the variable component was retained as variable in the QCA analysis. For instance, 'belief in clean water' was dropped while 'appreciation of clean water' was retained as variable. Appreciation and belief needed to be retained both with respect to only one item, the short-term economic benefits, because both components showed variation. In Table 3, the result of the appreciation/belief analysis is visible in that all local motivational indicators (1 - 7) start with "Appreciation of …" or "Belief in ….", with only short-term economic gain retaining both components.

3.7. Local indicators and QCA variables

All information was first put into a narrative analysis, then further analyzed for emerging common themes that were linked to the localized sensitizing concepts and the oil palm discussion, using descriptive and value coding techniques (Saldaňa, 2009). This, jointly with the appreciation/belief analysis, resulted in the 19 local indicators enumerated in Table 3. The table also shows, per indicator, which criterion was used to arrive at a 1 or 0 score.

Table 3

Local indicators identified from the interviews, standard for coding and aggregated variables for the QCA. The H, E and A after the indicators identify its character in terms of the localized sensitizing concepts. Based on the interviews, each factor was coded 0 or 1. Codes of indicators under the same variable were summed-up. The aggregated variables were coded 0 if the sum is below cut-off, and 1 if the sum is equal to or higher than cut-off.

No.	Local indicators	Scoring standard	Aggregated variables for the QCA	Cut-off
1	Appreciation of short-term net economic gain compared to current income if promises would be kept (H)	1 if respondent had a positive appreciation of land compensation, employment and outgrower scheme	Short-term economic gain (STEG)	1
2	Belief in short-term economic promises of the oil palm company (H)	1 if respondent believed that the oil palm would really give land compensation and bring prosperity e.g. through jobs and outgrower scheme	Belief in promises of the short-term economic gain (PROM)	1
3	Appreciation of rewards given by the oil palm company for influencing the community (H)	1 if respondent had been willing to influence community's decisions for the rewards	Appreciation of rewards (REW)	1
4	Belief that land ownership is lost forever (E/H)	1 if respondent believed the land ownership was lost forever once given up; 0 if respondent believed that land was only borrowed (*pinjam-pakai*) by the company and would be returned after 20-30 years	Long-term security motives (LTM)	3
5	Appreciation of timber availability change (E/H)	1 if respondent stated that timber would remain important		
6	Appreciation of clean water availability (E)	1 if respondent stated that clean water would remain important		
7	Belief that the oil palm company will build infrastructure and public facilities (H/E)	1 if respondent did not believe that the oil palm would build infrastructure and facilities including house		
8	Good relations and mutual trust of respondent with other community members (A/E)	1 if respondent (cross-checked with other respondents) had good relations and mutual trust with other community members.	Embeddedness of individual respondents in community and nature (EMB)	3
9	Willingness to exchange of ideas, information knowledge, capitals (A/E)	1 if respondent (cross-checked with other respondents) had desire to exchange information, ideas, knowledge and capitals with others		
10	Familiarity with and obedience towards traditional rules on resources and land (A/E)	1 if respondent was familiar with and obeyed traditional knowledge and rules (e.g. desire to avoid a curse or loss to descendants)		
11	Connectedness with the community (E)	1 if respondent had strong concerns towards their community rather than only for themselves, e.g. did not want to make decisions that would harm others		
12	Connectedness with nature (E)	1 if respondent expressed appreciation or strong concerns towards natural ecosystems		
13	Mobility and networking (A)	1 if respondent actively developed or used a network to look for knowledge, ideas, capitals or market opportunities	Agency (AG)	3
14	Intellectual capacity (A)	1 if respondent proactively acquired knowledge and information from various sources to make decisions, and showed reflective and analytical thinking		
15	Leadership (A)	1 if respondent had a leadership attitude and was regarded highly by others		
16	Self-confidence (as individual and as an ethnic group) (A)	1 if respondent showed confidence towards their personal and Iban capabilities to solve their own problems		
17	Not dependent on a single source of income (A)	1 if respondent had diverse sources of income	Economic Resilience (ER)	2
18	Income stability (A)	1 if respondent's household income had been stable over the preceding years		
19	Household economic growth (A)	1 if respondent used income for investments e.g. in business or education.		

Technically, 19 indicators are too many to handle in a QCA analysis with only 49 cases (Kane et al., 2014). The local indicators were therefore aggregated into a set of 7 variables to enter into the QCA. Table 3 shows the groupings made and the names given to the aggregated variables. Care was taken to not aggregate indicators that

respondents had paid much attention to in the interviews, which was the case with the first three of them. In the variable of Economic Resilience (ER), we aggregated three indicators of income diversity, stability and spending (cf. Adger et al., 2002), which could be assessed from livelihood history and strategy. Note that this does not include the

level of income *per se*, which was very uncertain to assess.

In the resulting scheme, the first four variables, with their E and H sources, can be seen as purely motivational and the last two as purely agency (A source), while Embeddedness, mixing E and A sources, is a blend of both. Embeddedness in the community will tend to strengthen both an individual's capacity to act (social capital) as well as his/her motivation to do so, e.g. to protect the common good.

4. Results: Variables and Outcomes of the QCA Analysis

4.1. Qualitative overview of variables

In this section, we will first give an overview of the qualitative results on the seven aggregated variables separately, and then focus on the outcome of the QCA analysis based on the respondents' scores on these variables.

4.1.1. Short-Term Economic Gain (STEG)

Under the STEG variable, we discuss the content of the economic promises of the oil palm companies during the land acquisition process in 2007-2009, which were (a) land compensation and additional one-off amounts of cash; and (b) employment on the plantation employment and the nucleus-estate scheme.

As said, companies were obliged to discuss land transfer and negotiate compensation with local communities. In our sites, the compensation was fixed by the oil palm company at IDR 250,000-300,000 (US$ 20-24) per hectare, either family land (e.g. swidden field) or communal land. The extent of land to be given up varied between 8 and 20 ha per family, so that the promised land compensation ranged from US$ 160 to 480. For communal land, each family was promised an equal share of the value. Respondents said that during the land acquisition processes, they made no attempt to negotiate a higher rate, for three main reasons: (a) better get something than nothing and possibly lose the land anyway; (b) the oil palm manager had said the company had to be consistent with the value already agreed with other villages; and (c) they did not know what the proper value was. When we asked whether or not a written agreement existed, the answer was that there might be one kept by the cooperative, but they had never seen it.

In addition, the company promised to build a new long-house in two villages. In one, people were interested in this promise, but not in the other as many families there had started to live in individual houses. Instead, they negotiated an amount of US$ 5.4 million as a timber compensation for giving up their peat swamp forest. The company agreed, promised to pay the compensation in installments, and signed the minutes of the meeting with the village.

Other promises from the company were employment on the estate and a monthly income from the nucleus-estate scheme (NES, an out-growers scheme).[1] The company kept these promises general, never stating the number of villagers to be employed, the kind of job or the wages, saying for example, "The plantation will create employment and basic facilities for the local people," or "Each month the NES farmers will receive 20 percent share of the benefit." In one village, people tried to negotiate a higher share, but the company said the rate had been agreed by other villages. The company promised 50 percent in another village, though. In the village negotiating about the timber compensation, respondents were not made aware of NES. They said, "The company did not say too much about NES, they only mentioned it very briefly, while we focused more on the negotiation of the compensation."

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[1] The NES was regulated by the Ministry of Agriculture Decree no. 98/2013 (Ministry of Agriculture, 2013), which states that company has the obligation to allocate minimum 20 percent of the plantation area for NES, to manage the NES area under a benefit-sharing mechanism, and to build capacity of the farmers on oil palm cultivation and marketing.

4.1.2. Belief in Promises of the short-term economic gain (PROM)

At the time of decision-making in 2007-2009, the credibility of the promises of the oil palm companies was highly variable. Many respondents stated that at the time, they did believe the oil companies at least to a large extent, saying, for instance, "We believed that by working in the plantation, we would earn a higher and fixed income, high enough to buy rice, a motorcycle, a car, and to build concrete houses later." Others however did not believe the promises. This distrust was often grounded in knowledge of realities elsewhere, with respondents saying, for instance, "We could not trust the company. They promised employment, but we knew from other places that once they were operating, they would employ people from other parts of the country rather than the locals."

This level of consciousness was not connected with proximity to a real oil palm plantation nearby. As shown in Table 1, two villages were rather close to such plantations, but believers in the oil palm promises were found in these villages too in significant numbers or even the majority. Later in this section, we will venture an alternative causality of what made people believe or distrust the companies.

4.1.3. Appreciation of Rewards (REW)

Rewards were handed out by the companies to elite village members willing to help convince or silence other village members that might be opposed to the oil palm conversion. The rewards were composed of cash, jobs, cars as well as an air plane trip to Sumatra to visit an oil palm plantation which had been operating for more than 20 years, where they were shown villages with modern houses, vehicles, schools and healthcare, fruiting oil palm trees and a palm oil mill. They were not given the opportunity to talk with the farmers. Though not made public, the rewards system was known of by basically all villagers. One, for instance said, "We would be rich if we would be willing to become the company's strawmen," and another, "Mr. X, Mr. Y and their closest family members were given trucks, cars and a good job position by the company for helping ease the land transfer." All villagers that were generally known or self-confessed having taken such rewards were noted with a "1" in the QCA dataset on this variable.

4.1.4. Long-Term security Motives (LTM)

The LTM variable consisted of appreciations and beliefs related to preserving autonomy and ownership of communal territory, timber resources and clean water for community and descendants, and development of infrastructure (Table 3).

Most respondents believed that their village land was only borrowed (*pinjam-pakai*) by the company and would be returned after 20 or 30 years. Some however believed that land ownership would be lost forever once they accepted the oil palm to operate in their village, as expressed in the interviews. One of them said, "Once given up to the oil palm, the land would not be ours anymore. The company would continue use it and not return it to us." Another respondent said, "In many other villages such as X and Y, the company moved the agreed boundary markers and cleared more land than what had been agreed, including sacred forest. We felt we would lose the land, and that would be a threat to the very existence of our community."

All respondents believed that timber would become scarce once oil palm would have taken over the land, but a smaller number appreciated the importance of timber for their descendants to build their own house and village facilities in the future, saying for example, "If we don't protect the forest, our descendants may not have good quality timber to build their own houses." Likewise with respect to the water sources, all respondents believed that clean water was important, but only some of them positively appreciated the importance of preserving forests as the sources of it. They said, for instance, "In these other villages, right after the oil palm company cleared the land and forests and started to operate, there was no clean water anymore. River and streams turned muddy, oily and smelly. In drier months, rivers and streams are drying drastically. Fish also disappeared. The communities now have to buy

clean water from other villages."

Infrastructure was another factor frequently mentioned by respondents. All respondents described that until early 1990s, there was no basic infrastructure such as a road, mooring site, school, health unit or electricity in their village. All respondents appreciated such infrastructure, but not all of them believed the company's promises about it.

4.1.5. Embeddedness (EMB)

Relations and mutual trust of individual respondent with other community members was one indicator in the aggregated Embeddedness variable (Table 3). Some respondents showed good relations and mutual trust, characterized by willingness to share information, to show solidarity and to help each other, saying, for instance, "The chief of village, his father and their big family had become our role models. They were open and honest, so we trusted them." Other respondents had less trustful relations, for example indicated in their description of village-level decision making processes, "News, programs or plans had never been shared openly to village members. Leaders tended to keep information for themselves, made decisions, and involved only their closest relatives." Or even more explicitly, "I'm not really willing to talk to you, because I just saw you talking to family A, which means you are their friend." Strong variation was also found on the indicator of *willingness of reciprocity and exchanges of knowledge and capitals*. This included sharing information of marketable commodities, sharing financial and physical capitals, and willingness to take others to connect to small business networks. For instance, some respondents who had developed breeding ponds of *arwana* fish species and established partnerships with small-scale investors offered other community members the opportunity to join. Shared information was also about risks such as those attached to the oil palm decision.

The Embeddedness indicator of *familiarity with and obedience towards traditional institutions* included practice of traditional knowledge, customary rules, norms and sanctions in daily life of respondents. While the majority of the respondents were familiar with traditional knowledge and customary rules, not all of them obeyed and practiced them. As said by the chief of one village, "The Iban people have many customary rules. For instance, selling rice is taboo. And the presence of [the voice of] the *murai batu* bird (White-rumped shama, *Copsychus malabaricus*) is believed to be a sign of a good fortune, while the *ketupung* bird (Rufous piculet, *Sasia abnormis*) is a sign of bad fortune. But I do not really care. I rarely follow these rules."

The two other indicators of Embeddedness focused on connectedness with community and with nature. Respondents who had strong *connectedness to the whole community* always made decisions and actions carefully, by considering the impacts to descendants and the whole community. As one respondent said, "It would be everyone in this village and our descendants who would feel the impact of what we decided [on the oil palm] that day. We felt we should not make decisions that sacrifice others and our ancestral heritage."

Connectedness with nature is characterized by familiarity of and consistent obedience towards traditional beliefs related to nature, and positive appreciation of natural ecosystems. For example, protection of sacred places including the *tembawai* (former long-house sites) which are believed to be the shelter of the ancestors, as well as wildlife drinking places, birds nesting trees, places providing clean water and edible or medicinal plants. Those scoring 1 on this indicator said, for instance, "Those who disturb nature will cause a curse to themselves or their family," or "If not us, who would look after our environment? What kind of environment and nature would our descendants inherit?"

4.1.6. Agency (AG)

The aggregated Agency variable was composed of five criteria (Table 3), the first of which was *mobility and networking*. We found that many respondents used mobility and networks as an important means to acquire knowledge and generate ideas, and to build new relations for developing alternative sources of income. Through the same channels, they learned what happened in other villages which had given up their land to the oil palm. The villages being far from sources of information – no phone and TV signals, no electricity except from a portable generator – these means of searching information were quite important. These respondents attempted to learn as much as possible each time they went to other villages or towns. As one of them said, "We went to traditional markets and coffeeshops, mingled with people, listened and joined their conversation to know what was happening outside our village, and to know what products were having good markets; then we assessed our capacity to produce them." Another respondent explained what he did after the oil palm company came the first time, "I went to see relatives whose villages had been turned into oil palm. They regretted their decisions. Now they did not have land anymore. Even the land where their house was located was claimed as the company's property. I also asked for more information from the *camat* [head of sub-district] and other government officials, but they talked like the oil palm spokespersons; therefore I did not trust them."[2] Many other respondents however did not show such networking behaviors at all. When they went to the nearest town, for instance, they merely shopped in the market and returned home.

The indicator of *intellectual capacity* expressed the respondents' capacity to take up information, reflect to their own conditions and assess potential risks. Several respondents showed this capacity, saying, for instance, "The company gave many promises of economic benefits. To check these up, we went to other villages. Only a few people turned out to be employed indeed, and for only low wages of some IDR 250,000 [US$ 20] per week. It's not worth it; it's much lower than what you can get from your own business." Other respondents showed the opposite, easily believing information from outsiders. They said, for instance, "We had a low income, almost entirely relying on selling surplus products of our garden. We believed that the oil palm investors would solve our problems.".

On the *leadership* indicator, some respondents showed high levels, confirmed by others who gave examples of exemplary behavior, sharing information and ideas, inspiring others to grow. One characteristic quotation is, "Mr. X [previous head of village] had never been selfish. He always worked for the community; he let us use his ponds and other facilities to grow *arwana*." *Self-confidence* was another indicator of the Agency variable. Many respondents exhibited this confidence, saying, for instance, "We knew that if we thought we could do it, we would be successful. To achieve what we wanted, we had to work hard and tactful, keep on learning, but also practice the knowledge and norms of our ancestors, for example in managing land and natural resources." Or, "I was sure we could protect our land. Our community lived here before the Indonesian government was born, therefore our rights to this land are stronger than the government's." Other respondents however showed much lower confidence levels, saying, for instance, "We were poor and had not gone to school. We did not know how to improve our life. The oil palm investors were more educated, progressive and clever than us, so they must know what was good for us."

4.1.7. Economic Resilience (ER)

The majority of respondents had *various sources of income*: rubber, pepper, *arwana* fish farms, and traditional inland fishery. Some others however practiced only subsistence farming, selling only the harvest surplus, if any, and worked as seasonal laborers when possible. As said with respect to the ER second indicator, we used *income stability* instead of income level, because respondents had never documented their earnings. *Income stability* was easy to asses, however, e.g. from the timeline stories, that could talk about an income "high enough to buy a boat" on one year and "just enough for buying salt, sugar and cooking oil" in another. Next to this, we assessed the *income spending* indicator, directly from the stories or indirectly from the state of the house, education of the children and so on. Overall then, it seems safe to assume that scores on the aggregate ER variable coincide with what is usually called poverty or (relative) wealth.

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[2] For an explanation of this collusion, see Ribot et al. (2006).

Table 4
Truth table resulting from the QCA analysis, showing configuration of variables that influence the outcomes.

STEG	PROM	REW	LTM	EMB	AG	ER	OUTCOME (RESPONSE)	n
1 (A)	1	1	0 (B)	0	0	0	1	6
1	1	0	0	0	0	0	1	7
1	1	1	0 (E)	0	0	1	1	3
1	1	0	0	0	0	1	1	1
1	1	0	1 (F)	1	0	1	1	1
1	1	0	1	1	1	1	1	2
0 (C)	0	0	1 (D)	1	1	1	0	15
1	0	0	1	1	1	1	0	3
0	0	0	1	1	0	1	0	1
0	0	0	1 (G)	1	1	0	0	1
0	0	0	1	1	0	0	0	8
0	0	0	1	0	0	0	0	1

STEG = appreciation of short-term economic gain; PROM = belief in promises from the oil palm company; REW = appreciation of rewards from the oil palm; LTM = long-term motives; EMB = embeddedness of individuals in community and nature; AG = agency; ER = economic resilience; Outcome 0 = rejected the oil palm; Outcome 1 = supported the oil palm.

4.2. Outcomes of QCA analysis

Table 4 gives the resulting QCA dataset ('truth table' in QCA parlance) and the explanatory clusters. The primary reading of the Table is simply line by line. The upper line, for instance, shows that 6 respondents (but no others) shared the same characteristics: high appreciation of short-term economic gain (STEG), high belief in the promises, willingness to receive the rewards and low interest in the future (LTM), combined with low embeddedness, low agency and low resilience, and supporting the oil palm as Outcome variable. The next line shows a group of 7 respondents that is almost equal except that they did not receive rewards, yet also supported the oil palm, and so on. The explanatory clusters (A, B, C, …) are our interpretation of 'blocks' of data that are similar enough to be treated as wholes.

The truth table shows a dominant configuration of variables (clusters A + B versus clusters C + D), as well as interesting exceptions (E, F, G). Cluster A explains that appreciation of 'short-term economic gain' (STEG) and 'belief in promises' (PROM) appear to be the key characteristics of respondents who supported the oil palm (Outcome = 1, n = 20, hereinafter called 'supporters'). Thirteen of the twenty supporters, grouped in cluster B, also have low economic resilience (ER), low agency (AG) and low embeddedness (EMB). Maybe due to these reasons, they also do not care much about the future (LTM).

Respondents that opposed the oil palm (Outcome = 0, n = 29) were found in all four villages. In this group, Cluster C shows that all opposers except three were uninterested in the short-term economic gains from the oil palm, and that all of them disbelieved the oil palm promises and were unwilling to receive rewards from the company. The three exceptional individuals in this cluster did appreciate the short-term economic gains, but did not believe that the company would ever fulfil these promises. Two thirds of the respondents in Cluster C also belong to cluster D that appears to reinforce the tendency to oppose the

oil palm. Cluster D groups all respondents that combine high embeddedness with high agency, good resilience and (maybe therefore) an interest in the long-term impacts of the oil palm.

The exceptions (clusters E + F and G) offer important additional insights. Clusters E + F, with seven respondents, contain individuals with relatively good economic resilience, but supporting the oil palm nevertheless. This shows that economic resilience in itself is not a sufficient predictor to explain why people oppose or support the oil palm. The four respondents in cluster E are people with a low levels of agency (AG) and embeddedness (EMB), which may have made it difficult for them to refuse the awards offered by the company (REW) and develop care for the consequences for the community as a whole and in the future (LTM). Next to these four relatively economically resilient but pro-palm respondents, cluster F contains three respondents who were likewise relatively economically resilient and pro-palm, but also well-embedded and interested in the future. Contrary to all other respondents sharing these characteristics (see cluster D), they believed and appreciated the oil palm promises (STEG and PROM). These three respondents became this special case because they had been involved with the oil palm company through their construction business and expected more contracts.

Cluster G represents the exceptions in the opposers group. In spite of low economic resilience and (except one respondent) low agency (ER = 0 and AG = 0), which they have in common with cluster B and therewith would predispose them to support the oil palm, their embeddedness is high (EMB = 1), contrary to cluster B. In this group and in fact all over the truth table, high embeddedness is also associated with a high interest in the future. Thus, it appears that for the low-agency and low economic resilience respondents of cluster G, the EMB variable, i.e. connectedness to community, traditions and nature acted as an effective counterweight against the oil palm supporting predisposition that comes with low economic resilience. One respondent in the group stated that, "We better live as poor rather than losing our land and all things associated with it: natural resources, ownership, traditional identity, culture including rice cultivation, timber, and clean water." The importance of the embeddedness variable is also underscored by our earlier and above-mentioned finding that that the four respondents in cluster E who supported oil palm in spite of high economic resilience all showed low embeddedness. We elaborate on this phenomenon in the section below.

4.3. The key role of embeddedness

Fig. 2 depicts fractions of the oil palm opposers and oil palm supporters that score 1 on the QCA variables in graphic form.

Several elements of the Figure such as the high scores on PROM and STEG of the supporters, are no surprise and have been found already (e.g., Feintrenie et al., 2010 Levang et al., 2016). The special insight delivered by Fig. 2 is that the difference between opposers and supporters on the EMB variable was much more salient than on ER. In other words, embeddedness comes out a much stronger predictor of the support/oppose outcome than ER. As Table 4 shows in more detail, respondents well-connected to community, traditions and nature opposed the oil palm even when having low ER or agency, while the unembedded economically resilient welcomed it.

The variable of long-term motivations (LTM) shows an almost equal characteristic. We intuit that embeddedness is the causally deeper variable, i.e. roughly, EMB → LTM. Embeddedness in community, family and nature creates a motivation towards these entities that live on a longer timescale than the individual. The hypothesis can be that well-embedded individuals sought more information on the long-term aspects of the oil palm, economic and otherwise, and were able to get that information either because they themselves had enough agency to do so, or, being well-embedded, were connected to high-agency individuals that could supply that information. These two factors (interest in and information on the long-term aspects) then worked to undermine the interest in short-term gains (STEG) and to build a critical attitude towards the company promises.
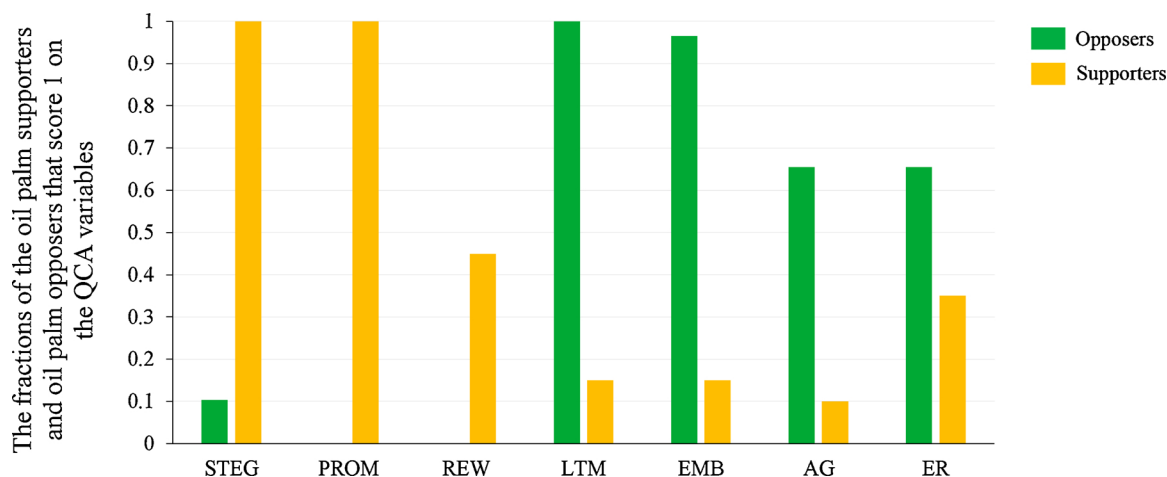
Fig. 2. The fractions of the oil palm opposers and the oil palm supporters that score 1 on the seven QCA variables. STEG = Short-term economic gain. PROM = Belief in the promises of short-term economic gain. REW = Appreciation of rewards. LTM = Long-term security motives. EMB = Embeddedness. AG = Agency capacity. ER = Economic resilience.

5. Discussion and Conclusion

In the foregoing we have seen that, structured by an inductive methodological framework and sensitizing concepts, our interviews and QCA analysis have unearthed some basic patterns in the crucial and irreversible decision to give up the village land to be converted to oil palm plantations. This basic pattern is that support of the oil palm correlates with high appreciation of and belief in the oil palm companies' promises and with a mixture of low economic resilience, low agency, low embeddedness and little care for long-term consequences. The reverse respondent characteristics correlate with opposition to land conversion. We also found important exceptions however, in particular that respondents that were highly embedded in their community and traditions opposed the oil palm even if they have low economic resilience and agency capacity.

The data allow for a further interpretation of the QCA pattern. We start out however with a methodological reflection.

5.1. Representativeness

Being a non-statistical approach, QCA focuses fully on patterns within the dataset (sample) and does not generate statements (e.g. with levels of significance or confidence) on the population as a whole. The representativeness of the findings, therefore, must be reflected upon outside the QCA proper.

On the level of our four villages, we think that our sampling method (snowball sampling controlling for almost equal numbers of opposers and supporters, men and women, until saturation was reached in terms of motivational and agency indicators) has guaranteed a good level of confidence of qualitative representativeness for the villages as a whole. With this we mean that with this sample, basically the full pattern of causes and outcomes in the villages has been uncovered. Glaser and Strauss (1967) refer to sampling for qualitative representativeness as 'theoretical sampling', which, as explained in depth by Gobo (2004), aims at 'generalization about the nature of a process'. This then is different from quantitative, distributional representativeness; we do not claim that the *distribution* of the variables in the sample (e.g. 20 respondents pro and 29 against the oil palm; 26 respondents with high resilience and 23 with low) represents these variables' distribution in the villages.

A similar reasoning holds for representativeness on the level of the wider region. Though obviously with less certainty than with respect to the study villages, we think that patterns found in the QCA truth table also hold significant insights into people's responses to the oil palm offers in Kalimantan as a whole. But on this level too, this claim is different from distributional representativeness. Due to our selection of respondents, our data do not say anything about the opposers/supporters distribution in the district or Kalimantan as a whole.[3]

5.2. Wishful thinking, economic arguments and economic resilience

A first interpretative step beyond what emerged already from the QCA is based on that, as Table 4 shows, the appreciation of short-term benefits (STEG) and belief of the company promises (PROM) almost fully coincide; a 1 on STEG always means a 1 on PROM, and the reverse. We may assume causal direction here. If people very strongly appreciate something that is being promised, they will tend to believe in the promise, thus attuning belief to desire, *cf.* the case of wishful thinking in Elster (1989, p.31); see also (Sherman and Cohen, 2002; Sherman et al., 2006). In our case, the STEG → PROM relationship was indeed so strong that people who highly appreciated the promises turned a blind eye to the realities on the oil palm plantations, even if at the time of the research respondents had an example of a working oil palm plantation at only 15 km away. The truth table also shows the decisive function of the STEG and PROM factors. If people appreciated and believed the economic oil palm promise, they were invariably supporting the conversion of their community's land oil palm plantations.

This result resonates with findings of Feintrenie et al. (2010), Levang et al. (2016) and Langston et al. (2017) that all agree on the overriding importance of economic reasoning in people's decision for the oil palm. In our analysis, this comes forward as the hundred percent association of the PROM, STEG and Outcome variables. Additional to the just cited literature however, we see that these variables may also work against the oil palm, since many respondents, while living in the same villages as the supporters of the oil palm, held that PROM and STEG were in fact negative and therefore rejected the oil palm (Cluster C in Table 4). The characteristics of these respondents were not that they were economically more resilient than the supporters of the oil palm; both the supporters and the opposers groups have members with high and low ER. In other words, in spite of the importance of economic desires, we do not find that the economically less resilient people had stronger desires than the better-off. We do not find a 'poverty/deforestation nexus' as discussed in deforestation literature (Arnold and Bird, 1999; Atmadja and Sills, 2006).

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[3] From other sources such as Potter (2009), Morgan (2017), and Li (2018), we do know that in spite of massive expansion of the oil palm in Kalimantan, many inhabitants disagreed. Often, these voices were lost in later community-level decisions, and even when communities initially refused the oil palm, many of them were threatened, tricked or forced into giving up their land at a later stage.

Rather, the data points at a quite different underlying mechanism. We conclude that our data suggest the existence of an embeddedness/ rejection nexus, additional to the overall focus on economic aspects that was already found in preceding studies. The fact that this relationship has not been uncovered yet by previous research may be sought in two directions: (1) embeddedness is much more difficult to measure than economic phenomena, especially in research that employs relatively shallow methods such as questionnaires or statistical data; and (2) much literature shares the unspoken assumption that economically less resilient people are only busy surviving on the short term and not busy living. It seems more appropriate to assume that also these people have strong desires to be live a meaningful life and be connected to community, enabling that meaningfulness. In terms of our sensitizing concepts, we conclude that perspectives of economically less resilient people are not only hedonic, but also eudaimonic (Nussbaum and Sen, 1993; Sen, 1999, 2009; Schlosberg and Carruthers, 2010 Edwards et al., 2016).

Looking at this conclusion from a viewpoint of policy making (e.g., McCarthy and Cramb, 2009), we may note that work on better regulation of the oil palm and improving the economics of forest-based livelihoods are not the only avenues to help Kalimantan develop in a more balanced manner than through a single monoculture, and help save its globally important rainforest. Our findings add to this that informing people on the long-term aspects of the conversion and helping people to remain connected to community and cherish local traditions, which also means protecting them against the hedonic and individualistic visions inherent in neo-liberal ideologies, may be just as important.

Declaration of Competing Interest

None.

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