The Development Continuum: Change and Modernity in the Gayo Highlands of Sumatra, Indonesia

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Matthew J. Minarchek
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This thesis titled
The Development Continuum: Change and Modernity in the Gayo Highlands of Sumatra, Indonesia

by
MATTHEW J. MINARCHEK

has been approved for
the Center for International Studies by

____________________________________
Gene Ammarell
Associate Professor of Sociology and Anthropology

____________________________________
Gene Ammarell
Director, Southeast Asian Studies

____________________________________
Daniel Weiner
Executive Director, Center for International Studies
ABSTRACT

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This thesis provides a 'current history' of development in the village of Aih Nuso in Gunung Leuser National Park, Sumatra, Indonesia. Development in the Leuser region began in the late 1800s when the Dutch colonial regime implemented large-scale agriculture and conservation projects in the rural communities. These continued into the 1980s and 1990s as the New Order government continued the work of the colonial regime. The top-down model of development used by the state was heavily criticized, prompting a move towards community-based participatory development in the later 1990s. This thesis examines the most recent NGO-led development project, a micro-hydro electricity system, in the village of Aih Nuso to elucidate the following: 1) The social, economic, and political impacts of the project on the community. 2) The local people's perceptions of technology, modernity, electricity, and development. And, 3) To what extent is an NGO-led development empowering to this local community or is it just a guise that reinforces development hegemony and outside power.

Approved: _____________________________________________________________

Gene Ammarell

Associate Professor of Sociology and Anthropology
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>3</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>4</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>7</td>
</tr>
<tr>
<td>ABBREVIATIONS AND ACRONYMS</td>
<td>8</td>
</tr>
<tr>
<td>CHAPTER 1: INTRODUCTION</td>
<td>9</td>
</tr>
<tr>
<td>Research Questions</td>
<td>12</td>
</tr>
<tr>
<td>Methods</td>
<td>13</td>
</tr>
<tr>
<td>Theoretical Framework and Literature Review</td>
<td>15</td>
</tr>
<tr>
<td>Poststructural Critiques of Development</td>
<td>17</td>
</tr>
<tr>
<td>CHAPTER 2: BUILDING MONUMENTS: A HISTORY OF DEVELOPMENT IN GAYO LUES</td>
<td>28</td>
</tr>
<tr>
<td>Introduction</td>
<td>28</td>
</tr>
<tr>
<td>Study Site</td>
<td>31</td>
</tr>
<tr>
<td>Governmentalized Locality</td>
<td>41</td>
</tr>
<tr>
<td>Neocolonial Realities</td>
<td>46</td>
</tr>
<tr>
<td>CHAPTER 3: (EM)POWERING COMMUNITY</td>
<td>52</td>
</tr>
<tr>
<td>Micro-Hydro Electricity and the Putri Betung Project</td>
<td>54</td>
</tr>
<tr>
<td>Social Aspects of Development in Aih Nuso</td>
<td>56</td>
</tr>
<tr>
<td>Technical Aspects</td>
<td>64</td>
</tr>
<tr>
<td>CHAPTER 4: GAYO NOTIONS OF TECHNOLOGY AND MODERNITY</td>
<td>71</td>
</tr>
<tr>
<td>Village Perceptions of Economic Development</td>
<td>74</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1: Gunung Leuser National Park</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2: Overview of Alas River Valley</td>
<td>34</td>
</tr>
</tbody>
</table>
ABBREVIATIONS AND ACRONYMS

BPK- Badan Perwakilan Kampung (Village Representative Body)
BRR- Badan Rekonstruksi dan Rehabilitasi (Reconstruction and Rehabilitation Agency)
GAM- Gerakan Aceh Merdeka (Free Aceh Movement)
GMO- Genetically Modified Organism
IBEKA-Institut Bisnis dan Ekonomi Kerakyatan (People-Centered Economic and Business Institute)
ICDP- Integrated Conservation and Development for Lowland Rainforests in Aceh
LIF- Leuser International Foundation
LMU- Leuser Management Unit
NGO- Nongovernmental Organization
PACOS Trust-Partners for Community Organizations
PLN- Perusahaan Listrik Negara (State-Owned Energy Company)
PNPM- Program Nasional Pembangunan Masyarakat (National Program for Community Development)
RANTF- Recovery Aceh Nias Trust Fund
TNGL- Taman Negara Gunung Leuser (Gunung Leuser National Park)
WWF- World Wildlife Fund
CHAPTER 1: INTRODUCTION

The first micro-hydro project site I visited was in the small village of Bario in the Kelabit Highlands of Sarawak, Malaysia in December of 2007. I traveled to the Bario Asal longhouse to learn about community-based development and micro-hydro electricity. From the newspaper articles I read online I was prepared to visit a micro-hydro project that was in working condition. I was excited to hear the Kelabit community’s perceptions of a successful renewable energy project and gain a better understanding of how sustainable development projects could benefit marginalized communities throughout Insular Southeast Asia.

Upon arriving on the small gravel landing strip in Bario, I was greeted by workers from the nongovernmental organization (NGO), Partners of Community Organizations (PACOS Trust). PACOS Trust specializes in community-based micro-hydro development in Sabah and Sarawak, Malaysia, and was working on the project with the Kelabit community. We drove to the Bario Asal longhouse and discussed the development project I was about to see. The micro-hydro project in Bario was constructed and completed in 1999 by the Malaysian government and was officially opened at a ribbon-cutting ceremony by the former Malaysian Rural Development Minister. The turbines of the system were opened and electricity was generated to the longhouse and the nearby school…for seven hours. As it turned out, what I had read in the newspapers and online was a bit out of date, and I was in for a surprise. In a devastating turn of events for the local people, the project, which cost the federal
government RM12 million (USD 3,300,000) failed and was abandoned after only one day in operation. The residents of the longhouse and the staff of the school turned the diesel generators back on and gave up hope for a renewable energy source.

As I arrived at the Bario micro-hydro project, I noticed the pipes from the past infrastructure had been heavily damaged and were scattered throughout the surrounding forest from intense floods that swept through the previous year. Other parts of the system had been stolen and sold for scrap. There was not much left of the infrastructure except for the dam across the small stream in the mountains above the Kelabit community and the powerhouse below. PACOS Trust was helping the community rebuild the micro-hydro system using a community-based development model focused on local participation. The development specialists from the NGO described the government’s attempt at building the micro-hydro system as a “cut and paste” project; a simplified design based on a previous project at a different location. They installed a turbine and generator with a 100-kilowatt (kW) capacity on a river only large enough to generate at the most 35 kW of electricity. The system the government had built was much too large for the small stream and could not work. Furthermore, the pipeline that carried the water from the dam to the turbines was built in a flood zone, which could have been avoided by including local knowledge of the landscape. So if the project had continued working, the seasonal floods that swept down the mountainside still would have destroyed it.

In the end, PACOS Trust rebuilt the micro-hydro system at the Bario Asal longhouse and the community now receives electricity from the project. To pay for the new system, a few international organizations, including the non-profit organization
Seacology, donated funds but in the end it cost the local community over RM 100,000 (USD 27,500) of their own money. During my time at the longhouse, I participated in community meetings led by PACOS Trust to discuss project updates and observed the process of community-based development structured around local knowledge. The staff from PACOS Trust worked closely with local villagers to keep them informed on the new project and to listen to their ideas on how it could be improved or in what ways it could benefit members of the longhouse. I immediately became fascinated with participatory development and how decentralized projects occur in rural Southeast Asia. It is from this experience in the Bario Highlands of Sarawak that the idea for this thesis originated.

This thesis is not concerned with the Bario development project, but instead on a project in the village of Aih Nuso in Gunung Leuser National Park (TNGL), Sumatra, Indonesia. A similar situation had occurred in Aih Nuso, and my thinking and framework for the research was influenced by my experiences and observations in Bario, Malaysia. Upon arriving in Aih Nuso, I discovered that there were many similarities between that project and the one in the Kelabit Highlands of Bario, Sarawak. The Indonesian government built a micro-hydro project in Aih Nuso in 2006, and within a month it had quit working and failed altogether. The government did not return to fix the system. Just as the Bario community had done, the local community in Aih Nuso had to consult with an NGO, in this case the People-Centered Economic and Business Institute (IBEKA), to rebuild the system. However, in Aih Nuso, all the funding for the new project was provided by outside organizations along with IBEKA, and the local people did not have to contribute financially for the development. Beginning with my visit to
the longhouse in Bario and continuing on with this research, my interests in participatory development and the impacts of small-scale development programs on local communities have steadily grown.

![Figure 1: Gunung Leuser National Park](image)

**Research Questions**

In Indonesia during the Suharto era (1967 - 1998), nongovernmental organizations (NGOs) grew out of the environmental and human rights movements of the 1980s (Collins 2007, Tsing 2005). Since the transition to democracy in 1998, NGOs
have used the discourse of decentralization, social empowerment, community-based and participatory development, sustainability, and site-specific and community-appropriate projects when advocating their causes. In the past decade across Indonesia, there has been a dramatic increase in the number of NGOs and NGO-led development programs intended to ‘improve’ the livelihoods of the population. However, scholars have debated the intricacies of the participatory development approach for some time and there is a sharp divide in the literature between those who support it and those who see it as reinforcing the hegemonic discourses of development.

This thesis contributes to the literature on NGO-led community-based development projects. Using ethnographic data collected in the Aih Nuso community on the micro-hydro development project, it explores the following questions: (1) To what extent is NGO-led development empowering to this local community and to what extent is it just a guise that reinforces development hegemony and outside power? (2) How did this community respond to the participatory development approach? (3) What were the intended and unintended consequences of this participatory development project? (4) To what extent can NGO-led development projects offer hope to rural minorities to improve their livelihoods and better their economic conditions by ‘developing’ on their own terms?

Methods

This research took place in the Aih Nuso community in June and July of 2008. It continued as I traveled with IBEKA to other project locations to get a better
understanding of their development approach. The Aih Nuso micro-hydro project included six sub-villages within the larger village of Putri Betung. I focused my research specifically on the sub-village of Aih Nuso for numerous reasons. First, it was within this sub-village where the micro-hydro project was constructed, and village land was used to house workers from IBEKA. Secondly, I wanted to interview as many residents as possible, and time only allowed for me to study in this sub-village of nearly 140 households and 700 residents. At the time of the study, only two households in the village had access to electricity by means of a diesel generator. Everyone else in the community received lighting from kerosene lamps and open fires in front of their houses.

I chose to use qualitative research methods such as participant observation, structured and semi-structured interviews, and group discussions. I lived with the Aih Nuso community, and on most days I would go to work in the swidden plots with residents, stay at their houses and converse with families, travel to local markets or neighboring villages with them, or wander around the development project talking to workers. I interviewed workers and staff from IBEKA who were involved on the project, local residents (including women, men, and children involved in the project and those not involved), and residents from neighboring sub-villages. I also was involved in group discussions at two separate Aih Nuso village government meetings on the micro-hydro project. Interviews and group discussions were carried out in Indonesian. Some residents did not speak Indonesian but only the local Gayo language, and a Gayo sociologist, Ilham, from a nearby community who was working for IBEKA translated during those interviews. My Indonesian language ability was advanced during this
period, but I had to record many of my interviews and transcribe them afterwards. With the help of Ilham, we translated and transcribed the interviews to English or Indonesian depending on the data received and his English language ability. Lastly, I used secondary sources for historical data on the region, particularly in chapter 2.

Theoretical Framework and Literature Review

Poststructural critiques of development have analyzed “development” as an apparatus of state power, a way for the state to assert control over a weak peasantry. Many have of these critiques have been informed by the theories of Michel Foucault and poststructural theory more generally. For poststructuralists, the state and development are understood as aggressive agents of modernization, which differs greatly from neoliberal critiques of development that view the state as standing in the way of the transformative and modernizing potential of the market (Bebbington 2000). Other development scholars have argued that poststructural accounts generalize about the state and development organizations and ignore the role that individual agents play in the complex process of development at all levels (Mosse 2005, Li 1999b, Dove 1994). For instance, David Mosse contends that “the critical and instrumental perspectives divert attention from the complexity of policy as institutional practice, from the social life of projects, organizations and professionals, from the perspective of actors themselves and from the diversity of interests behind policy models” (2005: 6).

In this thesis, I argue that the state has in fact worked to control the rural people of Aih Nuso village through modernization and resource control programs, while at the
same time leaving the local communities with little room to improve their lives through autonomous methods of generating income. I believe that both poststructural critiques as well as accounts that seek to better understand the motivations behind the individual actors that carry out the development project are crucial to our understanding of the development apparatus. Individual players in the development project (NGO workers, regional government officials, scientists and researchers, and others) each contribute to the outcomes of the development scheme. However, each works within the state system of improvement schemes. No matter how well intended an NGO-led development project is, there will always be unintended consequences that negatively impact potential improvements in people’s livelihoods. Moreover, such projects are always situated within larger development goals and structures put forth by the state. There is seemingly an unending list of development critiques available today, but I will be discussing the works most relevant to this study.

First, I will begin with Foucault’s theory of ‘Governmentality” as it has been used by many poststructural ethnographers when critiquing the role of the state in development. Foucault argues that government control over the population, what he calls ‘governmentality’ is a process that takes form over years of state intervention in the lives of the population. In Foucault’s essay, Governmentality, he argues that, “government has as its purpose not the act of government itself, but the welfare of the population, the improvement of its conditions, the increase of its wealth, longevity” (1991; p. 100). The government has as its central concern the population and their relationship with wealth, means of subsistence, resources, the territory, customs, habits, ways of thinking(Foucault
1991; p. 99). To govern a state is no different then the head of a household, according to Foucault, and “requires applying economy to the entire state, which involves implementing a form of surveillance over all its inhabitants, and the wealth and behaviors of each person” (Foucault, 1991; p. 92). Scholars have used this theory to argue that the state’s accumulation of knowledge over the populace, through the use of statistics and other new technologies, has been used to generate income for the state through taxation, the establishment of political economy throughout the nation, and the creation of a military.

Poststructural Critiques of Development

The poststructural analysis of development finds its roots in James Ferguson’s classic study of rural development in Lesotho (1994). Ferguson suggests that the failed development project he studied had unintended consequences and effects that includes the expansion and entrenchment of state power (1994: xiv). It is not important, for Ferguson, what the development project fails to do, but rather what it does do; the importance lies in the side effects from the project. For instance, while the development project in Lesotho ultimately ended in failure, state power was expanded through the extension of roads into a region that was a safe haven for subversives, a prison was built, and government administration offices were constructed in the region (Ferguson 1994: 254). The main argument in his book is that “Development is an anti-politics machine, depoliticizing everything it touches, whisking political realities out of sight, all the while performing, unnoticed, its own preeminently political operation of expanding
bureaucratic state power” (1994: xv). Ferguson believes that it is not important or even relevant to show that the development apparatus is wrong or to offer a critique of the project perse but to show that the institutionalized production of certain kinds of ideas plays an important role in the production of structural change.

However, by ignoring the work of the development agency or its workers and focusing on generalizations about power (for instance the expansion of bureaucratic power) and knowledge, I believe he misses an important point. I agree with Michael Dove’s suggestion that we can better understand how the development apparatus operates and why failed projects continue to occur if we look to the people that run the development apparatus. According to Dove,

Acknowledgement that the interests of the farmer must be reckoned with if forestry development is to succeed, while once a radical idea, is now widely accepted in forestry development. Yet impasses and failures in the forestry sector persist, in part because one player remains to be recognized: the national forest services and their foresters (Dove 1994: 333).

Ferguson ignores that, while these failed projects persist, anthropologists actually know very little about the institutions that implement these schemes. However, this is changing as more ethnographies and studies are published on aid, policy, and the key players in the development process (see Mosse 2005, Goldman 2005, Hulme and Edwards 1997).

Along the same lines as Ferguson, Arturo Escobar finds little room for improvement in the livelihoods of rural people without radical economic and political change (1995). Escobar suggests that development was what created and invented the “third world” and was used for Northern countries to assert dominance over those of the South (1995). Thus, the idea that people were in need of development came about as
rural populations and the places they live were seen as underdeveloped and in ‘need’ of modernization. In many countries, including Indonesia, labeling the rural populace as ‘backwards’ or ‘underdeveloped’ allowed the state to assert control by turning them into the targets of ethnocentric development programs that further marginalized and oppressed the rural people. Escobar argues that these development interventions aimed to turn rural people into efficient producers, and if they did not transition towards production, they were encouraged or forced to leave the countryside (1995: 157).

Important to this thesis, Escobar argues that development projects must emphasize change at a more decentralized and local/grassroots level. He contends that, “there are no grand alternatives that can be applied to all places or situations” and so “one must resist the desire to formulate alternatives at an abstract, macro level; one must also resist the idea that the articulation of alternatives will take place in intellectual and academic circles” (Escobar 1995: 222: as quoted in Bebbington 2000). The alternatives, for Escobar, are defined by “defense of the local,” “identity strengthening,” “opposition to modernizing development,” and “organizing strategies” that “begin to revolve more and more around two principles: the defense of cultural difference and the valorization of economic needs and opportunities in terms that are strictly not those of profit and the market” (1995: 226). Escobar sees these techniques as a form of peasant resistance similar to James Scott (1985) and many other works of critical anthropology and geographies of development (Bebbington 2000).

In past studies James Scott focused on peasant resistance, but in his most recent book, legibility is the key component to his argument regarding development programs.
Scott argues that development programs aimed to improve the human condition have failed because of oversimplified state models of social organization and the natural environment that lack local, situated knowledge, or what he calls ‘metis’ (1998). Scott cites four elements that when combined lead to full-fledged development disasters implemented by the state. First is the “administrative ordering of nature and society” or state simplifications on management of social organization and the organization of the natural world (Scott 1998: 4). Scott sees the state’s attempts to arrange and organize the population as a means of legibility, one that allows the state to implement taxation, conscription, and the prevention of rebellion (1998: 2).

The second element is what Scott calls the “high-modernist ideology.” This ideology, as Scott argues, is based on the state’s belief that science and technology are the end-all and be-all of development and social organization. He cites huge dams, centralized communication and transportation hubs, large factories and farms, and grid cities as examples of high-modernist approaches of states to organize the population. The third element is that the state must use all its power to bring the high-modern ideology into being using such techniques as war, revolution, depression, and the struggle for national liberation (Scott 1998: 5). Lastly, for the plans of the state to be realized they needed a weak civil society that lacked the “capacity to resist these plans” (Scott 1998: 5). These four elements combined brought about the legibility of the population that allowed the state to carry through with high-modernist plans of control that expanded bureaucratic power.

Scott suggests that development projects have failed because of the state’s
ignorance of the actual functioning of social order. The plans implemented by the state were inadequate to efficiently work on the ground in which a complex social unit operated, one that the state did not understand. Scott concludes, “If I were asked to condense the reasons behind these failures in a single sentence, I would say that the progenitors of such plans regarded themselves as far smarter and farseeing than they really were and, at the same time, regarded their subjects as far more stupid and incompetent than they really were” (Scott 1998: 343). In order to correct start by taking a small step, observing the outcome, then planning the next move. He favors projects that are reversible and that can be undone if mistakes occur. Thirdly, he wishes that developers plan on surprises and choose projects that are flexible. And lastly that developers assume that the local community involved in the project “will have or will develop the experience and insight to improve on the design” (1998: 345).

While Scott’s thesis allows us to better understand the functioning of the state and their “high-modern” schemes to improve the human condition, he does not account for the scientists, nongovernmental organizations, corporations, and international firms that are also dedicated to large and small-scale projects to develop rural people. In response to Scott’s work, Tania Li acknowledges this and asks where in Scott’s book are the “missionaries, social reformers, scientists, political activists, ethnographers, and other experts” who propose schemes of improvement (2005: 386). She proposes that we move beyond the question of why projects fail and look back to Ferguson’s work, and ask, “What do schemes do?” (Li 2005: 384). Scott explores the effects of development projects on local communities, but Li wishes he would reflect further. She argues that
state development schemes are destructive, but at the same time, they produce new forms of local knowledge. Li suggests that it is not as effective to generalize over the impacts of state improvement schemes, but rather they should be “examined empirically, in the various sites where they unfold—families, villages, towns, and inside bureaucracy, among others” (2005: 391).

Using empirical research and data collected at the village level combined with historical accounts, Arun Agrawal analyzes the decentralization of forest management in Kumaon, India (2005). Agrawal’s book begins during the colonial era in India under British rule. British control brought a centralized government in India, and Agrawal uses Foucault’s theory of ‘governmentality’ to argue that the government focused on the use of statistics and numbers, including surveying, demographics, and demarcating forest boundaries, to reconfigure the forests and populations (2005: 6). Forest reserves were created and local villagers found they had limited or no rights left in the reserves and responded with resistance, such as setting reserve forests on fire to challenge the state’s authority (Agrawal 2005: 3).

In response to the forest destruction caused by the rural peasants, the British authority decentralized control over the forests to the local communities. Agrawal cites three results of the effective decentralization of forest management in Kumaon: (1) Decentralization brings about tighter relationships between the state and the periphery as state power is now asserted through self-regulation. (2) The governmentalized locality transforms the relationships between local decisions makers and ordinary members of the community (Agrawal 2005: 16). Using Scott’s theory on legibility, Agrawal suggests
that localized use of the forest is regulated and can be manipulated and calculated so that
the “legibility and visibility of local actions is increased to outside observers” (2005: 16).

(3) State power is practiced in the governmentalized locality by changing the residents’
attitudes to the forest, and subject positions are now “closely tied to practices and
involvement in new regimes of monitoring, enforcement, and regulation” (Agrawal 2005:
17).

However, decentralization of power over resource use and development is not
necessarily a negative for Agrawal. He maintains that instead of local peoples losing
control over their resources as a result of state control, they are now gaining them back.
Furthermore, past top-down policies of governments that were based on greed and
ignorance are now being replaced with a greater awareness of the need to pay attention to
local variations and knowledge in development and forest management practices, albeit

Along with Tania Li, I believe that it is important for anthropologists to ground
their research in empirical data collected at the village level and link it with historical
accounts and global movements just as Agrawal has done. This thesis is based on
ethnographic research carried out amongst the Aih Nuso community and the NGO
facilitating the development project. In this thesis, I will use multiple theoretical
frameworks to highlight the complexity of the development process in Aih Nuso village
within Gunung Leuser National Park (TNGL). In chapter 2, I provide a brief history of
government led development and resource control schemes implemented in the Gayo
Highlands of TNGL beginning during the Dutch colonial era and leading up to the
present. A poststructuralist view using Foucault’s theory of ‘governmentality’ and Scott’s concept of legibility best elucidate the history of development in TNGL. I argue that the numerous development programs and resource management regimes implemented by the government, along with international organizations, have been used as a form of surveillance over the rural peoples to make their lives more legible, and therefore, easier to control (Scott 1998).

In Chapter 3, I move the discussion to participatory development and the micro-hydro project in Aih Nuso from the perspective of the NGO leading the project, IBEKA. Here I use William Fisher’s review of research on participatory development and NGOs to explore the question he poses, “what responsibilities are being devolved and to whom?” (1997: 455). It was expected that participation would lead to better project designs, more targeted benefits, more timely and cost-efficient benefits, and more transparency in the project leading to a decrease in corruption (Mansuri and Rao 2004). However, participatory development models have received mixed reviews from both scholars and development professionals as oftentimes the rhetoric of participation, empowerment, and sustainability are used to ensure funding from international sources. Mosse argues that participatory development “does not reverse or modify development’s hegemony so much as provide more effective instruments with which to extend technocratic control or advance the interests and agendas while further concealing the agency of outsiders, or the manipulations of more local elites, behind the beguiling rhetoric of ‘people’s control’” (2005: 5).
Other studies that have focused on specific cases of NGO-led development have demonstrated that particular NGOs have stimulated effective community participation that allowed the poor to have control over development decisions (Ahuja 1994, Marulasiddaiah 1994, Chambers 1983). These studies have shown that these NGOs have contributed to the successful political empowerment of marginalized groups (Fisher 1997). Another benefit of participation is that the community has more involvement over what kind of development project will occur and the project may deliver many things that both “recipients and project implementers consider beneficial” (Mansuri and Rao 2004). Many scholars have called for more localized studies of NGO-led participatory development schemes to provide insight to actual on the ground practices to further our understanding of the development process (Li 2005, Mansuri and Rao 2004, Fisher 1997). In chapter 3, I provide insight into the practices of an NGO by exploring the development approach used by IBEKA, highlighting their perceptions on community participation, the varying levels of participation, and their concept of empowerment.

In chapter 4, I focus on the local residents of Aih Nuso to better understand their perceptions of technology, modernity, and social and economic development. In this chapter, I explore Michael Dove’s suggestion that “when forest dwellers develop a resource for market, and when and if this market attains any importance, central economic and political interests assume control” (1996: 51). This participatory development project, as with most, is situated within larger development structures in the region, such as the commercialization of guiding and ecotourism services, and this may have unforeseen consequences for the outcomes of the project that are out of the control
of either the developers or the local community (Tsing 2005). IBEKA’s development strategy was well-received by most members of the community, and they felt that their opinions and needs were being heard by IBEKA, but oftentimes the benefits of a localized development project can be thwarted by larger development programs being implemented by the state or multinational firms.

In this thesis, I argue that the governmentalization process is still at work in the region, and the villagers feel the everyday effects of surveillance measures put in place by the state, even under decentralization, although decentralization has given more power to the Aih Nuso community over local decisions than they previously had. Whereas before decentralization, top-down Indonesian state development programs led to the oppression and marginalization of rural minorities, now the local community has a say in how and what development programs occur at the local level. I maintain that IBEKA’s participatory approach differs from past top-down development projects because its modus operandi is based on viable, community-specific goals set forth by the village leaders and reflects localized resource management practices and religious beliefs. I do feel that it would be naïve of me to claim that everyone in the community has benefitted equally and that all have felt empowered by the project. Even in a small community, villagers often have conflicting views on political issues, especially issues regarding social and economic development. Development will always benefit some community members more so than others; such is the nature of development (Scott 1985).

Development programs, such as the new micro-hydro project, have the potential to drastically alter political and economic structures in a community. In Aih Nuso, some
community members were empowered to let their voices be heard regarding the potential outcomes, while others did not feel empowered at all but just hoped for the best. While not everyone in the village may have been completely satisfied with the social and economic development aspects of the project, all were hopeful that electricity would improve their livelihoods in some way. However, the outcomes of the social and economic development programs that are part of the micro-hydro project, if successful, are still enmeshed within larger development plans by the state that might mitigate the positive outcomes of the Aih Nuso project.
CHAPTER 2: BUILDING MONUMENTS: A HISTORY OF DEVELOPMENT IN GAYO LUES

Introduction

As I entered the village of Aih Nuso in Gunung Leuser National Park (TNGL), I noticed that power lines extended through the village and satellite dishes sat in front of many of the houses. I found this quite odd because the village did not have access to electricity as the national grid network did not extend into TNGL. Of the 140 households in the village of Aih Nuso, only two had access to electricity and this was through the use of diesel generators. I also knew that the micro-hydro project I was there to observe was not yet complete. As I walked down the main path of the village, I observed workers from the NGO, the People-Centered Economic and Business Institute (IBEKA), erecting new infrastructure, including the steel poles to hold the power lines. So I asked Pak Lubis, a member of the local government body (Badan Perwakilan Kampung BPK) in Aih Nuso, about the defective electric infrastructure throughout Aih Nuso and why there was a failed micro-hydro system in the village.

He explained to me that in 2006, a development program initiated by the Program Nasional Pembangunan Masyarakat (PNPM) or National Program for the Development of Communities, first visited the village with the goal of building a small-scale hydroelectric system in the village. This renewable energy
project fit all the parameters outlined in the Leuser Development Programme: it supported sustainable development activities and promised to bring “modern” economic development to the Aih Nuso community, reducing the locals’ reliance on products from the forest. PNPM constructed and completed the project within a few months time in 2006. However, the outcomes of the development did not end as stated in the project goals.

Pak Lubis asserted that the project was doomed from the start. He said that the micro-hydro development project was conducted in a top-down manner, leaving out the local knowledge of the Aih Nuso residents and ignoring their concerns about the project. According to Pak Lubis, the project was “not built with the right process and could not work, but was a project that just made money for local elites and development organizations.” The small-scale hydro system was completed and within a month it had quit working, and now the powerhouse and water wheel turbine sat directly in the middle of the village as a reminder of past hopes. No one came to repair the system or remove it from the village center. Pak Lubis described it best by saying, “the project is just a monument, like MoNas in Jakarta. The project was designed to make someone money, but not for the residents of Aih Nuso.” When I asked another resident about the past project he stated that, “it failed and ruined our expectations for electricity and that hopefully IBEKA will build a project that works. But I will not be satisfied until the diesel-generator is turned off and a light bulb comes on.” The first attempt at a micro-hydro development project disillusioned the residents, and the top-down
development approach not only failed to provide a successful and sustainable project for village residents, but also failed to empower the community and alleviate poverty.

The initial attempt at developing electricity in Aih Nuso failed almost immediately and the developers did nothing to correct the mistakes, leaving the villagers of Aih Nuso with nothing but a monument of lost hopes. The development agency gained access to the community using discourse of economic development, social empowerment, and participatory development. But the results of the project did none of the above. So what did come out of this development project?

The government used this development project to make the rural community more legible and extended state control through up-to-date census data (Scott 1998). Roads were improved and expanded in this rural enclave of six villages and throughout the project government officials visited on numerous occasions to conduct censuses. Officials claimed that the census data was to gain a precise measurement of how much electricity would need to be produced by the micro-hydro system once completed. The officials took detailed information including the total number of residents, their ages, and their occupations, and also documented the total number of households in the village.

Furthermore, the region is a stronghold for the Free Aceh Movement (Gerakan Aceh Merdeka or GAM) and many residents mentioned that it was during the period of construction that GAM training camps were growing in the
surrounding mountains, leading some villagers to speculate that the development project provided a reason for the government to keep watch on the area.

This development project can be seen as part of a larger process of government intervention and surveillance over the residents of Gunung Leuser National Park. In this chapter, I will discuss the process of Aih Nuso becoming a “governmentalized locality,” which is defined as a “new regime of control that seeks to create fresh political-economic relationships between centers, localities, and subjects and represents a new relationship between the State and the periphery” (Agrawal 2005: 15). It is predominantly a historical narrative highlighting the process of resource control and the continued implementation of political economy into the Gayo Highlands, presented through the perceptions of the residents of Aih Nuso. Akhil Gupta argues that the process of governmentality is “a ‘very specific albeit complex form of power, which has as its target population, as its principle form of knowledge political economy, and as its essential means apparatuses of the security’ (quoting Foucault 1991: 102), a form of rule that continues to operate in the present” (1998: 321).

Study Site

My first trip to the Gayo Highlands in Southeast Aceh was in the summer of 2008. I flew into Medan, Sumatra and was greeted at the airport by staff from the NGO, the People Centered Economic and Business Institute (IBEKA). After introductions, we drove northwest towards Gunung Leuser National Park
IBEKA was facilitating the development of a micro-hydro electricity project in the village of Aih Nuso located within TNGL. I was there to study the social aspects of the development project as it played out in the local community. The drive through northern Sumatra was oftentimes intense with roads winding up and down mountains and alongside steep cliffs of a thousand feet or more. The lack of tropical forest, however, was immediately noticeable, as much of it had been clear-cut to make way for plantation agriculture. Cornfields covered the hills and mountainsides of the North Sumatra province, and signs along the road advertised for Pioneer brand GMO seed and various herbicides and pesticides. Agricultural development had transformed the ecological systems in the diverse tropical forests: cornfields, palm oil plantations, and wet-rice paddies (sawah) were now the dominant features of the rural landscape of North Sumatra. The province of North Sumatra was the fourth largest corn-producing region in Indonesia last year and in 2007 produced over 804,850 tons (Jakarta Post 2009).

The cornfields covered steep hillsides rising up from both sides of the road and traffic was backed up for kilometers in many sections due to landslides caused by heavy rainfall eroding the exposed soil of plantation agriculture. Without a four-wheel drive sport utility vehicle, much of the road would have been impassible. Local residents worked to clear the blocked road of mud and debris to get traffic moving again. Drivers handed cash to the workers as they drove by to pay for their daily wage and as an expression of gratitude for clearing the path and making their journeys possible. Driving through the area were buses
of tourists on their way to see orangutans in TNGL or to Lake Toba to the south, while local residents in mini-buses traveled home from the city or to visit relatives in the rural areas. Also passing by were large trucks carrying the remnants of forest giants, including dipterocarps, logged from nearby forests. Logging and plantation agriculture provided job security for the local road crews, as landslides were a common side effect from forest removal and occurred after nearly every rain shower.

The closer we got to the national park, the more forest cover was noticeable. After ten hours of driving, we arrived in the lowlands of the Alas River Valley in the Badar subdistrict of North Sumatra, just south of the Aceh provincial border. Plantation agriculture was less expansive in this area as the periphery of TNGL extended to the edges of the villages. Wet-rice fields were scattered along the river and small-holdings of rubber and candlenut slowly replaced the cornfields of the area to the southeast. Ecotourism was advertised instead of GMO seed varieties, and river rafting trips were offered by many of the small tourist hotels along the road. As we drove through the Badar region and passed the low-lying villages, the road rose in elevation and darkness enveloped us as the dense tropical forest surrounded in all directions. We were now in the Leuser Ecosystem, and the national park was just ahead.

Upon arriving at the southern entrance of the park, guards armed with semi-automatic rifles came up to our vehicle. The armed men inspected every vehicle to monitor the activities of those entering or departing the national park.
They explained two reasons for the necessity of doing so. First, the region was one of the top producers of marijuana in Indonesia, and they searched vehicles for illegal drugs moving in and out of the area. Secondly, GAM was being revived in the region and insurgents had reestablished training camps in mountains of the national park.

![Figure 2: Overview of Alas River Valley within Gunung Leuser National Park. Putri Betung village is the area between Ketambe and Agusen. Aih Nuso is just northwest of Ketambe.](image)

The guards at the entrance stated they were there to protect local residents from violence related to both drug cartels and insurgents from GAM. I could not help but wonder if they were there to protect residents or as a form of control put in place by the government to keep watch over the rural citizenry as discussed in past studies of the region (McCarthy 2006). We told them we were there to work
on a development project, and, after inspecting our SUV, they gave us a nod to proceed into the park.

Continuing into the national park and the Alas Valley, our car passed through villages with cloth blankets covered in drying candlenut (*kemiri*) fruits and coffee (*kopi*) beans lining the main road. In between the towns, dense tropical forest encased both sides of the road and steep inclines led to the tops of mountains from which you could see the rushing Alas River below and hornbills flying in the distance. Tucked in the forest along the road were patchouli (*nilam*) oil distillation ovens made of mud and earthen materials. Underneath thatched roofs stood men distilling their patchouli plant materials, and pouring the dank smelling oil into large barrels to be distributed to markets in Jakarta, Singapore, and elsewhere. Finally, after a thirteen-hour car ride northwest from Medan, we were now deep in the Alas Valley in the Gayo Highlands.

I was on my way to the village of Aih Nuso located in the northern part of the plush Alas Valley along the banks of the Alas River in the Gayo Leus district of Southeast Aceh. The village is tucked back in the valley surrounded by rushing waters flowing down the mountainsides and is the last of six hamlets forming an enclave along the mountain walls of the valley. Aih Nuso lies within the boundaries of Gunung Leuser National Park. The area has long been known for its incredible biodiversity of flora and fauna which has been described by conservationists and ecologists as the Leuser Ecosystem.

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1 The terms in italics are in the Indonesian language unless specified with (s:) which refers to the scientific genus and species name of a particular animal or plant.
The main vegetation types in the park are coastal beach forest along the Indian Ocean to the west, swamp forests, lowland dry forest, riparian forest, hill dipterocarp forest, sub-montane forest, and alpine meadows in the interior. The Leuser Ecosystem contains over twenty-five thousand of the known species on earth, including over 4.2% of all the known bird species, with 3.2% of all the known species of mammals, and over 4,500 species of plants and trees. This includes the last remaining viable populations of orangutan (s: *Pongo pygmaeus*), Sumatran tiger (s: *Panthera tigris sumatrae*), and Sumatran elephant (s: *Elephas maximus sumatrensis*), as well as the largest population of the most critically endangered large mammal on earth, the Sumatran rhino (s: *Dicerorhinus sumatrensis*) (Robertson 2002).

However, the flora and fauna are not the only locals residing in the region. Various human groups have lived within the Leuser Ecosystem for centuries, including the Alas people, migrant Acehnese and Batak populations, and the Gayo people for which the highlands is named. Bowen wrote in 1991 (13) that there were approximately forty thousand Gayo living in the Highlands. The Gayo are further divided into subgroups based on their location within the Leuser region. The residents of Aih Nuso consider themselves part of the Gayo Lues subgroup. A majority of the Gayo Lues peoples live in the Southeastern Leuser area between the main towns of Kutacane to the south and Blangkejeren to the north.
The sun had recently set and the moon reflected off the rice paddy (sawah) along the floor of the valley, at the end of which sat the village of Aih Nuso. Water flowed down the steep mountains and into the raging Alas which ran through the middle of the valley, and was nearly fifty meters in width at this point. As we approached the village, the driver stopped the SUV and we hopped onto a motorbike. Aih Nuso is not reachable by a four-wheeled vehicle, and only on foot or motorbike could we cross the swinging footbridge over the Alas that led to the hamlet. Had it been during daylight, I am not sure I would have been daring enough to ride on the back of the motorbike across the one meter wide swinging wooden bridge, nearly fifteen meters above the Alas River. Ignorance is bliss.

As we arrived in Aih Nuso, a village of over 700 residents, and walked down the main path leading through the village, the first thing I noticed was the sound of water. Water could be heard in all directions, not just from the Alas River running alongside the village, but from the complex system of irrigation canals leading to holding ponds in front of the houses. Water is one of the most abundant resources in the area with streams and rivers surrounding the village, and the residents have devised creative ways to make use of the water by keeping it close to home, thus easing the daily workloads of washing laundry and dishes, and collecting drinking water. The ponds are also used to hold fish that are caught in the nearby rivers, allowing the fish to grow in size until they are ready to be eaten. On top of the ponds are miniature hand-built greenhouses that look
similar to a small lean-to. Seeds germinate and seedlings grow under the thatch roofs and these seedlings will eventually be transplanted in the swidden plots located just a short walk away in the forest.

Walking further down the path, the second sound I heard was ducks quacking as they passed by nervously trying to avoid me. Most houses in the village use their ponds for the rearing of ducks whose eggs and meat provide an important source of protein and supplemental income when sold in the local markets. Some residents also own sheep, goats, chickens, or a cow as an additional source of protein or income depending on the current financial situation of the family.

Most of the subsistence needs of the people of Aih Nuso come from the surrounding rivers and forests with the main exception being that most of their rice comes from the wet-rice fields in the valley. Favorite items found at the dinner table include eel and fish from the Alas and other nearby rivers and chicken, rice, grilled corn, and coffee from the fields. They practice a diversified system of agriculture in which they manage irrigated rice fields in the floor of the open valley below the village, integrated swidden plots in the surrounding forests, and small-holdings of rubber (*Hevea brasiliensis*), candlenut (*Aleurites moluccanus*), patchouli (*Pogostemon cablin*), and coffee (*Coffea sp.*) intercropped together in the swiddens, which vary depending on market prices.

For instance, a local man named Ismail told me about the local and global prices for patchouli oil and discussed how recently it had become his main crop as
global prices for the oil had risen. At the local markets Ismail could sell the plant for 60USD per kilogram (kg) and in Singapore buyers were offering more than 300USD per kg. However, he stated that the price for processed patchouli oil was dramatically higher, but there was only one patchouli distillation station in the enclave, and it could not produce a fine enough quality of oil which was necessary to attain the high price. The distillation center he spoke of was off the side of the road about five kilometers from Aih Nuso. The distillation process is very dangerous and most of the villagers do not process their own oil but choose to sell the dried plant materials instead.

The biodiversity of the TNGL is not only found in what many conservationists throughout history have seen as “pristine” environment but also in what has been called second nature, or social nature; “nature that is the by-product of human conceptualizations, activities, and regulations” (Biersack 2006). Second nature of the swidden fields and forest gardens, though manipulated for centuries by humans, also maintains an incredible biodiversity, showcasing the local resident’s knowledge of agriculture and local flora. The forest gardens of Aih Nuso could be described similarly to those of the Meratus Dayak as recounted by Anna Tsing. She states, “The field is a scene of enormous variety, and it would be a mistake to ignore this variety in thinking about the appreciation of biodiversity, although, of course, most (but not all) of this variety represents cultivated variety and not wild nature” (Tsing 2005: 165).
The biodiversity of the swiddeners’ gardens not only reflects current market prices in the region and beyond, but also their tastes and pleasures when it comes to cooking. Most commonly found among their swiddens are chili peppers (s: *Piper sp.*), corn (s: *Zea mays*), tamarind (s: *Tamarindus indica*), shallots (s: *Allium cepa*), onions (s: *Allium sp.*), bell peppers (s: *Capsicum annuum*), coriander (s: *Coriandrum sativum*), ginger (s: *Zingiber officinale*), garlic (s: *Allium sativum*), tomatoes (s: *Lycopersicon esculentum*), and long beans (s: *Vigna sesquipedalis*). From the forests, villagers gather medicinal plants, firewood, construction materials such as rattan and wood from dipterocarp trees, and food plants to supplement their diets. However, unlike many swidden systems around the world, the Gayo do not grow dry rice in their swiddens as they produce their rice needs in the valley below.

The agricultural system in the forest is managed as a common-property resource and village Gayo *adat* dictates how much land each family is allowed to farm. The plot must be under cultivation or used at all times or else it can be given away or claimed by another family. Due to this, most swidden plots have an abundance of fruit trees and small-holdings of rubber (*karet*), coffee, patchouli, and candlenut mixed in with the swiddens, and this allows the family to maintain ownership of that particular plot while providing delicious foods and products they can sell in times of abundance at the local markets. Each tree in the village is owned by an individual or a family and can only be harvested by members of that family. A list of common fruit trees found in the swiddens or around village...
houses would include; water apple (s: Syzygium aqueum), mango (s: Mangifera indica), mangosteen (s: Garcinia mangostana), coconut palms (s: Cocos nucifera), many varieties of bananas (s: Musa sp.) and rambutans (s: Nephelium lappaceum), chocolate (s: Theobroma cacao), jackfruit (s: Artocarpus heterophyllus), and the famous durian (s: Durio zibethinus).

**Governmentalized Locality**

The agricultural practices and forest uses of the people living within TNGL have not gone uncontested, and they have experienced power conflicts similar to many other rural peoples throughout Indonesia (Peluso 1992, Tsing 1993 and 2005, McCarthy 2006, Collins 2007, Li 2007, and others). The Dutch colonial government first began their conquest of the Gayo Highlands in the late 19th century, moving into the Gayo Lues area around 1904 (Bowen 1991). The people of Gayo Leus were known as the strongest resisters of colonial rule in the area, so the Dutch sent a mission led by lieutenant colonel Major G.C.E. van Daalen to gain the support of the regional leaders. The people of Gayo Lues continued their resistance, which eventually led to fierce battles against the Dutch and ended in one of the worst massacres during the Dutch invasion. In June of 1904, it was estimated from eyewitness reports that more than 1500 persons died in the battle and an estimated 988 males were killed, or about one-quarter of the male adult population of Gayo Lues (Bowen 1991: 65).
The locals are well aware of the colonial history, and on a few occasions it was mentioned in conversation. One evening as I sat in on a local village council meeting, the geucik, or village head, handed me a cigarette of local Gayo tobacco and said, “We used to be enemies, but not now.” Everyone in the room laughed at the comment and especially when I explained that I was from America and not the Netherlands which was the enemy he was referring to. He then spoke of stories passed down by the elders of the village of the colonial officers coming to the area and of Dutch researchers that had passed through.

After gaining control of Gayo Lues, the Dutch quickly took notice of the area’s rich natural resources. It was then that the colonial government introduced, for the first time in Gayo Lues, new technologies to demarcate boundaries and maps and create conservation areas and buffer zones with restricted land use, all with the intent to control access to and use of forest and other resources. They created maps of the region and tried to find a balance between establishing plantation agriculture, understanding local land use, and implementing forest conservation. The “domain declaration” determined that land not used for “settled agriculture now belonged to the state and the colonial authorities began to make an area available for commercial use” (McCarthy 2006: 158). The local communities still retained some sovereignty, and village heads took control of their lands.

In 1934, the colonial system of indirect rule was used to gain support for the creation of the Gunung Leuser Reserve when the then-governor of Aceh
handed power over the local leaders as “self-governing territorial heads” (McCarthy 2006: 161). That same year, the Tapaktuan Doctrine was signed by the local Gayo leaders and the colonial government to create protection forest in what now is the backbone of Gunung Leuser National Park (Kleden 2002). It is believed that the local leaders signed the agreement to resolve conflicts over proposed oil and mineral exploration in the region and the opening up of more colonial plantations (Kleden 2002, McCarthy 2006). This created the first forest reserves in the Leuser Region. At the time, the creation of this reserve did not impact the livelihoods of the people residing on the reserves’ boundaries as the population was relatively low compared to available forest. However, as populations grew, less land was available, and people moved into the forest reserves. When the Leuser Region was declared a national park, the past creation of these reserves left the local communities with little leveraging room in negotiating land claims (McCarthy 2006).

This can be described as the first instance of the governmentalization of the Gayo Lues region. The new management regimes implemented by the colonial authority sought new methods of control over the rural populace and created fresh political and economic relationships between the state and the rural citizenry (Agrawal 2005). However, the Dutch colonial government’s attempt at controlling the communities within TNGL were not “successful” because they had few resources to allocate to this region, and communities were still able to harvest forest resources. During this period, it is unlikely that the designation of
the reserve significantly affected local patterns of resource use, but the “creation of state forests set aside for conservation—albeit with the formal assent to the local heads—set the scene for later conflicts” (McCarthy 2006: 219). The legislation has evolved since the colonial period, but each new piece has aimed to reduce logging, delineate conservation areas and buffer zones, and manage agricultural practices.

The community of Aih Nuso not only experienced shifting power relations under colonial rule, but new development programs in the 1960s and 1970s continued to dictate their relationship with the surrounding forest. During that decade, the World Wildlife Fund (WWF) began work within the reserves of the Leuser Ecosystem. International organizations and transnational networks, such as the WWF and Netherlands Commission for Nature Protection and Netherlands Special Appeal of the World Wildlife Fund, conducted research in the reserves to document biodiversity for conservation and development management plans and began campaigns to collect funds to support research activities. In 1980, the reserves established by the Dutch colonial regime were combined and expanded to form Indonesia’s first national park, Taman Negara Gunung Leuser. TNGL now constitutes the largest rainforest reserve in the world (McCarthy 2006).

The New Order’s development programs in TNGL were similar to and expanded upon colonial government processes a century before. The Suharto government increased territorialization by further extending boundaries and used statistics to monitor the local peoples’ use of the forest. In Arun Agrawal’s study
on forest management in Kumaun, India, he concludes that the
governmentalization of the environment” was accomplished by the “creation,
activation, and execution of new procedures for surveying, demarcating,
consolidating, protecting, planting, managing, harvesting, and marketing forests”
(2005: 12). Similarly, the New Order’s move divided the land within the national
park into core conservation areas and buffer zones, and activities within those
zones were to be restricted to those with licenses and permits. Surveillance over
forest use established new laws, forms of criminality, and power relations within
the region. Many of the communities within Gayo Lues, including Aih Nuso,
practiced shifting agriculture and this was seen as a threat to conservation as well
as ‘backwards’ and uncontrolled, thus the Indonesian government worked to bring
order, control, and “development” to these communities (Dove 1983 and 1985, Li

The residents of Aih Nuso not only felt the effects of the creation of the
national park by the New Order government, but also through the intervention of
international organizations. The village sits on the banks of the Alas River and
the swidden fields and small-holdings run along the river for a few kilometers
back into the forest. Across the river, the forest rises straight up to the peak of a
mountain. The steep hillside is covered in dipterocarps and other forest
emergents, and provides ideal habitat for orangutans, tigers, and other species that
migrate through the area.
One day, I was sitting on the porch talking with Pak Sudir and Pak Agar as the afternoon rains began, providing an opportunity for them to take a break from cutting weeds in their swidden plots. Pak Sudir explained to me that during the 1980s, researchers and activists from the WWF used to make frequent visits to Aih Nuso as they were interested in the forests across the river. He discussed how the WWF came in and designated the mountainside “protection forest” (hutan lindung) for the large mammals that lived in the area, such as orangutans and tigers, and the Aih Nuso community could no longer use the land for access to wood or farming. As we sat there, both Pak Sudir and Agar told me of their encounters with the forest creatures that the WWF were working to save. They pulled out their machetes and stated that it was not just for cutting weeds or wood, but also for protection. He animatedly described his past confrontations with tigers while working in the forests. Both Pak Sudir and Agar’s voices grew intense and they began stabbing at the air as though a tiger were approaching. They then laughed at their actions and then stated that this was an everyday reality for the people that live in TNGL, but not for the foreigners who come here to tell them what they can and cannot do in the forest.

Neocolonial Realities

The designation of the area as a national park did little to discourage illegal logging and the conservation of the Leuser Ecosystem was seen as a failure in the 1980s. McCarthy states that, “the New Order oversaw a system permitting industrial logging by
corporate interests and damaged the environmental foundations that supported local livelihoods, but it also prohibited poor farmers from opening other forest areas set aside in protected areas” (2006: 208). Thus, yet another structure for the development for TNGL was established to provide technical assistance to the Indonesian government and this was titled the ‘Integrated Conservation and Development for Lowland Rainforests in Aceh’ (ICDP) (Kleden 2002).

In 1995, the Indonesian government handed power over the management of TNGL to the Leuser International Foundation for a period of seven years (Kleden 2002). The Leuser International Foundation (LIF) is an Indonesian non-government, non-profit organization that was set up specifically for the purpose of managing the Leuser Ecosystem and is funded primarily through the European Union (USD $43.6) and the Indonesian government (USD $28) (Kleden 2002). In 1998, the Indonesian government extended the LIF’s license for the management of the newly created Gunung Leuser Ecosystem for thirty years. The LIF formed the ICDP model and handed control over the management of the park to the Leuser Management Unit (LMU).

The ICDP model was created in 1995 based upon the emergence of participatory approaches to development. The goals of the ICDP approach were combined to help alleviate poverty and conserve biodiversity. This was also a time of increasing conflict in the region with GAM and surveillance was increasing throughout the southern Aceh Province. The LMU was able to expand reserves in the area and legitimate their presence by citing the agreements signed

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2 Ministerial Decree No 227
3 Presidential Decree No 33/1998
sixty years earlier by the colonial Dutch government and the territorial heads of the Gayo Highlands. McCarthy argues that:

During the 1990s, the Leuser Management Unit frequently used the agreement with the self-governing territorial heads of the colonial period as a rhetorical means of arguing that the protection of this area was legitimate because it was based on an agreement signed by the indigenous “territorial heads” of the area on behalf of the “community” (2006: 162).

The Indonesian government was using this historical document signed in 1934 to legitimate their attempts to gain control of the land and regulate the lives of those residing in the area.

Although the ICDP report states that local participation was a fundamental goal of the program, it is difficult to ascertain what kind of participation they were hoping for. The ICDP program, just as the past development schemes, was designed upon a top-down structure of management and development based on Western scientific notions of conservation in which preservation is accomplished through excluding humans from the ecosystem. The “core area” of the park was denoted “pristine” and untouched by human activity and local activities within the park were then declared “encroachment” (McCarthy 2006: 223). Scholars have problematized the idea of a “pristine” environment, a concept that tends to ignore the history of the region, including forest use by humans prior to colonization (see Biersack 2006).

While the goal of the ICDP program was to help alleviate poverty and work towards the preservation of biodiversity, the unintended consequences did just the opposite. Development organizations and the government constructed
new realities for the region using varying discourses on poverty, conservation, biodiversity, and development. They then used this discourse to implement development programs aimed to alleviate poverty and protect the environment, many of which, intentionally or unintentionally, failed and further marginalized rural peoples.

The outcomes of the ICDP program support this argument: in TNGL state bureaucratic power was extended through the new ICDP management program. The ICDP expanded state resource control by enlarging the boundaries of the park by over 800,000 hectares and increased colonial territorialization into a more extensive Leuser Ecosystem. Moreover, the creation of new zoning systems for the Leuser Ecosystem intensified surveillance, and the formation of a para-military law enforcement worsened the matter (McCarthy 2006: 223). Beginning during the colonial era, TNGL had gradually become ‘governmentalized’ with security apparatuses in place, the establishment of new forms of criminality aimed to control the population of TNGL, and management/development programs monitored the relationships between population, territory, and wealth (Foucault 1991, Agrawal 2005).

The ICDP program set out to involve local participation in environmental conservation and community development, but the top-down approach of the project left out the local communities as stakeholders in projects to encourage their development. Ultimately, the project failed to bring about any real change on the ground as far as conservation was concerned and deforestation and
poaching continued to occur for a number of reasons, including collusion and corruption (McCarthy 2006). The ICDP also called for the “sustainable” development of rural populations living within the park boundaries. In a report on the Leuser Development Programme, specific objectives of the development program call for sustainable management of buffer zones to facilitate conservation of the Leuser Ecosystem. These goals included sustainable, non-destructive economic activities developed in the buffer zones and “profitable eco-tourism” development (Kleden 2002: 12). How would this new development program affect the residents of Aih Nuso? One immediate impact of the program was the micro-hydro development project described at the beginning of this chapter. That project was a failure in the eyes of the community and left the residents with shattered hopes for modernity. While at the same time, the development provided the government with new demographic information on the community and made the village more legible (Scott 1998).

This chapter has discussed the process of extending state control into the rural Gayo Lues region by making the community more legible. By understanding past resource management regimes and development attempts by the Indonesian government and international organizations, we can see how the state wished to define their relationship with rural communities. The following chapter will take a closer look at a more recent micro-hydro development project in Aih Nuso and the Putri Betung subdistrict. The new project was led by the NGO, IBEKA, using a participatory development structure aimed to provide a
sustainable energy source. The goal was to bring economic and social
development while at the same time empowering the local community. How will
this development process differ from those in the past? Can an NGO-facilitated
project have different outcomes from the past projects in the region? Or will it
continue to expand state bureaucratic power while further marginalizing the
residents of Aih Nuso?
I awoke in a small hotel in Medan one morning and the power was out. On this day in Indonesia’s third largest city, a blackout had been scheduled. I had just returned to Medan from the Gayo Highlands and the village of Aih Nuso with development workers from the NGO, People Centered Economic and Business Institute (IBEKA), where I had spent the past two weeks observing a micro-hydro electricity development project. I imagined returning to the city where I could have a nice warm shower and catch up on world news. However, residents of Medan were struggling with energy costs and the shortfalls of the government in providing sufficient electricity. As we left the hotel for breakfast, I noticed signs posted on most street corners advertising forums for discussions on energy, gas, and oil for local farmers, fisherman, commercial drivers, and laborers, all of whom were struggling with high energy costs or a lack of electricity. This was confirmation for me on the necessity of decentralized and renewable energy production. But if the government is unable or unwilling to develop alternative sources of energy, which seems to be the case judging by the rhetoric of the state energy ministers and the State-Owned Energy Company (PLN), then are NGOs the only alternative? What impacts could NGOs have on rural communities by introducing new energy technologies such as micro-hydro systems? How do NGO-led participatory development approaches differ from large-scale development projects or are they a continuation of the same top-down approaches of the past?
Beginning in the 1980s, development organizations, such as NGOs, the World Bank, and others, established curricula for participatory models of development. The move towards participation in development stemmed from a well-recognized failure of top-down projects and planning (Ferguson 1994, Escobar 1995, Scott 1998, Li, 1999a, Mansuri and Rao 2004, Goldman 2005, Mosse 2005, Li 2007, Collins 2007). The World Bank was one of the first organizations to adopt the new ‘participatory, community-based’ rhetoric to quell concerns over their legitimacy based upon their disastrous development programs of the 1980s and 1990s (Goldman 2005). This shift focused on the ideals that participation was required to empower people, utilize indigenous people’s knowledge, and ensure the sustainability and efficiency of interventions (Hickey & Mohan 2004).

The participatory development structure is based on the assumption that communities possess knowledge of the local ecosystems and have a vested interest in development projects based on their own goals; they are therefore better equipped to manage local resources through traditional forms of management. However, participatory development structures have received mixed reviews from both scholars and development professionals as oftentimes the rhetoric of participation, empowerment, and sustainability are used to ensure funding from international sources, even when the project is implemented in a top-down fashion without community involvement. While development agencies may stress participation, this is oftentimes rhetoric that is not reflected in the actual goals of the project (Fisher 1997: 455). Fisher contends that in
instances where participation is a claimed objective, we must ask “what responsibilities are being devolved and to whom?” (1997: 455).

The goal of many projects, including the development in Aih Nuso, is to delegate decisions and responsibility on the management of the development project to the local community. I will now take a closer look at the site of the micro-hydro electricity development project in Aih Nuso to elucidate the participatory approach used and the perceptions of rural electrification by the main development organization involved, the People-Centered Economic and Business Institute (IBEKA). This chapter will explore IBEKA’s development method and their opinions on the development process while the following chapter (4) will present the community’s perceptions of the process.

*Micro-Hydro Electricity and the Putri Betung Project*

Aih Nuso was chosen as the site of the micro-hydro project as its location near rushing rivers and steep terrain provides the ideal topography. Water is an abundant resource in the area and streams and rivers flow in all directions around the village. There is not only a lot of water, but the steep mountainsides ensure that the water flows at high speeds. A continuous flow of rushing water is necessary to maintain a high electricity output from a small-scale hydroelectricity scheme. There are six sub villages within Putri Betung, including an estimated 960 houses that will receive electricity from the energy source.

The national electric grid system does not extend inside the Gunung Leuser National Park and communities have had to provide their own electricity sources and, as
is the case in many rural areas of Indonesia, diesel-powered generators have been most common. The nearby sub village of Jemur Gele, located a few kilometers from Aih Nuso, already receives electricity from a micro-hydro project built by IBEKA in February of 2008. The residents of Aih Nuso and the other villages in the enclave observed the micro-hydro development in Jemur Gele, and, upon its completion, village leaders convened and voted to contact IBEKA about expanding the project to all people in the area of Putri Betung. IBEKA is now working to connect the Jemur Gele hydro scheme with the system being built in Aih Nusoto form one large grid in the area.

The project in Aih Nuso began in March of 2008 and was completed the following November, two months after funding deadlines had passed, although the funding agencies no problems over the delay. The managers of IBEKA acknowledged the problem of deadlines on development projects but stated that most of the funding agencies require deadlines and there is oftentimes no way around it. This project was funded primarily by the Agency for Rehabilitation and Reconstruction (Badan Rekontruksi dan Rehabilitasi or BRR), the Recovery Aceh Nias Trust Fund (RANTF), IBEKA, and the Coca-Cola Foundation Indonesia. Most of the money provided to these agencies came from international donorsthat provided funding after the Indian Ocean tsunami in 2004. Funds not used for reconstruction on the coast have gone toward funding development projects in the interior regions of Aceh province. The Aih Nuso community did not fund the micro-hydro project but provided land to house the staff from IBEKA and will pay monthly costs for the distribution of electricity and management of the micro-hydro system.
Social Aspects of Development in Aih Nuso

IBEKA completed their first micro-hydro electric project in 1991 in the village of Curug Agung in Java. The NGO’s philosophy regarding development in rural areas is that each project must be site-specific and community-specific. The head engineer for IBEKA maintains that each project consists of 70% social work and 30% technical work. IBEKA will only build projects that are appropriate for each specific community on a social level and that meet the demands of the local geography on a technical level. IBEKA’s head engineer said, “Development must be site-specific and appropriate. Micro-hydro electricity can be successful in Indonesia as water is plentiful and the systems are relatively simple to operate by local communities after they receive training.”

Defining what is site-specific and community appropriate is accomplished through social fieldwork conducted in the community for one or more months prior to designing a proposal.

Sociologists from IBEKA continually reside in the village throughout the development process to work with the community on adapting the management of the micro-hydro system into local governing structures, such as the local Gayo adat in the case of Aih Nuso. This fieldwork at Aih Nuso began two years prior to developing the construction plans and Tri Mumpuni, the co-founder of IBEKA who was trained in the social sciences, moved into the community to conduct fieldwork. Fieldwork includes meetings with village leaders, focus group discussions with women, and town hall style assemblies with neighboring communities to assess local needs and motivation for managing a project. IBEKA staff work with leaders and inform the community about the
development process and the impact of introducing a new technology into the village, using examples from past projects. The goal of the fieldwork is to work with local village heads and governing bodies to form a cooperative to manage the micro-hydro project, the funds collected to pay for the management of the system, and the distribution of electricity upon completion.

During this fieldwork staff members from IBEKA try to measure the priorities of electricity use in the community. IBEKA has a long list of communities throughout Indonesia requesting electricity development, so they travel to many of these regions and meet with locals to find out how the electricity will be used and for what purposes. IBEKA’s goal is to provide renewable energy producing technology for communities that wish to engage in social and economic development, improve local health care, and enhance livelihoods. This includes projects focused towards lighting for schools and houses and the construction of health care facilities. They also look to find electricity uses within communities that will directly benefit women and children, as they are often the people who are overlooked by development processes.

In Aih Nuso, IBEKA worked with the village council to decide what economic activities would be valuable to the community once the micro-hydro system was complete. Together they decided that upon completion of the project, leaders from each of the six communities connected to the system would form a cooperative where all the communities would work together. The economic development programs aimed to implement capitalistic modes of production. For instance, they hope that eventually excess electricity will be produced and then they may be able to export electricity to
outside villages for income. The additional funds received from exporting electricity would be used to fund community projects such as improving schools and health care facilities. They also plan on building a new patchouli distillation plant that could be used by all communities in the enclave. They already have a wood fired patchouli distillation process, but it is dangerous and does not produce high quality oil. The women of the community asked for a candlenut and coffee drying facility to ease the workload of the women and bring supplemental income into the community. All of these economic goals are dependent on future financial conditions and are more of a wish for the future, rather than an instant reality.

Finally, they discuss the costs of electricity and the tariffs to be put in place with village leaders before the technical processes begin. The costs of operating and maintaining the system must be addressed, especially in a large project like the one in Aih Nuso which spans six communities and twelve kilometers. The tariffs for each household that receives electricity are used to pay the operators of the system and for all maintenance costs. Micro-hydro electricity currently has no subsidy in Indonesia to pay for these costs, so communities must cover them on their own. Past projects by IBEKA have left communities paying up to Rp. 1,000 per kilowatt (kW), which is more expensive than the wealthiest people in Jakarta pay after PLN subsidies on oil and coal.

The fieldwork process also entails what the mangers of IBEKA refer to as talent scouting: observing people in the local community to see who works well together and to gain an idea of who they may want to hire as part of their development staff. This part of the process is also important for getting ideas about which village members would be
suitable to train as operators of the system. IBEKA offers recommendations to village leaders based on observation, but ultimately it is the local governing body that resolves these decisions. IBEKA contends that they and local residents must make this decision together as they have a better understanding of relations within the community and of how people work together. During and following the development project, the village governing council oversees the work of the operators. They choose how much and how oftenthe operators are paid, which is usually an average wage for that community, and assess the job performance of the operator. If the operator does not adequately carry out his duties and threatens the performance of the micro-hydro system he can be fired and a new operator will take his place.

The position of operator is a full time job that entails everyday maintenance tasks on the micro-hydro system and the project infrastructure. Jobs include greasing the system once per week, cleaning and painting the system, flushing the settling basin to clear of debris and trash, and creating a logbook of fluctuations in electricity output and daily observations. Following the development process, IBEKA maintains contact with the community and visits the site frequently to ensure that the operators are working properly and maintaining the system until they are confident in caring for the system on their own. Throughout the development process, numerous residents are selected as potential operators of the system, and they must take part in the construction of the system to fully understand the intricacies of the technology. It is a competition of sorts, and those successful throughout the process are awarded the job of full time operator. Upon completion of the system, IBEKA personnel continue training the operators
through an apprenticeship program that lasts from three to nine months. IBEKA staff claim that apprenticeship is necessary for empowerment and confidence building for operators. However, the choice of an operator is inherently political in any community and this raises problems as local power relations and family disputes come into play, as is discussed in the next chapter.

Tri Mumpuni, the co-founder of IBEKA, has lobbied the United Nations and the Indonesian government in Jakarta for energy subsidies for renewable forms of electricity. She is most well known in Indonesia for successfully pushing through legislation that now allows communities to connect their micro-hydro systems to the grid, where possible, and sell the excess energy produced to the State Energy Company. On September 23rd 2002, this new electricity law was signed (Law No.20), introducing a new regulatory framework for electricity generation, transmission, and distribution. Under the law, PLN is required to buy electricity from private enterprises at prescribed rates. This is known as small power purchase agreements (SPPA), whereby private developers of small power plants offer surplus electricity to PLN for purchase. By law, it is stipulated that the price PLN should pay to producers is a fraction of PLN’s own production costs: 80 per cent for medium voltage and 60 per cent for low voltage.

IBEKA constructed a micro-hydro system in the community of Cinta Mekar, near Bandung in West Java, in 2004. Many of the households in Cinta Mekar already received electricity from PLN and the national grid system, but the poorer resident’s in the community could not afford to pay for the utility. The poor villagers then received subsidized electricity from the micro-hydro at a cheaper cost than from PLN. The new
micro-hydro system was connected to the national grid, and PLN paid the village of Cinta Mekar for the excess energy produced by the micro-hydro project. All income received from the micro-hydro project went into a village fund that is used to pay for education and health care development. Unfortunately, most micro-hydro systems built by IBEKA, including the project in Aih Nuso, are in locations that cannot access the national grid and the possibility of selling electricity back to PLN is not an option.

When constructing a project, IBEKA brings their staff to each project site to lead project construction and mentor local residents that participate in the project. When asked why full participation from the community was not possible, the head of IBEKA cited two specific reasons: (1) Project deadlines require previous experience and expertise in micro-hydro construction and the training of a whole new project staff is not feasible at each location for this reason, and (2) project quality could suffer from new staff having to be trained at each project site.

In Aih Nuso, there were a total of nearly thirty people brought in to build the project and the workers came mainly from two villages in West Java, Sukabumi and Subang, but a few came from the Padang area of West Sumatra. IBEKA hires their staff from the communities of previous project sites; workers that were trained through participation, and two of IBEKA’s first projects were built in Sukabumi and Subang. The project in Subang was built in 1991 and the system in Sukabumi was completed in 1996. IBEKA trained the workers and then started taking them to subsequent project sites. At all of IBEKA’s project locations, they train a group of local people on micro-hydro construction and then eventually hire the workers as part of their staff for future projects.
They have a few different groups of workers from past projects that travel to new development sites, depending on location of the project. When I asked the local residents about the groups of workers from Java, most agreed that there was no problem. However, there were a few reports of small conflicts between the local villagers and IBEKA’s work crew. The relationship between the local community and the workers from Java was usually glossed over in conversation and I could not explore it in depth while in Aih Nuso.

In Aih Nuso, there were about fifteen residents from the six sub villages working alongside IBEKA’s crew from Java. The two groups from Java each had their own area of expertise in the construction process; the people from Sukabumi worked mainly on cement and infrastructure, while the group from Subang focused on metalworking, such as the pipes and turbines. The turbines came from a Bandung company that IBEKA worked with to design and manufacture turbines built specifically for each project to match local hydrological and geographical conditions.

To house the nearly thirty workers and IBEKA’s staff throughout the construction process, a base camp was built a half a kilometer from the village of Aih Nuso in the forest surrounded by the community’s swidden plots. A local family allowed IBEKA to use their land for the base camp, and in return they asked that their land be returned to them in clean condition. The base camp consisted of three large housing structures with the frames made of local wood, and large tarps covered the sides and tops of the temporary shelters. Wooden cots ran the length of both sides of the tents and inside slept 20-30 workers apiece. This is where the workers prepared for their days of work and
relaxed in the evening upon returning from the work site. The base camp received
electricity from a mini-hydro system that IBEKA built beforehand to provide power for
numerous uses; including a television set for the workers to relax around in the evenings
or during lunch, outlets to power cell phones or laptop computers, and a radio for news
and music throughout the day.

The base camp featured a cooking area with fire pits in which five men
maintained all cooking duties. The cooks would wake at two in the morning to begin
preparations for breakfast, then go back to sleep after breakfast for a few hours, and wake
again around ten to cook lunch. After lunch was eaten and dishes cleaned, the chefs
would go back to sleep until three in the afternoon to get dinner ready for when the
workers returned at the end of the day. Most of the meals came from local sources, and
the chefs also served as fisherman in the local rivers to catch eel and fish for the meals.
The remaining food items, with the exception of rice, which they bought in large
quantities from a store in Kutacane, came from local markets. Menu items featured on a
daily basis included rice, cooked tofu, an Indonesian pancake stuffed with shredded
vegetables, vegetable fritters, soups with local herbs and spices, and numerous fruits.

The base camp was a busy intersection at all times as it sat directly in between the
village of Aih Nuso and the residents forest gardens. Residents from Aih Nuso filtered in
and out throughout the day to watch television or charge their cell phones while the
workers were not around. Oftentimes, this was the best location to converse with
residents while they were passing by to and from their swidden plots or taking breaks
from farming during the heat of the day or afternoon rains. It was also a site of power,
not only from the mini-hydro system, but also local governing power as IBEKA had a small office constructed there and leaders from the surrounding villages would hold meetings with IBEKA staff to discuss the project conditions or to resolve conflicts regarding the implementation of the system.

Technical Aspects

There are numerous sizes of land-based hydropower schemes and these are usually classified into three levels: full-scale, mini, and micro. Full-scale hydro systems produce enough electricity for large towns and extensive grid supplies. A full-scale hydro electricity scheme produces more than 10 megawatts (MW) of power and is enough to power up to 200,000 light bulbs (Harvey 2006). A mini-scale hydro project provides smaller contributions to national grid supplies, typically between 300 kilowatts (kW) and 10 MW. Micro-hydro electricity systems, with which this paper is concerned, are smaller still and are used in remote regions to provide electricity to small communities or even individual houses. Micro-power systems often provide from 50 watts (W) to 300 kW of electricity.

Beyond the size of output, hydropower systems are further classified into two groups based on their design. The first type is the run-of-the-river scheme, which does not stop the flow of the river, but instead diverts part of the flow into a channel and pipe and then through a turbine. The turbine spins and powers an electric generator sending electricity to the desired destination. Most micro-hydro schemes are run-of-the-river as they can be built locally at low cost, and the simplicity of the system gives rise to long-
term reliability. Harvey points out that the disadvantage of this approach is that water is not carried over from rainy to dry seasons of the year and water availability is unpredictable (2006). However, run-of-the-river schemes are preferable from the point of view that environmental damage is minimized as the seasonal river flow patterns downstream are not disturbed and flooding of the valley upstream is not necessary.

Storage schemes are more complex than run-of-the-river and also more expensive to build depending on the local environmental circumstances. The storage scheme makes use of a dam to stop the flow of the water, building up a reservoir behind the dam, which then is released to the turbines when power is needed. The advantage is that water can collect during the rainy seasons and then be used to power the turbines when electricity is needed. Storage schemes are often problematic as they collect silt and other debris. When this happens, it is often too expensive to dredge the reservoir clean again, and the scheme ends up supplying less electricity than expected (Harvey 2006). It should be mentioned here that each micro-hydro system is unique in design and size as numerous variables must be taken into consideration when designing the project, primarily local geography, river size and flow, and drop in elevation at the development site.

The project at Aih Nuso was designed as a run-of-the-river scheme. A dam was constructed on the Uso River (Sungai Uso), which flows from the mountains behind Aih Nuso and runs perpendicular to the Alas River, eventually flowing into it. The dam allowed most water to channel through while a portion was diverted to a cement canal until reaching a filtration tank, to get rid of debris, and eventually into a 76 centimeter (cm) in diameter pipe of 325 meters in length, leading to the powerhouse below the
village on the Alas River. The water passed through two turbines in the powerhouse and was then released back into the Alas River. To create a force to propel the turbines at high speeds and maximize the energy output, the pipes ran down a steep incline of nearly 70 degrees for 75 meters. The pipes on the incline were constricted to 57 cm in diameter to create more force. From the powerhouse, electricity had to be carried for 12 km through power lines to reach all six of the villages connected to the system.

In order to determine the potential electricity of the system, the co-founder and chief engineer of IBEKA, Pak Iskandar, visited the project site prior to the social fieldwork stage to determine the capacities of the micro-hydro development project. The first step in the process was to visit the site during the dry season to measure the water level during the lowest levels of the year. He then worked with members of the community to map local topography and gain a better understanding of seasonal fluctuations in geography and weather conditions using local knowledge. The mountainous terrain around Aih Nuso made this process more difficult as erosion, landslides, and additional factors had to be considered. Pak Iskandar stated that local knowledge plays a crucial role in this process as residents in the community oftentimes have a detailed understanding of landscape features and climatic variations.

Measurements of local topography form an equation that determines the power output of the system. The first component of the equation is the debit, which is the pace and amount of water in the stream, or water flow. The second component is the head, which is the total drop in elevation from the pipeline carrying the water to the turbines located in the powerhouse below. Then total efficiency must be calculated, which is a
standard formula for measuring energy losses from friction in the penstock and turbines, and in the transfer and movement of electricity. Then the equation \((\text{debit} \times \text{head} \times \text{total efficiency} = \text{power in kilowatts})\) is calculated to determine the estimated power output in kilowatts.

In order to ensure the sustainability of the micro-hydro project, staff from IBEKA worked with the Aih Nuso community to gain an understanding of their resource management practices. This was to ensure that the forests around the watershed be protected so that water loss did not occur in the future. The main threats to electricity production by river hydro systems are logging and disturbances to the watershed both above and around the system. For a sustainable project, big trees are needed in the catchment area, and cutting trees decreases the water holding capacity or the river, as trees have tap roots and protect the water table by keep water at the deepest possible level. If deforestation occurs anywhere in the watershed, water levels in the river decrease significantly, thus electricity produced by the system decreases. IBEKA mandates that if communities want micro-hydro electricity they must conserve their forests.

One benefit of micro-hydro electricity development most often cited by developers and villagers alike is the relationship with environmental conservation. As mentioned in chapter 2, the Leuser Ecosystem has a long history of deforestation and resource exploitation, and it is hoped that micro-hydro electricity will contribute to conservation at many levels. Not only would the community receiving the energy system have to adjust their resource management regime to maintain forest structure around the
river, but also developers hope that household lighting will decrease the resident’s use of forest resources, such as wood, for energy production. Past studies indicate that this hope has not been realized as I discuss in chapter 3.

At a previous IBEKA project location in Kreung Kala on the north coast of Aceh, the community implemented a conservation corridor in which cutting any trees is prohibited within a 500x500 meter area in any direction from the center of the river. The community and the leaders have forged this into the community *adat* law with the help of sociologist from IBEKA. At another project location in Java, a golf course was built by a multinational corporation near a local village’s micro-hydro project and trees were clear cut and replaced with grass for fairways and greens. When grass replaces trees, the roots are shallow and water stays only at surface. This immediately decreased the water flow and changed the levels in the water table, thus drastically impacting the amount of water in the watershed. The nearby micro-hydro project lost 30% of the power from 90kW to 17 kW and many of the residents had to resort to using diesel generators again as there was not enough power in the system.

In an Aih Nuso project report submitted by IBEKA in February of 2009, the head engineer of the project stated that the six villages in the sub-district of Putri Betung had obtained electricity service from the Aih Nuso micro-hydro generator since early November. Nevertheless, there are still problems with the continuity of electricity flow because of small problems in the generator control system. Up to February 2009, the electricity flow had experienced several shut downs, but IBEKA was working with the operators to fix the problem. The report continues that the number of IBEKA staff
currently in the Putri Betung region, as of February 2009, was down to only eight people; four sociologists and four people focused on technical aspects. IBEKA contends that in the near future all technical staff will be withdrawn. The system operators from Aih Nuso are already able to operate the generator without any supervision from IBEKA staff. Yet, they are still lacking of confidence to do so without supervision. By the end of March, it was hoped that the local operators would be confident enough to operate the generator independently without any supervision from any IBEKA staff. All of the base camp facilities had been removed by IBEKA staff, except one building, which will be used as an accommodation for visiting guests, researchers, or development personnel.

This chapter has focused on the development process in Aih Nuso from the perspective of the developing organization, IBEKA. I have explored their development approach to provide the background necessary to understand how they perceive development and the goals they set forth for not only their own staff but for the Aih Nuso community. Development for IBEKA is a long and enduring process that does not end once the project is completed but continues until the operators can maintain the system on their own. At all of IBEKA’s project sites, they commit to providing assistance on the project throughout the life of the micro-hydro system. However, once the operators are confident enough to maintain the system, IBEKA will only offer technical assistance on problems serious enough to threaten the operation of the project and lead to a failed development project or for technical parts that may not be available in such a remote location. They believe that letting the operators solve problems on their own, with the help of the community, is a part of the empowerment process and if they continue to
intervene on smaller issues the operators will never gain the confidence necessary. This differs completely from the first attempt at micro-hydro development in the village in which the development agency did not train any individuals to operate the system and then left the village and never returned after the project failed.

I will now turn my attention to the perceptions of the Aih Nuso residents on the development process, electricity, and economic and social development to gain a better understanding of the impacts of this development process on the local community. How did the local community react to IBEKA’s participatory approach to development and did they feel that it differed from past attempts at localized development in the region?
CHAPTER 4: GAYO NOTIONS OF TECHNOLOGY AND MODERNITY

One of the first residents I came to know in the village of Aih Nuso was Amangas. He was in his mid-forties but was unsure of his exact age as most people in the village do not keep a record of their date of birth. Amangas was a charismatic individual who was always looking to get a laugh out of someone. He was known throughout the village as Pak Polisi for the silver handgun lighter he carried around to light the cigarettes for both himself and others. Just like most everyone in the village, he was a farmer and spent most of his time working in his swidden plots in the forests behind Aih Nuso. For additional income, Amangas also served as a trekking guide for groups coming to conduct research in the national park or go on treks in search of the wildlife in the region. On two recent occasions he led a team from a university in North Sumatra and another group of researchers from Japan. They paid him directly for his services, a cost of Rp.150,000 for five nights in the forests. But when I spoke with him he no longer could take tourists or researchers on guided hikes because the national park started a guiding service, and it was now illegal to be a guide unless you obtained specific certifications. There were, however, two barriers that prevented Amangas from achieving certification: 1) although a certification course was offered to residents, knowledge of English was required, and 2) a fee was charged for both the course and the certification.

In chapter 2, I discussed how the history of forest management and development in the Leuser region brought drastic changes to the lives of the people in Aih Nuso. In the past, the government of Indonesia, from the colonial era up to the New Order,
implemented development programs to control the lives of the rural populations and gain profits from the natural resources of Gunung Leuser National Park. Amangas’ loss of income through the regulation of guiding services in Aih Nuso offers a more contemporary example of the Indonesian government regulating the activities of rural people and finding new methods of exploiting natural resources for profit. For Amangas and other residents, guiding was a supplemental income activity for which they were overqualified for, but new regulations limited those who could pursue this job opportunity, further marginalizing the rural community. The regulations have created a new form of criminality within TNGL, and, if Amangas were to continue leading treks, he could face fines or more severe sanctions.

Everyday forms of governmental control are at work in Aih Nuso, and they are felt through programs such as the regulation of trekking services and the collection of census data. Villagers also feel the reach of the government when they are stopped at checkpoints by armed guards when entering or leaving the national park to take trips to the doctor or visit family. Although the rural peoples still feel the impacts of national government legislation, decentralization of the central government has given the people of Aih Nuso more control over their village than anytime in the recent past. The micro-hydro project presented in this thesis is but one example of an action the village governing body voted in favor of to improve their constituents’ livelihoods without seeking the outside approval of the state.

However, even in a decentralized community, villagers often have conflicting views on political issues, especially issues regarding social and economic development.
This chapter will illuminate the perceptions of the Gayo villagers of Aih Nuso in regard to the benefits and drawbacks of electricity, development, and community participation. Through the presentation of an assortment of views within the community, I argue that the NGO-led development offers community members a chance to have their voices heard. However, development will always benefit some community members more than others; such is the nature of development (Scott 1985).

Development programs, such as the new micro-hydro project, have the potential to drastically alter political, social, and economic structures in a community. In Aih Nuso, some community members were empowered and their voices heard regarding the project, while others were not empowered at all but just hoped for the best. The participatory approach used by IBEKA was different than past development models in the region, offering a new hope to all in the community that a successful project would be constructed. Unlike past development attempts in Aih Nuso, IBEKA used the local peoples’ knowledge of the region throughout the process which helped them to create development goals that were locally viable. IBEKA was also aware of and concerned about local resource management systems and religious beliefs which allowed the residents to feel comfortable with the project and staff of IBEKA. However, this participatory development project, as with most, is situated within larger development structures in the region, such as the commercialization of guiding and ecotourism services, and this may have unforeseen consequences for the outcomes of the project that are out of the control of either the developers or the local community (Tsing 2005).
Village Perceptions of Economic Development

Samsudin Lubis is a strong and confident man, one of the only village leaders who is not Gayo by birth, but married into the community. He was born forty-seven years ago near Medan, the capital of North Sumatra province, and moved to Aih Nuso in 1987 to be with his Gayo wife and her family. Pak Lubis is a charismatic individual who sees the villages of the Putri Betung subdistrict as trapped in the past. He blamed a lack of technology and opportunity, and he believed that modernization was essential for the future of Aih Nuso. The personnel of IBEKA regarded Pak Lubis as the unofficial leader of the Aih Nuso community, but this was a position that was contested by other residents in the village who had different opinions on what modernity should bring to the village.

One day as Pak Lubis sat with workers from IBEKA on the porch of the staff office at the base camp, he spoke, almost preaching, about why the micro-hydro electric project was a necessity for the community and on how it could improve their lives.

As he spoke, everyone on the porch sat quietly, unable to move their eyes from this intense and determined speaker. Pak Lubis first touched on the subject of economic development, which he believed would be the primary benefit of the micro-hydro project. He maintained that electricity would allow the village to become a destination for ecotourism, thus increasing the income of the village. With electricity, the community could build modern lodging facilities to house tourists from around the world.

Tourism has grown in and around the Leuser region, and the residents have taken advantage. In the lower-lying areas of the Alas Valley, river-rafting tours are offered from small hotels and guesthouses, and, while in the park, tourists can go to the Bukit
Lawang orangutan rehabilitation center or take a guided hike to catch a whiff of the rotted flesh smell of *Rafflesia arnoldii*, the largest flower in the world that only grows on Borneo and Sumatra. Pak Lubis saw this as an opportunity for the community: residents in the village have detailed knowledge of the surrounding forests and mountains and could earn extra income as guides for trekking expeditions. He understood why tourists come to the park and what they were interested in seeing. Looking at me he smiled and used me as an example, “See you came here, you want to see *Rafflesia* and the orangutan,” and then nodded teasingly toward me. I tried to explain that that was not why I was there, but then I gave in and said that I would not mind it if we happened to pass by either while we were waking through the forest gardens.

However, not all men or women on the porch agreed with Pak Lubis on the role that ecotourism should play in the development of Aih Nuso, or at least saw kinks in his argument. Pak Amankas stopped Pak Lubis and discussed how he used to take researchers on guided tours in the nearby Kemir Mountains. But as mentioned earlier, Amangas could no longer perform this job due to government regulations. So while Pak Lubis saw economic benefits from ecotourism, others already felt the effects of government intervention in this area. Amankas wondered if the government would allow Aih Nuso to become a prominent ecotourism site without stepping in.

After Amankas finished, Thaib spoke up and raised concerns about the groups of foreign tourists that would be the potential clientele. While on one hand he stated that tourism could bring in money to the area and allow the community to progress, on the other hand it also could have large repercussions for the local culture. The Gayo are
predominantly of Islamic faith, and Thaib told Pak Lubis and the others who had gathered around IBEKA’s office about how tourism development could bring with it problems of free sex and other moral issues that they have heard about from other villages in the national park. He was unsure if the opportunity to make extra money from tourism development was worth the costs of eroding the local Gayo culture and exposing the youth to foreign morals and values. At times the conversation became heated and intense exchanges took place over the benefits or drawbacks of economic development in the area.

But while tourism was the hot topic of debate, Pak Lubis also spoke of other, seemingly less controversial ways the electricity could be utilized. Pak Lubis believed that eventually the enclave could pull money together and form a cooperative to begin processing their agricultural products for sale in regional markets. First, the community could build a patchouli distillation facility for farmers in the area to use. As mentioned in chapter 3, the community often sells dried patchouli (nilem) plant materials to middlemen who in turn process the plant into oil and sell it for higher prices on international markets. Next he stated that the purchase of mechanical driers for chocolate, coffee, and candlenut would supplement the income of local families and ease the workloads of women in the village. Furthermore, by processing their own agricultural goods they could bypass the middlemen at the markets and earn more income.

However, by skipping the middleman new local political and economic structures would emerge and new relationships would form with existing markets. Integrating into existing economic markets may bring advantages, but incorporation also brings new
dependencies and constraints (Fisher 1997). Judging by how the state intervened with ecotourism, would they not step in to receive their share if the community successfully developed means to improve the economic production of forests goods, such as patchouli or candlenut? Would the agricultural processing facilities be tightly regulated inside the national park surrounded by protection forest and conservation areas? On the other hand, would the production facilities be encouraged by the state? Thus, justifying for the community a move from swidden cultivation towards plantation agriculture and large-scale production.

Pak Lubis’s talk on development then led from the processing of agricultural goods to the introduction of internet, computers, and even television into the village. He was determined that new forms of communications would help farmers in search of current prices on regional and international markets for their goods, allowing them to bargain for the best prices. Pak Lubis explained that, “I feel cheated! We lack current information on crop prices and do not know if we are getting the best price at the market. With internet access we will be able to obtain information, and we will also be able to understand what is going on in the outside world.” For Pak Lubis, the main goal of micro-hydro development was economic modernization, a way to catch up with the outside world.

Only two households in Aih Nuso owned diesel-generators and one of these was Pak Lubis. The Lubis family also owned the only television in the village, and once a week he would invite everyone in the community over for a television watching party. His wife and others would cook food which residents could purchase as they sat and
watched the latest sitcoms or caught up on world news. The food helped to pay for diesel to run the generator and also provided a small source of supplemental income for the Lubis family. On the evening of the weekly party, Pak Lubis’ house was the liveliest household in the village. The sounds of music from stereos, television shows, laughter, and the villagers shuffling to find a seat filled the air. The television had provided a new form of socializing in the community and became one of the main social events in the residents’ weekly schedule.

Increased access to television could increase the community’s consumption, while at the same time providing them current market prices on agricultural products. After the micro-hydro project was completed and the community was receiving electricity, I received an email from a sociologist working in the village. He stated that everyone in the village was now working overtime in their gardens and planting more than ever to receive as much profit as they could, and this included villagers that previously did not work in the gardens. They worked to produce more so they could earn extra income to purchase electric tools, televisions, and clothing.

While many community members community sat in Pak Lubis’ house at the television watching party, others were at the Islamic center attending a practice session of the traditional Bunis and Saman dances for which the Gayo are famous throughout Indonesia. Young women in the village perform the Bunis Dance while the Saman Dance is for boys and young men. These dances are an important part of the local culture, as stated in numerous interviews, and the residents take pride in their ability to perform them well. Practicing these dances is a main activity during the childhood and
young adult years of the men and women of Aih Nuso. Men practice and train for the Saman Dance in the nearby Alas River to build strength and improve the fluidity of their movements.

The dance is performed on ceremonial occasions in the village or during festivals. In particular, the regional bupati (regent) was scheduled to visit the micro-hydro project the following week and he would be welcomed with the performance of the Saman and Bunis Dances. The lyrics are at once a call for harmony between Gayo people using Islam as a starting point, while constituting a formal and respectful welcome to the Bupati to the village. Thaib discussed that his hobby growing up was to train for the Saman Dance, and that all young men start learning the lyrics and dance when they are around age five. He was worried that in the future children may not be interested in the dances once television and internet were available. In the arguments presented on the porch that afternoon by numerous residents of Aih Nuso, there was an obvious struggle on how to maintain the values and traditions of the local Gayo culture while also modernizing and finding new methods of economic production.

**Renegotiating Gayo Adat**

In the absence of clear authority structures willing or able to consistently govern access to the use of forest, the intertwining of local government, adat, state forestry institutions, and international conservationist agencies has created a complex, dynamic state of affairs…in which there were no clear winners. (McCarthy 2006: 198)

The residents of Aih Nuso not only rely on adat, or unwritten native customary law, to manage their lands, but also to guide everyday living decisions such as what foods are acceptable to eat, how guests are to be served in the household, what hand a person
uses to eat with, and so on. The Gayo *adat* has evolved throughout the years and is constantly renegotiated as local environmental and demographic conditions change. While there is a standard Gayo *adat* for all Gayo people in Aceh based on mannerisms and values, which has been written in recent years, each village adjusts their local *adat* to conform to local environmental conditions and resource management. In the past, this has been problematic for development agencies and the government because oftentimes they were unaware or ignorant of the evolving nature of the Gayo *adat* and understood it as a static concept (McCarthy 2006). The implementation of new development processes and resource management in the Leuser Ecosystem was complicated by foreign methods of resource control versus local management systems based on *adat*. Throughout development of the region, overlapping institutional arrangements on forest resource use had produced conflict and confusion on many levels.

It has been hoped that recent attempts at decentralizing state power from the central government to local communities throughout Indonesia would solve some of the past problems in resource management and development. Supporters argue that decentralization would allow communities to have more control over their resources and receive a greater proportion of revenues received from local natural resources. In the Gayo village of Aih Nuso, decentralization also reestablished local *adat* as the main resource management law. Members of the local community generally agreed that decentralization had been a positive move towards improving their livelihoods, providing them more power of local decisions on development, and allowing the Aih Nuso community the power to call for localized energy development.
The staff at IBEKA also stated that decentralization was essential for participatory development, and projects would ultimately be more successful when communities had control over their own decisions in regard to development. In the past, overlapping political structures emerged from the different stakeholders involved in resource management and development. Officials at every level of administration, from the village up to the central government, had multiple positions on ways to move forward, and this was confusing for everyone involved, thus leading to power conflicts and failed projects. IBEKA approached this project differently from previous development attempts in the region, and decentralization may have allowed this to occur. In Aih Nuso, IBEKA hired two Gayo sociologists from the city of Takengon in Aceh province to work with the local governing body and facilitate the process of integrating the management of the micro-hydro project into the local Gayo adat. They believed that a successful project could only occur if the development agency understood local resource use patterns and management practices. The sociologists spoke the local Gayo language, were familiar with IBEKA’s micro-hydro development process, and understood many of the intricacies of the local culture that otherwise may have been overlooked or misunderstood by development professionals from Java or elsewhere and this was appreciated by many residents in the community.

On evening after leaving Pak Lubis’ house, I walked to the residence of the geucik, or local headman, with members of the local governing body, or Badan Perwakilan Kampung, and the two sociologists from IBEKA. That evening a special meeting had been called in order to discuss the management of the micro-hydro project,
the operators of the system, and how to integrate the development project within the local adat structure. However, the local adat was only one piece of legislation to be used, and they were working to create a new quanan, similar to a constitution, by using pieces of the Aceh Constitution, the Constitution of Indonesia, and the local Gayo adat.

That evening we walked to the village headman’s house after the sun had set and families were out in front of the houses preparing dinner over an open fire. Walking down the village path in the dark was oftentimes a bit tricky, with only the dim glow of a small flashlight illuminating our way as we walked over jagged stones sticking out of the path or crossed shaky wooden planks leading over irrigation canals. In the distance, the beautiful song of girls practicing the Bunis Dance could be heard, while boys rushed by with wooden torches lit on fire to catch the end of the performance. We proceeded by a house with the family sitting around a fire cooking dinner, while ten or more local youth listened to a battery powered radio and played guitar along with the songs that came over the airwaves. Finally, we passed the mosque and came to the house of the geucik, Matsa.

We entered the house and everyone sat in a circle with the geucik sitting directly across from me, as the Gayo adat states that the host must always sit directly across from the guest. A small candle and kerosene lamp were lit to provide light for the room and cigarettes were passed around. Smoke quickly filled the room and everyone sat around chatting to lighten the mood before the meeting began. This provided the men an opportunity to direct questions to me about my family, America, our eating habits -- primarily related to pork-- and about school. I felt sweat dripping from my forehead as I was not only nervous, but the lack of air moving through the room caused it to heat up
from all the bodies, the burning lamps, and the humidity of the local climate. All of a sudden a light bulb on the ceiling flickered and turned on. Matsa smiled at me, pointed toward the light bulb and said that the electricity came from the mini-hydro that IBEKA used at their base camp. He then stated that, “That light is from electricity. Our children cannot read at night with that kerosene lamp, it is much too dangerous, progress must be made.” I nodded in agreement at the thought of children reading under a flame, especially living in a house constructed completely of wood. The kerosene lamp was then blown out and grilled corn and coffee were passed around.

Kerosene lamps and fires from wood burning have been the primary source of lighting for the households in Putri Betung for decades. As I sat down to an interview with Aih Nuso resident Muhammad Kadi, he stated that electricity from the micro-hydro project would be safer in many regards. In the 57 years of his life, he had seen quite a few house fires as a result of kerosene lamps. Fires were not his only concern of kerosene lamps; he also cited health problems, such as asthma, associated with the pollutants from the burning gas and other household pollutants. Kerosene and wood are most important to the residents of Aih Nuso in nearly every aspect of their daily lives.

Indoor environments have been described as the most important source of human exposure to pollution in the rural areas of developing nations (Kammen and Dove 1997). Studies have shown the negative effects of kerosene on the health and safety of rural communities as lung disease and asthma rates increase with the reliance on these fuels (Koshal et al. 1999, Shepherd and Perez 2008). Indoor air pollution could potentially decrease as a result from the clean energy source in Aih Nuso, but toxins from kerosene
and diesel fuel are not the only culprits. The noxious pollutants from smoke are most often concentrated in the kitchen as wood is used for cooking. Therefore, as women are most responsible for cooking the meals and also for care of small children, as is true in Aih Nuso, both are most affected by the detrimental health effects from these toxins (Smith 2008). The women cook most meals outside over fires, but when it is raining, the cooking takes place inside the household. The main source of indoor air pollution in Aih Nuso comes from kerosene lamps.

Although, past studies have not shown a decrease in solid fuel use in communities that acquire electricity, and the use of wood for fuel tends to stay just about the same as before the development project (Wamukonya and Davis 2001, Bhattacharyya 2006). The community has reduced the use of kerosene and diesel during nightly activities, but the expense of electric cooking equipment is unlikely to bring about change any time soon when wood is free from the nearby forest. Additionally, electrical cooking supplies would require a larger source of electricity, and better solutions may be chimneys in the dapor area and, perhaps, methane production from biomass.

Another benefit from the micro-hydro project that villagers spoke of was the improvement of educational services in the village. While Pak Lubis was most concerned with the economic development of the area, other villagers cited other reasons they were most interested obtaining a reliable and clean source of electricity. Just as Matsa stated the electricity would allow his children to study at nighttime, most other villagers shared the same sentiments and nearly every person I spoke with mentioned this as the primary reason they wanted electricity. Muhammad Kadi has six children, all of whom are
farmers. According to Pak Kadi, there are no other opportunities for them in the region, and their only choice is to become farmers like he and his parents before him. He wanted electricity so that the local schools could improve with modern technologies such as computers, the internet, and new teaching tools.

The new educational technologies and the ability for children to study in the evenings would improve education and open up new job choices and opportunities for the youth of Aih Nuso. With a better education, he believed that his children would have a chance at going to college or university after they graduated high school and this would open the world to them. They would no longer have only one choice for their future, but could work as farmers if they chose, or could take jobs in nearby cities. If this were to be the case, then electricity may actually lead to an increase in urban migration, and rural communities that modernize through the introduction of electricity may be faced with the problems that stem from urban migration. So while IBEKA and the community hoped that modernization would not drastically alter the agricultural production methods of Aih Nuso, the results of the project could lead to labor shortages that other rural areas throughout Southeast Asia are experiencing.

Men in the community generally perceived that renewable electricity in their community would improve their children’s education, bring about positive economic change, and provide safer living conditions. However, as I interviewed women, I found that they were less concerned with economic development and were primarily concerned with easing the laborious tasks they perform on a daily basis. Ibu Sidara discussed how electrical appliances and an electric water pump would be most beneficial to her. She
hoped that eventually she could purchase kitchen appliances like a blender, water heater, or a rice cooker. As common as these goods are in modern households, the benefits they would provide to the women of the community must not be taken for granted. The women and children primarily do the cooking and other household tasks in the village when they are not working in the forest gardens. Without electricity, they must cook every meal over a fire, and, in order to do so, they have to collect firewood from the forest and bring it back to the home. Electrical appliances would ease the daily workload for the women and provide them relief from the exhausting task of firewood collection. An electric water pump would bring water directly to the household and save them from having to walk distances to wash laundry or collect water for drinking and cooking.

Each member of the community has their own views and perceptions on modernity, how electricity should be used, and the benefits it would bring to them. As I continued interviewing local villagers on the advantages of electricity, the more varied the responses became. Pak Kadi mentioned that with electricity he could buy lights that could be used to breed ducks, as their eggs are one of the main products he eats and sells. Other residents were excited because the local schools and mosques could use electricity to broadcast prayers and readings from the Qur’an over loudspeakers during prayer times, while a few of the younger residents hoped they could eventually purchase a television to watch soccer games. Even in a village as small as Aih Nuso, each person has their own perceptions and beliefs on development. The complexity of views on development and change raises serious dilemmas for development agencies that oftentimes work on strict deadlines and may not have the resources or patience to listen and understand their
numerous views. But it also offers developers an opportunity as people in the community are motivated to bring about change, albeit for different reasons. IBEKA took advantage of this opportunity and did listen to all in the village, and the residents of Aih Nuso were appreciative of their approach, but being able to accommodate all the different perspectives was virtually impossible for IBEKA or any development agency for that matter. Furthermore, is it necessarily the responsibility of the development organization to assist with the social development processes in the community post-development?

*Forms of Participation*

Back at the meeting at the local headman’s house, the main topics of the meeting was the role of the operator. Community participation in the project was evident on many different levels; from the village council voting on the measure to approve the project, to IBEKA meeting with local residents to better understand their desires for electricity, and then using the local peoples’ knowledge of the landscape and local climate to determine the design of the project. However, the most sensitive topic for both the development professionals at IBEKA and also for the local community was participation in the actual construction of the project. IBEKA determined that full community participation in the development process was not possible as they faced constraints in time from outside funding agencies, and choosing locals who would work with IBEKA on the project was not a simple decision without repercussions. At first it was determined that the sons of the family who provided the land for the base-camp would be the operators of the system, but as the project progressed, the sons were not
living up to the expectations of the development agency.

Oftentimes IBEKA spoke of how difficult it was for them to get the local people in Aih Nuso to work on a strict schedule, as do the workers brought in from Java, which is necessary to complete the project before the funding deadlines. There is a common stereotype that has emerged from Java over the decades that depicts rural people as lazy and unwilling to work. The laziness of the Acehnese, as portrayed by people from Java, had come up in my conversations with people in Jakarta and also in my classes with students from Java. I have even overheard Indonesians discuss how failed reconstruction efforts following the tsunami were the result of laziness on the part of the Acehnese people and not from the corruption and culturally irrelevant and ill-planned development processes of large-scale projects designed by organizations such as the World Bank. However, it is difficult for me to understand or comprehend as lazy a people that work as diligently in the forest swiddens or on household tasks as the Gayo. There are obvious misunderstandings and long-held stereotypes at play. However, even if the stereotype is true, although nonetheless unfair, and the Acehnese work ethic differs from that of people from Java, it must be taken into consideration that the Acehnese have lived for over thirty years in a militarized zone. The frequent warfare in the region has drastically altered the lives of the people in Aceh and maybe this has had some effect on the work ethic of those living in the region.

As I spoke with the local workers, they could not understand why IBEKA did not want them to work on the project. They saw the development project as an opportunity for them to have reliable jobs, providing steady incomes unlike farming which garners an
income that varies greatly from week to week and season to season. Part of the problem is that agriculture is a full time job for both the men and the women of the household, and, when combined with the tasks of raising children and household duties, not much free time is left to devote to forty or more hours per week for working on the micro-hydro project. Furthermore, the daily work schedules of the Gayo are not at all like those of IBEKA’s staff or other people that have a forty-hour workweek. The villagers complete tasks as they arise, and if the family’s gardens or livestock need to be attended to, they do so no matter what time of day or night. It was difficult for the local people to imagine a set schedule rather than a daily routine that allowed time for visiting neighbors and socializing, taking breaks to accomplish other tasks, or daytime rests from swidden work when the sun reached its highest point and labor becomes most dangerous.

I then interviewed a few of the local men that were selected as operators to find out how the development project had affected their lives. Moksin, whose local name is Aman Iyu⁴, is thirty-three years old, at least as he can recall (he mentioned that the Gayo do not keep records of their birthday), and has three daughters with the oldest in high school. Before IBEKA came, he worked as a farmer as does most everyone else in the

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⁴ All Gayo men in Aih Nuso change their names upon the birth of their first child. Aman translates as ‘father’ in the Gayo language and Iyu is the name of his first daughter. So his name, Aman Iyu, can be understood as ‘the father of Iyu’. The local residents use their birth name when addressing a person, but most preferred to use their previous names when speaking to foreigners. Names change often in this Gayo village. This is very similar to Hildred and Clifford Geertz’s description of ‘teknonymy’ in Bali 1975: 85). Teknonymy is described as a process that “progressively suppresses personal names and regularly substitutes what are essentially impersonal status terms” (Geertz and Geertz 1975: 85). After birth the person is given a name which remains the same until they are married and have children. After the birth, both the mother and the father take on the name of “father of so and so” and “mother of so and so” (Geertz and Geertz 1975: 86). In Aih Nuso, as in Bali, a second name change occurs when the persons become grandparents.
village. He said that he liked working on the micro-hydro project more than being a farmer as it pays better on a weekly basis, and, in turn, he can purchase more household goods from the local markets. However, it has altered the family’s daily work habits, and now his wife must work everyday in the forest gardens and his children help her. When they go to school, his oldest daughter cares for the younger two siblings and takes charge of the household duties. He believed that his wife did not mind working in the swiddens, but that she did not have time for cracking open and drying candlenuts, which previously was her main contribution to the household income.

So the development project has impacted the social lives of residents in Aih Nuso, but it is difficult to ascertain to what extent the project has empowered the women of Aih Nuso. In this case, Moksin’s wife now brought in less income to the family than before, and her job of child rearing had been altered. Now, however, she had a role that was more similar to many men in the village, and she was in charge of the family’s swidden plots. Her new role as head of agriculture in the family allowed her less time to socialize with other women in the village, and her days were spent in the fields. When I asked her how she felt about her new position, she was undecided. She believed that Moksin’s new job was important and would ultimately provide her family more money in the long run, and maybe it was the better option because of that.

Samat and Darman are friends that live just down the street from Moksin. They are both in their early thirties and have young children, but unlike Moksin they were not asked to participate in the construction of the project. We sat on Samat’s porch one morning as villagers were making their way to the swidden plots to begin the day of
work. We discussed their daily work routines and they estimated that they work anywhere from 7 to 10 hours per day in their gardens, but it varies greatly throughout the agricultural cycle. If their durian trees were ready to harvest, the owner might not visit the forest gardens everyday but would focus their time and energy on collecting durian fruit and taking them to local markets for sale. Their work schedules were heavily dependent on the cycles of the agricultural holdings; for instance, they would work more during the harvest period than during the period after the crops had been planted. Both Samat and Darman were upset IBEKA had not asked them to work on the project, and both felt they could have used the extra income that IBEKA paid the project workers.

During the meeting at the headman’s house discussed earlier in this chapter, I mentioned that participation in the project construction was a heated topic of debate. Moksin, one of the community operators, was nervous about the idea of the entire fate of the project resting on his shoulders. This was a new technology to him and he did not quite understand the full workings of the system. Darman jumped in at this point in the meeting and stated that it would be no problem for him to run the system. This is where the sociologists from IBEKA helped out in the process and where a benefit of their community-based development structure can be seen. The sociologists talked through the process with the government council, explaining how Darman and others could help out by also learning about the maintenance and operation of the system. For empowerment to be achieved, argued the sociologist, the community must work together, but they will not be alone. He stated that IBEKA would be there to guide the operators through the process until they are fully confident in maintaining the system. Furthermore, the
sociologists continued, it would also not be just the operators and IBEKA but the whole community, such as Darman and Samat who would be able to assist if necessary, and that if the community wanted electricity from the system to last, they had to work together. This discussion by IBEKA’s sociologists provided the support necessary to Moksin and the others who were not chosen as operators, at least during the meeting, and everyone felt satisfied with that answer for the time being.

The process of empowerment is a long and arduous process, and to understand how it is achieved in the long term will require further research. IBEKA took a unique approach to the development process in Aih Nuso. Previously, residents had been disillusioned by failed projects, government corruption, and a history of top-down development in the region that ignored their needs, knowledge, and their history of resource management and local adat. IBEKA demonstrated that they cared for the local community and were determined to build a successful project by trying to understand the various perceptions of the local community on modernity, change, and electricity. IBEKA also showed that they were interested in local religious beliefs and village government structures. Villagers in Aih Nuso claimed that for the first time they were listened to and their opinions were valued. This development project brought about drastic change in the community, which will inevitably alter existing local power structures and cause strife amongst the residents. Even so, all residents were excited that IBEKA listened to them and showed some initiative to take seriously their wants, needs, and concerns. This provided at least some sense of empowerment for the villagers and something they had not experienced before from a local development project.
Discussion

In the preceding chapters, I have documented a “current history” (Moore 1994) of development in the village of Aih Nuso from the colonial era leading up to the present. There have been remarkable shifts in the development process throughout the last hundred years, from the violent colonial government’s entry into the Leuser region to decentralization and the move towards community-based development after the New Order. In chapter 2, I suggest that past development and resource management practices in the Leuser region were put in place to control use of the land, resources, and the people that resided within the national park. State control was extended through a territorialization process that included new surveillance measures and introduced technologies to monitor the resources and the people, such as the collection of census data and the demarcation of forest boundaries.

The development programs aimed to improve the livelihoods of the local people and preserve the biodiversity of the nearby forests, but oftentimes had opposite effects, creating a new relationship between the rural communities and the state. The state’s use of statistics and the introduction of new technologies, including agricultural production and forest management, provided the government with knowledge of the population living in Gunung Leuser National Park (Agrawal 2005). More recent attempts at development in the village, such as the failed micro-hydro project built in 2006,
continued state surveillance in the region, while at the same time further marginalizing the Gayo people of Aih Nuso.

Government led development programs have changed dramatically from decade to decade for the people of Aih Nuso, and each new regime brought new regulations and laws dictating how the people within TNGL were to live their lives. The changes happened so often that the residents were oftentimes unsure of what new regulations were implemented. It was not just the government that was impacting the lives of the residents, but large-scale organizations such as the World Wildlife Fund (WWF) also took part in demarcating village land as a conservation area. In the early 1990’s, for instance, the WWF declared land across the Alas River from Aih Nuso as protection forest, thus the residents could no longer harvest wood or farm the land there. However, in 1997 the WWF terminated their efforts in TNGL and ended all their programs in the park (Purnomo 2001). The village is still unclear on whether they can use the land once again or whether they will face fines for doing so. The residents of Aih Nuso have constantly renegotiated their daily routines and local adat to accommodate to changes put into effect from outside the village, such as new regulations on tourism or resource management.

The environmental and NGO movement in Indonesia came about as a response to the New Order development projects that marginalized and impoverished rural people

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5 According to a statement released by Agus Purnomo (WWF-Indonesia), WWF was asked to cease all efforts in Gunung Leuser National Park in 1997 by the Leuser Management Unit (LMU). WWF donors also encouraged the WWF to terminate conservation activities in the park as the European Union was already funding the LMU program (Purnomo 2001).
Many of these NGOs worked to empower the poor economically. This was the goal of IBEKA’s development program in Aih Nuso which used rural electrification as their starting point. In the third chapter, I explored IBEKA’s perceptions of the development process and their motivations for developing rural communities in Indonesia. IBEKA believes that the best way for rural people to move “forward” is through social and economic development programs spurred by the introduction of renewable electricity. They believe the best way to accomplish this, both for the developer and the local community, is with a community-based participatory development approach.

IBEKA’s participatory development approach differed drastically from previous attempts to ‘modernize’ Aih Nuso. While the community acknowledged that the new strategy brought hope for a successful project, it exposed previous power conflicts in the community. For IBEKA, Pak Lubis was the unofficial leader of the village and it was from him that much of the NGO’s information on the project was obtained. In this sense, Pak Lubis could be understood as the “tribal elder” as Anna Tsing uses the term. Tsing argues that it is the “tribal elder” who “holds the attention of potential rural-minority advocates” and takes “responsibility for the fantasy of the tribe” (Tsing 1999; 395). Pak Lubis was not the elected village headman, or geucik, nor was he elected by the residents to play the role of community leader. However, he was a charismatic individual who could speak the Indonesian language fluently and was looking to bring drastic change to the community through economic and social development. However, while others generally agreed with many of the development goals set forth by IBEKA and stressed by
Pak Lubis, there was often a tension between him and others on the village governing council. The participatory nature of this project did empower certain members of the community, such as Pak Lubis and the chosen operators of the system, but it also caused tensions in the community which I could not explore in my time in Aih Nuso but were visible.

While IBEKA’s participatory development model may have empowered some residents and allowed the local community more power over local decisions, it may have also brought about drastic political and economic change. In Aih Nuso, the completed project offered a renewable form of energy for the residents of Aih Nuso and to the other villages in the enclave. The electricity generated could allow the community to ‘modernize’ with new forms of capitalistic economic production (ie. agricultural processing facilities, tourism, etc), which will bring new forms of political subjectivity to the region. The project’s effects introduced new forms of political economy into the region which have the potential to make the village more legible to outside control and bring about new encumbrances between the local community and the state. On the other hand, if the economic development programs are successful, it may bring the village more power in their relations to the broader political and economic structure. Dove argues that:

The challenge for contemporary forest dwellers is less developmental than political. And the challenge for development planners is not to address an imagined economic weakness, through searching for methods of ‘supplementing the forest people’s income’, but to mediate the integration of forest dwellers into broader political and economic arenas so that they are not disadvantaged by their political weakness. The focus on ‘mediation’ and the finding, that while forest dwellers may need government to do things that are beneficial, they also need government to
stop doing things that are detrimental, suggest a new perspective on development planning (Dove 1996; 56).

The micro-hydro development project will bring new relationships between the Aih Nuso community and the state. The goal for IBEKA was to improve the livelihoods of the community by enhancing their safety, health, and education through economic and social development. Furthermore, IBEKA hoped the project would empower residents, not only in their daily lives, but politically as well. However, the unintended consequences of the micro-hydro development scheme may cancel out some of the positives everyone is hoping for. As Dove argues above, rural people need the government to stop doing things that are detrimental to their lives. One example includes the government regulations put in place to control ecotourism and guiding activities that caused the locals to lose a source of supplemental income.

Secondly, if the agricultural production facilities are successful and earn the local community additional income while easing the labor burdens on the residents, especially for women, then the communities must find a way to run the facilities as a coop without direct connection to the government. For if this is a successful venture, it could provide the government with legitimate reasons to convince the local populations to expand their agricultural production in the form of plantation agriculture and other large-scale production facilities, shifting away from small-scale production and less-intensive swidden systems. This would both be detrimental to the local environment, the local working conditions, and have huge implications for the livelihoods of the Gayo in Aih Nuso. This shift has
occurred elsewhere in Indonesia and has ultimately benefitted multinational corporations and the state, not the rural peoples.

*Future Explorations*

Participatory development is a highly contested issue within academia, and scholars have provided convincing arguments both in favor of and against this model of development. In this thesis I have argued that while the participatory development approach was different from past attempts to develop the community of Aih Nuso and it did empower certain members of the community, it also brought change to the community’s social, political, and economic structures. The residents who appeared to benefit most from the project and felt empowered by the development process, were the village officials who had a say in the project outcomes, and the men of the community whom were allowed to participate in the development project. It is difficult to ascertain at this time how the role of the women in the community will be affected by the project and what the implications of this are.

However, even though IBEKA claimed community-participation, there is still the issue of outside power and the hegemony of the development apparatus. IBEKA retained the power to decide which communities needed modernization and then how those communities could use electricity to develop capitalistic modes of production. This is the same in many ways as past development programs in which the government saw rural communities as ‘backwards’ and ‘underdeveloped.’ In this light IBEKA is perpetuating
the development apparatus and reinforcing outside hegemony over rural communities throughout Indonesia.

On the other hand, if the local community calls for the development project and the village council votes in favor of bringing in the NGO to build the micro-hydro electricity system, as did occur in Aih Nuso, is the NGO not doing the local community a favor? The marginalized group, such as the Gayo in Aih Nuso, saw small-scale development as the only way to improve their livelihoods through better health care, education, the ability to purchase Western consumer goods, and other forms of modernization. They considered themselves to be poor, yet at the same time most in the community-owned motorbikes, were not struggling to provide food for their families, and had access to schooling. Further research is necessary to understand what their concept of ‘poor’ and ‘poverty’ is based upon. Was it outside agencies that determined the villagers were poor and in need of modernization during past development schemes? The improvement programs are not the issue, though; the concern is who benefits from the modernization project after it is finished: the community, the funding agencies for the project, the NGO, or the state?

One problem lies in what consequences modernization may bring to the community from the central government. If the community successfully develops new methods of processing their crops or new sites for bringing in ecotourism, will the government not step in to regulate their actions as has happened in the past? If this is the case, then the central government is the main agent that marginalizes the rural people, not the NGO. However, the government may also help the community to find markets for
the agricultural goods and even for tourism. The economic development programs in Aih Nuso could be a way for the state to justify plantation agriculture and the large-scale production of candlenut, patchouli, and other goods. This is a situation that requires further research in the village of Aih Nuso to better understand the consequences of the development project.

The next concern I wish to explore, but could not during this research due to time constraints, was the role of the funding agencies. First, I would like to better understand why the funds that were supposed to be used for coastal projects following the 2004 tsunami were transferred to inland locations in the Gayo Highlands. Are there connections between the government and international funding agencies wanting to develop the inland locations where training camps for members of GAM are located? GAM is growing in size and force in the region and local residents and village governments are concerned about the threat posed to them. This region of Aceh is also known as the leading producer of marijuana in Indonesia as described in chapter 2. Is the government providing funds to NGOs that wish to make legible areas where subversives may reside and illegal activities occur, using the discourse of development as a guise? What are IBEKA’s connections to the funding agencies and the government? As is always the case, motivations are complex and power-laden and may or may not be found in the answer to these questions, but there is no doubt that funding agencies play a central part in the development process and one that should be explored in greater depth.

Lastly, I would like to further explore the complex issues surrounding the decentralization of government for a community that resides within a national park. This
situation was even confusing for members of the Aih Nuso community. Under
decentralization, power had been handed over to the local village government. However,
they still reside within a national park, and many of the surrounding lands were set aside
as protection forest, commercial forest, and bufferzones. While the local community has
power over local decisions, there are still state regulations regarding land use surrounding
the village. These regulations could impact the community’s future goals of social and
economic development following the micro-hydro project. Future studies should focus
on the proposed social and economic development programs to explore their outcomes
and impacts on the social structure of the community. Did the proposed development
programs improve the livelihoods of the residents and in particular the women of the
community as claimed by IBEKA? What were the impacts of the drastic political and
economic changes from the development project?

The micro-hydro development project and modernity bring about opportunities
and choices for the people of Aih Nuso and the Indonesian government that were
previously not available. The social, political, and economic outcomes of the project will
make available new opportunities for all residents in the village. The success of this
project depends on what the villagers and the government decide to make of
opportunities and choices. Will the government cease the opportunity to tax, modernize,
and push the community to move to plantation agriculture with the assistance of
multinational corporations? Will the community choose to improve their livelihoods by
working with neighboring villages to form a cooperative to process their locally produced
agricultural goods for sale in local and regional markets? Might education improve in the
village and children leave for university, and, intrigued by a more modern lifestyle, opt to remain in urban regions? Could modernity for Aih Nuso bring a large shift in agricultural production and youth urban migration as has occurred throughout Southeast Asia? Or will the introduction of electricity and modernity in Aih Nuso provide reason for the youth to remain in the village as speculated by development specialists? These are all questions I wish to explore in the future that will contribute to our understanding of participatory development, modernity, the state, and the operations of NGOs.
REFERENCES


