

**SUMMARY
EXECUTIVE**

THE COST OF LAND AND NATURAL RESOURCES CONFLICT: A COMMUNITY PERSPECTIVE



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Conflict over land and natural resources in Indonesia is a seemingly endless problem, and the extent and impact of these conflicts have only tended to increase over time. Various measures to resolve these conflicts appear inadequate. Nevertheless, all parties agree that land and resource management conflicts result in enormous costs, and therefore must be addressed as early as possible.

A fundamental question that has often been raised in discussions over these conflicts is the actual costs associated with these conflicts. While a previous publication (Barreiro et al., 2017)¹ examined the costs incurred by corporations, this current research initiative explores the costs borne by local communities. To provide some perspective on this question, the Conflict Resolution Unit (CRU) commissioned KARSA (Circle of Rural and Agrarian Reform) to undertake a study using a combination of both quantitative and qualitative research methods.

1 http://daemeter.org/new/uploads/20170121193336.The_Cost_of_Conflict_in_Oil_Palm_Indonesia_.pdf

The research was conducted between June and December 2017. The initial study design was reviewed by a selected group of stakeholders and experts during a focus group discussion on June 14, 2017 in Jakarta. This discussion helped further refine the overall methodology of the study, and also identified three specific cases for the analysis: 1) Anak Dalam 113 Tribe in Jambi, 2) Muara Tae Village in East Kalimantan, and 3) Trimulya Village in West Kalimantan.

In-depth interviews were conducted at the household level in each of the three locations, using the Zaltman Metaphor Elicitation Technique (ZMET) to construct a "consensus mental map" of the impact of conflict. This mental map was then to develop more detailed questionnaires for collecting household survey data. The results were analyzed and presented in a draft report which was also reviewed by individuals with relevant expertise in social survey, environmental economics, and conflict resolution. Input from these reviews was then integrated into a final report, which has been published in Bahasa Indonesia.

This summary report presents an abbreviated, English language version of the study's findings, in order to expand access to the analysis and recommendations. After a brief introduction providing some background to the study, we describe the research methods and analytical approach, discuss general findings, and then present the study's overall conclusions and recommendations.

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We hope these results will be useful to various parties in improving their ongoing policy and advocacy work related to land and resource management conflict. Our ultimate hope is that these results provide insights that are useful in understanding communities' perspectives on these issues, and the impact these conflicts have on local communities.

Executive Summary

Land and resource management conflicts are a pervasive problem throughout Indonesia. The cost of these conflicts - to society, to corporations, to communities, and to all levels of government, are assumed to be quite significant, but they have yet to be quantified in any deliberate way. This study aims to answer this basic question of how tangible or intangible costs and losses, caused by land and resource management conflicts, are incurred by local communities. This research is intended as a companion study to a recent effort to quantify the cost of conflict to commercial plantations (see: Barreiro et al., 2017).

To answer this question, researchers used qualitative methods, including Zaltman's Metaphorical Elicitation Technique (ZMET), focus group discussions, and household-level interviews, to identify people's perceptions of the conflict. Quantitative methods, such as cost accounting and choice model, were used for direct cost measurement. Based on these estimates, the research yielded a value of minimum conflict cost (minimum irreducible cost).

The study was conducted in three locations, selected in consultation with national resource experts familiar with these issues. They include the cases of Suku Anak Dalam 113, Bungku Village (Jambi), Muara Tae Village (East Kalimantan), and Trimulya Village (West Kalimantan). Although the context of each case is different, the three cases share some common characteristics; most importantly, their direct experience, since the 1990s, with conflicts related to oil palm production.

Based on the ZMET analysis and focus group discussions, respondents noted that oil palm-related conflicts tend to have a greater impact on individual households than those associated with forestry concessions or mining companies. The loss of most forest functions due to the expansion of oil palm operations has resulted in dramatic changes in the basket of goods consumed at the household level, as these goods had previously been obtained free of cost prior to the conflict over oil palm plantations.

Survey results from the three communities indicate that people spend 36.79% of their current consumption to purchase goods that were freely available in the past. The general contraction of consumption reported in the study should be viewed seriously, given that the impact of economic contraction during the 1998 monetary crisis, only 15% GDP per capita, is still deeply felt by government and society.

In the three survey sites, each respondent's family member bears a total cost of Rp41,754,672 (US\$3,036.74) per year as a result of the conflict. The analysis also indicates that households that own smallholder oil palm plantations or follow the “nucleus” plasma program (pola inti) bear a greater burden of the cost of conflict. The total cost borne by this group is Rp51,617,040 (US\$3,754.01) per year. In contrast, the costs for families that are not involved in oil palm production were calculated at only Rp32,294,844 (US\$2,348.74) per year.

Based on the study's findings, ongoing conflict has clearly resulted in a deepening cycle of impoverishment. This is marked by individuals' weakening ability to save or invest, as well as narrowing social mobility opportunities due to the limited opportunities for improved education.

Based on these findings, the study underscores the importance of early recognition and response in addressing land and resource management conflicts in Indonesia.

1 Introduction

Analysis by the National Commission on Human Rights (Komnas HAM) during 2014 – 2015 indicates that Indonesia is continuing to witness systematic and chronic occurrences of conflict related to land use and natural resource management. During 2016, the Commission recorded a total of 450 agrarian conflicts, encompassing an area of 1,265,027 hectares and affecting 86,745 households (KPA, 2017). Reported conflicts mostly involved agricultural and forestry plantations, property, infrastructure, and forest management disputes. The figures add to the growing documentation of agrarian conflict throughout 2004 – 2014, during which a total of 1,391 cases were recorded, covering an area of 5,711,396 hectares and 926,700 households (Press Release of Komnas HAM, Agrarian Reform Commission/KPA and WALHI, 2014).

Similar patterns of land-related conflict have been observed in other Asian countries (Yasmi et al., 2012). Conflict between the government, companies, and local communities may involve issues concerning legal versus customary rights, economic development policies that tend to disadvantage certain groups, and poor coordination among levels of government and other

stakeholders involved in land use and resource management (Yasmi et al., 2012).

Many of the conflicts in Indonesia occur due to the uncertainty of land ownership rights (Rist et al., 2009; Yasmi et al., 2012), e.g., research by Feintreine et al. (2010), using data from household socio-economic surveys in Bungo, Jambi during 2007 – 2010. Furthermore, the various government-issued concessions and licenses for forestry, estate crop plantations, and mining are often legitimized through coercive action of the security forces (the Indonesian Police and Armed Forces/TNI) (Komnas HAM, 2016).

Land and natural resources conflicts are a particularly common phenomenon in the oil palm sector. Conflicts between oil palm companies and local communities in Indonesia are the result of many factors, e.g., the company's lack of transparency with communities, as well as unequal benefit sharing (Rist et al., 2009). Lack of leadership in smallholders' cooperatives has also increased the level and complexity of conflict between cooperative members and the oil palm companies (Feintreine et al., 2010).

These conflicts are detrimental to all parties concerned: companies, local communities and the government are all adversely affected. Land conflicts show positive correlations with the rate of unemployment, inequality, risks to natural disasters, and changes in sources of income (Barron et al., 2004). The National Land Office (BPN) has reported that agrarian conflicts have resulted in 607,886 hectares of unproductive land, leading to an estimated national loss of Rp146 trillion (US\$10,601,200). The above-mentioned study by Daemeter Consultants (2017) reported that companies suffer between US\$70,000 - 2,500,000 in tangible costs from conflicts. These costs include lost business income as well as a loss staff time diverted to address the conflicts. These tangible costs represent 51 - 88% of plantation operational costs and 102 - 177% of investment costs per hectare per year.

The significant cost of these conflicts suggests that companies and other stakeholders could certainly benefit from attempts at conflict prevention or mitigation, especially in terms of utilization of land and labor. Conflict mitigation also helps reduce the government's fiscal burden. Nevertheless,

conflict resolution efforts can only be achieved with the support of both local and national government agencies (Feintreine et al., 2010, Rist et al., 2009; Larson et al., 2013).

Several studies have been conducted on the costs of conflict incurred by companies (Davis and Franks, 2014, Daemeter, 2017). However, questions remain about the impact of land and natural resources conflict on local communities, particularly those based on results of household surveys.² It is important to understand to what extent individual families and local communities are affected by conflict, i.e., both the tangible and intangible costs resulting from these conflicts.

This study seeks to address the following questions:

- a. What are the social, economic, and environmental consequences of land and natural resource conflicts on the lives of households?
- b. What are the implications of land and natural resource conflicts on the lives of households?
- c. What are the costs and losses, both tangible and intangible, caused by land and natural resources conflicts, borne by households?

It is our hope that this study will enhance stakeholders' awareness of the impact and urgency for resolving land and natural resource conflicts in Indonesia.

² For more details concerning the unit of household, see Chapter 2 on Methodology of Study.

2 STUDY METHODS

2.1. Definition of conflict

While conflict can take many forms, this study limits its analysis to conflict involving disagreements over land, land use, and natural resources management. “Conflict”, as defined during the study, is “a disagreement on land affairs between individuals, groups, classes, organizations, legal entities, or institutions that is likely to involve or have involved wider socio-political impacts (BPN No. 3, 2011).

The three cases used in the analysis were identified through an initial focus group discussion (FGD) with prominent experts in related fields. Not surprisingly, all of the cases involve issues related to oil palm plantations, since these cases are quite common throughout Indonesia.

Conflict is often characterized by its dynamic nature. In the course of time, a simple conflict (e.g., over compensation to local communities) can evolve into conflicts that are much more complicated (e.g., involving land rights, values, inter-community dynamics). To comprehend the complexity of conflicts

and estimate its economic cost, a thorough understanding of the causes and characteristics of each conflict is required. However, limitations on the availability of data for a study of this kind impose necessary constraints in terms of the time horizon and the methods used. It is also worth noting that conflicts in the study sites are still evolving, and this presents yet another constraint on the analysis of the overall impact.

2.2. Analytical framework

Under ideal conditions, the best methodological approach to measure cost of conflict would involve intertemporal comparison of pre- versus post-conflict income levels, between assigned control and study areas. This approach is not feasible for this analysis, because the study was initiated without pre-conflict or longitudinal data over the course of the conflict; also, conflicts within the study sites are dynamic and continue to evolve and change over time. Finally, limited resources and limited availability of data constituted additional constraints which suggested the use of the current household expenditure, which is considered a representative proxy of income.

Cost analysis is part of economic evaluation of an activity or a program. It should be noted that a benefits-costs analysis and cost-effectiveness or cost-utility analysis can only be conducted when the cost elements have been properly calculated. When an activity is seen as harmful (e.g., crime, conflict, or war), all efforts for reducing the level of intensity, as well as preventing harm, can be considered a measure of effectiveness or benefit.

Economic analysis of the cost of conflict covers both direct and indirect costs, as well as private costs and externalities. In each stage of conflict, an estimate of the private and social costs (externalities) should be made. The consequences of this approach are that changes in conflict intensity can influence an increase or decrease in the cost of conflict over a particular period of time. On the other hand, cost accumulation will continue to increase until the impact of the conflict ends. Using this approach and taking into account relatively prolonged repercussions that often result from conflicts, the analysis should encompass the accumulation of economic costs

from the time the conflict began until after it ends. However, this approach is not feasible due to the aforementioned limitations in data and resource availability.

For a comprehensive assessment of the impacts of conflict related to oil palm plantations, the following agrarian questions were used to calculate costs for each stage:

- a. Costs before land-related conflict: These costs usually arise as a result of the change in land ownership from community to government or private control. Before independence, communities outside Java normally relied on customary law to determine inheritance and property rights. Since formal property rights acquired and acknowledged by customary law are often not recognized by the conventional legal system, a household may suffer from implicit costs due to the loss of ownership or control over land.
- b. Costs at the early stage of the conflict: Costs arise when companies have been granted rights of release of forest areas for plantation development. Companies often face opposition from local communities, whose resentment may be caused by: a) loss of recognition of their rights to the land; b) land disputes between the company and the local community; c) decline in livelihoods, and d) environment impacts.
- c. Conflict escalation: Costs can become greatest when vertical conflict (e.g., between the community and the company) transforms into horizontal conflict (i.e., within or between communities). As the complexity of conflict increases, economic impacts may rise accordingly.
- d. Costs of conflict resolution: Costs are also associated with efforts at conflict mitigation, or resolution, and may include consultation, mediation, or other socialisation activities.
- e. Post-conflict costs: These costs represent the various costs that parties must bear for recovery to the desired pre- or post-conflict conditions.

With these considerations in mind, in light of limited resources, the research team focused on an estimation of the economic cost of conflict using a

minimum irreducible approach, in which researchers make an estimate of the minimum irreducible economic cost of conflict despite the fact that the actual economic cost of conflict is greater than the minimum irreducible economic cost. This cost estimate results in a conservative estimate of the economic cost of conflict, meaning that the cost of conflict cannot possibly be lower, but is definitely greater than the estimated value. The cost estimates in this research are therefore limited to the following elements:

- a. Primary and secondary consumption purchased by households, i.e., an estimate of the cost of goods that were previously accessible for free, using a cost accounting approach;
- b. Economic valuation of water quality, medicine, and social capital, using a choice model approach.
- c. Impact of social transformation related to the access to and cost of healthcare, educational services, level of crime, and environmental conditions. This element differs from elements a) and b), as the valuation is qualitative in nature.

The study used cost accounting and the choice model as preferred quantitative methods for estimating losses resulting from conflicts. Cost accounting is one of the simpler methods for estimating costs (Abadie and Gardeazabal, 2010), since explicit costs are estimated from actual data. In contrast, implicit costs are measured using the concept of opportunity cost of damage to or loss of production factors, such as capital goods, or loss of access to a particular good.³

In addition to these quantitative costs, the study also measured qualitative costs through questionnaires exploring respondents' perceptions of various aspects of social transformation: a) access to and cost of education, b) access to and cost of health services, c) crime; d) quality of the environment; and e) future certainty.

3 From an economics perspective, opportunity cost is a central concept in cost analysis (Brand and Price, 2000). Technically, the use of this concept yields the scale of costs in the form of willingness to pay (WTP) and or willingness to act (WTA). Studies conducted by Davis et al. (2006) and Arunatilake et al. (2001) used a similar method to measure the cost of conflict resulting from State participation in war.

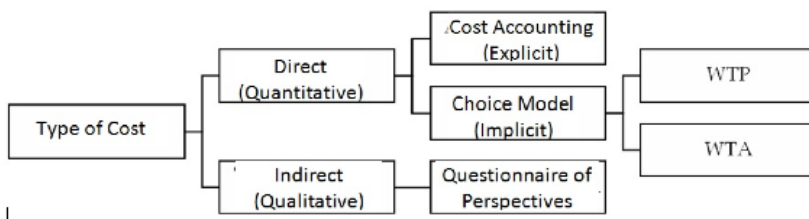


Figure 1. Concept of Cost in the Study for Estimating the Cost of Conflict

While many insights and benefits can be gained by using this approach, given the study's limitations, the authors recommend that more comprehensive research should be undertaken in the future to further detail these costs. A study with greater coverage of conflict areas, and over more extended time periods, will ultimately be necessary to provide a more precise estimate of the costs to conflict to households and communities.

2.3. Data collection

Consistent with Davis and Franks (2014), the study employed a triangulation approach by combining qualitative and quantitative method. The study was conducted in four stages: 1) Literature review, 2) In-depth interviews using Zaltman's Metaphorical Elicitation Technique (ZMET) method, 3) household surveys, and 4) analysis of survey results.

2.3.1. ZMET Interviews

The Zaltman Metaphor Elicitation Technique (ZMET) is to construct a "consensus mental map" of the impact of conflict. ZMET interviews helped elicit community perspectives, which were then used to develop an understanding of the types of costs experienced by the community.

Respondents were selected to represent various constituents in the community (elected officials, indigenous leaders, religious leaders, farmers, traders, workers in the service sector, women, youth), with eight individuals

selected in each site. Since ZMET is a qualitative method, the objective is to reach saturation (i.e., complete representation of perspectives) from the information collected in the interviews.

ZMET results address the qualitative aspects of the study, namely the socio-economic and environmental consequences of land and natural resource conflict on households, and their implications. The conceptual map developed through ZMET interviews was further used as the basis for developing the survey instruments to measure the impacts of conflict on the household economy.

2.3.2. Household surveys

Household-level surveys were conducted to explore the impacts of conflict on individual households. Forty (40) households were selected, through stratified random sampling, in each of the study sites, and interviews were conducted with both husbands and wives, to accommodate the different perspectives about household consumption patterns, since these are often gender biased. In single-parent households, all questions were asked to the single parent.

Respondents were asked a series of questions on the following topics:

- a. Value of property loss due to conflict
- b. Household characteristics before and after the conflict, including household income, livelihood, consumption and saving patterns, access to infrastructure, health, education, etc.
- c. Proxy variables for non-market cost estimates (choice model)

2.4. Analytical methods

2.4.1. Cost Accounting Using Market Price (Market Price Method)

The cost accounting method was used to estimate consumption and determine the value of goods and services that households could access for free prior to the initiation of conflict. The market price method was used to measure goods and services of the ecosystem (Garrod and Willis, 1992).

In economic valuation, cost accounting is the simplest approach for determining market prices. The number of resources or services is multiplied by the current market price to generate an overall value. Loss of access to some commodities has forced people in conflict areas to spend money to obtain the commodities that they had previously obtained for free.

Survey questionnaires asked about primary and secondary consumption of one hundred commodities. The total value of consumption was then compared to the total consumption of commodities that they could previously access without spending money. Generated consumption values were based on current market prices.

2.4.2. Choice Model

To answer broader research questions, such as how people perceive costs, McFadden (1974) developed a discrete choice model that is based on random utility theory. The research team developed a valuation of households' willingness to pay for particular goods and services, namely water, medicinal plants, and social harmony. These three elements were selected based on results from the ZMET interviews; however, their costs are difficult to quantify in numbers. The approach therefore seeks to obtain respondents' perception of certain goods without directly asking the value of the goods. The research team developed a scenario for each of the three elements to develop an estimate of the price that respondents paid for each. The result is an analysis of implicit costs, denoted as the willingness to pay (WTP) and/or the willingness to accept (WTA).

3 COSTS OF CONFLICT

Household surveys were conducted with 217 respondents from the three study sites: Jambi (74), West Kalimantan (66), and East Kalimantan (66), with 53.77% female respondents and 46.23% male respondents.

More than a third of respondents (37.44%) had attained primary school (SD) (or Islamic Primary School), with 13.74% completing middle school (SMP) (13.74%), 10.43% completing senior high school (SMA), and 4.27% having a university education. Note that almost one third of the respondents (33.18%) had never attended school.

A high proportion of respondents (64.02%) identified themselves as having been directly affected by the conflict. There was no significant difference in the three study areas concerning this figure.

3.1. Purchase of Consumptive Goods

Results of the ZMET interviews indicated that one of the primary impacts of conflict was the loss of the forest as a source of household necessities. Respondents claimed that prior to the conflict game animals, vegetables, fruit, water, honey, and traditional medicines were abundantly available in the forest. Following the outbreak of conflict, however, households were forced to purchase these needs.

Based on survey results, 36.79% of the current value of commodities could be accessed for free before the conflict. This figure represents the opportunity cost that local communities must pay to purchase these commodities in comparison with their ability to access them for free before the conflict occurred. However, the three sites show varying degrees of impact, with West Kalimantan most affected (41.65%), followed by East Kalimantan (35.82%) and Jambi (29.58%). During the economic crisis of 1998, Indonesia experienced a decline of 15% GDP. Therefore, compared to the economic contraction of 1998, the decline evidenced in these communities (29.58% to 41.65%) signals a serious and profound impact.

3.2. Impact of Conflict on Water Availability, Medicinal Plants, and Social Harmony

The research team used the choice model approach to estimate the cost of conflict regarding loss of water availability, medicinal plants, and social harmony. This approach calculates, albeit indirectly, the value that respondents are willing to pay for certain attributes.

The figures resulting from this model are technically referred to as willingness to pay (WTP), i.e., the highest monetary value that respondents are willing to pay to gain access to certain goods, and/or their willingness to accept (WTA), i.e., the lowest value that respondents are willing to accept when they lose access to certain goods. Collectively, the two methods offer a more technical

explanation for decision making than the concept of opportunity cost.

Respondents in the three locations were willing to pay Rp. 1,361,971 (US\$ 99.06) per month to be able to have access to water similar to pre-conflict conditions. WTP for medicinal plants, and for a sense of social harmony were Rp161,345 (US\$11.74) and Rp36,975 (US\$2.69), respectively. These latter two figures are not statistically significant.

Further analysis, based on the choice model, indicates that availability of water is the main consideration for respondents in the three study areas (significant at the 1% level). The availability of medicinal plants and perceived social harmony were again not statistically significant. Survey results suggest that gender did not influence respondents' WTP values for water and social capital; therefore, there is insufficient evidence to support the hypothesis that there are different valuations of water and social capital for female and male respondents.

3.3. Perception of Social Conditions

During the survey, respondents were asked to compare current social conditions with conditions prior to the conflict, on the basis of five elements: 1) cost of and access to education, 2) crime level, 3) health conditions, 4) environmental conditions, and 5) certainty of the future. These five elements were identified from the results of ZMET interviews and FGD sessions.

On average, respondents in all three conflict areas noted a relative decline in the cost of education compared to pre-conflict conditions. Respondents also felt that access to education had improved, although respondents in Jambi reported no change in pre- and post-conflict conditions.

While respondents noted no significant changes with regard to the cost of health services, they reported improved access to health services, statistically

significant at the 1% level. Results indicate that there is no difference in perception concerning access to and cost of health services before and after the conflict by gender, or by participation, or lack thereof, in oil palm production activities.

Respondents in Jambi and East Kalimantan generally perceived a worsening crime situation in their areas following the conflict; in West Kalimantan, on the other hand, respondents perceived a decline in crime, although this was not statistically significant. Responses were also not significant in terms of respondents' education level.

Valuation of environmental quality indicated that in general respondents in the three locations have seen a decline in environmental quality compared to conditions prior to the conflict. The potential risk of accidents as a result of company activities (e.g., mining accidents) was perceived to have increased compared to conditions before the conflict, and respondents in Jambi recorded the highest concerns for decline in the environmental quality.

3.4. Total Cost of Conflict

The average proportion of primary consumption now purchased by households is 42.04%, or Rp2.26 million (US\$164.62) per month. The greatest economic burden from conflict was reported by households in West Kalimantan (46.45%, Rp3.15 million, or US\$229.44) per month. Using an average daily wage of Rp100,000 (US\$7.28), this means an average of 34.8 person days/month to cover this income gap (53.5 days/month in West Kalimantan; 26.5 days/month in Jambi; and 23.8 person days/month in East Kalimantan).

These results indicate that people in the three sites must work extremely hard to address the decline in income due to conflict. If a person generally works 40 hours a week (five days per week, or 22 days per month), a household in West Kalimantan would have to work 2.43 full-time equivalent

(FTE), Jambi 120.5% FTE, and East Kalimantan 1.08 FTE. The burden would therefore have to be distributed among other members of the household, i.e., husband, wife, and children.

Results also show a higher economic cost among households who participate in oil palm plantation compared to those who don't. Households that do not own oil palm plantations experienced a lower economic cost (48.92%) than those that own oil palm plantations (59.62%).

One of the reasons for this difference is the value placed on water, since households who own oil palm plantations tend to have a higher WTP for water than those that do not own oil palm plantations.

If the total economic cost of conflict is linked with level of education, household heads attaining senior high school (SMA) or university education suffer the greatest cost (81.51%) of the total value of consumption. This proportion is significantly higher than households with heads attaining primary school (SD), or middle school education (SMP) (46.47%), or those who did not attend school (56.59%).

3.5. Social Condition as An Additional Element of Cost of Conflict

The results of analysis of social conditions indicate that access to health and education are perceived to have improved, despite the fact that conditions have not improved in terms of the cost of health and education. Both aspects have increase in value as a result of national program initiatives since 2004, as the government has committed 20% of the national budget (APBN) for education and 5% for health care. Regardless of such efforts and commitment, the perception in the three study communities is that conditions in these sectors have tended to worsen.

In the medium and longer terms, there is a fundamental question concerning the ability of households to accumulate savings and ensure a

quality education for their children. Education is one of the ways for vertical mobilisation, and the results of the study show that although there is some improvement in terms of access to education, the cost of education has become less affordable.

In the health sector, changes in consumption patterns have resulted in the emergence of “new” diseases that were not common prior to the conflict, including cancer, stroke and heart attacks. ZMET interviews in Dayak Benuaq, for example, noted the recent incidence of stroke, something which respondents had not been experienced before the conflict.

3.6. Ability to Transfer Economic Cost of Conflict

Based on the results of ZMET interviews, conflicts due to the presence of oil palm plantations essentially involve three parties: plantation companies, local government, and communities. The analysis of the economic cost of conflict is not only limited to the value borne by each party; it also involves the ability of each of the parties to transfer economic cost of conflict to other parties.

Among the three parties in conflict, local government has the greatest ability (i.e., bargaining power) to shift the cost of conflict, since it has the authority to approve or deny licensing agreements. Oil palm companies can also transfer the economic costs of conflict, either to consumers who purchase Crude Palm Oil (CPO), or to members of the nucleus-plasma program. If the company internalises costs, this will likely result in an increase in CPO prices. However, the degree to which a company can transfer the costs of conflict to CPO consumers depends on the elasticity of CPO demand and the level of competition in CPO markets. The other alternative is to shift portions of these costs to nucleus-plasma program participants, although this depends upon the bargaining position of the company towards nucleus-plasma members.

Individual households have the least ability to shift or transfer the economic cost of conflict to other parties. This means that the full value of the economic costs of conflict estimated above will fall entirely to households, as they are unable to transfer them to other parties.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1. Summary Findings

Results indicate that land conflicts, particularly those related to oil palm plantations, tend to cause significant impacts to households. The loss of most forest functions, the direct result of oil palm expansion, leads to fundamental changes in consumption patterns at the household level.

These impacts start with the decrease in forest cover and in communities' ownership of land. Respondents noted that the forest had previously provided many of their consumption needs, regardless of their economic background, since both rich and poor households had similar access to forest resources prior to the occurrence of these conflicts. Most consumption goods were viewed as freely accessible (i.e., without cash payment), including various game animals, fish, fruit, vegetables, rattan, ironwood, honey, and clean water. Most of these necessities must now be purchased through the market economy.

Both direct and indirect costs were estimated during the study. For direct costs, cost accounting was used for calculating explicit (direct) costs and the choice model was used to estimate implicit (indirect) components.

Study findings indicate that on average 36.79% of the total consumption commodities of the community were previously considered to be outside of the cash economy. This general contraction in consumption is far greater than the impact to households of the 1998 economic crisis (15% GDP per capita). This figure is highest in West Kalimantan (41.65%), followed by East Kalimantan (35.82%) and Jambi (29.58%). There is a positive correlation between education level and proportion of primary consumption, as respondents with the highest education levels showed the highest ratio of primary consumption outside of the cash economy, i.e., 80.41%.

Results of economic valuation using the choice model indicate a significant level of concern regarding access to water, but not significant for medicinal plants and social capital. Analysis in the three locations suggests a willingness to pay (WTP) of Rp1,361,971 (US\$99.25) per month for access to drinking water (with reference to conditions prior to the conflict), compared to the current perceived decline in both quality and availability. In Jambi and West Kalimantan, WTP was Rp18,245,820 (US\$1,329.68) and Rp24,061,824 (US\$1,753.52) per year. The use of the WTA approach indicates that respondents in East Kalimantan are willing to accept Rp590,954 (US\$43.07) per month and Rp7,091,448 (US\$516.79) per year as compensation for their loss of access to water. Both the WTP and WTA figures demonstrate the significant value that communities place on water in considering the impacts of the conflict.

Household costs as a result of conflict in the three conflict locations were calculated at Rp41,754,672 (US\$3,042.90) per year. Respondents in West Kalimantan suffer an average cost of Rp64,185,000 (US\$4,677.53) per household compared to those in East Kalimantan (Rp28,608,576, or US\$2,084.87) and in Jambi (Rp31,860,660, or US\$2,321.87). This analysis also shows that households who participate in oil palm production suffered more severe impacts (Rp51,617,040, or US\$3,761.63) than households that do not

participate (Rp32,294,844, or US\$2,353.51).

As reflected in the results, conflicts related to oil palm plantations, regardless of the cause or nature of these conflicts, lead to significant costs to communities. Furthermore, prolonged conflict results in exacerbation of the impoverishment cycle, as indicated by the increasingly weakened capacity of communities to accumulate savings or investments, along with decreasing opportunities for social mobility due to more limited opportunities for education.

4.2. Recommendations

Based on the above findings, the following recommendations are suggested:

1. Concessions or licenses for plantation operations should only be granted to responsible entities with proven track records of working effectively with local communities. The transfer of use rights to companies should be reconsidered and revised in light of the significant impacts these conflicts have on local communities.
2. A review of the nucleus-plasma mechanism should be conducted to ensure that the system can serve as an effective safeguard for households as they transition to this new source of livelihood.
3. The government and the plantation sector should work together to develop an effective insurance mechanism that can guarantee the ongoing education of school-age children who are affected by land and natural resources conflict.
4. This study should be followed up by a more comprehensive analysis of the impact of oil palm plantation operations to stakeholders, including the impact on government revenues at the District, Province, and National levels. Additionally, a study on the impact of conflict on women and children, and the relationship of oil palm and poverty, would help further elucidate these dynamics.

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