

Law Enforcement and Community Participation in Combating Illegal Logging and Deforestation in Indonesia

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Abstract Purpose: This study attempts to analyze the reconstruction of law enforcement on illegal logging based on community participation and the values embodied in Pancasila as a national philosophy in Indonesia. **Methodologies:** This study was conducted using a normative empirical method, by employing data-driven approaches. **Principal results:** The results revealed that combating deforestation and illegal logging can be achieved by participatory measures with the implementation in the grassroots through community participation being taken as an important consideration to instill the principles of sustainable forest management. To obtain optimal and equitable benefits of forest resources, local community empowerment is carried out, through capacity building and providing access in order to improve their welfare. **Major conclusions:** The prevention and eradication of deforestation should pay attention to the principles of sustainable forest management by the government and regulatory agencies with involving grassroot level to obtain sustainable and optimal benefits of forest management. **Contribution to the field:** This study contributes to the intertwined relationship between law enforcement in developing forest management and social participation through a series of mechanisms and practices based on local wisdom. **Important aspect of the study:** The findings highlight social forestry as a sustainable forest management practice in balancing natural

sustainability and social justice as law enforcement priorities. **Research limitations/implications:** The theoretical scope is specific to the idea of natural sustainability in the context of social justice. This has theoretical implications for further studies to provide empirical and practical justification for the implementation of social forestry in Indonesia. **Practical implications:** The findings practically underline the need for social forestry activities through efforts to provide legal access to local communities in the forms of forest management, business permits, plantation, partnerships, recognition and protection and customary law for community welfare and forest resource conservation. **Social implications:** The principles and practices of community involvement in social forestry are required to reduce poverty, unemployment and inequality in the management/utilization of forest areas.

Keywords Sustainable Forest Management, Law Enforcement, Community Participation, Illegal Logging, Deforestation, Indonesia

1. Introduction

The rate of deforestation of Indonesia's primary forests

has continued to decline in recent years. Indonesia's primary forest land was recorded to have only decreased by 270 thousand hectares in 2020, lower than the previous year which reached 323.6 thousand hectares. However, Indonesia's deforestation rate ranks in the fourth position in the world, after Brazil, Bolivia and Democratic Republic of the Congo [1]. In a legal context, the destruction of such an extensive forest was due to the non-compliance with legal provisions by the holders of forest concession rights or currently better known as permits for timber forest product utilization. One of the neglected obligations is implementing the Indonesian selective logging system in exploiting forests [1]. This continues to happen until now. The Ministry of Environment and Forestry released the data about the deforestation that occurred throughout 2020 in Indonesia which reached 116,900 hectares. Meanwhile, data from the University of Maryland reported that deforestation in Indonesia in 2020 was 270,462 hectares, while Atlas Nusantara (Tree Map) stated that during the same period there were 222,453 hectares of deforestation throughout Indonesia [2]. By region, data showed that Kalimantan had the highest deforestation rate of 41,500

hectares (35%), followed by Nusa Tenggara (21,300 hectares), Sumatra (17,900 hectares), Sulawesi (15,300 hectares), Maluku (10,900 hectares), Papua (8,500 hectares) and Java (34 hectares) (Appendix) [3, 4].

It is calculated that the deforestation rate has increased and decreased every year. This happens because of the dynamic changes in land cover due to human activities in utilizing the land, resulting in the loss of forest cover or the addition of forest cover due to planting. For clarity, the deforestation rate is shown in Figure 1 [5].

Indonesia has been calculating deforestation rates periodically since 1990 (Figure 1). The highest deforestation rate occurred in the 1996-2000 period, which was 3.51 million hectares/year. During that period, there was a great forest fire. In the following period, from 2002-2014, there was a decrease in the rate of deforestation, in line with a decrease in the incidence of forest and land fires, and a tight control over some excesses of decentralized forest management. In the 2014-2015 period, the deforestation rate in Forest Areas was 0.82 million hectares, of which was caused by forest fires that occurred in 2015 [5].

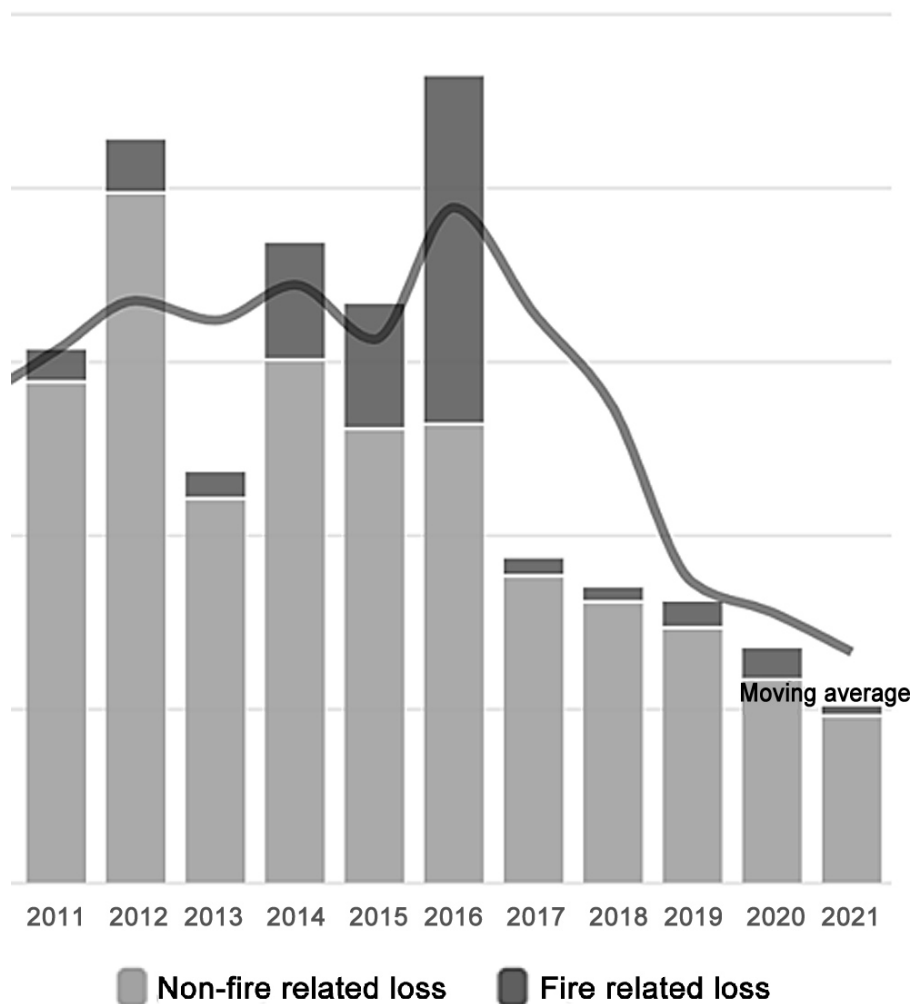


Figure 1. Deforestation Rates of primary forest in Indonesia

The Indonesian Forum for the Environment stated that every minute an area of 7.2 hectares of Indonesian forest is destroyed due to destructive logging. The Ministry of Forestry stated that losses due to timber theft and distribution of forest products amounted to 30.42 trillion rupiah per year. To protect forest areas from rampant illegal logging activities, it is necessary to enforce laws to prevent environmental damage. Law enforcement is an effort to make the law a guideline for behavior in every legal act, the point of which is to obey it as a guideline and as a kind of filter for behavior in managing the environment. Law enforcement must refer to the protection of society or individuals. That is, not only for the sake of enforcing the law without considering the interests of development. There must be a balance between protecting the environment, society and development interests as the basis for sustainable development [6].

2. Literature Review

Deforestation has had a wide impact on environmental, economic, institutional and socio-political aspects, especially those related to the accessibility and biodiversity of forest resources [7]. The rate of deforestation in Indonesia continues to occur due to various factors such as illegal logging, forest fires, weak control and supervision of the operationalization of the licensing system in forest area management, conversion of forest area functions to plantations, settlements and/or other non-forestry development purposes, all of which cannot be denied to have caused damage and destruction to forest resources [8]. The exploitative and more business-oriented way of utilizing natural resources has led to a decline in the standard of living of the community, namely increasing poverty among people who live in nature and around forest areas [9]. The wrong principles of forest area management that have been practiced for the last decades have increased the rate of forest area destruction which continues to this day [10]. Deforestation disrupts the water cycle, resulting in less rain. As a result, the volume of river flow will also decrease so that it will be difficult for farmers and ranchers to get water for their plants and animals. This shows that drought as a result of deforestation affects not only animals and plants, but also human food supplies. In addition, deforestation can cause the loss of natural resources such as wood, wild fruit, herbal plants, as well as various kinds of wild animals that are a source of human food. To combat deforestation, legal measures in term of law enforcement are highly required [8]. Socially, illegal logging can have far-reaching consequences. Deforestation can cause these communities to lose their livelihoods by drought and forest fires of a higher probability. Pollution and environmental damage in the case of forest fires in Indonesia are serious problems under poor management. The lack of supervision and the low quality of forest management in various regions in Indonesia have so far caused so many problems.

Deforestation and forest degradation have caused serious ecological losses and resulted in horizontal conflicts between communities and the plantation and mining industries as well as between local communities.

Illegal logging is the main cause of deforestation in Indonesia [11]. It seems that illegal logging is a crucial problem that is very difficult to be overcome and even minimized. Natural resource management must take into account the general principles of good governance so that sustainable environmental management is implemented [12]. One of the government's efforts to protect forest areas from illegal logging activities is to issue Law No. 41 of 1999 concerning Forestry and Law No. 18 of 2013 concerning Prevention and Eradication of Deforestation [6]. The Law specifies the prevention of deforestation, eradication of deforestation, institutional approach, community participation, international cooperation, protection of witnesses, reporters and informants, financing, and sanctions. One of the causes of the high number of disasters in Indonesia is an ecological emergency indicated by sharp increase in deforestation rates as the main cause [13, 14]. As many as 750,000 hectares of forest in Indonesia are deforested. This amount is not proportional to the government's ability to rehabilitate forests, which is 250,000 hectares. Other causes of deforestation are spatial planning, plantation, mining, urbanization, and industrial development.

Activities that are suspected to be the cause of the reduction in forest area are the conversion of forest areas for development purposes in other sectors, for example, plantations and transmigration; unsustainable logging, timber theft or illegal logging occurs continuously, while mining, encroachment and occupation of land, and forest fires during plantation land clearing always occur every year. On the other hand, not optimal reforestation and reforestation activities have resulted in the expansion of critical land. Environmental damage can also be felt to increase along with increasing deforestation [13, 14]. This is exacerbated by the weak supervision and law enforcement that occurs in dealing with the problems and causes mentioned above. Besides the problem of deforestation, other problems are also encountered due to the high demand for wood while the unbalanced availability and production also causes forest encroachment.

Production sustainability will be achieved if the annual volume of felled is in accordance with the yield management plan which is prepared based on valid data sources and base maps [15, 16]. In realizing the sustainable use of forest resources, sufficient funding is needed for planning, protection, forest development, procurement of infrastructure and work equipment, research and development, and development of human resources [17, 18]. The deforestation caused forest area reduction. The laws and regulations governing forests and illegal logging are contained in Indonesian Criminal Code, Law No. 8 of 1981 concerning Criminal Procedure Law, Law No. 5 of

1990 concerning Natural Resources Conservation and its Ecosystem, Law No. 41 of 1999 concerning Forestry, Law No. 19 of 2004 concerning Stipulation of Government Regulations in lieu of Law No. 1 of 2004 concerning Amendments to Law No. 41 of 1999 concerning Forestry into Laws, Law No. 32 of 2009 concerning Protection and Management of the Environment and Law No. 18 of 2013 concerning Prevention and Eradication of Forest Enterprises and Law No. 11 of 2020 concerning Job Creation. Currently, pollution and environmental damage often occur in industries run by large corporations operating in the fields of industrial plant producers and oil palm plantations. In addition, forest destruction has resulted in floods, droughts and fires which disrupt the social and economic conduciveness of the affected areas [19, 20]. Furthermore, there has been deforestation caused by the use of forests and the use of forest areas that are not in accordance with statutory regulations.

Moreover, Article 12 of Law No. 18 of 2013 concerning Prevention and Eradication of Deforestation, in which everyone is prohibited from cutting down trees in forest areas that are not in accordance with forest utilization permits [21]. Deforestation is one of the environmental issues that have attracted the attention of many parties during the last four decades. The negative impact of deforestation invites a number of other problems, including climate change. The frightening threat forces humans to think about curbing the rate of deforestation and forest degradation as well as global warming. Forests which function as a life support system cannot be separated as a source of life for living things, including humans. Destruction of forests can break the chain of life and at any time will bring disasters and losses. Deforestation with all its biophysical components has indirectly contributed to the global warming.

Regulations in Indonesia have regulated forms of law enforcement and sanctions for illegal logging and deforestation. In this context, law enforcement is a form of relationship between law and society, for where the law works, it affects the social behavior of the community. In law enforcement known as the law enforcement system or criminal law enforcement, as part of the criminal policy or crime prevention efforts, two facilities are needed, namely penal and non-penal facilities. In addition, prevention requires a special unit with sufficient numbers of people and skills in an integrated local network and vertical command system, plus a special budget to support the continuity of its work, including community education in remote villages near areas prone to illegal logging and deforestation. Lastly, in the context of implementing court sentences, real enforcement is needed, both in the form of

the abolition of operating licenses and financial fines for deforesting corporations. This is because without the existence of serious and continuous law enforcement, the deterrent effect of legal measures is difficult to realize.

3. Method

This study is conducted with an empirical normative approach. The technique used in this study is descriptive qualitative. By relying on secondary data relevant to the discussion, the findings are projected using an empirical-data-driven approach. The data used in this study are mainly data on forest deforestation, illegal logging, forest destruction, and deforestation rates released by government agencies and environmental NGOs.

For the normative aspect, this study uses a study of legislation and legal literature to analyze the extent to which the current legal system is capable of preventing deforestation. The theory used to employ this context is from Friedmann [22]. To analyze the data, this study uses a qualitative descriptive analysis technique of triangulation to verify and guarantee the credibility of the findings. The qualitative analysis used refers to Creswell & Miller [23].

4. Results

Data showed that deforestation rates have increased and decreased in each calculation. This happens because of the dynamic changes in land cover due to human activities in utilizing the land, resulting in the loss of forest cover. The deforestation rate in 2015-2016 was 0.63 million hectares. The calculation of the 2016-2017 deforestation rate was carried out based on the interpretation of the Landsat LDCM (Landsat Data Continuity Mission) imagery. The calculation results show that the 2016-2017 deforestation rate in Indonesia was 0.48 million hectares, with the deforestation rate in forest areas of 0.31 million hectares (61.9%), a decrease compared to the 2015-2016 period, which was 0.43 million hectares. Meanwhile, the deforestation rate in other use areas (APL) was 0.17 million hectares (38.1%). The highest deforestation occurred in secondary forests, both inside and outside forest areas, amounting to 0.45 million hectares [4, 5].

Global Forest Watch [24] reports that from 2002 to 2021, Indonesia lost 9.95Mha of wet primary forest, losing 36% of total tree cover loss over the same period. The total area of wet primary forest in Indonesia decreased by 11% over this time period (Table 1). Meanwhile, from 2002 to 2021, Indonesia lost 27.8Mha of tree cover (Table 2), equivalent to a 17% decline in tree cover since 2000 [24].

Table 1. Primary Forest Loss in Indonesia, 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Remaining area of primary forest (%)	94.0	93.5	92.7	92.0	91.0	90.6	90.2	89.9	89.6	89.4
Loss of primary forest (kha)	856	473	737	667	929	373	340	324	270	203

Table 2. Tree Cover Loss in Indonesia, 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Loss of tree cover	2.26*	1.14*	1.89*	1.75*	2.42*	1.30*	1.22*	1.18*	962**	841 **
Percentage of tree cover (%)	1.4	0.71	1.2	1.1	1.5	0.81	0.76	0.73	0.60	0.52
* in million hectares (mha); ** in thousand hectares (kha)										

However, the existing laws and regulations are considered inadequate and have not been able to deal effectively with the eradication of organized deforestation. The crime of illegal logging according to Law No. 41 of 1999 concerning Forestry is formulated in Article 50 and criminal provisions are regulated in Article 78. The basis for the existence of illegal logging is deforestation. It can be concluded that the elements that can be used as a legal basis for criminal law enforcement against illegal logging crimes are that every individual or legal entity and/ or business entity, doing prohibited acts either intentionally or by negligence, cause forest damage, in terms of damaging forest protection infrastructure and facilities, activities that are outside the licensing provisions that damage the forest, violating the boundaries of river banks, ravines, and beaches stipulated by law, cutting down trees without permission, receiving, buying or selling, accepting exchange, accepting deposit, storing, or possessing forest products that are known or reasonably suspected to be illegal forest products, transporting, controlling or owning forest products without the sustainability validation, and bringing heavy equipment and other tools for managing forest products without a permit [25].

In addition to the criminal provisions, the perpetrators are also subject to additional penalties in the form of compensation and administrative sanctions [26]. The criminal threats in giving these sanctions are in the severe category, where the perpetrators are subject to the main punishments in the form of imprisonment, fines and additional penalties for confiscation of all forest products and or tools including their means of transportation. Law No. 5 of 1990 concerning the Conservation of Biological Natural Resources and Their Ecosystems, regulates two kinds of criminal acts, namely crimes and violations, while there are three kinds of criminal sanctions, namely imprisonment, confinement and fines. Criminal sanctions for crimes are regulated in Article 40 paragraphs (1) and (2)

and criminal sanctions for violations are regulated in Article 40 paragraphs (3) and (4) No. 5 of 1990, while the elements of a criminal act are regulated in Articles 19, 21 and 33. The formulation of the criminal provisions in the law can be understood that the articles are only specifically for crimes and violations against certain forest areas and certain types of plants, so that to be applied to the crime of illegal logging only as a complementary instrument that can only function if the elements is fulfilled [25, 27].

5. Discussion

Crimes against environment, especially forestry are special crimes regulated by criminal provisions [28, 29]. There are two criteria that can indicate the special criminal law, namely first, the people or special subjects, and secondly the special actions. Special criminal law with a special subject means a special subject or perpetrator such as military criminal law which is only for military groups. The second type of criminal law whose specific actions are criminal acts carried out specifically in certain fields, such as fiscal law which is only for fiscal offenses. The crime of illegal logging is a special crime which is in the category of criminal law with special actions, namely for forestry offenses involving the management of timber forest products [30, 31, 8]. Basically, the crime of illegal logging, in general is related to the elements of general crimes in the Criminal Code. Destruction as specified in Article 406 to Article 412 refers to the element of deforestation in the crime of illegal logging departs from the idea of the concept of licensing in the forest management system which contains the function of controlling and supervising the forest to ensure the sustainability of forest functions. Illegal logging is essentially an activity that violates the existing licensing provisions [32, 33], whether it does not have an official permit or has a permit but violates the

provisions contained in the permit, such as overtaking or logging outside the concession area owned. In addition, promoting law enforcement against illegal logging needs to be carried out in conjunction with monitoring forest reforestation by permit-holding corporations. Table 3 shows the lack of reforestation carried out per year compared to forest deforestation. Data shows that in 2019-2020, net deforestation was 462,500 hectares compared to only 3000 hectares of reforestation achieved (Table 3).

Table 3. Deforestation rate in Indonesia, 2018-2020

Items	2018-2019*	2019-2020*
Gross deforestation	119.1	465.5
Reforestation	3.6	3
Net deforestation	115.5	462.5

*in thousand ha

In this regard, as state ideology, Pancasila must be the basis or source of material for the formation of laws in Indonesia, including in the effort to reconstruct the rules regarding the prevention and eradication of deforestation in the form of illegal logging. In addition, in the formation of laws and regulations in Indonesia, Pancasila which was given the position as a legal ideal (*rechts idee*) was then placed as the source of all sources of law [34]. Pancasila must be used as a source for all sources of law, both material and formal, both written and unwritten, in accordance with the fourth paragraph of the Preamble to the 1945 Constitution, which contains the five precepts of Pancasila. Then with the placement of Pancasila as the basis and ideology of the state as well as the philosophical basis of the state, every legal substance that is formed must animate the values contained in Pancasila. All regulations that will be enforced must have passed and been filtered from Pancasila. Therefore, the reconstruction of the rules regarding the prevention and eradication of deforestation in the form of illegal logging must be based on the values contained in Pancasila. In other words, the values contained in Pancasila must determine the substance of the rules regarding the prevention and eradication of deforestation. The rules regarding the prevention and eradication of deforestation in the form of illegal logging must not conflict with the values contained in Pancasila [35].

Article 11 paragraph (4) Law No. 18 of 2013 concerning Prevention and Eradication of Deforestation which stipulates that people living in and/or around forest areas who carry out logging outside conservation forest areas and protected forests for their own purposes, and not for commercial purposes must obtain permission from the competent authority in accordance with the provisions of the legislation. Article 11 paragraph (4) is not in

accordance with the variable of protection with indicators that there are provisions that guarantee the protection of the community. This is also contrary to the 1945 Constitution Article 33 paragraph (3) stating that earth and water and the natural resources contained therein are controlled by the state and used for the greatest prosperity of the people and Law No. 41 of 1999 concerning Forestry Article 3 that forestry operations are aimed at the greatest prosperity of the people in a just and sustainable manner. Furthermore, Minister of Environment and Forestry Regulation No. 70 of 2017 concerning Procedures for Implementing REDD+ provides support that a national forest monitoring system is a prerequisite for knowing changes in forest cover and efforts to prevent deforestation and degradation. Baseline emission levels can be used as a framework for determining areas of special concern for either deforestation or reforestation. This reference level will be used as the basis for developing an integrated REDD+ implementation strategy to the level of local agencies and local communities. Furthermore, a forest management plan like this, which is accompanied by a safeguard framework, is expected to ensure that the implementation of REDD+ has a positive impact on social, economic and environmental governance in an integrated and sustainable manner. In this case, reforestation and prevention of illegal logging require community participation as the backbone in realizing sustainable and sustainable forest management which at the same time contributes to emission reduction efforts. However, concrete efforts to make it happen must be made several breakthroughs. The central government as a regulator is expected to be able to translate climate change and REDD+ policies that are integrated with the role of forestry agencies at the operational level and community participation capable of managing the territory. Furthermore, it requires regional governance and stand productivity in the landscape through the preparation of forest governance and forest management plans as well as business plans at the agency level by involving community participation, which is also a solution to deal with deforestation and forest degradation. In addition, policies up to the grassroots level are needed to provide more flexibility for local agencies to estimate the amount of community participation required as well as forest resource utilization strategies and climate change financing options that are possible to support operations in order to reduce deforestation.

The above-mentioned scheme underlines that in managing, utilizing nature and the environment, in this case forests, there are 3 dimensions that must be considered, namely divinity, humanity and ecology. The divine dimension is located at the top corner, while the other two dimensions, namely humanity and ecology are placed parallel to the two corners below it. Figure 2 depicted the three dimensions forming a kind of equilateral triangle or what is called a triangle arrangement [36].

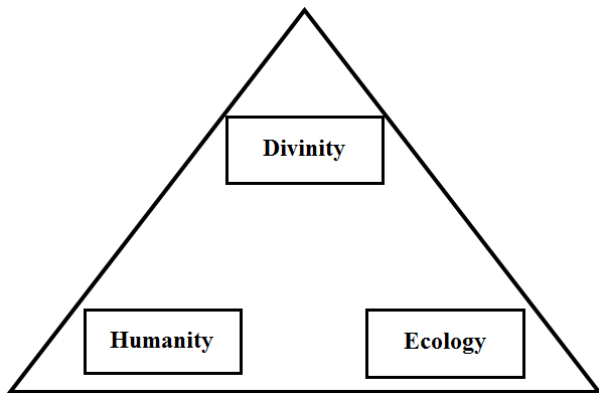


Figure 2. The relationship between divinity, humanity and ecology

To raise public legal awareness in eradicating illegal logging cannot be separated from community empowerment, especially communities around forests. Community legal awareness related to the eradication of illegal logging is closely related to efforts to encourage community participation in forest conservation [37]. Communities must be stimulated to realize that forest sustainability is the continuation of a better life. Efforts to improve welfare must also be realized not only as a slogan, sustainable forests, but the people around them are also prosperous [9]. In the form of a company, the concept of people and planet profit has also been introduced, which is a concept that seeks to create a synergy between the social, environmental and economic aspects of the company with the main core being good corporate, good for the company and good for the environment [38, 39, 40]. The concept introduces how to prevent companies engaging in the management or utilization of forest products from destroying forests by complying with all provisions. On the other hand, the welfare of people living around the forest must also be improved in order to promote their participation in protecting the forest which is also a source of raw materials for the company's survival [41, 42, 43].

Community participation has a very important position in preventing and eradicating deforestation, because basically the community is the party who knows best about their own problems and needs [44]. Therefore, prevention and eradication of deforestation is a law mandate that must be carried out. Asshiddiqie [45] stated that civilizing, correctional and legal education and socialization in a broad sense are often not considered important. In fact, without being supported by awareness, knowledge and understanding by legal subjects in society, it is impossible for a legal norm to be applied upright and obeyed. Therefore, the agenda of civilizing, correctional and legal

education needs to be developed separately in order to realize the idea of a rule of law in the future [46].

Arnstein [47] pointed out community participation refers to community active involvement in the process of determining the direction of the development, policy, strategy and its implementation. Community participation is one of the characteristics of the community development movement. The desired community participation is not only in the implementation stage, but also in determining or planning activities and determining results. Communities are more trusting of a development project or program if they feel included in the preparation and planning process. Efforts to achieve self-supporting projects in developing countries show that local community assistance is very difficult to expect if they are not included. There is an assumption that participation is a democratic right when people are involved in the development of their own society. It can be felt that they also have the right to give advice on determining the type of development carried out in their area. In this context, the levels of participation from the highest to the lowest are [48]:

- (1) Citizen Control, the community can participate in and control the entire decision-making process
- (2) Delegated Power, the community is given the authority to make decisions on certain plans
- (3) Partnership, the community has the right to negotiate with decision makers or the government, by mutual agreement power is shared between the community and the government
- (4) Placation, the holder of power in this case the government needs to appoint a number of people from the affected part of society to become members of a public body, where they have certain access to the decision-making process
- (5) Consultation, the community is not only notified but also invited to share opinions, although there is no guarantee that the opinions expressed will be taken into account in decision making
- (6) Information, the power holder only provides information to the public regarding the activity proposal, the community is not empowered to influence the results
- (7) Therapy, the power holder gives reasons for the proposal by pretending to involve the community
- (8) Manipulation, the community only uses its name, an activity to manipulate information to gain public support and promise a better situation even though it will never happen.

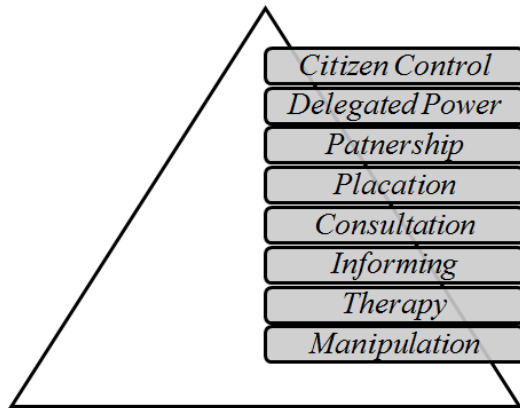


Figure 3. Community participation rate

Figure 3 showed the community participation level. Community participation in Law No. 18 of 2013 concerning prevention and eradication of deforestation, it relates to community participation Article 58 – Article 63 namely community participation where the community has the right to a good and healthy living environment, including the quality of the environment produced by forests, utilization of forest in accordance with the provisions of laws and regulations, community empowerment efforts, and counseling on the importance of forest conservation and the negative impacts of deforestation [49, 50].

6. Conclusions

The results showed that in the implementation of the prevention and eradication of deforestation, more attention should be paid to the legal structure, legal substance and legal culture with the principles of sustainable forest management by the government and regulatory agencies. In the grassroots, implementation can be taken to instill the

principles of sustainable forest management and use with local wisdom through community participation. To obtain optimal and equitable benefits of forest resources, local community empowerment is carried out, through capacity building and providing access in order to improve their welfare. Empowerment of local communities is the obligation of the government, province, district/city whose implementation is the responsibility of the head of the forest management unit. Community empowerment can be done through village forest, community forestry or partnership. In forest areas that have not been encumbered with forest utilization permits or forest management rights, this is done through village forests and community forests. Meanwhile, in forest areas that have been encumbered with forest utilization permits or forest management rights, this is done through a partnership pattern. Included in previous policies or programs that have been implemented in the context of community empowerment, among others, is social forestry.

Social forestry emphasizes the implementation framework in which socially managed forests are considered to be a new economic center for the community in alleviating poverty and preserving forest sustainability. Moreover, social forestry aims to minimize the threat of deforestation and economic disparities for local community. Social forestry in this context is useful to accommodate local interests and problems in forest areas. This program provides an opportunity for the community to manage forest areas while conserving them by establishing a social forestry-based business. Local communities or indigenous communities are used as the main actors for forest management in their areas with the aim of improving economic quality, preserving the environment, and balancing socio-cultural dynamics with local economic interests. Finally, this program is expected to be able to provide new economic opportunities such as agroforestry and ecotourism around forest areas.

Appendix

Indonesia's Net Deforestation Rate by region, 2019-2020 (ha/year)

Province	2019-2020		
	Forest Area	Non-Forest Area	Total Deforestation
Aceh	6,737.5	4,870.5	11,608.0
North Sumatra	9,583.9	2,818.5	12,402.4
West Sumatra	7,626.0	1,698.9	9,324.8
Riau	136,998.3	5,012.9	142,011.1
Jambi	26,109.6	1,272.3	27,382.0
South Sumatra	57,857.6	2,797.5	60,655.1
Bengkulu	1,959.4	201.2	2,160.6
Lampung	182.3	443.2	625.4
Bangka Belitung Islands	1,574.3	580.2	2,154.4
Riau islands	356.7	205.3	562.0
Jakarta	-	-	-
West Java	3,782.4	1,194.9	4,977.4
Central Java	1,859.6	44.5	1,904.0
Yogyakarta	141.4	185.0	326.4
East Java	5,066.4	738.3	5,804.7
Banten	67.3	16.1	83.4
Bali	89.3	1.7	91.0
West Nusa Tenggara	12,382.4	3,589.4	15,971.9
East Nusa Tenggara	1,279.2	2,233.6	3,512.8
West Kalimantan	15,109.1	8,985.9	24,095.0
Central Kalimantan	17,974.3	8,265.8	26,240.2
South Kalimantan	6,309.9	1,789.4	8,099.3
East and North Kalimantan	43,031.6	26,552.9	69,584.6
North Sulawesi	213.0	47.8	260.8
Central Sulawesi	2,292.4	1,499.4	3,791.8
South Sulawesi	1,387.7	628.0	2,015.7
Southeast Sulawesi	4,544.1	2,013.1	6,557.2
Gorontalo	261.3	116.8	378.1
West Sulawesi	-229.2	0.4	-228.8
Maluku	1,214.7	57.2	1,271.8
North Maluku	1,780.7	546.2	2,326.8
West Papua	1,855.3	3,440.8	5,296.1
Papua	6,468.1	4,744.1	11,212.2
Total	375,866.7	86,591.8	462,458.5

Source: [4]

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