The Role of Middle Actors on Land Use Policy: A Case Study in Central Kalimantan, Indonesia

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The Role of Middle Actors on Land Use Policy: A Case Study in Central Kalimantan, Indonesia

Abstract: This study applies Parag and Janda's (2014) 'middle-out' analytical perspective as a complementing alternative to the dichotomous options of top-down vs bottom-up strategies of environmental management. It further develops the framework by applying it to a new context of land management and environmental change. Using a case study approach, we explore influences from both internal and external middle actors, utilizing qualitative empirical evidence and incorporating responses across 25 village households and 11 key stakeholders in Central Kalimantan, Indonesia. We demonstrate middle actors' unique capabilities and their criticality to change due to their influence across various levels of decision-making and commons governance. We posit that existing frameworks may misidentify the 'bottom' as 'middle,' raising questions about traditional development and livelihood discourse, strategies, and support. Recommendations include that current policy preconceptions be reevaluated to engage middle actors in locally-adapted, integrative manners to improve governance and rural development more broadly.

Introduction

Background: Land Use in Kalimantan

Since the late 1990s, Indonesia has transitioned to a near-traditional western democracy and is hailed by the World Bank as 'one of Asia Pacific's most vibrant democracies' (World Bank Group, 2015), but effective governance remains challenging. The country is geographically disparate and ethnically diverse with myriad problems that typically accompany developing countries, including corruption, limited institutional capacity, and ecological damage (Barber, 2002). During the Suharto regime (1967-1998), mismanagement of land and forest resources, exploitation by mining and logging, and increasing pressures of a growing population put the forests throughout the Indonesian archipelago under strain.

The island of Borneo has long held a certain mystique in the Global North. Shared by Indonesia, Malaysia, and Brunei, it is symbolic as one of the last frontiers of global wilderness. But today's reality is very different from that perception. Kalimantan, as Indonesian Borneo is called, represents 73% of the island's landmass and has been subject to massive exploitation of natural resources (MacKinnon, 1997). Human disturbance of its forest has occurred since the 1970s (Barber, 2002), resulting in significant environmental change; severe deforestation and degradation from legal and illegal logging, mining, adaptation of land for oil palm plantations, and massive forest fires resulting from the purposeful draining of peat-swamps (Nugroho, 2018; Suwarno et al., 2015). This was due in great part to government mismanagement (Galudra et al., 2011), resulting in systemic failures in long-term land use management strategies (Hirano et al., 2007). Compounding the disruption of sensitive and diverse ecological systems and indigenous ways of life, the government's centralized, top-down management system did not recognize the land rights of local indigenous peoples living in much of the forest

(Hidayat, 2016), including the Dayak of Kalimantan who lost traditional agricultural knowledge, local land management practices, and much of their way of life (Barber, 2002). Moreover, their socioeconomic structures relied on intact socioecological systems resulted in significant deterioration of the region's already subsistence-level poverty (Hidayat, 2016). Retrospectively, most land use decision-making and environmental management policies of the era were viewed to be 'wholly a failure' (Limin & Ermiasi, 2007).

The Middle-Out Perspective

Development and environmental management policies for decades have centered around top-down policy approaches, emphasizing a centralized, widely disseminated approach (Honig, 2018; Swantz, 1986). Bottom-up policies, emphasizing more localized and regionally-specific actions, have increasingly been employed as a more effective mechanism (Carter, 2003; Raworth, 2018; Yaylacı & Düzgün, 2017). At least in theory, by incorporating ground-based perspectives and increasing the agency and capacity of local actors, the bottom-up approach leverages more precisely-designed projects to realize better results (Crescenzi & Rodríguez-Pose, 2011).

While tension exists between the two bipolar approaches, more recent literature calls for adaptive methods, effectively combining the two types of policies (Ostrom, 1990; Ostrom et al., 2015). Ostrom's seminal Eight Design Principles do this through a nesting structure; her broader 'multi-scale' approach is another combined structure providing agency at multiple levels (Ostrom, 2011). Similarly, Crescenzi and Rodriguez-Pose's (2011, p.774) 'integrated framework' presents a combined perspective, presenting an aggregated approach to economic development and governance management. This intends to combine the various perspective levels into one operational system, providing an 'understanding of "real-world" innovation.'

Although they recognize a structural alternative to top-down and bottom-up per se, these perspectives do not necessarily prioritize a conceptual middle as possessing inherent agency or capacity. The middle is instead presented as passive, squeezed on all sides. These frameworks more guide the actions of top and bottom actors than identify a specific space between (Forsyth and Johnson, 2014); they do not clearly identify the middle as equally important or sufficiently explore whether the 'bottom' is actually grass-roots or if it could be more accurately described as the 'middle.'

This study does just that. It is aimed at understanding the spatial structure of Indonesia's forest governance as a means to identify methods of improvement. More specifically, it uses a case study approach based on environmental, economic, and social factors to apply the 'Middle-Out Perspective' (MOP) (Parag & Janda, 2014) in a new context to answer this overarching thematic question:

How do middle actors (MAs) influence local land use and livelihood capacity, as well as the associated governance and decision-making in the context of environmental change?

To address the question, this study was designed to generate data informing the following more granular queries:

- Within Central Kalimantan, who and what are the external and internal influences on the village of Anjir Kalampan within the MOP?

- What influences drive institutional and individual efforts on land use and livelihood capacity, as measured by agency, knowledge/motivation, and capacity?

- Are there policy conclusions that can be drawn from the observations?

Based on literature searches and personal communication with the original authors, the MOP has not before been used outside its original field of sociotechnical transitions of energy systems. This study is the first to adapt the MOP within a new context.

Researching 'The Middle' and Expanding the Framework

Parag and Janda first introduced the formally conceptualized 'middle-out' environmental governance in 2010 in exploring low-carbon energy source transitions and technologies in the Global North. They presented it as a complementary alternative to traditional policy designs and frameworks accompanying binary top-down vs bottom-up perspectives, as processes of change are generally reduced to simplistic layers both within policy circles and more generally (Parag & Janda, 2010b).

They plainly identified the MOP framework as applicable to other 'social and social-technical transition areas' outside the original application (Parag & Janda, 2014), enabling application to development, livelihood and economic strategies, agricultural practices, and both environmental management and land use decisions in Central Kalimantan (Source: personal communication, Janda, 2018), some of which are noted in the literature (Kim et al., 2016; Fisher et al., 2017; Marcot et al., 2012).

At the heart of the framework is the observation of a pervasive binary 'underlying assumption' that any alterations to system functions or changes in overall outcome will stem from one of two sources: the 'top' or 'bottom.' As shown in Figure 1, the 'top down' flows or pushes downwards and the 'bottom up' counters that with the reverse.

[Figure 1 near here]

At a basic level, the MOP differs from other binary systems by acknowledging the general presence of a commonly overlooked third space in-between the top and bottom**.** Actions by middle actors have significant effects on a system; they can and do have as much or more kinetic systemic influence than changes initiated from system ends, such as institutionalized government policies ('top') or citizen-led action ('bottom'). This takes place via entities occupying 'the middle,' such as corporations, religious congregations, or entrepreneurs making medium-scale purchasing decisions (Parag &

Janda, 2014). More specifically, the MOP notes that while being the 'intermediary' of the top-down and bottom-up influences that pass through it, the middle also possesses its own agency and space, itself influencing 'upstream,' 'downstream,' and 'sideways,' with the last indicating lateral movement and influence such as one MA influencing another MA. In rejecting simplistic bipolar approaches, the MOP emphasizes the value of the meeting point between dichotomized approaches. The best example of an active system participant within this study is the role of the palm oil company. Not only do they fall between 'top' and 'bottom' actors, but also palm oil companies within Indonesia heavily influence decisions over land use, policy, and politics.

While Parag and Janda did not invent the middle space or actors that operate within per se, their work identifying and unpacking the distinction of this unique space and its associated actors creates a valuable lens through which to understand the complexities of policy development, implementation, and efficacy. While the MOP was originally built to explore changes in sociotechnical energy systems and the roles of MAs there, this study applies it to a new framework in order to address its own research questions.

Despite a lack of other frameworks, 'intermediaries' as a concept and their influence over a range of sociotechnical and socioecological systems has been recognized separately, albeit operating indistinctively from the 'top' or 'bottom' (Corbera et al., 2007; Davis et al., 2014; Pham et al., 2010). Here exists a difference in language and terminology: is 'intermediary' distinct from or comparable to 'middle actor' (Janda, 2018)? Some literature qualifies distinct types of intermediaries, but Parag and Janda detailed a qualifiable difference between the two terms, contending they differ in level of agency, relative self-interest, and existence of an agenda, positive or otherwise. Fisher maintains the difference is irrelevant from a practical perspective, however (source:

personal correspondence). While acknowledging the value of Parag and Janda's bundling

preferences, this study notes that both MAs and intermediaries occupy and act within the

middle space. For the purposes of this study, a MA is one that operates within the middle

space, either actively or passively and regardless of positive, neutral, or nefarious aims.

As a result, the authors group 'intermediaries' as 'middle actors.' To be clear, this MA

category includes but is not limited to NGOs, private researchers, palm oil companies,

village elites, and community groups.

As Central Kalimantan is an area of 'social and social-technical transition,' this

study focuses on the adaption of the MOP to this new area via a more development-

oriented perspective, broadly relying on Parag and Janda's (2014) definition of MAs.

Parag and Janda focus on agency and capacity as two variables within the MOP, defined

as 'the willingness and ability of actors to make their own free choices.' They then

analyze 'the ability of actors to execute or perform' these choices, respectively, and the

extent to which MAs are able to affect them (Parag & Janda, 2014). As they note, MAs

are uniquely positioned to enact change due to their innate agency and capacity.

[Figure 2 near here]

Figure 2 represents the middle-out framework differently from Figure 1, removing

the directional forces of action, focusing entirely on the respective levels of agency vs

capacity, visualizing Top, Middle, and Bottom actors on an X-Y axis. Top-level actors

have significant capacity to design and carry out directives, such as Suharto's Mega-Rice

Project (MRP), but often have little agency to effectively implement policies given on-

the-ground realities or to provide specific guidance to bottom actors, who may or may

not be receptive to top-down directives. Bottom actors, on the other hand, have

significantly more agency, as they are more in tune with realities on the ground and can

more often determine actions of greater impact. Yet they are often limited in capacity, such as in manpower, time, and scale (Brown & Westaway, 2011).

MAs therefore can occupy the best of both worlds, as illustrated in Figure 2 having reasonably significant capacity through their 'middle-ness' while possessing the ability to leverage connections into the top and the bottom, thereby enabling potential agency and capacity increases within either of the other two levels. This is not to say that MAs cannot be weak, however. Parag and Janda (2010a) allow for the contextually dependent possibility of MAs and middle space to lack significant agency or capacity and be less influential than the top and bottom.

This study considers forest regeneration and the promotion and adoption of sustainable agricultural practices within the case study area as behavioral and policy adaptations to environmental change broadly comparable to the MOP's original context of low-carbon energy transitions, due to shifts in both physical tools and conceptual understanding required for associated action. It considers the extent to which MAs fit the model of having more or less capacity and agency than top or bottom entities. In adapting the MOP framework to this context, the study considers its same two variables of agency and capacity, and assesses the extent to which entities at various levels affect entities on other levels. It adapts the variables' definitions to be substantially synonymous yet more specific for this context: 1) motivation and knowledge to make the change (agency), and 2) capability to make the change (capacity).

Methodology and site selection

A few years before the regime's collapse in 1998, Indonesia's President Suharto initiated the MRP in Central Kalimantan in 1995. The project's aim was to develop Kalimantan from 'unproductive' peat-swamp forests to the country's new 'rice basket' through

converting over one million hectares to rice production via the construction of drainage

canals (Sabiham, 2004). In theory, the MRP would increase Indonesia's agricultural and

economic productivity and enable the redistribution of Java's overcrowded population

through forced transmigration (Galudra et al., 2011; van der Meer & Ibie, 2008). But the

planned Javanese-style of irrigated rice growing was incompatible with the peat-swamp

forest land even when cleared, due to its inherent anoxic state and low levels of soil

nutrients (Warren et al., 2017). Moreover, the 6,000 kilometers of canals dug for draining

swamps and transportation led to serious degradation and drying of the peat-swamps.

This in turn made the cleared and dried peat-swamps highly susceptible to fire (Goldstein,

2016).

In 1997, Central Kalimantan and the broader region experienced a strong El Niño

Southern Oscillation (ENSO) cycle (Goldstein, 2016) amidst already low water levels

(Boehm & Siegert, 2001). With its protective forest cover removed and peat-swamps

drained due to the MRP, the region succumbed to the threat; fires used to clear land for

the MRP spread underground into the dried peat and to nearby primary forest (Galudra et

al., 2011). The immediate result was localized famine (Boehm & Siegert, 2001); the long-

term result is still present with semi-permanently damaged ecological systems, occasional

fires as a result of weakened resiliance, and diminished livelihood capacity of local

peoples (Goldstein, 2016).

[Figure 3 near here]

In 2007, following several changes in government leadership, Indonesia's

Yudhoyono administration initiated the Ex-Mega Rice Project (EMRP) in the same area,

attempting to restore the region's heavily degraded forest (Hirano et al., 2007). The new

objective was to improve livelihood capacities of the dozens of towns and hundreds of

local villages negatively affected by the project, home to 350,000 people, as well as

initiate systemic ecological restoration (van der Meer & Ibie, 2008). The EMRP identified 227 villages occupying the region of and negatively affected by the MRP. One of those villages is Anjir Kalampan – the site of this case study.

[Figure 4 near here]

The following background of Anjir Kalampan is based on empirical evidence collected during this study. A small village of ~650 households, it is located along a 40m canal connecting the major Kahayan and Kapuas Rivers running North to South on the island of Borneo. When visited in 2018, Anjir Kalampan was relatively well-developed by regional standards, with road access and reliable electricity. It is and has been a traditionally agriculture-oriented village; until the MRP, the village was predominantly engaged in subsistence farming, including rice variants and techniques specific to the local ecological system. Additional activities included timber and Non-Timber Forest Product (NTFP) production through the 1970s, until the village began significantly developing, clearing most of the original forest for infrastructure needs. Then too, however, the village relied on subsistence farming, selling extra rice as it was available.

As one of the 227 villages identified by the EMRP, the village enjoys a close relationship with the region's forest management unit (*Kesatuan Pengelolaan Hutan Lindung* or KPHL) and is working to establish a community forest (*Hutan Kemasyarakatan* or HKm) that will enable it to obtain land rights to 150 hectares of degenerated forest. Expected to be approved by 2020, the HKm will be the first such forest concession in the region, used as a pilot program by the KPHL for forest regeneration, sustainable agroforestry, and adaptive land management. Anjir Kalampan also possesses an active local government with a Village Chief of significant political influence.

Anjir Kalampan was selected as the case study location based on specific characteristics supportive of applying the MOP structure, from feasibility to novelty of concept: 1) Physical accessibility, 2) High level of ecological degradation requiring intervention (Ex-Mega Rice Project territory status), 3) High likelihood of future intervention (the pending HKm pilot), and 4) Limited existing documentation (the village is heretofore undocumented within English academic literature). Together, these requirements resulted in a case study location that was accessible, of notable academic and industrial interest, and provided supporting contacts and infrastructure for a study on MAs influencing land use decisions amidst environmental change.

Data Collection

This study relies on established social science research methods; it utilizes a case study approach in conjunction with contextual academic literature review. Qualitative research techniques were employed in and around the village of Anjir Kalampan, including excursions to neighboring villages and the larger cities of Kapuas, Palangkarya, and Banjarmasin. A snowball method of study participant recruitment was used, relying on initial contact with the Anjir Kalampan Village Chief, the Director of the KPHL, the Director of the Forestry Department at Universitas Muhammadiyah Palangkaraya.

Following initial data collection, key local MAs were identified as well as local farmers in the village and surrounding region in order to evaluate influences on the village's socioecological system redevelopment efforts. MAs influencing land use and livelihood capacity included members of the local KPHL, the Village Chief, community agricultural groups, the private sector (e.g. palm oil industry entities), academia, independent consultants piloting agroforestry techniques, and regional NGOs. Government employees at various levels of seniority were interviewed as MAs and also considered experts, justified by their interaction with Anjir Kalampan and the

surrounding region. The internet was also identified as a MA, albeit passive based on its influence on agricultural practices and land use decisions of villagers and MAs alike (see Section 'Middle actor influence on agency and capacity'). Empirical data was collected through a multi-month field visit and includes verbal surveys, structured interviews, and semi-structured interviews with local farmers and aforementioned key stakeholders. Field work resulted in survey and interview responses from 47 respondents in 25 households, as well as 11 key stakeholder perspectives. The sample size included perspectives from multiple adult members of the same household in order to capture internal decision-making processes as well as any diverging or complementary information.

Other types of data analysis and collection such as network mapping (Section 'Exploring Social Networks') and review of government reports and grey literature were utilized in a planned effort to achieve data convergence, through data saturation and informational triangulation, including within-subject and between-subject triangulation, cross-research, and cross-method (Newing, 2010).

This was performed by obtaining a sufficient sample size, using methodological variance, and by exploring existing data (Yin, 2009). Data were continually analyzed, with an in-depth examination occurring after the initial sample to determine if additional responses were needed. Conversation results were recorded with their results transcribed and tabulated. Analysis of results used tabulation manipulation and calculations as well as a visual Social Network Analysis (SNA).

Exploring Social Networks

Single-mode SNA was used to explore interactions among actors due to its documentation within the literature as helpful to understanding community structure (Carrington & Scott, 2011; Wasserman & Faust, 1997). SNA visualizes influence via quantified social and political capital (Borgatti et al., 2009), showing the extent to which survey data points

translate into more detailed knowledge-sharing, demonstrating its direct and aggregated effects. By relying on literature support (Carrington & Scott, 2011; Newman & Dale, 2005), this applied SNA helped identify MAs and their influence across the social network of Anjir Kalampan (see Figure 5).

Network analysis allows for the weighting of relationships and marking of multiple relationship types between nodes. Nodes were weighted for betweenness, with connections possessing greater size and negative gravitational pull as a result, visualized by distance from other nodes. Intending to demonstrate not the depth but the breadth of social relationships among study participants, this study used only one layer of contact; a single relationship was selected to link two nodes. This was selected and categorized as the primary relationship between the two individuals, supported by institutional identification such as marriage where possible. This simplifies the visualization and provides additional validation of an actor's category identification. It also mitigates inaccuracy and imprecision; it would be impossible to accurately identify, represent, and weight all relationship types over this study's duration and scope. Lastly, although most nodes are connected to MA influences via family relations, 'Friendship' or 'Neighbor' was an insufficiently general primary relationship definition due to its cultural subjectivity, lack of institutionalization, and limited geographical context.

Results and Discussion

This section addresses the original research question of MA influence by first determining said influence on Anjir Kalampan and then evaluating the subsequent impact on land use and livelihoods through assessed agency and capacity. Unless indicated otherwise, this section refers to collected empirical evidence.

Figure 5's SNA illustrates not only the interconnected nature of most study participants but also the extent of social structure flows through key nodes, later identified

as MAs. Here, their 'middleness' is clearly visible via their connection type (agency) and extent of connection (capacity). Some nodes appear isolated as a result of methodological defining of primary relationship types, though this aligns with findings by Chaudhury et al. (2017) whereby not all selected participants were connected despite a snowball recruitment method.

Table 3 was compiled separately yet complements the SNA visualization and further clarifies the roles of MAs, summarizing their effects upstream, downstream, and sideways from within the village.

[Figure 5 near here]

The MAs are categorized into six groupings, relating to key nodes in the SNA visualization, alongside their associated influences on land use and livelihood capacity within the context of environmental change: leaders of regional NGOs, members of the local KPHL, the Village Chief, faculty at local universities, the internet in general, independent consultants piloting agroforestry techniques, palm oil industry entities, and community agricultural groups. All were contacted for this study.

[Table 3 near here]

Institutionalized Information

One significant challenge to effective environmental and institutional governance is the availability of sufficient and reliable data, including land boundaries, a well-known issue in Kalimantan and throughout Indonesia. This affected levels of knowledge and agency in the case study, from individuals to government-level, and affected land use decisions directly (see Section 'Recommendations and Conclusion').

The Indonesian Government requires each village to possess a clearly-defined map of its own territory that meets modern standards. In practice, however, complete compliance with this regulation is elusive. In the case of Anjir Kalampan as of 2018, there

was no established, GPS-confirmed village border. While Google Maps has the village clearly defined within its data-set, neither the village nor the local KPHL has a clear definition of the village's territory. Anjir Kalampan's only official map is shown in Figure 6. This document is filed in the village office and its 2016 Rencana Pembangunan Jangka Menengah Desa (RPHMDes), the village's five-year development plan submitted to the federal government – is the village's most official and verified document. Such lack of detailed official documentation is often cited as a root cause of land disputes, violent confrontations, and land grabs. Equally challenging is the lack of certifiable information on economic and census-related data. While the village granted the lead author access to its official plans and surveys within the 2016 RPHMDes, there is a common understanding more widely that these results may not be accurate. Not only are data collection procedures not verifiably precise, but also documents submitted to the federal government are a component of what determines the financial allocation of supporting funds on a multi-year basis. This potentially incentivizes inflated data reporting in a governance environment where accuracy is neither expected nor required.

This limited information constrains both capacity and agency within the village, including that of the village chief and community groups. Without defined borders, the village may be unable to receive financial support from the Indonesian national government that predicates some payments on meeting boundary establishment standards, limiting economic capabilities. Additionally, the KPHL will be unable to grant the village a HKm until the boundaries are determined. There is also a risk that without defined and certified borders, both illegal squatters and land grabs from agricultural companies such as palm oil entities may result in the village losing access to land that it could otherwise claim as its own.

[Figure 6 near here]

Land Use Agency and Capacity

To assess agency and capacity in respondents' ability to choose their livelihoods as well as community land use, they were asked about crops they grow, both generally and specifically by name; categories such as 'fruit' or 'vegetable' were formed by the lead author. Figure 7 tracks the number of households growing each crop type, with most households indicating more than one.

[Figure 7 near here]

Two observations here were consistent with village-wide trends:

- Oil palm is not the most prominent crop by number of households. But due to several larger landowners, such as one outlier village resident who has 40+ ha of palm, it is the village's largest crop by area.

- Rubber, local trees like gelam, and fruit are the top three crops grown among study respondents. Trees like rubber and gelam have traditionally been grown in Anjir Kalampan and the surrounding regions for decades and serve as a less ecologically obtrusive and more reliable crop than oil palm.

Study data revealed that although many farmers indicated they had at one point worked in the palm oil industry as laborers (palm oil being the processed end product from the fruit of oil palm trees), such as during the swamp-peat fires of 2011-2015, no household indicated that oil palm labor outside of their own land remained a primary form of income. Additionally, aside from one outlier respondent, all households growing oil palm indicated that they themselves did not plant it. The stories encountered were consistent, with all indicating that a nearby, now-defunct palm oil plant was the origin. The company had approached them with significant money offered for the right to grow and harvest palm on their land. As oil palm is considered within Anjir Kalampan to have

a harvestable life-span of 30 years, the arrangement was expected to yield each farmer

enough annual income to earn more than enough to make ends meet for decades.

However, the company was unable to make its own internal economics work and

closed within 10 years, well before it was able to fulfil its contracts. Farmers who had

leased their land were left with monocultured oil palm occupying their agricultural space.

With many years of harvestable life yet in the crops, and with insufficient financial capital

to clear the land in order to plant another crop, farmers had little choice but to continue

growing palm themselves and find another buyer. Other regional palm oil factories were

happy to purchase their harvest but it was incumbent on the farmers to continue oil palm

production and maintenance. Despite the income, most farmers voiced a sense of

resignation and disappointment at the resulting impact on their land, namely that it was

no longer suitable for wider agricultural production. 'After palm, the land is broken,' said

one farmer. Another claimed: 'Once you grow palm, the land is not good. The only thing

you can use it for is to grow palm.'

Other more entrepreneurial farmers gladly entered the oil palm-growing business

due to its well-established reputation as a reliable cash crop. But most unintentionally

entered a vicious circle that they have been unable to exit, despite an expressed desire to

do so. Overall, this demonstrates that palm oil companies, categorized by this study as

MAs for their presence outside a simple 'top' or 'bottom' categorization, are significant

influences on land use decisions and agency within Anjir Kalampan. It also illustrates

how little capacity the bottom can have on land use decisions.

Middle actor influence on agency and capacity

Figure 8 demonstrates that the influence of family, friends, and neighbors remains a

central component to decision-making on crops, techniques, and land usage generally. It

also shows that villagers cite their chief (43%), palm oil companies (32%), community

groups (17%), and even the internet (11%) as significant influences on their decisions

and as sources of information. This study qualified each as a MA. Other influencers

such as NGOs and other academics weren't indicated by villagers; information obtained

through triangulation confirmed the absence of NGOs and other academics.

[Figure 8 near here]

The internet finding was unexpected, due to the lack of reliable cellphone service

in the village and complete absence of wired internet connectivity. Those who cited the

internet actively travelled a minimum of 15 minutes by motorized transportation to areas

with sufficient cellphone data service and sought out farming information via a search

engine on their mobile phones. Also unexpected was the variety of manners in which the

nearby palm oil factory influenced residents, beyond that detailed in Section 'Land Use

Agency and Capacity'. The outlier farmer with 40+ hectares and the village chief, both

with significant land holdings and significant hectarage of oil palm, cited exacting

instructions delivered from the factory's agricultural specialist as to the specifics of land

tillage, palm tree planting, fertilizer and watering frequencies, and harvesting guidelines.

When asked if they had ever considered agroforestry or intercropping practices, many

farmers growing oil palm cited strict instructions from the palm oil factory to the contrary.

One stated 'The palm factory demands a certain quality of fruit for a high price. They told

us how to grow it to produce that quality, and they buy it at the agreed price. Why would

I do something different?'

Anjir Kalampan's chief is a noted influence within the community, leading the

charge on the community's efforts to secure a HKm and to incorporate agroecology,

agroforestry, silviculture, and other ecologically sustainable practices, techniques he

applies on his own 55 ha of land. These instructions circulate to other small-holder

farmers within the 'friend/neighbor' network as well as within the various community

groups that share tools and supplies stored on his land, extending the influence network, as visualized in the SNA (Figure 5). These findings are important as they demonstrate the influence of MAs on the knowledge and willingness of others to make land use decisions, including what to grow, when, and how.

Local Perceptions of Regional Land Use

Villagers were polled on perceptions of their village, the surrounding socioecological system, and the topic of systemic change. Their responses, noted in Figures 9 and 10, directly informed research questions regarding the internal and external forces on the village. A number of themes became clear, including: 1) Villagers significantly prefer the current socioeconomic conditions when compared to that of their youth, 2) That preference is based on improved economic opportunities in current conditions, and 3) Villagers overwhelmingly favor the concept of ecologically restoring the forest, peatland, and surrounding areas.

[Figure 9 near here]

[Figure 10 near here]

In fact, 100 percent of villagers interviewed for this study responded favorably to the concept of restoring and regenerating non-timber forest (NTF) in the village and surrounding areas. Responses varied on specifics, but all demonstrated an adherence to similar ecological perceptions with a notable understanding of various documented environmental services provided by forests, from improved air, water, and soil to public health and mental health considerations. Common responses are grouped below into Table 4.

[Table 4 near here]

However, farmers were also questioned about their land use decisions and asked what they would grow if provided an additional five or more hectares of land, equating

to roughly 200% increase of existing holdings on average (Figure 11). Despite the consensus on the importance of restoring forest, few respondents indicated they would use this hypothetical land for NTF, instead citing cash crops such as Sengon (paper pulp), rubber, and palm. When asked to explain their reasoning for not including NTF in their response, villagers identified their immediate primary goal was economic returns for themselves and their families. Despite being aware of the benefits of forest and desiring it, economic capital restrictions result in a limited capacity to act despite having the agency to do so.

[Figure 11 near here]

Recommendations and Conclusion

The study set out to determine the extent to which MAs influenced the decision-making process of Anjir Kalampan's residents and to determine the role they played in land use decisions. The results indicate that MAs indeed play a large role, both passively and actively, both directly and indirectly, across a variety of levels of decision-making, perception-shaping, and commons governance.

In locations like Anjir Kalampan where ecological degradation is significant, economic resources for local communities are few, and the government's ability to intervene with effective and positive change is limited, there is significant potential for MAs to act and impact both agency and capacity. Villagers and some MAs may make a point of safeguarding native trees when found growing on their lands, but there is no purposeful reforestation. There is significant agroforestry at play, such as the piloting of forest vanilla on rubber trees and intercropping with fruit trees and vegetables. But the largest territory of crops is occupied by monocultured oil palm and is unlikely to change soon based on recommendations and influence from the palm oil industry. Based on local

comparative perceptions of land use, this study demonstrates a local population's desire to restore forest and operate sustainably while constrained by economic limitations. The key to successful ecological restoration may lie in the implementation of sustainable socioeconomic livelihood improvements first and ecological improvements second.

Top-down development efforts and economic layouts can provide significant capacity to marginalized populations and communities. But as with the MRP, top-down development initiatives have historically provided significant capacity to initiate change but lacked sufficient agency to do so in a positive or effective manner. As an infamously stereotypical example of such top-down initiatives, the MRP struggled with successful implementation due to mismatches of centralized capacity with localized realities of agency on the ground.

Central to the broader conceptual issue is a misrepresentation of the middle space and MAs. The middle space is widely overlooked through bipolar top-bottom frameworks and misunderstood via a miscategorization of the middle space and/or MAs as belonging to the bottom or the top. For example, whereas NGOs are generally classified as MAs, in the case of development work, many NGOs carry out actions on behalf of or in partnership with governments, including at a national scale (as evidenced by Indonesia's EMRP and the involvement of many local and international NGOs). This paper holds that such actions made in association with top-down planning are better categorized in the top than middle.

The perennial binary view is a gross oversimplification of society, development efforts, and the messy reality of life. It discounts the potential benefits of agents acting within the middle, fails to adequately respect the potential negative externalities of MAs, and confuses the successes of actual bottom-up efforts. As shown in the SNA, relationships among various actors in Anjir Kalampan are numerous, complex, and

multivariate. Viewed within the context of the MOP, it is much easier to understand and begin to evaluate direct impacts from MAs than it is in more traditional perspectives.

The internet is also identified by this study as a MA, though passive. Through their thirst for additional knowledge (a key component in increasing agency), villagers accessed the internet through cellphones. There remains a question as to the overall positive or negative nature of this MA due to the internet's myriad unverified information, however. It is as equally possible for the results of this interaction to be beneficial or negative, including subject to manipulation from other actors. Further research is required on both access to and educated digestion of online information within rural Kalimantan.

Spatiality of models and frameworks matters in these evaluations, especially when applying the MOP framework, as Parag and Janda noted. They recognized the subjective nature of 'the middle' and the importance of defining special perspectives (Parag & Janda, 2014). This study applied a wide-angle perspective, considering the breadth of policy and action space among international NGOs, the Indonesian national government, and the indigenous Dayak subsistence farmers in the village of Anjir Kalampan. Within this perspective and spatial model, the Indonesian national government is clearly categorizable as a top-level actor, individual villagers of Anjir Kalampan fit in as bottom-level actors, and provincial-level KPHLs, palm oil companies, and even the village's chief are identified as middle actors. But these categorizations can change, depending on the spatial perspective. Applying a more finitely-focused spatial perspective to the village level alone, villagers remain at the bottom but the village chief becomes a top-level actor.

As explored in Section 'Middle actor influence on agency and capacity,' both agency and capacity are observed within Anjir Kalampan. Within the village, various MAs actively influence upstream, downstream, and sideways, in turn affecting other actors' agency and capacity, visualized in part within the SNA. Understanding these

effects helps to answer the question of MAs' influence on decisions of land use and resulting livelihood capacity in addition to the governance and decision-making processes therein.

Three key points arise in conclusion: First, the study demonstrates that MAs influence local land use decisions and livelihood capacity in a variety of ways and at all scales. From directly influencing crop choice (oil palm), to passively providing access to additional agricultural practice knowledge (the internet), to actively seeking-out and facilitating the creation of the region's first HKm (Village Chief and the KPHL), MAs appear to be the main driving force behind most land use decisions. Not only are they significantly interconnected with other actors, but they often also possess centrality within the broader social network and influence.

Second, the study found Parag and Janda's Middle-Out Perspective well-suited for application in environmental change. While Anjir Kalampan is a small, relatively obscure village in Central Kalimantan, it has provided valuable insights to the ways and methods that MAs influence local community. Third, this study adds value to the literature by demonstrating the influence of MAs on this small portion of Central Kalimantan and by introducing the village to the literature.

Although this study's conclusions and recommendations are informative, other questions arise, including 1) Are there broadly negative middle actor influences experienced in other villages? 2) How does the presence or absence of a MA inside local government impact a village's interaction with external MAs? 3) Can the role of MAs within the resolution of land rights conflicts be more specifically identified? and 4) To what extent are entirely bottom-up development and environmental management approaches extant within Central Kalimantan?

Overall, study recommendations are that the middle space and MAs should be treated as distinct from those at the top and bottom, yet be understood as inextricably interconnected. This study offers an expansion of the discussion surrounding development efforts and the MOP; it urges moving past benefactor-related attitudes and a (however unintentional) bias towards noblesse oblige that may color existing interpretations. A first step is acknowledging and understanding the importance and vital role of the middle space and MAs.

General trends supporting bottom-up development is top-led and minimal in scale, resulting in relatively limited success thus far (Annamalai et al., 2016; Wennmann et al., 2010). For scalable success and greater community buy-in, MAs should be leveraged and provided greater agency and capacity in less of a top-down approach and more of a middle-enabler approach. The vast majority of bottom-up approaches will require interaction with, support from, and eventual partnership with MAs. While bottom-up initiatives are not rare, they are likely far less common than generally recognized due to the inherent interaction with additional levels within social networks.

A final response to this study's research question is the provision of policy implications supported by its findings. 'The middle' is a very active place; where top-down and bottom-up policies may not be well spatially constructed or inclusive, this study shows a need for environmental management policies to incorporate this space and its actors as influencers, enablers, and informants. Further, this study has shown that MAs vary widely in identity and do not necessarily have positive, negative, or active influences. To improve governance efforts and environmental management policy more broadly, existing preconceptions should be questioned in favor of greater engagement with MAs in a locally-adapted, integrative manner.

Applying the MOP to these land-use decisions and development more broadly builds an arguably more viable framework applicable to research towards these ends than alternatives that attribute less distinctive capability to the middle. Additionally, this expanded framework offers a lens through which to reinterpret and thus better comprehend existing understandings of social and development structures. Past successes may be better understood and replicated through an appropriate reclassification as a 'middle-out success' rather than a truly 'bottom-up' project. This recategorization attributes greater agency and respect to true bottom-up efforts, such as projects that are entirely locally-initiated and led.

Geolocation Information: Research for this manuscript was conducted in the village of Anjir Kalampan, located in the Kapuas Regency of Central Kalimantan, Indonesia.

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Tables

Table 1. Key for Edge Indicators in Figure 5.

Edge Indicator	Meaning
Collaborates	Relationship based on sharing of information, knowledge, and networks in pursuit of a shared goal or partnership on a project
Married	Marriage between two nodes
Access	Relationship based on land or other resource provisioning, such as retrieving a village-owned tractor from a shed
Instructs	Information-imparting or non-employee command imparting relationship, such as between the KPHL and Village Chief
Employee	Employee-employer relationship between nodes
Family	Blood relations between nodes, such as a daughter, brother, or parent relationship

Table 2: Key for Node Color in Figure 5

Node color	Indicator
Red	Village resident
Orange	Village resident who is also a group leader
Light green	KPHL leader or employee
Blue	Independent actors, including academics, NGOs, other experts, and "The Internet" (as a passive actor)
Dark Green	Federal Government entity
Purple	Oil Palm entity

Table 3: Categorizing the direction and extent of MAs' influence within Anjir Kalampan

Middle Actors	Action / Type of Influence		
	Vertical Influence (Up)	*Vertical Influence (Down)*	*Horizontal Influence (Sideways)*
NGOs	Political Influence, Key Informants	Key Informants, Project Implementation, Economic, Facilitator	Key Informants, Economic, Facilitator
KPHL	Key Informants	Project Implementation, Economic, Intermediary	Key Informants, Facilitator
Village Chief	Key Informants, Facilitator	Project Implementation, Intermediary	Key Informants, Facilitator
Academics / Universities / Internet (passive)	Key Informants	Key Informants	Key Informants
Palm Oil Companies	Key Informants, Political Influence, Economic	Economic, Ecological	Economic
Community Groups	Political Influence, Facilitator	Key Informants, Project Implementation, Facilitator, Economic	Key Informants, Project Implementation, Facilitator

Table 4: Described benefits of forest presence, as detailed by villagers in Anjir Kalampan

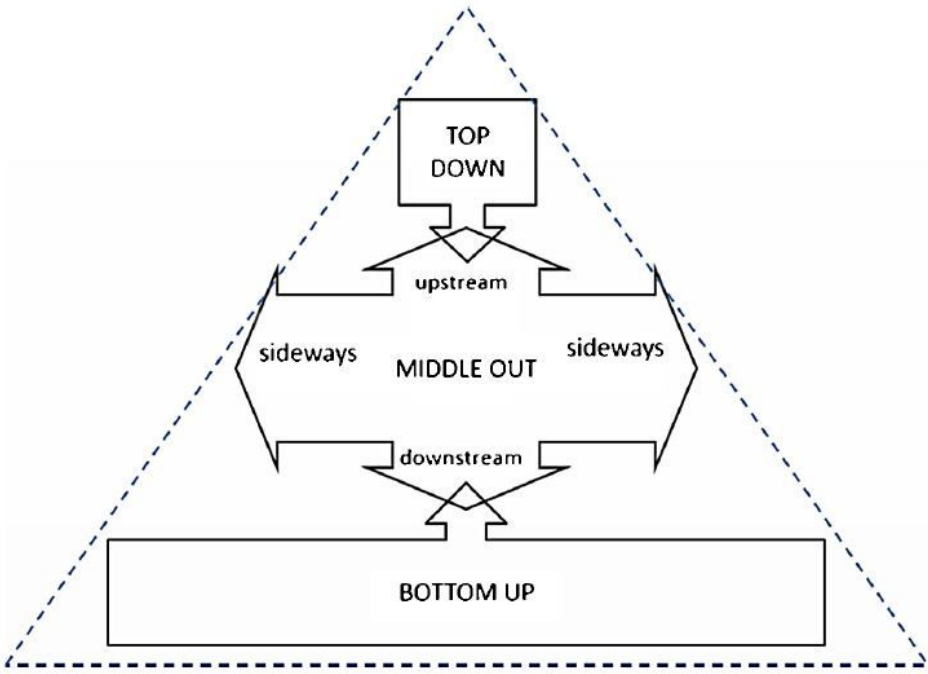| Described benefits of forest (*hutan*) |
|---|
| Cleaner air and water |
| Cooler temperatures |
| Improved soil nutrition |
| Green space |
| Good for health and well-being |
| *Lestari* (translates to "everlasting" or "eternal") |
| Economic resiliance against *rugi* (translates to "loss/failure") |

Figures

Figure 1:

Figure 2:
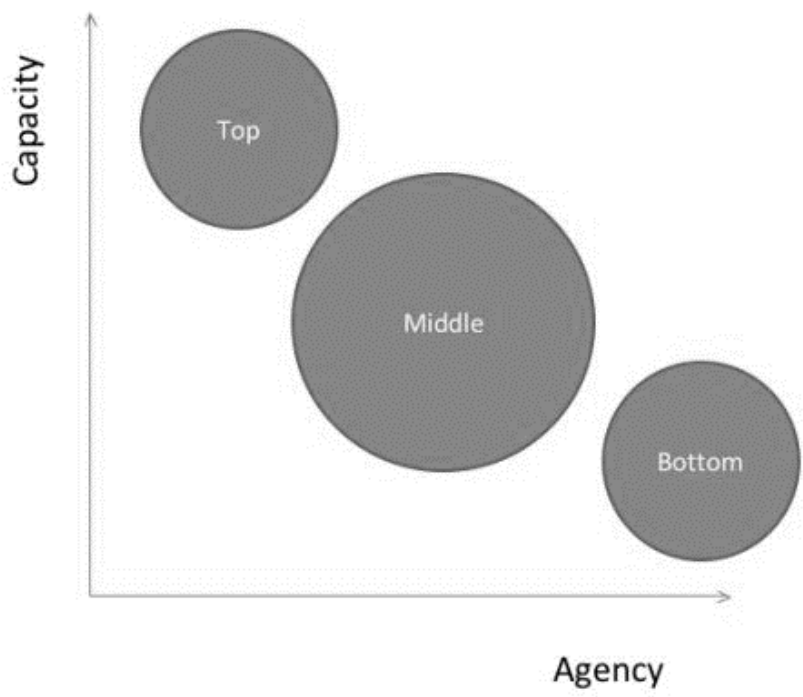
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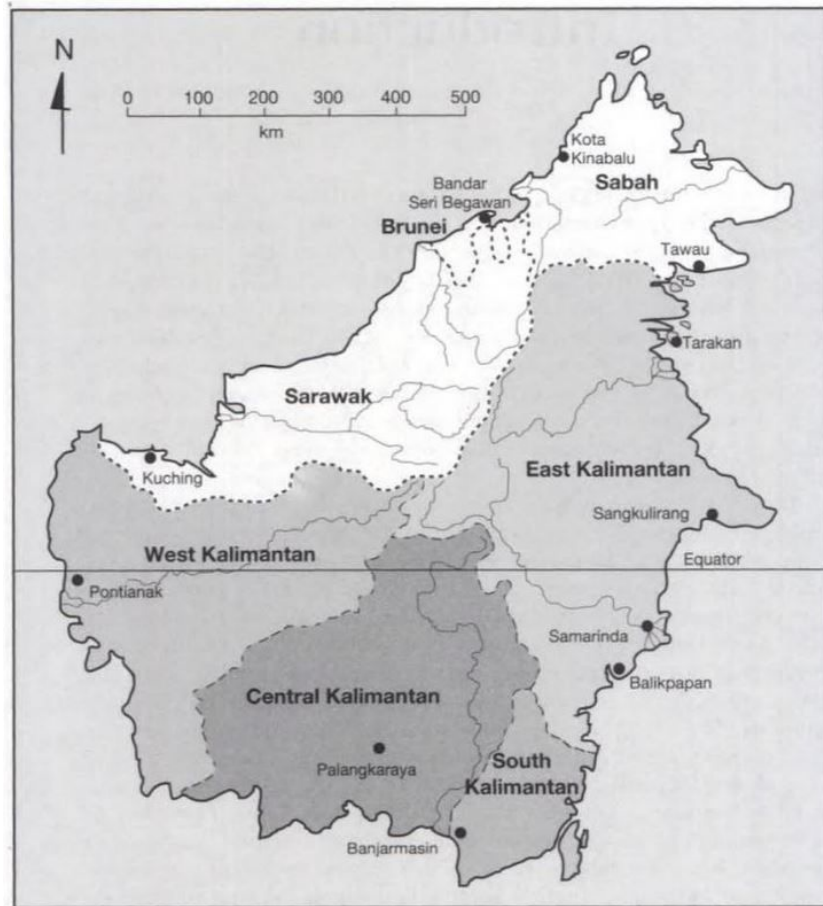
Figure 4:

Figure 5:

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Figure 6:

Figure 7:

Crops

Figure 8:

Learning Method

Figure 9:

Perceptions of Better: Now vs Then

Figure 10:

Evaluative Criteria, Both Positive and Negative

Figure 11:

Preferred Crops if Given More Land
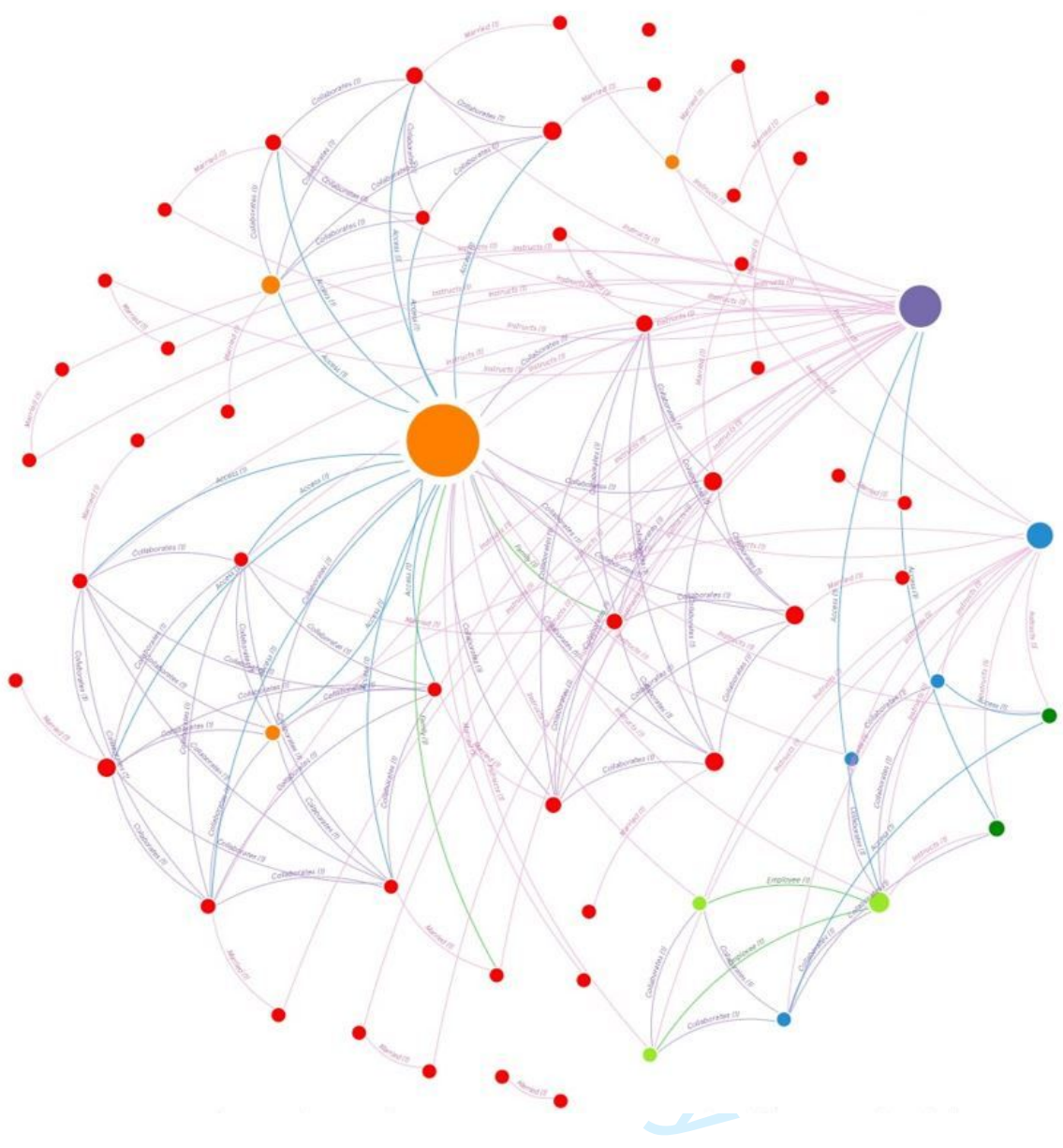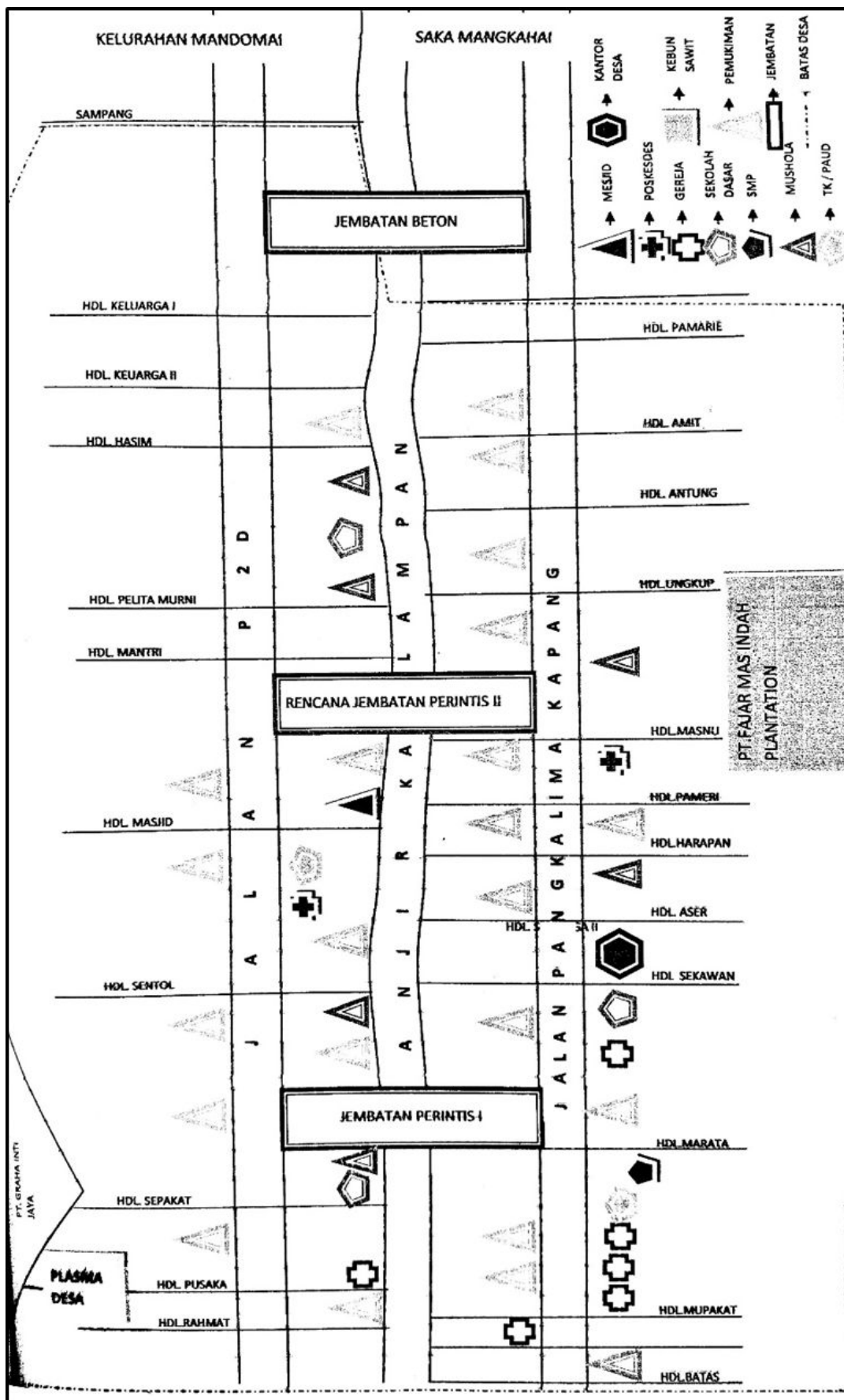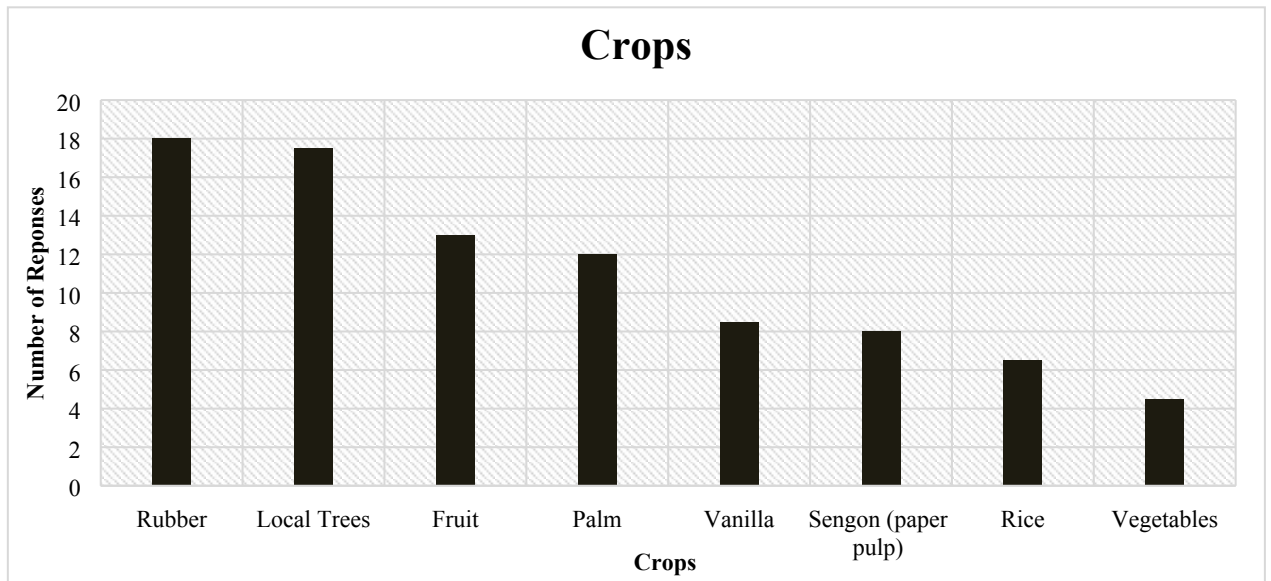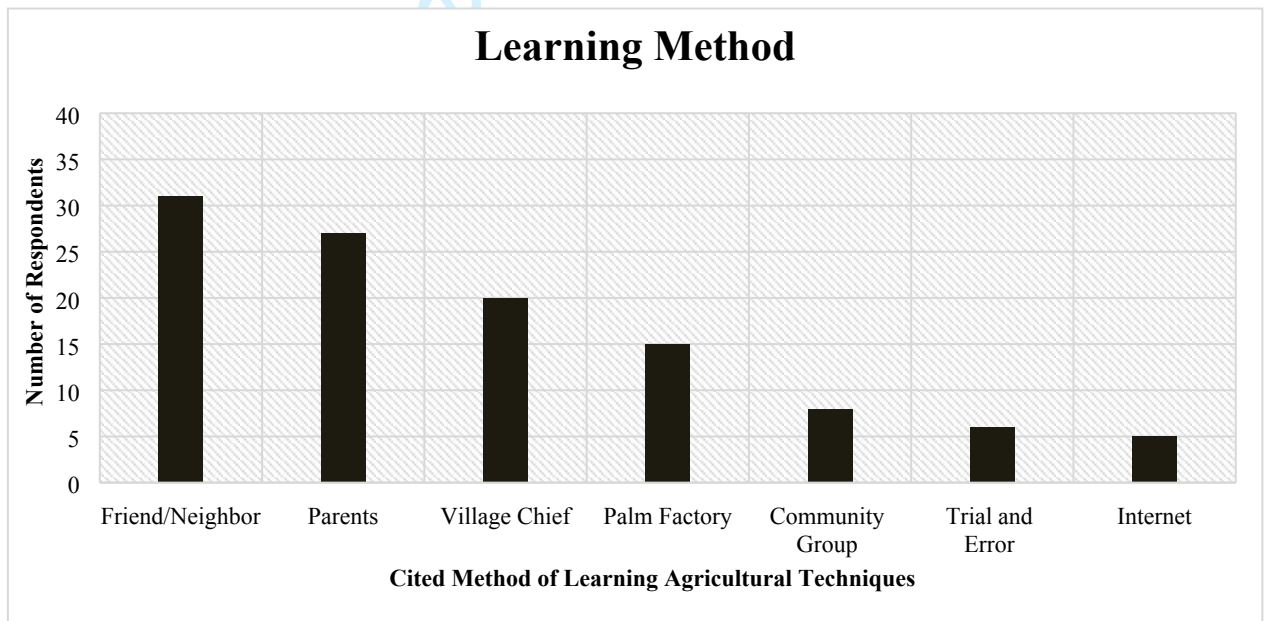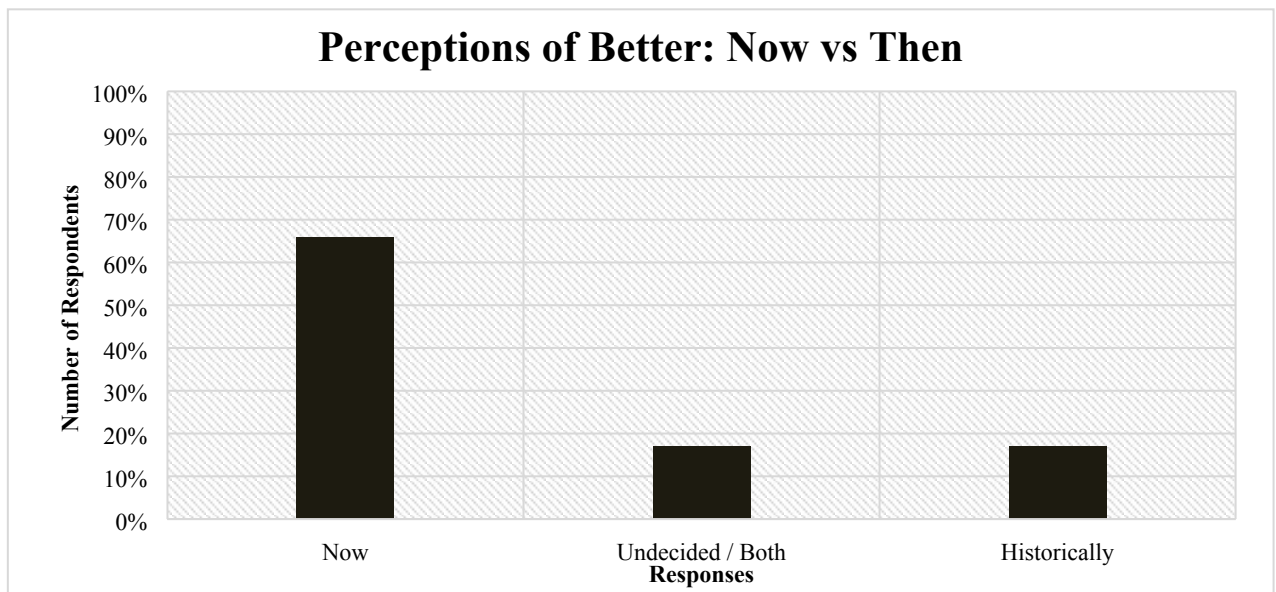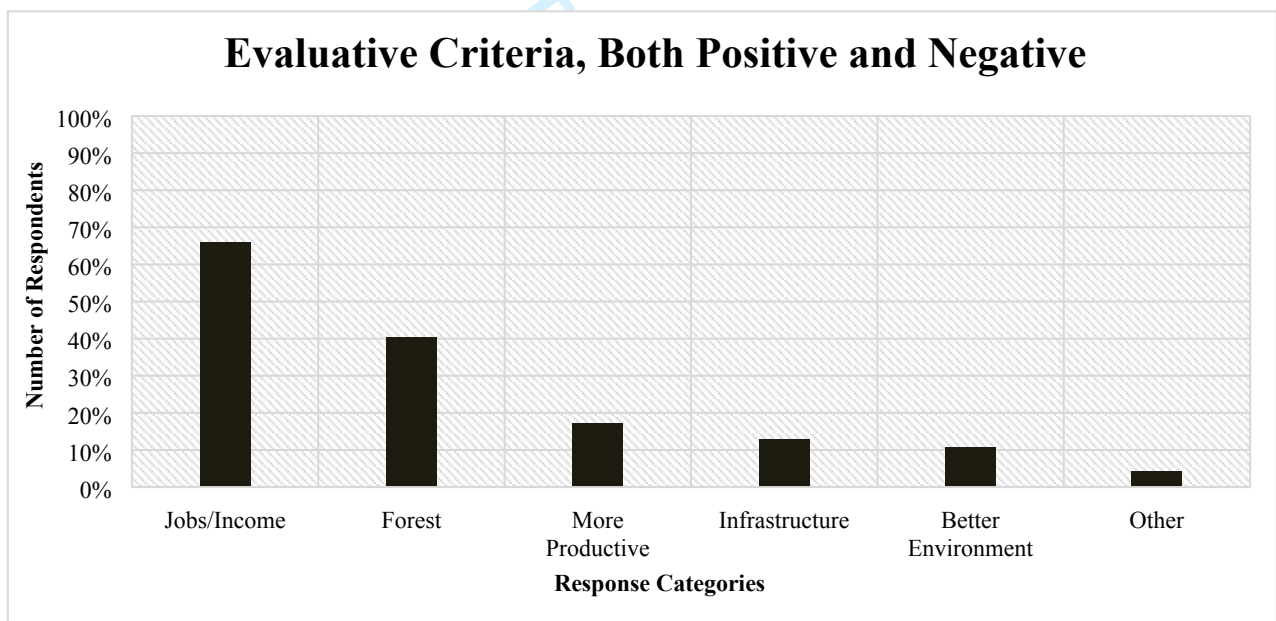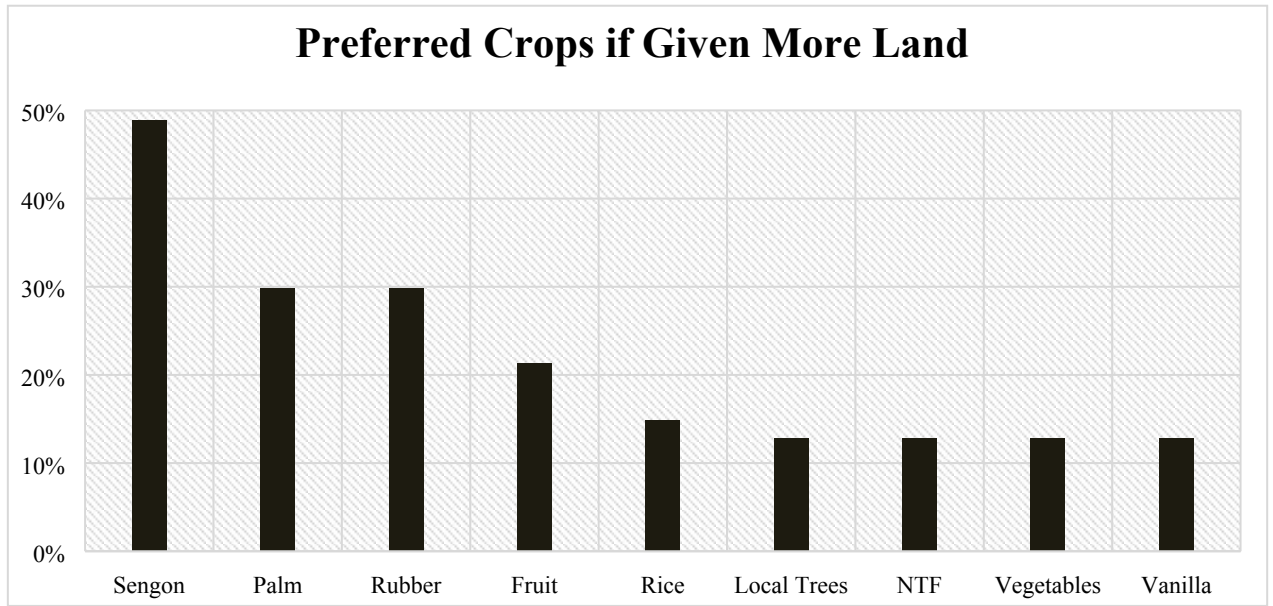
Figure Captions

Figure 1: Parag and Janda's 'Middle-Out' Framework, diagraming the three directional forces of influence. Source: (Parag & Janda, 2014)

Figure 2: Capacity vs. Agency in Governance Direction (Parag & Janda, 2010b)

Figure 3: Political boundaries on the island of Borneo. Malaysia and Brunei claim the north; Indonesia claims the south. (Source: MacKinnon, 1997)

Figure 4: To-scale zoomed map of Anjir Kalampan on the island of Borneo (Source: Google Earth, 2018)

Figure 5: Network Map of Anjir Kalampan respondents, interviewed Middle Actors, identified government officials, and their undirected relationships weighted for relative betweenness

Figure 6: Anjir Kalampan's official map of its territory, detailing the main curvy river channel in the middle, bisected by three bridges, the one access road paralleling the river on the right, and various types of buildings and land usage. (Source: Desa Anjir Kalampan, 2016)

Figure 7: Number of respondents who indicated they currently grew each type of crop

Figure 8: Survey respondents were asked their methods of learning for both agricultural and environmental management techniques

Figure 9: This graph shows survey responses in regards to perceptions of Anjir Kalampan and the status of its forests and natural land. 'Undecided/Both' is defined as unsure or preferring each for different qualities. 'Historically' is defined as the state of the village when growing up, pre-MRP.

Figure 10: In relation to the previous graph, this graph shows the evaluative criteria respondents used to determine their perceptions of whether Anjir Kalampan was better 'Now,' 'Historically,' or 'Both.'

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Figure 11: Percentage of respondents indicating which preferred crop they would cultivate on additional land.