Alternative livelihood dilemmas and the degradation of protected areas: power contestation and social-ecological interests in Gede Pangrango National Park

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Abstract. Forest degradation has occurred in Indonesian Protected Areas, including Gede Pangrango National Park. Forest degradation is marked by the incidence of illegal logging and land occupation by local communities. Some national parks promote alternative livelihoods to reduce land occupation, but the results are less satisfactory. This research was conducted in Gede Pangrango National Park, with a focus on observing the process of power contestation, the development of alternative livelihoods and forest degradation in Sukatani village. This study uses qualitative methods to answer: 1) How social formation is associated with forest degradation; 2) Why alternative livelihood development did not succeed to reduce forest degradation; 3) What power strength which made the local people prefer land occupation. The study was conducted in Gede Pangrango National Park with the focus of the study to observe the process of power contestation, the development of alternative livelihoods and forest degradation in Sukatani village. The results reveal that the occupation of land and forest degradation followed from power relations. Local communities build power relations to maintain access rights. Farmers prefer land occupation as a rational action. Ties of patronage at the farm level made small farmers continue to maintain land occupation. Thus, market power and the high economic value of agriculture works forest protection and restoration worked against the restoration of forests.

1. Introduction
Protected areas constitute a major component of national and regional strategies to counter biodiversity loss. They are considered in-situ repositories of genetic wealth as well as relics of pristine landscapes that deeply touch the spiritual, cultural, aesthetic and relational dimensions of human existence [1]; [2]; [3]. However, ‘paper parks’ and ‘island parks’ have become synonymous with many protected areas, depicting how many protected areas fail to maintain their ecological character [4]; [3]. Conservation organizations at national, regional and international levels are pushing for the expansion of protected areas to serve as the last remaining ecosystem on earth [5]. A notable expansion of protected areas has
been recorded between 1911 and 2011, when the number of protected areas increased from 153,000 to over 157,000, covering about 12.7% of the world terrestrial land and 1.6% of the marine areas [6].

The number of forested areas included in the protected areas network has increased significantly over the past 20 years, evolving from “paper parks” before 1990 to scarcely funded parks between 1990 and 2006. Previous park management strategies have often focused on imposing strict rules regarding access to the protected area and the use of natural resources from the protected areas” territory. As a result, some residents and tourists developed negative perceptions of protected area conservation efforts [7]; [8]. Scientists, however, argue for an increase in protected area coverage to ensure that the world’s remaining natural wealth is sufficiently protected [9]. With that proposition, more human-restricted reserves and more conservation induced displacement are expected to increase [10]. Following these global trends, Indonesia has also experienced an expansion of protected areas since 1990. This expansion also applies to the old National Parks, including in Gede Pangrango National Park. More often, conservation induced displacement costs are borne by people living adjacent to these protected areas. The cost may be associated with loss of forest and land resources, potential for livelihood activities, and social ties developed over the course of living in or around the area [10]. Protected areas are regarded as pristine lands that need to be separated from human activities. Neglecting the role of people in nature conservation has led to conflicts between rural communities and authorities that are responsible for managing protected sites [11]; [12]; [13]; [14]; [15]; [16]; [10].

Conflicts between protected area managers and local communities arise out of the externally enforced exclusion of the communities from the protected area and the resources they had access to before the designation of protection. Conflicts range from disagreements over illegal entry and development of settlements in the park, to major confrontations, arrests, prosecutions and even deaths [3]. According to [17]; [18] conflicts arise as a result of struggles over access to resources or historical land disputes. Though other divergent views have been expressed to explain causes of the conflicts, the dominant view attributes conflict to the system of protected area governance [20]; [21]. Park–people conflicts are rooted in the premise that parks are areas without human habitation, which is based upon a North American model of conservation [22]. The introduction of national parks, with a strict definition of landscape preservation, has entangled people who traditionally maintained control over the use of resources [23]. These conflicts result from constraints imposed by the protected area management on land use and natural resource extraction. Restrictions regarding access to the protected area, agricultural activities, timber extraction, hunting or other such activities, are just some of the most frequent sources of protected area-local community conflicts in the existing literature [24]. When local people can no longer access resources because of a designated protected area, their attitudes toward park authorities turn negative. There are many cases of confrontation between park officials and local people regarding resource restriction [25].

Gede Pangrango National Park is one of the five first national parks in Indonesia. Gede Pangrango Park previously had status as Cibodas, Cimungkad, Mount of Gede and Mount of Pangrango Nature Reserve. This area is designated as a National Park in 1982 by decree of the Minister of Agriculture No 737/1982, extending across 15,196 hectares. In 2003, the Gede Pangrango National Park expanded to include previous production forests managed by the national forestry company (Perhutani), which operates as a State-Owned Enterprises (BUMN). During the handover from Perhutani to the national park, which was formalized in 2009, Gede Pangrango Park increased in land area by 7,655, increasing total park area to 22,851.03 hectares [26].

When production forests are re-designated as protected areas, agricultural development often continues within protected area boundaries [27]. In addition to land-use histories, contemporary trends also influence development within protected area boundaries. For example, increased population pressures can lead to encroachment. In Indonesia, it is common for agricultural expansion to occur within forest areas and residential expansion in agricultural areas (e.g. tree and tea gardens, or kebun). Thus, historical and contemporary trends converge to generate modern causes of encroachment in Gede Pangrango Park.
2. Methodology

2.1. Study area
Gede Pangrango Park is located in Bogor, Sukabumi, and Cianju districts of West Java Province, Indonesia. The study was conducted only on the Sukatani village, in Cianjur regency. Sukatani village contains Resort Gunung Putri, which is part Gede Pangrango Park. Resort Gunung Putri is divided into multiple blocks: 1) Blocks of Ciguntur; 2) Blocks of Tanah Merah; 3) Blocks of Romusa; 4) Blocks of Legok Ipot; 5) Blocks of Tanggeuk; 6) Blocks of Pinus; dan 7) Blocks of Ekaipitus. This research focuses on Tanah Merah and Romusa Blocks, where farmers have begun to cultivate farms within the park borders.

2.2. Methods
Data collection occurred through semi-structured interviews, formalized into a questionnaire. Semi-structured interviews insight into the opinions, values, attitudes, feeling and the issues that people have in common [28]. Interview respondents consisted of farmers, park managers and others. In addition to interviews, individual and group discussions were conducted with local residents (farmers, smallholders, transport services, suppliers, and others actor), park managers and local government.

3. Results and Discussions

3.1. History of Forest Degradation
Degradation in the Gede Pangrango Park is the result of agricultural expansion. Since the addition of former production forest area, conflict and forest encroachment has persisted within Gede Pangrango Park. The agricultural expansion that occurred in production forest occurred before re-designation as a protected area [29].

In Sukatani village, Perhutani began a program in 2002 through an agreement with Sukatani villagers, covering an area of 40 hectares and consisting of 124 people [26]. Based on the agreement and legal documents, Perhutani provided land for the farmers to cultivate until 2014. Cultivation activities continued after the designation of Perhutani land as part of the national park [27]. Efforts to reduce encroachment in the park have been conducted with community development programs,
economic assistance, law enforcement and local government involvement, but the problem has not yet been resolved [29].

**Table 1.** Encroachment in the Gede Pangrango Park

| No | Resort        | Area (Hectares) | Number of Farmers |
|----|---------------|-----------------|-------------------|
| 1  | Mandalawangi  | 70              | 74                |
| 2  | Gunung Putri | 125.11          | 533               |
| 3  | Sarongge      | 239.60          | 545               |
| 4  | Tegalega      | -               | -                 |
| 5  | Goalpara      | -               | -                 |
| 6  | Salabintana   | -               | -                 |
| 7  | Situ Gunung   | 10.30           | 62                |
| 8  | Nagrak        | 273             | 806               |
| 9  | Pasir Hantap  | 177.68          | 386               |
| 10 | Bodogol       | 17.19           | 83                |
| 11 | Cimande       | 79.76           | 97                |
| 12 | Tapos         | 2.54            | 26                |
| 13 | Cisarua       | 3.40            | 17                |
|    | **Amount**    | **998.57**      | **2,629**         |

*Source: [33]*

Initially 124 farmers cooperated with Perhutani to cultivate 40 hectares, but in 2013 the number of farmers cultivating area in the Perhutani land increased to 533 people and 125.11 ha. This increase occurred over a period of regulatory uncertainty. In 2003, through a policy of national park extension, the status of forest area managed by Perhutani was officially designated to become part of the Gede Pangrango National Park. However, there was a time lag between changing the designation of the forest areas and shifting management from Perhutani to the national park management (*Balai TN*). The *Balai TN* just handed over the management of those former Perhutani’s forest areas in 2009, six years after they were stated as part of the national park. This created uncertainty with regard to management responsibility between 2003 and 2009. Managerial uncertainty is often associated with ineffective management forest areas and increased forest degradation (see [30]; [31]).

3.2. **Social Relations of Forest Degradation**

This paper draws on the “theory of access” by [32], who defined access as the “ability to benefit from things”. By focusing on ability, rather than rights, the authors distinguish access from property and there by draw attention to a wider range of social relationships that can enable or constrain people to benefit from resources [32]. Over time and scale, people and institutions are positioned differently in relation to access to land; “Different political-economic circumstances change the terms of access and may therefore change the specific individuals or groups most able to benefit from a set of resources” [32]. In short, access to land is affected by the “bundle of powers” different people hold and can draw on [32]. Degradation in Gede Pangrango Park due their "access" as ability to benefit of land. Farmers still can work on forest land though the forest status has changed from production forest (Perhutani) into a national park.
Figure 2. Social Relation of Land Occupation in Sukatani

The encroachment in Sukatani is made up of complex social relations. As with other examples in Indonesia, encroachment is often performed by laborers who work as smallholders/farmers, and those in charge of investment often own land [29]. Thus, ties of patronage create distortions to determine who damages forestlands. Complex social relations also extend to actors that affect land use beyond direct encroachment, including transport providers, fertilizers providers, and middlemen who provide other agricultural inputs. High demand for vegetables in nearby urban environments reinforces dependency agricultural activities in Sukatani [27].

Restoration efforts in Gede Pangrango Park have sought to improve degraded forests since 2007, but demonstrate little success. Between 2007 and 2014, Gede Pangrango Park has restored 400 plants per hectare. Over 7 years, park staff have planted 72,800 plants in 7 Blocks of Gunung Putri Resort, but many of these plants died because of farming activities.

| Years | Restoration Area | Program |
|-------|------------------|---------|
| 2007  | 50 Ha            | The participatory rehabilitation program (RHLP) |
| 2009  | 20 Ha            | The CSR program from DAIKIN, DENSO and Gunma Safari Jepang |
| 2010  | 35 Ha            | Rehabilitation program from Ministry of Forestry |
| 2011  | 25 Ha            | Rehabilitation program from Ministry of Forestry |
| 2013  | 22 Ha            | Citarum Watershed Management and Biodiversity Conservation Program from ADB-GEF |
| 2014  | 30 Ha            | Rehabilitation program from Ministry of Forestry |

Source: [33]

Park Managers claim that farmers intentionally damage restored areas; however, farmers deny this allegation. [29] find evidence of intentional damage when farmers make a “teres” incision, burn the base of trees, and prune it. This aligns with the claim that farmers have a strong interest in maintaining access to forest land, and thus attempt damage trees or plants that might shade or otherwise harm their crops.
3.3. Power Contestation

Access to land is subject to contestations and struggles resulting from concurring but ambivalent institutional regimes and power asymmetries [34]. Some farmer leaders have been trying to build relationships with government officials at the village level up to the district government level to maintain their access to land. Farmers seek to intimidate Park Managers to show the strength they have to maintain land access. According to [35], these “new frontiers of land control were being actively created, through struggles involving varied actors, contexts, and dynamics”.

In 2014, since the leader of the farmers (Isa) had died, Gede Pangrango Park Managers seek to build strength in order to exclude farmers from the park. Park Managers thus built relationships with police, military and local governments. [26] notes that police support park managers to maintain and conserve the national parks and prioritize preventive action. However, police carry out repressive action if there is no other choice [26]. On December 12, 2014, Park Managers and local government held an informal dialogue to resolve encroachment by local leaders (Bupati). The meeting included representatives of local government units, Perum Perhutani, the TNI (Indonesian National Army), and the Police. Efforts to resolve encroachment issues intensified with socialization/meetings in the village and farmer groups. But this result is unsatisfactory. Farmers do not want to attend when they are invited by head of the village, park managers, TNI and community leaders.

Park management efforts to build strength with local government has affected village-level government. Village leaders support park managers in reducing. In June 2014, an investigation team was formed with support from the Sukatani village leader through Decree No: 522.5/SK.09/2014 dated July 14, 2014. The investigation team was tasked with the responsibility of verifying farmer and occupation data with original Perhutani documents. This proved difficult, given the amount of change that occurred after the land was designated as part of the national park, but before formal management began. Park managers have a letter (No 1410/IV-11/BT-5/2015) that formalizes the termination of agricultural work in the national park area. However, this letter has faced significant resistance among farmer groups. The farmers revolted against expulsion without compensation. Farmers also demanded more time to complete their agricultural activities, in order to transition to a different livelihood strategy. According to one farmer:

Sanusi (Encroachers)

“Encroaching farmers were invited by Perhutani, so their status is legal. If people will be evicted from the area of national park, it is necessary to provide new land or compensation, like farmers in the Sarongge Resort received. 80% of farmers have no land, so they depended on national park land”

Park managers did not agree to compensate farmers, citing the extended amount of time farmers received to use former Perhutani land. The focus on expelling villagers from Sukatani has received general support from other communities, including Maleber village.

Tahidin

“Maleber people were affected by disasters, such as flood and drought. [These disasters were] due to degraded forests in Gunung Putri. If the compensation to be awarded then it would be unfair because the people that do not damage the forest cannot be compensated”

3.4. Alternative Livelihood Development and Rational Choice of Farmers

Other schools of thought reflect a human-centred approach, focusing on: economic empowerment of residents [36]; [37]; [21] changing relationships between fringe communities and protected area managers [38]; [39]; and the complex links between biodiversity degradation and rural poverty [40]; [41]; [42]; [43]. Gede Pangrango Park managers have made efforts to improve economic alternative of farmers. Alternative livelihoods, a direct benefit of park management [44] has been considered to divert livelihood of farmers from a land-based economy into a new economy based on livestock. Livestock management has become the preferred livelihood alternative to encroachment in Gede Pangrango Park,
because it does not require as much land for cultivation and is part of local custom. Park Managers aim to run the livestock program in order to reduce conflict due to participant exclusion.

| Year | Alternative Livelihood Program | Result |
|------|--------------------------------|--------|
| 2007 | Livestock of sheep, cattle and mushroom cultivation | No sustainable results |
| 2013 | 180 rabbits and rabbit breeding facilities | Rabbits reduced to 16 |
| 2014 | 18 sheep and sheep breeding facilities | Number of sheep increased to 31, but cannot be sold and do not have a direct economic value |

Although Park Managers provided alternative livelihood strategies only to farmers outside of Perhutani land, alternative livelihood aid was not accompanied by agreements for farmers to leave their land. An alternative solution to conflict is benefit-sharing [24]; [45]. Stewardship may only be effective if alternative economic incentive programs are also developed with a participatory process [46]. Park Managers claim to have done a participatory process in determining the development of alternative livelihood. However, any decision of the development of alternative livelihood based on the strong power of the Park Managers, such as sheep and rabbit breeding, have been selected due to its ease of purchase and implementation. During the program, local participation was not managed by a professional social worker, but by Park Managers. This reduced project efficacy. Almost all the programs to develop alternative livelihoods in Gunung Putri failed to produce long-term livelihood alternatives. According to [47] an alternative livelihood program’s success may be attributed to five factors: (1) a high level of participatory involvement and community leadership, (2) the enhancement of local perception that natural resources have been recovering gradually, (3) a combination of scientific and traditional knowledge, (4) economic incentives created by the alternative income generation, and (5) well-defined boundaries allowing enforcement to take place. Park managers failed to deliver a combination of these five references; as a result, projects did not achieve their desired goal.

The designation and management of protected areas not only conserves biodiversity, but also contributes to sustainable development through income generated from tourism [36]. A goal for many national parks is to demonstrate careful and sensitive tourism development that provides recreational opportunities while maintaining environmental quality and aesthetics of surrounding areas [23]. Gede Pangrango Park Managers have not developed a community-based ecotourism management. Tourists who visit Gede Pangrango Park have not used the opportunity as a solution for the development of alternative livelihoods. However, ecotourism does have potential to reduce conflicts. According to [48]; [49] this approach strives to reconcile differences between local residents and protected area needs, to advance their participation in resource management, and to improve their level of economic comfort.

We argue that Gunung Putri farmers choose to maintain agricultural livelihoods on land within the national park. Farmers have no interest in pursuing livelihood alternatives because, thus far, the projects to deliver alternative livelihood strategies have produced little economic value. Thus, these alternatives are inherently risky. However, without such a livelihood alternative, it is unlikely that encroachment in Gede Pangrango National Park will be ameliorated.

4. Conclusions
Linking community development to wildlife management can provide a potential alternative for farmers who currently farm land inside Gede Pangrango National Park. Community development and wildlife management promotes self-sustaining economies, including alternative livelihoods such as beekeeping, handicraft production, and small livestock management. However, such activities must be aligned with local custom to ensure that alternative livelihood programs provide a rational choice that farmers are
interested in pursuing. Payment of compensation to groups and individuals who were seriously disadvantaged as a result of protected area establishment may also be vital in reducing conflicts. Compensation payments have been awarded to farmers in Sarongge Block, but they have not yet been allocated to farmers in Gunung Putri Block. Sarongge Block has become a pilot payment of compensation for loss of land access, with payment valued at IDR 750,000 per person for 1 year. The compensation system is not limited only to lands expropriated for the national park, but also for consistent damages caused by wildlife. The exploitation of certain natural resources inside protected areas on a sustainable basis (e.g., wild honey, and other sources) often improves the living conditions of local populations and, at the same time, diminishes conflicts between locals and park authorities. However, when such alternative livelihood schemes are entangled in complicated patron-client schemes, the exploitation of natural resources cannot guarantee sustainable outcomes.

This study finds that removing local communities from the lands that they have been cultivating, without consultation or adequate compensation, can result in retaliation and hostile attitudes toward national park objectives. Restricting local access to natural resources, which can play a crucial role in their livelihoods, health, and culture, might favor biodiversity conservation in the short term. However, in the long term, such strategies may fail to preserve biodiversity if park authorities disregard the importance of simultaneously promoting active local community participation in national park management, capacity building, implementing adequate outreach programs and efficient governance, is guaranteeing that penalties will be applied and consistently enforced. Local residents need to be assured that their voices are included in the planning and decision-making process of any development programs that are launched for the improvements of livelihoods.

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