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**TOWARDS ADAPTIVE FOREST GOVERNANCE  
ACCORDING TO SOCIAL-ECOLOGICAL SYSTEMS  
RESILIENCE  
(Study case: The Mount Pancar Nature Tourism Park)**

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**MASTER THESIS**

**A thesis submitted in partial fulfillment of the requirements for  
the Master Degree from University of Groningen (RUG) and  
the Master Degree from Institut Teknologi Bandung (ITB)**

**By  
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**Double Master Degree Program  
Environmental and Infrastructure Planning  
Faculty of Spatial Sciences  
University of Groningen  
and  
Department of Regional and City Planning  
School of Architecture, Planning and Policy Development  
Bandung Institute of Technology  
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*The fear of the LORD is the beginning of knowledge,  
but fools despise wisdom and instruction*

-Proverbs 1: 7, KJV-

*(this thesis is dedicated to Heri Baja and Gerrard Devon Baja)*

## ABSTRACT

Social-Ecological Systems (SES) approach considers human and ecosystem as fully integrated aspects in the system management (Waltner-Toews and Kay 2005, Janssen and Ostrom 2006). Forests are identified as complex SES (Agrawal et al. 2008 *in* Tucker 2010). Tucker (2010) contends that some forest areas could sustain the ecological functions, while others undergo deforestation, and failures in forest management are consistently related to sustainable forest governance. Regarding the SES research, authors such as Ostrom (2010) called for further research about core attributes of SES in forestry field. Adaptive governance is recognized as the key requirement of SES (Folke, et al. 2002). This research was done to address this academic challenge, through the exploration of a case study, the Mount Pancar Nature Tourism Park (NTP). The aim of this thesis is to analyze the processes and critical factors of adaptive forest governance, strengthening the resilience of SES, notably in the Mount Pancar NTP case. Two main questions guided this research. First is related to how adaptive governance processes, principles and its dynamics operate and guide this park. Second is related to what are the critical factors of adaptive forest governance transformation enhancing the resilience of this park.

This research identified that the governance structure and function of the Mount Pancar NTP changed. It affects one of the SES components, which is public infrastructure provider system entity. Because of the change, attributes of governance, such as social justice and organizational features (polycentric and multilayered), are essential to be developed in current management. Governance system is possible to be adaptive, because it has adaptive capacities. Towards the Mount Pancar NTP resilience, there are critical factors needed for transforming existing forest governance system to be adaptive, which are leadership, network, common understanding and (adaptive) institution.

*Keyword:*

*Adaptive governance, forestry, resilience, Social-Ecological Systems, transformation*

## **GUIDELINE FOR USING THESIS**

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Reproducing and publishing some part or the whole of this thesis can be done with the permission of the Director of the Master Program in the University of Groningen and Institut Teknologi Bandung.

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I praise my Lord, Jesus Christ, for His love and grace in my life. Without His kindness, it is impossible to finish my thesis. I give my highest appreciation for those who are thoughtful also kind that supported me during these thesis-making processes. Foremost are my advisors, Constanza Parra Novoa and Djoko Santoso Abi Suroso for their guidance and patience during the processes. Then, to all the interviewees in Indonesia, thanks for the knowledge sharing and time contributions to this research.

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Groningen, August 2013

Sahat July Tirta Dewi

## WORKING GLOSSARY

### **Adaptive governance**

*Institutional and political frameworks designed to adapt to changing relationships between society and ecosystems, institutional frameworks that enable adaptive management, and the facilitation of learning from adaptive management to policy* (<http://www.springerreference.com/docs/html/chapterdbid/310715.html>);

*Expand the focus from adaptive management of ecosystems to address the broader social contexts that enable ecosystem-based management* (<http://www.climate-science.gov/Library/sap/sap4-4/public-review-draft/Front-Back-Matter/sap4-4prd-glossary-acronyms.pdf>)

### **Adaptive management**

*A systematic process of natural resource management whereby management actions are treated as experiments to increase learning and improve subsequent management* (<http://www.springerreference.com/docs/html/chapterdbid/310715.html>).

*Adaptive management is a structured process designed to improve understanding and management by helping managers and scientists learn from the implementation and consequences of natural resource policies* (Holling 1978, Walters 1986, Lee 1993 in Gray 2000, p.2).

### **Capacity**

*A society's ability to manage resilience resides in actors, social networks, and institution (...capacities for self-organization, adaptation, and learning* (Lebel et al., 2006, p.24).

*Adaptive Capacity is the ability of a social-ecological system to cope with novel situations without losing options for the future, and resilience is a key to enhancing adaptive capacity* (Folke, et al. 2003, p.17).

### **Critical factors**

*Factors that are needed for the transformation to adaptive governance of Social Ecological Systems... that can help provide social sources of renewal and shape reorganization toward desired SES configurations* (Olsson, et al. 2006, p.20).

### **Government**

*The group of people who officially control a country* (Cambridge Dictionaries Online);  
*A particular ministry in office* (Oxford Dictionaries Online).

### **Governance**

*The action or manner of governing a state, organization, etc.* (Oxford Dictionaries Online).

*Governance is characterized by diversity, uncertainty, heterogeneity of society, and the decreased possibilities for inducing long-term change by government* (Loorbach 2010, p.166).

*Predominantly understood to include a plurality of actors (formal and informal ones, not restricted to government actors), involved in decision-making and implementation as well as the institutional structures (both formal and informal) in place that define the range of action* (Affolderbach and Parra 2012, p.11).

*IUCN recognizes four broad types of governance of protected areas, any of which can be associated with any management objective: governance by government, shared*

*governance, private governance, governance by indigenous peoples and local communities (Dudley 2008, p.26).*

#### **(Governance) Attributes**

*Lebel et al. (2006, p.22) are initially interested in are those frequently considered to be part of “good” governance, e.g., participation, representation, deliberation, accountability, empowerment, social justice, and organizational features such as being multilayered and polycentric.*

*Cundill and Fabricius (2010, p.16) develop a conceptual map for monitoring change in governance by identifying four system attributes: social capital (Pretty 2003), adaptive capacity (Armitage 2005), self-organization (Olsson et al. 2004a), and operational preconditions for the emergence of adaptive governance (Dietz et al. 2003).*

#### **Social-Ecological Systems**

*(1) A coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner; (2) A system that is defined at several spatial, temporal, and organizational scales, which may be hierarchically linked; (3) A set of critical resources (natural, socioeconomic, and cultural) whose flow and use is regulated by a combination of ecological and social systems; and (4) A perpetually dynamic, complex system with continuous adaptation (Burch and DeLuca 1984; Machlis and others 1997 in Redman, Grove and Kuby 2004).*

#### **Sustainable development**

*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UN-Bruntland Commission Report 1987, Chapter 2; <http://www.un-documents.net/ocf-02.htm>)*

*The balance of economic development in regards to (social) poverty reduction and environment impact minimization (summarizing Adam 2006).*

#### **Resilience**

*The capacity of a system to continually change and adapt yet remain within critical thresholds; The resilience approach focuses on the dynamic interplay between periods of gradual and sudden change and how to adapt to and shape change (<http://www.stockholmresilience.org/21/research/what-is-resilience.html>).*

*Walker et al (2004, p.6) also define that resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks.*

#### **Vulnerability**

*The extent to which a system is unable to cope with the undesirable impacts of a change, such as with the poverty-generating impact of resource degradation or climate change (IPCC 2007 in Glaser, et al. 2008, p.78).*

## ABBREVIATION

Abbreviation	Name and explanation	First used in page:
BKSDA	<i>Balai Konservasi Sumberdaya Alam</i> or Nature Resources Conservation Office—in this thesis BKSDA refers to BBKSDA Regional III and the name changed to BBKSDA in 2007	26
BBKSDA	<i>Balai Besar Konservasi Sumberdaya Alam Jawa Barat</i> or West Java Nature Resources Conservation Agency—in this thesis BBKSDA refers to BBKSDA Jabar ( <a href="http://bbksda-jabar.dephut.go.id/">http://bbksda-jabar.dephut.go.id/</a> )	7
CIFOR	Centre International for Forestry Research ( <a href="http://www.cifor.org/">http://www.cifor.org/</a> )	39
IPB	Institut Pertanian Bogor/Bogor Agricultural University ( <a href="http://www.ipb.ac.id/">http://www.ipb.ac.id/</a> )	60
MoF	Ministry of Forestry-Republic of Indonesia ( <a href="http://www.dephut.go.id">www.dephut.go.id</a> )	29
NGO	Non-governmental Organization	44
NTP	Nature Tourism Park—refers to <i>Taman Wisata Alam</i> , one of the conservation area forms in Indonesia	<i>i</i>
PERHUTANI	<i>Perusahaan Umum Perusahaan Hutan Negara Indonesia Kawasan Penguasaan Hutan Bogor</i> or state-owned forestry enterprise in Bogor Regency Area—refers to PERUM PERHUTANI KPH Bogor ( <a href="http://www.kphbogor.perumperhutani.com/">http://www.kphbogor.perumperhutani.com/</a> )	26
PILI	<i>Pusat Informasi Lingkungan Hidup</i> or Centre for Environmental Information-Green Network ( <a href="http://www.pili.or.id/">http://www.pili.or.id/</a> )	38
PT. WWI	Perseroan Terbatas Wana Wisata Indah—a private company that holds tourism concession in the Mount Pancar Nature Tourism Park.	28
SES	Social Ecological Systems	<i>i</i>

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# CHAPTER 1: INTRODUCTION

## 1.1. Background

The sustainable management of nature conservation areas, in general, and forests, in particular, is a major contemporary challenge. Similar with the metaphor of a two-sided coin, the focus on sustaining the functions of conservation areas has to deal with and accommodate the needs of economic development.

Tracing the literatures back, various approaches have already been used to address the challenges of the conservation area management. Conventional approach concerns to manage the ecosystem or other ecology features of the conservation areas (Carpenter and Gunderson 2001 *in* Folke, et al. 2005). Integrative approaches that manage a more essential ecological processes have been developed, in which the approaches incorporate human interactions in the management (Carpenter, et al. 2001) and embodied in the understanding of social processes as much as ecology processes (Waltner-Toews and Kay 2005). All of these approaches provide a better understanding about sustainability, but the results of sustainability are still under questioned (Berkes, et al. 2003). Some of the conservation areas can retain their ecological functions, while others undergo degradation. Managing the complex system of conservation areas has forced contemporary scholars to determine the most comprehensive management approach and appropriate concept in expressing sustainability.

Thus, a new concept, which is resilience, has risen in the past two decades. Resilience is used as the alternative approach to explain about sustainability. One of the approaches in the resilience research is Social-Ecological Systems (SES). The SES approach considers the role of the human dimension in the ecosystem processes and dynamics (Waltner-Toews and Kay 2005), including the interaction of social and biophysical at multiple temporal and spatial scale (Janssen and Ostrom 2006). Based on resilience perspective, a system sustains when the system experienced an evolutionary process after disturbances and also able to transform

from a one dynamic equilibrium to another dynamic equilibrium condition (Rotmans, et al. 2001). Supporting the evolutionary process, adaptive governance system is needed in the system management. Adaptive governance could identify the social and ecological contexts in the system and guide the system to be adaptive in responding the disturbances.

There is a research suggested for exploring SES and adaptive governance, in specific field, such as study about core attributes of SES in forestry (Ostrom 2010). Forests are identified as complex social-ecological systems (Agrawal et al. 2008 *in* Tucker 2010). Forest sustainability determines environmental sustainability. Tucker (2010) mentioned that forest management is also questioned for its sustainability, because some forests are sustainable and others still suffer for deforestation. There is a claim that people inside and around the forest are the subjects of deforestation (Wollenberg, et al. 2004). Adaptive management, an approach that considers social contexts, had already been introduced in forest management, but sustainable forests still become a challenge. Failures in the forest management are consistently related with the sustainable forest governance (Tucker 2010). This is the reason why SES could be the alternative perspective in forest management, to investigate why existing governance system is not able to deal with current problems. Within the SES view, forest governance system has to recognize the integration of social and ecological systems.

A large body of forestry research, especially on forest changes and management, has focused on physical issues that are related to causes and consequences of deforestation (Tucker 2010). For example is in Indonesia that has a lot of conservation areas. Indonesian forests are facing common pressures, but in the different levels. Illegal logging, forest land certification, encroachment, illegal infrastructure, etc., are found as the general causes of deforestation. In fact, weak profile of governance becomes important indirect driver of deforestation that significantly contributes to the forest vulnerability (Andersson and Ravikumar 2010, Doherty and Schroeder 2011, Kissinger, et al. 2012).

One example case in Indonesia is the Mount Pancar Nature Tourism Park (NTP). This park is one of protected areas in Indonesia that has 447.50 hectares area

wide. The area is small as a protected area, but environmental values provided by this park are uncountable. Complexities in managing the park occurs from social, ecological and spatial contexts—see Chapter 3. Furthermore, there are many illegal activities in this area, such as illegal tourism business that is monopolized by individual actor, triggering mass illegal buildings in the park. It shows how weak the monitoring and enforcement by management authority in managing the area—noted that there was a changing management authority of the Mount Pancar NTP in 1993. This situation is worsening the environmental quality of the Mount Pancar NTP.

Illegal activities emerged in conservation area in Indonesia is generally caused by unapplied good governance principles (Mursito 2010). There is also a claim that what is called with good governance in this park is still under questioned. Many efforts have been done in combating the illegal activities in this park, for example collaborative law enforcement in 2010. This action becomes the starting point for emendation of Mount Pancar NTP management and other NTPs in Indonesia, because it involved several government institutions. It has been more than one year after law enforcement done in this area, but the process is still incomplete yet.

The circumstances in the Mount Pancar NTP and SES research challenge are the reasons why this case-study base research is conducted. On the one hand, it is interesting to explore the governance system in this park from a different view, the SES perspective, to analyze how it operates and could be adaptive in dealing with disturbances. On the other hand, this thesis also tries to addresses the academic challenge of SES research about forest governance system. Thus, at the end of analysis, recommendations are suggested further towards the resilience of the Mount Pancar NTP.

## **1.2. Problem Statement**

Governance system, in the context of SES, should integrate social aspects and able to encourage the system to be adaptive (Olsson, et al. 2006). There are many studies about SES, but it is limited researches in Indonesia. The key requirements

of resilience SES are structured scenarios and active adaptive management (Folke, et al. 2002, p.437). One important research of SES, as suggested by Ostrom (2010), is the exploration of core attributes of SES in specific field, such as of forestry, water, and fishery. In the SES learning, adaptive governance is recognized as the key requirement of SES. Since forests are a type of the complex SES, analyzing SES of forestry and adaptive forest governance seems important to be done. Thus, this case-study base research, notably in the Mount Pancar NTP, is done to address the challenge.

### **1.3. Research Aim and Objectives**

The aim of this thesis is to analyze the processes and the critical factors of adaptive forest governance, strengthening the resilience of SES, notably the Mount Pancar NTP case. Two main research questions guide the analysis processes, as follow:

- a) How and to what extent adaptive governance principles operate and guide the management of the Mount Pancar NTP? Do these governance dynamics strength the resilience of this forestry SES?
- b) What are the critical factors of adaptive forest governance enhancing the resilience of the Mount Pancar NTP?

Thus, the research objectives are set to address the thesis aim and questions, which are:

- a) To examine the changes and dynamics in the governance structure of the Mount Pancar NTP, at different spatial and temporal scales.
- b) To analyze the attributes and capacities of forest governance, bringing resilience to the Mount Pancar NTP.
- c) To identify the critical factor(s) of adaptive governance preparing the transformation towards more resilience of Social-Ecological Systems.

### **1.4. Research Significance**

The importance of this research is that the results will contribute for SES learning in the forestry sector (see section 1.2.) and contribute for SES research in

Indonesia, by providing different perspective of forest governance system, through the lens of Social-Ecological Systems

## **1.5. Methodology**

### **1.5.1. Research Methods**

This case-study base research is a qualitative research. Yin (2009) contends that a case study method examines current events, through direct observations and interviews with people involved in those events. Moreover, it focuses on “why” and “how” questions, in which those are related to the operational links and investigations over time (*op cit*). This research focuses on this type of questions, based on SES perspective: why adaptive governance of SES is important to be explored in the study case and how governance system is operationalized and should be operationalized in the future, towards the resilience of the Mount Pancar NTP.

### **1.5.2. Data Collections**

#### **a. Primary Data**

Primary data was collected through semi-structured in-depth interviews with relevant stakeholders. Specific topics guided the interviews, but the interviewees had freedom to respond the questions. The topics are possible to be developed during the processes, as long as it is related to the theme (Bryman 2008). The key informants, who understand and are involved in the changes of the Mount Pancar NTP, were crucial to be interviewed due to understand how the system cope, adapt and transform with the changes in the park. Purposive sampling was used for choosing the interviewees, specifically with snowball sampling approach. Bryman (2008) contends that this sampling type is used if there is no sampling frame in the research.

Marshall and Rossman (2006) said that interview is aimed to describe the meaning of a concept or phenomenon that several individuals share. This is important because SES has major values that should be explored, related to

feedbacks and learning towards a resilient system. Three in-depth interviews compose lived experience inquiries (Seidman 1998 *in* Marshall and Rossman 2006): (1) focuses on the past experiences with the phenomenon of interests; (2) focuses on existing experiences; (3) joint these two narratives to describe the individual's experiences with the phenomenon. The first and second inquiries are needed to address the first and second objectives, while the third inquiry is needed to address the third objective in this thesis.

The dimensions used for the interviews in analyzing adaptive governance towards SES resilience, according to the theoretical framework in the Chapter 2, were:

- Objective 1 : SES framework (Anderies, et al. (2004)); governance system changes that could be understood through the analysis of governance structure (Dudley 2008), governance shifting in regimes (Folke, et al. 2004) and governance across spatial and temporal scales (Berkes and Folke 1998 *in* Ostrom 2009).
- Objective 2 : The attributes of governance (Lebel, et al. 2006, Dudley 2008); adaptive capacities and its dimensions (Folke, et al. 2003 *in* Armitage 2005).
- Objective 3 : Key factor(s) for the transformation of adaptive governance towards SES resilience, refers to many success stories in other places (Danter, et al. 2000, Olsson, et al. 2006).

The interviews were conducted mainly from 29 April to the 14 May 2013, but there are two interviews conducted on July 2012 (representative of PERHUTANI on 13 July 2012 and representative of Social and Economic Division of Planning Agency-Local Government of Bogor Regency on 23 July 2012). About thirteen different key informants, from various backgrounds, have been interviewed (APPENDIX 1). APPENDIX 2 shows the list of topic questions that were used in the interviews. Not all the topics were asked to each stakeholder, because they has different perspectives, role, and underwent different experiences in this park. The code in APPENDIX 1 represents the individual code that is used to distinguish the reference source in this document.

b. Secondary Data

Documents that are related to the case study were primarily collected from BBKSDA (a conservation agency from the central government that manages the Mount Pancar NTP). Other sources are media, journal articles and reports from other relevant stakeholders. The data was collected from 29 April to the 14 May 2013.

**1.5.3. Data Analysis**

In general, narrative analysis was used in this thesis for building up the entire stories (interview results combined with the secondary data). Bryman (2008) mentions that this analysis type emphasizes the stories of the informants have to take the events into account and make the connections (between events, also between events and its contexts).

Another analysis, stakeholder analysis, was used for further identification of potential actors in the study case. Golder (2005, p.1) said that stakeholder analysis can be used to identify the interests of stakeholders involved; appropriate strategies or approaches for stakeholder engagement and the potential conflicts for these initiatives in the future; network that can be built on during implementation; marginal group that should be encouraged to participate; and reduce unexpected impacts on vulnerable and disadvantaged groups.

Other analysis is a qualitative content analysis. This analysis could help researcher to find out the underlying themes in the materials and connect it to the previous studies, in which the themes are not excerpted in detail (Bryman 2008).

Thus, summarizing this chapter, FIGURE 1 shows the analytical framework of this thesis. Next section, the structure of the thesis will be explained in detail.

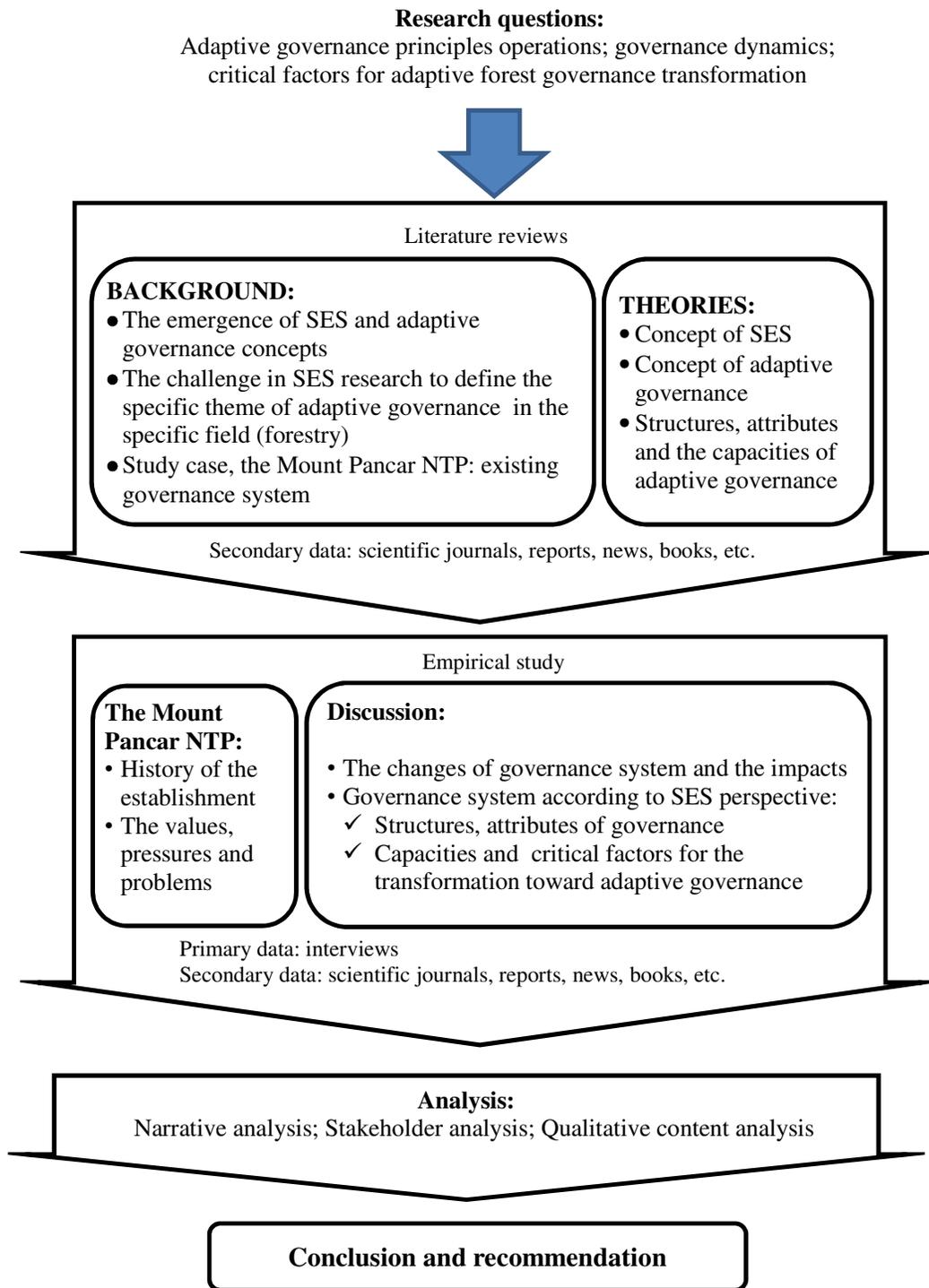


FIGURE 1. Analytical framework of the thesis (source: author).

## **1.6. Structure of the Thesis**

This thesis consists of five chapters (FIGURE 2). The first chapter has been presented, while the content of the other chapters are described as follow:

### **CHAPTER 1: INTRODUCTION**

This chapter presents the background, problem, research aim and objectives, research significance, methodology, and structure of the thesis.

### **CHAPTER 2: THEORETICAL REVIEW**

This chapter explores a glance overview of the Social-Ecological Systems and adaptive governance concepts, by discussing the findings from existing literatures. It is expected to be the basis of adaptive governance analysis and its components in this research.

### **CHAPTER 3: THE STORY OF MOUNT PANCAR NATURE TOURISM PARK**

This chapter focuses on the history of the Mount Pancar NTP establishment, values, pressures, and problems in the park. It also provides the justification why this park is suitable to be the case study, in addressing the academic challenge of SES and adaptive governance in forestry field.

### **CHAPTER 4: TOWARDS ADAPTIVE GOVERNANCE OF THE MOUNT PANCAR NATURE TOURISM PARK RESILIENCE**

This chapter explains the analysis results, related to governance system according to the SES. The governance system operation of the Mount Pancar NTP and the analysis of potential transformation processes towards adaptive forest governance are described. Addressing the theoretical challenge, core attributes of SES are also explored through the study case.

### **CHAPTER 5 CONCLUSION AND RECOMMENDATIONS**

The last chapter describes the conclusion of this thesis, extracting particular policy recommendations, and reflections of this research.

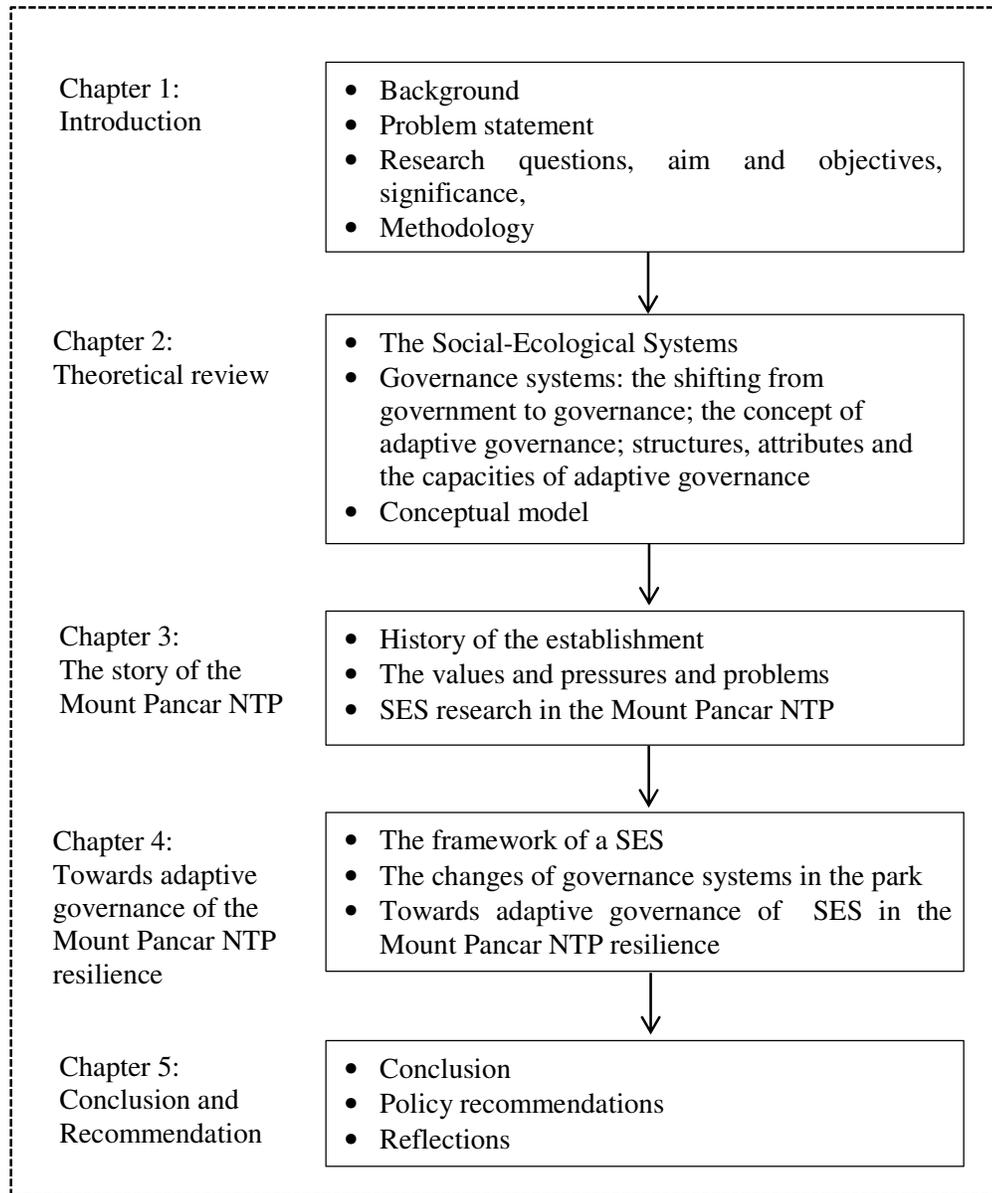


FIGURE 2. Structure of the thesis (source: author).

## **CHAPTER 2: THEORETHICAL REVIEW**

This chapter explores about the findings in the literatures, related to the Social-Ecological Systems and adaptive governance researches. Within this theoretical review, the knowledge gap about adaptive governance in the existing literatures is also explored and become the ground of this thesis.

There are five sections in these chapters: (1) the emergence of resilience concept, it explores about why resilience is used as the alternative for the sustainability concept; (2) Social-Ecological Systems, this section defines the Social-Ecological Systems (SES) as one of the approaches in resilience study; (3) government and (adaptive) governance, it describes the shifting from government to governance, the reason why adaptive governance becomes the key of SES, and the research challenge in adaptive governance study; (4) forests in Indonesia and the Social-Ecological Systems research, this section represents the existing condition of forest management in Indonesia and why SES is used as the alternative perspective for the forest governance study in Indonesia, specifically in the study case (the Mount Pancar NTP); (5) conceptual model, it describes the research flow, in relevant with the theoretical review.

### **2.1. The Emergence of Resilience Concept**

To begin with, it is important to discuss about sustainable development and the emergences of SES among scholars. Sustainable development (social, economic and environment) becomes the basis of current developments in all around the world and has been agreed by nation's leaders through signing the Millennium Development Goals in 2000. The ideas and the concepts of sustainability were defined by the Bruntland Commission or the World Commission on Environment and Development (WCED), in 1987. According to Bruntland Commission report, there are two fundamental issues that should be addressed, which are: (1) the two sides of a coin to express the environmental degradation and economic

development, and (2) the need to overcome poverty (Adams 2006). The biggest challenge for conservation areas is in the sense that economic and social issues receive greater attention than environment issue. Recently, environmental sustainability is put forward to become equal, as well as the two others (*op cit*).

The concept of sustainability also becomes a concern in the spatial development (land-use management and land development). Managing land always entails complexity among stakeholders, because it has to facilitate overall public interests (Berke, et al. 2006). This is the reason why government intervenes in the management of land-use through urban design, or also known as spatial system (Marcus 2011). Although the spatial plan-making considers the pillars of sustainable development (social, economic and environment), problems are still unsolved and become more complex, when it is implemented.

Tracing back the environment management history, there are many approaches used in practice. On the one hand, ecology becomes the basis for the management (Carpenter and Gunderson 2001 *in* Folke, et al. 2005). On the other hand, social aspects have been identified and essential to be considered on managing the essential ecological processes (Carpenter, et al. 2001). Both of the approach types improve our understanding, but still failed to address challenges in system (Berkes, et al. 2003). It still focuses on single issue or partial approaches (Folke, et al. 2005). Such partial approaches are less useful in current situation, wherein the capacity of ecosystems to generate resources and ecosystem services for social development, has become vulnerable because of changes and no longer could be taken for granted (*op cit*).

These failures entail the new approaches in managing ecosystem. It should encourage environmental sustainability as the core of activities, in the same proportion as social and economic sustainability (Adams 2006). All dimensions of sustainability should be developed in the integrative way (Adams 2006, Du Plessis 2008). In turn, there is shifting in the ecological thinking. Adapting the open, dynamic and highly unpredictable ecosystem condition, because of the internal and external factors, it shifts from equilibrium to non-equilibrium model (Du Plessis 2008). These are the reasons why ecosystems should be seen as a

system in the context of wholeness, emphasize to connectedness, context, feedback (negative or positive) as suggested by von Bertalanffy (1968) *in* Berkes, et al. (2003). Regarding the new perspective, Ostrom (2007) contends that the system should be managed with multi-discipline approaches.

Therefore, many scholars started to rethink about sustainability. Centre for resilience of the Ohio University contends that sustainability is not the end-state<sup>1</sup>. It means that future condition cannot be forecasted, but can be prepared and resilience is possible as the key of global sustainability. Resilience is now used in the great variety of interdisciplinary works, concerned with the interactions between people and nature. The difference between sustainability and resilience is that sustainability includes the assumptions or preferences about which system states are desirable, while resilience can be desirable or undesirable (Carpenter, et al. 2001). It means that resilience system is possible to transform to a certain condition (not always desirable condition) in responding the system disturbance (self-organize). One of the approaches in resilience study is Social-Ecological Systems (SES). Towards the resilience of SES, certain capacities are needed to be developed (see section 2.3.4 in this chapter).

## **2.2. Social-Ecological Systems**

Social-Ecological Systems (SES) becomes one of the approaches that tries to integrate human interactions in the complex system. Berkes and Folke (1998) *in* Folke, et al. (2005) use the term “social-ecological” systems to emphasize the integrated concept of human aspects in the ecosystem management and to put more attention that the delineation between social and ecological systems is unreal and irrational.

There are three main issues are summarized related to the development of SES approach. First, the integration of the social aspect into sustainable concept. There is no dichotomy of nature and human in the system. SES recognizes the role of the human dimension in the processes and ecosystem dynamics (Waltner-Toews and Kay 2005), including the interaction of social and biophysical at multiple

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<sup>1</sup> Source: <http://resilience.osu.edu/CFR-site/resilienceandsustainability.htm>, accessed on 1 July 2013.

temporal and spatial scale (Janssen and Ostrom 2006). Second is related to the multi-scalar characteristic of the system. Identifying and analyzing the relationships among multiple levels at spatial and temporal scales of the system is difficult and SES addresses this challenge (Berkes and Folke 1998 *in* Ostrom 2009). Third, the learning process is important in SES. SES has powerful reciprocal feedbacks and act as complex adaptive systems (Berkes, et al. 2003). Feedback means learning. It is needed to cope with uncertainty and surprises on the system for its resilience (Ostrom 2009).

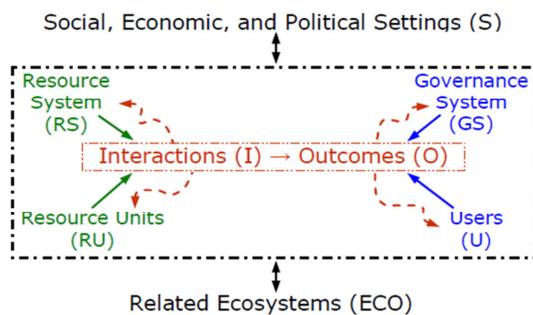


FIGURE 3. A multitier framework (decomposable model) for analyzing Social Ecological Systems (source: Ostrom 2007, p.8)



FIGURE 4. Model urban development (source: Marcus 2011, p.5)

FIGURE 3 shows the well-known model for analyzing SES, proposed by Ostrom (2007). Since the urgent environmental problem relates to the resources (the potential loss of fisheries, forests, and water resources) and the limitation in understanding the processes, a common framework of complex social-ecological systems is needed to be described and explained (Ostrom 2009).

Theoretically, there is an assumption that resource users will never self-organize to maintain their resources, but Ostrom (2009) contends the vice versa result: the system is

possible to self-organize. Thus, Marcus (2011) proposed a model of urban development as the example of knowledge and practice, related to self-organize processes (FIGURE 4). Within this framework, city as the example of complex systems can be self-organized triggered by governance, planning and design, but

there is interdisciplinary and transdisciplinary knowledge challenges in the processes.

Carpenter et al. (2001, p.766) define resilience in SES as the ability of a system to cope, adapt, and transform without losing its critical functions and has three properties: (1) the amount of change the system can undergo and still remain within the same domain of attraction; (2) the degree to which the system is capable of self-organization; and (3) the degree to which the system can build the capacity to learn and adapt.

There are two points are highlighted regarding these definitions. First, to understand how the changes in the system are recognized, the framework of SES should be drawn. It represents the interaction between actors and their relationship in the system. Furthermore, key driver of changes in the system can be also recognized in this framework (Anderies, et al. 2004). Each systems could have a different SES framework, because SES is context-dependent, meaning that the system complexity depends on these interactions (Ostrom 2010). Example of SES framework will be discussed further in the next paragraph. Second, triggering self-organized systems and addressing the challenges about the capacity to learn and adapt, adaptive governance system play an important role (Marcus 2011). Detail explanation about adaptive governance will be discussed in the section 2.3 in this chapter.

Anderies, et al. (2004), give an example for SES framework (FIGURE 5). The framework describes entities and the interactions in the system. There are four main entities in the system: resource (A), resource users (B), public infrastructure providers (C) and public infrastructure (D). These entities are related each other, shows by link 1-8. To understand the interactions, link 1-6 explain the interactions between entities and its potential problems, in which link 5 describes the (resource) dynamic in the system. Meanwhile, link 7 and 8 refer to the external factors that impact the system: link 7 represents about disturbances that impact biophysical conditions and link 8 represents disturbances that impact socioeconomic conditions. Anderies, et al. (2004) concludes that link 2, between

resource users (B) and public infrastructure providers (C), becomes the key driver of the system changes, which had been neglected in the past.

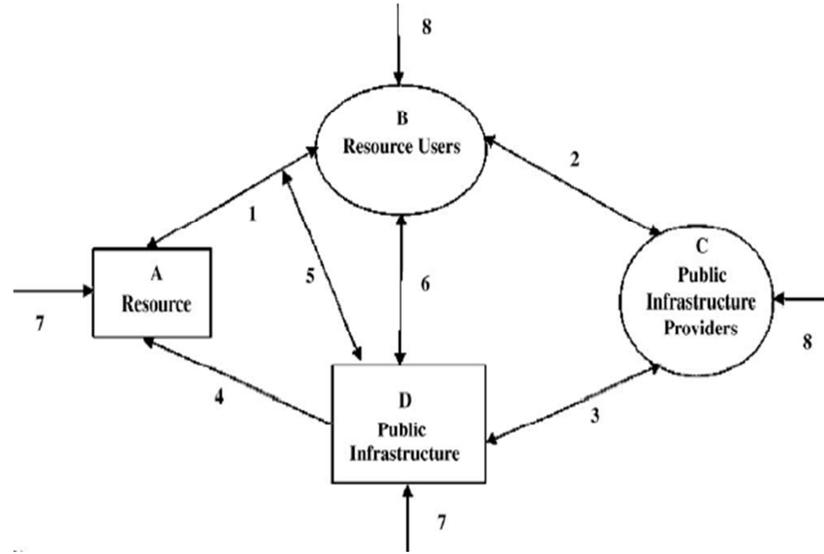


FIGURE 5. The framework of the Social-Ecological Systems (source: Anderies, et al. 2004, p.20).

Governance system is also considered as the important part in the framework (Anderies, et al. 2004). The dynamics of the system triggers many scholars to define what kind of governance system that is suitable towards the SES resilience. Next section will explain about governance system in SES. It is started with the exploration about the changes of governing type, from government to governance. This shifting also impacts to the structure and attributes of governance. SES relies on adaptive governance system (Dietz et al., 2003). Thus, transforming the governance system to be adaptive needs adaptive capacities and critical factors for the processes.

### 2.3. Government and (Adaptive) Governance

#### 2.3.1. Shifting from Government to Governance

The need for balancing economic, social and environmental aspects of sustainability is related with the shift from government to governance. Parra (2010, p.491) contends that this shift from government to governance relates to: “...the recognition of the impossibility for nation-states to advance by themselves

*in paving the way for more sustainable paths*". A plurality of actors and different spatial levels are needed to address global environmental challenge, in the way that these processes bring as well as equity and justice (Parra 2012).

The environment dynamics and future uncertainty trigger government to prepare for the changes by looking a new way of governing. It is about how decision making processes and its implementation are steered, namely governance, and have been widely discussed from various perspectives (Affolderbach and Parra 2012). Governance relates to the plurality of actors, interests, issues, even the concept of governance itself (*op cit*). Nevertheless, Parra (2010) argues that the high complexity of the existing multi-scalar system may threat its sustainability, e.g. in Morvan regional park (France). Affolderbach and Parra (2012, p.17) mentioned that: *"A core issue in the debate in environmental governance has to do with how and who steers collective action to stop this state vulnerability and bring sustainability of embedded a social-ecological system back"*. In the new field, one way to conceptualize this shift from government to governance is through the concept of "adaptive governance".

### **2.3.2. Structures and Attributes of Governance System**

#### Governance Structure

Understanding how adaptive governance operates in a system, good understanding of governance structure is important. It could be seen within the type of governance (Dudley 2008), transformations of regimes (Folke, et al. 2004) and through spatial and time scales (Berkes and Folke 1998 *in* Ostrom 2009). Shioya, et al. (2011) contends that, in the context of natural resource management, this governance structure could be changed and modified by perturbations (shocks and shifts) in the system.

Related to the protected areas management, International Union for Conservation of Nature (IUCN) has identified diverse governance types. It helps to understand, plan for and trace the evidences of the protected area development (Dudley 2008). According to IUCN, the type of governance could be governance by government,

shared governance, private governance, and governance by indigenous peoples and local communities (*op cit*).

Attributes of Governance

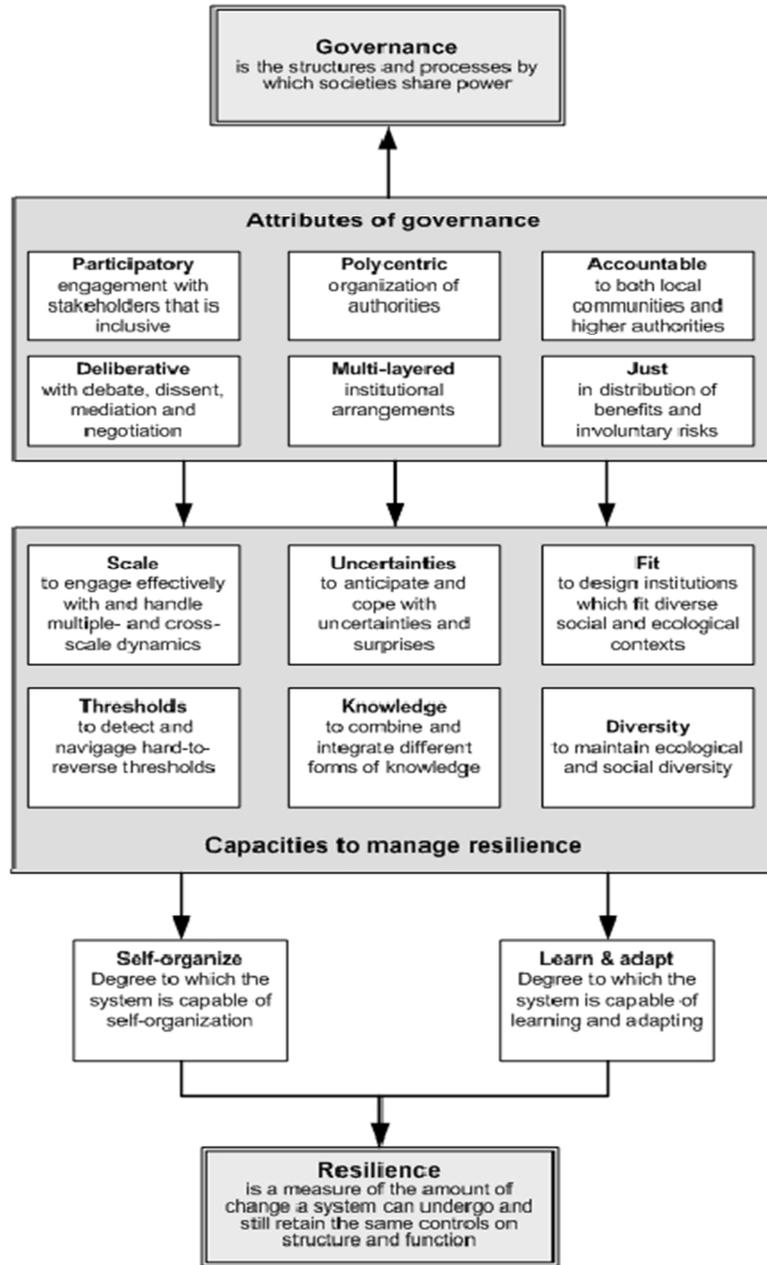


FIGURE 6. Selected attributes of governance system and its association to the governance capacities to manage resilience (Source: Lebel, et al. 2006, p.23).

After recognizing the governance structure in the systems, attributes of governance are also important to be analyzed. These attributes are the function in society that improve the capacity to manage resilience (Lebel et al. 2006). FIGURE 6 shows the attributes of governance that is used for research analysis in this thesis. It focuses on the attributes that are refer to the concept of “good” governance, which are participatory, accountable, deliberative, social justice and organizational features—polycentric and multi-layered (*op cit*). These attributes reflect how the governance system responds to the changes.

The governance form that is needed in SES is adaptive governance. Next sections explain about the emergence of adaptive governance and how to prepare the governance system transformation, in dealing with future changes, towards a resilient system.

### **2.3.3. Adaptive Governance versus Adaptive Management**

Earlier studies had explored adaptive management approach in terms of addressing sustainability. For example, Gunderson (1999) says that the concept of adaptive management has emerged and put forward as realistic and promising approach, to deal with ecosystem complexity. Still, there are many challenges in adaptive management, such as: a lack of clarity in definition and approach, a shortage of success stories on which to build, management, policy, and funding paradigms that favor reactive rather than proactive approaches to natural resource management, etc. (Allen, et al. 2011, p. 1341).

According to failures in environmental management towards sustainability, Berkes, et al. (2003) mentions that alternatives to top-down governmental control for governing SES are needed. One of the alternatives could be adaptive governance, relies on polycentric institutions that provide a balance between decentralized and centralized control (Imperial 1999 *in* Olsson, et al. 2006). Thus, adaptive governance is recognized to meet the adaptive management challenges.

Adaptive governance then focuses on experimentation and learning, research on institutions, roles of individual, social relations and network that deal with the

uncertainty and changes (Folke, et al. 2005). It is also seen as the broader context of adaptive management, in which adaptive management means operation of adaptive governance (Boyle, et al. 2001 *in* Folke, et al. 2005). Adaptive governance is also found better to address the social context that enables ecosystem-based management (Dietz, et al. 2003).

In regard to SES, Folke, et al. (2002, p.437) contend that the key requirements of resilience SES are structured scenarios and active adaptive management. Structured scenarios refer to figure out alternative future, while active adaptive management means to “*seek a set of structured management experiments designed to reveal fundamental variables and system potential*” (*op cit*, p.52). These two key points relate to the social contexts and have characteristics such as flexible, open institutions, multilevel governance systems, provide learning opportunities, and develop adaptive capacities. These characteristics also refer to the characteristics of adaptive governance.

Adaptive governance connects the individuals, organization, agencies and institutions in all levels, though the network (Folke, et al. 2005) and allow people in societies sharing the power and involved in decision making (Lebel, et al. 2006). It is also related to complex adaptive ecosystems and in particular during periods when change is abrupt, disorganizing, or turbulent (Folke, et al. 2005). The importance values in adaptive governance are feedback and learning (Walker, et al. 2004) for self-organizing towards expected condition (Kooiman 2003 *in* Frantzeskaki and Thissen 2009). Thus, towards adaptive governance, the capacities to adapt to and shape change is needed and become an important component of SES resilience (Berkes, et al. 2003).

#### **2.3.4. Adaptive Capacities and Critical Factors towards Adaptive Governance Transformation**

##### Adaptive Capacities

Adaptability needs the capacity of actors in managing resilience of uncertainty and surprise (Folke, et al. 2005). Olsson, et al. (2004) mentions that one of the

attributes of SES is adaptive capacity. Adaptive capacity refers to the ability of a system to adapt and respond to perturbations (Berkes, et al. 2003) while maintaining critical functions, structures, and feedback mechanisms (Olsson, et al. 2004). It is also a component of resilience that reflects the learning aspect of system behavior to respond with disturbances (Gunderson 2000 *in* Carpenter, et al. 2001). The long-term sustainability of SES as a complex system requires multiple governing forms that proactively seek to enhance the system (Akamani and Wilson 2011). The capacities are also related to the skill of actors to develop creative forms of collaboration, multi discipline approaches and understand the processes (Berkes, et al. 2003). TABLE 1 shows adaptive capacity dimensions and its subcomponents (Armitage 2005—adopted from Folke, et al. 2003).

TABLE 1. Dimensions of adaptive capacity (source: Armitage (2005, p.706)—adopted from Folke, et al. (2003))

<b>Component</b>	<b>Subcomponent</b>
Learning to live with uncertainty, change	<ul style="list-style-type: none"> <li>• Learn from crises</li> <li>• Expect the unexpected</li> <li>• Evoke disturbance</li> </ul>
Nurture diversity for reorganization and renewal	<ul style="list-style-type: none"> <li>• Nurture ecological memory</li> <li>• Sustain social memory</li> <li>• Enhance socio-ecological memory</li> </ul>
Combine different types of knowledge for learning	<ul style="list-style-type: none"> <li>• Combine experiential and experimental knowledge</li> <li>• Integrate knowledge of structure and function</li> <li>• Incorporate process knowledge into institutions</li> <li>• Encourage complementarity of knowledge systems</li> </ul>
Create opportunities for self-organization	<ul style="list-style-type: none"> <li>• Recognize relationship between diversity and disturbance</li> <li>• Deal with cross-scale dynamics</li> <li>• Match scales of ecosystems and governance</li> <li>• Account for external drivers</li> </ul>

### Critical Factors towards Adaptive Governance Transformation

Transformability means creating and defining a new attractor by introducing new components that, in defining the system, it changes the state variables and often the scales of key cycles of a system (Walker, et al. 2004). Towards adaptive governance, critical factors that have to be developed for the success of transformation processes, also need to be identified (Olsson, et al. 2006).

One example of the critical factors is a key individual that provides visionary leadership in directing change and transforming governance. It becomes a key factor of the resilient transformation of an everglade ecosystem in the United States (Gunderson and Light 2006). The roles of this leader are integrating, understanding, and communicating between multilevel and/or multi scalar actors Olsson (2006). Another example is the emergence of informal network for the success of transformation processes (Folke, et al. 2005). These type of networks are played by key individuals that help facilitate the information flows, identify the knowledge gaps, and create moments for sharing knowledge in the management—can be drawn upon the critical times (*op cit*).

Interestingly, findings in several areas, through comparison studies by Olsson (2006), shows that leadership does not always contribute to governance improvement, but it is crucial to the emergence and performance of shadow networks. Therefore, as Ostrom (2010) said that SES could be different in each places, critical factor in specific area is important to be explored for the success of adaptive governance transformation.

Therefore, academically, there is a significant development of SES and adaptive governance studies. Regarding the research challenge of SES in forestry field, next section will explore the existing forest governance system development in one of the countries that has a considerable forest area wide in the world, notably in Indonesia.

#### **2.4. Forests in Indonesia and the Social-Ecological Systems Research**

Indonesia's rainforests are the second largest in the world after Brazil<sup>2</sup>. This country experienced the changes in national governing system that brought transformation on how forests are managed. From 2005 to 2010, national government prepared for decentralization (Law Number: 32/2004). There is shifting forest management responsibility. Local government is responsible to manage some of protected areas, while conservation areas are still managed by central government.

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<sup>2</sup> Source: <http://www.orangutan.org/rainforest/indonesian-forest-facts>

The governance system changed, but the forest areas still undergo deforestation. Previous researches show that there is an alarming number of deforestation in Indonesia. According to the data<sup>3</sup>, the annual deforestation rate in 1990-2000 was 1.75% and decreased about 0.31% in 2000-2005. It started to be higher in 2005-2010, about 0.71%. It becomes the public concern, because rainforests in Indonesia have important values, as quoted: *“It is hard to overstate the value of Indonesia’s forests. Apart from their intrinsic worth, these forests represent the ‘lungs of Asia’...”* (Arnold 2008).

Reviewing the current condition of deforestation, some people claim that decentralization has led to the forest degradation (Arnold 2008, Burgess, et al. 2011). This situation remains questions about forest management in Indonesia. How the forest areas are managed in Indonesia? In post-colonial time, forest management authority was fully hold by central government and focus for timber exploitation. In this era, local rights were taken away and given to concession holder for timber harvesting purpose (Banerjee 1997, p.9). In 1990s, government started to include local people in managing the forests. The importance to include local people and do collaborative management is because a lot of management conflicts related to society (Wulan, et al. 2004). The fact that deforestation is increasing after decentralization shows that there is a lack in existing management.

Tucker (2010) contends that one of the reasons why some forests areas are sustainable and others are struggling with deforestation, is consistently related to sustainable forest governance across different social and ecological settings. Contreras-Hermosilla and Fay (2005) contend that improving forest management in Indonesia requires a balance of private and public responsibilities. This requirement indicates that the governance systems should deal with creating this balance.

Social-ecological Systems concept is hardly new, but in Indonesia, there is insufficient research about this topic. This thesis tries to explore the governance system in forest management in Indonesia, according to SES view. The result,

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<sup>3</sup> Source: <http://rainforests.mongabay.com/deforestation/2000/Indonesia.htm>

perhaps, is not a panacea for existing problems, but it provides different perspective of governance system in Indonesia. The result also tries to address the research call about adaptive governance in forest management, in which the study case taken for the research is Mount Pancar Nature Tourism Park.

## 2.5. Conceptual Model

Following the research questions, research aim, objectives and theoretical background, a conceptual model is developed as the guidance for this research (FIGURE 7). The focus of this analysis is about “adaptive forest governance”. In this thesis, the complex system of the Mount Pancar NTP will be drawn, according to SES perspective. Next, in what why the change in governance system impacts the governance structure and attributes. Thus, for the resilience of the system, the possibilities of the governance system transformation (to be adaptive) will be analyzed, by exploring adaptive capacities and critical factors that trigger the processes.

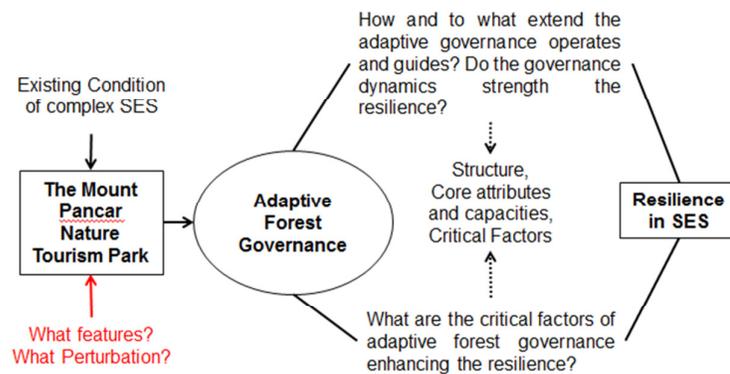


FIGURE 7. Conceptual model of the research (source: author).

## **CHAPTER 3: THE STORY OF THE MOUNT PANCAR NATURE TOURISM PARK<sup>4)</sup>**

### **3.1. Introduction**

In Indonesia, according to Law Number: 5/1990 about Conservation of Nature Resources and Ecosystem, there are two types of protected areas: nature sanctuary areas and nature conservation areas. The management of nature sanctuary focuses on protecting ecosystem and preserving flora and fauna, with limited human interactions or physical management (the area is possible to be accessed for research purposes). Meanwhile, nature conservation areas have similar management focuses with nature sanctuary areas, but human interactions and physical management are not as strict as in the nature sanctuary areas. Nature tourism park, including the Mount Pancar NTP, is one of the types of nature conservation area (the other types of conservation areas are national parks and great forest parks). Great forest parks are managed by local government<sup>5</sup>, while nature tourism parks and national parks are managed by the central government.

The Mount Pancar NTP has 447.50 hectares area wide (FIGURE 8). This area is located in Bogor Regency-West Java Province, about one hour from Bogor City. Comparing the area wide of the park and Bogor Regency, the park shares only 1.5% of 298,838.304 hectares of total area in Bogor Regency and 3.35% of total protection areas provided by this regency (Bogor Regency provides 44.69% for protected areas or 133.548,409 Ha). It means that this park is really small, but this area has huge contributions of environmental values for its surrounding areas. Despite of these ecological values in the park, pressures that lead to its vulnerability also become concern of management authority. Detail explanation about values and pressures in the park will be described in the following sections.

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<sup>4</sup> Source: internal reports of Natural Resources Conservation Agency, West Java Province.

<sup>5</sup> Minister of Forestry Decree Number: 107/Kpts-II/2003, on 24 March 2003, about management assistance of great forest park by the Governor or Regent/Mayor.

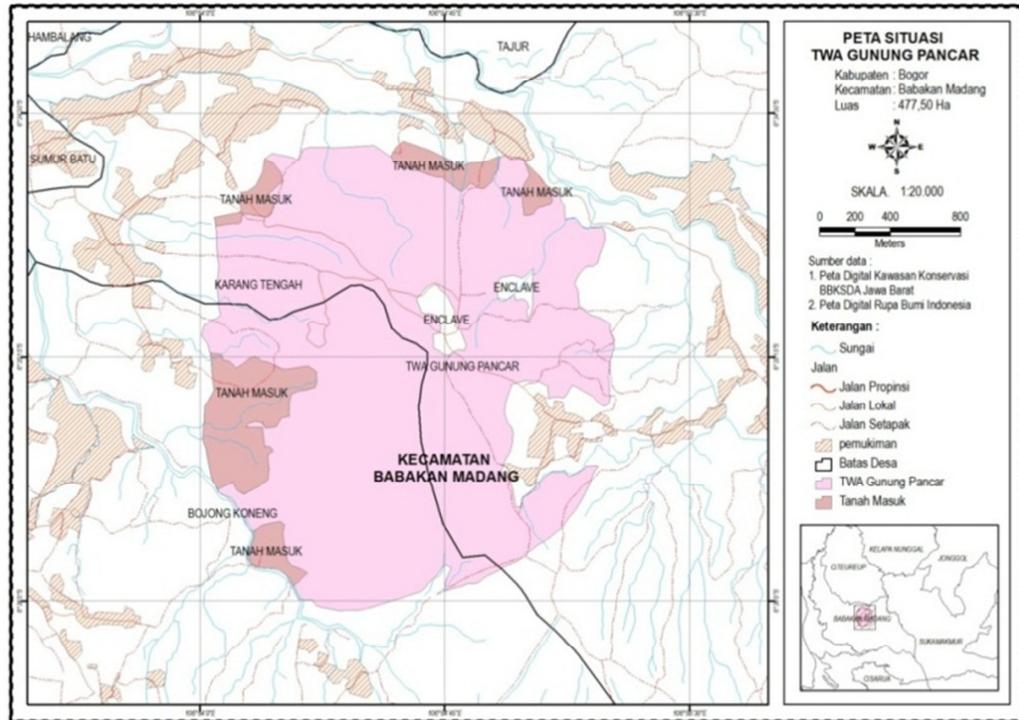


FIGURE 8. The Mount Pancar National Tourism Park (source: Natural Resources Conservation Agency, West Java Region—according to hand-over map in 1993).

The area of the Mount Pancar NTP is shown by pink color. When the park was handed-over to BKSDA, *tanah masuk* (about ±17.9 hectares that is shown as five red-colored spots inside the park) and two spots of enclave (about ±7 hectares) are excluded from the area management (FIGURE 8).

The five spots of *tanah masuk* are the compensation areas between previous management authority (PERHUTANI) and a company namely PT. Salak Gede in the past, as the consequence of land borrow agreement between these two companies. PT. Salak Gede bought this land in 1972, but there were payment problems between this company and local communities (landowners). The status of *tanah masuk* is forest area that is owned by state, but the function of this area is still unclear yet<sup>6</sup>. Local people claim that they still have rights for the land. However, PERHUTANI is still obligated to finish the problem related to *tanah*

<sup>6</sup> As the forest area, the function of *tanah masuk* is possible to be nature tourism park or production forest (because it has boundaries with these two areas). However, there is unclear decision, yet, for the function of the areas by MoF, including which institution unit of MoF will manage the area.

*masuk*. This situation triggers a lot of free riders that take advantages in *tanah masuk* areas (about 12.45 hectares of this area have already been controlled and owned by third parties, which are communities—both local and migrants). Although *tanah masuk* areas are excluded from the Mount Pancar NTP management, BBKSDA has responsibility to monitor these areas<sup>7</sup>.

Meanwhile, enclave is the area inside the park, but the status belongs to private/individual properties<sup>8</sup>. There are land expansions in enclave areas. Communities built residences and guest houses in the park. Some of them even moved the boundary poles in the park. Problems regarding these illegal buildings in the park will be explained in section 3.4.

### **3.2. History of the Mount Pancar Nature Tourism Park Establishment**

Regime changes at the national level have brought the changes in forest management. Before 1945, Indonesia was colonized by Dutch. This Mount Pancar NTP was managed with other production forest, namely the Mount Hambalang complex. Since 1926, the Mount Pancar NTP has been preserved to be protected. In 1938, the status of the park changed to fixed (protected) forest. This park became nature tourism park on 21 March 1988, after the nature hot spring phenomenon found, that managed by a state-owned company namely PERUM PERHUTANI KPH Bogor (PERHUTANI)<sup>9</sup>.

Central Government under Balai Konservasi Sumber Daya Alam Regional III (BKSDA-Natural Resources Conservation Office) took over the management on 11 January 1993 (Sukandar 2003). In 2007, BKSDA changed the name into Balai Besar Konservasi Sumberdaya Alam Jawa Barat/Nature Resources Conservation Agency, West Java Region (BBKSDA). Not only manages the Mount Pancar NTP, BBKSDA also manages more than twenty conservation areas. Currently, this park is managed by Resort Bogor, the lowest management unit in

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<sup>7</sup> It is written in the Mount Pancar authority and management responsibility handover report, from PERHUTANI to BKSDA, in 1993.

<sup>8</sup> Enclave areas, in Block Cipanas and Block Dorang, are already clear and legal for its status.

<sup>9</sup> Minister of Forestry Decree Number: 156/KPTS/II/1988.

BBKSDA<sup>10</sup>. The status of the park changed into a conservation area, a nature tourism park. To manage tourism in the park, BBKSDA cooperates with a private company, namely PT Wana Wisata Indah (PT. WWI) that holds tourism concession in this park since 1993<sup>11</sup>.

### **3.3. The Values and Pressures of the Mount Pancar Nature Tourism Park**

The Mount Pancar NTP has ecological and social values. Sukandar (2003) contends that, ecologically, the park is the habitat for endangered and endemic fauna in West Java, such as Javan Surili (*Presbytis comata*) and Javan Leopard (*Panthera pardus*). This forest is also the water catchment area for surrounding villages and one of Cikeas River Basin's springs. These ecological values represent the importance of the Mount Pancar NTP for ecosystem. From a social-cultural perspective, there is an interesting culture/social value of the park, in which local community believes this area as a sacred place<sup>12</sup>. This value could encourage the sense of belonging of local communities to preserve the park.

Several pressures in the Mount Pancar NTP make this park vulnerable. The spatial context, its geological condition and illegal activities happening in the area are putting this park under pressure. Spatially, Bogor Regency is one of the buffer zones of Jakarta, the capital city of Indonesia. To support this regency growth, local government made a regional plan for a center area of Bogor Regency namely "Cibinong Raya", in 2010. This area consists of 7 sub-districts including Babakan Madang, where the Mount Pancar NTP is located. The park is the only protected area in Cibinong Raya, and currently faces many pressures as the consequence of the fast development of Cibinong Raya. Geologically, the soil formation is unstable and vulnerable for cracked soil and landslide disasters. In 2006, it was reported that 3 houses dropped and 45 houses were severely damage because of landslides. The latest disaster, cracked soil happened in 2010 (KOMPAS 2010). Other pressures because of illegal activities in the park, such as illegal building, illegal infrastructures and encroachment, will be explained in section 3.4.

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<sup>10</sup> Head of BBKSDA Decree Number: 03/BBKSDA Jabar.1/2013 on 29 January 2013.

<sup>11</sup> Ministry of forestry decree Number: 54/Kpts-II/9.

<sup>12</sup> Source: <http://dishut.jabarprov.go.id/index.php?mod=manageMenu&idMenuKiri=473&idMenu=487>.

### 3.4. Main problems of the Mount Pancar Nature Tourism Park and Collaborative Action

According to the regulation of conservation area management, activities that transform land uses are prohibited in this park. Nevertheless, BBKSDA reports that there are many illegal buildings, infrastructures and encroachment activities inside the park surprisingly (TABLE 2). Several buildings and land are “legal”, because the certificates issued by the National Land Bureau (between 1997 and

TABLE 2. Main problems in the Mount Pancar Nature Tourism Park (source: BBKSDA Jabar internal report, 2011).

No	Problems
1.	Certification/private ownership A. Certified : 17 Buildings B. Uncertified : 11 Buildings : ±1 ha (Hot springs)
2.	Enclave expansion : ±10 ha
3.	Encroachment : ±175.9 ha (Various crops: bananas, cassavas, etc.)
4.	Roads: • Three spots • Hot mix (1.5 km x 2 m) • Asphalt (200 m x 2.5 m) • Natural/soil (1,5 km x 2 m)

2001). However, these certificates should be illegal because the status of the park is a forest area that is owned by the state.

The “legal” status of the land makes buying and selling (of land) activities are possible and common in the park. One of the impacts of this certification is illegal buildings and businesses that harming the environmental quality of the park,

e.g. hot spring tourism business or guest houses business development that is run by local individual actors. Other problems in the Mount Pancar NTP, which are enclave expansion, encroachment and roads, are summarized in TABLE 2.

Interestingly, the park is located near the central office of Ministry of Forestry (MoF). The effort in encouraging good governance becomes the main focus of management restructuring in MoF, including in BBKSDA. Still, this park cannot be managed properly, and problems cannot be controlled. The newest action in this area was done by BBKSDA. Collaborative law enforcement had been done to cope with these illegal building cases in the Mount Pancar NTP<sup>13</sup>. This action involved Natural Resources Conservation Agency, PERHUTANI and National Land Agency, National Police Agency, and other related stakeholders.

<sup>13</sup> Press release of Head of Information Centre-Ministry of Forestry on 31 August 2010 (<http://www.dephut.go.id/index.php/news/details/7140>)

The action becomes the starting point for emendation of Mount Pancar NTP management and other NTPs. It has been one year after law enforcement done in this area, but the process is still unfinished yet. This is quiet shameful and become reflection for other NTPs that are located in all around Indonesia.

### **3.5. Social-Ecological Systems Research in the Mount Pancar Nature Tourism Park**

There are different opinions regarding current situation in the park<sup>14</sup>. Some people, such as communities inside the park, claim that BBKSDA omits the situation in the past. However, BBKSDA have done collaborative law enforcement as their effort to combat illegal activities in this park, but the process runs slow. Others, such as local researcher, said that it is not only the fault of BBKSDA. Weak profile of government agencies, such as weak coordination and monitoring system in the past, generates the problems. For example, PERHUTANI should finish the *tanah masuk* problems, before the area is handed-over to BBKSDA or the National Land Bureau should check the land status carefully, before the certificates issued. Current governance system seems not able, yet, to deal with the impacts of the changes in the Mount Pancar NTP.

The complexity, changes and the social-ecological problems in the park remains questions: how the government “governs” the Mount Pancar NTP? Is it guiding the system to the sustainable direction? How they should govern this park in the future? It is interesting to do a research about the evolution on how communities and management agency interacts each other in this park, from a different view. Furthermore, regarding the challenge of SES research in forestry field and current situation in the park, this thesis also tries to address the research challenge by exploring the governance dynamics in the Mount Pancar NTP, through the SES perspective, in which adaptive governance could be the key in responding the system changes towards the resilience of the system.

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<sup>14</sup> Interviews of local communities (S1 and S2) and local universities (R3) representatives, 3 May 2013

## **CHAPTER 4:**

### **TOWARDS ADAPTIVE FOREST GOVERNANCE OF THE MOUNT PANCAR NATURE TOURISM PARK RESILIENCE**

As it is already described in Chapter 3, there was changing management and status of the Mount Pancar NTP, in 1993. There is also an indication that current governance system in the Mount Pancar NTP is not adequate in dealing with the impacts of changes in the park. Thus, this chapter provides a glimpse of the governance dynamics in the Mount Pancar NTP, based on the SES perspective. It analyzes in what way the management change impacts the governance system in the park and how the governance system can be prepared to be adaptive in dealing with the changes towards the system resilience in the future. Furthermore, in relevance with the thesis problem statement and through the analysis, the core components of SES in the forestry field, notably the Mount Pancar NTP, will be analyzed further.

This chapter consists of three sections. First is the exploration of SES framework of the Mount Pancar NTP. The components of SES will be drawn in defining the main driver of the system changes. Second, the analysis of governance system changes in the Mount Pancar NTP. It describes how the structure and attributes of governance operates in the Mount Pancar NTP. Third, according to SES, critical factors for adaptive governance transformation towards the Mount Pancar resilience will be examined.

#### **4.1. Drawing a Social-Ecological System Framework of the Mount Pancar Nature Tourism Park.**

This section analyzes the system components of the Mount Pancar NTP, through the SES framework. Within this framework, how the system components interact each other can be understood. Anderies, et al. (2004) propose a SES framework that shows the links between entities of system, to identify potential vulnerabilities because of disturbances and recognize the interaction that reduces the system robustness (FIGURE 4, p.14). There are four main entities involved in

the SES framework, which are resources, resource users, public infrastructures, and public infrastructure providers, with eight different links (Anderies, et al. 2004). The entities and the links in the Mount Pancar NTP will be explored further in the next sections.

#### 4.1.1. Entities in the Mount Pancar Nature Touris System, before and after 1993

TABLE 3 shows the entities that form the Mount Pancar NTP system and also provides the information about the potential problems of each entity that impacts the system. Before 1993, the park was managed by a state-owned company namely PERHUTANI, in which three main actors were involved in the system: (1) PERHUTANI, as the manager of the park, also playing a role as infrastructure provider of this park; (2) communities inside the park, as the resource users— noted that there are two enclave areas in the park and communities lives in these areas and inside the park; (3) the local government of Bogor Regency that provided the infrastructures, especially around the park. Main responsibility of local government is managing the communities, not only outside the park, but also communities inside the Mount Pancar NTP.

TABLE 3. Entities of the Mount Pancar Nature Tourism Park, according to the Social-Ecological Systems framework, before and after 1993<sup>\*</sup>) (source: author, adopted from Anderies, et al. (2004, p.21))

Entities	Who and What	Potential problems
A. Resources.	Water source. Hot springs (found around 1988). Before 1993: Pine (production forest).	Before 1993: medium level of complexity, problem still under control. After 1993: complex problems.
B. Resource users.	Before 1993: <ul style="list-style-type: none"> <li>• PERHUTANI has the forest concession.</li> <li>• Community use water and do farming.</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• BKSDA as the manager.</li> <li>• PT WWI has the tourism concession.</li> <li>• Community use water.</li> </ul>	Before 1993: <ul style="list-style-type: none"> <li>• Over target of production, threat the ecology system.</li> <li>• Free rider, hot springs exploitation.</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• Lack of budget, slow development.</li> <li>• Continuing farming activities and illegal certification, in which it is illegal in current situation.</li> </ul>

<b>Entities</b>	<b>Who and What</b>	<b>Potential problems</b>
C. Public infrastructures.	Before 1993: <ul style="list-style-type: none"> <li>• Due to logging activities.</li> <li>• Support communities inside the park (enclave area).</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• Due to tourism activities.</li> <li>• Support communities inside the park (enclave area).</li> </ul>	Before 1993: <ul style="list-style-type: none"> <li>• Leads to fragmentation in the park.</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• Delayed project, possible to illegal infrastructure.</li> <li>• Fragmentation.</li> </ul>
D. Public infrastructure providers.	Before 1993: <ul style="list-style-type: none"> <li>• PERHUTANI, supporting their logging activities.</li> <li>• Local government, supporting community accessibility.</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• BKSDA, supporting ecological activities.</li> <li>• PT WWI, supporting tourism activities.</li> <li>• Local government, supporting community accessibility.</li> </ul>	Before 1993: <ul style="list-style-type: none"> <li>• Overlapping infrastructure development.</li> <li>• Partial infrastructure development potential for land fragmentation.</li> <li>• Continuity of the project until monitoring and maintenance.</li> </ul> After 1993: <ul style="list-style-type: none"> <li>• Partial infrastructure development potential for land fragmentation.</li> <li>• Community development: BBKSDA or local government responsibility?</li> <li>• Continuity of the project until monitoring and maintenance</li> </ul>
Institutional rules.	Formal and informal institution. Common understanding.	Commitment among stakeholders. Changes of regulation.
External environment.	Landslide. Political system. National economic change.	Unexpected events Social imbalances

<sup>\*)</sup> Analysis based on interview results with P1 (before 1993); C1, C2, C3 (after 1993), L1, L2, L3, R1, R2, R3, S1, S2 (both phase)—see APPENDIX I.

Although this park is established as protected areas, initially, it was managed as the part of production forests namely the Mount Hambalang complex. PERHUTANI is the timber concession holder. As a (state-owned) company, the management focus was profit oriented through logging activities, but they did not exploit this park. Managing this park as the protected area was not the priority of PERHUTANI.

Having communities inside the forest areas is also a dilemma in forest management. There was a claim that people inside and around the forest areas tend to be poor and their living source depends on the forest values, so that their exploitation is causing deforestation (Wollenberg, et al. 2004). Similar with the situation in the park, communities inside the park were poor people and one of the

tensions in the park is derived from illegal activities by the communities. The problems occurred in the park was mainly about encroachment, selling the wood or did illegal farming. However, these activities are not the main causes for existing forest degradation in the Mount Pancar NTP.

As the concession holders, before 1993, PERHUTANI dealt with these problems by involving the communities to manage the park, according to the regulation about community-based forest management. Communities were allowed to do farming in the park. Thus, tension in the park was still under controlled, as quoted:

*“When we managed the park, I think the problem was not too complex comparing with recent condition. Yeah, they did illegal logging and farming. We tried to engage communities inside the park by doing community-based forest management. Communities were allowed to do farming, but they had to protect the pine seeds that we plant. We also cooperated with local government to build infrastructures, supporting the communities. One of our advantages as a company, our budgeting system is flexible (not like in the government system), so it was easier to develop a project innovation and also respond, if there is a problem in the park.”* (Source: P1-representative of PERHUTANI, 13 July 2012).

After 1993, when the park’s management handed-over to a conservation agency under the central government namely BKSDA (now become BBKSDA), there are four main stakeholders involved in the park: (1) BKSDA, responsible for maintaining the ecological functions of the park, maintaining tourism activities by providing the infrastructures, and the representative of the central government in implementing the rules and regulation in the park; (2) Perusahaan Terbatas Wana Wisata Indah (PT. WWI), a private company that cooperates with BKSDA, is responsible for developing tourism under BKSDA supervision—noted that they hold tourism concession in the park, since 1993; (3) the local government of Bogor Regency that has the role to provide public infrastructures and community development; (4) communities inside the park as the resources users. In this era, communities inside the park are not only indigenous people, but also newcomers that built illegal residences inside the park and exploit resources (hotsprings).

The problems inside the park are more complex in this era. Disturbances are caused by resource users (communities) and natural disasters. In 2010, there was natural disaster in this park. The soil cracked happened and potential to land slide.

Other tension is from communities that are not only do encroachment in this park, but also applying “legal” land certification. Although the certificates are issued by National Land Bureau (it seems legal), it is illegal because land certifications in protected areas are prohibited. There is an indication that a lot of the Mount Pancar NTP areas were “legally” certified (FIGURE 9), as quoted:

*“The map (FIGURE 9) is a land map issued by National Land Bureau. The blue line/pattern shows the results for land measurement indicate the boundary of the area that will be certified. Look the patterns inside the park! Thus, are the certificates issued? I do not know... Usually, it will be certified if it is drawn in this kind of map”* (Source: L1--representative of Land and Spatial Planning Office, Local Government of Bogor Regency, 7 May 2013).

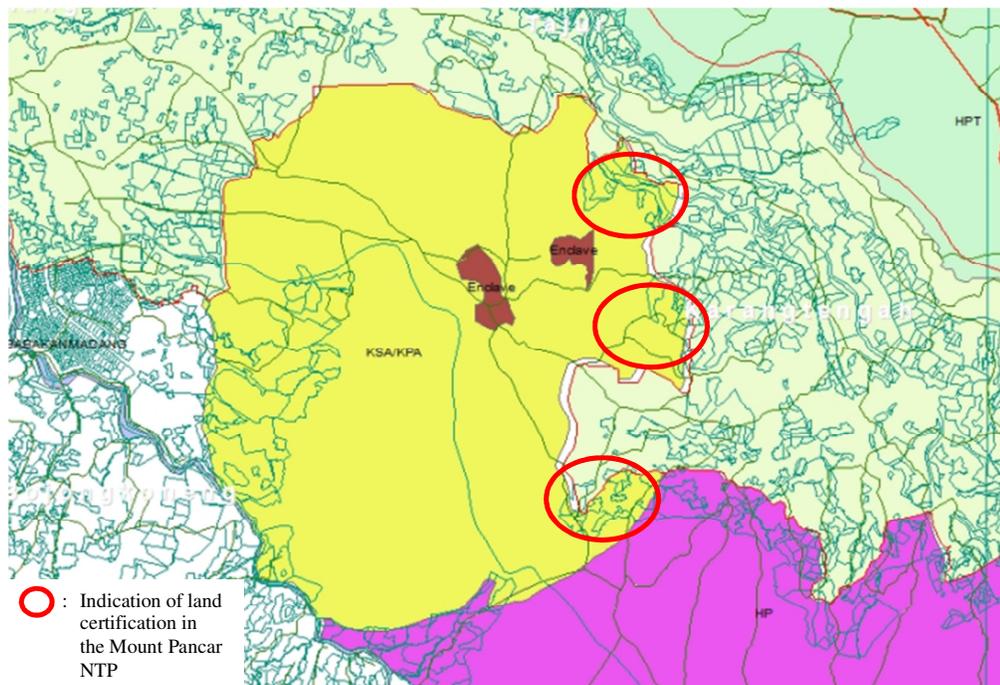


FIGURE 9. The land maps indicating the certification of the Mount Pancar Nature Tourism Park (source: Land and Spatial Agency of Bogor Regency, 2013)

Several disturbances in the system are already recognized, but there are other potential problems in each entity (TABLE 3, p.32). It shows that stakeholders realize the threats in the system that could lead to the land fragmentation and social imbalances. Learning that there is uncertainty in the future, the relationships

between these entities are analyzed in the next section, in finding what the main change driver is in the system.

#### 4.1.2. The relationship among entities in the Mount Pancar Nature Tourism Park System, before and after 1993

Anderies, et al. (2004) mention that there are two types of links in SES framework: (1) links between entities; and (2) external links that affect each entity (these links are recognized as disturbances). Framing the SES framework, there are two advantages can be recognized through the analysis of these reciprocal interactions. First, the type of disturbance that affects the system can be observed. Disturbance of the system can be divided into two types, external disturbances that impact the biophysical condition of the system and internal disturbance that impact the system's socioeconomic conditions (Anderies, et al. 2004). Second, the key driver of system changes can be analyzed for the system robustness. Finding in the previous research, the links between resource users and public infrastructure providers is proposed to be the key variable affecting the system (*op cit*)

TABLE 4. Links among entities of the Social-Ecological Systems framework in the Mount Pancar Nature Tourism Park, before and after 1993<sup>\*)</sup> (source: author, adopted from Anderies, et al. (2004, p.21))

	<b>Links</b>	<b>What</b>	<b>Potential problems</b>
(1)	Between resource and resource users.	Availability of resources.	Justice and equality of among users. Long-term availability.
(2)	Between users and public infrastructure providers.	Project recommendation. Human resources.	Free riding. Mismatch project. Gap of information.
(3)	Between public infrastructure providers and public infrastructure.	Initial infrastructure network. Maintenance or develop new infrastructure. Performing rules and regulation.	Corruption Continuity of the project (lack of budget, changes in management system, changes of actors, etc.). Unprepared infrastructure for shock events.
(4)	Between public infrastructure and resource.	Accessibility that triggering the level of over-utilization.	Effective versus ineffective infrastructure.
(5)	Between public infrastructure and resource dynamics.	Impact on new resources exploitation (hot springs).	Unintended consequences to the system.
(6)	Between resource users and public infrastructure.	Utilization. Maintenance. Monitoring.	Free riding. No incentives.

<b>Links</b>	<b>What</b>	<b>Potential problems</b>
(7) <sup>**</sup> Between public infrastructure providers and resources	<u>Exists after 1993:</u> Utilization for tourism activities Conserving the areas	Prioritizing tourism activities, not focus to conserve the park Over-exploitation
(8) External forces on resource and infrastructure.	Landslide. Weather. New roads.	Unpredictable for natural hazards events. Unpredictable for the future impact of new infrastructure.
(9) External forces on social actors	Political system. New regulations, e.g. in 1993.	High degree of uncertainty, central government has full authority in making changes of forest status.

<sup>\*</sup> Source of information: P1 (before 1993); C1, C2, C3 (after 1993), L1, L2, L3, R1, R2, R3, S1, S2 (both phase)—see APPENDIX 1.

<sup>\*\*</sup> Link/interaction after 1993 (the management was handed-over to BBKSDA).

According to the study case, TABLE 4 provides the relationships among entities in the Mount Pancar NTP and the potential problems in the links/interactions. There are three points highlighted, related to this framework:

1. The internal links between entities have the same type interactions, both before 1993 (PERHUTANI era) and after 1993 (BKSDA era)—except link 7. The new resources (hotsprings) and the existing public infrastructures triggered new resource users in the park (link 6—between resource users and public infrastructures). These new resources users are free riders that exploit the resources and become threats in the park. Land certifications and illegal businesses inside the park are the examples of their exploitation forms. Main cause of these free riders existence is weak monitoring from the management authority, specifically in the transition era because of the changes of park's status. It forces unintended consequences in the resource dynamics (link 5).
2. There is another interaction found in the Mount Pancar NTP in current management, which is the internal links between resources and public infrastructure providers (link 7). Public infrastructure providers are also the resources users, such as PT. WWI. In the one hand, PT. WWI, under the supervision of BBKSDA, has obligation to establish the infrastructures towards tourism activities in the park. In the other hand, PT. WWI is also utilizing the resources in this park, e.g. hotsprings, as the key tourism

developments. This dualism role is potential to trigger another problem. The current management focus is to conserve this park, so that the tourism activities should be based on conservation principles. Without strong monitoring system, tourism developments are possible to not meet the conservation goal in this park (potential for over-exploitation).

3. The disturbance in the socioeconomics (link 9) is found to give more impact on the system than biophysical disturbance (link 8). The new regulation on the park's status, change the management and impact communities the most (see section 4.1.3). Thus, compare with Anderies, et al. (2004) result, the key driver of the changes in the system is found different in the study case. The disturbance that impacts socioeconomic (link 9) is the key changes driver in the Mount Pancar NTP system, as quoted:

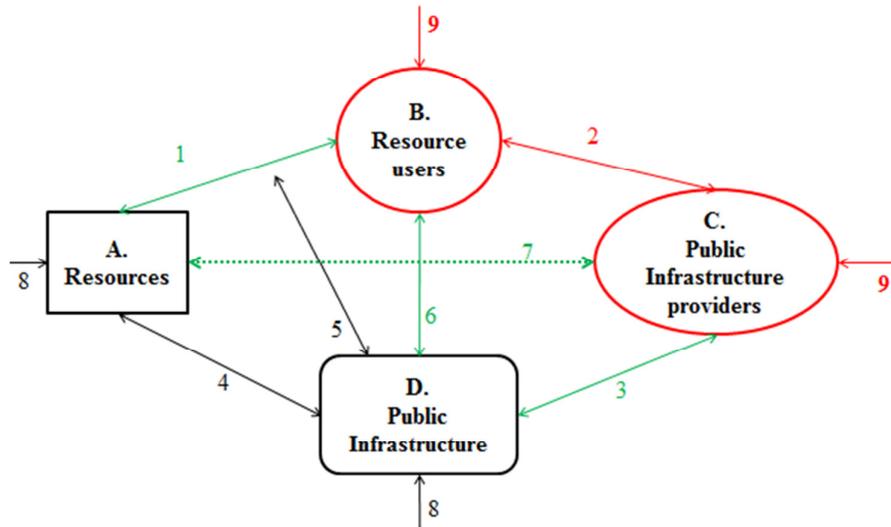
*“A lot of study has been conducted related to the conservation area management, including the impact on changing the area status. As the local research center, we also propose several recommendations about this issue to the government. Changes in the internal political system of MoF impacts the regulation issued in the conservation area. For example is in the Mount Pancar NTP. I think, when the park became conservation area, MoF did not prepare the potential of social impacts”* (Source: R2-representative of PILI, 30 April 2013).

Summarizing the analysis of entities and its interactions in the Mount Pancar NTP, the system framework of this park will be drawn in the next section. Stakeholder analysis is also described. It is important to recognize who is involved and potential to be involved in the Mount Pancar NTP governance system, to figure out who can jointly work in the system to reduce the threats in further management (Golder, 2005).

#### **4.1.3. The Mount Pancar Nature Tourism Park System Framework, through the Social-Ecological Systems Perspective**

It is impossible to capture all the complex relationships of the Mount Pancar NTP using one integrated model. As Anderies et al. (2004) said, at least, the framework is useful to inform the starting points for long-term robustness possibilities in the system, through the strategic interactions of the broader context of the entities and

links in a SES framework. The SES framework of the Mount Pancar NTP is described in FIGURE 10.



**FIGURE 10. The Social-Ecological Systems Framework of the Mount Pancar Nature Tourism Park (Source: Author, modified from Anderies, et al. (2004))**

Learning from past events, through the entities and links in the Mount Pancar NTP, the main driver of change is the external forces (link 9). Political system and new regulation changed the status of this park, from production forest to conservation area. Any disturbance in this link tends to trigger vulnerability in the system, as quoted:

*“Scaling up the forest status, such as from production forest to a conservation area, always triggers more complexity in the area. There are tensions from communities (resources users) and the management authority. Communities inside the park usually lose their rights in accessing the forest resources, but they still access and utilize the resources. Something that legal becomes illegal in the new management. As a conservation area, these activities make the area become more vulnerable. Usually the government (management authority) did not prepare the impacts of the changes, and if they aware, it needs time for the preparation. It becomes the opportunity for free riders” (Source: R1—representative of CIFOR, 29 April 2013).*

The impacts of disturbance that influence the interactions among entities in the system framework can be divided into three levels:

1. First tier, link 9—disturbance in the socioeconomic aspect, impacts directly to the interactions between resource users and public infrastructure providers (link 2). For example, there is a different type of development between PERHUTANI and community, and between BBKSDA and community. PERHUTANI developed infrastructures for the sake of logging activities and community prosperity, but conservation was not the main management goal. In contrast, BBKSDA develops infrastructure for tourism, cooperates with PT. WWI, and conservation is the main focus of the Mount Pancar NTP management.
2. Second tier, the change between resource users and public infrastructure providers (link 2) affects link 1, 3, 6 and 7, on how the resources users and public infrastructure providers interact with the resources and public infrastructures. For example, it impacts to the type of community involvements (Link 1). In the past, communities were possible to be directly involved in the park's management and utilized the resources. In current management, involvement of communities is related to conserve the park and they should not exploit the resource directly. Another example, the purpose of public infrastructure developments is different between current and the past management, logging activities versus conservation (link 3). Although this park is a conservation area, existing public infrastructures, such as roads inside the park, threat the park and causing land fragmentations (link 6). Other change, public infrastructure provider, such as PT. WWI, also utilizes the resources in the park and acts as resource user in the system (link 7).
3. Third tier, link 4 and 5 are not directly impacted, depends on the changes of the other links. Once there are disturbances in the biophysical condition of the park, this links will be impacted directly. For example, natural disasters, such as land-slide, will impact the resource availability and existing public infrastructure.

TABLE 5. Stakeholder analysis in the Mount Pancar Nature Tourism Park (Source: Author)

		POWER INFLUENCE	
		STRONG	WEAK
TIME INVOLVEMENT	PAST	<ul style="list-style-type: none"> <li>• PERHUTANI (former management authority)</li> <li>• Local Government</li> </ul>	<ul style="list-style-type: none"> <li>• Community</li> <li>• NGO</li> <li>• Media</li> </ul>
	PRESENT	<ul style="list-style-type: none"> <li>• BBKSDA <u>Jabar</u> (central government—current management authority)</li> <li>• PT. WWI</li> </ul>	<ul style="list-style-type: none"> <li>• Community</li> <li>• Local government</li> <li>• NGO</li> <li>• Media</li> <li>• University</li> </ul>

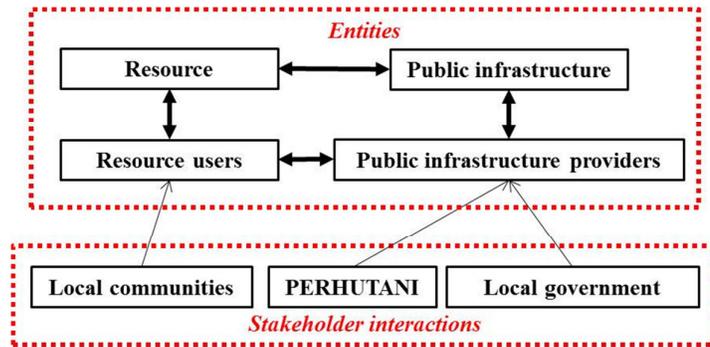
Furthermore, this disturbance also affects stakeholders on how they respond to the changes. Recognizing who are the stakeholders in the Mount Pancar NTP can be done through stakeholder analysis. They can be divided based on their power influence and time

involvement (TABLE 5). Through the analysis, main stakeholders involved in the Mount Pancar NTP are different, before and after the management system changed in 1993. It also could be seen that there is a changing power of one stakeholder (local government) that is experiencing weaker influence in this park, related to the changes in national governance system.

The role of each stakeholder is different in the system. FIGURE 11 shows stakeholders' role in the system entity. After 1993, BBKSDA (management authority) and PT. WWI (cooperates with BBKSDA), not only are the public infrastructure providers, but also the resource users. This circumstance generates another interaction pattern in the system, link 7 (Section 4.1.2). This role was different, compared with the previous situation in the system. Before 1993, PERHUTANI was the manager of the park and had role only as public infrastructure provider.

After the changes happened, public infrastructure provider entity plays an important role in the park, in which their interactions determine the system dynamics. This entity is the core component of SES in the Mount Pancar NTP and impacts the system as a whole. Thus, how the system deals and adapt with this change will be explored in the next sections, through the analysis of governance system in the Mount Pancar NTP.

*Before 1993:*



*After 1993:*

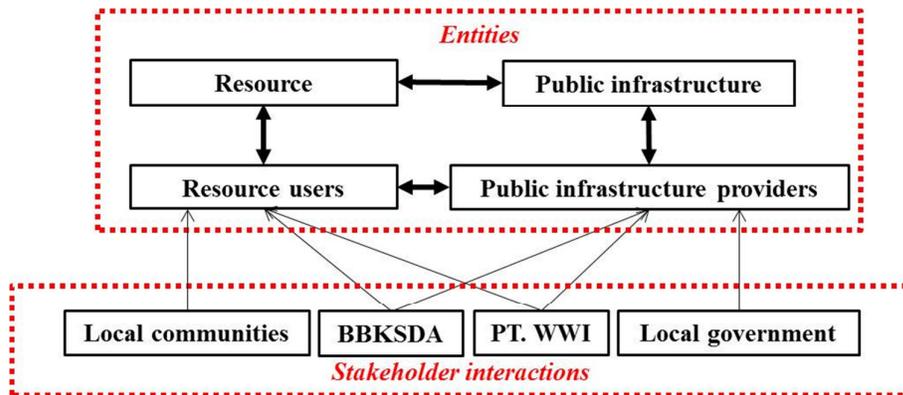


FIGURE 11. Stakeholders and their entity in the Mount Pancar NTP system (source: author)

#### 4.2. Analysis of Major Changes in the Governance of the Mount Pancar Nature Tourism Park

It is clear that there is status change of the Mount Pancar NTP. It impacts to the role of management authority in the SES entities (public infrastructure providers and resource users). The changing function of the park impacts the governance structure and its attributes. This section explains the different types of governance system in the park. Through the governance analysis, clear picture on how the governance system cope with the problems, adapt with the changes and prepare to the future uncertainty can be drawn. To begin with, next section provides an exploration of the governance structure changes to understand the historical story of governance system in this park.

#### 4.2.1. Shifting from Private Governance to Governance by Government

The history of the Mount Pancar Nature Tourism Park is represented in FIGURE 12. As described in section 4.1., the main driver of system change in this park is derived from the external socioeconomic forces. The changes in governance system, in which central government took over the management and scaling up the Mount Pancar status, could be seen as the shock event in this park, as quoted:

*“Year 1993, when government scaled up the park’s status, it was the starting point for the chaos in the park. Conservation area management is stricter rather than in the production forest”* (Source: C1—representative of BBKSDA, 30 April 2013).

Tracing the history of the park, there are two different types of governance structure in this park: which are private governance (before 1993) and governance by government (after 1993). What are the differences between these two governance structures will be explained in detail.

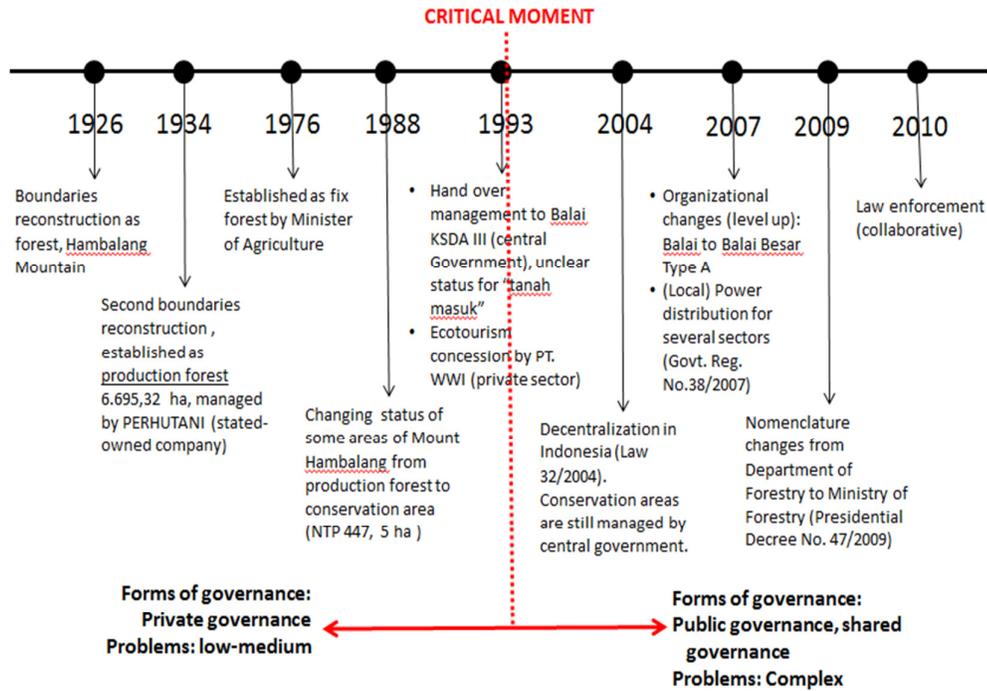


FIGURE 12. The milestone of the Mount Pancar Nature Tourism Park (source: author)

#### **a. Before 1993: Private governance**

As Dudley (2008) said that individual, cooperative, NGO or corporate control and/or ownership could hold the management authority in this type of governance; in which it is not-for-profit or for-profit purposes. In the Mount Pancar NTP, PERHUTANI determine the activities and in charge for any decision or subject with relevant to the regulation in this park, such as the conservation objective, management plans, etc.

Since 1926, the land use of this park is established as a protected forest, as the part of production forest concession area namely the Mount Hambalang complex. As a stated-owned company, PERHUTANI managed this area with the focus on profit and preserving the forest was not the priority. Engaging with the communities inside the park, PERHUTANI did a mutual cooperation with local communities by doing community-based forest management. The cooperation with the communities worked well.

Nevertheless, it was difficult, for PERHUTANI, in doing a project, if it involved other stakeholders. For example was the cooperation of short-time project with local governments. PERHUTANI engaged with local government to develop infrastructure related to the community development or to rehabilitate the park. However, it needs time for implementation. The government monetary system is not as flexible as PERHUTANI. Local governments, such as community division of the planning agency of Bogor Regency, realize that they have many circumstances that make the development run slowly, as quoted:

*“Many people think that we are seems so slow in responding stakeholders who want to cooperate with our agency. It is quite difficult for us if the projects are not in our schemes. If there is any project for community development, we have to propose at least a year before the projects run. We have our own target and limited budget each year. At that time, people inside the park was also not as many as now, and we have to make priority for development. However, we cannot support communities inside the park that live outside the enclave areas, because they have illegal status”*  
(Source: L3--representative of Social and Economic Division of Planning Agency, Local Government of Bogor Regency, 23 July 2012).

## **b. After 1993: Governance by Government**

The governance type in this phase is governance by government. According to Dudley (2008), the characteristic of this type is that the government control and set the objectives of the management (but possible to transfer the task to other party), decision making is also made under state's legal scheme without any obligation to inform stakeholders about the decision or program setting made.

When the central government (BKSDA) took over the management of the Mount Pancar NTP in 1993, the status of the park changed to a conservation area, in the form of nature tourism park. Preparing the status change, Ministry of Forestry only focused for ecological feasibility study, whether this park is suitable to be managed specifically as a conservation area or not. Social feasibility was not explored in deep. Another critical characteristic of this governance type is task management transfer to other party. The tasks for tourism development are given to PT. WWI, but all the decisions are still made by BBKSDA.

Tourism should involve local communities and is expected to provide alternative living source for these people. Unfortunately, there were slow developments by BKSDA and PT WWI. Existing infrastructures, new resource, slow tourism development and weak monitoring and commitment from BKSDA, triggers free riders in the park. These free riders do illegal activities occurred in the park, such as illegal land certification and illegal business that exploits resources (see Chapter 3).

Related to the land certification issue, there is an indication of conspiracy among government employees from several agencies (including BBKSDA) about this case. Certificates will be issued by the National Land Bureau, if there is a letter of agreement from related stakeholders that mentions the area is not the part of the park, as quoted:

*“Related to land certification issue, we admit that some of the staffs in the past involved in this conspiracy. However, this certification cannot be issued without any confirmation from us that the area is or is not the part of the park”* (Source: C1—representative of BBKSDA, 30 April 2013).

There was an organizational restructuring and nomenclature change in Department of Forestry: BKSDA Regional III changed to BBKSDA (2007) and Department of Forestry was also changed to be Ministry of Forestry (2009). It reflects changes in power and decision making, in a positive way. These changes also reflect the effort of Ministry of Forestry for good governance. The conspiracy in the past is expected to be not existed in current management.

The Mount Pancar NTP experienced governance system change, from private governance to governance by government and the differences among these two management types have been explored. Existing management system is possible to improve the weaknesses of previous management system. It could be defined from the operation of the governance attributes. These attribute operations could also describe how each governance type responds the Mount Pancar NTP dynamics. Next section will analyze these attributes operation in the Mount Pancar NTP governance system.

#### **4.2.2. Governance Attributes of the Mount Pancar Nature Tourism Park**

According to Lebel, et al., (2006), governance attributes refer to the concept of “good” governance, which is participatory, deliberative process, accountability, (social) justice, polycentric and multilayer system. Certain attributes enhance the capacity to manage resilience in the future (*op cit*). Each of attributes will be analyzed in each type of governance.

##### **a. Participatory**

In the private governance system, participatory is less operated than in the governance by government system. When the park is managed by PERHUTANI (private governance system), participatory processes focus on the collaboration management between PERHUTANI and communities inside the park and limits to other stakeholders, such as local government, as quoted:

*“At the time we cooperate with limit institution, such as local government and communities. We focused on finding alternatives for communities’ living source. Cooperation with local government was about supporting us to develop infrastructures in the villages, such as sanitary systems, roads, etc. Our relationship with central government is indirectly about our logging quota and regulation for production forest. I think there are not many stakeholders involved in the park management at that time”* (Source: P1—representative of PERHUTANI, 13 July 2012).

As Dudley (2008) also said, participatory processes are common and desirable in the governance by government’s type. The system is also experiencing the similar condition. In past management, communities became the main target to be involved in the management processes. Meanwhile, there are broader participation processes in current management. Third parties are incorporated for managing the park, such as a private company (PT. WWI) in the tourism development, local NGO for rescuing the endangered animals and other organization for certain action (e.g. law enforcement), as quoted:

*“Nowadays we engage conservationists for helping us to rescue the animals. Local police force, sometimes, are also involved in the routine forest patrol. Related to tourism development in the park, we expect that PT. WWI implements their planning and engage more with the communities. Although we are the decision maker in this park, PT. WWI also has power to cooperate with other stakeholders, as long as it relates to their tasks”* (Source: C2—representative of BBKSDA, 1 May 2013).

Participatory are important for building trust among stakeholder (Lebel, et al., 2006). Participation process with other stakeholders shows that the current governance system (governance by government) is more open to the system dynamics. Once there is problem in the park, BBKSDA have opportunities to cooperate with related stakeholders. However, community participation is important for combating encroachment problems in the park, because a lot of pressures are sourced from communities. It could encourage their awareness about importance of this park. Although there is more stakeholder involvement in the management, in contrast, there is a weak community participation in current management (section 4.2.2.d)

b. Deliberative process

Deliberative processes in the private governance system are less operated than in the governance by government system of the Mount Pancar NTP. Deliberation is a process for sharing the understanding and it is needed to mobilize actions and encourage self-organize processes (Lebel, et al., 2006). In the case of the Mount Pancar NTP, it is important to build the knowledge that the park is vulnerable and the illegal activities inside the park could threat the ecosystem.

Deliberation processes by PERHUTANI focused more on the communities through community-based forest management system. Meanwhile, BBKSDA encourage more deliberative processes of related stakeholders in strengthening their management. Although it is still reactive process, for responding problems in the park, BBKSDA have tried to start the formal and informal open communication processes. Through this deliberative process, BBKSDA mobilizes the action needed from other stakeholders. Network is built more in current management, as quoted:

*“When law enforcement phase, we were deliberated in term of tracing back the illegal land certification. At least, we do understand what is going on actually in the park. We do our best to help, but managing the park is the main responsibility of BBKSDA”* (Source: L2—representative of Planning Agency, Local Government of Bogor Regency, 23 July 2012)

c. Accountability

Accountability and its implementation are the keys of global environmental governance related to sustainable development (Najam and Munoz 2011). Joss (2010) suggests that in the high level complexity, transparency and openness become noticeable elements of accountability, related to: *information accessibility, openness of decision-making processes & outcomes, and publicity (p.411).*

In current national governance system, good governance is the governance restructuration target in Indonesia. It influences the lower level government management units, including in BBKSDA, by putting forward accountable management in their governances system. For example, when BBKSDA

prepared law enforcement in the Mount Pancar NTP, stakeholders shared data and information that is important for checking and balancing the actual situations. A lot of discussions had been done by BBKSDA for the decision making processes.

Dudley (2008) contends that the accountability of private governance may be limited (especially to society), while accountability measures in the governance by government system will vary according to the country. When the park is managed by PERHUTANI, information flow is limited to the public, as quoted:

*“We are a state-owned company, not a public servant. As a company, profit is our goals. We are accountable for financial or budgeting performance, especially to the central government”* (Source: P1—representative of PERHUTANI, 13 July 2012).

Accountability, in the past management, was a narrow perspective. It is not seen as a wider context of socio-politic as in current governance system. Thus, accountability performs less in private governance system, rather than in governance by government system.

d. Social Justice

Social justice is the main aim of what is called by good governance (Lebel, et al. 2006). In contrast with previous attributes, social justice in private governance operates better than in governance by government system in the Mount Pancar NTP. Communities inside the park think that community-based forest management system in the past gave them more opportunity and justice for enhancing their economics, as quoted:

*“I think it is fairer for us in the past, when PERHUTANI offered community-based forest management. Nowadays, we have no option and lost our source for living. Pressures in economic forced us to sell our land to developers or just keep doing farming activities in the park”* (Source: S2—representative of communities, 3 May 2013).

In fact, in current management, BBKSDA has already prepared alternatives for the living source of local communities in the park. They already involved private sector in managing the park (PT. WWI). As it is already mentioned, previously, incorporating communities in tourism development

can be one of the alternatives for their living source and building the sense of belonging of the park. Interestingly, the progress is slow and tourism is not well-developed, yet.

There are two reasons why tourism seems not work well in this park. First, although the tourism concession is given since 1993, PT. WWI just started to develop the park in the last five years. The projects/plan postponed, because of internal problem in their management, such as budgeting problem. Recently, PT. WWI starts to focus on short-term development, e.g. tourism infrastructure developments. Long-term program that includes communities is still in preparation, as quoted:

*“Now, community cannot do farming. We just started to develop the park since the last five years. It still focuses on the physical developments. We know that we have to involve communities in our project. Thus, the thing that we can do nowadays is trying to involve them as low-skilled labor for the development, but we cannot incorporate all of them. We already had plan about several tourism program in the future, and communities can be a part of this plan. We still need BBKSDA to build the network for future integrated-program”* (Source: P2—representative of PT. WWI, 6 May 2013).

Second, there is a weak monitoring from BBKSDA regarding the progress of tourism plan implementation by PT. WWI. This company did not do their obligation to develop tourism activities on time. Thus, communities think that there is no significant effort from BBKSDA to foster PT. WWI in advancing tourism in the park.

This weak monitoring system is also open the opportunity for free riders. Those who have illegal businesses (exploit the resources) are not the local people, but come from the outside of the park. Local people that are poor, become poorer. Thus, because the communities inside the park do not have alternatives, they just do their routine for living—farming, and finally blamed for illegal actions. They feel that there is injustice in park’s management, as quote:

*“I live here for years, and become a witness of the park’s changing. Since BBKSDA manage the park, it feels like they are just expelled us indirectly from the park. Everything is prohibited in the park, because it is conservation area. A lot of people here just continue to do farming, although*

*it is illegal. We expect that we can be involved in tourism project, but I think there is no significant progress from PT. WWI. This is also an issue. Why BBKSDA still continue their cooperation with this company? For several years BBKSDA omit the situation”* (Source: S1—representative of communities, 3 May 2013).

e. Organizational features: polycentric and multilayered institutions

Polycentric institution means that the system has multiple center or authorities, also called multilayered institutions, and it does not always be hierarchical (Lebel, et.al, 2006). Decentralization, in the context of forestry, in Indonesia, means that there is power distribution to manage several types of forest areas<sup>15</sup>. Yet, all the management must follow to the national regulation. In fact, these organizational characteristic are not exist in the governance system of the park. The national government system in Indonesia is centralized. However, these attributes are important governance characteristics in the resilient system. The governance system in the conservation areas, in Indonesia, is still hierarchical and top-down system, but the bottom-up processes had already occurred, as quoted:

*“Although it is already decentralized, the power is still in the national level. Each level of government has its own responsibility in managing the forest and central governance set the regulations. It is true, in several cases, that participatory and deliberative processes exist in the process of decision making in the forestry field, but it is not fully influence the result. It seems that top-down system dominate the forest management, because forestry is one of crucial sectors in Indonesia”* (Source: R1—representative of CIFOR, 29 April 2013).

Therefore, when the function of the Mount Pancar NTP is changed, the attributes of governance are operated differently. Participation, deliberation and accountability are less operated in previous management. Social justice attribute, as the aim of good governance, is less operated in current management. It should become concern for current management authority. Other attributes of organizational features (polycentric and multilayered institutions), do not exist in both management types, because the national governance system does not support this attribute operation.

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<sup>15</sup> Government Regulation Number: 38/2007.

However, there are uncertainties in the future, as the impacts of system changes. The governance system is changed and attributes of governance improved, but current governance system is not able, yet, to respond the dynamics in the system, toward the resilience of the Mount Pancar NTP. The social problems and uncertainty in the future still become challenge in the management system. Thus, according to SES, adaptive governance is suggested to be developed in addressing this challenge. Next section discusses about how to prepare existing governance system to be adaptive in this park.

### **4.3. Towards Adaptive Forest Governance of Social-Ecological Systems Resilience in the Mount Pancar Nature Tourism Park**

The challenge for SES is how the systems respond to uncertainty, in which the system prepares for change and surprises, and enhance adaptive capacity to cope with perturbation (Akamani and Wilson 2011). In a resilient system, disturbances could become the opportunities into more desired states transformation (Folke, et al., 2005). This section, analyzes adaptive capacities of the Mount Pancar NTP and the system ability to prepare uncertainty in the future. Folke (2006) emphasizes transformation ability for SES improvement. There are several factors that are essential for the success of adaptive governance transformation processes in a system (Danter, et al. 2000, Olsson, et al. 2006). Thus, these critical factors in supporting the Mount Pancar NTP governance transformation, towards adaptive forest governance, will be discussed in detail.

#### **4.3.1. Capacities towards Adaptive Governance**

Folke, et al., (2003) *in* Armitage (2005) suggest that there are four dimensions of adaptive capacity according to SES (TABLE 1, p.21). These dimensions will be discussed in detail, in the Mount Pancar NTP case.

##### **a. Learning to live with uncertainty and change**

It is clear that MoF, in the national level, holds the authority for any changes on institutions and be responsible for the impacts of the changes.

However, when they decided to change the park's status, they did not prepare for the impacts, as quoted:

*“We do realize that we were not aware for the impact of the changes. Main reason for existing problems in the park is because the weak of monitoring system in our management; slow respond in practical prevention and in making further regulation in this park. We have to follow national regulation, in which that it is rigid and strict. We know that every park has its own characteristic and solving problem could be different in each park”* (Source: C2—representative of BBKSDA, 1 May 2013).

Nevertheless, another entity, which is communities as the resource user, tried to self-organize by responding the changes. Communities learn that direct impact of the change in the park is related to their opportunities of their livelihood. Thus, the different approach in managing the park triggers community to propose an integrated planning system, in 2005. Guiding this process, a local NGO namely Pusat Informasi Lingkungan Indonesia (PILI) became the facilitator of the processes. The problem is that this planning emphasized on the technical actions, rather than uncertainty in the future, as quoted:

*“It was really interesting to see that communities shared the knowledge and learned to organize themselves about what should they do for a better management of the park. Communities really put their effort in making this proposal. It also involved BKSDA. When the proposal presented in formal meeting with other stakeholders (discussing who will do what in the future), agreement was only in formal way. No feedback and respond further. It is true that it consists of practical actions, at least they already thought about future”* (Source: R2—representative of PILI, 30 April 2013).

Although future impacts are not taking into account by the management authority, at least, the entities have already learned that there is uncertainty in the system that have to be considered in the management of the Mount Pancar NTP.

b. Nurture diversity for reorganization and renewal.

This capacity relates to social, ecological and social-ecological memories (TABLE 1, p.21). As the manager of the park, BBKSDA tried to do law enforcement (in 2010), involving various organization. All the memories were traced in finding the root for the problems, focus on illegal

certification. Collusion and corruption indications in the past did not burden the stakeholders to be brave in telling the truth, including taking its consequences, as quoted:

*“We tried to trace the documents and individual stories about what actually happened in the past. Lesson learned that we got from these memories help us to consider what actions are needed. We realize that there are certain people among us were also involved in the problems. Without any recommendation letter that showing the area is not the forest area, it is impossible to issue land certification. When we decided to do law enforcement, we do understand that this fact will impact us, both individually and organizationally”* (Source: C1—representative of BBKSDA, 30 April 2013).

Ministry of Forestry tried to enhance the capacity of the operational units to deal with the dynamics in the forest management, by doing restructuring in the organization, such as BKSDA that is changed into BBKSDA. This restructuring also changed the governance system in the Mount Pancar NTP. New management type, BBKSDA, is more powerful in decision making. Thus, BBKSDA is expected could be adaptive in responding the dynamics in the park.

c. Combine different types of knowledge for learning

To begin with, it is important to understand about what knowledge that each stakeholder shares in the Mount Pancar NTP and what are the learning points they have (TABLE 6). The knowledge, especially local knowledge, is crucial in building social-ecological resilience, for example in the case of watershed management as suggested by Olsson and Folke (2001). Despite the explicit information, another type of knowledge that is tacit/implicit knowledge is also found important to deal with complex issues (Geldof, et al. 2011).

Combining knowledge for learning is related to the ability of system for: (1) experiential and experimental knowledge integration, (2) structure and function knowledge integration, (4) knowledge incorporation into institutions, and (4) encouraging the complementarity of knowledge systems (Folke, et al., 2003 *in* Armitage, 2005).

TABLE 6. Knowledge and learning shares among stakeholders in the Mount Pancar Nature Tourism Park (source: author).

<b>STAKE-HOLDERS</b>	<b>Building knowledge (In what aspect?)</b>	<b>Learning (What is the learning point?)</b>
PERHUTANI	Tacit knowledge for social, ecological and social-ecological memories.	Community-Based Natural Resources Management was a good example to deal with the social problem in the park.
BBKSDA	Commitment among stakeholders about the importance of the park and considers about uncertainty. Proactive actions are needed.	Monitoring, evaluation are important in the management. Commitment among stakeholders needs to be encouraged. Cross spatial and cross scale network for better management and prepare for the changes.
PT. WWI	Tourism is not about the exploitation, but more focus on long-term planning.	Coordination is important, and community is the part of the success story.
Local Government	Supporting the protected areas is not only “in the paper” but it needs to be supported by formal institution.	Feedback of the system learning can stimulate self-organized process in the park.
NGO	Adaptive governance is ongoing process, stimulate the progress is important.	Formal network is easy to find, but recognizing the shadow network is difficult to be recognized.
Media <sup>*)</sup>	The park is under threatened, breakthrough the political pressure is important to be informed to the societies.	Both proactive response and reactive response are important in dealing with the changes.
Community	Already know about the function of the park, but economic aspect become boundaries	Initiative actions as the part of self-organizing process, stimulating feedbacks from other relevant stakeholders is important.
University	Social and ecological aspects are not separated aspects of the system.	Changes in the conservation area need to be supported by comparative studies. Stimulate and bond the cooperation among stakeholders in managing the park.

<sup>\*)</sup> Analysis based on interviews of each stakeholder, except media that is gathered from electronic news)

Existing management system has shown this potential adaptive capacity dimension, according to TABLE 6. There are several points highlighted. First, the ability in combining experiential and experimental knowledge has been performed in the system. For example, through several events in the system, tacit knowledge become important for tracing the root problems in the park, as quoted:

*“We have to include relevant stakeholders when did the law enforcement. PERHUTANI and local government have the whole document about certification in the past and PILI understand about the society conflict. We do not have this knowledge”* (Source: P2—representative of PT. WWI, 6 May 2013).

Second, there is recognition for knowledge integration of structure and functions. For example, cross-scale and cross-spatial network also sharing knowledge are the key for law enforcement in the park. It is also needed for preparing another change in the park. Third, in the Mount Pancar NTP case, institutional support by the local government is crucial. For example, development in the park’s boundaries must be minimized, because it leads to the vulnerability. Local government holds the authority in managing the areas outside the park, but there is no support of regulations from local government related to this issue. Fourth, BBKSDA has shown the ability in encouraging the complementarity of knowledge systems. Each stakeholder has already realized their capacities and roles, but it still needs stimulation in bonding and combining the capacities in the future.

d. Create opportunities for self-organization.

Self-organization is one of the characteristic of a resilient system. All the entities in the park system agree that social and ecological context in the park system cannot be separated. Responding the changes in the Mount Pancar NTP, by the external driver, the social system has shown the ability for the self-organizing process (Section 4.3.1.a.). They tried to be adaptive by proposing an integrated plan, but no feedback system in the park’s management, yet. However, for a self-organize system, a change agent is needed to trigger the processes. In the past, a local NGO (PILI) was the agent in facilitating the processes. Therefore, the changes in the park create opportunity of self-organization by one of the system entities.

The Mount Pancar NTP actually has shown the required adaptive capacities. Adaptive governance is potential to be developed for a resilient system of the Mount Pancar NTP. Next section discusses the critical factors for transforming the governance system to be adaptive towards the Mount Pancar NTP resilience.

#### **4.3.2. Critical Factors for Adaptive Forest Governance Transformation towards the Mount Pancar Nature Tourism Park Resilience**

Based on SES perspective, the governance system in the Mount Pancar NTP has capacities and potential to be adaptive. Transforming current governance system to be adaptive, there are four critical factors are found important for the processes, which are:

a. Leadership

Guiding the transformation in the Mount Pancar NTP, a strong leadership is needed. It remains question: who will in charge the processes in this park? According to the past experience, a local NGO (PILI) succeed to facilitate communities to propose an integrated plan in responding the change in the park. At that time, BKSDA also involved in the process. The problem is that the process ended up when it involves cross-scale stakeholders. A leader that has capacity or power to engage cross-scale and cross-spatial actors is needed for the governance transformation towards the resilience of the Mount Pancar NTP.

In the Mount Pancar NTP case, stakeholders agree that the transformation processes should be led by the manager of the park. Currently, BBKSDA manages the park. Eventough PT. WWI also operates in the park, BBKSDA holds the full responsibility of the park. It means that BBKSDA is potential to be the leader for transformation, as quoted:

*“We operate under the supervision of BBKSDA. However, all the concepts and the movement should be led by BBKSDA”* (Source: P2—representative of PT. WWI, 6 May 2013).

b. Network

In the case of the Mount Pancar NTP, network is also important for the transformation and three points are highlighted related to network. First, network types, both formal and informal, are needed to be developed in the park. Both of these network types exist in the system. For example, when BBKSDA planned to do law enforcement in 2010, formal network was

developed with all related stakeholders, local government, police force, education centre, NGO, etc. Learning from the past, commitment becomes the key in the success of formal networks, as quoted:

*“BBKSDA should be the leader for the transformation, but it cannot be done by BBKSDA alone. Each stakeholder should have commitment who doing what and implement it. A lot of agreement in the discussion, but without implementations at the end”* (Source: P1-representative of PERHUTANI, 13 July 2012).

Informal networks are also found exist in the park. For example is informal network with local researchers to improve knowledge about ecosystem in the park or media to inform public about recent condition in the park and develop public awareness. This shadow network is important for transforming governance system, but it is difficult to be recognized, as quoted:

*“There is a lot of networks have been developed towards adaptive governance. But actually shadow (informal) network is more important to be recognized for the changes in the governance system. It is difficult to recognize this shadow network”* (Source: R1—representative of CIFOR, 29 April 2013).

Second, network scale, both national and international is also found important to be developed. The State Minister for the Environment mentioned about the importance of network that involves stakeholder across-scale. As the example of this is related to the law enforcement process of the Mount Pancar NTP, as quoted:

*“The law enforcement must still be done. All have been discussed at the national level, and local governments are tasked to carry it out....”* (KOMPAS 2010)

Network in the international scale for environmental management in Indonesia has been developed, as said by Vice Chairman of Corruption Eradication Commission in a media electronic: *“In line with the existing diplomatic ties for 60 years, the Government of Indonesia together the Russian Federation Government will cooperate in the field of environmental management”* (Mursito 2010). This type of network, perhaps, will not impact directly to the Mount Pancar NTP governance system. However, it could encourage BBKSDA to improve the governance

system in the park—noted that BBKSDA is one of management units in Ministry Forestry.

Third, stimulation is needed in building the network. It is difficult to develop networks in the Mount Pancar NTP, because stakeholders come from different organizations and have their own interests. Economic factor is found possible as the network bond among stakeholders in the park, as quoted:

*“I think economic factor, through tourism, is potential as the base for building the network. In Local government of Bogor Regency, we have tourism agency, community development agency, forestry agency, etc. As long as it relates to our job desks, we can be the part of the activities. Integrated tourism can be the solution and BBKSDA is possible to lead the process and develop the network”* (Source: L3--representative of Social and Economic Division of Planning Agency, Local Government of Bogor Regency, 23 July 2012)

Integrated tourism activities could be the alternative to sustain the Mount Pancar NTP, as long as it follows regulations and sustainable principles (not only about exploitation). Physical developments done by PT. WWI encourage the number of visitors in the Mount Pancar NTP, in this last five years (FIGURE 13). If tourism is well-developed, it is possible that BBKSDA could sustain the park, private company could improve their profits, local government is possible to increase their local GDP, and the communities could improve their livelihood.

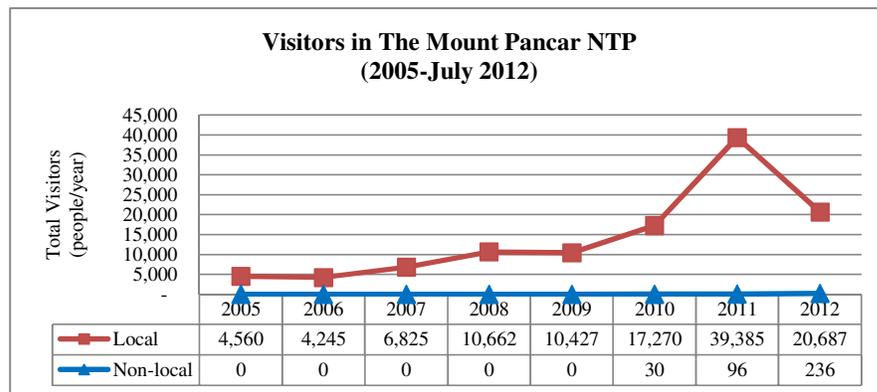


FIGURE 13. The number of visitors in the Mount Pancar Nature Tourism Park, from 2005 to July 2012 (source: internal report of BBKSDA, September 2012)

c. Common knowledge

When the park established as the conservation area, the perception about the importance of this park, among stakeholders, could be different and it affects them on how they respond the change in the Mount Pancar NTP. Knowledge about the importance of the park has to be developed, as quoted:

*“It is important to be realized among the stakeholders that once the area become conservation area, this park should be sustained for its ecological functions. It is important to build the common knowledge about this issue”* (Source: R2—representative of PILI, 30 April 2013).

In contrast with statement above, another stakeholder contends that, actually, all the stakeholders in this park are already understand that the park is important as the conservation area. The problem is that willingness to change and to be adaptive has to be developed, as quoted:

*“Change is not only a word. It must be done with commitment. Willingness to change and to be adaptive must be stimulated, because, actually, they do understand about the importance of the park and they have capacities, but they have different interests”* (Source: R3—representative from local university, Institut Pertanian Bogor (IPB), 3 May 2013)

d. (Adaptive) institution

Because the conservation areas in Indonesia are managed under central government, all the regulations, related to the management, are issued by central government. As the operational agency, BBKSDA is expected to be adaptive, but being adaptive must be supported by adaptive regulations, as quoted:

*“However, sometimes our regulations restrict us to do innovation. We have one regulation for all conservation areas, but we realized that every area have its unique condition. We try to be adaptive in management, but the regulations, sometimes, restrict us to be innovative”* (Source: C1—representative of BBKSDA, 30 April 2013).

Summarizing the analysis, there is changing management system in the Mount Pancar NTP. The existing governance system of the Mount Pancar NTP has shown the ability to cope with the problems and changes in the park, but it is not able, yet, to deal and adapt with system dynamics, such as future changes and impacts. It could lead the system to be more vulnerable. Towards a

resilient system, adaptive governance is the important in guiding the process. Thus, transforming current governance system to be more adaptive requires certain capacities. Notwithstanding, the Mount Pancar NTP system has the capacities and several capacities are found particularly critical to trigger this transformation processes. However, these capacities are still needs to be more developed in the system. Connecting all of the findings in this analysis, policy recommendations are given towards the resilience of the Mount Pancar NTP (section 5.2).

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1. Conclusion**

There is a call for further SES study about the identification of the core attributes of SES in forestry field (Ostrom 2010). Exploring previous studies, adaptive governance is recognized as the key requirement of SES (Folke, et al. 2002). Each environment system is unique, means that the system has their own framework, pattern, structure, governance system, etc. Therefore, this case-study base research is done in addressing this challenge, notably in the Mount Pancar NTP. The focus of this thesis is analyzing adaptive forest governance, according to SES perspective, towards the resilience of the Mount Pancar NTP.

Two main questions guided this research that are related to: (1) the exploration about adaptive governance processes principles and its dynamics that operate and guide this park, and (2) the exploration about the critical factors towards adaptive forest governance, enhancing the resilience of this park.

The Mount Pancar NTP is located in Bogor Regency and has 447.50 hectares area wide. BBKSDA (central government) holds the authority to manage this area. The park has social and ecological values, but it also undergoes several problems that lead this park become vulnerable. Stakeholders involved in this park agree that social and ecological aspects cannot be separated in the system management. Thus, it is interesting to explore the evolution on how communities and management agency interacts each other in this park, according to SES lens.

To begin with, there are two important changes in this park. First, there was a changing status in this park in 1988, from production forest to conservation area, in the form of Nature Tourism Park. Second, the governance type in this park also changed from private governance (managed by a company namely PERHUTANI) to governance by governance in 1993 (manages by central government namely BKSDA, in which the name changed to BBKSDA in 2007). In current

management, BBKSDA cooperates with a private company namely PT. WWI to develop tourism in this park.

These changes, according to SES framework, are known as the socioeconomic disturbances. This disturbance type is the key driver of the system change that impacts public infrastructure providers and resource user entity in the park—noted that the entities as the component of SES are: resources, resource users, public infrastructures and public infrastructure providers.

The role of management authority in the system is different after the changes happened, in which there is a dualism entity of existing management authority in the park. BBKSDA (and PT. WWI) operates not only as public infrastructure providers, but also as resource users in the SES framework. Thus, there is a new interaction pattern observed that makes the system more complex than in the previous management (Link 7—FIGURE 10, p.39). After the changes happened, public infrastructure provider entity plays an important role in the park, in which their interactions determine how governance system responds to the system dynamics. This entity is the core component of SES in the Mount Pancar NTP.

The changes in the governance system of the Mount Pancar NTP impacts the governance attributes operation differently in each governance system. Several attributes of governance, which is participatory, deliberative processes and accountability, perform better in current management. Related to the participatory and deliberative attributes, more stakeholders are involved in the current management than in the past management. Accountability, in current management, is a wider context of socio-politic aspects.

Others attributes, which is social justice and organizational features (polycentric and multilayer) perform differently in the current management, compare to the previous attributes. Social justice in the past management of the Mount Pancar NTP performed better than in current management. This attribute, according to Lebel, et al. (2006), is the main aim of what is called by good governance. Meanwhile, the attribute of organizational features (polycentric and multilayer) does not exist in both management forms. The national governance system is

centralized, in which top-down system dominated. Although there is decentralization in Indonesia, since 2004, managing conservation areas is still under the authorities of the central government. These last attributes, become the concern that have to be developed, regarding the governance system of the park.

Toward adaptive governance, analysis about dimensions of adaptive capacities has been done, to explore whether the system has capacities to be adaptive or not. There are four dimensions of the adaptive capacity, according to SES (Folke, et al. (2003) *in* Armitage (2005)).

First dimension is the capacity to learn and live with uncertainty and change. Uncertainty is not taking into account in the system management, but recognized by stakeholders in this park. For example, community as the resource user responded the change in a positive way, by initiating to propose collaborative management plan in the park. Second dimension is maintaining diversity for reorganization and renewal in the system. For example, the recognition of diversity in managing the park encourages existing management authority to enhance their capacity to deal with the changes, by restructuring the organization (from BKSDA to BBKSDA). It makes current management authority more powerful as a decision maker and possible to be adaptive in responding the changes. Third dimension is combining different types of knowledge for learning. It is found that each stakeholder has already realized their capacities and roles, but it still needs stimulation in bonding and combining the capacities of stakeholders in the future. Fourth dimension is creating opportunities for self-organization. What is done by communities by responding the change, as mentioned in the first dimension, is the form of the self-organizing capacity.

Even though the system has these adaptive capacities, several critical factors are needed in transforming existing governance system to be adaptive in dealing with future changes. In the Mount Pancar NTP case, there are four factors are critical for the transformation, which are leadership, network, common knowledge and (adaptive) institution. To conclude, the governance system in the Mount Pancar NTP has adaptive capacities and possible to transform to adaptive forest governance for guiding the system towards resilience direction.

## 5.2. Recommendations

Combining several important learning points, according to the critical factors and stakeholders involved in this park, an integrated scheme is suggested towards adaptive governance for the resilience of the Mount Pancar NTP (FIGURE 14).

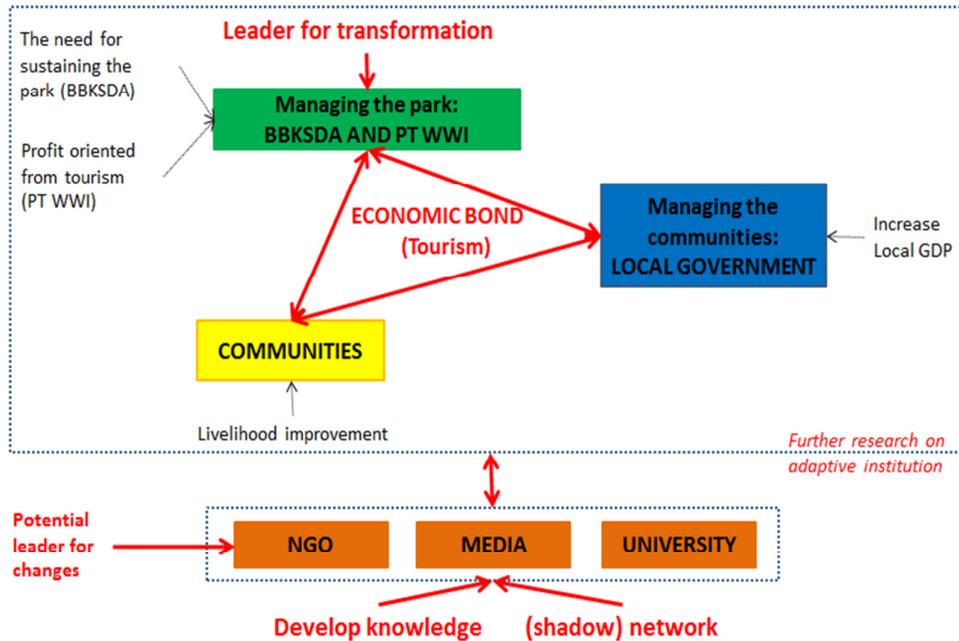


FIGURE 14. Recommendation scheme towards adaptive governance system in the Mount Pancar Nature Tourism Park (source: author).

Four important points are highlighted in this scheme, for further governance practice in this park:

- a) An integrated tourism plan can be the alternatives to deal with economic problems among the society in the park.

Integrated tourism development should involve four main stakeholders in the park. Formal network is important to be developed for the success of the planning process, because these stakeholders have certain capacities that complement each other. Economic factor can be used as the bond for this network. BBKSDA needs to sustain the park and develop tourism activities. As a company that holds tourism concession, PT. WWI needs to seek the

profit. Local government needs to increase their local Gross Domestic Product (GDP).

- b) Strong leadership must be developed toward adaptive forest governance transformation.

BBKSDA has power to develop the network and communicate with stakeholders, across scale and level. In developing an integrated tourism plan, BBKSDA could engage local government, e.g. as infrastructure providers and develop marketing schemes of the tourism plan. Other stakeholders are also potential as the transformation leader of adaptive governance in this park. It happened in the past, in which local NGO (PILI), succeed to drive the self-organize process in the system. Still, it needs triggering factors for other stakeholders in doing this action.

- c) Share the common knowledge and find shadow network in this park.

CIFOR has done many rigorous studies about adaptive governance and IPB also has done environmental studies. This knowledge should be combined with existing knowledge in the Mount Pancar NTP, to develop social, ecological and social-ecological databases and information. Media is also needed to be engaged. There is a need to inform public about actual situation, from various perspectives, and building public awareness about the importance of this park. Media could be effective in developing a balanced perspective to the public. Regarding the shadow network, management authority should be able to recognize this type of network. Although it is difficult to recognize this network, it could be effective to mobilize actions in the park.

- d) Further study for developing adaptive institutions, notably in this park.

The general problem in forest management is that the institution in Indonesia is rigid, while SES is context-dependent. This adaptive institution is the part that cannot be separated from adaptive governance context. Thus, further study on how adaptive institution should be developed in this park is suggested to be done.

### **5.3. Reflections**

The interviews were done in a very limited time. There are difficulties to do the interviews, because of the administration process in conducting research in Indonesia. It is also difficult to get secondary data related to this park. Some documents are sensitive to be shared, because the on-going process of law enforcement processes in this park. Several key informants, such as media representatives, residence developers around the park and communities from Bojong Koneng village, cannot be interviewed because of the time limitation for coordination and making appointments. This factor may impact to information quality about the Mount Pancar NTP, because the perspectives of these key informants could enhance the analysis results.

There is also subjectivity in the method that makes the result is possible to be bias. The strength of in-depth interview method is the flexibility and the openness for interviewees to answer the questions. Most of the interviews were done in the formal situations. There is anxiousness that the answer given was the 'right' answers, not the 'true' answers. Although narrative analysis emphasizes the stories that the informants have, connecting the stories is also another important process in this thesis that relies on the skill of the author. This is my first time to do this qualitative research. It may also impact to quality of the analysis. At least, I have learned and still learn about this methodology.

Although there are limitations in conducting this research, I believe that this thesis contributes to the SES research. Addressing the academic challenge for exploring the attributes of SES in forestry field is one of the objectives in this thesis. However, this is a study case research. Similar research, perhaps, should be done for comparing the results with other different forest governance types. Further research is also suggested to explore what organizational features of adaptive governance are appropriate for specific types of forest governance system (such as in Indonesia) and how to develop adaptive institutions in dealing with the dynamics of forest system.

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**APPENDIX 1. Key stakeholders interviewed in the Mount Pancar Nature Tourism Park**

<b>CODE</b>	<b>ORGANIZATION</b>	<b>ROLE</b>
C1	BBKSDA	Head of Division 1 (second level of decision making authority in BBKSDA-policy level), experiencing the current management of the park.
C2	BBKSDA	Head of Section 1 (third level of decision making authority in BBKSDA-operational level), experiencing the current management of the park.
C3	BBKSDA	Forest Ranger, experiencing the current management of the park; tacit knowledge.
P1	PERUM PERHUTANI KPH Bogor	Head of Planning Division, having knowledge and experiencing the past management in the park.
P2	PT. WWI	Marketing staff, c
L1	Land and Spatial Planning Office-Local Government of Bogor Regency	Head of Spatial Planning Division, having knowledge about past and current spatial planning conditions in and around the park.
L2	Planning Agency- Local Government of Bogor Regency	Staff of Planning Division, having knowledge about past and current planning conditions and the regulations in and around the park.
L3	Social and Economic Division of Planning Agency- Local Government of Bogor Regency	Section Head (Social and Economic), having knowledge about community development in the park.
R1	Center for International Forestry Research (CIFOR)	Senior Associate, Forests and Governance Program, having knowledge about governance development in Indonesia.
R2	Pusat Informasi Lingkungan Indonesia (PILI)	Director, having knowledge communities in the park and became the facilitator of a project with the communities in the park.
R3	Institut Pertanian Bogor (IPB)	Director of Cooperation of university, expert on conservation policy analysis.
S1	Community in Karang Tengah village	Local citizen, also member of local NGO (Yayasan Garuda Nusantara) that works for the park rehabilitation and live in the village
S2	Community in Karang Tengah village	Farmer

APPENDIX I. Topic lists in in-depth interview.

*Note:*

*Not all the topics were asked to each stakeholder, and the language style used in asking the questions was different among stakeholders. The questions could be developed further during the interviews.*

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T1	<b><u>Exploration about governance structure:</u></b> <ul style="list-style-type: none"><li>• The history of the park (what were change in the park, events, impacts, etc.)</li><li>• Main problem in the NTP (past, present and potential in the future)</li><li>• Development of governance system, in general and related to the park (which one is preferred to be more ideal, strength and weaknesses, etc.)</li><li>• Differences about participatory, deliberative, accountability, social justice, organizational features performances (issues of attributes of governance)</li><li>• Learning points of the NTP's management (social-ecological relation, uncertainty, among stakeholders, etc.)</li></ul>
T2	<b><u>Adaptive governance:</u></b> <ul style="list-style-type: none"><li>• Perspective about the importance of the park and problems (predictable or not, who should responsible, how to respond the changes, etc.)</li><li>• Communication with other different stakeholders (how the system works, how to deal with different interests, etc.)</li><li>• Initiative actions that have been done to deal with the changes</li><li>• Past learning point, points of improvement (what innovations and what should be improved in the future, etc.)</li><li>• Role of other stakeholder in the management and the interaction with the NTP (how it is/was and how it should be)</li><li>• Possibilities to develop different approach in managing the NTP area.</li></ul>
T3	<b><u>Key factors for the resilience of the system in the future:</u></b> <ul style="list-style-type: none"><li>• What has been done to solve current problems?</li><li>• What is the most important factor in governing the NTP system?</li><li>• How about the role of other stakeholders in future management?</li><li>• If there are any possibilities to bridge various interests with other stakeholders in managing NTP, what factors should be developed?</li></ul>

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