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Acronyms

AF: Agro forest

BBSNP: Barisan Selatan National Park

CF: Community Forest

FAO: Food and Agricultural Organization

FRA: Forest Resource Assessment

FD: Forest Department

HH: Household(s)

HKM: Hutan Kimasyarakatan (Community Forestry Program)

GRNL: Gerakan Nasional Rehabiltasi Hutan Lindung

ICRAF: International Center for Research of Agro forestry

NGO: Non-Governmental Organization

NTFPs: Non-timber Forest Products

PA: Protected Area

PF: Protected Forest

PRA: Participatory Rural Appraisal

IUCN: International Union for Conservation of Nature

UNEP: United Nation Environmental program

WATALA: (Local NGO, in English: Friends for Nature and Environment)

1. Introduction and Study Site: Sukapura

Sukapura village is locatued in the Sumberjaya region in West Lampung Province of Sumatra, Indonesia. Almost 70-80% of the land is occupied by coffee and paddy farms.

Sukapura was officially established as a resettlement village in 1951 by people moving in from West Java during the National Transmigration Program.

The village is divided into 10 hamlet called *"Pemangku's" or "Dusum's"* each with its own Pemangku Chief who reports to the "Pratin" (Head Village Chief). The Pratin and Pemankgu Chiefs are elected by the villagers democratically.

There are 8 visible FD cement posts dividing the village into two zones with around 70% of land being inside PA and the rest 30% being outside PA.

Sukapura is under the Indonesian forest land classification divided into:

a) Protected Area

b) Conservation/Protected Forest and

c) Private land

This division of land was carried out in 1992. The people living inside PA have no tenure right on their residential lands and cultivation land, but people living outside PA have full rights on land. Since 1992 there has been a nonviolent conflict over the tenure issue between FD and villagers.

The study team was attracted to the impact of the boundary. We expected that the boundary construction might have major affect on the HH in Sukapura and secondly that the purpose of the boundary in keeping the PF and PA safe and under government control should have an affect on the forest condition fitting the idea of PF as a natural tropical forest.

What is this affect if there is an affect at all? Does the boundary serve its purpose keeping the conservation of PF? Or are there some compliance issues? And in what way does the division of land affect the HH?

Knowing in advance the changed status of tenure security due to the demarcation of the boundary, this aspect peaked the team's curiosity wondering how the absence of tenure security is understood by and affecting the HH.

These initial motivations and areas of interest led the team to outline the problem statement and related research questions for the study.

2. Problem statement and Research Questions

2.1 Problem statement

What is the impact of the classification of Sukapura land as 'protected forest' on the villagers' livelihood strategies and on the forest?

2.2 Research Questions

- Are there any significant differences in the composition and structure of Natural Forest and Agro Forests in Sukapura? What are the underlying reasons for the differences if any?

- What are the various livelihood strategies and options available for HH in Sukapura? What are the reasons behind these strategies and options?

- How do the HH in Sukapura cope with shocks related to land tenure insecurity? How vulnerable are the HH for uncertain changes in the future?

- What is the understanding and attitude of the Sukapura HH towards PA and PF? Do HH comply with the basic assumption about forest utilizations in PA and PF?

3. Research Design and change of synopsis

Along the project duration, after finalising our draft synopsis (Refer appendix IX), we did some changes in our approach after realising real field situation.

We kept PA issue as one of the core areas of our study and tried to assess the forest system and agroforest system with focus on their tree diversity. Followed by what could be a compromise between these two different forms of forestry in village.

Secondly we assessed the existing livelihood options of villagers. A major change considered for this was to do away with the distinction of people living inside and outside PA for Livelihood considerations, as on field we realised that it was not at all an important

criterion when it comes to coffee farming. Our section of livelihood further develops into the issue of lack of diversification in livelihood strategies in village and through this the vulnerability aspect of HH.

Deriving from the 1st and 2nd research questions and initial discussions with villagers we took up the issue of lack of tenure security due to the PA declaration and how it makes such families more vulnerable to changes. To conclude this chapter we identified some coping mechanism used by villagers in some of the key shocking events in village history. From here our argument flows down to the changes in forest policy as a future threat.
Secondly we also realised that tenure insecurity was perhaps one of the most important issue for villagers, so we included a new research question about Tenure Security.
We introduce the concept of compliance in a second additional research question not developed in the synopsis. Here we tried to analyze and discuss compliance issues of PA rules and regulations in Sukapura.

4. Methods and Methodology: discussions of methods and data

4.1. Household Survey

A survey was conducted with 30 HH selected; 15 HH in Pemangku 5 and 15 HH in Pemangku 7. The Pemangkus were chosen on the criteria of location; they both had representative division of 70 percent of land inside PA and 30 percent land outside PA, representing Sukapura's divided land status.
The Pemangkus were chosen represented the geographical landscape in Sukapura with Pemangku 5 situated near the main road and consisting of flat lowland and Pemangku 7 situated far from the main road consisting of highland. Many possibilities were considered in chose of HH sampling, such as an overall selection of respondent HH situated within or outside PA. We found this to be non-reasonable because the location of the fields are spread over large areas and are not connected with the placement of the HH. Then a random sampling in whole Sukapura was considered, but since the village is quite large and

stretched out with longer distances, we found that Pemangku 5 and Pemangku 7 would be good representatives for the whole of Sukapura.
The questions were broad asking about basic livelihood issues but also covered questions concerning the PA boundary, the HH's use (or no use) of the PF and the HH experience with the FD. This allowed the team to get a broad perspective of the HH livelihood strategies (see appendix X for further question details).

4.1.1 Limitations and advantages

There are methodological restraints in doing a survey since you are required to use predefined categories asking every HH the same questions (Babbie, 2002, p269).
In some cases the questions represented the team's expectation more than the actual conditions in Sukapura,
Presenting an example: Asking if the HH has a successor was asked by the team to understand if there was an expectation that the children would continue the coffee production after their parents. The answer however did not seem to correspond with the team's question when triangulating the data from the survey with HH interviews. 83,33% in the survey answered they had a successor, while nobody in the HH interview, when asked the question in an elaborated form, answered "yes". The HH might have understood the question presented in the survey differently maybe thinking that they had to answer if they had children at all. This is present in the team's analysis of data.
The sheet was translated into Indonesian, which could have changed the categories. This made the questions less transparent to the team, and what was actually asked to HH could have been changed in the translation process without the team's knowledge.
We are aware of the validity problems of 30 HH representing the whole village.

4.2 Interviews

The team focused on semi-structured interviews including 9 households. These were selected based on team observation, information derived from Community Sketch Map and information gained through the survey. The interview guide was divided into 3 main

sections namely; HH history and migration, Livelihood options and strategies and Attitude towards the PF and PF law

We conducted an interview with the Sukapura FD representative asking specifically on the nature of PA and PF regulations and compliance issues with HH. An Interview was carried out with Pemangku 10 chief asking about his task and challenges as Pemangku chief[1]. Furthermore informal interviews were done with Pratin on a number of occasions covering general information about the village structure, PA and PF rules and regulations, "chain of reporting" and FD (see appendix IX for further interview guidelines).

4.2.1 Limitations and advantages

The choice from the team to conduct interviews are the possibilities of: "understanding the perceptions of its (the World's) actors" (Brockington and Sullivan, 2003, p57) –asking in depth, why for example a HH could perceive the PA boundary as limiting their cultivation practices (see appendix V and VI). By interviewing we can ask "why" and "how" and not only getting the numbers of "how many". This was of great importance when understanding the issues of compliance and relation to the FD.

There are however a number of limitations. The language barrier can be of a great importance when conducting interviews with HH, where conversation is mainly in Indonesian. This closed the opportunity of the Team to understand ways of formulating answers and questions; what was actually asked in Indonesian and what was answered? Here the Interpreters played a big part passing information from the Team to the respondents and back again. Unfortunately much information got lost in this process leaving the Team sometimes puzzled and frustrated. Moreover some question were sensible and the answers could be affected thereby; for example asking about forest use and forest dependency, some HH might not be willing to share their practices, since most HH know the illegality of this behaviour (see chapter 8.4).

[1] We will further explain the reasons for choosing Pemangku 10 in Chapter X

4.3 Participant Rural Appraisal (PRA)

The Team carried out 3 PRA exercises namely Timeline, Community Sketch Map and Forest Resource Map (for specific information on the settings and the question asked see appendix IX and for final result see Timeline map 6, Forest Resource map 7 and 8 and Community Sketch map 9).

For the Timeline the team invited 2 elderly ex-Pemangku Chiefs chosen on the background of information from Village Chief. The main criteria was, that they were first generation of settlers in Sukapura, and secondly that they had extensive knowledge about the village structure, so they could share information concerning history of rules and regulations, forest degradation and the emerging of coffee production.

2 Forest Resource Maps were conducted; the first was carried out in Pemangku 7 with one guy and an old man who knew about forest locations provided us with forest information. In the evening we cross checked the map with village head to triangulate the information. The second forest mapping exercise was in Pemangku 10 with a villager living inside a coffee farm in PA, isolated from main village.

Community Sketch Map was carried out in the Village Community Hall stretching over 2 days due to high interest from the participants, wishing to create a detailed map. The participants included a number of government employees; representing different sectors; one working at Watershed and Irrigation Department, 2 working as local teachers, different Pemangku Chiefs, administrative secretaries, the Pratin and other connected to the local administration. We chose to keep the session open inviting all curious and interested people to participate. This meant people were coming and sometimes leaving, not making it able for the team to keep track on the actual numbers of participants.

4.3.1 Limitations and advantages

In community sketch map, it should be noticed that there were not any non-governmental workers among the participants leaving the outdrawing of the map to administrative orientated people (see picture 1), which could affect the outcome of the map. Optimally we would have several maps conducted by different groups in Sukapura to see and analyze the differences. This was however not possible due to time limitations.

In the Forest Resource Map exercises, the process might stand against the basic principle of PRA where we should have sit with a diverse group of people. This however was not possible first due to lack of people available and second only a few villagers knew about specific forest locations.

In general the lack of language abilities delimited the team from following the discussion process; since there were so many participants discussing lively the mapping, the interpreters had no possibility to translate as quickly as the discussions were flowing.

4.4 Participant observation

One of the essences of participant observation is to empathise with the study subjects so as to better understand their way of looking at and interpreting their world (Brockington and Sullivan, table 4.1, p58). Team tried to participate in most of the discussions with zeal and appreciation of their outlook. Sometimes observation was used to crosscheck dubious information. In case of Forest methods, personal observations helped in digging out unseen forest factors. Observation played a major role in semi-structured interviews with selected participants.

4.4.1 Limitations and advantages

Participant observation is a good way of gaining trust and engage in the everyday tasks of the villagers. There is always a balance between 'observing' and 'participating', and in our context, considering the language barrier and limited research time, the emphasis was on the observation. The mentioned factors were constraining us from gaining the best possible results out of this method.

4.5 Forest Vegetation Sampling

We conducted 6 sampling quadrates; 3 in natural forest in Agung PF, and 3 in Ayr Pakuan PF focusing agro forest areas. In Abung PF we selected quadrates on the basis of convenience to work due to highly limiting weather conditions on the day, and the only criterion for this quadrate selection was that it should fall in Sukapura range and should be with no Coffee farms.

In Ayr Pakuan the objective was to look for a Coffee farm which can produce comparable results with natural forests, so instead of selecting some near by visible farms we selected a farm which was located in the outer boundary of Ayr Pakuan PF (resembling terrain conditions). This was an old farm with standing crop of coffee almost 30 year old (for step to step method explanation we refer to appendix IX).

4.5.1 Limitations and advantages in the data conducted by Forest Vegetation Sampling

So few quadrates were insufficient to say anything specific about the vegetation composition but more for an overall picture. They are not at all a representative of the forest in PF and AF, but then they serve our purpose for basic comparison. We ignored small herbs, lianas, epiphytes in inventory and focused only on trees in PF and we did non do any assessment of the coffee plants either, thus the results are tree oriented which is not a good indicator of biodiversity but rather tree diversity.

4.6 Transect walks

To understand the spatial changes over the village and forest landscape in Sukapura the team conducted 5 transect walks. 3 Village walks were conducted to represent non-protected, protected and transition areas from protected to non-protected in village. This yielded good diversity of landscape information from village.

For forest transect walk, the transect for Abung PF , was good, where we walked across a 200 m line dissecting forested hill transversly. Yielding good resuts on tree diversity. Second walk in the Ayr Pakuan agro forest zone was simple.

4.6.1 Limitations and advantages

It was difficult to keep transect as a straight line due to highly variable terrain. Transect selection was random; due to which we might have missed recording some more representative transect areas.

5.1 Analysis: Forest Resource Analysis

Forest area in Sukapura is an interplay of various forms of forestry, occupying different spaces (physical and ecological) and different interpretations (Villager and Government and Advocacy groups). To start this chapter on forest analysis, we would like to focus first on the different forms of forests (see chapter 1) from the point of view of its purpose in Village.

Starting with the basic idea of forest as defined by the Food and Agriculture Organisation (FAO in FRA, 2005), in their terms "*Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use".* This construction of Forest in Sukapura is difficult to see, except in some isolated patches in Protected area[2] hold by government as PF. Rest of the forest in Sukapura has been defined as Agro forest[3] by international groups like ICRAF, dominated by Coffee and sometime pepper as the agriculture crop interspersed with woody trees.

Status of Protected forests (PF Inside Protected Area)

The Abung PF consists of 3 hectares high land (>1500 msl) natural forest area is one of the protected forests in village, it lies almost 5 km from the Pemangku 10 (see forest resource map 2) in North West of Sukapura. This forest is critical for the hydro balance in the region and acts as the last shelter for the animals in the forests.

Description: The high forest is a typical moist tropical forest with tree species of Dipterocarpaceae and Caesalpiniaceae dominating its strata. But as one climbs down non-existence of mother trees and high number of poles makes a transition to secondary forest

[2] As defined by IUCN, "A protected area (PA) is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." In Sukapura declared PA covers almost 70% of village land and forest beyond it, another term used in the analysis is Protected Forest (PF), which is a smaller unit in PA and is a forbidden area for villagers, due to its extreme importance as the only water source in and around village.

[3] ICRAF has defined AF as 'Agroforestry is a collective name for land-use systems and technologies, where woody perennials (trees, shrubs, palms, bamboos,etc.) are deliberately used on the same land management unit as agricultural crops and/or animals, either in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economical interactions between the different components'.

growth in whole area before the complete transition of the forest to agro forests. As shown in the forest profile (see Map 4, Forest Transect in Protected forest of Abung), the crown cover subsequently falls from 90-80% to 40-30% and finally to less than 10% along the slope. Though there was no significant changes in the soil conditions along the slope, the ground vegetation declined significantly; from thick humus cover (fallen leaves and little vegetation) in high land to heavy undergrowth (rattans, ferns and grasses) in secondary patches to almost nothing in the adjoining agro forest. In case of animals, team spotted marks and signs of wild pigs, sun bear and civets along the slope.

Quadrate results

This section will discuss results as three major parameters[4]: Frequency curves for tree species, Basal area per hectare for each species and different diametric classes for species recorded.

The frequency curve (see fig 1) shows that in natural forests of Sukapura, quite a few numbers of tropical species are present. *Shovea laevis* is the most frequently found species and *Caesalpinia sappan* as least frequent one. Other three species except *Cynometra* was also recorded in good numbers. As observed in field the *Shorea laevis* and *Quercus lusitanica* were more abundant in the higher ends of PF and the secondary zone was dominated by other species. In all three quadrates, similar species were recorded.

Shovea laevis are the biggest trees followed by *Alseoclaphne spp*. The Basal area graph (Fig 2) clearly indicates the dominance of these Dipterocarps on over all forest structure. However, the results are more suitable for the high forest areas as in the forest areas near to settlements, Dipterocarps were altogether absent maybe due to selective logging for this valuable species.

More than 65% of trees are of diameter less than 10 cm, which hints towards the secondary nature of a major portion of forest with many pole-staged trees (See Fig 3). Supplementing

[4] These three parameters will help understand the forest make up, especially species composition and structural attributes. Frequency measurement indicates how widely a species is distributed, basal area is an indicator of dominance (largest species in terms of their presence), and diameter classes help visualizing the stratification in forest. We are not calculating Importance Value Index (IVI), as the data collected is too small for this kind of specification.

this data with the personal observation of many small saplings of these species was a sign of high regeneration in this part of PF. We found very less tree in the range of 15-25 cm, as it was evident from the forest structure and some historical information that in this area witnessed rampant deforestation during 80's.This perturbation may be explained by illegal logging although not thoroughly investigated to support the claim but stumps of trees were observed. Interestingly in the highest category of 25-30 cm good number of *Quercus lucitanica* were recorded in the lower sides of PF and few Shorea in Upper part of PF. When asked about the presence of big Javanese oak species the local guide said that this tree is of no importance to villagers so they never cut it.

Figure 1: Frequency curve for tree species in PF of Abung

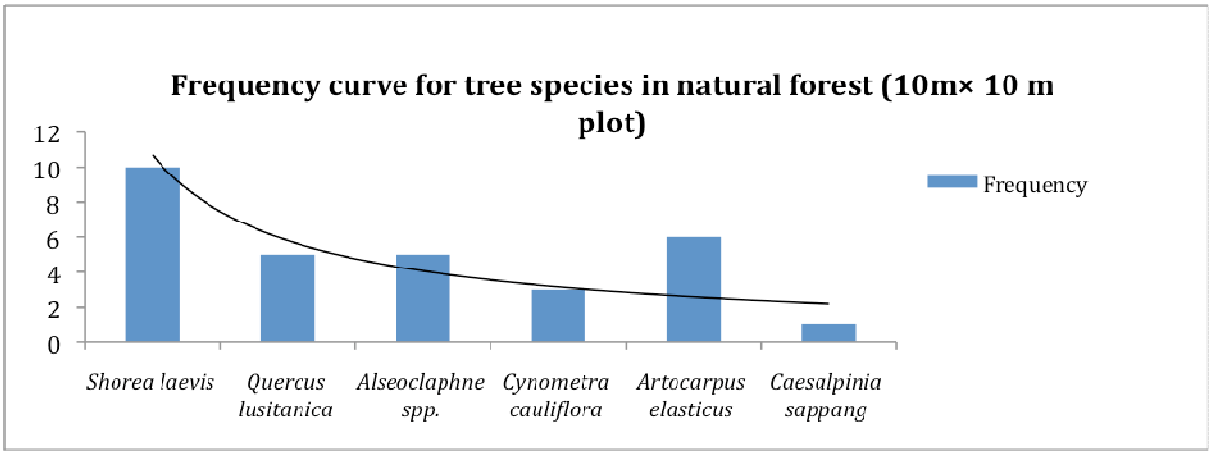


Figure 2: Basal area graph for tree species in PF of Abung

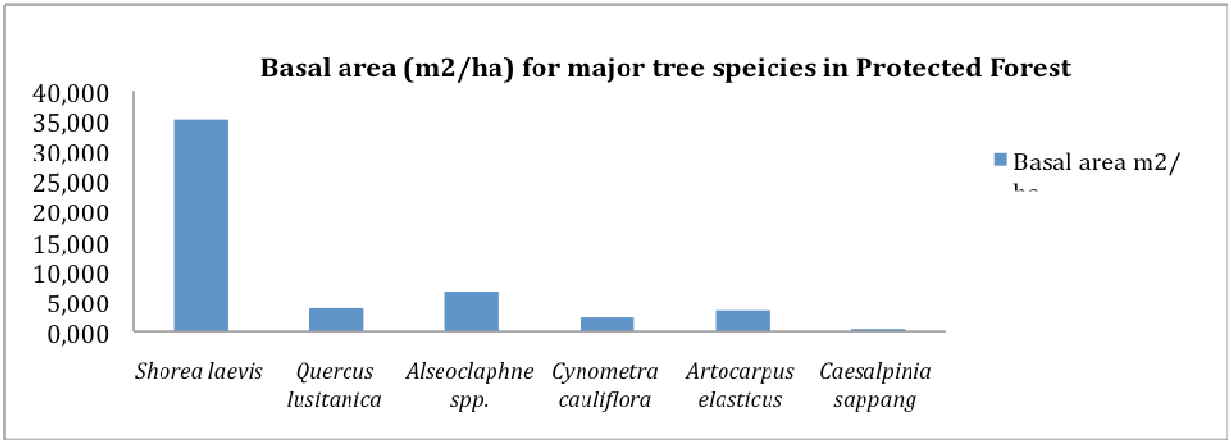
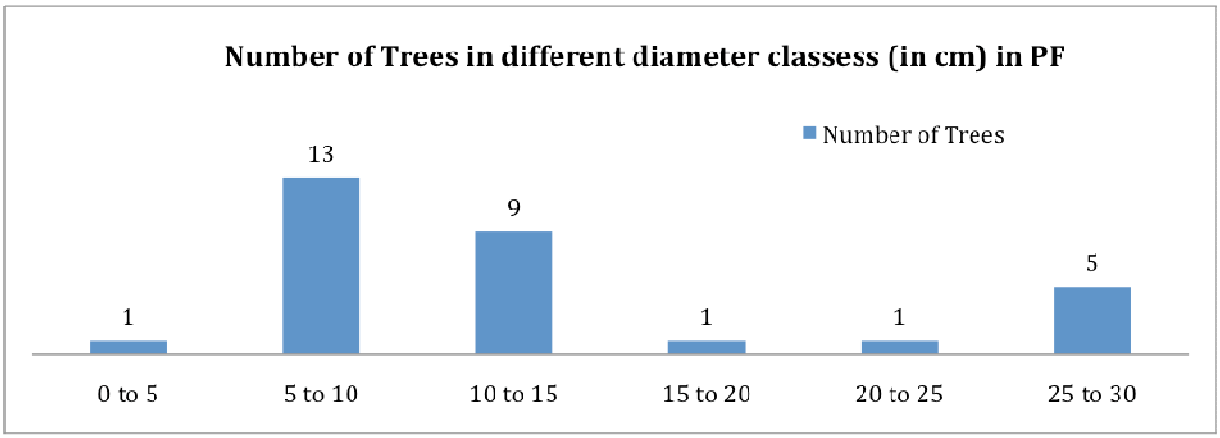


Figure 3: Diameter class distribution of various trees recorded in Protected Forest of Abung



Status of Coffee[5] Agro forests

Ayr Pakun is the PF zone in Pemanku 7. Sukapura surroundings are dotted with coffee agro farms, but majority of continuous farms are situated in Northwest and Northeast sides of Sukapura, which extends up to the designated PF (see forest resource map 7 and 8). Most of the farms are small and are cultivated by village households. The study considers different categories of farms based on their age

Description: The agro forests are generally developed on gentle steep slopes, and are managed extensively to increase production of coffee. The tree crown cover of 5-15%, was recorded in young and middle aged farms but some of the mature farms had almost 30% of tree cover. In most of the farms, in far off location from main highway[6] in village, the ground vegetation was almost absent, so the whole area appeared as red due to exposed soil. Various woody and non-woody fruit species were found in the agro forests around the village but the sampling region had very few trees.

[5] *Coffee canefora vrt robusta*, Mojor variety of coffee from the village, though some plots of *Coffee robinson* and *Coffee arabica* were also seen. A well managed one Hectare Coffee agro forest will have around 2000-3000 coffee plants (depending on the fertility and access to fertilizers) and 200-400 woody trees (mostly fruit trees).

[6] Agroforests near West Bandar lampung Highway and inside village had moderate ground vegetation, due to regular maintenance and monitoring by Forest department, but Farms in the far flung areas were without any undercover. Thus team selected the most dominant form of agroforests as the one in the more inner sides of village.

10m by 10m Quadrates were laid down to assess various forest status parameters following are the results looking at Frequency Curves, Basal Area and Diameter classes

Quadrate results

The frequency curve for the woody species within the Agroforest shows that the Most common species present is *Gliricidia sepium* which is the host plant for other cash crop *Piper nigrum* and is a renowned nitrogen fixer. Other species recorded from this side of village were insignificant in their numbers but significant from the point of view of nutritional requirements of the households. Supplementing this with personal observation, the agroforests with in the main village had more species of fruit trees like those of *Psidium guajava* and *Archidendron pauciflorum.*

The basal area distribution of woody trees within the Agro forest is very interesting as most of the agro forest species are selected after lots of considerations in terms of allowing minimum basal area and the optimum crown cover. Though the sampled agro forest had only *Durio zibethinus* as big trees, taking up relatively bigger areas in a small plot, but the villagers never complained about them as they provide much sort after fruits during seasons. Otherwise rest of the trees like *Gliricidia sepium, Erythrina subumbrant* and *Archidendron pauciflorum* are naturally small trunk trees to interfere much with coffee growth.

The tree species in samples of agro forests considered for this study are still young and growing therefore the diameter classes doesn't give much insight into related issues. During sampling it was discovered that the farmers in the region usually replace their coffee farms once in 30-40 years when the production declines to non profitable levels. The owner of the farm said that he also changed his crops along with the old trees. So what we studied was a relatively new/replaced old farm.

Figure 4: Frequency Curve for woody trees in Coffee Agroforest in Ayr Pakun

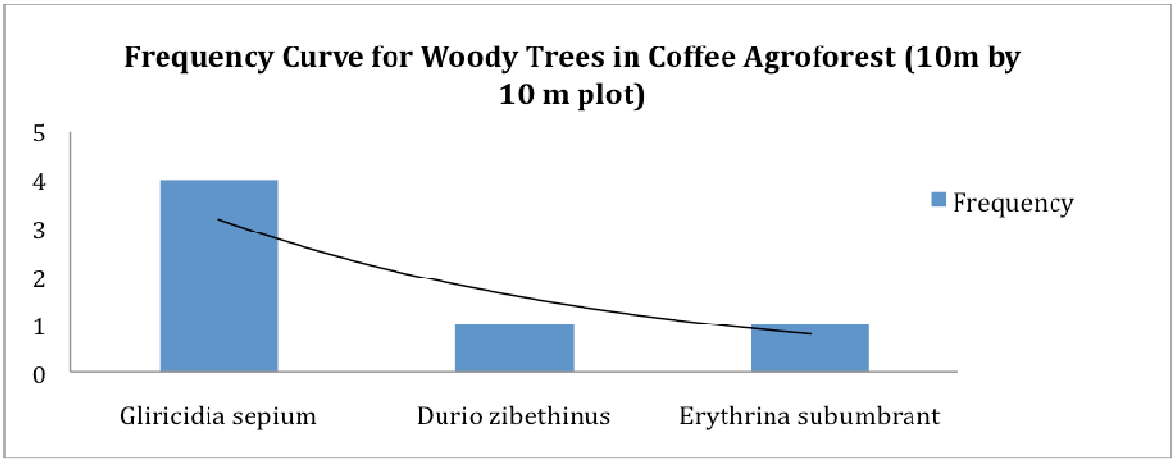


Figure 5: Basal area graph for woody tree in Agro Forest of Ayr Pakun

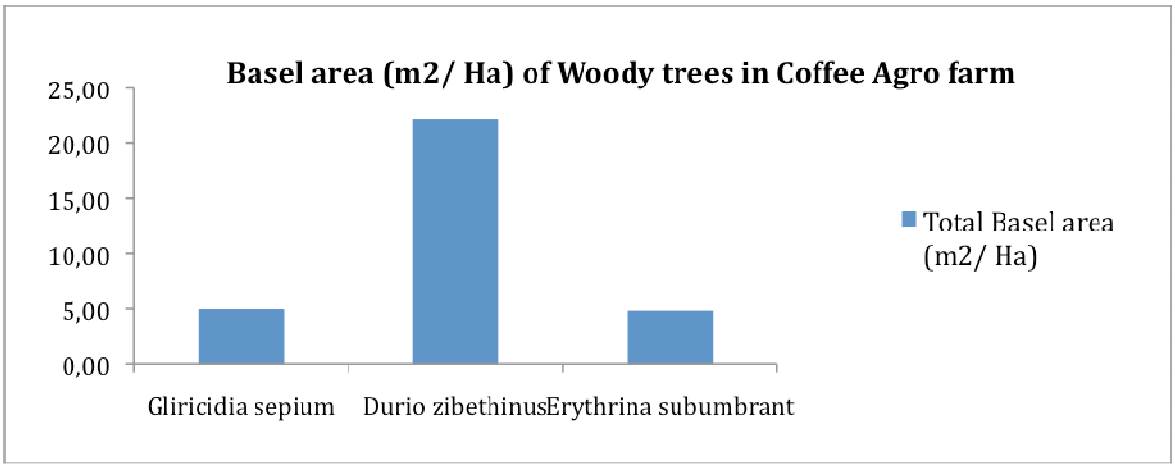
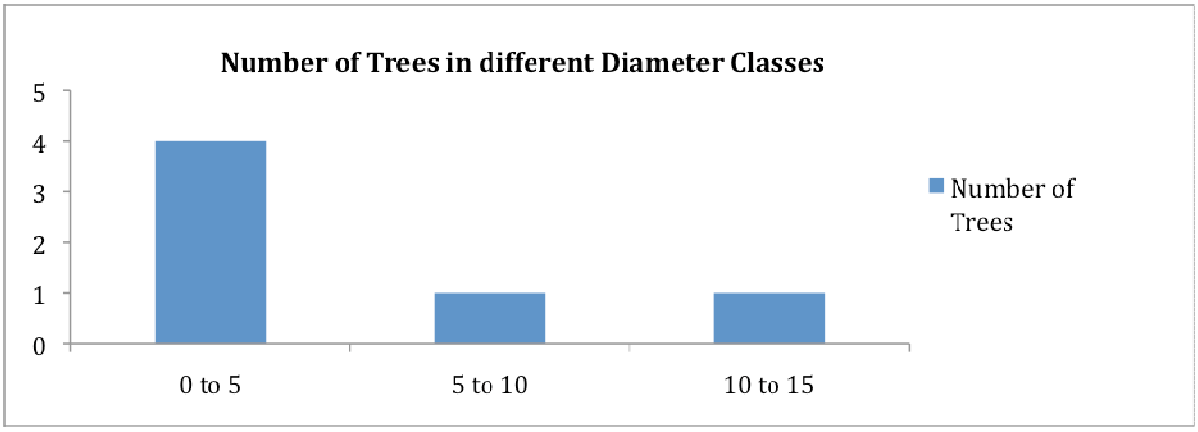


Figure 6: Diameter class distribution of woody tree in Agro Forest of Ayr Pakun



Differences observed between the "so called natural forest like conditions"[7] in the Agun Protection forest and Ayr Pakun Agro forests

Though the physical differences between two systems are apparent and we expected it to be like this, but the study would like to draw attention on the anomalies of both the systems, as we are interested in finding out how these two entirely different forms of forestry can grow together. As ignoring any one of these will have huge future implications in terms of natural resources exploitation, human sufferings and stability of the whole environment.

Following can be the highlight from the whole forest analysis and observation done by the team in such a short duration:

Disappearance of huge tract of natural forest over the last few decades

One can blame coffee farmers for this but, enough considerations needs to be given to the rampant irregularities in the national level forest policy changes. Forest department representative in Sukapura also confirmed this that, high return coffee farms were meant to be the first choice of communities settling in this area. Weak government monitoring could be blamed for the large-scale deforestation in past showing its impact now. Team could see recent natural forest areas cleared for coffee farms in the village.

Differences in Agro forest compositions with in village

As one walk through the village, the differences in the quality of coffee farms are one of the striking features. Taking a walk from Lower ends of Ayr Pakun till the Bander Lampung highway had striking graduation in density of trees in agro forests. Those who are cultivating more visible farms, have more trees, but then those at the far flung areas have none!. In Ayr Pakun Forest Department has established a model agro forest for villagers to imitate but then, just a visual comparison of this "Model Agro forest" with Normal agro forest in the village raises further questions about differences in people's preferences and

[7] Team selected this pact of far off, somewhat restricted forest area so as to get the original species from the region. It was impossible to find these species in any of the near by modified forest patches.

govt preferences[8] about the species density, species preference and ratio of timber and fruit species in farms.

Declining biodiversity in the area

In government records the Protected area of Sukapura is a zone identified as conservation area, due to its high level of biodiversity (flora and fauna) in earlier days. But we could not get access to any of the official records supporting this idea. Presently The Protection Forest of Abung and Ayr Pakun still holds some wildlife like Wild pigs, Gibbons, Macaques, Sun Bears, foxes, civets and other small animals, but not much species of trees except those recorded during transect walk and quadrates. In Agro forests, we could find none of the signs of big mammals. Though it was observed that more mature and dense continuous agro farms should have some small visitors in them due to presence of fruit trees.

At the end we would like to tabulate the differences and similarities observed by the team to conclude this section.

Figure 7: Comparison of Protected Forest and Agro forests

Parameters	Protected Forest	Agro forest
Vegetation Profile	Dominated by tropical trees, shrubs and lianes Thick ground cover Different vegetation strata's visible	Dominated by coffee and few scattered trees Very less ground cover Two strata's visible (coffee and trees)
Major trees identified	*Shorea laevis*, *Artocarpus elasticus, Caesalpinia sappan, Alseoclaphne spp., Cynometra cauliflora, Caesalpinia sappan, Casuarina junghuniana,Ganua spp.*	Gliricidia sepium, Durio zibethinus, Erythrina subumbrants, Archidendron pauciflorum
Risks (Natural and Anthropogenic)	Forest clearing Forest fires Small scale logging Mud slides	High soil erosion due to continuous tilling Inflow of pesticides and herbicides in water streams
Benefits to villagers and environment	Bush meat (Wild pigs, Gibbons and Macaques) Bamboo and rattans Improved environmental conditions Waters source (drinking and irrigation)	Main source of income Nutritional value Fruit trees supplement after coffee harvest
Managements practices	Village level petrol team under the instruction of Forest department	Intensive management

[8] Government agro forest species were high value timber trees ike Champaka, Teak, Erythrina and African tree with some fruit trees (70:30 ratio), but normal agrofarms maintain by farmers had mostly fruit trees and some nitrogen fixers but we could find none of these commercial timber trees.

5.2 Analysis: Livelihood strategies

The first step for examining the livelihood strategies for selected household in Sukapura is to define "livelihood". We follow the definition presented by Frank Ellis: "A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living by the individual or household"[9] (Ellis, 2000, p10)10.

Ellis focuses on diversification when conducting livelihood analysis, saying that it is continuation and constant adaption of multiple activities supporting the HH income that characterize rural survival strategies in developing countries. It is not farming combined with short periods of wage labour or a "hobby farming" combined with full-time non-farming work, but instead a mosaic of multiple income sources. These can include wage labour in farm activities but also in non-farming activities as trading or work outside rural areas, remittances both from abroad but also from non-rural areas (Ellis, 2000, p4f). Diversification might occur as an intentional HH strategy or as an involuntary need to overcome crisis (Ellis, 2000, p5).
Following Ellis, we would expect the HH in Sukapura to not only concentrate on one income source but also to have other income options available to support the HH economy and function as a "buffer" when the production or harvest of main crop is low.

[9] Ellis' definition above includes assets on one hand and access on the other, where assets are mainly the range of capital, which support the household strategies, and access is the possibility of the household in gaining the different types of capital. It is important to note that assets and access can differ over time, and are not to be seen as static conditions. Assets can be instantly destroyed (due to land erosion for example) or be built up (due to higher coffee prizes for example), and access to resources and opportunities can change due to an institutional and social changing context surrounding the livelihoods (Ellis 2000, p10).
10 Physical capital refers to possessions like tools, machines and land improvements like irrigation systems and terraces. Human capital is defined by education level and health status of individuals, households and populations. Financial capital refers to collection of cash that can gain access to purchase consumption or production goods. Access to credit is also included in this category. Natural capital is defined as a key component of natural resource as water, land and trees that produce products used by households for their survival (Ellis 2000, p8). Inspired by the capital we will cover some capitals forthcoming in the chapter talking about assess and access.

In Sukapura, however, we found that the majority of the HH rely only on one income source, namely coffee. In this chapter we will argue for our findings, analyse the reasons behind, and further discuss the consequences:

- How come coffee is the dominant crop?
- Why are the HH in Sukapura only relying on coffee as their income source?

And in what way can the lack of diversification in income strategy affect the HH in Sukapura, if it affects them at all?

Income strategies in Sukapura

Figure 8 shows that coffee is the main source of income for 83% of the HH in Sukapura followed by paddy fields, which as the second biggest income sources only constitutes of 10% of the HH main source of income. Figure 9 show that 40% of the surveyed HH do not have a secondary occupation. The remaining 60 % of the HH having a secondary occupation is almost percent wise equally spread within 7 categories, where coffee is the main secondary occupation (13,33 %).

Figure 8: Percentage of primary occupation

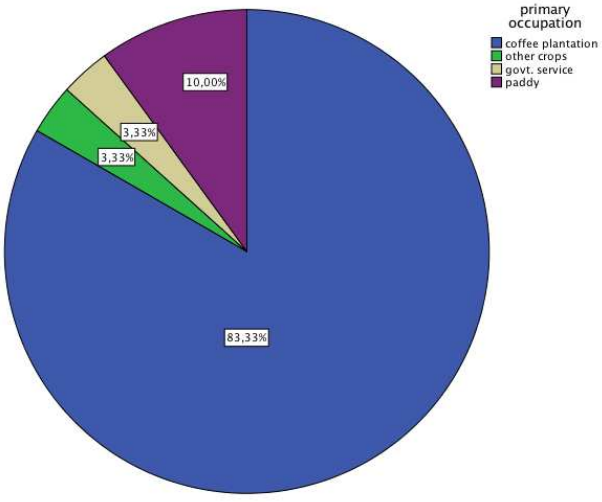
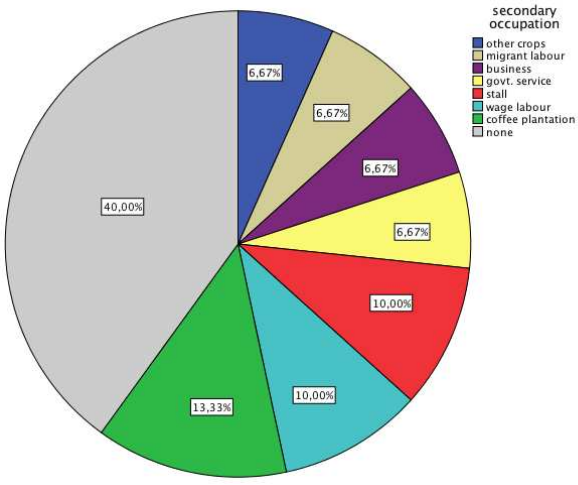


Figure 9: Percentage of secondary occupation



Some sorts of income strategies does not appear in figure 9, since the categories where predefined. Through observation, we discovered other minor income sources, as for example 'ojek' (motorbike taxi). This is, however, not a very profitable income with fees

ranging from 2000-5000 rupiah (0,22-0,55$) (www.valutakurser.dk 31-03-2010) for a taxi drive within Sukapura.

The amount of coffee in the category 'coffee' as secondary occupation manly consists of minor plots (HH interviews + observations during survey) and we found that the category 'other crops' was often perceived by respondents as various crops planted within the coffee plantations, most commonly fruit trees. Fruits are mainly for own consumption but if the harvest is good, it is possible for HH to sell a minor part.

It is therefore questionable if the categories 'coffee' and 'other crops' as secondary occupations can be considered income possibilities in economic terms. This means that the percentage not having a secondary income source might be bigger than showed in figure 9.

Included in the survey were categories of livestock, fishponds and chicken as a supplement for either sale or own consumption, but through observation and survey results we discovered that livestock and chickens were almost non-existent[11]. Fishponds are frequent in HH with medium/rich wealth status, which is probably due to the necessity of a large area of land for the pond. Fishponds are also mainly for HH's own consumption.

To sum up, our first expectation of HH in Sukapura to rely on a variety of income sources is not met. Coffee is by far and for most HH the main and for the majority also the only source of income. We have now presented our argument on the basis of survey results, but it is important to note that we triangulated the data with qualitative data derived from informal and formal interviews, discussions and observations [12].

The next step in the analysis is to discuss why coffee is the main and only source of income in HH in Sukapura.

[11] Several households informed that the chicken population fell dramatically due to a domestic disease (they called it 'bird flu' but we are not sure)

[12] Returning to Ellis' definition, it seems his characterisation of rural survival strategies for poor people in developing countries are not compatible with the characteristics of the HH income strategies in Sukapura. Why could that be? When looking at Ellis' references throughout his analysis, he mainly includes examples of rural household income strategies from sub-Saharan Africa. The HH in Sukapura might not be compatible with the poor HH in Ellis' analysis but might instead be considered to be "better off HH" when comparing them to poor HH in sub-Saharan Africa.
Ellis characterises the income strategies for "better off HH" as "(…) diversity combined with occupational specialisation (…)" (Ellis, 2000 p5). This definition might better describe the HH income strategies in Sukapura, even though the aspect of this combined with diversity is not very embodied.

Why coffee?

A brief look at the history of the area shows that coffee has been a key component since the Dutch introduced coffee plantations in the Sumberjaya area in the 1880's. This motivated small holders to cultivate coffee themselves (Potter, 2008, p178). Coffee has been preferred as *the* crop continually up to the establishment of Sukapura in the 1951, where the first generation of settlers were encouraged to grow coffee and supplied with seeds by the Indonesian government (HH interview 1, timeline discussion).

From an anthropological perspective, the cultivation of coffee should maybe not only be considered as an income source, but as influencing the daily life in many other aspects. In this way, coffee is a special kind of lifestyle, or, as Appadurai puts it, '…commodities such as coffee is not seen (…) as simply economic and agricultural products, put as possessing social and cultural attributes (…) and as 'producing' both their growers and their own version of nature' (Appadurai, 1986b and Bridge and Smith 2003 in Potter, 176).

Coffee production has transformed the landscape of Sukapura through history and today the landscape consists mostly of coffee fields. (Personal observation, transect walks, forest sampling). Since the first generation of migrants the knowledge of coffee growing, patterns of work and lifestyle and cultural identity as 'coffee farmer' has been reproduced. Sukapura is in this sense physical and culturally transformed into a 'coffee village', and newcomers move to Sukapura especially to grow coffee. In fact, a number of HH replied that they moved to Sukapura due to West Lampung's reputation as a 'good place to grow coffee' (HH 3 interview).

Figure 10: Years residing in Sukapura compared with primary income

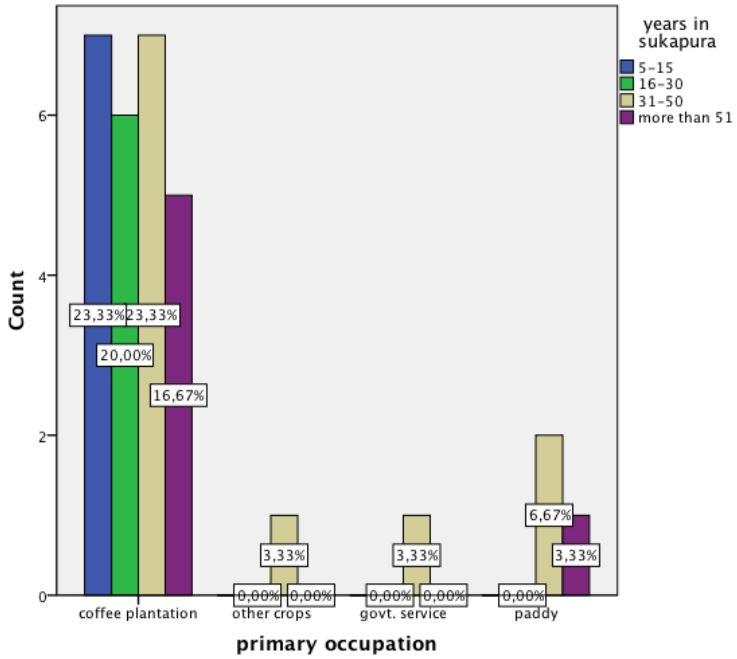


Figure 10, supports this statement showing that all HH, who have been settled in Sukapura between 5-30 years, grow coffee as main occupation. Only a few HH have other occupations and these HH have been settled for more than 30 years.

An interesting finding was that none of the interviewed households had experience with coffee production before moving to Sukapura. Most was Javanese and Sundanese people who had a tradition for paddy cultivation, and many left their paddy farms for taking up coffee production. The skills of cultivating coffee are said to be gained learning from neighbouring HH and by observation.

Lack of diversification

We will now discuss the various reasons why people in Sukapura mainly cultivate coffee as their only source of income.

It seems like small plantations are considered sufficient for many households to cover the daily needs (survey, semi-structured interviews). Moreover, as already shown in figure 9, many HH do not have a secondary occupation, and if they have, it seems to only play a little role in the HH economy. When asked, in most HH all family members work exclusively on

their coffee plantation year round. This fit well with our experiences in village when attending meetings with HH members. Normally, villagers worked on their plantations from 7am–12am, and initially we thought it would be hard getting appointments and people for surveys due to work throughout the day. On the contrary after 12am everybody (both men and women) was at home and would fit in 3 hours of interviewing with a smile. On one hand, it therefore seems that the coffee plantations, when price and harvest is good, are enough to supply the HH economy, and that villagers might therefore lack the motivation for seeking new work opportunities. On another hand, we discovered through interviews that many villagers expressed a wish for higher income and support to the HH economy, so the lack of motivation does not seem to explain the situation fully.

Figure 11: Percentage of size of coffee plantation.

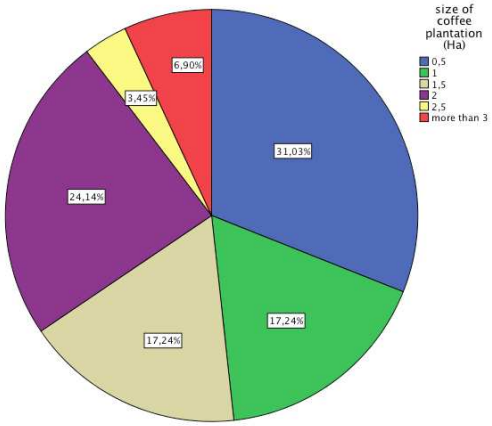


Figure 12: Percentage of level of education.

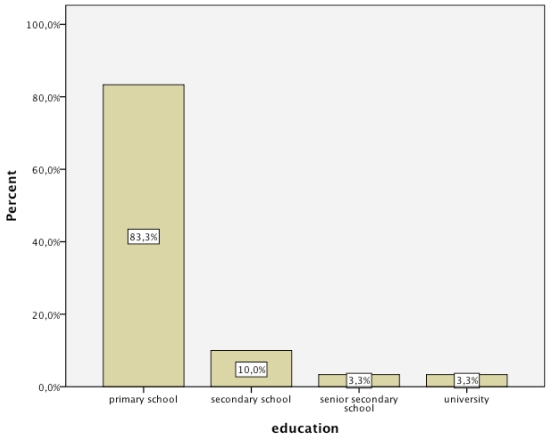


Figure 11 shows the size of the plantations in Sukapura. Only around 10% of HH dispose over a coffee plantation of more than 2.5 Ha where the majority has only 0.5 Ha. Even though most HH are growing fruit trees and occasionally other crops, the fields are only providing outcome for own consumption as explained earlier.

Another important aspect is the level of education. As figure 12 shows, 83% of the HH members have completed SD level, which is compatible with junior high school. SD level is not considered to be qualifying for a long range of jobs (interviews), which could be an

aspect explaining the lack of alternative income strategies[13]. As mentioned earlier, Sukapura, and Sumberjaya district in general, is very much a 'coffee area' and we find it likely that people who seeks other income possibilities (and with the required skills) migrate elsewhere in order to succeed.

Another important reason behind the lack of diversification is way the coffee production determines the HH economy.

The access to credit is scarce but in some cases, credit can be arranged in private agreements with money holders in the village. The money holder is often also the coffee trader, who distributes the HH harvest for further selling.

These store the money for the HH, and the HH then go to the money holder, when they need something (this can include everything from more fertilizers, furniture, intuition fees). When the money is scarce, they can borrow from the money holder, and then the credit is withdrawn from the next earnings. The problem in this system is that it lacks transparency. The money holder has the opportunity to manipulate prices, when HH come to collect purchased goods, because HH is not able to keep notice if the expenditure is actually what the money holder claims (see box 13).

Due to the few harvest seasons, HH have to manage their money in advance, opening up for this special credit system.

Box 13: HH interview 2: in Pemangku 7, 18-03-2010

Living inside PF and Cultivating inside PF. Household members consist of 3 (Husband, wife and a boy child). Husband and wife work in their coffee farm. When asked about major expenses for households they shared that they spend major part of the income to buy rice and other major groceries once in a year after harvest and rest of the money is then given to the " Boss" (money holder) (Person who buys their coffee and is also a money lender to them whenever required). When asked about saving he shared that he is not sure of his annual savings as the boss keeps all the money and till date he is yet to save anything substantial. Further questions about this informal arrangement of monetary security disclosed that, most of the poor coffee growers have personal fixed traders, who buy their coffee every year and subsequently support these families financially. After harvest of coffee the trader or the boss comes to the family and buy most of the coffee to further sell it to big traders. The family uses some of the money to buy the essential items required round the year including rice, and give back the rest of the money to the Boss. So that he can keep it safe and from thereon for all other necessities the boss bear the cost, deducting bills from the family savings with him. The man of the HH said that there are more than 50 such bosses in the main village).

[13] This point of view is supported by Ellis stating that a lack of education means a lack of human capital, since the individual is excluded from activity and occupation possibilities that require a specific level of education (Ellis 2000, p7).

The problems with the money lending system evokes when the HH do not have a profitable income, since this increases the necessity for lending money. When the harvest is bad, or the coffee prizes are low, the HH gets security from the moneylender since they can borrow money to cover for basic expenditures. When the harvest is good, they do however not get the profits, since they owe money to moneylender from other seasons (see box 13). Combined with the mentioned lack of transparency, many HH are caught in a cycle of continuous debt, and have therefore no opportunity to save money for investments which could open up for the opportunity to pursue alternative ways of income. The HH are always 'behind' working to pay the depth and loan money for the next coffee season.

To sum up, we have identified a number of factors that can explain the lack of livelihood options in Sukapura.

People in general have small fields that do not leave room for a large range of other cash crops than coffee.

The lack of education limits the opportunity to seek a range of jobs. People are specialized in coffee production, and this specific knowledge is reproduced through the way, the HH acquire new skills, which consists of observation and information from the neighbouring HH.

The money lending system, mainly due to the economic cycle of coffee production, makes it impossible for many farmers to save money for investments in alternative income possibilities.

Consequences of livelihood strategies

Through an optic of vulnerability, we will now discuss the consequences derived from the described lack of livelihood diversification.

In our case, a suitable definition of vulnerability is given by Adger, who states that: "vulnerability is the state of susceptibility to harm from exposure to stresses associated

with environmental and social change and from the absence of capacity to adapt" (Adger, 2006, p268).

There are several consequences that affect the vulnerability of the coffee farmers in Sukapura. First of all the reliance on coffee as the only source of income makes the farmers dependent on external factors which they can't influence. The 'coffee business', prices and demands, are shaped by global factors that are out of the hands of the farmers. As Potter argues, the impact of neo-liberalism and globalization on Sumatran coffee farmers have been huge, causing low prices and competition from especially Vietnam, where coffee is directly competitive with Indonesian Robusta (Potter, 2008, p177and p184).
Moreover, the deregulation of the coffee commodity chain in the late 1980's, "…moved the institutional framework form one where producers had a voice to an informal and buyer-dominated system" (Potter, 2008, p184). This shift is very evident in Sukapura.
In Sukapura the trade system is characterized by a few number of traders fixing the prize of coffee (HH interviews). This means that there is not a great variety in the coffee per kilo prices, which in 2009 and 2010 was around 12.000 rupiah per kilo for sundried coffee (survey, HH interviews). The possibility for the local buyers of fixing prices lies mainly in the fact, that coffee farmers do not have many possibilities of searching for other buyers who might give them a better price.
It seemed like the farmers accepted this, and they had to trust 'their' trader from whom they often (as discussed in chapter x) loan money.
In general, we found a lack of knowledge about the commodity chain of the coffee they harvest and sell (HH interviews, informal interview).
This limits the HH opportunities to be "in chart" of selling their own coffee, and they seem as subjects to an opaque buying-selling system. This is underpinned by a HH interview in Pemangku 10, where they stated that they " (…) would sell the coffee to whatever prize is offered, and then cope with that" (HH interview 4). This is understandable, as coffee as a cash crop is useless if not sold when mature.

Impact of the boundary

From an overall discussion of the livelihood options, constrains and vulnerability of HH in general we will now turn our attention towards the impact of the PA boundary. As stated earlier we did not find any significant differences in terms of livelihood options or constraints for people cultivating accordingly inside and outside PA. The division however becomes significant when turning our attention towards the issue of land tenure security having the vulnerability aspect present.

Figure 14: Sizes of coffee farms in and outside PA

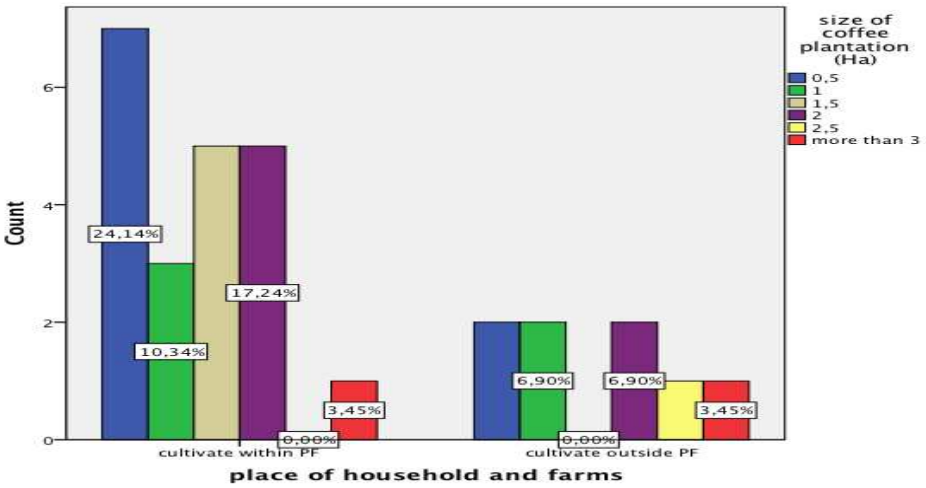
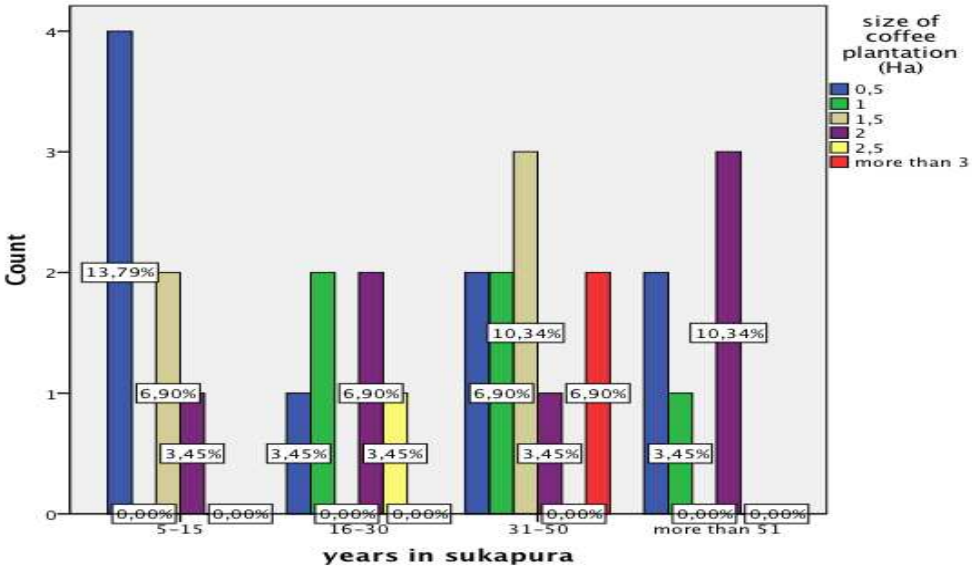


Figure 15 : Combination of size of coffee plantation and settled period in Sukapura



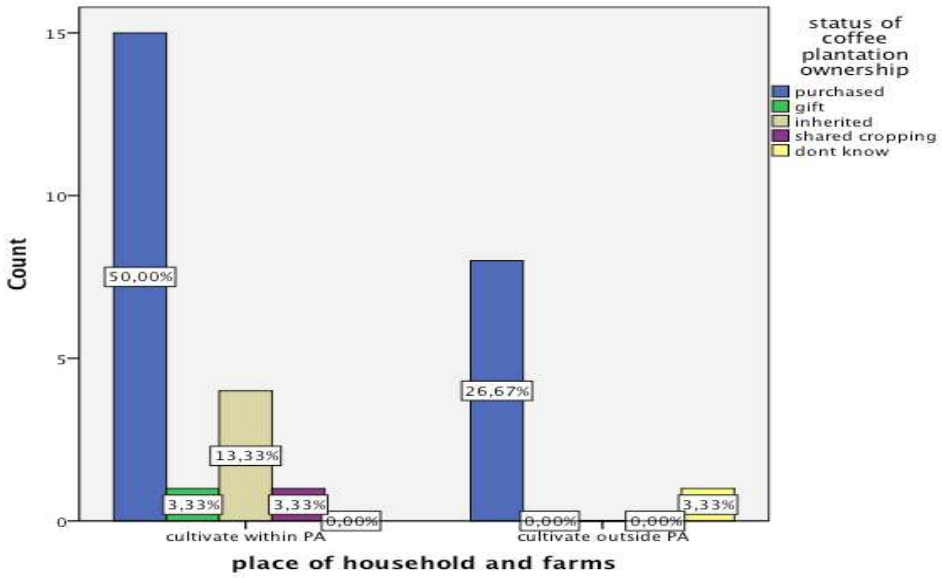
As seen in the figure 14, people cultivating inside PA have smaller fields, and the area is divided into smaller plots (informal and formal interviews). As mentioned in the earlier section, people are still migrating to Sukapura and the population is divided between people that have experienced the boundary marking and the following government enforcements, and people settled within the last 15 years.

The majority of the newcomers, who settled after the evacuation in mid 90's, have small fields of 0,5 Ha., mostly inside PA (fig 15).

This shows, combined with the information above, that even though it is not officially possible to expand and sell or by land in PA, this is the place where migrants settle.

At first, we expected that the scarce land plots within PA was inherited, but the figure beneath (figure 16) confirms, that most of the people with land inside PA have actually 'purchased' it.

Figure 16: Status of coffee plantation ownership



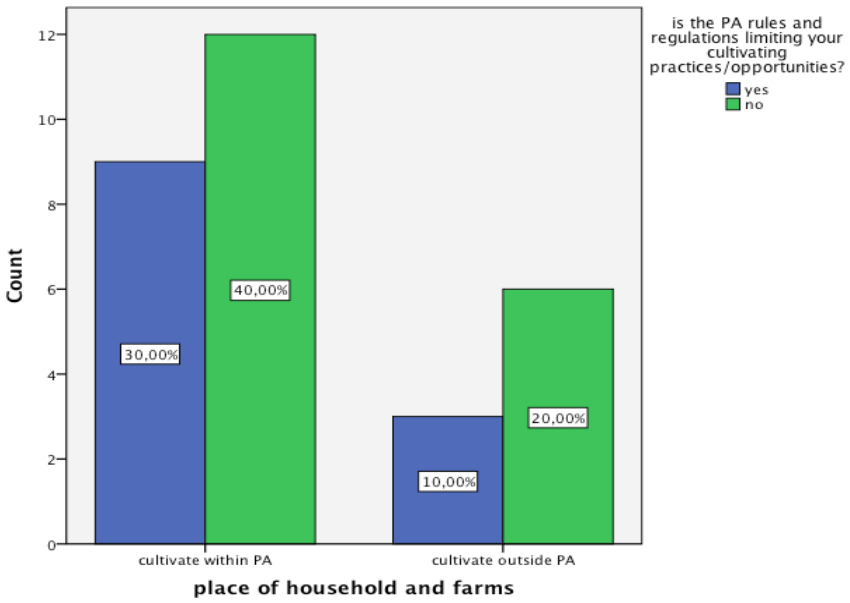
It is obvious that the land plots are not 'purchased' in legal terms as it is illegal to buy land in PA and people do not hold land titles. The 'ownership' categories in the questionnaire did

not left room for this kind of land status, where the term *'compensation'*[14] is more suitable. We learned, from both informal and semi structured interviews, that the price and negotiations about compensation had many different aspects. But in general, land inside PA cost only about 1/5 of the prize of land outside, reflecting the lower levels of tenure security related to cultivation within the area.

The coffee plots inside PA are smaller and affordable, which attracts migrants, who, for a relative small amount of money, can "purchase" land.

When investigating the impact of the PA declaration, we expected that people cultivating inside PA would feel more restrained than those cultivating outside. Therefore, the figure below seems surprising at first:

Figure 17: Combination of place of land and opinion PA limitations



When reconsidering the question asked, it become obvious that 'the cultivating opportunities' are the same, whether the land is inside or outside. PA.

No matter where in Sukapura you are cultivating, you have to plant wooden trees[15]and it is not possible to open new land. The soil condition is the same (some people stated that it was even better in PA) and the coffee kilo price does not differ. However, when talking

[14] As shared by villagers about the land purchased inside PA without much of formalities involved.
[15] See chapter on tenure security for further description

about preferences, all of our informants from the semi-structured interviews stated that they would prefer to cultivate land outside PA due to tenure security. Several informants stated that their ambition was to save money to buy either land or a house outside PA.
Now we would lead our discussion to land tenure insecurity and its future implications.

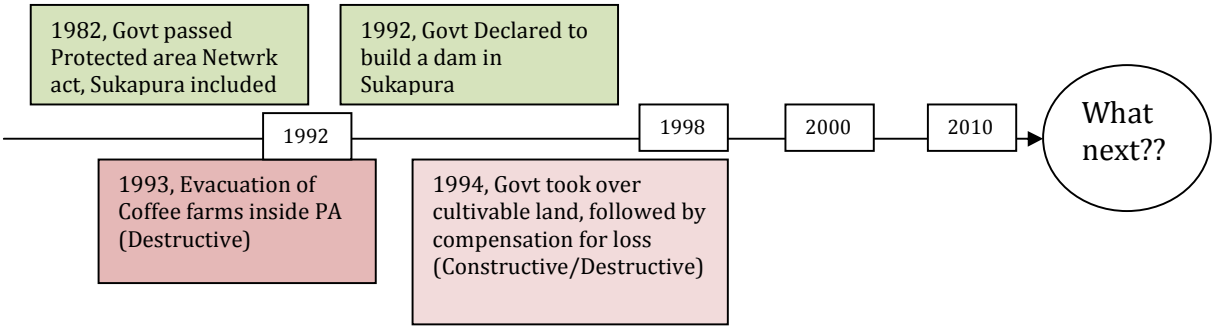
5.3 Analysis: Land Tenure Insecurity

We will now analyze and discuss the land tenure insecurity dividing the analysis into two levels; one about coping strategies during a number of major shock incidents in Sukapura. The second level of analysis is discussing the vulnerability aspect of HH diversification lack in the context of land tenure insecurity. For our study objectives the declaration of PA and division of village in two different types of tenure arrangements is critical, through livelihood analysis in previous chapter we could see that PA boundary doesn't have any impact on peoples livelihood at present, but it also came out strongly that absence of any tenure security over farms and living place is a matter of major concern for future for most of households.
In our context, we find John Bruce's definition of 'tenure' suiting our purpose, as he talks specifically about tenure concerning land and trees. (Bruce, 2008, pp1) "Tenure' in this sense, is seen as set of rights which a private person or private entity holds in land or trees. In case of Sukapura, people having land outside PA hold tenure right on land but no right on trees in their agro farms, and people living/cultivating inside PA have neither land tenure nor tree tenure security.
In this section we will present our arguments around two major shock events that happened in Sukapura in 1992 (dam construction and valuable land submergence) and 1994 (forceful evacuation of coffee cultivars from PA) and subsequent strategies adopted by villagers to overcome them. At the end we will finish our chapter by taking our discussions to possible future risks.

Shock (constructive/destructive) events

We see "shock" as a sudden or violent disturbance of the mind, emotions, or sensibilities. Though in our work we would use this term in context of "change making events", specially those which are of enough intensity to affect household drastically and had significant future implications.

Figure 18: Important events justifying vulnerability of households in Sukapura (See Map 6)



In 1982, Government of Indonesia, Ministry of Forestry declared a huge part of forest as protected areas or conservation areas (3 in 1982, 40 in 2000), without considering the people living in and around these forests. Ground implication of this decision in Sukapura was realised in 1992, when FD came and placed its posts in village, differentiating 70% of village land as forest department property. This was the start of conflict over land tenure insecurity.

As discussed before, Sukapura is a "coffee village", with limited livelihood diversification options for HH's. When FD realised that it was impossible to keep people out of newly re-declared PA boundary, they followed strict law enforcement model in village and around. Interview with affected families (HH interview 1, 2, 5), shared that almost 30-40 HH lost access to their farmlands, though no govt record could be found to confirm this. One of the lady who lost her farms said *"during those years people were so helpless that they lost their senses and many of those families would be found wandering naked around the village"* But lately most of those household left Sukapura and moved out to look for other livelihood opportunities.

The second major event related to land tenure occurred in 1992, when some of the families lost their paddy fields and some part of coffee farms to the dam reservoir. The dam is in PA, but reservoir spreads across PA and non PA land, thus govt gave a fair compensation only to the families who had land outside PA.

Figure 19: Compensation rates for different group of land owners

Paddy outside PA (20 mIDR per Ha)
Coffee farms inside PA (8 mIDR for 1 Ha of land + 5000 IDR for each coffee plant)

Most of paddy fields was in low lying non PA area, thus HH received fair conpensation (as said by villagers), difference cropped up between Govt and Villagers upon the prices for Cpffee farms which were in the high lands, legally inside PA. The agrofarms in dam area are the oldest and most productive farms, the prices given as compensation was a mockery.

(Discussion with villagers in Pamakgku 5 and 7)

Coping Strategies

After discussions with HH affected (limited HH in village) about these events, we could identify some patterns;

1. **Move out to other places to find new agrofarms:** It seems more than 90% of HH's fled the village as they had no source of survival (we found only 4 houses in the village, who stayed back as they still had some other land left for cultivation).
2. **Stay back and diversify**: one house that we visited[16] has used compensation money from lost paddy fields to invest in their childrens education, and now they are into some salary based jobs. This the family reduced its dependence only coffee.
3. **Share cropping with others:** In Pamanku 10, we were told that two houses have got into shared cropping with other big farm holders thus, managing with thier daily needs.
4. **Reopened lost farms after reformasi period:** Though this seems another conficting issue, but in 1999 some families went back to forest and re-opend thier farms. During the process itself some of them lost thier farms to new occupants who fought with these families on the basis of unprooven ownership of the forest land.

[16] Dual shock case: first lost their paddy field, got some compensation and then lost their coffee farms with no compensation

All the narrations from these affected show that the absence of tenure security over their cultivation lands has made them vulnerable to potential changes, controlled by extrenal forces (govt, companies, other villages etc). The change in national and provincial government and its stability has definelty built more trust in people but then, when it come to ”sudden extrem events” and their consequences. Before disscusing more on future options for such vulnerable HH, we feel its important to introduce this concept and its reflection in Sukapura.

HH vulnerability and the future of people living inside the PA boundary

Returning to Adger’s definition on vulnerability (see chapter 5.2) his second important aspect “capacity to adapt”, was decisive in shaping what these families are doing now (refer to coping strategies in previous section). Projecting our arguments of “struggle to rebuilt” to other HH in Sukapura, depending on their capacity to adapt land status inclusive of education, livelihood diversification, skills and opportunities; (discussed in chapter 5.2)

We thought of discussing this issue with the people in authority in village so we approached, the Village head, Forest department representative in village and two members of two NGO’s (ICRAF and WATALA), who had worked in the village earlier.

When we approach the Pratin, who he said that he is confident that nothing extreme will happen now, due to stable govt and good relationship of village with govt. When we raised the same question to Forest Department, they said that the land and trees belong to Govt, and in future it seems difficult to revert the PA conditions in village, as it is a very important national level decision, people need not to worry if they abide by rules and regulations and cooperate with department in usual monitoring (Interview FD, HH Pemangku chief 10). But he said that land tenure assurance can’t be given to villagers. When same thing was asked to the NGO people, they had a different opinion about it, they were uncertain of the future course of development in the region, WATALA (working with agro framers empowerment through capacity building) representative said that villagers are not doing enough to approach govt to get their rights and forest department is also imposing their unjustified

conditions (70% woody trees in farm) on farmers due to judicial advantage at their end. ICRAF (worked for agro forest promotion and watershed conservation in the region) was more into the regional and national perspective, and said that right now situation looks positive than ever before as govt is accepting agro forestry concept in the region, but they are yet to make any legal safeguard for these farmers. But then as now they have already finished their work from the region they said, scene looks gloomy for villagers waiting for some kind of tenure security, as government changes its stand quite often (Interview with ICRAF).

Summing up, there are many angles to the complex issue of tenure security:
Unsustainable agro forestry practices by villagers (extractive), PA expansion and forest rehabilitation as prime forest policy focus, Rapid deforestation around the region in absence of government control (in 60 and 70's), weak provincial and central govternmen coordination. It seems bleak, that in future these houses will get any permanent tenure security, but as we will be discussing in our last chapter there is some hope for farmers association to get some benefits through HKM program. This will be discussed later.
From here now we would flow into the issue of compliance and how the village sees the PA boundary?

5.4 Analysis: Compliance

Issues of compliance are a foundation for the stability of the pillars of PA, livelihood, forest conservation and relations between government and people. In this section we will attempt to built a discussion on the issue of compliance based on the survey, observation and interviews with key informants

Knowledge about PA boundary

Our Survey showed that nearly 85 % of the respondents knew about the PA boundary.
All of the respondents who did not knew were all cultivating inside PA. The explanation could be, as we showed in earlier section, that many newcomers settle within PA.

Figure 20: Household perception of role of FD in village

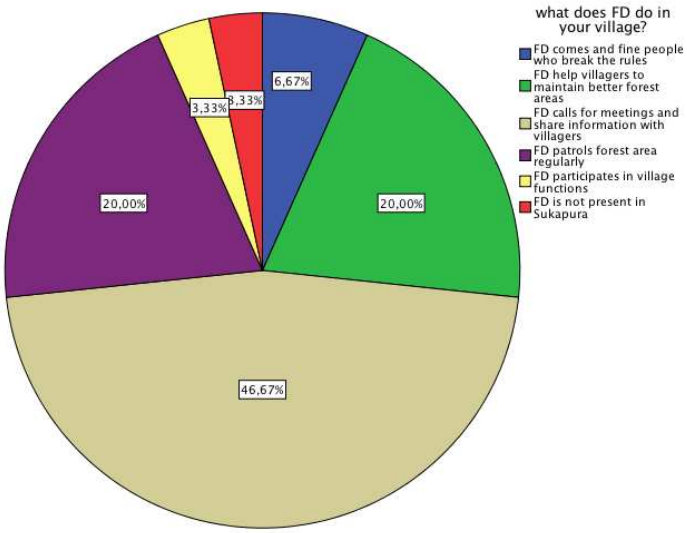


Figure 20 shows that FD is the only source of information for villagers. The three main functions of FD in village is 1) sharing information, 2) patrolling and 3) maintaining forest areas.

It seems villagers largely identify FD as a unit that represents government viewpoints about protected forest (trees), and not agro forest (coffee).

Figure 21: role of FD in village accordingly inside/outside PA

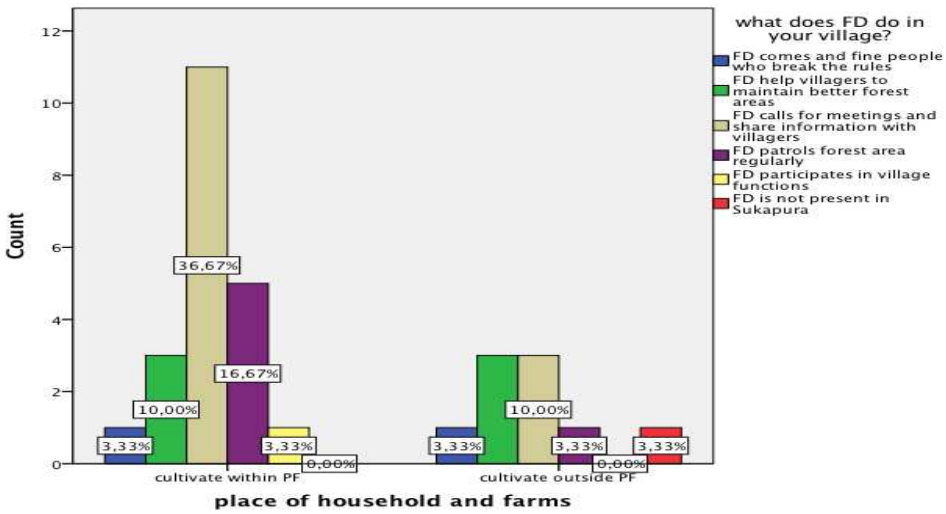


Figure 21 shows that HH experience the FD patrolling[17] and informing villagers more intensively inside PA. Apart from the survey, we discovered through interviews that people perceive that another important role of FD is to hand out trees seedlings whenever a new coffee farm is established[18]. Thus most of the HH had some opinions about FD and its functions.

Figure 22: Source of information about PA

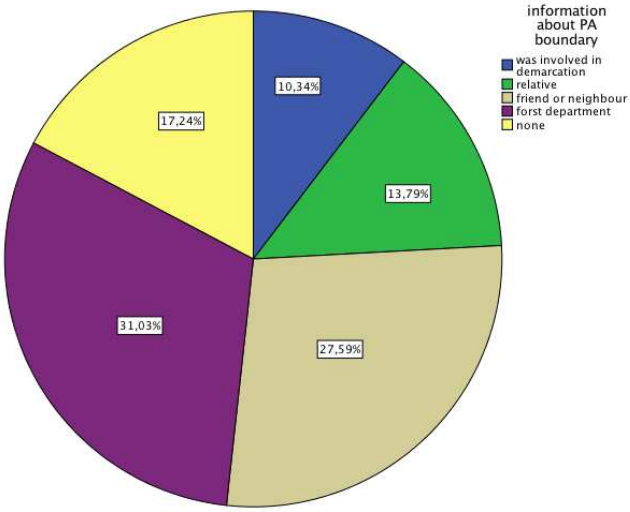


Figure 22 shows that apart from FD, people came to know about the PA through neighbours, friends and relatives. It seems like most of the younger generations and new migrants are represented in this group.

When FD representative was asked about his role, he also said that, he coordinated FD programs on field, including Sukapura, where his main role is to report higher authorities sitting in Sumberjaya and West Lampung about the issues cropping up in the village. He does that by regularly inspecting and meeting people to know about the trees in their farms and their growth (Interview FD).

[17] We learned from interviews and observation, that patrolling is done by villagers themselves, under guidance of FD and Pemanku chief.
[18] A part of the ongoing GNRHL and Hkm program.

Attitude: a question of classification

We will now describe the villagers attitude towards PA regulations, discuss whether people are complying[19] or not and analyze the reasons behind. Compliance is defined by Young who refers to is as: "all behavior by subjects or actors that conforms to the requirements of behavioral prescriptions or compliance systems. Conversely, noncompliance (or violation) is behaviour that fails to conform to such requirements" (Young 1979, p4f).
We will discuss the factors leading to compliance/non-compliance by taking into account both various reasons for compliance issues.

A very interesting point is the difference between the legal land status and villagers perception of the categories of land classifications[20]. Most of the actual PA area are treated and looks like private land. In theory, there is nothing called private land inside PA and there are limited cultivation opportunities. But villagers referred to PA land as 'their' land, even though they knew that this is not the truth in legal terms. The general attitude was that, when asked, the only land 'belonging to government' is the area of PF (HH interviews, observations). This also needs to be seen in light of how government sees it, as they seem acceptable to this perceived notion of "their land in PA" (namely HH land in PA) which belongs to government. The recent Forest policy interventions like Hkm can be seen as another facet of Government planning, where they are consolidating their right[21] on forestland too.

People living inside PA prefer to plant non-timber or fruit trees. But as requirements of PA, government asks for more timber trees (see HkM policy). As a result of this most of PA is dominated by non-timber trees, in place of more natural species belonging to forest areas. But in the eyes of the villagers it seems illogical with these trees in their farms, as expressed by this statement "settlement is settlement, not forest- near the forest it is ok, but not here." (interview with Pemangku 10 leader). This also strongly projects the described understanding of what is regarded PF and cultivated land.

[20] As described in 'study site'
[21] Consolidating its right, In Hkm govt gives written contract to farmers, which states clearly that this land belong to government and given on 35 yrs lease to the farmer group

A factor that is highly important when analyzing villagers' attitude towards PA regulations, is to distinct between people that experienced the violent law enforcements in the 90's and people settled after this period.

Obviously, we learned[22] that villagers who experienced the conditions before and during the enforcements felt victimized and had a strong sense of mistrust towards the government. They had a clear understanding of 'family land' taken away from them. The words of the Pemangku 10 leader illustrate this point of view: "Why did they send migrants to this area, for later evicting them?" (Pemanku 10 interview)

For newcomers, who migrated although knowing about the status of the land they bought, it is a different story. As a newly settled guy in Pemangku 10 stated 'I won't inherit this farm to my son as it is too risky and better to sell' (HH 4 interview). He knew about the uncertainties about buying the relative cheap land and did not see it as a long-term investment. The different conditions are important to have in mind when discussing compliance issues, but also as a reminder that many villagers are not mainly victims but actively moved to Sukapura in search of better conditions than the place they left. In relation to compliance, its seems reasonable that the people who open up new land in PA/PF are relative new settlers, as they are the ones living in the only areas which borders the PF where expansion is possible.

There is a thin line between compliance and non-compliance in Sukapura, and there are different perceptions of land status. In theory, villagers do not follow rules and regulations, but in many ways the FD are closing their eyes. We argue that the present status of land are blurred, a place in between the legal status as strictly PA area and private land.

The chain of report: from policy to practice

We would like to summarize this chapter by presenting a case from Pemangku 10 (P10), which unfolds the aspects of compliance issues. P10 is an interesting area to explore the key issues concerning the relationships between law and actual practise inside PA.

The area within P10 is, when talking about compliance, the 'battleground' in the sense that it is one of the two Pemangkus that borders areas of PA and PF where it is still possible to find land to cultivate (both legal illegal) Therefore, many new settlers select P 10 (Interview with Pemangku chief 10, Pratin). Apparently we could see many freshly open areas for farm expansion inside PF,

[22] through interviews and during timeline exercise

and many cases of non-compliance. Ironically, this seemed one of the areas where the FD was least present. (HH interview 3 and 4 + observation)

Figure 23: The ground of disturbances: Interview Pamangku 10 leader

He is paid by the local government in West Lampung. He goes to his office two times a week meeting the head of the district. They discuss in what way P10 can get needs full filled

The chief was a victim of the eviction, because his coffee plantation (2 Ha) was in the PA. They (government) removed it with elephants in 1994. He didn't get compensation.

Chain of report
If he finds people doing illegal activities (concerning PA) he will first attend the concerned farmer. If he is ignoring it, chief takes it's it up with the P10 community. They decide the further punishment. If they agree, P10 chief will go to the other Pemanku chiefs, who will report it to the relevant officials.

"it is hard work being P chief because most of the P10 lies within PA. And many didn't obey the demands from government in the beginning. But at this moment the work is a bit easier because people know and agree more with regulations"
He claims to have a good relationship with FD, with whom he meets every 3 months.
Other than this he also shared about the cases of miss trust of villagers on government and unhappiness about the FD orders to plant trees on all farms. He shared that his role as a mediator was hard.
Personally, he does not accept the HKm program because he does not believe in the demand that everybody have too keep the settled area green and plant wooden trees.

The reasons behind the lack of FD presence seems to be the remoteness of the area, lack of resources/ manpower within FD and non-cooperation from villagers. (Interviews with FD and P10 chief).

In our interview, when enquired about how the FD officer ensures that people obey PA regulations, he said that he keeps regular contact with village chief and Pemangku leaders, and he also made a local group to patrol forest areas. All these people are responsible for bringing cases of violation to FD. At the end he said that so far he has got good cooperation from them. (Interview FD representative).

The Pemangku leaders also play a critical role in such cases, as moderator, negotiator and decision makers.

The chain of report, shown in figure 23, shows that the actual practice of the handling of violations on PA regulations, are a long and complicated process. It seems like a major parts of the activities will never be reported.

The FD representative stated that the fact that not much where reported, was illustrating that there where not many issues in the moment. You could argue that the case is that cases of violations seldom reach him. On another hand, this can be seen as a positive thing, as issues are sorted out more informal on a lower level of the chain of report.

The case described above illustrates the complexity of legal issues in a context like the one in Sukapura. When the villagers engage in the informal arrangement for conflict resolution on local level, factors like social capital and credibility seems to play a major role when negotiating legality. Most likely, the level of compliance are derived from reasons based on both legitimacy, moral and retribution.[23]

6. Conclusion

To sum up , we would like to knit in the various conclusions derived all along the report to answer our initial Problem Statement of how the presence of the PA boundary had affected villagers of Sukapura and how it had affected the dynamics of forest in the village.

Impact of PA boundary on HH livelihood options and strategies

Existence of PA in the village has heavily curtailed the HH's legal rights on their coffee farms by changing the land tenure status on government records and villagers minds. Though it has not done much change in people practices. We couldn't find any significant differences in livelihood strategies of those living inside and outside. We have discussed the reasons behind the dominance of coffee as the preferred cash crop in the area, and the lack of diversification in terms of alternative income sources. Furthermore, we have demonstrated the consequences of this dominant pattern of livelihood. Though the boundary is not significant in terms of livelihood options, it has influenced peoples future strategies in an significant way. They see it as a limiting

[23] Tyler provides and interesting framework, by which, in a perspective way, could be a good way of investigating the compliance issues in Sukapura further. Legitimacy defined by Tyler is "(…) believed to be the key to the success of legal authorities. If authorities have legitimacy, they can function effectively; if they lack it, I is difficult and perhaps impossible for them to regulate public behaviour (…)" Tyler in Sarat, 1993, p654)

factor when it comes to investing in PA area in future. When investigating reasons behind such behavior, we found that villagers still perceive their farms inside PA as “their own farms” irrespective of the government orders classifying it as government forest land and Protected Area for limited use. As main findings we can say the lack of livelihood diversification and absence of land tenure security together, make them highly vulnerable to changes in future.

Impact of PA boundary on Forest

The agro forests in Sukapura have taken up most of the forest land, though it’s not a recent phenomenon, it happened much before PA declaration. But it’s still impacting natural forest in a heavy way. Government priority is to protect the rest of the natural forest, and they did by declaring areas rich in natural forest as protected forest. But our study shows that this decision didn’t yield much of results. Villagers are still opening up new coffee farms encroaching protected forest, the quality of majority of agro farms is not good in terms of “shade trees per hectare”. There is a big difference in species diversity in natural forest and coffee farms. If continued unmonitored it can have future implications on existence of natural forest in the region. In whole discussion we downplayed the strategic importance of Sukapura protected forest as the buffer zones of BBHNS, as none knew much about it. So the forest politics of Sukapura is much more complicated, with natural forest, agro forest and protected area (international) sharing the same space.

We further investigated the issue of compliance within this arrangement of different uses of forest in same space. Seeing in an optic of legality, it was easy to identify that villagers are breaking rules, but then we visualized their actions from more social perspectives of morality and experience. At present both FD and villagers seem to have accepted this mid way between the actual policy and private land. It is important to state that our analysis derived from 10 days of fieldwork and under a present situation that are not static. For now, people are awaiting the next chapter in the development, and as we see it, it can go either way depending on both global, national and local factors and changes.

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