

**Technische Universität Dresden**

**Faculty of Environmental Sciences**

Topic of the dissertation:

# **An analysis of the process of policy-making to prevent deforestation in Indonesia**

Dissertation for awarding academic degree

**Doctor rerum silvaticarum (Dr. rer. silv.)**

Submitted by

**Min-kyung Kang**

M.Sc. Forest Resources

**Supervisors:**

**Prof. Dr. rer. silv. habil. Norbert Weber** - Technische Universität Dresden, Germany

**Prof. Dr. habil. Gerald Kapp** - Technische Universität Dresden, Germany

**Dr. Muhammad Alif K. Sahide** - Universitas Hasanuddin, Indonesia

Dresden 28. 11. 2022

**Declaration of conformity**

I hereby confirm that this copy conforms to the original dissertation on the topic:

An analysis of the process of policy-making to prevent deforestation in Indonesia

---

Location, Date

---

Signature (Kang, Min-kyung)

### **Note on the commencement of the doctoral procedure**

- (1) I hereby assure that I have produced the present work without inadmissible help from third parties and without aids other than those stated; ideas taken directly or indirectly from external sources are identified as such.
- (2) When selecting and evaluating the material and also when producing the manuscript, I have received no support from other persons.
- (3) No further persons were involved in the intellectual production of the present work. In particular, I have not received help from a commercial doctoral adviser. No third parties have received monetary benefits from me, either directly or indirectly, for work relating to the content of the presented dissertation.
- (4) The work has not previously been presented in the same or a similar format to another examination body in Germany or abroad, nor has it been published.
- (5) I confirm that I acknowledge the doctoral regulations of the Faculty of Environmental Sciences of the Technische Universität Dresden

## **Acknowledgement**

It took me longer than others to get my Doctoral Degree. My research continued not only by sitting in the classroom and at the desk, focusing on the text and letters of a book but also by working in various countries. And I have been trying to do a study that reflects the voices of the field. Although it took me a lot of time to become a doctorate, I am sure that my determination and field experience have completed this dissertation. And even now, I am conducting research, hoping my research outcomes can be applied and utilized in the field. While publishing this dissertation, I would like to promise to strive to become a researcher who always communicates with the field and constantly develops.

I express my infinite gratitude to Prof. Norbert Weber, who took a lot of interest in me during my stay in Tharandt, Dresden, and took care not only of my studies but also of my life in Germany. Also, thanks to my supervisors, Prof. Gerald Kapp and Dr. Muhammad Alif K. Sahide, who are scattered throughout the region. I will always remember the detailed reviews and encouragement of the three supervisors who helped me complete my dissertation. I would also like to thank Prof. Uta Berger, who chaired the defense of the dissertation, and Ms. Jana Posselt, who provided a lot of administrative help. My thanks and regards to my colleagues at the Institute of Forest Economics and Forest Management Planning, including Prof. Peter Deegen, Wenke Franz and, Yvonne Barteld, Rea Schneider, who have always been so warm. My memories in Germany were enjoyable and enriched, thanks to you.

Prof. Young Woo Chun, you made me who I am today. I am sorry to hear such good news so late. And I would like to thank Prof. Ki Won Kim and Prof. Jae-Kyung Cha, and many other respected teachers who always wanted me to grow into a great researcher. I also want to convey the news to Prof. Young Geun Eom and Prof. Leo Tak, who are probably watching from afar.

Lastly, I would like to express my gratitude and love to my mother, father, and brother Junho, who always trust me and care of me with love.

## **TABLE OF CONTENTS**

<b>TABLE OF CONTENTS.....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>x</b>
<b>LIST OF FIGURES .....</b>	<b>xiii</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>xv</b>
<b>Abstract .....</b>	<b>xviii</b>
<b>Kurzfassung .....</b>	<b>xxi</b>

## **I. INTRODUCTION**

<b>1. Indonesian Forest Policy and Research Objectives of the Dissertation .....</b>	<b>2</b>
1.1 Understanding the national forest policy in Indonesia .....	2
1.2 Objectives .....	4
1.3 Research Questions .....	5
1.4 Hypotheses .....	5
1.5 Disposition .....	6

## **II. THEORETICAL BACKGROUND**

<b>2. Multiple-Streams Framework (MSF).....</b>	<b>8</b>
2.1 The models of policy-making .....	8
2.2 Content and development of the Multiple Streams Framework (MSF) .....	9
2.2.1 Problems Stream .....	10
2.2.2 Political Stream.....	11
2.2.3 Policy Stream .....	12
2.2.4 Policy Window .....	12
2.2.5 Policy Entrepreneurs.....	13
2.3 Previous applications of the Multiple Streams Framework.....	14
2.4 Limitations of the MSF .....	17
2.4.1 Metaphors and Models for policy analytics.....	17

2.4.2 Institutional aspects .....	17
2.4.3 Scope of analysis .....	17
2.4.4 Reduction of the role of policy actors.....	18
2.4.5 Analysis of the dynamics of the policy-making process .....	18
<b>3. Policy Network Model and Approach .....</b>	<b>19</b>
3.1 Origin of Policy Network Theory .....	19
3.2 Policy network concept and characteristics .....	22
3.3 Components of a policy network .....	23
3.4 Classification of Policy Network Model .....	25
3.5 Strengths and Limitations of the Policy Network Approach.....	27
3.5.1 Methodology .....	27
3.5.2 Variables and indices .....	28
3.5.3 Explanatory power .....	29
3.5.4 Formation of a policy network .....	30
3.5.5 Dynamics of policy networks .....	31
<b>4. Previous Studies on Policy Processes in the Forest Sector .....</b>	<b>33</b>
4.1 Previous Studies on the Policy Theory of Forest Policy Processes.....	33
4.1.1 The Use of Multiple Streams Framework in Forestry .....	34
4.1.2 The Use of Policy Network Analysis in Forestry .....	34
4.2 Previous Studies on the Policy Process in Indonesia.....	36

### **III. METHODOLOGY**

<b>5. Research Design .....</b>	<b>42</b>
5.1 Development of the analytical framework .....	42
5.2 Methods .....	42
5.2.1 Literature review.....	41
5.2.2 Expert Interviews.....	43
5.2.3 Data analysis.....	45
<b>6. Development of the Analytical Framework for Policy Making Process .....</b>	<b>47</b>
6.1 Principles of analytical framework .....	47
6.2 Conceptual framework.....	49

6.2.1 Multiple Streams Framework .....	50
6.2.2 Policy Network.....	51
6.3 Analysis of variables for hypotheses .....	62

## **IV. RESULTS**

<b>7. Study Site Analysis .....</b>	<b>65</b>
7.1 Political and administration system .....	65
7.1.1 General political system .....	65
7.1.2 Organization of the Ministry of Environment and Forestry .....	66
7.1.3 The legislative power in Indonesia .....	71
7.2 Regional autonomy system.....	71
7.3 Indonesian Forest Policy.....	75
7.3.1 History of Indonesian forest policy .....	75
7.3.2 Current forest laws and regulations .....	77
7.3.3 Current policies against deforestation .....	79
7.3.4 International Regimes against deforestation .....	84
7.3.5 Development collaboration projects supported by donor countries .....	88
<b>8. Application of Multiple Streams Framework.....</b>	<b>93</b>
8.1 Problem Stream.....	93
8.2 Political Stream.....	98
8.3 Policy Stream.....	100
8.4 Policy Window .....	110
8.5 Policy Entrepreneur .....	111
<b>9. Application of Policy Network Analysis.....</b>	<b>113</b>
9.1 Policy Actors.....	116
9.1.1 Players.....	118
9.1.2 Subjects.....	122
9.1.3 Context Setters.....	125
9.1.4 Crowds.....	126
9.2 Interactions.....	127
9.2.1 Instruments of participation in the policy network.....	127
9.2.2 Motivation for participation in policy network .....	129

9.3 Network Structure.....	130
9.3.1 Cohesion .....	131
9.3.2 Centrality .....	133
9.3.3 Openness.....	166
9.3.4 Typology of linkages .....	168

## **V. DISCUSSION and CONCLUSIONS**

<b>10. Discussion .....</b>	<b>171</b>
10.1 Summary of the results .....	171
10.1.1 Multiple Streams Framework .....	171
10.1.2 Policy Network Analysis .....	171
10.2 Review of the hypotheses .....	173
10.3 Discussion of methodology .....	176
10.3.1 Analysis of the framework.....	177
10.3.2 Analysis of variables.....	178
10.3.3 Correlation analysis between centrality indicator.....	181
10.4 Interpretation of findings .....	183
10.4.1 Type of network.....	183
10.4.2 The influence of the President of Indonesia .....	184
10.4.3 The influence and role of international actors .....	185
10.4.4 The role of non-governmental organizations (NGOs).....	186
10.5 Further Considerations: Four Pathways of Influence .....	188
 <b>11. Limitations, Significance and Future Research Topics .....</b>	 <b>194</b>
11.1 Limitations .....	194
11.2 Significance .....	196
11.2.1 Research method.....	196
11.2.2 Research scope.....	196
11.2.3 Analytical variable.....	197
11.2.4 Analysis of policy process in forest sector .....	197
11.3 Recommendations for future research .....	198



**VI. List of References ..... 201**

**VII. Appendix**

1. Questionnaire for the interview .....	228
2. CIFOR's Publications on Forest Policy and Deforestation in Indonesia (2000-2021).....	232
3. Raw analysis data of Ucinet.....	237

## **LIST OF TABLES**

Table 1. Analysis variables and elements of a policy network according to scholars.....	24
Table 2. Target organizations for the policy analysis network interview on deforestation prevention in Indonesia .....	45
Table 3. Contents of analysis variables and indicators of the policies for deforestation prevention in Indonesia .....	52
Table 4. Typical definitions of stakeholders in previous research .....	54
Table 5. Types of policy networks: characteristics of Policy Community and Issue Network .....	61
Table 6. List of the Presidents of Indonesia .....	66
Table 7. Organization of the Indonesian administration .....	67
Table 8. Change history of the name of the government organization responsible for forest in Indonesia.....	69
Table 9. Administrative divisions (Provinces) of Indonesia .....	72
Table 10. The structure on the administrative division of Indonesia .....	74
Table 11. The policy direction and goals for each territory on National Forest Plan 2011-2030 .....	81
Table 12. LESTARI's strategic approach.....	91
Table 13. Changes in the forest area of countries.....	93
Table 14. GHG emissions level and BAU (BAU (Business as usual) from each sector... 97	
Table 15. List of Indonesian forest cooperation projects conducted by aid agencies .....	100
Table 16. List of FORDA studies performed with international cooperation (2008-2020) .....	103
Table 17. Indonesia's REDD+ National Strategy.....	106
Table 18. Policy actors (who are interviewed) on policies to prevent Indonesia deforestation .....	114

Table 19. Classification of policy actors according to the type based on stakeholder analysis on Indonesian deforestation-prevention policies .....	117
Table 20. Type of the participation of actors in Indonesia deforestation-prevention policies (SPSS Display).....	128
Table 21. Motive for participation of actors in Indonesia deforestation-prevention policies (SPSS Display) .....	129
Table 22. Results of Cohesion analysis for Relation, Information and Trust Network in Indonesian deforestation-prevention policies .....	133
Table 23. Top 10 policy actors in Degree Centrality of the Relation Network on Indonesian deforestation-prevention polices .....	135
Table 24. Top 10 policy actors in Closeness Centrality of the Relation Network on Indonesia deforestation-prevention policies .....	138
Table 25. Top 10 policy actors in Prestige Centrality of the Relation Network on Indonesian deforestation-prevention policies .....	139
Table 26. Top 10 policy actors in Betweenness Centrality of the Relation Network on Indonesian deforestation-prevention policies .....	140
Table 27. Top 10 policy actors in Degree, Closeness, Prestige and Betweenness Centrality of the Relation Network for Indonesia deforestation-prevention policies .....	141
Table 28. Top 10 policy actors in Degree Centrality of the Information Network on Indonesian deforestation-prevention polices .....	144
Table 29. Top 10 policy actors in Closeness Centrality of the Information Network on Indonesia deforestation-prevention policies .....	146
Table 30. Top 10 policy actors in Prestige Centrality of the Information Network on Indonesian deforestation-prevention policies .....	147
Table 31. Top 10 policy actors in Betweenness Centrality of the Information Network on Indonesian deforestation-prevention policies .....	148
Table 32. Top 10 policy actors in Degree, Closeness, Prestige and Betweenness Centrality of the Information Network for Indonesia deforestation-prevention policies .....	149

Table 33. Top 10 policy actors in Degree Centrality of the Trust Network on Indonesian deforestation-prevention polices.....	152
Table 34. Top 10 policy actors in Closeness Centrality of the Trust Network on Indonesia deforestation-prevention policies .....	154
Table 35. Top 10 policy actors in Prestige Centrality of the Trust Network on Indonesian deforestation-prevention policies .....	155
Table 36. Top 10 policy actors in Betweenness Centrality of the Trust Network on Indonesian deforestation-prevention policies .....	156
Table 37. Top 10 policy actors in Degree, Closeness, Prestige and Betweenness Centrality of the Trust Network on Indonesia deforestation-prevention policies .....	157
Table 38. Top 10 policy actors in Degree Centrality of each network on Indonesian deforestation-prevention policies .....	160
Table 39. Descriptive statistics in Degree Centrality of three networks on Indonesian deforestation-prevention policies .....	163
Table 40. Descriptive statistics in Closeness and Prestige, Betweenness Centrality of each network on Indonesian deforestation-prevention policies.....	164
Table 41. Survey results of influential policy actors in the Indonesian deforestation-prevention policy network .....	165
Table 42 Correlation analysis between centrality indicators.....	182
Table 43. Network type of policy network to preventing deforestation in Indonesia .....	183

## LIST OF FIGURES

Figure 1. Diagram of the Multiple Streams Framework .....	10
Figure 2. Ten things to know about the forest policy .....	48
Figure 3. Integrated analysis framework on the policy making process .....	49
Figure 4. Stakeholder power-interest grid .....	55
Figure 5. Organizational structure in the Ministry of Environment and Forestry .....	70
Figure 6. The objectives of Indonesian forestry policy on National Level Forest Plan 2011-2030 .....	80
Figure 7. Annual deforestation rate in Indonesia in million hectare per year .....	94
Figure 8. Global historical GHG emissions by countries .....	96
Figure 9 Global historical GHG emissions by sectors.....	96
Figure 10. Indonesian REDD+ national strategy framework and five main pillars .....	108
Figure 11. Distribution of actors based on their power and interest grid on Indonesian deforestation-prevention policies .....	117
Figure 12. Results of cohesion analysis results for the policy network for deforestation- prevention policies (Ucinet Display) .....	132
Figure 13. Structure of Relation Network for Indonesian deforestation-prevention polices .....	137
Figure 14. Correspondence analysis for centrality in the Relation Network (Ucinet Display).....	142
Figure 15. Structure of Information Network on Indonesian deforestation-prevention polices .....	145
Figure 16. Correspondence analysis for Centrality in the Information Network (Ucinet Display).....	150

Figure 17. Structure of Trust Network on Indonesian deforestation-prevention policies 153

Figure 18. Correspondence analysis on the Centrality in the Trust Network (Ucinet Display) ..... 158

Figure 19. The structures of Relation, Information and Trust Network in Indonesian deforestation preventing policies..... 161

## LIST OF ABBREVIATIONS

Abbreviation	Definition
ACF	Advocacy Coalition Framework
ACIAR	Australian Centre for International Agricultural Research
A/D	Afforestation and Deforestation
ADB	Asian Development Bank
AFD	Agence Française de Développement ( <i>French</i> )
	French Development Agency
Afoco	Asian Forest Cooperation Organization
ASEAN	Association of Southeast Asian Nations
AusAid	Australian Agency for International Development
BAU	Business as usual
BMP	Best Management Practice
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung ( <i>German</i> )
	Federal Ministry for Economic Cooperation and Development
CBD	Convention on Biological Diversity
CBFM	Community-Based Forest Management
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research
COP	Conference of Parties
DFID	UK Department of International Development
DGCC	Directorate General of Climate Change
DNPI	Dewan Nasional Perubahan Iklim ( <i>Bahasa Indonesia</i> )
	Indonesian National Council on Climate Change
DPD	Dewan Perwakilan Daerah ( <i>Bahasa Indonesia</i> )
	Regional Representative Council
DPR	Dewan Perwakilan Rakyat ( <i>Bahasa Indonesia</i> )
	People's Representative Council
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FLEGT	Forest Law Enforcement, Governance and Trade
FMU	Forest Management Unit
FORCLME	Forest and Climate Change Programme

FORDA	Forest Research and Development Agency
FREL	Forest Reference Emission Levels
GCF	Green Climate Fund
GHG	Greenhoues Gases
GIZ	Gesellschaft für Technische Zusammenarbeit ( <i>German</i> )
	German Corporation for International Cooperation GmbH
IFACS	Indonesia Forest and Climate Support
IFCI	International Forest Carbon Initiative
INGO	International Non-Government Organization
ITTO	The International Tropical Timber Organization
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau ( <i>German</i> )
	German Development Bank
KOICA	Korea International Cooperation Agency
LCP	Landscape Conservation Plan
LMO	Living Modified Organism
LOI	Letter of Intent
LULUCF	Land use, land use changes, and forestry
MFP	Multi-Stakeholder Forestry Programme
MoEF	Ministry of Environment and Forestry
MPR	Majelis Permusyawaratan Rakyat ( <i>Bahasa Indonesia</i> )
	People's Consultative Assembly
MRV	Measurement, Reporting and Verification
MSF	Multiple Streams Framework
NGO	Non-governmental organization
NICFI	Norway's International climate and Forest Initiative
NLBI	Non-Legally Binding Instrument
NORAD	Norwegian Agency for Development Cooperation
NTB	Nusa Tenggara Barat ( <i>Bahasa Indonesia</i> )
	West Nusa Tenggara
NTFP	Non-Timber Forest Product
PES	Payments for Ecosystem Services
PIC	Prior Informed Consent
RAN-GRK	Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca ( <i>Bahasa Indonesia</i> )
	National Action Plan for Greenhouse Gas Emission Reduction



REDD+	Reducing Emissions from Deforestation and Forest Degradation
RI	Republik Indonesia ( <i>Bahasa Indonesia</i> )
	Republic of Indonesia
RKTN	Rencana Kehutanan Tingkat National Tahun ( <i>Bahasa Indonesia</i> )
	National Level Forestry Plan
RPJM	Rencana Pembangunan Jangka Menengah ( <i>Bahasa Indonesia</i> )
	Medium-Term Development Plan
RPJP	Rencana Pembangunan Jangka Panjang ( <i>Bahasa Indonesia</i> )
	Long-Term Development Plan
SBY	Indonesian President - Susilo Bambang Yudhono
SD	Standard Deviation
SEA	Strategic Environment Assessment
SFM	Sustainable Forest Management
SIDA	Swedish International Development
SIS	Safety Information System
SVLK	Sistem Verifikasi Legalitas Kayu ( <i>Bahasa Indonesia</i> )
	Timber Legality Information System
UNDP	United Nations Development Programme
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VPA	Voluntary Partnership Agreement
WRI	World Resources Institute
WWF	World Wildlife Fund

## **Abstract**

The environmental, social, and economic value of Indonesia's tropical forests has generated extensive interest and scrutiny, both local and global. International stakeholders are heavily involved in Indonesian forest policies, including in the issue of deforestation, both because of their immense interest in the Indonesian environment, and because of Indonesia's lack of development capacity. Many of domestic and international stakeholders participating in the policy-making processes with regard to Indonesian forests have discrete views and concerns. A successful policy would be one that meets all the requirements of all such actors. This study was conducted to analyze the policy process including some questions about Indonesia's policies for the prevention of deforestation: 1. 'When are such policies formed?', 2. 'Who is involved in the policy-making process?', 3. How are the resulting policies implemented?' Appropriate research methods and analysis frameworks for the examination of policy processes were developed for this study and were applied to Indonesia's deforestation prevention policies. The current study interviewed 72 of the 114 people who were involved in the policy-making process identified through this study, to analyze the means and motives that are involved in the policy-making process and to ascertain the respondents' interactions with the other actors.

The environmental contexts of the development of guidelines were examined by analyzing the streams of problems, politics, and policies through the Multiple Streams Framework to assess the manner in which the current Indonesian deforestation prevention policies have been established. Subsequently, the actors involved in the policy-making processes and the interactions between them were identified to create a structure of the policy network. Further, the parties that exert a significant influence on the deforestation prevention policy were identified. The characteristics of this policy network were confirmed, and the general network was classified into the Relation Network, Information Network and Trust Network.

The result of the analyses reveals that the situation pertaining to the deforestation of Indonesian tropical forests has not substantially improved, even though the problem of forest degradation has been recognized in Indonesia for a long time now. The burden of environmental duties demanded from Indonesia by the international community has increased. As Indonesia has transformed politically from a long-standing military regime to a democratic government, its

municipalities have gradually been strengthened and various levels of stakeholders including regional governments, NGO, and the private sector, have become actively invested in Indonesian policy-design. At the same time, international attention, and demand for preserving Indonesian forests have become more specific. Indonesia operated through a powerful presidential system and its president exerts much authority over the country's society. In such a situation, the Indonesian President Susilo Bambang Yudhoyono (SBY)'s announcement at the G20 Summit in 2009 opened the Policy Window. President SBY declared that Indonesia would reduce emissions of greenhouse gas up to 41% 2020. This proclamation received much attention from both domestic and international groups, and led to sweeping changes in Indonesia's forest policy.

In all three of the above-mentioned sub-networks, the overwhelmingly powerful influence of the Ministry of Environment and Forestry, the main policy designer of the Indonesian deforestation prevention policy, was confirmed. The Ministry of Environment and Forestry was found to obtain the highest centrality value in the Relation Network and the gap between this actor and the other policy actors was extremely wide. However, the centrality value of the Ministry of Environment and Forestry was relatively low in the Information and Trust Networks, and this centrality was distributed to the other actors. These outcomes imply that not only the Ministry of Environment and Forestry, but also other organizations such as intergovernmental organizations and academic organizations contribute relevant information with regard to the policy, that the information dependency and trust of the other actors are decentralized, and that these other actors primarily depend on and trust international donors (e.g., World Bank, UN-REDD+ Task Force) and academics who are also interested actors in the formation of the forest policy of Indonesia.

Many of the interested actors, especially intergovernmental organizations, academic organizations, NGOs, have access to the policy network of Indonesia's deforestation prevention policy without any significant barriers. Hence, this policy network may be termed an open system. However, the internal policy actors are judged to be rigid in terms of their systems. The policy network for deforestation prevention has also emerged as a partially vertical hierarchy, as the Indonesian central government's powerful initiative leads and directs the policy network along with a small number of other influential bodies.

According to the classification of policy network types proposed by Marsh and Rhode (1992), the policy network for the prevention of deforestation in Indonesia may be described as an Issue Network with a vertical hierarchy.

## **Kurzfassung**

Der ökologische, soziale und wirtschaftliche Wert der indonesischen Tropenwälder hat großes Interesse und Aufmerksamkeit erregt, sowohl auf lokaler als auch auf globaler Ebene. Internationale Stakeholder sind stark in die indonesische Waldpolitik involviert, auch in die Frage der Abholzung, sowohl aufgrund ihres immensen Interesses an der indonesischen Umwelt, als auch aufgrund der mangelnden Entwicklungsfähigkeit Indonesiens. Viele der nationalen und internationalen Interessengruppen, die an den politischen Entscheidungsprozessen in Bezug auf die indonesischen Wälder beteiligt sind, haben unterschiedliche Ansichten und Bedenken. Eine erfolgreiche Politik wäre eine, die den Anforderungen all dieser Akteure gerecht wird. Die vorliegende Studie wurde durchgeführt, um bestimmte Fragen zu Indonesiens Politik zur Verhinderung von Entwaldung zu beantworten: 1. "Wann werden solche Politiken gebildet?", 2. "Wer ist am Prozess der Politikgestaltung beteiligt?", 3. "Wie werden die daraus resultierenden Politiken umgesetzt? Für diese Studie wurden geeignete Forschungsmethoden und Analyserahmen für die Untersuchung von Politikprozessen entwickelt und auf die indonesische Politik zur Verhinderung von Entwaldung angewendet.

Die Umweltkontexte der Entwicklung von Richtlinien wurden untersucht, indem die Ströme von Problemen, Politik und Politiken durch das Multiple-Streams-Framework analysiert wurden, um die Art und Weise zu beurteilen, in der die aktuellen indonesischen Entwaldungspräventionspolitiken entstanden sind. Anschließend wurden die an den politischen Entscheidungsprozessen beteiligten Akteure und die Interaktionen zwischen ihnen identifiziert, um eine Struktur des Politiknetzwerks zu erstellen. Weiterhin wurden die Parteien identifiziert, die einen signifikanten Einfluss auf die Entwaldungspräventionspolitik ausüben. Die Merkmale dieses Politiknetzwerks wurden bestätigt und das allgemeine Netzwerk wurde in das Beziehungs-, Informations- und Vertrauensnetzwerk klassifiziert.

Das Ergebnis der Analysen zeigt, dass sich die Situation bezüglich der Abholzung der indonesischen Tropenwälder nicht substanziell verbessert hat, obwohl das Problem der Walddegradierung in Indonesien schon seit langem erkannt wurde. Die Last der von der

internationalen Gemeinschaft von Indonesien geforderten Umweltauflagen hat zugenommen. Da Indonesien sich politisch von einem langjährigen Militärregime zu einer demokratischen Regierung gewandelt hat, wurden die Kommunen allmählich gestärkt und verschiedene Ebenen von Interessenvertretern wurden aktiv in die Gestaltung der indonesischen Politik einbezogen. Gleichzeitig haben sich die internationale Aufmerksamkeit und die Nachfrage in Bezug auf die indonesischen Wälder konkretisiert. Indonesien funktioniert durch ein mächtiges Präsidialsystem und sein Präsident übt viel Autorität über die Gesellschaft des Landes aus. In einer solchen Situation öffnete die Ankündigung des indonesischen Präsidenten Susilo Bambang Yudhoyono (SBY) auf dem G20-Gipfel im Jahr 2009 das "Policy Window". Präsident SBY erklärte, dass Indonesien den Ausstoß von Treibhausgasen bis 2020 um bis zu 41% reduzieren würde. Diese Proklamation erhielt viel Aufmerksamkeit von in- und ausländischen Gruppen und führte zu weitreichenden Veränderungen in der indonesischen Forstpolitik.

Im Rahmen der vorliegenden Studie wurden 72 der 114 Personen interviewt, die an dem durch diese Studie identifizierten, Politikgestaltungsprozess beteiligt waren, um die Mittel und Motive, die an dem Politikgestaltungsprozess beteiligt sind, zu untersuchen und die Interaktionen der Befragten mit den anderen Akteuren zu ermitteln. In allen drei oben genannten Teilnetzwerken wurde der überwältigend starke Einfluss des Ministeriums für Umwelt und Forstwirtschaft, dem Hauptgestalter der indonesischen Politik zur Verhinderung von Entwaldung, bestätigt. Es wurde festgestellt, dass das Ministerium für Umwelt und Forstwirtschaft den höchsten Zentralitätswert im Beziehungsnetzwerk erhielt und der Abstand zwischen diesem Akteur und den anderen politischen Akteuren extrem groß war. Allerdings war der Zentralitätswert des Ministeriums für Umwelt und Forstwirtschaft in den Informations- und Vertrauensnetzwerken relativ niedrig, und diese Zentralität verteilte sich auf die anderen Akteure. Diese Ergebnisse implizieren, dass neben dem Ministerium für Umwelt und Forstwirtschaft auch andere Organisationen relevante Informationen in Bezug auf die Politik beisteuern, dass die Informationsabhängigkeit und das Vertrauen der anderen Akteure dezentralisiert sind und dass diese anderen Instanzen vor allem von internationalen Gebern und Wissenschaftlern abhängig sind und diesen vertrauen, die ebenfalls interessierte Akteure bei der Gestaltung der Waldpolitik Indonesiens sind.

Viele der interessierten Akteure haben ohne größere Barrieren Zugang zu dem Politiknetzwerk der indonesischen Entwaldungspräventionspolitik. Daher kann dieses Politiknetzwerk als ein

offenes System bezeichnet werden. Die internen Politikakteure werden jedoch als starres System beurteilt. Das Politiknetzwerk zur Entwaldungsprävention hat sich auch als eine teilweise vertikale Hierarchie herauskristallisiert, da die mächtige Initiative der indonesischen Zentralregierung das Politiknetzwerk zusammen mit einer kleinen Anzahl anderer einflussreicher Gremien anführt und leitet.

Nach der von Marsh und Rhode (1992) vorgeschlagenen Klassifizierung von Politiknetzwerk-Typen kann das Politiknetzwerk zur Verhinderung von Entwaldung in Indonesien als ein Themennetzwerk mit vertikaler Hierarchie beschrieben werden.

## **I. Introduction**



## **1. Indonesian Forest Policy and Research Objectives of the Thesis**

### **1.1 Understanding the national forest policy in Indonesia**

The national forest policy affects the lives of people who are both currently and traditionally dependent on forests for their survival needs. Since most developing countries are still very dependent on natural resources, their forest policies are linked to guidelines and procedures that prevail in other policy areas of the country and various domestic stakeholders are involved in policy-making process. In developing countries, the formulation of forest policies is also deeply linked to the issue of poverty. Hence, the international community is directly or indirectly involved in forest management in developing countries. These global stakeholders- such as international organizations, donors and international NGOs- perform major roles in various ways in the formulation and implementation of forest policies and may directly influence governmental decision-making.

All policies are not created and implemented independently, and a country's guiding principles may be influenced by varied external and internal factors and political environments, by high-level regulations and strategies, and by international conventions. That these factors affect both the formulation and the contents of policies must be clearly understood.

Indonesia encompasses the third largest area of tropical forest globally, which is a region of great interest to other nations because the environmental and forest issues of Indonesia exert a significant impact on the global environment. However, due to the absence of a systematic national forest management policy and the lack of sufficient economic and technical capacity, the area of deforestation in Indonesia has increased rapidly every year until very recently. The Indonesian forest policy has entered a new phase as international actors become involved at the request of the Indonesian government or because of the requirements of the international community. The Indonesian forest policy, which was earlier focused on the economic aspect, is now changing into a policy centered on forest conservation. Various regulations have been made and implemented to prevent deforestation in Indonesia, and statistical indicators that can explain the status of forests exist, but a complete evaluation of the policy has not been accomplished. Analysis of the process of policy formulation can predict in advance the consequences that will occur from the policy; it can also indicate ways that can lead to a successful policy outcome. In order for the policy to be implemented and to be effective, the policy-making and implementation process must be carefully analyzed and the results of the

examination of the processes in which policies are formulated and implemented must be continuously re-assessed.

Indonesia has 131.3 million ha of forest (68% of total land area in Indonesia) (Kementerian Kehutanan, 2012), ranking it the third-largest area of tropical rainforest in the world (World Bank, 2001). The forest is a crucial livelihood resource for a great number of people, between 6 and 30 million Indonesian are estimated to be directly dependent on the forests (Sunderlin et al., 2000). Indonesia's government is highly dependent on the forest sector and the forest-related sectors such as agriculture, mining, and cash crop plantation. Consequently, deforestation in Indonesia is inseparable from Indonesia's political and economic context (Murharjanti et al., 2012).

Deforestation rates in Indonesia have changed over the last 20 years but still remain high. The Ministry of Forestry (Kementerian Kehutanan, 2012) estimates that between 1985 and 1997, Indonesia lost about 1.7 million ha of forest area per year and reached 3.51 million ha per year between 1997 and 2000. This rate fell to 1.08 million ha per year between 2000-2005 and then rose again to 1.17 million ha per year between 2003 and 2006 (Indrarto et al., 2012). Drivers of deforestation range from shifting cultivation of smallholders, forest fires, and logging to the conversion of forest land to other uses, especially for commercial agriculture, including oil palm plantations.

The policies on combating deforestation have connections with almost the entire range of activities and industries in the forest, such as pulp, paper, plywood, palm oil, illegal logging, and REDD+. These policies are created and revised following international circumstances and the internal Indonesian situation, a notable example being the Moratorium. In 2011, the government of Indonesia announced a 2-year Moratorium (Presidential Instruction No. 10/2011) on the allocation of new concessions on forest land in order to improve governance on conserving peatland and primary forests (Brockhaus et al., 2012), as part of Indonesia's cooperation with Norway. It aims to suspend the issuance of new licenses for peatlands and primary forests for two years to allow for better coordination, improved data collection, and new regulations (Indrarto et al., 2012). This Moratorium was extended in 2013 and 2015. Despite a moratorium and high-level pledge to combat deforestation, it has nonetheless continued to rise in Indonesia. Indonesia lost more than 6 million ha of forest between 2000 and 2012 and has one of the highest deforestation rate in the world (Margono et al., 2014). There have been many controversies over the Moratorium from a number of actors at diverse

levels. The policy process is generally coordinated by the Ministry of Forestry and involves numerous actors, including domestic public actors, business actors, informal actors, and international actors.

This study was conducted to examine the formulation process of policies related to deforestation prevention in Indonesia. In order to effectively and efficiently do this, appropriate policy analysis methods were first researched, and the determination of appropriate indicators and variables was also made part of the study.

The analysis of Indonesia's forest policy formation process conducted in this study can be used as another guideline for analyzing forest policy issues in other developing countries and other policy processes in Indonesia.

## **1.2 Objectives**

The primary objective of this study is to examine the policy-making process to prevent deforestation in Indonesia.

In order to obtain valid results, this study selected and developed appropriate analysis models through various decision-making process theories and model reviews in policy studies and applied them to actual policies to identify the attributes of current policies and policy networks that are designed to prevent deforestation in Indonesia. Further, this study tried to draw some implications for future decision-making processes. The specific research objectives may be defined as follows:

- 1) Identify and categorize actors who have participated in the policy-making process concerning the prevention of deforestation and define each actor's roles, characteristics, and objectives.
- 2) Identify the key actors and determine the structural attribute of the policy network about the prevention of deforestation in Indonesia.
- 3) Examine the roles and influences of international actors, negotiations, and agreements on the policy-making processes and policy networks related to the prevention of deforestation in Indonesia.

### **1.3 Research Questions**

The research was conducted to discover the answers to the following questions that initiated this study;

- 1) How have policies to prevent deforestation in Indonesia been formulated?
- 2) What are the essential constituent elements of the policy-making process to prevent deforestation in Indonesia?
- 3) What effects of other policies, instruments, and agreements (domestic and international) may be observed on Indonesia's deforestation prevention policies?
- 4) Who is involved in the policy networks that exist in Indonesia, and what are the roles and objectives of the policy actors (organizations and groups)?
- 5) How do these actors participate in the formulation and implementation process of Indonesian forest policy, and which actors exert the strongest (most substantial) influence?
- 6) What influence have international organizations and donor countries exercised on the Indonesian forest policy network about deforestation?

### **1.4 Hypotheses**

- 1) There are three independent streams in the policy process, among which the politics stream acts as a trigger mechanism for Indonesia's forest policy and serves as the starting point for the opening of the policy window by coupling the three streams.
- 2) The centrality value of policy network analysis is proportional to the influence of each policy actor on the forest policy.

- 3) Regional governments represent are one of the most important policy actors, and they appear to be adversarial participants concerning the policy direction taken by the central government, thus affecting the derivation of the policy output.
- 4) International organizations, donors, and agencies are policy actors who have the greatest influence in the policy network of Indonesia's deforestation prevention policy process.
- 5) There are not many policy actors participating in the policy-making process about deforestation in Indonesia and actually affecting the policy output, and this policy network does not have an open network structure yet.

## **1.5 Disposition**

This study analyzes the process of formulation of the policy for the prevention of deforestation in Indonesia. The research objectives, research questions, and hypotheses are recorded in Part I. Prior to accomplishing the analysis of the forest policy-making process in Indonesia, the extant literature on the policy-making process is elucidated in Part II. The policy theories that are applied in this study are being discussed. This section further explores the limitations of the existing theories and research methods and attempts to express the goals of the present investigation. A policy network model, the multiple streams framework, and case studies of policy research accomplished in the forest sector are presented in this section in turn. Subsequently, Part III details the research methodology and provides information about Indonesia, which is the subject of this study. This part summarizes the current situation of Indonesia's administrative and political system and its laws and its previous circumstances to make it easier for readers to understand the Indonesian policy environment and contexts. Next, Part IV lays out the analysis results of the policy-making process. The results of this study are arranged in chronological order of the multiple streams framework and the policy network analysis. Part V briefly summarizes the results of this study, discusses methodology and results, and makes recommendations for future research projects.

## **II. Theoretical Background**

## **2. Multiple-Streams Framework (MSF)**

### **2.1 The models of policy-making**

The rational model, the satisfaction model, the incremental model, the mixed model, the optimality model, and the garbage can model represent the most important theories in policy agenda setting and policy-making (Herbert, 1976; Cohen et al., 1972). The rational model conceives policy-making based on human beings' rationality and is challenging to apply to a whole society where resources are limited and time constraints are frequent. The satisfaction model recognizes human imperfections in terms of rationality in making a policy and understands the process as selecting one satisfactory solution among limited alternatives as a policy. The incremental model determines policy design as an incremental process of examining a limited number of alternatives rather than one based on rationality and planning. This model is found in the real world but has normative limits due to its conservative attributes. The mixed model pursues both the qualities of rationality and incremental renewal, but it is criticized for amalgamating two extremes. The optimal model seeks both economic judiciousness and super rationality to overcome the limits of the rational model, but it is limited by its ambiguity about how super rationality can be achieved. These process analysis models provide a static perspective of the policy decision-making process. On the other hand, the garbage can model is based on practical dimensions, and it can take the progression of development of each situation from the formation of the policy problem to the decision process, the behavior of the policy actors, the stream of the political situation, the emergence of unexpected variables within each stream. It thus forms a framework that is capable of the most dynamic and detailed analysis of influence.

According to the garbage can model, the designing of policies may comprise several independent streams. Decision-making requires four streams: choice opportunity, which represents the chance of decision making; solutions, as possible answers to the problems; problems, to which solutions may be attached; and the participants, who must make the choices. Incidentally, this organic model suggests that an opportunity for policy-making is opened if these streams are combined in a garbage can (an organized anarchy) (Cohen et al., 1972).

## **2.2 Content and development of the Multiple-Streams Framework (MSF)**

Kingdon's multiple-stream model is based on the garbage can model described above, which explains the decision-making process within an organization with loosely organized ideas rather than a rational structure (Cohen et al., 1972; Parsons, 1995).

Kingdon (1984) focused on explaining the agenda adopted by the government and the policy alternatives that the government and other related entities are willing to spend on material and time costs. Kingdon's multiple streams model denies causal relationships, which are the preconditions of rational and incremental models. A policy process practically is streamed to a system that is independent of the other, and when each stream is coupled with another, the policy window opens, and the policy begins the implementation process.

In other words, if some problem is perceived and a solution is feasible, and the political circumstances and timings are appropriate for the formulation or modification of a policy, and there are no obstacles to policy changes, then at some point these streams merge and policy is adopted. Zahariadis (2007) also presented examples that modified Kingdon's multiple-streams model to analyze the privatization process in the UK and France and the business sectors of oil, telecommunications, and railway. Zahariadis theorized that the policy process is more complex and inadvertent, extending logic to the supranational level. The Zahariadis' model is instrumental in understanding the decision-making processes of innovative policies by overcoming the rigidity of institutionalism. He identified the problem stream in the policy process, the policy alternatives stream, and the political stream and concluded that these streams were coupled to open a policy window. In the context of ambiguity, Zahariadis assumed temporal order in examining the process of policy selection and the change process (Zahariadis, 2007).

The Zahariadis model allows the analysis of the entire policy formulation process because it can deal specifically with policy-making and agenda setting. In addition, it also offers the advantage of being applicable not only when the degree of differentiation of each sector function is high, but also when it is low (Zahariadis, 1999). In summary, it is significant that the multiple-streams model emphasizes the importance of political decision-making by dividing it into three streams: politics, problem, and policy streams. It also accentuates the role of policy entrepreneurs involved in the process of linking streams (Brunner, 2008). In other words, the Zahariadis model further defines the independent policy stream within Kingdon's



policy system as a problem stream, a policy stream, and a political stream, and it is meant to highlight the role of policy entrepreneurs who forge these streams into one.

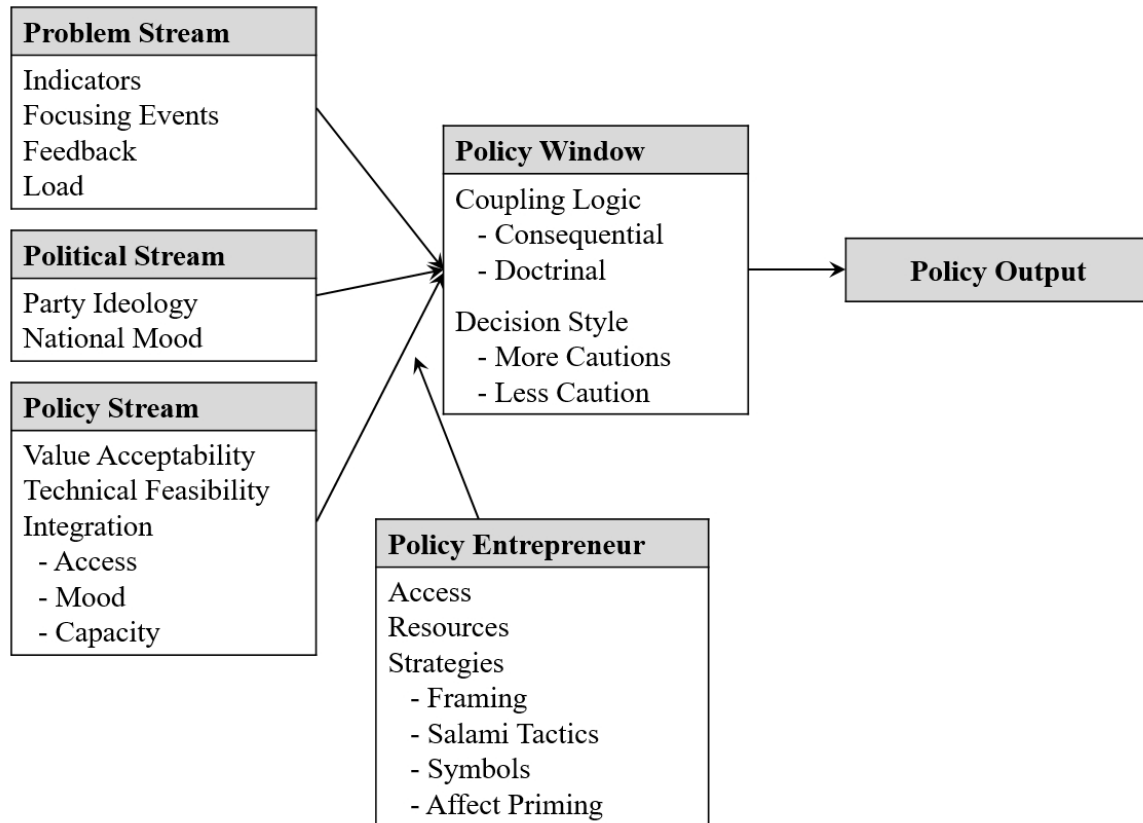


Figure 1. Diagram of the Multiple Streams Framework

Source: Zahariadis, 2007

### 2.2.1 Problem Stream

The Problem Stream is related to the process through which policymakers perceive social issues as policy agendas. The "problem" in this context is not a simple situation or an external event; there must be conscious and interpretable elements that define it (Kingdon, 1984). In this situation, Kingdon attended to the question, "How do policy environmental conditions relate to government issues and policies?" He argued that indicators, focusing events, and feedback can be used as means of recognizing problems. Indicators are data that help quantify problem conditions (birth rate, cost, the mortality rate on the highway, etc.), which are used politically to attract attention (Stone, 2002). The events drive the attention of the public and the policymakers to specific problems. If the indicators do not identify the problem, the problem

is likely to become an event such as an accident or a terrorism incident that attacks public and government roles (Zahariadis, 1999). In the problem stream, however, the existence of various situations is not unconditional; it is, instead, a situation in which the policymakers think that "we should do something about them." Thus, the problem stream is the process through which the decision-makers are already involved in the process of recognizing specific problems among the many social problems that occur simultaneously (Kingdon, 1984). Feedback on previous policies can also provide significant information that creates awareness in policy decision-makers concerning what works and what does not (Zahariadis, 2007).

### **2.2.2 Political Stream**

The Political Stream largely consists of two elements: the ideology of political parties and national mood (Zahariadis, 2003). Political party ideology is closely related to organized political power, which is closely linked to pressure (international) groups, political mobilization, and political elites' behavior. Since the voting rights of various pressure groups (party supporters, corporations, NGOs, women's groups, etc.) are considered to exert a significant influence, the government and each political party in organized political authority react sensitively to the assertions or positions of these pressure groups. Zahariadis (2007) argues that the emergence of new political parties or parliamentarians is likely to promote a deregulation policy that contradicts the "big government" ideology. He explains that if the key members of the administration were to change, the substitution would apply a politically meaningful influence, which would explain the potential change resulting from the emergence of a new president and a new cabinet caused by the administrative and legislative turnover.

The national mood depends on the issues and the direction of the sympathy shared by the people of the country. In the political stream, the national mood is very sensitive to politicians because it is directly linked to political support. Zahariadis (2007) elucidated that editorials and newspaper columns reflect the national mood. Government officials also conduct surveys or monitor people so that they can respond quickly to this mood: they may suggest that a particular agenda should be urged and be quickly institutionalized, or they may avoid the agenda. Since politicians are directly connected to public support, they are more sensitive to the national mood than are government officials.

### **2.2.3 Policy Stream**

According to Zahariadis (2007), the policy stream is a “soup” of ideas that compete about being accepted into the policy network that drives policy-making. Zahariadis (2007) distinguished the policy stream into value acceptability, technical feasibility, and their combination. The value acceptability indicates the degree of consent the key participants evince in the policy stream. The more the support of the participants to an idea, the higher the probability that it will be adopted during the policy process. Technical feasibility denotes the ease of implementation of a policy. The less the problem is in the policy environment, the higher the feasibility of its implementation; the more likely a policy is to survive within the policy stream, the greater the facility of its implementation.

The integration of the policy network is a term that distinguishes the stable link connecting the actors participating in the policy community. Policy networks are groups that participate in strongly associated advocacy groups (Sabatier & Weible, 2007) and are ad-hoc on the boundaries of issue networks (Richardson, 2001). The ideas contested between policy networks are not slowly accumulated over time, as Kingdon (1995) has stated. This concept is related to the process of validating and presenting solutions to the policy stream. The tempo of such solutions offered may be spontaneously high, and the mode may end up being the least likely alternative that was intended (Durant & Diehl, 1989).

### **2.2.4 Policy Window**

The policy window combines the problem, the political, and the policy streams into one through a powerful problem or a political event. This process is called coupling. When this process is accomplished, the policy window will open. Kingdon (1984) defines the policy window as “an opportunity for advocacy to suggest solutions or draw attention to specific problems.” The policy window opens for a brief period, at which time the logic of coupling and the decision style impact policy decisions (Zahariadis, 2007).

The policy agenda is more influenced by the political and policy streams than the problem stream. The policy window opens primarily when new policy problems arise or when the political stream is altered (Jenkins-Smith & Clair, 1993), and it is fundamentally more likely to be opened by the latter option. However, changes in the political stream do not provide

detailed guidelines concerning the type of policy that is enacted, and there is a drawback: the policy window opens only if the detailed proposals are acceptable.

The policy window does not remain open for long, and it is easily closed. It is difficult to predict when the window for standard policies will open, but when a significant event occurs, or a political change occurs, the timing of the window's opening can clearly be predicted (Zahariadis, 2007). However, when the coupling between certain streams will open the policy window and how the final policy output will emerge is a nonlinear eventuality. It may be determined carefully based on a variety of information, but sometimes it happens quickly. Such a combination depends on the ranking of the participants, and it is distinguished by at least four dimensions, i.e., variables, situations, possibilities, and accessibility. Zahariadis (2007) explains that a well-organized network is small in size, but it leads to a more casual style, a higher probability of problem-solving, and a more limited approach.

### **2.2.5 Policy Entrepreneurs**

The policy window can be also opened when the three streams of the policy process mentioned above merge or when a policy alternative is combined with the policy problem, and the alternative is joined with the political circumstances. For the policy window to open, however, the role performed by policy entrepreneurs is pivotal as it helps to connect the three streams of problem, politics, and policy. A policy entrepreneur is a policy advocate who is willing to invest personal resources such as money, time, and reputation to pursue concrete policy ideas. Whether policy entrepreneurs appear on time or not is an essential condition for policy agenda-setting.

Since it is difficult to predict when a policy window will open, policy entrepreneurs must try to draft policy alternatives of their advocated ideas once the policy window is opened (Crow, 2010; Houston & Richardson, 2000). Therefore, policy entrepreneurs require the qualities of rhetoric, authority, bargaining power, and patience to attract the attention of others. In addition, policy entrepreneurs must demonstrate that they are interested in the policy by constantly investing time in specific policy decisions (Kingdon, 1984). In reality, there are likely to be many policy entrepreneurs in the policy process because various stakeholders can share opinions if the interests or goals pursued through policy-making are the same. In addition, there are instances where the policy lead alters when the policy-making or policy modification period

occurs because of a change in the majority party and hence a replacement of the administration or the president.

### **2.3 Previous applications of Multiple Streams Framework**

Kingdon's multiple streams framework first appeared in the mid-1980s, when Kingdon (1984) began to question emergent government agenda in the fields of health and transportation, in terms of "the political stream" and "the policy window and joining the streams.". He presented a multiple streams model based on the garbage can model on the strength of information collated from interviews with 247 people, including White House personnel, the administration, the National Assembly, interest groups, and experts, and by dint of his analysis of 23 cases. Currently, the multiple streams model is regarded as indispensable to understanding policy-setting, and it has been used actively in various fields, especially since the 2000s, when policy research cases accumulated. Previous studies applying the multiple streams framework have analyzed the policy formulation process of various policy areas through the three streams, policy window, and policy entrepreneurs' framework components. The framework can also be observed in extant literature from the various aspects of the problem stream, which is raised as a policy issue; the policy stream which prepares the problems for decision-making; and the political stream surrounding the outflow of the other streams. In particular, this model offers the advantage of grasping the characteristics of policy entrepreneurs who participate in the process of policy design by explaining the trigger mechanism through which the policy window is opened when the three streams are combined. As a result, the multiple streams framework is widely applied in the USA and Europe, including the UK. These previous research endeavors can be roughly divided into analyses of the policy window based on the coupling of the three streams and investigations centered on the policy entrepreneur.

The policy entrepreneur is as important an element as the process stream in a multiple streams model. The policy entrepreneur allocates and tries to mobilize resources and efforts to couple the three streams to create policies that are directed toward individual political preferences (Kingdon, 1984). These studies of policy entrepreneurs form a vital pillar of the research of policy processes. Roberts and King (1991) indicated that there was no definition or consensus of the policy entrepreneur who was an important contributor to the decision-making process.

These authors found the conceptual basis of policy entrepreneurs in the act of policy entrepreneurship, a means of introducing innovation into public policy. Therefore, the policy entrepreneur is not merely a novel notion but also an actor who specifically designs and officially brings innovation to policy design. The tasks performed by policy entrepreneurs are creative and intellectual activities to share strategy, effect mobilization, enforce plans, administer regulations, evaluate strategies, and so on (Roberts & King, 1991). Mintrom (1997) assumes that the existence of policy entrepreneurs and their activities lead to the diffusion of policy innovation. He analyzed empirical evidence that the existence and activities of policy entrepreneurs can explain policy diffusion through the analysis of the introduction of the “school choice” system. Crow (2010) explored the influence of a policy entrepreneur with expertise in introducing an innovative rule called the recreational water rights policy in Colorado, and he confirmed whether this influence affected experts, general citizens, and policy elite in different ways. Cook and Rinfret’s (2010) study highlights the influence of interest groups on the overall decision making concerning environmental policy and constitutes a significant investigation of the role of policy entrepreneurs. The main content of the investigation of policy entrepreneurs is that they should promote alliances between different actors and policy communities and cooperate at different levels. Oborn et al. (2011) analyzed the functioning of specialists in health care reform in the UK and emphasized the importance of policy participants as individuals. The study examined policy entrepreneurs as individuals but ultimately made it clear that the policy entrepreneur could be a team or member of the team rather than a singular individual player. Ackrill and Kay (2011) evinced that directorate generals (DGs) that oversee certain policy areas in European policy-making situations overlap and cross-sector boundaries due to the institutional uncertainties of the European Union.

The following studies have previously analyzed the policy window. Solecki and Michaels (1994) analyzed the determinants of policy design through a policy window model based on the agenda and the mission experience of three US regional planning organizations. The researchers reviewed materials such as meetings, minutes, interviews, and committee documents to study organizational rather than policy cases. Zahariadis and Allen (1995) conducted a comparative study of the privatization of state-owned enterprises in Germany and the UK, focusing on the impact of the system on the formation of alternatives. They analyzed whether the alternative formulation is gradually devised. Travis and Zahariadis (2002) analyzed US foreign aid policy by modifying the multiple streams framework. This study excluded policy entrepreneurs, taking the view that these actors could not be vital for shaping foreign

aid policies, and conducted studies following the streams of policies and their coupling. For the purposes of that investigation, it was meaningful for the researchers to suggest a quantitative research method for multiple streams framework by analyzing the US federal aid data rather than performing a simple case analysis. In addition, Exworthy and Powell (2004) developed a more advanced model than the existing multiple streams framework in analyzing the UK policy and comparing the policy window to the big national window and the local level little window. Zahariadis (2007) specifically approached and analyzed the logic of the three hypotheses and components of the policy window model. He raised the possibility of manipulating the political flow to create a friendly atmosphere in policy formation, and the policy entrepreneur was adjudged able to change the context to some extent and increase or obstruct the opportunity of success of a policy. Zahariadis also posited the model's implications by expanding the scope and objects of the multiple stream framework. Bakenova (2008) assessed the case of Canadian water exports through a policy window model to ascertain how policy solutions and alternatives are proposed as problems and how the national government ultimately perceive them. In addition, Ridde (2009) examined the process and factors that change health care policies at the regional level in African countries.

However, there are instances in which a policy window is opened by coupling only a portion of the three streams (Zahariadis, 2007). Alternatively, a policy could be formed even if all three streams are not combined due to the absence of a policy stream, which can be seen in Argentina's rapidly reformed federal education law (Teodorovic, 2008). However, even if the three streams are incompletely combined, the problem stream and political stream must exist, and in such events, a policy may be designed when only the policy stream is insufficient (Teodorovic, 2008; Zhu, 2008; Ridde, 2009).

Further, Liu et al. (2010) demonstrate that the policy process is different depending on situations and contexts and on the level of the policy area scrutinized in these studies. Consensus and coalition influence policy decisions at the regional government level, but it is important to change the mood and opinions of the public at the national level. In Liu et al.'s (2010) study, the technical feasibility and value acceptance are more important in selecting a particular alternative than its compatibility with other policies. In other words, this study reminds us that the establishment of local government policies is different from the central government's agenda-setting. As a result, it provides a new direction in the understanding of the policy process.

## **2.4 Limitations of the MSF**

### **2.4.1 Metaphors and Models for policy analysis**

The most common criticism of the multiple streams framework is the metaphorical expression of the words and the concept's ambiguity as it is articulated in theory (Béland & Howlett, 2016; Howlett et al., 2016). Scholars and policymakers argue that the multiple streams framework lacks clarity concerning the elements that make up the three streams (Howlett, 2016) and that it emphasizes serendipity and randomness to explain how coupling occurs (Jann and Wegrich 2007; Gulbrandsson & Fossum 2009).

Policy analytics often relies on metaphors to simplify complexity and express subtle policy mechanics (Black, 1962; Stone, 1989; Pump, 2011). Thus, the risk of confusing the metaphor with the actual concept in the model always exists, and there is also the danger that this metaphor will limit the development of verifiable theories and will hence inhibit theoretical progress.

### **2.4.2 Institutional aspect**

The multiple streams framework is limited by its little theoretical interest in institutional aspects or policy decision structure differences. It focuses mainly on behavioral factors that influence behavior and the selection of individuals or individual actors (Zahariadis, 1999). In other words, it is criticized that its framework has no interest in the institutional contexts of the decision-making process.

### **2.4.3 Scope of analysis**

The multiple streams framework is also restricted by its focus on the post-event understanding and explanation of the phenomenon rather than future projection (Zahariadis, 1999). Therefore, Kingdon's policy stream model is criticized as a theoretical tool that cannot be applied to policy alternatives or future predictions but only to already determined policies.



#### **2.4.4 Reduction of the role of policy actors**

Various policy actors want their opinions to be reflected in policy, and they participate in policy formulation or change processes for this reason. In the multiple streams framework; however, the role of these policy actors is limited. This model considers the effects of policy actors on policy formation and change processes by setting variables called policy entrepreneurs. On the contrary, by placing policy entrepreneurs as analytical variables, the role of actors other than the most prominent actors has been reduced.

#### **2.4.5 Analysis of the dynamics of the policy-making process**

Kingdon did not address policy change of the definition of policy problem before and after introducing the agenda, and he focused on understanding which issue led to the policy agenda. However, those who want to extend his concepts of interpreting policy changes beyond policy agenda-setting should be aware of the recognition that the competitive structure of a problem can exist outside a policy process and that these various configurations affect the outlines and the content of both the “process sequencing” and the policy outcomes (Daugbjerg, 2009, 2012; Fischer and Forester, 1993; Hajer, 2005; Howlett, 2009; Sabatier et al., 1987).

### **3. Policy Network Model and Approach**

#### **3.1 Origin of Policy Network Theory**

The policy network model attempts to apply network analysis to the policy process analysis. This method was initially used to reveal the social network between actors in sociology. This model understands the interactions among various actors involved in the policy process as horizontal relations mediated by resource dependence (Hudson and Lowe, 2004) and the concepts of centrality, density, and intensity of relationships developed in network analysis to analyze this association. Therefore, as Kickert et al. (1997) defined, a policy network is a ‘more or less stable form of social relations between independent actors formed around policy problems or policy programs.’

However, unlike network analysis, which attempts to quantify behavioral relationships, most of the policy network models rely on qualitative methods based on specific case studies (Marin & Mayntz, 1991). In recent times, quantification has been attempted as a complementary purpose.

The significance of the characteristics of the policy network model and the analysis of the policy process are as follows:

1. The policy network model seeks to understand the nature of ‘relationships’ among actors involved in the policy process and to ultimately determine how these attributes affect policy output.
2. The scope of the actors involved in the policy process transcends the boundaries between the public and private sectors.
3. This model is concerned with the process of forming relationships between actors, and it emphasizes the resource dependence among actors as a factor for forming relationships.
4. This model treats the connections among actors as horizontal interdependence.
5. The nature of the relationship between actors can vary in terms of persistence and exclusion.
6. Thus, sub-types of policy networks can appear in various forms.
7. The number and scope of the actors constituting the policy network, and the power actors, and others may vary depending on the progress of the policy.

The policy network model has been debated by political scientists in Europe, especially in the UK, since the 1980s, but it can be traced back to the US sub-government concept (Smith, 1993). Lowi (1976) criticized the pluralism of the mainstream at that time, arguing that the process of formulation of major US policies is a sub-system dominated by a small number of actors: he called it sub-government (Marsh, 1998). This sub-government is characterized by a closed and symbiotic relationship between actors. The extreme type of this sub-system is the iron triangle. The policy process is governed by the relevant government ministries, the standing committees of the parliament, and the dominant interests of the policy sector. Also, according to Marsh and Rhodes' (1992) postulation of the idea of policy network typification, the concept of sub-government is linked to a policy community in which a small number of actors monopolize information and power and dominate the policy process.

Conversely, pluralists have criticized the sub-government model based on elitism and have developed the issue network concept based on Heclo's ideas (1978).

The issue network concept has been devised as a theoretical model that can understand the more open and flexible policy design process. The sub-government model is inadequate in grasping the reality that various interest groups and social groups participate actively in the policy-making process (Dovey, 2005). Unlike sub-governments governed by a small number of actors, issue networks are open policy-making systems in which various actors in public and private sectors form a dynamic relationship despite their different interests. Since mooted the idea, Marsh and Rhodes (1992) have formalized the issue network as a type of policy network that should be contrasted against the policy community. Therefore, the policy network model is based on the sub-government and issue network model developed in the 1970s in the United States, and it combines network analysis with its basic structure. However, the study of policy networks in the US emphasizes interpersonal relations, which counters the fundamental research trends in Europe that emphasize inter-organizational relationships.

The European continent and the UK can categorize the policy network research in the European context. In continental Europe, studies have mainly been conducted in Germany (Marin & Mayntz, 1991; Hanf & Scharpf, 1978; Schneider, 1992) and in the Netherlands (Kickert et al., 1997). These investigations are somewhat different in terms of specific content, but they share a general understanding of policy networks as a form of governance from a macro perspective. In other words, the policy network is viewed as a form of governance instead of a hierarchy or a market (Klijn, 1997). Groenendijk (2003) refers to this perspective as "network governance"

and distinguishes it from the policy network view that sees it as a form of profit. The hierarchy is state-centered governance that is characterized by a close relationship between centralized coordination and state control and the public-private sector. The market is autonomous governance involving the market, which does not have centralized coordination or a structural relationship between the public and the private sectors. On the other hand, policy networks represent horizontal governance based on the voluntary agreement and coordination among actors.

In contrast, in the case of the UK, interest in the policy network model can be traced back to Richardson and Jordan's (1979) policy community study. These researchers were influenced by the US, and they understood the policy network as an inter-personal relationship. Since the 1980s, however, policy network research in the UK has been more influenced by the European continent, which explains the policy network as an inter-organizational relationship and has thus emphasized the structural relationship between institutions and organizations (Marsh & Smith, 2000). Marsh, Rhodes, and Smith typify this approach. However, the fundamental difference between the European continent and the UK is that the former conceives of the policy network as a new form of governance at the macro level, whereas in the UK, it is described as a means of pursuing new profits from the meso perspective (Blom-Hansen 1997).

In applying the policy network model to policy process analysis, the relationship between various actors in the public and private sectors is considered a horizontal association based on resource dependence from the meso level perspective (Dovey, 2005). This meso level policy network model offers several advantages to policy process analysis. First, the relationship between actors involved in the policy process can be viewed from a more flexible standpoint. The policy network model is based on network analysis results to describe the key actor, the perimeter actor, and the attributes of the relationship between actors rather than pre-setting a specific type of relationship between actors (Hudson & Lowe, 2004). Second, the inclusiveness of the policy network model can encompass various subtypes. In other words, the policy network model is a kind of umbrella theory, and it includes various sub-types, so it can explain how distinctions in policy network attributes lead to differences in policy choices (Marsh, 1998). Third, it is helpful to explain the phenomenon of mutual penetration between the state (nation) and society (Klijn, 1997). Therefore, understanding the relationship between the various actors in the public and private sector who are involved in the policy process

benefits from the analysis of the participation of non-traditional private actors such as NGOs in the policy process, especially since the 1980s (Williams, 2004).

### **3.2 Policy network concept and characteristics**

A network is defined as a relationship between people and their relationships to objects and events. Even if the network has the same elements, the nature of the network can change if the relationship type is different or changes (Knoke & Kuklinski, 1982). Hanf and Scharpf (1978) referred to the affiliations between different levels of actors in government and society and public-private actors in the policy-making process. Katzenstein (1978) defined metaphysical, political structures that form a symbiotic relationship between public and private sectors in decision-making. Rhodes (1996) asserted that informal, decentralized, and horizontal relationships are the dominant networks. In addition, Marin and Mayntz (1991) described the policy network as a web of actor-to-actor relationships but views the attributes of the relationship as resource dependencies. Schneider (1992) defined the policy network as a set of autonomous and interdependent actors working together in the policy-making process. Marsh and Rhodes (1992) identify the aggregation of mutually connected organizations by resource dependence. Jordan and Schubert (1992) characterized the policy network as a means of expressing new reality and categorizing existing relationships between actors in the private and public sectors. Waarden (1992) regarded policy networks as the process of combining the results of actor interactions and types of linkages. Kickert et al. (1997) conceived them as a stable pattern of social relations among interdependent actors formed around policy issues and policy programs. Blom-Hansen (1997) delineated the policy network as a system that restricts and prescribes participants' behavior in various policy processes. He considers it like a game situation in which participants in the policy process try to influence policy to maximize their interests within a given framework of rules. Börzel (1998) argued that actors with common policy interests share the perception that cooperation is the best method to achieve their common goal. She defined policy networks as stable relationships with non-hierarchical, interdependent characters that exchange resources to achieve their objectives.

The concept of the policy network hence defined by various scholars, and its common features may be identified as follows:

1. The policy network is centered around forming interdependencies among related actors in the event of specific policy problems. The policy process is a dynamic and political process that is coordinated by compromise and conflict between various actors.
2. Policy network characteristics are different according to the leading policy actors within the policy network, the power allocation structure, interest relationships and interdependence, and mutual relations between policy actors and policy network structure can be changed according to policy interests.
3. Because the policy is the result of the interactions among the policy actors in the policy environment, any change in the structure of the policy network leads to a change in the policy output.

In summary, a policy network is a relationship structure in which various policy actors involved in the policy process influence specific policies and interact to produce policy outputs.

### **3.3 Components of a policy network**

The structure of the policy network model generates policy output through the interaction of participating actors in the policy process within the policy environment. To understand this definition, it is important to organize the various components according to the scope of the study because the characteristics of the policy network, the structure of the policy, and understanding of the policy process may differ depending on which of the various elements of the policy network are selected. However, there are no unified views on the components, and different elements are presented depending on the characteristics of the policy, the cases studied, and the scholars (see Table 1).

In a previous study, Atkinson and Coleman (1989) investigated the relationship between the Canadian government and corporations, and they used the concentration of authority, bureaucratic autonomy, and business interest mobilization as components of the network. Rhodes (1990) classified the membership, the arrangement of interests, vertical independence, horizontal independence, and resource allocation as elements to examine the relationship between central and regional governments. In a study that compared industrial policies in the United States and the Netherlands, Waarden (1992) argued that policy networks exhibit seven

key characteristics and include actors, functions, structures, rules of conduct, institutionalization, power reactions, and actor strategies. In addition, Jordan and Schubert (1992) selected three variables: the actors, the relationship between the actors, and the boundaries. However, the most commonly used classification is the one established by Marsh and Rhodes (1992), who used four components: membership, integration, resource, and power to apply the policy network model to UK government policy.

Table 1. Analysis variables and elements of a policy network according to scholars

Scholars	Analytical variable or constituting elements
Rhodes (1988)	Arrangement of interests, members, vertical independence, horizontal independence, resource allocation
Atkinson & Coleman (1989)	Concentration of authority, bureaucratic autonomy, business interest mobilization
Rhodes (1990)	Membership, arrangement of interests, vertical independence, horizontal independence, resource allocation
Marin and Mayntz (1991)	Policy sector, policy actors, structure as a relationship between organizations, collective action, power relations, strategic interactions
Jordan and Schubert (1992)	Number of actors, linkage, boundary
Marsh and Rhodes (1992)	Membership, integration, distribution of resource, power
Waarden (1992)	Number of actors, type of actors, function of networks, structure, power relations, rule of conduct, actor strategies, institutionalization
Yishai (1992)	Network exclusion, interdependence among actors
Collins (1995)	Boundary, membership type, association type, intensity and density of relationship, adjustment type, concentration, stability, nature of relationship
Knoke et al. (1996)	Policy domain, policy actor, policy benefit, power relationship, policy outcome, collective behavior
Daugbjerg (1998)	Membership, integration, institutionalization
Cope (2001)	Continuity and stability, membership, resources, power balance
Montpetit (2005)	Network diversity, distribution of capabilities, interconnectivity, coherence

Sources: Author's construct

### **3.4 Classification of Policy Network Model**

The policy network needs to be classified in order to describe, compare, and analyze policy results through a network model. Since the policy network model is a generic term that encompasses various sub-models, discussions about specific sub-types vary according to the scholars. Rhodes (1988) expressed the policy network as a comprehensive concept in which the various types are arranged continuously, while its policy community denotes the type of policy network. The expert network represents a closed-form of this community and is based on the relationship between central and local governments; local networks are related to regional issues; economic groups dominate producer networks, and issue networks are more open in their community structure. Marsh and Rhodes (1992) then examined policy network types as aspects of a continuum of policy communities and analyzed issue networks based on four dimensions: membership, integration, resource, and power.

The Policy Community is a tight network with a small number of actors sharing fundamental values and exchanging resources. This policy community is characterized by a limited number of participants, frequent interactions among participants, high continuity of membership, value, and policy results. All community members evince the attributes of resource retention and resource dependence and interaction through negotiation to maintain a balance of power. On the other hand, the Issue Network is a loose network in which access to the policy process is variable, and this type of network embraces a large number of actors. Specifically, attributes of an issue network include a large number of participants, open membership, and low persistence of value and policy results, fluid interaction and access to multiple members, lack of agreement and conflicts, and interaction based on negotiation.

Next, Yishai (1992) defined the policy network as the issue network, the policy community, the iron triangle, the iron duet, and the policy curtain by classifying the exclusionary qualities of the network and the dependency between the actors as variables that govern the degree of exclusion of new participants and the interdependence among actors within the network.

In the policy models described in the above two studies, the models with common functions of the policy network are classified and compressed into three representative models, which are the sub-government model (iron triangle), policy community model, and issue network model. The sub-government model is the typical policy network model of the US federal government. The policy community model and the issue network model critique the problems that may be



observed in the sub-government model, which is also labeled the iron triangle. In the sub-government model, legislators, their aides, the administrative bureaucrats of related agencies, and the spokespersons of interest groups are the participants who make policy decisions. The iron triangle is an articulation of the policy-making process of the United States; the most untroubled decisions in the United States are made by a small group of congressional committees, government agencies, and interest groups. In other words, a small number of elite actors dominate policy decisions in specific policy areas. The sub-government model was presented by Ripley and Franklin (1976) as a theory describing the policy decision structures prevalent mainly in the US political system, and it was pretty popular as a model for US policy networks in the 1960s and 1970s. The sub-government model is able to grasp the actual nature of the policy decision-making process beyond the limits of institutional analysis, and it can easily be understood through case studies on specific policies. However, it has been censured for its oversimplifying nature and its inability to explain the complexities of the policy decision-making process adequately.

As the closed sub-government model lost its explanatory authority with policy science studies, a new policy network model was proposed in the form of the policy community model. The main participants in the policy community differ from the sub-government model, and they are: (1) administrative agencies and bureaucrats, (2) representatives of political parties and individual politicians, (3) organized interest groups and their leaders, (4) universities, research institutes and experts related to policy. Administrative bureaucrats, politicians, and interest groups still form the focal core in this model, but a fourth group was added to reflect the growing role of experts in the emergent information/knowledge society. The policy community members share a common set of interests and develop communal feelings through their long-term contact, shared concerns, and control of resources that other members of the community can use. The members of such a community agree that the policy problem should be solved within the community, but because the members' interests and objectives are discrete, conflicts about the acceptable solution to the policy problem are likely to occur. Therefore, this model is different from the sub-government view in that policy decisions are made by consensus, collaboration, and cooperation among participants.

Finally, the issue network model also emerged from critiques of the closed sub-government model, suggesting an open and large-scale network that exerts a growing influence on policy decisions. An issue network comprises individuals and organizations that exhibit shared

interests in a particular issue or expertise in distinct domains. This network does not evince specific boundaries. In other words, an issue network is a knowledge-sharing group that ties together many participants who share a technical specialization. It is straightforward for participants to enter and exit the issue network, and it is almost impossible to find the boundaries of the network. However, the memberships of these networks are not fundamentally different from the sub-government and policy community models because interest groups, legislators, government bureaucracies, and other conventional actors still constitute the majority. Of course, the issue network includes these participants and well-known individuals and ordinary citizens who are knowledgeable, and thus, they are larger and more accessible than policy communities.

### **3.5 Strengths and Limitations of the Policy Network Approach**

However, despite the advantages presented in section 3.1 above, some shortcomings exist in the analysis methods and the methodology. For example, the controversy about the analysis dimension and the analysis level of the policy network model; the inconsistency in configuration variables of the policy network; the lack of explanatory authority of the causal relationship between the variables; the absence of interest in the dynamic aspects of the policy network, and its methodological flexibility are some drawbacks that may be cited.

In this regard, the policy network model is an incomplete theoretical framework rather than a completed theoretical model, and as such, it must constantly be revised and supplemented.

#### **3.5.1 Methodology**

The network analysis attempted to express the interdependence among actors by nodes, lines, parameters, etc., using the concept of density or centrality (Kilduff & Tsai, 2003). Therefore, this study aimed to accomplish empirical research and use quantitative techniques based on this network analysis method. However, since British political scientists dominated the policy network model, most of the studies that applied it to the policy process analysis depended mainly on qualitative methods. In recent years, there have been some cases that have utilized quantitative methods to supplement the analysis of the policy process (Bochel & Bochel, 2004).

The adjunctive use of quantitative techniques occurs because, unlike relationships between individual actors in a society, the policy process is political and value-judging by nature, and it is not easy to quantify scrupulously. However, there is an excellent reason for the policy network model to focus on the typification of the network and the manipulative definition: in doing so, reality can be measured in-depth, and the evaluating index may be developed based on this determination.

### **3.5.2 Variables and indices**

It is essential to develop the variables that constitute the policy network to understand and formulate the policy network and conduct empirical analyses using the policy network model. In this regard, many researchers have discussed the components or analytical variables of the policy network. However, as shown in Table 1 of the previous section, it is not easy to find consistency for each analytical variable. Moreover, researchers have mooted oversimplified (Daugbjerg, Yishai, Etc.) or overly complex analytical variables (Collins, Waarden, Etc.). If the analysis variables are too simple, it is difficult to grasp the entirety of the policy networks. Conversely, if the analysis variables are too complex, it is challenging to apply them to actual policy cases. Therefore, in reality, the four analytical variables (membership, integration, resource, power) introduced by Marsh and Rhodes (1992) to classify types of policy networks are the most frequently mentioned. It is not easy to apply these variables to actual instances without suitable definitions or without developing a specific measurement index. Previous research on analytical variables has neglected to develop variables related to linking policy networks with the environmental context and policy output by accounting for most of them through the description of the policy network itself. In addition, there is a lack of mutual exclusiveness among analysts selected by the same researchers, such as Collins's linkage and coordination types, Döhler's (1991) network structure and governance structures, and Waarden's (1992) structure and behavior rules.

### **3.5.3 Explanatory power**

The policy network model is a helpful model for analyzing the dynamic relationship among actors participating in the policy-making process, and various analytical variables have been developed for this purpose. The policy network model offers an advantage in describing the actual state of these analytical variables, but it does not sufficiently explain the relationships between the variables (Smith, 1993). Specifically, the policy network model is focused on the analysis of the network itself, so there is a lack of discussion on the effects of the environmental and institutional contexts on the policy network. This is because the policy network model lacks the systematic view expected from a current policy process theory. However, suppose the purpose of introducing the policy network model into the policy process study is to better understand the dynamics of the policy process. In that case, the disregard for the relationship between the environmental context and the policy process is detrimental to the adequacy of the model.

In addition, the policy network model needs a discussion on the relationship between policy network and policy output. Therefore, it is difficult to understand the manner in which the dynamics of the policy network affect policy output, and this problem is directly related to the usability problem of this model. In other words, if the policy network model is used only to describe the phenomenon, its usefulness as a theoretical model is very limited, as is the case with many theories that are based on positivism. Marsh and Rhodes (1992) argued that it is crucial to demonstrate how differences in policy networks lead to differences in policy output. However, many researchers have focused on analyzing the policy network itself and have neglected the consideration of the relationship between the network and policy output. Therefore, their research does not yield adequate results on whose interests are mainly reflected in the policy output, how the final policy output differs from the original policy content, and what motivates the difference. Of course, this deficiency stems basically from the absence of systematic and process-oriented perspectives of policy network theories.

The policy network model introduces various analytical variables to identify the characteristics of the policy network, and it describes them adequately, but it is vulnerable in revealing the relationships between these analytical variables (Marsh, 1998). It is difficult for the policy network model to impact policy process investigations simply by describing individual analysis variables. It is necessary for the model to be able to analyze the path of the relationship between the variables to better understand the dynamics of the policy process (Flyvbjerg, 2001). These

limitations emanate from the previous researchers' failure to develop appropriate variables by stipulating operational definitions that can measure each variable in detail. Of course, this inefficacy is inevitable because of the political nature of the policy process, but it is difficult to grasp the causal relationship between the variables unless the theoretical model is properly developed.

### **3.5.4 Formation of a policy network**

The policy network model explores the motivation of network actors in need of resource dependence. The actors interact with other actors because they need the assistance of resources that they do not have and that are controlled by other functionaries. In this regard, the policy network model displays a more advanced thought process than the existing pluralist and corporatist models that do not reveal the motivation for forming relations among actors.

However, unlike the assumptions made by the policy network model, the motivations for interaction among actors are complex. Sometimes it is difficult for actors to interact only because they need resources from other actors. In fact, resource dependency helps explain cooperative behaviors among actors, but it cannot clarify the hostile or conflicting interactions between them. Sometimes actors engage in the policy process with the hostile motive of preventing the claims or preferences of other actors from being reflected in the policy. Sometimes, such antagonistic motives may explain an actor's intervention in the policy process (Sabatier & Weible, 2007). Also, the interaction due to resource dependency is based on intentionality. The actors evaluate their resources, calculate what resources they lack, and consequently intentionally interact with actors who control the resources they do not have and that they need or desire (Hudson & Lowe, 2004). However, apart from the degree of dealings with government departments or congresses, who are official policymakers, interactions among actors are often accidental rather than intentional in practice. These inadvertent and inevitable relations often interfere with or occur through the policy process of interactions with the government or the parliament.

Also, there are other motives besides resource dependence in the actors' interactions and network formation. Above all, the actors' interests are in powerful incentives. The actors intervene in the policy process to ensure that their interests are reflected in policy content, and they interact with other actors in this process (Smith, 2006). There are also cases where actors

with similar belief systems for the policy form a coalition and interact with other actors in that form (Sabatier & Jenkins-Smith, 1993). This phenomenon helps explain the involvement of NGOs in the policy process to implement their belief systems into disagreeable policies (Weible et al., 2009). New ideas, power relations, and transaction costs are also factors for interactions among actors.

The policy network model emphasizes interactions due to resource dependence, but there is a dearth of discussion about what these resources specifically signify and what constitutes resources. It is necessary to clarify the meaning and components of resources to elucidate the relationship among actors in the policy network model. Sewell (2005) specified types of resources in terms of legal, formal authority, financial resources, information, mobilizable troops, public opinion, and leadership; these can also be cited to analyze resource dependencies.

### **3.5.5 Dynamics of policy networks**

In the meantime, the policy network model evinces immense interest in the formation and operation of the policy network, but it attends very little to how these aspects are amended over time (Hay, 1998). However, the amount and usefulness of the resources possessed by the actors who form the basis of the policy network may change, and thus the resource dependence may also alter. Of course, as a result, the properties of the policy network can also be modified because the policy network itself does not remain in a state of continuity once it is formed; it is fluctuating. Nevertheless, the fact that policy theorists do not actively develop the theoretical framework for analyzing the dynamic transformations in the policy network undermines the adequacy of the policy network.

As policy networks can change continuously, developing and analyzing related variables according to their formation, operation, maintenance, and variation are necessary. As mentioned in the preceding sectors, the formation of the policy network necessitates the identification of the main actors and the study of the kind of resources they command, the interests they profess, the reasons for their involvement, and ultimately, the type of network they form. Next, studies of the execution of the policy network must discuss the dynamic aspects of the actors' interaction with each other and the manners in which the strategy is mobilized after the formation of the policy network. Regarding the maintenance or modification of the policy network, the researchers should examine the policy network's

maintenance plan, the cause of the amendments to the policy network, the actors' reactions, or their resistance to the policy network.

## **4. Previous Studies on Policy Processes in the Forest Sector**

Policy analysis science has been influenced by economists, political scientists, and sociologists influenced applying their field expertise to various policy areas. The policy analysis is based on the political analysis of Lasswell and Downs (Lasswell H.D., 1948; Downs. A., 1957) and the cost-benefit analysis developed by scholars such as Krutilla and Eckstein in the 1950s (Krutilla & Eckstein, 1958). Early policy analysis aimed to identify the most efficient and effective solution from an economic and technical point of view.

Forest policy analysis has begun as a subdivision of forest science (Arts, 2012). However, the study and analysis of forest policy at that time was not conducted by forest scientists. Instead, it was carried out as a kind of case study by policy scholars. The policy theory and policy analysis that policy scholars asserted and applied were normative and aimed to provide policy advice. (Glück, 1992). Forest policy study has begun to change its trends about 30 years ago when policy science based courses have been introduced into the curriculum of forest science at several universities (Arts, 2012). Forest policy is considered one of the most important research topics in forest science, and from then on, the study of forest policy by forest scientists began. Moreover, forest policy has been developed by applying diverse policy theories, such as the detailed policies of each country's forests and the norms of national forestry. Changes in trends in forest policy study were observed in Europe in the early 1990s. The mature of a scientific discipline is characterized by the development of theories, frameworks, models, and typologies (Arts, 2012), thus underpinning that theory-based policy studies have become a matter of course in forest policy (Weber, 2012). Recently, forest policy analysis and forest governance research initiated from social science disciplines has made scientific advancement (Maryudi et al., 2018).

### **4.1 Previous Studies on Policy Theory of Forest Policy Processes**

The use of theory in forest policy research has shown a new aspect in forest policy science as it develops into a specific sub-discipline (Jong et al., 2012). However, it is not a forest policy study to simply apply the theory of policy science to the forest sector. First of all, the precise terms and definitions of the policy science theory should be the fundamental basis, and through



this, the forest policy process can be described and elaborated. An essential mission of forest policy study is to find the most appropriate theory for each forest circumstance (Krott, 2005).

The previous studies on forest policy using the major policy science theories also used in this study are described below.

#### **4.1.1 The Use of Multiple Streams Framework in Forestry**

The MSF is a theory that describes the beginning phase of policy formulation or the environmental policy context of policy formulation. This theory is often applied to describe modern policy processes initiated by the complex background of various phenomena and fields. In the field of environmental policy, there are also studies applying MSF theory to explain the policy process and outcomes. (Carter & Childs, 2018; Jeffrey, 2018)

Anderson and MacLean (2015) used the advocacy coalition framework and the multiple streams framework to review various actors' opinions and clarify the background of policy formulation on forest policy in New Brunswick, Canada. In addition, Storch and Winkel (2013) conducted literature studies and expert interviews to compare the policy formulation process in Bavaria and North-Rhine Westphalia in Germany through MSF.

MSF is not considered to be actively applied in policy studies in the forest sector. Forest policy is already clearly identifying the causes or problems involved in policy formulation and concentrates on problem-solving by achieving policy success so that there is not much analysis of the background of the decision-making process. Furthermore, some research that needs a background explanation of policy formation has been confirmed to use general social indicators such as social, economic, and political aspects rather than supporting the theory of policy science.

#### **4.1.2 The Use of Policy Network Analysis in Forestry**

All policies in our society typically have a complex structure, and in particular, policy in the field of environmental policy is represented by a multi-sector, multi-level policy process (Brockhaus et al., 2014). Environmental governance has evolved into a complex multi-centric structure to national and sub-national levels worldwide, depending on formal and informal

networks and policy channels (Bulkeley et al., 2014; Gregorio et al., 2019; Jordan et al., 2015). Currently, studies on the formulation of multi-level policy for the environment have been increasing, focusing on the climate change. Many scholars who study environmental governance have paid attention to the policy network approach as a method of policy process analysis (Bulkeley, 2000; Weible & Sabatier, 2005; Sandström & Carlsson, 2008; Papadopolou, 2011; Fawcett & Daugbjerg, 2012; Gale & Cadman, 2014; Brockhaus et al., 2014).

Many studies analyze the complex forest policy process by applying policy network theories, but the methods of applying this theory are different in each study. Wellstead and colleagues (2004) from Canada's Forest Service Northern Center applied the network approach and advocacy coalition framework to understand policy-related responses in the forest sector of the Prairie region. They conducted interviews with policy participants and conducted a network analysis using reliance, allegiance, and opposition as analysis elements to identify the policy network's nature. Teye (2013) conducted a qualitative study by interviewing policy actors of Ghana's forest resource governance and argued for the need to apply policy network analysis to forest resource policies. In addition, Gale (2013) identified the status of the forest policy process for constructing a pulp mill in Australia through literature review and assessed the role of interests and institutions by applying the structure established in the preceding policy network studies. Researchers at the Center for International Forestry Research (CIFOR), a research group working on tropical forests, conducted comparative studies on national-level policy processes in 7 countries that are conducting REDD+ programs. These studies analyzed the policy network of the countries with the interaction of actors as an analysis element, and interaction was mainly based on the exchange of information or financial resources (Babon et al., 2014; Brockhaus et al., 2014; Bushley, 2014; Dkamela et al., 2014; Gallemore & Harianson, 2014; Gebara et al., 2014; Pham et al., 2014; Rantala & Gregorio, 2014). In addition, many forest policy studies identify policy processes through analysis and description of actors and their powers among the components in the policy network (Shackleton et al., 2002; Krott et al., 2014; Schusser et al., 2015). These are examples of one of the research methods that explain the policy process, though it is not applied or cited in the policy network theory of policy science. On the other hand, Hasanagas (2011) focused mainly on the methodology of the policy network in forest policy research. He has identified the strengths and weaknesses of network analysis by analyzing the analysis variables of network analysis (Real & Hasanagas, 2005) and

analyzed the application of software programs to show the results of the network analysis (Hasanagas, 2011).

Social network analysis, which is one of the methodologies of a policy network, has long been applied to the forest policy process by many researchers (Korhonen et al., 2012; Borg, 2015; Paletto et al., 2015; Lovrić et al., 2018). However, in the forest sector, the research on policy processes through applying the policy network theory was not performed actively compared with other fields. Furthermore, most of the preceding research is either qualitative research based on the researcher's experience or intuition or applying the social network analysis methodology. The limitations of the current policy network analysis study discussed in the previous chapter were also found in the forest sector. For efficient forest policy research, it is necessary to systematically analyze the forest policy by applying policy science theory and standardizing it. In addition, it would be necessary to develop a systematic methodology for the forest policy process by studying appropriate analysis elements that reflect the specificity of the forest sector.

## **4.2 Previous Studies on the Policy Process in Indonesia**

The empirical analytic policy theories applied to political stakeholders and policy processes are generally of significant value. This means that it provides an explanation and elaboration of the forest policy. This fact can be confirmed by studying forest policies actively conducted in Europe in the 1990s (Krott, 2005). However, since the situation in the forest sector and the political situation in each country are different, the case study results of one country's forest policy are not applicable in other countries, even for countries in Europe.

The forests in Indonesia are very influential in the national economy, industry, and people's lives. Indonesia is a developing country; forest policy and the whole state policy are continuously developing, and related research is actively carried out. Prior to this study, this chapter identifies the direction in which previous research on Indonesian policy has been pursued.

Many scholars and research institutions have carried out many studies to determine the impact of Indonesian forest policy on Indonesia's politics and economy (Poffenberger, 1997; Burgess

et al., 2011). Due to the high environmental and economic value of Indonesia's tropical forests, the world is concerned with these forests and policies, and conflicts of interest between tropical conservation and development have occurred frequently. There have been many studies on the impact of international regimes on Indonesian forest policy.

Singer (2008) analyzed the impacts of international forest regimes on national forest-related policies in Indonesia and Brazil, where forest harvests are high and discussed the analysis indicators of effectiveness. Nurrochmat et al. (2014) conducted a study on the suitability to apply Indonesia's international and national forest regimes to community forests. Sahide (2015) confirmed the relationship between international regimes such as international agreements, treaties, conventions, and rainforest transformation in Indonesia. The study analyzed political and environmental situations by dividing them into problem dimensions and actor dimensions. Giessen et al. (2016) analyzed the role of various state bureaucracies in terms of the emergence and diffusion of private forest resource governance systems and how the transnational or international norms affected those. Sahide et al. (2016) analyzed the interest of domestic and international actors related to FMU and explored how international regimes affected domestic policy (Sahide et al., 2016). A lot of forest scientists are trying to identify the relevance of the international regimes and the Indonesian national regimes through various approaches.

Among these international norms, Sustainable Forest Management (SFM) is widely used in forest policy and is an important principle in community-based forest management (Ferguson, 1996; Maser, 1994). Indonesia's most crucial forest policy principles have been a major research theme (Prabhu et al., 1996; Purnomo et al., 2004). In addition, there are many studies on Community-Based Forest Management (CBFM), which were actively applied in Indonesian forest management (Rianawati, 2015; Santika, 2017; Suwarno et al., 2009).

Studies are also being conducted on individual subjects for international regimes and programs that are mainly applied and implemented in developing countries. Scholars have been very interested in the impact of European Forest Law Enforcement, Governance and Trade (FLEGT) on Indonesian national policies and the community sector (Heeswijk & Turnhout, 2012; Obidzinski et al., 2021). They analyzed the efficiency of its application to the current policies and programs and sought to develop the FLEGT application in Indonesia (Wiersum & Elands, 2013; Lesniewska & McDermott, 2014; Maryudi & Myers, 2018).

REDD+ is the approach that is currently attracting the most attention in Indonesia's forest policy and directly affecting policymakers, academics, and local residents. Indonesia is one of the countries where domestic policymakers and international donors have been attracted since the beginning of the discussion of REDD+. Therefore, many studies have been carried out on REDD+ in Indonesia from the early stage to the present. For effective monitoring and successful REDD+ implementation, many researchers and research institutes have decided on the definition of the terms for the program and proposed a practical implementation direction of the policy. Akiefnawati (2010) and Collins et al. (2011) also introduced specific strategies for individual regions where REDD+ is being implemented. As REDD+ was launched in Indonesia in earnest, an analysis of REDD+ competitiveness in economic perspectives (Brockhaus et al., 2012), and an analysis of environmental, economic effects and benefits, and subsequent policy changes (Irawan et al., 2013; Kaisa et al., 2017) were conducted. In addition, the market institutions were assessed during the readiness period of Indonesia's REDD+ (Boer, 2018). As a more specific example of the region, Indrajaya et al. (2016) analyzed the potential of tropical mixed-forests for carbon sequestration following the financial incentives from REDD+ in Kalimantan. In addition, many other studies have emphasized the importance of local government's role in forest conservation through REDD+ (Irawan et al., 2014; Irawan & Tacconi, 2016; Gallemore et al., 2015; Nurfatriani et al., 2015).

Concerning the more recent national forest policy, Sahide and Giessen (2014) analyzed the administrative responsibility of complex tropical forest transformation systems and proposed a land classification scheme; Nurfatriania et al. (2015) developed an evolutionary policy direction through an analysis of fiscal policy reforms for forest conservation.

The government structure in Indonesia is attempting to change from a strong central government to a decentralized regional autonomy. Studies on the distribution of government jurisdictions and administrative powers have also been carried out in the field of forest policy (Andriyana, 2018; Barr et al., 2006; Casson & Obydzinsk, 2007; Fatem et al., 2018; Fox et al., 2006; Moeoliono & Limberg, 2012). Many studies have analyzed the effects of decentralization in the Indonesian forest sector on the forest landscape and livelihoods of local residents (Resosudarmo, 2004; Resosudarmo et al., 2014; Sardono & Inoue, 2017).

Indonesia's forest policy research also analyzes and evaluates the policy status with various approaches; it has used policy science theory or social science method. Heeswijk & Turnhout (2012) analyzed the discourse structure of FLEGT, particularly the European Union FLEGT

Action Plan and Indonesia's legality standards, using a discursive analytical approach, Ekayanai (2016) analyzed the effects of media and scientists on policy agenda setting and policy through discourse analysis. Furthermore, Elliott and Schlaepfer (2001) analyzed the development of forest certification systems in Indonesia, Canada, and Sweden using the Advocacy Coalition Framework (ACF), Ruyschaert and Hufty (2018) used the ACF to understand the factors that led to improved forest policies in Sumatra. Mehring et al. (2011), assessing the current system by applying the Institutional Analysis and Development (IAD) framework, proposed a local forest management strategy, and Lesniewska & McDermott (2014) used a Critical approach to the study to analyze the FLEGT/VPA and its application efficiency. Maryudi (2016) applied Instrument Choice Theory to describe the governance arrangements of legality verification in Indonesia.

Also, some studies apply the actor or network approach. Gallemore et al. (2015) analyzed the status of REDD+ progress through a network approach. Maryudi and Myers (2018) applied a network approach to explaining how timber production was created, discussed, and negotiated. Luttrell et al. (2014) analyzed the political context of REDD+ by an actor approach. In addition, some studies analyze forest management and policy status through a multi-stakeholder approach (Achyar, 2017; Purnomo et al., 2005).

Studies on Indonesian forest policy have been actively carried out by scholars and research institutions from around the world and Indonesian scholars. Indonesia's policies are being analyzed by applying various research themes and methods as much as those of scholars. Forest policy is also considered to be a subdiscipline of forest science and an area of application of policy science. Therefore, the trend of applying the policy theories or the research methods from social science to forest policy has been applied to the analysis of forest policy in Indonesia.

Many researchers conducted qualitative studies to describe and analyze the forest policy that well grasps, understand and reflect the social, economic, political, and environmental conditions of Indonesia and reflect the specificity of the forest. Quantitative analysis, which is relatively more objective, also has disadvantages, but it is necessary to apply various analysis methods to Indonesian forest policy to find effective policy analysis methods. In Indonesia, the forest policy study also applied the social science analysis framework when conducting a qualitative study, but the research that did not apply such a framework could also be easily found. In this case, it is crucial to keep in mind that the method and results of the study may be criticized for lack of objectivity and persuasiveness because there are no objective criteria and

indicators, although the description of the status can be improved without boundaries or limitations of scope or framework. In qualitative analysis, it is necessary to secure the objectivity of study results by applying theory or analysis framework of policy science and social science fields.

The subject of study in Indonesia's forest sector is changing with the political environment or related individual policy changes, and the subject is determined according to important issues or events at that time. Also, as many international conventions affect Indonesia, studies focused on the domestic environment are not a complete solution to the problems arising from Indonesian forests. Thus, expanding the study scope and looking at policies from a broader perspective is necessary.

### **III. Methodology**



## **5. Research Design**

This study analyzes the process of decision-making regarding deforestation prevention policies and is an analysis of the forest policy process, which can be divided into two parts. One is to create a framework for policy process analysis through a policy network approach. Hence, this study aims to develop an analytical framework that reveals causal relationships, such as the relationship between policy content and policy networks. The second part is a case study. The analysis framework developed in the above part of the study is applied to the forest policy to prevent deforestation in Indonesia, and the respective policy processes are analyzed.

### **5.1 Development of the analytical framework**

First, this study developed an analytical framework for analyzing policy-making processes through a network approach. In order to overcome the limitations of the policy network, which has been criticized for its limitations in explaining the current phenomenon and structure causally, the present study tried to find a method of analysis that could reveal the causal relationship between the policy contents and the policy network. The study also attempted to develop analytical variables which could be applied to specific forest policy cases with current international characteristics.

This study began by exploring the textbook theories of policy science and selecting an appropriate analysis model for policy decision process analysis. Limitations were found through a review of previous studies on policy-making processes and policy networks, multiple streams frameworks, and the principles for developing an analytical framework were determined. This study developed an analysis framework applicable to this case by referring to the policy research results in the field applying the policy theory, based on the policy network theory and various policy science theories.

### **5.2 Methods**

#### **5.2.1 Literature review**

This study started from the literature review. We tried to find an appropriate analysis method for Indonesian cases by examining general policy theories and analysis methods of previous

policy research applied to various fields. In addition, the study has developed an analysis framework including analysis of contents and variables through policy theory and previous research cases. The background studies on the formulation of deforestation-preventing policies in Indonesia have also been conducted through literature surveys before fieldwork commenced.

The main subjects of the literature review were research papers and reports published by various organizations and the internet websites of each organization. The literature was reviewed with keywords such as Policy Process Analysis, Multiple-Streams Framework, Social Network Analysis, Stakeholder Analysis, and Indonesia's deforestation by targeting institutional reports, journals, and newspaper articles in English. In addition, media materials such as newspapers were actively used to identify Indonesia's social, economic, and political backgrounds. Indonesian language was used to confirm the contents of Indonesian laws and regulations or for local newspaper articles.

International projects that have affected domestic policies related to deforestation in Indonesia can be found in Chapter 7. High priority policies in Indonesia's forest policy were the target of this study. It is also an important condition for the researcher to determine the target policy whether the policy contents and information are accessible. The list of target policies and plans is as follows.

< Forest Policies for preventing deforestation in Indonesia >

- National Level Forestry Plan 2011-2030;
- National Action Plan for the Reduction of Greenhouse Gas Emission (2011);
- Suspension on New License and Improving the Forest Governance of Primary Forest and Peatland (2011);
- Task Force for Preparation of the REDD+ (2010);
- International development projects - REDD+, FLEGT, FORCLME, and so on.

### **5.2.2 Expert Interviews**

The study conducted semi-structured interviews with organizations participating in Indonesian deforestation prevention policies. The questionnaire consisted of the questions for analyzing the social network of the previous research based on the literature reviews and the questions

for confirming the analysis variables of the integrated analysis framework developed in this study. The main contents of the questionnaire are as follows.

<Contents of the semi-Structure Interview>

- General Information of the organization and informant
- Interest and objective of the organizations
- Organization stances
- Motivation to participate in the policy process
- Activities of the organization in policy network
- Interaction with other actors
- Difficulty in participating in the policy network
- Suggestions for policy process for preventing deforestation in Indonesia

As an interviewer, the author of this study refrained from giving personal opinions or examples as much as possible during the interviews. Interviews were performed with a translator when necessary, and translations were conducted mainly in Indonesian-English. Interviews were conducted between May and August 2017 in Jakarta and its neighboring regions and the Kapuas Hulu region of West Kalimantan in Indonesia. The time for the interviews varied according to whether interpreters were involved or not, and interviews were not conducted for more than an hour for the sake of the interviewee's concentration. Not all expert interviews could be conducted directly in Indonesia, and additional interviews and questionnaires were conducted via email and video call (Skype). Semi-structured interviews were conducted with all policy actors in the Indonesian deforestation prevention policy network, a field survey was conducted in Jakarta and West Kalimantan, and an additional about 10 interviews were conducted via email and video calls (Skype). Therefore, interviews were held in total with 72 of the involved organizations (actors), or about 63% of the institutions selected as subjects at the beginning of the research. Of these 72 interviewed actors of the policy network, 40 were Indonesian national actors, and 32 were international actors. The Indonesian national actors included government ministries and departments, government research institutes, other domestic technical advisors, environmental NGOs observing and monitoring government policies, and forestry-related companies. The international actors included international forest-related organizations, international cooperation organizations from developed countries, and

global environmental NGOs.

Table 2. Target organizations for the policy analysis network interview on deforestation prevention in Indonesia

Type of Policy Actor	Organization	No.
Central government	Presidential Office Ministry of Economic Affairs Ministry of State Secretariat Ministry of Environment & Forestry (Planning / Protection Forest / REDD+ / Forest Product / SFM / Climate Change / Ecosystem / Production FMUs Bureau) Ministry of Foreign Affairs (Legal Affairs / Finance) Ministry of Agriculture (Plantation / Agricultural Infrastructure) Ministry of Industry Ministry of Trade	17
Regional government	West Kalimantan (Administrative Management / Environment / REDD+ / Planning Bureau), Kapuas Hulu (Agroforestry / Forest conservation Team)	6
National research institute	Bogor Forestry Education and Training Centre / Forest Research and Development Agency(FORDA) / Indonesian Agricultural Environment Research Institute (IAERI) / Research Center for Climate Change (DNPI)	4
Indigenous people	Kapuas Hulu local people	2
University	University of Indonesia / Bogor University / Gadjra Mada University / Tanjungpura University	4
National NGO	AMAN / Borneo Orangutan Survival Foundation / DML / Eyes on the Forest / FWI / Indonesian Ecolabelling Organization / Perkumpulan / RMI / Sawit / Scale up / Sebatopa / TELAPAK / WALHI / Watch	14
Intergovernmental organization	ADB / Afoco / ASEAN / FAO / IUCN / UN-REDD+ / UNDP / UNFCCC / UNIDO / UNEP / World Bank	11
Foreign government aid organization	AusAID / CIDA / CFD / DANIDA / DFID / EU / GIZ / JICA / KOICA / NORAD / SDC / SIDA / USAID	13
International academic organization	Center for International Forestry Research (CIFOR) / European Forest Institute / Forest Research Organizations (IUFRO) / International Union of World Resources Institute(WRI)	4
International NGO	Conservation International / Fauna & Flora International / Friends of the Earth / Global Forest Watch / Greenpeace / Orangutan Foundation International / Rainforest Action Network / Rainforest Alliance / The Forests Dialogue / The Forest Trust / The Nature Conservancy / Wetlands International / World Wildlife Fund	13
National business enterprise	Asia Pulp & Paper / Bina Satria Abadi Sentosa / GAPKI / Kayu Merapi Internusa / KORINDO / Indo Rotal Art / Indonesian Chamber of Commerce / Provident Agro / Riset Perkebunan Nusantara / Samko Timber / Sinarmas Forestry	11
Other (private sector) organization	Bisnis Indonesia / Daemeter / eForest / EKOLOGIKA / Green Consult / ICCO cooperation / Perum Perhutani / The Indonesia Business Council for Sustainable Development / The Sustainable Trade Initiative / Tropical Forest Foundation	10
Media	Kompas / Mongabay / Reuters / Tempo / The Jakarta Post	5

### **5.2.3 Data analysis**

The data obtained through field surveys in Indonesia used various analytical tools to derive analysis results. The statistical analysis of the simple responses of policy actors was done using the SPSS statistical program. This statistical analysis was used to measure the actor's preference for current policies and the actor's perception of current Indonesian forest issues. Furthermore, this study used Ucinet, which is widely used in social network analysis of current social science study in order to extract analytic value or centrality value which shows the characteristics of the whole network. In this study, the network structure of the relationship between actors was divided into three and analyzed. The network structure and characteristics of the actors who frequently form relationships, the actors who receive information, and the trusted actors were identified, and these are expressed as Relation Network, Information Network, and Trust Network, respectively.

To visualize the structure of the network, this study used the Netdraw program to easily identify the characteristics of the network in the form of diagrams.

## **6. Development of the Analytical Framework for Policy Making Process**

### **6.1 Principles of analytical framework**

This study referred to the issues pointed out as limitations in the policy process analysis through the multiple streams framework (Chapter 2) and the Policy Network Model (Chapter 3) and determined several principles for producing the analytical methodology and framework. They were:

- 1) Develop an integrated theoretical framework that is based on a systematic and process-oriented perspective;
- 2) Harmonize various qualitative and quantitative methodologies in analyzing policy processes;
- 3) Select consistent and relevant analysis variables and develop specific measuring indicators.

The primary objective of this study is to understand and assess the policy-making process to prevent deforestation in Indonesia. Therefore, it is necessary to reflect on the specificity of forest policy regarding frameworks of analysis and elements of analysis, i.e., variables. The analysis and evaluation factors of the forest policy process were added with reference to ‘Ten things to know about forest policy’ (Figure 2) in the report published by FAO (2010). This report on forest policy is close to substantive guidelines, but it has been referenced to establish the criteria for analysis and evaluation of forest policy. It is based on the contents of the text, which are related to the policy-making process. These include the understanding of each policy actor in the vision and goals of the national forest policy; the role and support of the high-level actors; the participation of policy actors in all fields related to forests, and the existence of intermediary negotiators (brokers) of actors of conflicting views. The following guidelines for good governance are sufficient to be used as a reference to the analysis component to ensure that the Indonesian deforestation policy meets those criteria. This study has developed as an analysis framework to identify the above analysis elements within the MSF and Policy Network Analysis on the forest policy process in Indonesia.

### **Ten Things to Know about Forest Policy**

1. A national forest policy is a negotiated agreement among stakeholders on a vision and goals for a country's forests and trees, adopted by government.
2. Forest policy goals need to address social issues and be closely aligned with a country's development goals.
3. Initiating a policy revision requires a sound understanding of national context as well as support at a high political level and among stakeholders. Good timing is also essential.
4. Proper preparation is important including communication and capacity building, leadership support, and adequate information on forests and possible future trends.
5. The participation of stakeholders across all key sectors is essential, as is joint ownership of the resulting policy and shared responsibility for policy implementation.
6. Drafting a forest policy is about accommodating different and often conflicting views on how to use and protect forests. This requires good negotiation and facilitation skills.
7. Agreement among stakeholders is needed on implementation, including the re-alignment of legal and institutional frameworks with the new policy, and on responsibilities.
8. Strong and professional communication from the outset and the building of sufficient capacity for those participating in development and implementation are crucial for success.
9. The new forest policy and a strategy to put it into practice should be adopted by government at high levels to demonstrate commitment and guide authorities.
10. An ongoing institutional arrangement that promotes and facilitates continuous dialogue is essential for the effective implementation of a national forest policy.

Figure 2. Ten things to know about forest policy  
Source: FAO, 2010

## 6.2 Conceptual framework

This study first selected policy network analysis as a method to understand the modern policy process, which is explained in one word, “governance.” However, it is simply not enough to describe the policy process as a phenomenon or the existence or structure of a policy network, and it is difficult to differentiate the streams from the causes of policy formulation or change, the policy problems and finally policy output. In addition, MSF focuses on the agenda-setting process; there are limitations in describing the overall policy process that discusses policy content.

An analytical framework was developed that integrates two models to systematically and effectively elucidate the policy-making process from agenda-setting to policy output. The integrated analysis framework that can complement respective weaknesses of the MSF and policy network theory is shown below.

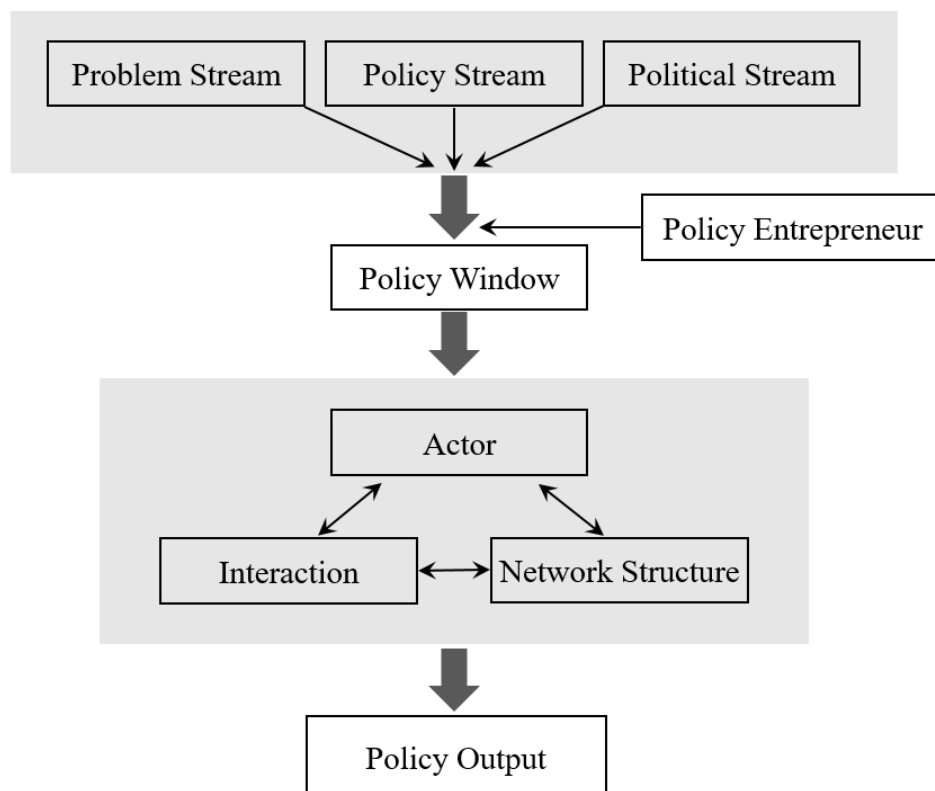


Figure 3. Integrated analysis framework on the policy making process  
Source: Author's construct



The analytical framework of the above Figure 3 was made to assist understanding according to the temporal stream from the policy environment to the policy formulation process while focusing on each study method. One of the most critical factors in the policy-making process is the “Policy Actors” that existed before the formation of the policy network, and these actors are always present throughout the Problems, Policies, and Political streams of the MSF. In other words, an “Actor” can be found only in the Policy Network Analysis section in the analytical framework, but it is clear that this is not meant to refer to the actors at other stages, although this framework is presented in a simplified manner to distinguish the analytical elements.

This study set up a series of processes that lead to Policy Environment - Policy Network Characteristics - Policy Output regarding the deforestation policy in Indonesia. It aims to analyze the environmental factors of internal and external policies according to a multiple streams framework and to clarify the process leading to a policy network of policy formulation processes.

### **6.2.1 Multiple Streams Framework**

Prior to the policy network analysis, this study applied the Multiple Streams Framework in order to identify the policy environment and context leading to a particular policy formulation process. In order to achieve this purpose, the model of Zahariadis (2007) was applied based on the above discussion. The variables representing the problem stream are indicators, focusing events, feedback, and the variables of the political stream are "national mood" and "organized political interest." Finally, the variables that indicate the policy stream are policy communities and power elites, issue framing, and value acceptability. Access, resources, and strategy measured the influence of policy entrepreneurs. The variables of each of the above streams were applied to the formulation process of deforestation prevention policies in Indonesia, and the appropriate actual analysis variables were determined. The study on the policy background and environment for Multiple Stream Framework analysis was mainly conducted in a literature review. It is essential to collect data from various fields of analysis when applying the multiple streams framework. This study focused on news access from newspapers and internet media and data collected through research papers and books. In addition to the research reports and papers, newspapers reflecting Indonesia's present social, economic, and political situation were important data for analysis.

As can be seen from the above analytical framework and Table 3 of analysis variables, this study uses the Multiple Stream Framework to examine the background of the current policy for preventing deforestation in Indonesia. In the Indonesian forest and political environment, identifying the "Problem," "Political," and "Policy Streams" are the core components of the Multiple Stream Framework as well as determine when the Policy Window will be open, and who is the actor or organization to be responsible for this process. Since this study is a study of the policy for preventing deforestation, the forest situation in Indonesia and the environmental problems faced by Indonesia have become important analytical elements of the problem stream. The Political Stream examines Indonesia's political and administrative situation and looks at the details of any changes. In addition to the views of the Indonesian government and political parties, the trends and activities of interest groups and environmental organizations who are interested in deforestation policies in Indonesia are also included in the analysis elements. The efforts of related organizations to prevent deforestation in Indonesia and solve the environmental problems are central analysis elements of the Policy Stream. The policy stream identifies the stream content through projects and studies carried out by government actors and international actors that have a significant impact on Indonesian forest policy. Among the Multiple Stream Framework elements, specific streams act as triggers to open the policy window. At this time, it analyzes who (Policy Entrepreneur), how, and why the policy window is opened.

### **6.2.2 Policy Network**

Since Policy Network Analysis applies analysis as a different element for each scholar, the researcher must determine the analytic variables according to the answer to be drawn from his/her study and the hypothesis to be verified. This study identifies the actors who participated and grasp the interaction, such as cooperation and conflict among actors. We determined the network structure by integrating these interactions. Although many analytical variables are presented in many research papers, this study has determined the actors, interactions, and linkages, which are commonly mentioned by scholars in the definition of a policy network, as the key variables. These are the fundamental components of the network, but also, because these can be visually verified, they are determined to minimize the subjective judgment of researchers. However, in order to classify the type of policy network widely used as analytical

variables, especially the elements of Marsh and Rhodes (1992), these are explained in the context of all actors and their interactions.

First of all, the actor's motivation for participating in the policy network, and the role of the policy network itself, is to summarize the characteristics of each actor to ensure that these are grasped. In addition, further information about the role of the actor in the policy network is obtained through other literature or official web pages. The study uses the quantitative analysis method of social network analysis. The data were compared and analyzed by numerical values such as cohesion, density, and centrality to determine the attributes of the actors in each of the networks and the characteristics of each respective network.

Table 3. Contents of analysis variables and indicators of the policies for deforestation prevention in Indonesia

Model	Contents	Variables	
Multiple Streams Framework	Problem Stream	<ul style="list-style-type: none"><li>- Status of deforestation</li><li>- Impacts of deforestation</li><li>- Conflicts between actors on policy implementation</li></ul>	
	Political Stream	<ul style="list-style-type: none"><li>- Change in political leadership</li><li>- The activities and will of the president and the political parties</li><li>- Trends in interest groups and public opinion</li><li>- Activities of domestic and international NGOs</li></ul>	
	Policy Stream	<ul style="list-style-type: none"><li>- Research of governmental research institutes</li><li>- Research by experts and external research institutes</li><li>- International community efforts for developing countries</li><li>- Projects related to forest policy of international organizations and donors</li></ul>	
	Policy Window and Policy Entrepreneur	<ul style="list-style-type: none"><li>- Key executives in the combination of the three streams</li><li>- Policy Window opening and closing</li><li>- Stream or event where the window opens</li></ul>	
Model	Contents	Indicators	Variables
Policy Network Analysis	Actor (Membership)	<ul style="list-style-type: none"><li>- Attributes of the actor</li><li>- Role of the actor</li></ul>	<ul style="list-style-type: none"><li>- Number of actors</li><li>- Type of interest</li><li>- Actor's understanding and specialty on forest policy</li></ul>

	Interaction (Integration)	-Type of Interaction	- Network participation type - Means of participation in the network
	Network Structure (Linkage)	- Cohesions - Centrality - Openness - Type of linkage	- Degree, Density - Degree, Prestige, Closeness, and Betweenness Centrality - Actor's degree of resource control

Source: Author's construct

#### 6.2.2.1 Policy Actor

Policy Network Analysis begins with a description of the attributes and roles of each actor involved in the policy process. However, since this policy process involved a large number of actors, and since many actors participated in the surveys of this study, it is not easy to analyze the individual characteristics of all actors. Therefore, this study classifies all actors according to their characteristics, identifies these characteristics by category, and adds a separate description of each actor if necessary. Actor categorization was made using the stakeholder analysis method. The stakeholder, which is an important factor in policy and administration science, is quite similar in meaning to the policy actor of policy network analysis. Before applying the stakeholder analysis, the method will be briefly described here.

In general, systematic stakeholder analysis is known to have originated in R.E. Freeman's 1984 book, "Strategic Management: A stakeholder approach" (Bryson, 2004). Freeman broadly defined stakeholders as "individuals or groups that affect the achievement of an organization's goal or are affected by achieving the goal," and the following scholars have variously defined it according to their research purposes (Freeman, 1984: 46).

Table 4. Typical definitions of stakeholders in previous research

Definition	Year	Scholars
All parties who will be affected by or will affect [the organization's] strategy	1992	Nutt and Backoff
Any person group or organization that can place a claim on the organization's attention, resources, or output or is affected by that output	1995	Bryson
People or small groups with the power to respond to, negotiate with, and change the strategic future of the organization	1998	Eden and Ackermann
Those individuals or groups who depend on the organization to fulfill their own goals and on whom, in turn, the organization depends	2002	Johnson and Scholes

Source: Author's re-edit based on Bryson (2004)

Eden and Ackermann (1998) placed two axes of stakeholders derived from fundamental stakeholder analysis (Figure 4). One axis showed the stakeholder's interest in the organization or current issue, and the other depicts the stakeholder's power (influence) in the organization or regarding the future of the current problem.

Power-interest grids typically help us determine which stakeholders' interests and power should be considered important for achieving organizational goals or solving current problems. It also helps identify who should be attracted, whose consent should be obtained, and what stakeholder coalitions should be advocated or suppressed. Finally, this grid provides some information on convincing stakeholders to change their opinion (Bryson, 2004). This study classified the policy actors of policy networks of the policies against deforestation in Indonesia according to this Power-Interest Grid because the actors' power and interest in the policy is a crucial component of the policy network in the policy process.

The definitions and characteristics of terms for each quadrant of the power-interest grid are as follows (Eden and Ackermann, 1998).

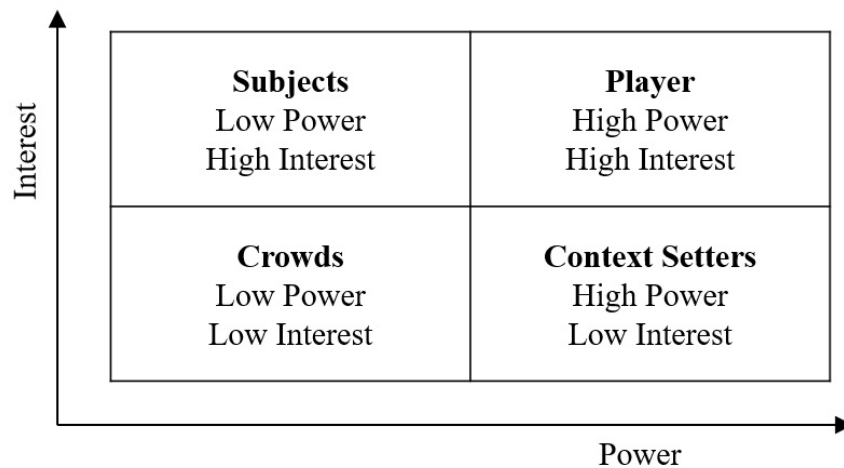


Figure 4. Stakeholder power-interest grid

Source: Ackermann & Eden, 2011

**Player:** Leading participant

It is a stakeholder who has both interest and significant power in achieving the organization's goals and who should develop collaborative relationships, especially those which are very important in the early phase of the organization or the problems at hand. They may be positive or negative relative to the organization's direction, but they are stakeholders to whom the organization's executives need to pay constant attention. In the general national policy or corporate strategy establishment, government ministries, local governments, and shareholders are examples.

**Subject:** Sensitive recipient, subject

Stakeholders who have a deep interest in achieving an organization's goals but lack influence cannot be considered successful at attaining the organization's objectives or solving their current problems unless their needs are identified or met. It is the group that is the subject of the policy or the group that is most sensitive to the execution of the policy. If it is challenging to grasp separately, it is a group of stakeholders that can be classified according to income, region, age, interest, Etc. Examples of Subject in national policy or corporate strategy are citizens or consumers who respond sensitively to policy targets and enforcement and are directly affected.

Context Setter: Potential participant

It is the stakeholder who may significantly impact the organization's goals but lacks direct interest. Their interest is not a priority in problem-solving, but a group of stakeholders can be a significant risk if their basic needs are not met during policy implementation. In a future decision-making process, organizational management should carefully identify trends, develop relationships, and turn positive subgroups into players. In the general policy or strategy establishment, academia or parliamentarians can be examples of Context Setters as continuous interest and management objects.

Crowd: An unspecified majority or a crowd

Crowds are difficult to classify as influential stakeholders due to their lack of influence and interest on issues, but their influence and interest may be enhanced in the future. Still, policymakers usually do not spend time and effort on their influence. The basic strategy for this group is to use only the minimal resources of the organization in stakeholder management while maintaining a distance that is not too far away. An example of a Crowd could be a citizen or consumer who has no direct interest in policy or strategy.

#### 6.2.2.2 Interaction

The interaction between policy actors results in the formation or maintenance of a policy network so that the interaction between policy actors can take various forms in terms of the structure of the network depending on the relationship formed through interaction. The interaction in policy networks is based on interdependencies between policy actors. Thus, the analysis of interaction is to examine the attributes of strategic interactions among interdependent policy actors. In other words, it is to identify the attributes of the policy network by identifying whether the characteristic of the policy actor interaction is cooperative or conflictive. Therefore, this study can be interpreted that the strategic choice of policy actors is based on existing interdependence and that their strategy is formed and reproduced and changed by cooperation or conflict with other policy actors. One notable method to understand the structure of the policy network is to identify the attributes of interactions among policy

actors and the factors that enable us to distinguish between cooperative and conflicting interactions, which are also included in the policy network type classification and analysis element of March and Rhodes' (1992) studies. However, this study has limitations in clearly distinguishing the attributes of each interaction among policy actors because it is not a network analysis targeting a specific policy. Furthermore, the targeted policies in this study are also policy networks that many policy actors have been involved in the policy process over a long time.

Therefore, this study examined how the interactions among policy actors were formed and how policy actors became involved in the policy network.

### 6.2.2.3 Network Structure

#### 6.2.2.3.1 Cohesion

Network cohesion is important to understand how networks form communities and facilitate the maintenance of norms (Freeman, 1992; Pescosolido & Rubin, 2002; Martin, 2009). A cohesive network is considered to be easier for circulating norms and information than a non-cohesive network. Cohesive networks are challenging to separate, and the more cohesive networks are, the closer they are to the actors within them. (Moody & White, 2003; Friedkin, 2004). This cohesion is an important factor in determining the overall attributes of the policy network and whether the network is sustainable. For this reason, this study intends to analyze cohesion as the first content among network structure analysis factors. This study analyzes the Degree, Density, and Distance values on the network level using the Ucinet program to determine the cohesiveness of Indonesia's network of policies against deforestation (Borgatti et al., 2002).

"Degree" is defined as the number of actors with whom one actor has a relationship. The actors with high degrees have many resources to mobilize and play a vital role in the flow of information. If there are five actors with whom actor 'A' shares information, the degree is 5, and actor 'A' plays a more critical role in the network than actor 'B' (Degree=2), which has a relationship with two actors. So if this actor is removed from the network, this network could be broken. This actor plays an important role in the cohesion aspect of the network. "Density" is an indicator of the overall degree between actors in a network, defined as the ratio of the



number of relationships actually made in all connectable relationships (Carrington et al., 2005). Therefore, it can be concluded that the more the connections between actors in the network, the higher the density. And high-density networks are generally considered to be highly cohesive (Kadushin, 2012). The more cohesive the network, the higher the degree of trust and cooperation among actors in the network (Coleman, 1988). “Distance” is the minimum number of steps that must be taken to connect two actors, and the defined distance means at least a few intermediate steps in which the two actors are connected to each other. The shorter the distance between the two actors, the higher the connectivity of the actors. Also, the longest distance among any two actors in the network is called the ‘Diameter’ of the network. The smaller the diameter of the network, the faster and more efficiently information can be transmitted.

#### 6.2.2.3.2 Centrality

Centrality is the most commonly used analysis element among the social network analysis indicators, and it is the indicator expressing the degree of the center of one actor in the network. It is an indicator of the relative importance of actors in the network and is used as a concept of power and influence. Centrality analysis can identify who is playing an important role in the entire network, and the policy process can then use those actors as a means to communicate effectively in the network. Freeman (1992), who made a great contribution to the development of the centrality indicators in networks, divided the Centrality into Local Centrality and Global Centrality. Local Centrality includes Degree Centrality, and Global Centrality includes Closeness Centrality, Betweenness Centrality, and Prestige Centrality.

In this study, various types of the centrality of each actor were calculated using the UCINET program. Each centrality value of each actor does not have a specific meaning independently but serves as an indicator to identify the centrality of an actor by comparison with other actors (nodes) in the network.

#### Degree Centrality

It is an indicator that measures how many relations (connectivity) an actor has in the network. If the actors have many relations with other actors, they have broader choices and autonomy, and they can lower their dependence on other actors relatively. As a result, the actors with a

high Degree Centrality can assume that they have greater influence in the network. The greater the number of links to actors, the higher the actor's Degree Centrality.

If the network consists of directional lines, the number of all actors to choose an actor is In-degree, and the number of actors to choose one actor is Out-degree. If only the In-degree is shown, the actor's popularity can be determined, whereas if only the Out-degree is calculated, the number of actors influencing the actor can be examined. The network of policies against deforestation in Indonesia, which is addressed in this study, is not consistently active in vigorous interactions. Moreover, although the number of actors included in the network is large, the number of actors that actually actively interact is significantly smaller. In addition, this study analysis was based on the fact that there was a limit on choosing the number of actors who had interacted with their own organization when conducting questionnaires and interviews. Each actor could select up to three actors with many interactions in response to questions about each interaction in the interview. Since these questionnaires and interviews do not ask questions about the strength of the relationship with each actor, the number of actors that can be chosen is limited so that the degree of influence of the actors can be verified. Therefore, even though the network is a directional interaction structure, Degree Centrality is calculated by combining the values of In-degree and Out-degree without calculating the two values separately.

#### Closeness Centrality

It is an indicator of how far one actor is located in the center of the network structure, and it is measured by the distance, which is the shortest distance linking the two actors. The actor with the smallest sum of these distances can be described as having the highest total centrality so that the actor is in the central position in the network. For example, if the travel time to all cities in the country is compared by city, a city with a short average travel time to all cities can be a 'central' city. This indicator is related to the independence of actors; actors with high Closeness Centrality can play a role in mobilizing resources of the network more efficiently and can therefore access information quickly. In addition, this actor is more likely to receive undistorted information in the process of disseminating information (Marsden, 2002).

#### Prestige Centrality

It is an indicator that measures the number of other actors directly connected to one actor and the importance of other actors who have a relationship with one actor. This gives weight to the

importance of the connected actors, and the more the actors make many relations with the actors who have the highest empowerment, the higher their prestige. An actor can increase his or her influence when they have a relation with the actors who have higher prestige. The relations with a few influential actors in the network have a greater centrality value than those associated with low influence. Prestige Centrality is referred to as Eigenvector Centrality in Ucinet, the social network analysis software used in the study.

#### Betweenness Centrality

This indicator measures the extent to which one actor is situated among the other actors within the network. The more the one actor is placed on the shortest distance between the other actors, the higher the Betweenness Centrality of the actor, i.e., it measures the extent to which the actor can act as a broker in the network. The higher the Betweenness Centrality, the higher the control over the flow of information and resources within the network. Actors with a high degree of Betweenness Centrality may threaten the network by distorting information in the path of the relations among actors or interfering with the relations of actors.

#### 6.2.2.3.3 Openness

"Openness" means the extent to which actors can participate in the network and which outsiders refuse participation in the network (Yishai, 1992). Participation means including and excluding actors and explaining the stability and change of policy (Bulkeley, 2000; Jordan and Greenway, 1998; Smith, 1993). The policy is a product of complex interactions between central governments, regional governments, interest groups, and ordinary citizens, and these actors and their participation are vital parts of policy process study.

Openness is an important component of the policy network and one of the principles of good governance. It is considered an essential element for democratic governance. A White Paper on European Governance (2001) emphasizes that relevant stakeholders should actively communicate in order for the policy to follow Good Governance principles. It is important to increase public accessibility to improve the trust of complex institutions. The United Nations Development Program (2011) also notes that openness facilitates exchanging information and ideas and improving efficiency. The free participation of stakeholders in the decision-making contributes to the stability of institutions in crisis and promotes innovative policy dialogue.

#### 6.2.2.3.4 Typology of linkage

The typology of linkage is a form of interdependence determined by the dominance of the resources that actors have. Actors who are predominantly positioned above other actors determine the form of linkage through the power and allocation of their resources in the policy process. The hierarchical relation does not appear equal among actors, but a certain actor is in a dominant position. In this case, policy decisions are not made through negotiation or competition but rather according to attributes given by hierarchical positions. In a hierarchical relation, an actor located in the upper layer can exercise overall control over the actor's preference or purpose in the lower layers and dominate the actor in a lower layer through a hierarchical association (Schneider, 1992). Thus, there is a vertical relationship between actors in the hierarchical relationship and a horizontal relationship between actors in the exchange relationship (Kenis & Schneider, 1991).

This study examines the policy actors, the interaction between policy actors, and the network structure as the analysis elements of the policy network and analyzes the characteristics and types of policy networks of deforestation preventing policies in Indonesia by these elements. In addition, policy network types could be classified into Policy Community model, and Issue Network model, the criteria and contents of the applied classification are shown in Table 5.

Table 5. Types of policy networks: characteristics of policy Community and Issue Network

Dimension		Policy Community Model	Issue Network model
Actor	Number of actors	Very limited number, some group consciously excluded	Large
	Type of interest	Economic and/or professional interests dominate	Encompasses a range of affected interests
Interaction	Frequency of interest	Frequent, high-quality, interaction of all groups on all matters related to policy issue	Contacts fluctuate in frequency and intensity
	Attributes of interest	Cooperative, conflict	Cooperative, conflict always exists
Network Structure	Centrality	Relatively decentralized	Concentrated in some actors
	Openness	Normal	Very open

	Typology of linkage	Horizontal, vertical	Horizontal
Power	Resource	There is balance of power among members, and one group often dominates	Unequal power, reflecting unequal resources and unequal access.

Source: Marsh & Rhodes, 1992: 251

### **6.3 Analysis variables for hypotheses**

The process for verifying the four hypotheses presented in Chapter 1 through the analytical framework and analytical factors determined in Chapter 6 is as follows:

1) There are three independent streams in the policy process. Among them, the politics stream acts as a trigger mechanism and serves as a starting point for opening the policy window by coupling the three streams.

To verify this hypothesis, this study examines how the stream of problems, politics, and policy has progressed through the MSF and how the window for policy formulation will be opened. It also identifies the Policy Entrepreneur and which of the three streams has a significant impact on Policy Entrepreneurs and the Policy Window.

2) The centrality on policy network analysis is proportional to the impact of each policy actor on forest policy.

The centrality of each actor can be calculated through the interaction between policy actors and the network structure among the actors. In interviews and surveys with policy actors, it was also investigated which actors were most influential in the policy network. This hypothesis can be verified by comparing the calculated values of centrality with the actors who judge that others have a real high influence.

3) The regional governments are one of the most important policy actors, and they appear as hostile participants in the policy direction of the national central government, affecting the policy output.

This hypothesis can be proved by identifying the actors involved in the policy process and the form of participation of the actors. It is possible to determine whether local governments have conflictual interaction with the central government and whether it is an important actor that can influence policy outcomes through the central value of the local government.

4) International organizations, donors and agencies are policy actors who have the greatest influence in the policy network of Indonesia's policies against deforestation.

Through the centrality measurement that is one of the social network analyses of the policy network, the study can identify the most influential actors in this policy network. So it can ascertain whether international actor have a higher degree of closeness.

5) The number of policy actors who involve in the policy making process on preventing deforestation in Indonesia and actually affect the policy output is limited, and this policy network does not yet have an open network structure.

This is a hypothesis that corresponds to openness in the structural attributes of the policy network. To confirm openness, the diversity of actors and the number of policy actors participating in the policy network are identified. There are also legal grounds for allowing various actors and citizens to participate in the policy-making process. Additionally, whether the opinions of policy actors are reflected in the actual policy decision-making process is also an important element of analysis.

## **IV. Results**

## **7. Study Site Analysis**

Each country in the world has a unique political structure. This chapter summarizes the Indonesian political and administrative system for an adequate understanding of national policies before studying the formulation process of Indonesian policy.

### **7.1 Political and administration system**

#### **7.1.1 General political system**

Indonesia is a presidential system, and the President of Indonesia is elected by direct national voting as Head of State and an administrator. The term of office is five years, and President can be re-elected.

Indonesia declared independence as the Republic of Indonesia in 1945, completely independent from Japan and the Netherlands in 1949, adopted a parliamentary system, and 1945 President Sukarno took office(see Table 5). He established the Guided Democracy System and subsequently formed a powerful dictatorship. President Suharto took office in 1967 and implemented policies that put economic development and political stability first but formed a long-term ruling system created by reorganizing the parliamentary regime to maintain/prolong his power. Many social and economic problems occurred in this process, and many people protested against him. It was not until 1998 that Indonesia entered an era of mass democratization.

On October 20, 2004, President Susilo Bambang Yudhoyono was the first President elected by popular vote and the vice president to launch the first United Indonesia Cabinet. President Joko Widodo was elected in 2014 and is currently in office.



Table 6. List of Presidents of Indonesia

	Name	Party		Term in office
		English	Indonesian	
1	Sukarno	Independent		Aug. 18. 1945 - March 12. 1967
2	Suharto	Golkar- Party of the Functional Groups	Partai Golongan Karya	March 12. 1967 - May 21. 1998
3	Bacharuddin Jusuf Habibie	Golkar - Party of the Functional Groups	Partai Golongan Karya	May 21. 1998 - Oct. 20. 1999
4	Abdurrahman Wahid	National Awakening Party	Partai Kebangkitan Bangsa (PKB)	Oct. 20. 1999 - July 23. 2001
5	Megawati Setiawati Sukarnoputri	Indonesian Democratic Party of Struggle	Partai Demokrasi Indonesia Perjuangan (PDI-P)	July 23. 2001 - Oct. 20. 2004
6	Susilo Bambang Yudhoyono	Democratic Party	Partai Demokrat	Oct. 20. 2004 - Oct. 20. 2014
7	Joko Widodo	Indonesian Democratic Party of Struggle	Partai Demokrasi Indonesia Perjuangan (PDI-P)	Oct. 20. 2014 - Present

Source: Author's re-edit based on Encyclopedia Britannica Website (2018)

Currently, Indonesian administration consists of four coordinating ministries and 28 sub-division ministries under its coordinating ministries, with two other separate ministries. The Ministry of Environment and Forestry, which is mainly responsible for the administrative affairs related to forests in Indonesia, dramatically influences the entire socio-economic field of Indonesia and belongs to the Coordinating Ministry for Economic Affairs.

Since Indonesia's forests have a significant impact on socio-economic development, most ministries are affected by the Indonesian forest sector, but several ministries directly impact the formation and implementation of deforestation prevention policies. These ministries are marked with particular highlights in Table 6.

Table 7. Organization of Indonesian administration

Coordinating Ministry		Ministry	
English	Indonesian	English	Indonesian
Coordinating Ministry for Political, Legal, and Security Affairs	Kementerian Koordinator Bidang Politik, Hukum, dan Keamanan	Ministry of Home Affairs	Kementerian Dalam Negeri
		Ministry of Foreign Affairs	Kementerian Luar Negeri
		Ministry of Defense	Kementerian Pertahanan
		Ministry of Law and Human Rights	Kementerian Hukum dan Hak Asasi Manusia
		Ministry of Communication and Informatics	Kementerian Komunikasi dan Informatika
		Ministry of Administrative and Bureaucratic Reform	Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi
Coordinating Ministry for Economic Affairs	Kementerian Koordinator Bidang Ekonomi	Ministry of Finance	Kementerian Keuangan
		Ministry of Industry	Kementerian Perindustrian
		Ministry of Trade	Kementerian Perdagangan
		Ministry of Agriculture	Kementerian Pertanian
		Ministry of Manpower	Kementerian Tenaga Manusia
		Ministry of Cooperatives and Small & Medium Enterprises	Kementerian Koperasi dan Usaha Kecil dan Menengah
		Ministry of State Owned Enterprises	Kementerian Badan Usaha Milik Negara
		Ministry of Public Works and Public Housing	Kementerian Pekerjaan Umum dan Perumahan Rakyat

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

		Ministry of Agrarian Affairs and Spatial Planning	Kementerian Agraria dan Tata Ruang
		Ministry of Environment and Forestry	Kementerian Lingkungan Hidup dan Kehutanan
Coordinating Ministry for Maritime Affairs and Natural Resources	Kementerian Koordinator Bidang Kemaritiman dan Sumber Daya	Ministry of Transportation	Kementerian Perhubungan
		Ministry of Maritime Affairs and Fisheries	Kementerian Kelautan dan Perikanan
		Ministry of Tourism	Kementerian Pariwisata
		Ministry of Energy and Mineral Resources	Kementerian Energi dan Sumber Daya Mineral
Coordinating Ministry for Human Development and Culture	Kementerian Koordinator Bidang Pembangunan Manusia dan Kebudayaan	Ministry of Health	Kementerian Kesehatan
		Ministry of Social Affairs	Kementerian Sosial
		Ministry of Education and Culture	Kementerian Pendidikan dan Kebudayaan
		Ministry of Research, Technology and Higher Education	Kementerian Riset, Teknologi dan Pendidikan Tinggi
		Ministry of Religious Affairs	Kementerian Agama
		Ministry of Women Empowerment and Child Protection	Kementerian Pemberdayaan Perempuan dan Perlindungan Anak
		Ministry of Villages, Disadvantaged Regions and Transmigration	Kementerian Desa, PDT & Transmigrasi Gandeng Perguruan Tinggi
		Ministry of Youth and Sports Affairs	Kementerian Pemuda dan Olahraga
Ministry without Coordinating Minister		Ministry of State Secretary	Kementerian Sekretariat Negara
		Ministry of National Development Planning	Kementerian Perencanaan Pembangunan Nasional

Source: Author's construct

### 7.1.2 Organization of the Ministry of Environment and Forestry

The Ministry of Environment and Forestry was created via the reorganization of the administration of the President of Indonesia, which was achieved by the merger of the former Ministry of Forestry and the Ministry of Environment.

The name of the government ministry responsible for forestry and forest-related administrative affairs has changed as follows.

Table 8. Changes history of the name of the government organization responsible for forest in Indonesia

Name		Period
Indonesian	English	
Direktorat Jenderal Kehutanan, Departemen Pertanian	General Directorate of Forestry, Department of Agriculture	until 1983
Departemen Kehutanan	Department of Forestry	1983-1998
Departemen Kehutanan dan Perkebunan	Department of Forestry and Plantation	1998
Departemen Kehutanan	Department of Forestry	1998-2005
Kementerian Kehutanan	Ministry of Forestry	2005-2014

Source: Author's construct based on Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, 2015

By Presidential Decree No 16/2015 in October 2015, the Ministry of Forestry was officially merged with the Ministry of Environment. The new organization of ministry retains most of each two ministry's individual divisions.

The Ministry of Environment and Forestry consists of nine administrative departments divided by fields such as forest management, environmental conservation, and environmental pollution. In addition, the Human Resources Development Institute and research institutes are located on the organizational chart of the Ministry of Environment and Forestry (see Figure 8).

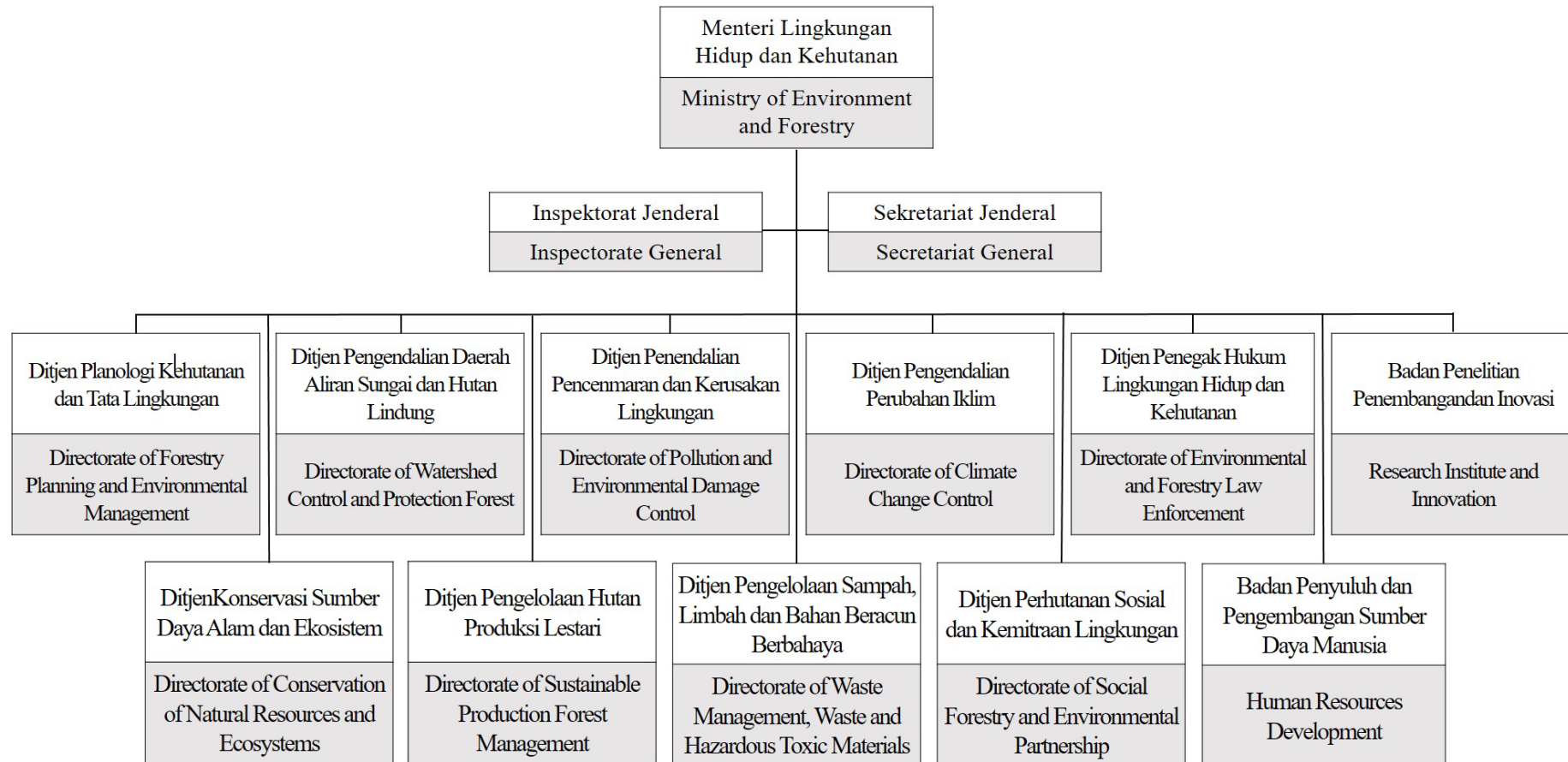


Figure 5. Organizational Structure in the Ministry of Environment and Forestry

Source: Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, 2015

### **7.1.3 The legislative power in Indonesia**

The legislature is bicameral (two-party system) and consists of the House of People's Representatives (DPR, Dewan Perwakilan Rakyat) and the House of Regional Representatives (DPD, Dewan Perwakilan Daerah) (Nachmany et al., 2014). The ensemble of DPR and DPD members constitutes a third representative body known as the People's Consultative Assembly (MPR, Majelis Permusyawaratan Rakyat). The DPR and the President jointly discuss and approve all legislation. All bills may come from the DPR, the President, or the DPD (Nachmany et al., 2014).

A wide range of legislation is created at various sources and different levels of authority (Nachmany et al., 2014), such that the hierarchy of legislation is as follows: Constitution of 1945; Presidential decree; MPR resolution; Law; Government regulation; Government regulation substituting law; and Regional regulation (Nachmany, 2015).

## **7.2 Regional autonomy System**

After Suharto was defeated in 1998, the decentralization was spread along with democratization, and the Law initiated the local autonomy on Local Government (No. 22/1999). The Law stipulates that regional governments exercise their powers in most areas except for the areas of diplomacy, security, defense, currency, and religion. However, due to a lack of central government authority's devolution and a lack of preparation by local government, there are many limitations in realizing decentralization and autonomy. In this process, issues such as the gap between local governments and corruption have been raised, and the reform of the local autonomy system in 2004 led to the first significant revision of the local government law enacted in 1999 (No. 32/2004 Law on Regional Government). This Law divides the service provision functions of local governments into Obligatory Functions and Discretionary Functions. The Law stipulates that national Minimum Service Standards for access to public services and quality should be met for the mandatory functions.

Table 9. Administrative divisions (Province) of Indonesia

Island	Province	Capital	No. of cities and regencies
Jawa (Java)	Banten	Serang	8
	DKI Jakarta	Jakarta	6
	Jawa Barat	Bandung	27
	Jawa Tengah	Semarang	35
	Jawa Timur	Surabaya	38
	Daerah Istimewa Yogyakarta	Yogyakarta	5
Kalimantan	Kalimantan Barat	Pontianak	14
	Kalimantan Selatan	Banjarmasin	13
	Kalimantan Tengah	Palangkaraya	14
	Kalimantan Timur	Samarinda	10
	Kalimantan Utara	Tanjungselor	5
Maluku	Maluku	Ambon	11
	Maluku Utara	Sofifi	10
Nusa Tenggara	Bali	Denpasar	9
	Nusa Tenggara Barat	Mataram	10
	Nusa Tenggara Timur	Kupang	22
Papua	Papua	Jayapura	29
	Papua Barat	Manokwari	13
Sulawesi	Gorontalo	Gorontalo	6
	Sulawesi Barat	Mamuju	6
	Sulawesi Selatan	Makassar	24
	Sulawesi Tengah	Palu	13
	Sulawesi Tenggara	Kendari	17

	Sulawesi Utara	Manado	15
Sumatera	Aceh	Banda Aceh	23
	Bengkulu	Bengkulu	10
	Jambi	Jambi	11
	Kepulauan Bangka Belitung	Pangkalpinang	7
	Kepulauan Riau	Tanjung Pinang	7
	Lampung	Bandar Lampung	15
	Riau	Pekanbaru	12
	Sumatera Barat	Padang	19
	Sumatera Selatan	Palembang	17
	Sumatera Utara	Medan	33

Source: Pcgn, 2015

Regional governors (22 Provincial level and 226 Regency levels) were elected by regional referendum in 2005 after a direct presidential vote in 2004. The regional government of Indonesia's administrative structure consists of 34 Provinces (provinsi) (see Table 9), which are subdivided into 514 (98 Municipalities (kota) and 416 Regencies (kabupaten)) at the second stage level. Among them, the capital Jakarta and Yogyakarta are designated as special administrative states, as well as Aceh and Papua and Western Papua are designated as particular autonomous provinces.

The Administrative Structure consists of two stages: the first stage, Province (Provinsi), and the second stage, Regency (Kabupaten / rural area) and the Municipality (Kota / urban area). Under the Regency and Municipality, there is a Sub-District (Kecamatan) and a village (Kelurahan) or hamlet (Desa) under it (see Table 10).



Table 10. The structure on administrative division of Indonesia

Level	Name of administrative structure		Top officials		Notes
	Indonesia	English	Indonesia	English	
1	Provinsi (Daerah Tingkat I)	Province (Provincial Government Level I)	Gubernur	Governor	<ul style="list-style-type: none"> <li>- the elected official</li> <li>- direct responsibility to the President</li> <li>- administratively, the Secretary of the Interior</li> </ul>
2	Kabupaten (Daerah Tingkat II)	Regency (Provincial Government Level II)	Bupati	Regent	<ul style="list-style-type: none"> <li>- the elected official</li> <li>- direct responsibility to the Governor</li> <li>- mainly rural areas</li> </ul>
	Kotamadya (Daerah Tingkat II)	Municipality (Provincial Government Level II)	Walikota	Mayor	<ul style="list-style-type: none"> <li>- the elected official</li> <li>- direct responsibility to the Governor</li> <li>- mainly urban areas</li> </ul>
3	Kecamatan	District	Camat	Head of Sub-District	<ul style="list-style-type: none"> <li>- Governor appointed</li> <li>- direct responsibility to the regent or Mayor</li> </ul>
	Distrik	District	Kepala distrik	District Chief	<ul style="list-style-type: none"> <li>- Governor appointed</li> <li>- only for Papua and West Papua</li> </ul>
4	Kelurahan	Village	Lurah	Village Head	<ul style="list-style-type: none"> <li>- Governor appointed</li> <li>- direct responsibility to Head of Sub-District</li> </ul>
	Desa	Hamlet	Kepala Desa	Hamlet Head	<ul style="list-style-type: none"> <li>- quasi-government organization</li> <li>- the Village Head is not a public official and is elected by the villagers</li> <li>- it is legally responsible for the Head of sub-District, but in reality, the Village Head is only responsible for the villagers</li> </ul>

Source: Pcg, 2015

In 1999/6, the authority to approve the timber rights in small-scale forest and forest product collection permits was transferred from the central government to the regional government. However, the abuse of permitting by regional governments, the increase of illegal logging, and the decline of forest resources have led the central government to transfer the authority on logging permission back to the central government. Since then, Law No.1999 / 6 has been abolished and all timber use approved have been transferred to the center, and all timber supplies based on the governor's ability, which was until then an important supplier of the plywood factories, were deemed illegal. In 2003, the Ministry of Forestry further strengthened the timber rights management system and imposed a quota system for forestry business rights. The quota system has shrunk timber use in Indonesia from 12 million cubic meters in 2002 to 6.8 million cubic meters in 2003 and 5.7 million cubic meters in 2004. In this way, the Forest Department has reverted back to centralized punishment management, which had been distributed to local governments. Since then, the legislation of local governments has continued to change, and related content can be found in the next chapter under 7.3.2, "Current Forest Law and Regulation."

## **7.3 Indonesian Forest Policy**

### **7.3.1 History of Indonesian Forest Policy**

This study aims to identify the phenomenon of the policy network that forms the Indonesian forest policy and to study the formulation of the policy against deforestation. Therefore, this chapter will examine how the forest policy and the forest laws of Indonesia have changed.

The Forestry Law No.5 of 1967, which was established during the President Suharto regime, is the first national forest law. The law defined the central government's forest planning, development, monitoring, evaluation, and timber rights. The Forest law also prohibits all citizens from living in and set up private property rights in national forests and stipulates that the sole authority to manage natural resources is attributed to the government. According to the provisions of the Forest Law No. 5, the Ministry of Forestry has jurisdiction over all the lands designated as forestry sites, and Article 33 of the Constitution, the higher law of Indonesia in

1945, gives the state control over the harvesting of forest land and resources. The Indonesian government controls, manages and operates domestic forests based on the provisions of the Constitution. This law was abolished in 1999 when the Forestry Law No. 41 came into force.

The Government Decree No. 21 of 1970 stipulated the right to forest harvestings, such as the forest concessions and the harvesting rights of forest products. Since then, forest owners have been obliged to incorporate the wood processing industry and domestic supply of products for the sawmills. In 1981, the plywood industry was set as a critical industry for the wood processing industry, and the licensing system for forest products was implemented, which in turn led to active forest development.

Government Decree No. 28 stipulated forest conservation in 1985. In 1991, the regulations on forest functions were enforced, and the forests and protected forests were formally defined. The Indonesian government completely banned the export of timber logs in 1985. According to the timber log experts and plywood industry development policies, Indonesia could supply timber at domestic plywood factories at a lower price than international prices. This, however, has resulted in the forest concessions being concentrated in large enterprises in cooperation with the government and related organizations at that time. Indonesian plywood had a price advantage in the international markets; Indonesia's share in the global plywood market reached 79% in the mid-1990s.

The government has subsidized the development of pulp and paper industries for the purpose of pulp remanufacturing. At the same time, the government increased the supply of wood beyond the forest concessions by converting the conservation area into the production forest. In 1990, the government accelerated plantation by granting industrial plantation rights while at the same time turning local forests into production forests to allow clear-cutting of the local forests, thereby increasing log supply.

After Indonesia's economic and social crisis and Suharto's resignation in 1993, International organizations such as World Bank have put pressure on Indonesia. Indonesia established the 'New Forest Law' in 1999, and the following are the critical points of this Forest Law.

- Clarified the scope of production forests, protected forests, and conservation forests.
- Changed the authority to issue the forest concessions (more than 10,000 hectare in the

responsibility of the minister of forestry, less than the provincial government (10,000 hectare)

- Changed the distribution of the issuance on the forest concessions from the central and regional government (20% in Central government, 80% in Province, 16% in Regency, 64% in District)
- Promoted forest conservation that can be managed with binding guidelines (Colfer & Resosudarmo, 2002).

The Forestry Law No. 41/1999 was revised to Law No. 6/2007 “Forest Utilization, Forest Management Plan and Forest Section.” The Law is composed of 144 articles and provides for the definition, purpose, function, use, planning, management of forests, forest protection and conservation and restoration, research and development, supervision, and administration. It also describes plantation-related policies and permits and those related to the timber industry (Ecolex Website, 2018).

By the decentralization, regional governments were authorized to approve small-scale forestry and forest product collection permission by the Government Decree No. 6 of 1999 was in the responsibility of regional government. Still, the abuse of sanctioning by local governments, the increase of illegal logging, and the decline of forest resources have led the central government to regain the authority on logging permission. With the implementation of Government Decree No.34 of 2002, Government Decree No.6/1999 was abolished, and all the affairs of forestry were transferred to the Ministry of Forestry, and the system was integrated to coordinate the supply system ranging from raw materials to timber products (Ecolex Website, 2018).

In addition, the New Forestry Law No. 41/1999 recognized the activities for the collection of forest products, forest management, and the welfare of residents as the daily life of the residents based on common law.

### **7.3.2 Current forest law and regulation**

Indonesia is a decentralized democracy where regional governments and municipalities

provide most government services. However, the ultimate authority for forest management lies at the national level (Forest Legality Initiative Website, 2018). The patchwork framework of law and regulation is causing confusion between the operator and the authorities, and confusion is continuing, especially concerning the issue of land tenure and concession procedures. Indonesia's regional autonomy system has led to the rapid proliferation of law-making bodies. Under complex systems of overlapping or contradictory authorities for forest resources at provincial and district levels, more than 1,000 organizations and individuals currently have law enforcement authority. This number is likely to increase due to the ongoing administration of existing provincial, district-level, and other government entities. Despite the overlapping governmental conflicts and authoritarian divisions of different levels, several national policies form the basis of the Indonesian forestry regime (Forest Legality Initiative Website, 2018).

\* Presidential Decree No. 16/2015 on the Ministry of the Environment and Forestry

The Forest Department reaffirmed Law No. 41/1999 that all elements related to forests are authorized. The central government (Minister of Forestry) is responsible for the text (Article 4, Clause 2) as follows. These authorities belong to the newly restructured Ministry of Environment and Forestry (MoEF).

- a) Control and manage all activities related to forests and forest products.
- b) Determine or change the category of a particular land as a forest area or otherwise.
- c) Manage and determine legal relationships between people and forests and legal actions related to forests.

The legislation on forests is more complicated than other fields in the areas of autonomy between central and local governments, and the government is constantly renewing related forest laws reflecting the current situation.

In order to prevent the clearing and destruction of forests, Law No.18/2013 was enacted. The Law further strengthened law enforcement by imposing penalties and by providing legal certainty on those engaged in deforestation (Forest Legality Initiative Website, 2018). It clearly defined the activities of illegal timber trade, the activities that the individuals, businesses, and

organizations should prohibit during logging in forests, and the falsification of permits and licenses made by officials. In addition, a special investigative team to investigate forest-related crime specifics should be formed within two years of enactment of this Law (Forest Legality Initiative Website, 2018).

The laws related to local governments include Law No. 6/2014 (village), an extension of the village's authority to manage the village's assets and natural resources, income, and administration, and has a tremendous impact on the forestry sector. In particular, the Indonesian village law provides an annual discretionary fund for local improvement to support poverty eradication, health, education, and infrastructure development and reassigns certain parts of the national budget to the village administration (Forest Legality Initiative Website, 2018). Furthermore, Law No. 23/2014 effectively weakened the local autonomy system in Indonesia by revoking the authority to manage natural resources in district and city municipal governments and moving authority to national-level and provincial governments.

### **7.3.3 Current policies against deforestation**

#### **7.3.3.1 National Level Forestry Plan 2011-2030 (Indonesian; Rencana Kehutanan Tingkat Nasional Tahun 2011-2030, RKTN)**

The National Level Forestry Plan 2011-2030 in Indonesia is a detailed macro plan covering references for development, research, and project plan relating to critical functions of geography, period, and forest area. The National Forest Plan seeks to provide a direction for future forest management by assessing sustainable and equitable use of forest resources and the multifunctional functions of forests for social welfare. This policy aims to reach the world level in terms of forest management, research, and technology in 2030 by optimizing forest areas and promoting forest resource productivity, value, and roles.

The National Level Forestry Plan aims at sustainable forest development. Sustainable development is based on synergies of ecological, economic, and social forest development. This means enhancing the productivity, forest biodiversity, and function of conservation areas based on sustainable forest development as specified in national forest plans. It also promotes

development and equity in forest utilization and function, and it aims to promote the participation of the community in forest development and establish an organization to play a role in forest utilization.

The National Level Forestry Plan established the necessary policies and strategies to meet the objectives and set the stage-by-step achievement targets for each sector.

**Indonesia Forestry Policy 2011-2030**

1. System Update
2. Strengthening and optimization of forest areas
3. Development of incentives and penalty systems
4. Increase forestry research and development
5. Strengthening Decentralization in Forest Management
6. Strengthen coordination between divisions / departments
7. Institutional strengthening of human resource development
8. Expanding the role of Indonesian forest sector at local and world level
9. Commitment and consistency of forestry law enforcement
10. Strengthen the use of natural resources for the purpose of conservation
11. Strengthening the use of natural resources for global environmental balance
12. Promote rehabilitation of forest areas
13. Increase in forest products
14. Strengthening the accessibility and role of the community in forest management
15. Function of forest area and optimization of profit distribution

Figure 6. The objectives of Indonesian forestry policy on National Level Forest Plan 2011-2030

Source: Kementerian Kehutanan, 2011

In addition, this plan has set appropriate targets for each region, considering the environmental and geographical specificity of each region (island-province) and enhancing the efficiency and effectiveness of this policy. The direction and goals for each region are shown in Table 11 below.

Table 11. The policy direction and goals for each territory on National Level Forest Plan 2011-2030

<b>Territory</b>	<b>Policy Direction and Goals</b>
Jawa - Java	<ul style="list-style-type: none"><li>- Increase forest cover inside and outside forest areas and improve the efficiency of forest state-owned enterprises.</li><li>- Forestry Industry Development based on community forests and increasing value added of forest products</li></ul>
Sumatra	<ul style="list-style-type: none"><li>- Resolving forest area problems, increasing the role of forest protection and conservation as well as the efficiency of forestry businesses and the development of high value-added forestry businesses.</li><li>- Development of plantations.</li></ul>
Kalimantan	<ul style="list-style-type: none"><li>- Resolving forest area problems, increasing the role of conservation and efficiency and developing SFM for forestry businesses</li><li>- Development of plantations.</li><li>- Forestry industry development.</li></ul>
Sulawesi	<ul style="list-style-type: none"><li>- Increase forest cover inside and outside forest areas as well as forestry businesses for local communities.</li><li>- Development of plantations.</li><li>- Forestry industry development</li><li>- NTFP Development.</li></ul>
Maluku	<ul style="list-style-type: none"><li>- Increasing the role of protection and conservation and forestry businesses for local communities.</li><li>- Development of plantations.</li><li>- Forestry industry development.</li></ul>
Bali and Nusa Tenggara	<ul style="list-style-type: none"><li>- Increase forest cover inside and outside forest areas and increase forest protection and conservation.</li><li>- NTFP Development.</li><li>- Development of Environmental Services and Nature Tourism.</li></ul>
Papua	<ul style="list-style-type: none"><li>- Resolving forest area problems, developing high value-added businesses and managing forests for local communities.</li><li>- Development of plantations.</li><li>- Forestry industry development.</li></ul>

Source: Kementerian Kehutanan, 2011



### 7.3.3.2 Suspension of New Licenses and Improving the Forest Governance of Primary Forest and Peatland (2011)

In 2007, Norway announced at the 13th Conference of the Parties to the UNFCCC that it would contribute approximately \$ 500 million per year to support REDD in developing countries (NORAD, 2011). At the “Climate Change and Forests” meeting held in Oslo, Norway on May 26, 2010, The Minister of Environment and International Cooperation of Norway and the Minister of Foreign Affairs of Indonesia concluded “LoI (Letter of Intent) between Indonesia and Norway on REDD+ Cooperation.” In this LoI, the Norwegian government has agreed to provide \$1 billion contributions to Indonesia’s REDD+ implementation efforts.

The purpose of the bilateral cooperation in this LOI is to substantially reduce greenhouse gas emissions from forests through international climate change policy, especially REDD+ policy dialogue, and prevent forests and peatlands' devastation. In other words, the partnership between the two countries aims to contribute to the development and implementation of the REDD+ strategy in Indonesia.

In the transformation phase, the agreement with Norway on the two-year suspension of all new licenses for peatlands and primary forests (called “Forest Moratoriums”) has become direct enforcement of the Indonesian forest moratorium policy.

The Forest Moratorium aims to improve forest governance and reduce greenhouse gas emissions in the forest sector during that period by no longer issuing new forest licenses for peatlands and natural forests (Presidential Decree No. 10/2011). In Indonesia, where more than half of the country is forest, forests are used in various fields such as agriculture and mining, and forestry. Many stakeholders want to use forests. The forest moratorium policy, which restricts the use of forests to oil palm companies and pulp and paper companies, could be a direct threat to business, and its impacts have affected both domestic and export markets. Therefore, the forest moratorium policy in Indonesia is a political agenda that needs to be agreed upon among various stakeholders. In order for the Indonesian government to implement the forest moratorium policy, it is necessary for the government to make efforts to understand the stakeholders and to reach an agreement. The Indonesian government enforced the forest moratorium policy until it could resolve these various controversies and risks, and the presidency extended it until 2019. However, the Indonesian government has decided not to

renew the 'Forest Moratorium' in September 2021, allowing them to apply for new licenses for logging in Primary Forest and Peatland. Although the Indonesian government has declared that efforts to combat deforestation will not be affected by the expiration of the 'Forest Moratorium', the global community and NGOs have expressed significant concern, arguing that private companies have intervened in this decision.

#### 7.3.3.3 National Action Plan for Reduction of Greenhouse Gas Emission (RAN-GRK) (2011)

The National Action Plan for Greenhouse Gas Reduction (RAN-GRK) is a follow-up to the Indonesian pledge to address climate change issues presented by President Susilo Bambang Yudhoyono in front of national leaders at the Pittsburgh G20 Summit in the United States in September 2009 (Ministry of National Development Planning & National Development Planning Agency, 2011).

To comply with the GHG emission reduction commitment, the RAN-GRK has been developed to provide a policy framework for the central government, regional governments, private sectors, and other key stakeholders on implementation actions, directly and indirectly, related to GHG emission reduction efforts during the 2010-2020 period according to the Long-Term Development Plan (RPJP 2005-2025) and the Medium-Term Development Plan (RPJM 2015-2019). The RAN-GRK was approved by Presidential Regulation No. 61/2011 (Ministry of National Development Planning & National Development Planning Agency, 2011).

The RAN-GRK proposes mitigation action plans in five priority sectors (Forestry and Peatland, Agriculture, Industry, Energy and Transport, and Waste Management) as well as other priority activities that are an integral part of the national development planning, which supports the principles of economic growth, poverty reduction and sustainable development (Ministry of National Development Planning & National Development Planning Agency, 2011).

The objectives of the RAN-GRK are to act (Ministry of National Development Planning & National Development Planning Agency, 2011):

- as a GHG emission reduction implementation reference by priority sectors at the national and local levels;

- as a reference to investment related to GHG emission reduction coordinated at the national and local levels;
- as a reference to GHG emission reduction action plan and strategy development by regions in Indonesia.

### **7.3.4 International regime against deforestation**

The international initiatives, regulations and agreements that affect forest management and forestry in Indonesia are listed below and the list is organized focusing on the most important regimes in Indonesia.

#### **7.3.4.1 Principle 2 of the Rio Declaration on Environment and Development**

The Rio Declaration on Environment and Development is a set of principles that recognize the importance of environmental conservation and provide international guidelines. Representatives from each country gathered at the United Nations Conference for Environment and Development in Rio de Janeiro in 1992 and the details could be found in the report of this conference (Facing Finance Website, 2018). The Rio Declaration serves as a part of the standards by which UN Member countries establish domestic and international environmental policies and by which they form consensus or organizations with one another, as it relates to the environment and conservation (Facing Finance Website, 2018).

Principle 2 of the Rio Declaration on Environment and Development, which was adopted at the 1992 Earth Summit in Rio de Janeiro, stated that (United Nations General Assembly, 1992):

*“States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction”.*

The Rio Forest Principle was identified in Rio Declaration Principles 1(a) and 2(a) of the ‘Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the

Management, Conservation and Sustainable Development of all Types of Forests' (Forest Principles) of 1992 adopted in Rio. Then the principle was later applied to the 'Non-legally Binding Instrument on All Types of Forests' (NLBI) in 2007 (Squintani & Vedder, 2014).

#### 7.3.4.2 Sustainable Forest Management (SFM)

The United Nations General Assembly defined sustainable forest management (SFM) as a “dynamic and evolving concept, which aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations” (United Nations General Assembly, 2008). The SFM concept encompasses a wide variety of forest ecosystem goods and services at global, national and regional levels, covering all geographical areas and natural and planted forests in climate zones and all forest functions managed for conservation, production or multifunctional use (CPF, 2012). Criteria and indicators developed for temperate, boreal and tropical forests provide a framework for assessing, monitoring and reporting the implementation of SFM based on: biological diversity; the extent of forest resources; forest health and vitality; protective functions; productive functions; socio-economic functions; and, the policy, legal and institutional framework (CPF, 2012). Certification processes and best-practices guidelines have been developed to guide, evaluate, demonstrate and monitor SFM at the forest management unit level (CPF, 2012).

There has been considerable progress in implementing SFM, but many challenges remain (CPF, 2012). Therefore, many researchers and research institutions are working to inform policy makers and stakeholders about the various problems faced in implementing SFM.

#### 7.3.4.3 UN Convention on Biological Diversity (CBD)

The Convention on Biological Diversity consists of a preamble, a text of 42 provisions, and two Annexes. The main contents are largely divided into the obligations of the biodiversity conservation of the participating countries and the cooperation elements between the participating countries for biodiversity conservation. Domestic obligations include establishing national strategies for the sustainable use and conservation of biodiversity, the monitoring of

biodiversity components, the establishment of in-situ conservation measures and the establishment of seed banks, implementation of ex-situ conservation measures, and environmental impact assessment in consideration of biodiversity conservation. As for the cooperation among the participating countries, the following has been agreed upon: introduction of the Prior Informed Consent (PIC) system to get prior approval of the relevant country when accessing the genetic resources of other countries, promotion of biodiversity conservation technologies such as biotechnology to other member countries, reviewing the adoption of the Protocol for the safe transboundary movement and management of living modified organisms (LMOs), and financial aid provisions for the implementation of the Convention in developing countries. Each country recognizes biodiversity richness in tropical rain forests, flora and fauna as valuable resources of humanity in its territory, and does not allow the exclusive rights of that country to previously unexplored genetic resources. It is possible to use biological resources scientifically or educationally, but it mandates that resource-consuming and resource-holding countries cooperate closely when it comes to commercial use.

#### 7.3.4.4 Reducing Emissions from Deforestation and Forest Degradation

REDD+ is a mechanism developed by Parties to the UNFCCC to create a financial value for the carbon stored in forests using “policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries” (Decision 1/COP 13, MOP 3, Bali, 2007). This program is an essential and integral part of the global efforts to mitigate climate change (FAO Website-b, 2018).

The core of REDD+ program is forests and their fundamental role in mitigating climate change by removing CO<sub>2</sub> from the atmosphere and storing CO<sub>2</sub> in biomass and soils. This also means that when forests are cleared or degraded, they can become a source of GHG emissions by releasing the carbon stored therein. Globally, deforestation and forest degradation are estimated to account for about 17 percent of CO<sub>2</sub> emissions (UN-REDD Programme Website, 2019).

The REDD + program is divided into three phases: the Readiness and Implementation phases, and Payment for Results. The first Readiness phase is developing national strategies and action plans, including REDD+ mitigation strategy and capacity building. The second phase may include technology development and transfer, capacity building, and results-based demonstration activities by implementing REDD+ measures and national strategies or plans by implementing national strategy and results-based demonstration activities. And the final phase, result-based action, must be measured, reported and verified (FAO, 2018). The program aims to support five outcomes related to the program objectives: (1) Strengthen country capacity, (2) engage stakeholders in consultation processes, (3) realize direct access, (4) provide access to finance, (5) mobilize the private sector (GCF Website, 2020).

REDD+ is one of the most critical support programs against forest degradation and for forest conservation in developing countries in Latin America and Asia. Reflecting this background, Green Climate Fund (GCF), which operates the world's largest climate fund, has adopted REDD+ as its core support area. Since 2017, the GCF has started pilot REDD+ results-based payments under the Warsaw Framework for REDD+ and other REDD+ decisions under the UNFCCC. Developing countries that have completed the first two phases of REDD+ program for results generated between the end of 2013 and the end of 2018 can apply for phase 3 funding through the GCF's pilot program.

Indonesia was supported through the GCF program for Phase 3; Results-based Payments of the REDD+ program implemented with the support of UNDP, and the project was recognized for a reduced volume of 27 million tonnes of MtCO<sub>2</sub>eq. Indonesia plans to invest the proceeds of Results-based Payments into activities to implement the national REDD+ action strategy. These activities include developing and implementing Indonesia's REDD+ architecture and supporting decentralized sustainable forest governance. The World Bank's FCPF, established to help developing countries prepare for REDD+ implementation, supports partnerships with many developing countries, businesses, and civil society, and also supports Indonesia's implementation of REDD+.

#### 7.3.4.5 FLEGT (Forest Law Enforcement, Governance and Trade) - EU

Based on the FLEGT action plan made in 2003 by the EU, FLEGT aims to strengthen

sustainable and legitimate forest management, improve national forest governance, and promote legally produced timber trade, thereby reducing illegal logging. Indonesia's Government and the EU signed the FLEGT-VPA (Voluntary Partnership Agreement on Forest Law Enforcement Governance and Trade) on September 30, 2013 to prevent illegal logging and distribution of illegal logging in the European market (ACRN, 2014).

VPAs are legally binding trade agreements between the EU and timber-producing/exporting countries outside the EU (EU FLEGT Facility Website, 2018). The VPAs aim to ensure that timber and wood products exported to the EU are produced in legitimate processes. This agreement helps timber producing countries stop illegal logging by improving the governance and regulation of the forest sector. Fifteen countries have signed FLEGT-VPAs until 2022 and the countries are currently working with the EU to develop systems for legitimate timber management, certification and licensing. Indonesia, one of these, is issuing FLEGT licenses. The country is called "VPA partner country."

In 2003, Indonesia began developing an operator-based timber management system for all timber exports based on an essential third-party certification approach for legality and sustainability. SVLK (Sistem Verifikasi Legalitas Kayu, Indonesian-Timber Legality Information System) has become the basis of the timber legitimacy verification system under the VPA of Indonesia. Currently, VPA deals with all exports, and coverage will be expanded to include the domestic market step by step. On November 15, 2016, Indonesia began issuing FLEGT licenses to identify legitimate timber products exported to the EU. Over the next 12 months, Indonesia has issued more than 39,000 licenses for shipments to 28 EU member states, totaling over € 1 billion in value (EU FLEGT Facility, 2017).

### **7.3.5 Development cooperation projects supported by donor countries**

Industrial countries support projects involving international cooperation on favor of the economic development of developing countries. In Indonesia, many projects are in progress that are intended to prevent deforestation through promoting technical assistance projects in tropical forests or strengthening the capacity of government and local communities. Each government has separate independent agencies under it that promote international cooperation and assistance in developing countries, and these are responsible for seeing through

development cooperation projects. Such activities may include implementation in individual unit projects with specific objectives or in the form of programs in which several projects are combined to achieve higher goals, including preventing deforestation in Indonesia. Below, some cases of projects of representative aid organizations are listed.

#### 7.3.5.1 Forest and Climate Change Programme: Germany

The Forest and Climate Change Programme (FORCLIME) is a bilateral program between the Ministry of Environment and Forestry (MoEF) in Indonesia and the Ministry for Economic Cooperation and Development (BMZ) in Germany, and was implemented from 2009 to December 2020. The Program is being implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and supported by KfW Development Bank GIZ-FORCLIME, 2017). Its goal is to improve the livelihoods of poor rural communities in Indonesia while at the same time reducing emissions of greenhouse gases (GHGs) in the forestry sector. FORCLIME combines technical and financial cooperation in a multi-level approach. The technical cooperation aspect focuses on reform of forestry administration and promotes human capacity development, and the financial cooperation supports district-based pilot projects for REDD+ program in three districts of Kalimantan (GIZ-FORCLIME, 2017). This approach supports the vision and mission of the MoEF, as outlined in the medium-term strategic plan.

The technical cooperation aspect of FORCLIME is intended to implement six aims (GIZ-FORCLIME, 2017):

- Forestry policy, strategic planning and institutional development
- Development of Forest Management Units
- Sustainable Forest Management
- Integration of Conservation and Development
- Human Capacity Development
- Biodiversity and Management of Protected Areas



#### 7.3.5.2 Multi-stakeholder Forestry Programme: UK

The program aims to build on earlier phases of the Multi-Stakeholder Forestry Programme(MFP), through which, since 2000, the UK Department for International Development(DFID) has been supporting in Indonesia to improve its governance, and to deliver an ambitious set of results regarding timber licenses, export volumes of sustainably sourced timber, areas under community forest management, and the number and value of community forest businesses.

The first phase of the MFP from 2000 to 2006 was emphasizing poverty eradication in communities that depend for forest resources on their livelihoods. In the second phase, the program focused on developing an Indonesia Timber Legality Assurance System, officially known as the Sistem Verifikasi Legalitas Kayu (SVLK), which was implemented to reduce illegal trade of timber and strengthen governance in the forest sector. The purpose of the third phase is to promote commercially viable and sustainable forest-based enterprises and to promote the provision of forest land to encourage the legal production of wood to enter the domestic and export markets (MFP, 2011).

#### 7.3.5.3 USAID LESTARI Project: United States

LESTARI, which means “everlasting” in Indonesian, is a sustainable forest management project undertaken to support the Indonesian government as it seeks to reduce GHG emissions and preserve biodiversity in carbon-rich and biologically important forest and mangrove ecosystems (LESTARI Website, 2018). LESTARI was implemented under the initiative of Tetra Tech and a consortium of partners, including WWF-Indonesia, Wildlife Conservation Society, Blue Forests, Michigan State University, and INFIS-Mongabay Indonesia, and the program ran from 2015 to 2020.

LESTARI is supported by the strong foundation established by USAID’s Indonesia Forest and Climate Support (IFACS) project, which supports effective forest policy and forest management in focal regional districts. LESTARI applies a landscape approach: an integrated land-use management framework that combines inter-sectoral policies to align development

and conservation objectives. USAID LESTARI activities are targeted to six strategic landscapes, in Central Kalimantan (Katingan-Kahayan), Aceh (Leuser), and Papua (Sarmi, Lorentz, Mappi-Bouven Digoel, and Cyclops) (LESTARI Website, 2018).

LESTARI incorporates three integrated and synergistic thematic activities: forest and land-use governance and advocacy, conservation management and private sector participation. Various strategic approaches support each technology theme. LESTARI works at landscape levels through grantees, subcontractors and works in the regional government, the private sector, the communities (LESTARI Website, 2018). LESTARI's thematic activities and strategic approaches are shown in Table 12 below.

Table 12. LESTARI's strategic approach

Thematic activities	Strategic approach
Land-use governance and advocacy	Awareness and advocacy
	Operationalize SEAs and LCPs
	Environmental Governance
Conservation co-management	Co-management
	Protected area management
Private sector engagement	Green Enterprises
	Private sector BMPs
	PES and REDD+ innovative finance

Source: LESTARI Website (Nov 12, 2018)

Abbreviations: SEAs: strategic environmental assessments, LCPs: landscape conservation plans, BMPs: best management practices, PES: payments for ecosystem services

#### 7.3.5.4 International Climate and Forest Initiative: Norway

The Norwegian government supports global efforts to reduce tropical rainforest destruction, and to stop GHG emissions from deforestation and forest degradation in developing countries.

Norway's International Climate and Forest Initiative (NICFI) is leading this effort in the Ministry of Climate and Environment (NORAD Website, 2018). The Norwegian Agency for Development Cooperation (NORAD) manages a significant portion of its funding to develop climate and forest initiatives on behalf of the Ministry of Climate and Environment (NORAD, 2018). Norway's International Climate and Forest Initiative was initiated by the Norwegian Prime Minister during the Bali Climate Change Conference in December 2007, pledging three billion Norwegian Kroner (US\$ 500 million) per year to the Reducing Emissions from REDD+ program in developing countries (NORAD, 2011).

After NICFI was launched at COP13 in 2008, Indonesia government expressed interest in a bilateral agreement with Norway. However, due to the lack of national consensus on development of REDD projects and GHG emissions in Norway and Indonesia, direct negotiations between the two countries were not quickly resolved. At COP15 in Copenhagen in 2009, Indonesia and Norway began negotiating a possible bilateral agreement on REDD in developing countries (REDD+) under Norway's International Climate and Forest Initiative (NORAD, 2011). Norway was encouraged by President Yudhoyono's announcement of G20 emissions reduction in Indonesia. In May 2010, the Norwegian and Indonesian governments signed and announced a joint 'Letter of Intent (LoI)' in 2010 committed to cooperation on reducing GHG emissions from deforestation and forest degradation (2010).'

Currently, NICFI supports REDD+ in Indonesia through four main avenues:

1. Bilateral partnership or "LoI"
2. Multilateral initiatives (UN-REDD, FCPF)
3. NORAD managed Civil Society Support Scheme
4. Embassy-managed development cooperation grants (NORAD, 2011).

However, Indonesia and Norway differed on their deforestation efforts, Norway's funding, and bilateral commitments and ultimately agreed to end the LOI in September 2021 after consultations between ministries.

## 8. Application of Multiple Streams Framework

### 8.1 Problem Streams

Sunderlin et al. (2008) indicated that approximately 20 million Indonesians live in and around the forested areas, of which around 6 million people depend on forest resources for their livelihoods (Blaser et al., 2011). Forests and forestry have played a significant role in Indonesia's expansive economic development over the last five decades. Forestry industries have expanded from craft timber local businesses to international competition. Forestry manufacturing has shifted from small manufacturing to larger-scale plywood production and the production of paper and pulp. These combined wood manufacturing sectors, forestry, and the pulp and paper industry contribute about USD 21 billion to Indonesia's GDP and around 3.5 % of the national economy in 2013 (IndoComTrade Website, 2017). Because Indonesia is home to one of the world's largest tropical forests, deforestation in Indonesia's tropical forests is a serious challenge that may cause economic, environmental, and social problems in Indonesia while also affecting the rest of the world.

Table 13. Changes in forest area of countries

(% of land area)

Country or region	1990	1995	2000	2005	2010	2015
Brazil	65.4	63.9	62.4	60.6	59.6	59.0
Democratic Republic of Congo	70.7	70.0	69.4	68.7	68.0	67.3
Republic of Congo	66.5	66.3	66.0	65.8	65.6	65.4
Indonesia	65.4	60.2	54.9	54.0	52.1	50.2
East Asia and the Pacific	25.8	25.7	25.7	26.1	26.2	26.3
Lower Middle-income Countries	29.8	28.9	28.0	27.7	27.3	26.5
World	31.8	31.5	31.3	31.1	31.0	30.8

Source: World Bank Group, 2018

Despite the sustained domestic and international interest in preventing damage to tropical forests, Indonesian forests are still disappearing rapidly. Table 13 above shows the degree of deforestation in Indonesia compared to other countries with large forest extents. Comparisons with Brazil and Congo, which have large tropical forests, and Russia, Canada, and the United States, which have large non-tropical forests, confirm that Indonesia's deforestation is proceeding relatively rapidly. Indonesia was 65.4% covered in forest in 1990, but this proportion fell to 50.2% in 2015. This is quite a rapid rate of decline for countries in the Indonesian economic group (lower-middle-income countries) and its regional group (East Asia and the Pacific). In recent years, although the pace of decline in forests has relaxed slightly, deforestation continues.

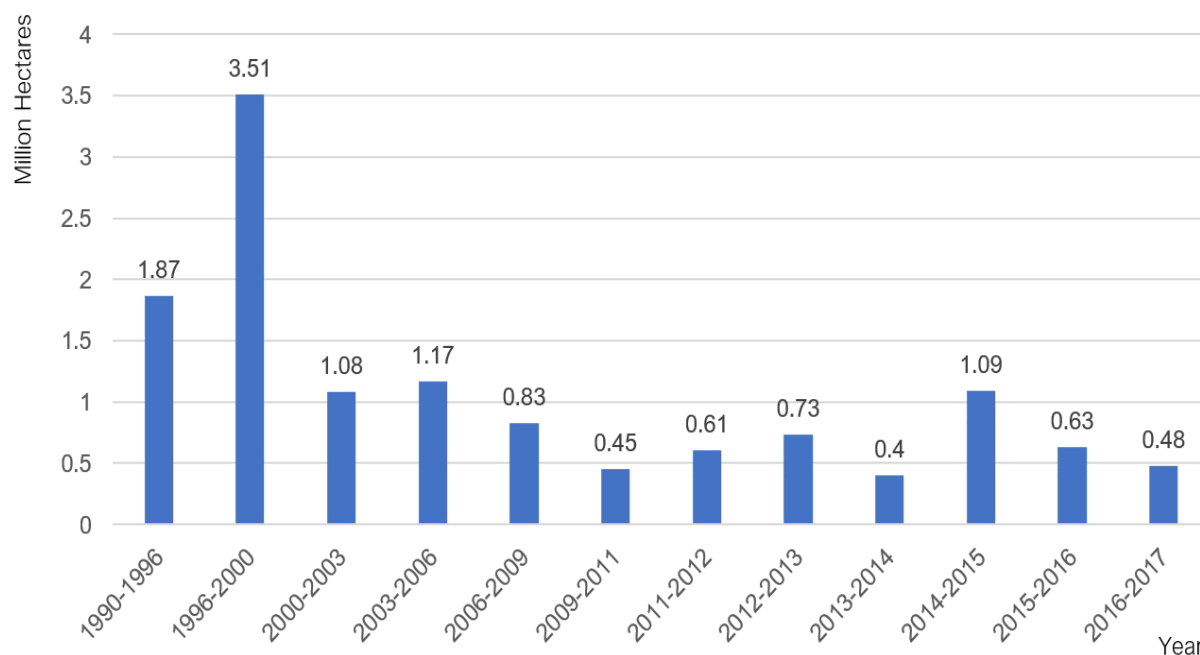


Figure 7. Annual deforestation rate in Indonesia in million hectare per year

Source: Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, 2018

Indonesia has been calculating its deforestation rate periodically since 1990 (see Figure 7). The highest deforestation rate occurred in the 1996-2000 period, which was 3.51 million ha per year. During that period, there was a great forest fire. In the following period, from 2002-2014, there was a decrease in the rate of deforestation, in line with a decrease in the incidence of

forest and land fires, and tight control over some excesses of decentralized forest management. In the 2014-2015 period, deforestation rates in forest areas were recorded at 1.09 million ha, of which were caused by forest fires that occurred in 2015. In the following period, the rate of deforestation decreased again. The deforestation rate in 2015-2016 was 0.63 million ha. The calculation results show that the 2016-2017 deforestation rate in Indonesia was 0.48 million ha, with the deforestation rate in forest areas of 0.31 million ha (61.9%), a decrease compared to the 2015-2016 period, which was 0, 43 million ha (Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, 2018). However, many Indonesian forests are being damaged continuously.

The most significant impacts of deforestation fall directly on the forests and the natural environment. Deforestation can increase the likelihood of and damage inflicted by some types of natural disasters, such as landslides and floods, and exacerbate the effects of climate change. It also has an outside impact on biodiversity, the existence of which is closely linked with tropical forests. Indonesia is one of the most biodiversity-rich countries globally, with 12% of the extant mammal species worldwide, 16% of the world's reptiles and amphibians, and 17% of all living bird species. Furthermore, 33% of insect species and 24% of fungi are also found in Indonesia (the REDD desk, 2013). However, this biodiversity is under significant threat. In 2011, Indonesia hosted the third-largest number of endangered species (Orangutan Foundation International, 2011), with 772 species, and the Ministry of Environment (2008) estimated that Indonesia would lose 20-30% of its biodiversity each year due to deforestation.

Forests, especially tropical forests, can have great importance for climate change and GHG emissions. Approximately 24 billion tons of carbon stock is stored in soil and vegetation, 80% stored in standing forests (Ministry of Environment, 2003). However, nearly half of Indonesia's forest areas are degraded and of poor condition (Kedeputian Bidang Kajian Lemhannas RI, 2006). Indonesia is estimated to be losing 2 million ha of tropical forest per year due to land-use change and deforestation (World Bank, 2000), leading to large amounts of carbon emissions.

The above data shows the situation at the time of the establishment of the policy to prevent deforestation, which is the topic of this study. The current rate of deforestation in Indonesia is, fortunately, slowing through the efforts of the Indonesian government and various stakeholders.

Annual GHG emissions often significantly change year over year for any given country. However, according to the Climate Watch Module, Indonesia has the fifth highest GHG emissions in 2018.

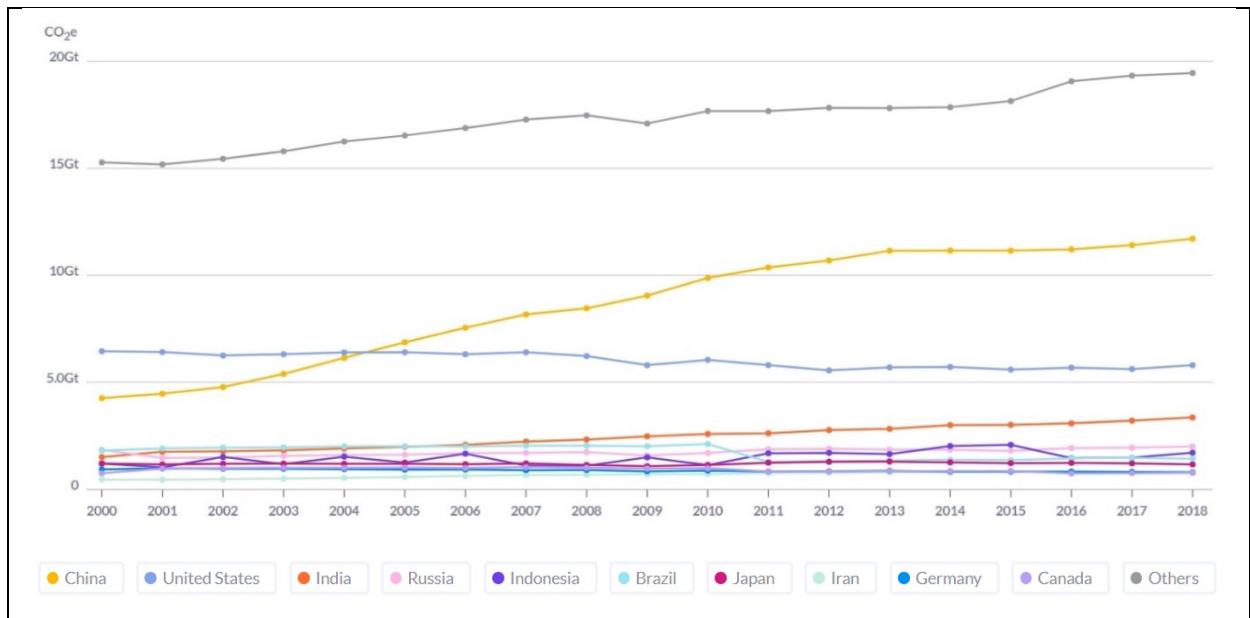


Figure 8. Global historical GHG emissions by countries  
Source: Climate Watch Website (03 Jan. 2022)

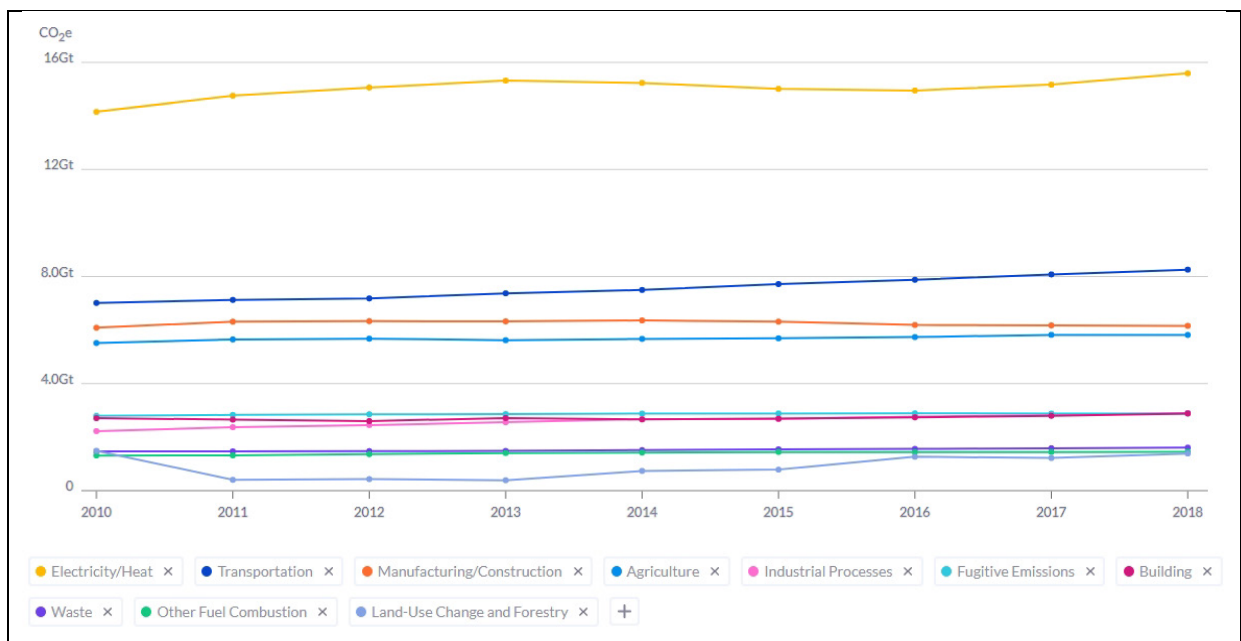


Figure 9 Global historical GHG emissions by sectors  
Source: Climate Watch Website (03 Jan. 2022)

Table 14. GHG emission level and BAU (Business as usual) from each sector

(MtCO<sub>2</sub>eq)

Sector	GHG emission level 2010		GHG emission level 2030	
	emissions	Percent	BAU	Counter Measure (Mitigation scenario)
Energy	453.2	33.9%	1,669	1,355
Waste	88	6.6%	296	285
IPPU	36	2.7%	69.6	66.85
Agriculture	110.5	8.3%	110.39	110.36
Forestry	647	48.5%	714	217
Total	1,334	100%	2,869	2,034

Source: Government on Indonesia. 2016

In many countries, Electricity, energy generation are a significantly higher GHG emissions sources than other sources, but land use change is the largest source of GHG emissions in Indonesia. Forest fires are the main reason of deforestation and land conversion in Indonesia, accounting for 57% of the total land area of deforestation and land conversion. For example, it is estimated that between 3,000 and 9,000 million tons of CO<sub>2</sub> were released into the atmosphere in 1997 due to the forest fires alone (Page et al., 2002). This smog also caused severe health problems for residents and economic impacts such as air traffic. Approximately 1,400 million tons are released annually in the regular burning season, and 600Mt has released annually from dry peat decomposition (PEACE, 2007). Global warming is expected to lead to a vicious cycle that is dry out the rainforests and peatlands and thus increase the risk of even more intense fires (PEACE, 2007).

## 8.2 Political Stream

In 1998, Indonesia transferred to a democratic political system from authoritarian politics in the wake of the collapse of Suharto's dictatorship, which had lasted for 32 years. The Suharto regime lost legitimacy due to the 1997 economic crisis, and democratization began after that. Indonesia has achieved democracy through competition and compromise between different social forces (Carnegie, 2009; Vatikiotis, 1996). It has maintained a strong presidential system



since that time, and the president still has the most decisive influence over socio-economic policies in general.

Until the early 2000s, presidents were elected through the indirect election of the National Council (for a 5-year term), but in 2004 President Susilo Bambang Yudhoyono (SBY) was elected through a national referendum. After his victory, SBY had national support for overcoming the economic crisis, achieving stable growth, maintaining reforms, and developing democracy. He eventually won re-election in 2009, after which he continued to pursue policies based on stable public support in the areas of the environment, forestry, and economy. His announcement at the G-20 Summit in 2009 of a voluntarily established goal of reducing GHG emissions by 26% (by 41% if developed countries provide support) by 2020 based on BAU (Business as usual) had a significant impact on policy.

The Law promoted local autonomy on Regional Governance in 1999 (Law No. 22/1999), which devolves responsibilities to regional governments except the fields of diplomacy, security, and defense. However, because the central government did not directly transfer authority and the regional governments were not fully prepared, limitations occurred in realizing local decentralization and local autonomy. Thus, a gap appeared between local governments, and corruption became a more severe problem among public officials, especially in regional governments. The regional autonomy system was reformed in 2004 after the regime was changed, and the Law on the regional government of 1999 was largely revised (No. 32/2004 Law on Regional Government). Subsequently, effective governance began by dividing the service-provision functions of regional governments into obligatory and discretionary functions. In the early stages of implementing the local autonomy system, the central and regional governments often differed in policy directions for forests and land-use rights and permits. This often resulted in indiscriminate deforestation.

In May 2009, the Center for Orangutan Protection in Indonesia made a statement regarding Kutai National Park in East Kalimantan. They have found that the number of orangutans in the park has fallen from 600 (7 years ago) to 30-60 (Mongabay, 2009). The government denied this, but Orangutan conservation groups and environmental groups insisted that indiscriminate development be stopped, and the corruption of government officials should be punished.

The problem of deforestation has attracted much attention both within and outside of the country due to the importance of Indonesian forests for the world. Many experts, including researchers and authoritative papers, and much public opinion express criticism of the position and policies that the Indonesian government has adopted to cope with such problems and its ongoing deforestation, and they continue to be expressed to this day (Setiawan et al., 2016; Thung, 2019). The Indonesian government has long tended to transfer responsibilities to residents for inadequate deforestation (Sunderlin, 1996). However, many countries and international organizations, such as FAO (1990) and World Bank (1990), continue to criticize the Indonesian government for shifting cultivation and deforestation. It is emphasized that the information gap and prejudices among stakeholders are becoming obstacles in preventing deforestation, and the scope and cause of deforestation should be identified by applying all relevant analysis and rigorous methodology (Sunderlin, 1996).

In November 2007, Vice President Jusuf Kalla claimed responsibility for Indonesia's forest destruction should be shared with other countries helping Indonesia to restore it. Moreover, he urged the developed countries to compensate the developing countries that preserve the rainforest (Reuters, 2007). In addition, Hadi Daryanto, who was minister of forestry during some of the worst periods of ongoing criticism in 2013, announced that Indonesia would not have to be concerned over representations in the media, as the damage to its forest was not as severe as it was presented there. However, in Indonesia, he was refuted in various media based on concrete grounds (The Jakarta Post, 2013). This is a representative example of the conflict between the position of the Indonesian government on the problems of deforestation and both public opinion at home and abroad as well as expert opinion. On the other hand, international environmentalists say they can help negotiate a broader international agreement to deal with climate change, welcoming the Indonesian promise announced by SBY to reduce greenhouse gas emissions (Reuters, 2009).

### 8.3 Policy Stream

The first forest problem was discussed at a donors' meeting in Indonesia in July 1999. Since then, many projects have been carried out by developed countries to support the Indonesian capacity to prevent deforestation and its economic capacity. Further, developed countries worldwide are working to find solutions to environmental problems located in the forests of Indonesia.

#### **Indonesian forest cooperation projects with aid agencies and organizations**

Developed countries and inter-government organizations have carried out many international development cooperation projects with the government and stakeholders in Indonesia. This indicates that Indonesia's tropical forests attract much attention worldwide, and their environmental values are highly appreciated. It can also be seen that Indonesia is a developing country with economic and technological difficulties in preventing the country's independent forest degradation by itself.

Table 15. List of Indonesian forest cooperation projects conducted by aid agencies

Country	Organization	Title of Project	Period
Australia	ACIAR	Improving governance, policy and institutional arrangement to REDD	2008-2011
	AusAid	IFCA & support for REDD+	2007-2012
	IFCI	Indonesia's national carbon accounting system	2007-2012
	IFCI	Asia Pacific forestry skills and capacity building	2008-2010
Canada	CIDA	implementing the Nurseries of Excellence (NOEL) Project in Aceh	2007-2009
	Global Affairs Canada	Agroforestry and Forestry in Sulawesi, Indonesia: Linking Knowledge to Action	2015-2017
Denmark	Denmark, World Bank	Promoting Sustainable Community-Based Natural Resource Management and Institutional Development Project	2012-2016
EU	EU	Collaborative land use planning and sustainable institutional arrangement for strengthening land tenure, forest and community rights in Indonesia	2010-2012
	EU	Developing community carbon pools for REDD projects in selected ASEAN countries	2010-2012

Germany	BMZ	Integrated experts forestry and environmental management	2004-2006
	BMZ	Forestry policy and administrative management	2005-2011
	BMZ	Local initiative to fight the expansion of biofuel in Sumatra	2009-2012
	BMZ	Banda Aceh environmental administration	2009-
	GIZ	Sustainable forest management	2003-2004
	GIZ	Biodiversity conservation through Prep. Measures for REDD+ in Merang Peat Forests	2008-2012
	GIZ	Knowledge management for the REDD pilot project in the Merang Peat Area	2009-2012
	GIZ	Policy advice for environment and climate change (PAKLIM)	2009-2015
	GIZ	Forests and climate change programme	2009-2020
	GIZ	Biodiversity and climate change (BIOCLIME)	2012-2017
	GIZ	Strategic partnership for supported NAMAs and climate finance - support for the ICCTF	2013-2017
	GIZ	Low-Emissions oil palm development (LEOPALD)	2017-2022
Japan	JICA	Project of capacity development for climate change strategies	2010-2015
	JICA	Capacity development assistance for low carbon development	2014-2017
	JICA	Climate change support programme	
	JICA, AFD, World Bank	Climate change program loans	2008-2010
Norway	NORAD	International climate and forest initiative- support for REDD+	2010-2016
	NORAD	Cooperation on reducing greenhouse gas emissions from deforestation and forest degradation	2010-2020
Sweden	SIDA	International training programme: Forest certification	2011-
UK	DFID	Multi-stakeholder forestry programme	2007-2011
	DFID	Indonesia climate change trust fund	2010-2011
	DFID	Indonesia programme on climate change	2011-2015
	DFID	Forest governance, markets and climate	2011-2021
	DFID	Forestry, land-use and governance in Indonesia	2015-2020
	DFID	Promoting debate on climate change choices in Indonesia	2016-2017
USA	USAID	Forest resource sustainability program (FOREST)	2010-2014
Multilateral organization	FAO	Securing tenure rights for forest landscape-dependent communities: linking science with policy to advance tenure security, SFM and people's livelihoods	2015-2018

	FAO	Building Research Environments for fostering Innovation, Decision-making, Governance and Education to support Blue Growth	2016-2018
	FAO	Strengthening Forest Management Unit for Sustainable Forest Management and Community Empowerment	2016-2018
	FAO	FAO-EU FLEGT (Forest Law Enforcement, Governance, and Trade) Programme	2016-2020
	Forest Carbon Partnership Facility	Management of readiness process support establishment of FREL and MRV	2010-2012
	UN-REDD	Developing designs for payment mechanism linking to MRV system, stakeholder consultation and demonstration activities	2010-2019
	World Bank	Integrating environment and forest protection into the recovery and future development of Aceh	2006-2007
	World Bank	Indonesia climate change development policy project	2010
	World Bank	Improving governance for sustainable indigenous community livelihoods in forested areas	2012-2015

Source: Author's constructed based on Brown and Peskett (2011), Gené (2012), Kawai (2017), GIZ Website (3 Jan. 2019), DFID website (03 March 2019), FAO Website-a (03 March 2019)

This study assessed forest cooperation projects from the 2000s through literature review to confirm the policy stream. In the early 2000s, international donors supported capacity-building projects for policy development and forest management. From the late 2000s to the 2010s, several cooperative projects have been implemented in REDD+ programs, one of the most critical regimes in the Indonesian forest sector, and many projects have been implemented to increase the national capacity to respond to climate change. In addition, the classification of forest cooperation projects according to the timing of implementation shows that their number has increased significantly since the late 2000s.

Table 15 is a list of Indonesian forestry international development cooperation projects compiled by the author. Although various countries and international organizations are promoting cooperative projects in the forestry sector with Indonesia, they may not include all projects because there is no systematically organized data on those projects.

### **Studies of forest policy and deforestation by the research agency of Indonesian MoEF**

The Forest Research and Development Agency (FORDA) is a national research institute run

by the MoEF, and it is leading research on Indonesian forests. Due to its status of developing countries, Indonesia has been working with foreign institutions and international organizations to strengthen its research capacity and receive support for research funds. Table 16 below summarizes the studies directly related to forest policy research and deforestation conducted by FORDA in cooperation with foreign institutions.

Table 16. List of FORDA studies performed with international cooperation (2008-2020)

Partner	Title	Period
CIFOR	From climate research to action under multilevel governance: Building knowledge and capacity at land scope scale (IKI-MLG)	2017
FAO	Promoting forest landscape restoration FLR in Indonesia	2016-2017
ACIAR Australia	Enhancing community based commercial forestry in Indonesia	2016-2020
Korea Forest Service/ AfoCo	Capacity building in the application of the landscape approach to support sustainable natural-resources management in Brunei Darrussalam, Indonesia, the Philippines and Singapore	2016-2019
ACIAR Australia	Enhancing smallholder benefits from reduced emissions from deforestation and forest degradation in Indonesia	2014-2018
ITTO	Strengthening the capacity of local institutions to sustainably manage community forestry in Sanggau for improving livelihood	2015-2017
Korea Forest Service	Capacity building to improve forest-resources assessment and to enhance the involvement of the local communities to address the adverse impacts of climate change	2013-2016
JICA	Environmental policy advisor project	2014-2016
UNESCO	Capacity building for climate change adaptation and mitigation	2013-2016
ACIAR	Facilitating and deepening democracy for improving local forest governance: Case of Wonosadi customary forest	2013-2014
Sumitomo Forestry Co., Ltd	Pilot project for peatland rehabilitation in Central Kalimantan (Study of the trial of the agroforestry system and the monitoring of natural regeneration following forest fire on peatland rehabilitation in Central Kalimantan)	2013-2014
ITTO	REDD+ feasibility study for the bilateral offset scheme FY 2012 in Central Kalimantan, Indonesia	2012-2013
University of Idaho Moscow	Genetic conservation, remote sensing and carbon accounting, climate change, plantation forestry, forest products, entophyte applications.	2011
CIFOR	Increasing REDD+ Literacy in Indonesia through Outreach and Capacity Building	2011-2014

World Bank	Forest carbon partnership facility and REDD+ readiness preparation	2011-2014
ITTO	Promoting partnership efforts to reduce emissions from deforestation and forest degradation of tropical peatland in South Sumatra by enhancing conservation and restoration	2010-2012
KOMATSU	Rehabilitation of degraded forest and land, Indonesia	2015-2018
ITTO	Tropical-forest conservation to reduce emissions from deforestation and enhancing carbon stocks in Meru Betiri National Park, Indonesia	2009-2013
KOICA	Korea-Indonesia joint project for adaptation and mitigation of climate change in forestry through A/R CDM and REDD in Indonesia (KIPCCF)	2008-2013
ACIAR	Improving governance, policy, and institution arrangements to reduce emissions from deforestation and degradation (REDD)	2009-2012
ITTO	Initiating the Conservation of Cempaka Tree Species ( <i>Ecmerilla</i> spp) Through Plantation Development with Local Community Participation in North Sulawesi, Indonesia	2016-2019
ACIAR Australia	Maximizing Productivity of Eucalyptus and Acacia Plantations for Growers in Indonesia and Vietnam	2015-2019
ACIAR Australia	Management Strategies for Acacia Plantation Diseases in Indonesia and Vietnam	2015-2019
ACIAR	Improving Community Fire Management and Peatland Restoration in Indonesia	2018-2021
ICRAF	Developing and promoting Market-Based Agroforestry Option and Integrated Landscape Management for Smallholder Forestry in Indonesia (Kanoppi 2)	2017-2021
The Government of Australia, NRAUSTIN	Overcoming constraints to community Based Commercial Forestry (CBFC)	2014-2020
APFNeT	Development Participatory Management of Micro Catchment at The Bengawan Solo Upper Watershed	2017-2019
ICRAF	Cooperation in Agroforestry	2017-2022
Yale University	Research and Knowledge Transfer in the Field of Conservation and Rehabilitation of Tropical Forests in East Kalimantan	2017-2020

Source: FORDA Website, 2022

Research on REDD+ was intensively conducted by cooperation between FORDA and foreign institutions from 2008 to the early 2010s. Following that period, the cooperative study was performed to strengthen forest governance at the national level and strengthen the forest-management capacity of regional governments and local communities. Research trends before 2008 cannot be shown in this Table 16, but the research theme changed in the early 2010s.

**Center for International Research Institute (CIFOR) studies on Indonesian forest policy**

Center for International Forestry Research (CIFOR) is a not-for-profit scientific institution that surveys the most urgent challenges in forest and environment and landscape management worldwide. CIFOR works ‘to improve human well-being, protect the environment, and improve equity with a global, multidisciplinary approach’. To achieve these results, it conducts innovative research, develops the capabilities of the partner countries, and engages actively with all stakeholders to communicate their practices and policies affecting forests and people. CIFOR’s headquarter is in Bogor, Indonesia, and it has offices in Kenya, Cameroon, Peru, Germany. CIFOR is researching ‘four subject areas (Climate change, energy and low-carbon development; Equal opportunities, gender, justice and tenure; Sustainable landscaped and livelihoods; Value chains, finance and investment) in more than 50 countries’ (CIFOR Website, 2022).

Because its headquarters is in Indonesia, CIFOR does much research on Indonesian forests, leading international-level research on Indonesia. To determine the status of policy research in research institutes in the Policy Stream field, this study collected the subjects and research data of Indonesian forest research conducted by CIFOR. Through the CIFOR website, we found studies related to forest policy and deforestation from 2000 to October 2018 in Indonesia, and this list is based on CIFOR’s work and its publication of achievements (see Annex 2). Annex 2 does not include the entirety of the research, but it indicates CIFOR’s research and flow. This shows how much research has been done on forest policy and deforestation prevention by year. These related forest policy and deforestation prevention studies indicated a particularly active period beginning in the late 2000s to the first half of the 2010s. However, this list is based on CIFOR’s homepage, so not all publications may have been reviewed. It is not easy to give an absolute meaning to the selection criterion for the publications because it reflects the personal perspective of the researcher, and this study was simply used as a reference for research trends in CIFOR’s work.

Through this list, it would be possible to identify what problems and critical issues are being faced in Indonesia at this given time. In the early 2000s, the Indonesian law on forests was reformed and settled, and CIFOR was seriously studying forest-related crimes and forestry crises. It also explored local governments and their relationship to forest management. In the



late 2000s, research of developing international regimes, such as the A/D CDM (Clean Development Mechanism) and REDD+, for Indonesia, attracted much attention. This research trend continued into the 2010s. As the REDD+ program is being done in small rural areas, and the community and participants play an important role, the policy network analysis research is an essential theme of CIFOR. In late 2010, CIFOR has studied forest governance, and following global trends, Indonesia's forest research was also studied in terms of its environmental sustainability.

These research trends illustrated by CIFOR can be used to identify current problems in Indonesian forestry studies and understand the direction policy takes in Indonesia.

### **REDD+ National Strategy in Indonesia**

Indonesia is preparing to implement REDD+ as part of its National Determined Contribution to reduce emissions through its "National Approach with Sub-National Implementation" approach (Government of Indonesia, 2016; Irawan et al, 2019).

Table 17. Indonesia's REDD+ National Strategy

Vision	Sustainable management of natural forests and peatlands as national natural resources assets to maximize the prosperity of the people.
Mission	1. Enhancing the functioning of forest and peatland management institutions. 2. Improving law and regulations and strengthening law enforcement. 3. Improving the capacity to manage forest and peatland resources.
Goals	1. Short-term Goal (2012-2014): The strategic improvement of institutions and governance systems, as well as of spatial plans and the investment climate, in order to fulfil Indonesia's commitment to reduce greenhouse gas emissions while maintaining economic growth. 2. Medium-term Goal (2012-2020): The implementation of governance systems in line with policies and procedures developed by forest and peatland management institutions, and their application to the spatial and financial mechanisms developed and established in the previous phase, to achieve the targeted 26-41 percent reduction in emissions by 2020. 3. Long-term Goal (2012-2030): Indonesia's forest and land areas become a net carbon sink by 2030 as a result of the implementation of appropriate policies for sustaining economic and ecosystem service functions of forests.

Principles	<ol style="list-style-type: none"><li>1. Effectiveness: REDD+ activities in Indonesia reduce emissions and result in additional real and measurable benefits.</li><li>2. Efficiency: REDD+ programs in Indonesia constitute long-term activities that result in optimal financial, ecological, and social benefits.</li><li>3. Fairness: REDD+ is implemented on the basis of the principles of equality for all and human rights protection in forest management, including for women and communities vulnerable to socio-economic and environmental change.</li><li>4. Transparency: REDD+ activities are undertaken transparently to enable full understanding and opportunity for stakeholders to participate.</li><li>5. Accountability: REDD+ implementation is fully accountable to the people of Indonesia and the international community in terms of relevance, process, funding, and results obtained.</li></ol>
------------	---

Source: Indonesian REDD+ Task Force, 2012

With more than 130 million ha of forests, 70% of the country's land area, Indonesia is a major country applying REDD+. Indonesia implements the REDD+ program to significantly reduce deforestation and forest degradation and reduce actual emissions from forestry and land use. Indonesia is also vulnerable to climate change impacts, so it is interested in curbing global warming (Indonesian REDD+ Task Force, 2012).

REDD+ is applied to mitigate land-use climate change mitigation efforts in line with Indonesian policy and sustainable development. Indonesia is striving to reduce GHG emissions by 26% on Indonesia own efforts, or by 41% through international aid by 2020. To fulfill this commitment, the Indonesian government has issued Presidential Regulation 61/2011 with a National Action Plan for GHG Emissions Reduction and Presidential Regulation 71/2011 on the Implementation of National Greenhouse Gas Inventories (Indonesian REDD+ Task Force, 2012).

The strategic framework of REDD+ includes (a) emissions reduction; (b) increased carbon stocks; (c) conservation & maintenance of biodiversity; (d) economic growth. The REDD+ framework consists of five main strategic pillars, as shown in Figure 10 below. These interconnected pillars were created in a way to facilitate the achievement of REDD+ strategic objectives.

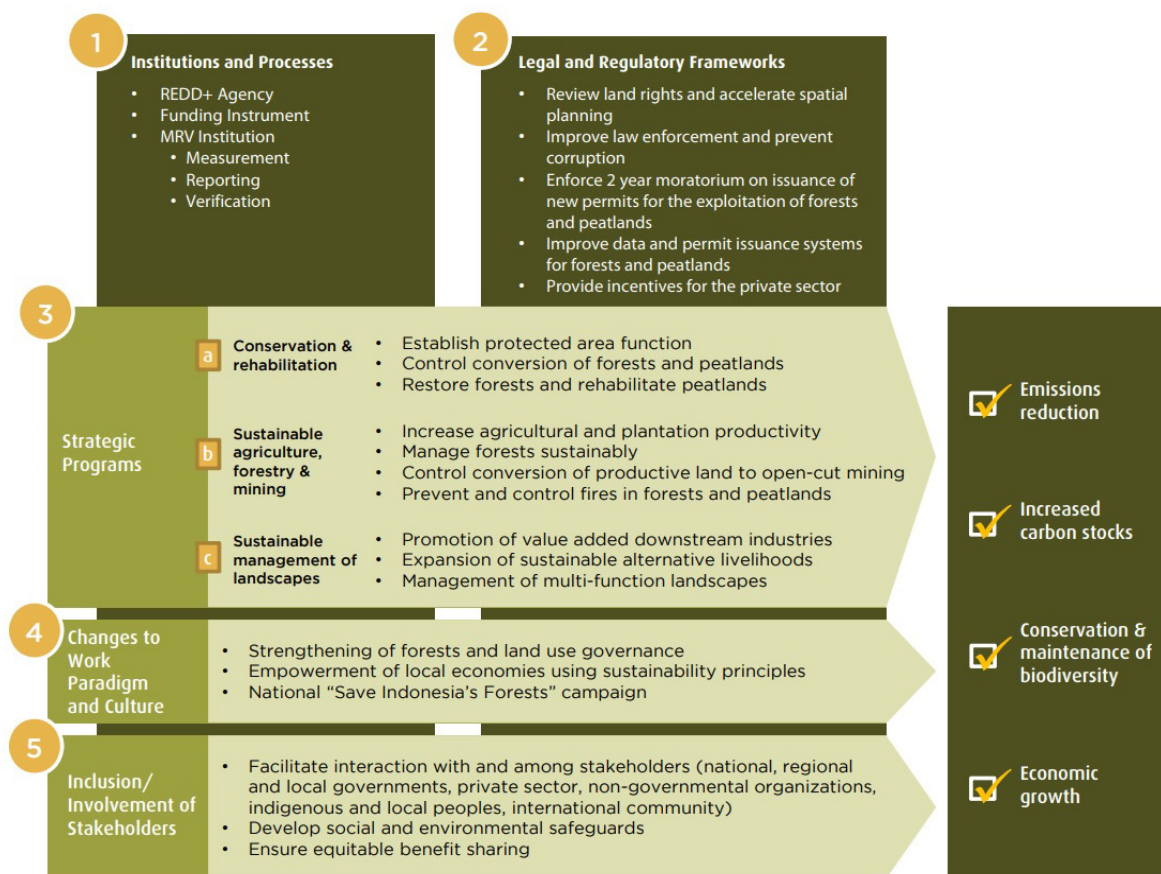


Figure 10. Indonesian REDD+ national strategy framework and its five main pillars  
Source: Indonesian REDD+ Task Force, 2012

In order to facilitate relevant programs and processes undertaken by various government departments and stakeholders, the Ministry of Environment and Forestry (MoEF) has established the DGCC (Directorate General Climate Change) as the national focal point of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), based on the Decree of MoEF No. 18 in 2015 (Kawai et al., 2017). DGCC is responsible for all climate change-related programs and activities for REDD+ preparation and implementation and mitigation and adaptation. DGCC is the national focal point for REDD+ program and is responsible for implementation coordination, synchronization, planning, facilitation, management, monitoring, supervision, and control of REDD+. The DGCC was made up of relevant directorates generals within the MoEF, as well as other relevant ministries (e.g., Ministry of Agriculture, Ministry of Finance, Ministry of Law and Human Rights and

Ministry of Foreign Affairs, etc.) and related research institutions, non-governmental organizations, international organizations, and private sector. The National Forest Reference Emission Level (FREL) submitted to the UNFCCC in 2015 was developed jointly with DGCC and related experts in forestry and other land use (Kawai et al., 2017). The FREL is one of the elements that developing country Parties implementing REDD+ activities should develop, and the FRELs are expressed in tonnes of CO<sub>2</sub> equivalent per year for the reference period against which emissions and removals in the resulting period will be compared. The FREL thus serves as a benchmark for evaluating each country's performance implementing REDD+ activities (Andoh et al., 2018). Indonesia analyzed annual emissions from deforestation, forest degradation, and peat decomposition in Indonesia to establish the FREL for 1992-2012. As a result, emissions from deforestation accounted for 51% of the total emissions, while emissions from peat decomposition contributed 39% and the remaining 10% were from forest degradation. Furthermore, the FREL from deforestation and degradation was set at 0.351 GtCO<sub>2</sub>e yr<sup>-1</sup> for the base period 1990-2012, plus 0.217 GtCO<sub>2</sub>e yr<sup>-1</sup> emissions from peat decomposition (Ministry of Environment and Forestry, 2016).

DGCC developed a framework for a comprehensive national registration system for climate change and a measurement, reporting, and verification (MRV) system for mitigation and has tested the Safeguards Information Systems (SIS) REDD+. DGCC is working with the Ministry of Finance to prepare and develop national mechanisms for REDD+ funding (Kawai et al., 2017).

As national REDD+ readiness progressed, the focus of REDD+ readiness moved from national to sub-national level. At the sub-national level, 11 pilot provinces developed regional REDD+ strategies and action plans. DGCC focuses on developing guidelines for sub-national REDD+ FREL. In Western Kalimantan, a FREL of the provincial government was developed with the support of GIZ, JICA, and FFI. A Carbon Fund emission reduction program of Forest Carbon Partnership Facility (FCPF) initiated in East Kalimantan is expected to be a model for sub-national REDD+ implementation through result-based payments (Kawai et al., 2017). As of 2014, the MoEF has conducted more than 35 REDD+ pilot activities, including sub-national and project-level initiatives developed by governments, NGOs, the private sector, and other sectors (Kawai et al., 2017).

#### **8.4 Policy Window**

In 2018, Indonesia was one of the top five largest emitters of GHGs and contributed about 2,052 million tons of CO<sub>2</sub> emissions or around 5% of the world's total. Indonesia's National Climate Change Council (DNPI) predicted that by 2030, it could contribute as much as 7% of the total reduction needed to achieve a global goal of avoiding more than 2°C warming before pre-industrial levels. Responding to the urgency of the climate change crisis, President SBY committed a national goal of reducing emissions by 26% below projected levels in 2020. As discussed in the previous section, policy debates and discussions of deforestation have been conducted through various channels. However, the government-led concrete policy initiative began with SBY's declaration at the G20 Summit in 2009, where he pledged to reduce Indonesia's GHG emissions by 26% by 2020 and suggested a 41% reduction if international assistance can be secured.

In the following year, Indonesia initiated a REDD+ partnership with Norway through a jointly drafted and signed LoI (Letter of Intent) with a two-year moratorium on all new forest licenses and a \$1 billion grant, including \$800 million for proven emissions reductions. The LoI was a potential game-changer for REDD+ in Indonesia and around the world. A 2010 Norad's review of the LoI explains it as “catalyzing greater stakeholder participation, public interest and debate, and increasing the commitment, speed, and effectiveness of the Indonesian government's action on REDD+” (Greenpeace, 2012). This moratorium, which was implemented as a result of the LoI with Norway, has to be regarded as having an important influence on Indonesia's forest policy, particularly deforestation prevention.

In addition to this moratorium, many Indonesian forest policies have been implemented and revised since 2009.

- National Level Forestry Plan 2011-2030
- National Action Plan for the Reduction of Greenhouse Gas Emission (2011)
- Suspension of New Licenses and Improving Forest Governance of Primary Forest and Peatland (2011)

- Task Force for Preparation of the REDD+ (2010)

Despite the positive impact of the LOI on Indonesia's deforestation prevention, the two countries differed on Indonesia's deforestation efforts, Norway's funding, and bilateral commitments. After inter-ministerial consultations, it was decided to end the LOI in September 2021.

President SBY's announcement opened the window to policies related to the forest sector in Indonesia and deforestation in particular. However, this policy window has not been closed until today and is considered open. In this study, the opening of the policy window can be regarded as an opportunity or a suggestion to present the policy direction, and it is provided as a basis on which the related policy is continuously made.

## **8.5 Policy Entrepreneur**

At the 2009 G20 Summit, because of the serious deforestation problems in Indonesia, the Indonesian President SBY's declaration of a national goal to reduce greenhouse gas emissions was praised by the other countries, especially by the developed countries.

*'We are devising an energy mix policy including LULUCF (land use, land use changes, and forestry) that will reduce our greenhouse gas emissions by 26 percent by 2020 from BAU (Business as usual). With international support, we are confident that we can reduce emissions by as much as 41 percent. This target is entirely achievable because most of our emissions come from forest-related issues, such as forest fires and deforestation. We are also looking into the distinct possibility to commit a billion tonne of CO<sub>2</sub> reduction by 2050 from BAU. We will change the status of our forest from that of a net emitter sector to a net sink sector by 2030.'*

- Susilo Bambang Yudhoyono, President of Indonesia<sup>1</sup>

---

<sup>1</sup> Extract from President Susilo Bambang Yudhoyono's speech at the G20 (Group of Twenty) Summit, Pittsburgh, September 25, 2009

The president's announcement was for Indonesians to share environmental responsibilities, but Indonesian people were shocked by the decision because Indonesia's national policy focus at that time focused on economic development. Therefore, the goal of reducing current GHG emissions by 26% by 2020 was considered so high that it did not receive support from other Indonesian ministries, Indonesian industry, or Indonesian citizens. While Indonesia is a democratic society, the president wields a great deal of power; therefore, SBY has used his strong leadership to push for the achievement of his goals. The President's declaration at the G20 effectively changed several Indonesian policy directions, especially forest management policy. Because Indonesia is considered a developing country, continued economic development and environmental preservation have been difficult to achieve. However, because SBY's G20 declaration of Indonesia's GHG emissions reduction goals received significant support from developed countries involved in bilateral international development cooperation projects in other developing countries, a related assistance program was launched. The increase in the national image of Indonesia has increased international support for its environmental goals and resulted in international development cooperation infrastructure construction projects.

Indonesian President Susilo Bambang Yudhoyono firmly acknowledged that while the Indonesian forests are of global environmental importance, the task of reducing Indonesia's greenhouse gas emissions requires support from aid agencies and international organizations, as well as leadership in activating the actual projects. However, Indonesia has had difficulties promoting Norway's International Climate and Forest Initiative (NICFI) project because of a lack of domestic interest in forests and environmental conservation and government will. After the 2009 G20 Summit, the agreement with Indonesia and Norway to implement the NICFI project led to the Forest Moratorium, the most important Indonesian policy against deforestation.

## **9. Application of Policy Network Analysis**

Policy network analysis seeks to determine the primary actors involved in a policy through social network analysis; consequently, it is not necessary to garner information through a population-based sample survey because the main concern of social network analysis is the relationship between the relevant actors rather than the intrinsic characteristics of the individual actors themselves (Hanneman, 2001; Wasserman & Faust, 1994). Therefore, to identify the links between the actors, it is important to set population boundaries, in the network analysis, and to establish the policy network scope, it is necessary to identify the links between the policy network participants in terms of contact frequency, attributes, and participation in specific events or activities. For example, snowball sampling can be used to determine whether certain actors have specific relationships (Laumann et al., 1992).

In our study, the possible actors were first identified from existing literature reviews, and those who were judged to have played an important role in the policy formation process were further selected through a preliminary interview to form the final target group of actors in the policy network. In the previous chapter, the policy actors were identified primarily from the documents and reports produced during the policy decision-making process on Indonesian policy against deforestation, which was the study scope of this analysis. In addition, through pre-interviews with experts, actors identified during the survey and interviews were added. Finally, 114 organizations were identified as participants in the policy process examined in this study. The policy actors, who were classified based on their institutional characteristics, were as follows.

Seventeen of the identified organizations were Indonesian central government Ministries or Departments such as the Presidential Staff Office and the Ministry of Environment and Forestry with many of the others involved in the policy process being international organizations and NGOs.



Table 18. Policy actors (who were interviewed) on policies to prevent Indonesian deforestation

Type of Org.	Organization	Remarks	No.
Central government	Ministry of Environment & Forestry (Planning / REDD+ / Climate Change/ Production FMUs Bureau) Ministry of Foreign Affairs Ministry of Agriculture Ministry of Trade	Department, Bureaus	7
Provincial government	West Kalimantan (REDD+, Planning Bureau)	Regional government	2
District government	Kapuas Hulu (Agroforestry, Forest conservation Team)	Regional government	2
National research institute / agency	Forest Research and Development Agency(FORDA) / Research Center for Climate Change(DNPI)/ Bogor Forestry Education and Training Centre		3
Indigenous people	Kapuas Hulu local people		1
State forest public company	Perum Perhutani		1
University	Bogor University / Gadjra Mada University		2
National NGO	WALHI /Perkumpulan / Sebatopa / Indonesian Ecolabelling Organization / FWI /Scale up / Eyes on the Forest / RMI / Sawit/ Watch / AMAN / TELAPAK /		11
Intergovernmental organization	UN-REDD+ / World Bank / UNFCCC / UNEP / UNDP / ASEAN / Afoco / ADB / FAO		9
Foreign government aid organization	GIZ-FORCLIME / NORAD / USAID / JICA / KOICA / DFID / AusAID / SIDA	Donor agency	8
International academic organization	CIFOR / World Resources Institute		2
International NGO	WWF / The Nature Conservancy / Rainforest Action Network / Greenpeace / The Forest Trust / Rainforest Alliance / Global Forest Watch / The Forests Dialogue / Conservation International / Friends of the	Global-based organization	11

	Earth / Fauna & Flora International		
National business enterprise / organization	KORINDO / Sinarmas Forestry / GAPKI/ Indonesian Chamber of Commerce / Asia Pulp & Paper	Profit-seeking organization	5
Other private sector organization	ICCO cooperation / The Sustainable Trade Initiative / Bisnis Indonesia / The Indonesia Business Council for Sustainable Development / Daemeter	Consulting agency	5
Media	The Jakarta Post / Kompas / Tempo / Mongabay	Newspaper company (Broadcasting)	4
Total			72

Of these 72 interviewed actors of the policy network, 40 were Indonesian national actors and 32 were international actors. The Indonesian national actors included government ministries and departments, government research institutes, other domestic technical advisors, environmental NGOs observing and monitoring government policies, and forestry-related companies. The international actors included international forest related organizations, international cooperation organizations from developed countries, and global environmental NGOs.

Perum Perhutani, which appears as a separate category in the above Table 18, was included as a policy actor in the pre-interviews before main interviews for the following reasons. Perum Perhutani is a state-owned forest enterprise, responsible for national forest resources in Java and Madura and strategically supported environmental, economic and socio-cultural sustainability (Perhutani, 2015). Therefore, Perum Perhutani is responsible for managing the entire Indonesian forest resources and plays an important role in current Indonesian forest policy because Java, one of the regions managed by Perum Perhutani, is the location of the capital Jakarta and is in the center of Indonesia. Perum Perhutani has also been the organization involved in the formulation and implementation of forest management policies that can internationally compete in the future (Perhutani, 2015).

## **9.1 Policy Actors**

This study conducted stakeholder analysis of the policy actors identified as part of the policy network analysis, each of whom was highly invested in developing and implementing this policy. The diagram below illustrates each actor's degree of interest and power in the policy, which their relative position value can see; however, the lowest points of interest and power, as represented by the x and y values in the diagram, do not start at zero.

The Indonesian deforestation policy network actors were classified based on the Grid in the following Figure 11. Please note, however, that this classification does not reflect whether each actor is in favor of or opposed to the government policy direction. Rather, this classification indicates the influence and interest the actor has on the policy making process.

The policy actors were classified into four types for the stakeholder analysis based on their location on the graph. The characteristics and characteristics of each actor type are described in the following.

However, the position values of actors in the diagram do not represent absolute values. This study investigated each actor's level of interest and power through literature review and actor interviews, and the actor position in diagram was based on the position with other actors. In addition, there is no established standard for dividing into four categories, but the researcher confirmed the distribution of actors on interest and power and determined the position. In the following graph, the policy actors were abbreviated to more effectively represent their positions. The meaning for the abbreviations is given in Table 19.

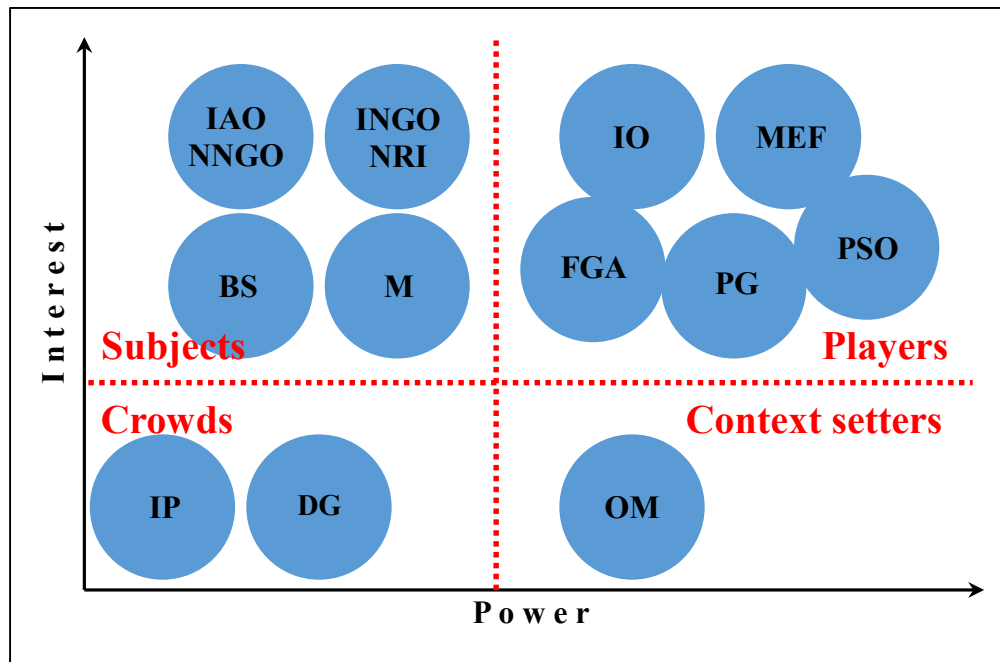


Figure 11. Distribution of actors based on their power and interest grid on Indonesian deforestation prevention policies

Sources: Author's construct

Table 19. Classification of policy actors according to type based on the stakeholder analysis on Indonesian deforestation prevention policies

Category		Policy Actor
Type 1	Player	Presidential Staff Office (PSO), Ministry of Environment & Forestry (MEF), Provincial Government (PG), Intergovernmental organizations (IO), Foreign Government Aid Agency (FGA)
Type 2	Subject	International NGO (INGO), National NGO (NNGO), International Academic Organization (IAO), National Research Institute (NRI), Media (M), Business Sector (BS)
Type 3	Context setter	Other Ministries (OM)
Type 4	Crowd	District Government (DG), Indigenous People (IP)

### **9.1.1 Players**

<Presidential Staff Office, Ministry of Environment and Forestry, Provincial Government, and International actors (Intergovernmental Organization, Foreign Government Aid Agency)>

Players are policy actors with high power and interest in deforestation prevention policies and who lead the policy formation and implementation. These policy makers belong to the central government or are international policy actors interested in Indonesian deforestation due to the high value of Indonesia's tropical forests and the current serious forest problems being faced by Indonesia. These policy actors are obliged to participate in the policy process or participate in the policy process because of strong political, administrative, and economic connections (Parrotta & Trosper, 2011).

#### Presidential Staff Office

The central government, which is the organizer that promotes and implements the policies, is a representative actor of this type. The President of Indonesia has a very powerful role in implementing the overall policy. As much of Indonesia's national policy is related to forests because forests and forests products account for a large share of Indonesian industry and economy, forest policy plays a very important role in the president's policies. Therefore, the Moratorium, which is one of the most influential policies in Indonesia's forest industry, began with President SBY's global commitment at the G20. Consequently, the presidential office oversees the general aspects of these policies at the national level. While the concerned ministries drive many Indonesian policies, others are specifically determined through the president's authority. The overall direction and target values are determined by the Presidential Office, with the policy content being decided on through consultation between the ministries. While the Presidential Office has a strong interest in the deforestation prevention policies and is therefore the strongest force in the Indonesian policy process, it is unlikely to intervene in the detailed policy process, and even though there is a sectoral advisory board for the President and the Presidential Staff Office, this office usually relies on the respective ministry for field expertise. However, the Presidential Staff Office was not included in this study's policy network interaction structure as it was not available for the interview.

### Ministry of Environment and Forestry

The current Ministry of Environment and Forestry, an integration of the Ministry of Forestry and the Ministry of Environment, is the central ministry for the formulation and implementation of all forest related policies. Therefore, the degree of interest in the deforestation prevention policy at the Ministry of Environment and Forestry is higher than that of the presidential office. As the Ministry responsible for the development and implementation of forest-related policies exercises considerable power in the policy-making process, 11 departments of the Ministry of Environment and Forestry each have various tasks in forestry. For example, because the departments responsible for the forest product production and those responsible for forest conservation and protection have different goals, policy details need to be agreed to through cross-departmental consultations. However, the overall goal of all Ministry of Environment and Forestry is to prevent deforestation. Before implementing the regional autonomy system in Indonesia, and before the system had settled, the Ministry had a strong authority and influence over the forests and the related industries as it had all the forest licenses and was responsible for the implementation of all forest policies. At present, however, much of the authority related to the issuing of forest licenses has been devolved to regional governments. Overall, however, as the Ministry of Environment and Forestry is the key policy actor who best understands the needed Indonesian forest policy directions, participating in the forest policy decision process is one of its official tasks. Therefore, the Ministry is responsible for initiating and leading the discussions on new forest policies or policy amendments at the national level holding public hearings or debates, and deciding on the policy making actors. The Ministry of Environment and Forestry has significant policy expertise and consults with Forest Research and Development Agency (FORDA) under the Ministry's purview. However, in this study FORDA is seen as a different policy actor to the Ministry of Environment and Forestry.

### Provincial Government

As the Indonesian local autonomy system has stabilized, the roles played by local governments and especially by the Provincial governments have become increasingly more important. In 1999, when the law on decentralization and regional autonomy was passed and implemented,

the influence of Indonesia's regional governments over local socio-economic politics increased significantly. This law stated (No.22/1999) that the role of the Indonesian central government was diplomacy, defense, security, law, national finance and monetary policy and religion, with the regional governments being responsible for all other domestic considerations such as public works, healthcare, education, cultural and social affairs, labor, environmental protection, land, citizenship and investment. However, as Indonesia had a strong central government system for a long time, there were many initial regional autonomy system implementation problems. In particular, there were many problems in the forest sector related to forestry and land use. Even today, many years later, the Indonesian government is still seeking to implement effective forest management measures through the continuous amendment of the associated laws and regulations. It was expected that the decentralization of forest management and administration to local authorities would contribute to developing the autonomous provincial government control and encourage the sustainable management of the forests in the regions (Wardojo & Maspipatin, 2002). When the central government promulgates the national policies and strategies, the specific regional policies are then developed and implemented by the respective regional governments in each province. Therefore, the Provincial Governments have become important actors in the forest policy decision-making process because of their direct links to the forest resources organization or international aid agency projects. They only consult with the central government regarding the larger framework while the specific details are decided on in consultation with the respective regional governments. Therefore, as the regional governments are very important policy actors, the provincial government must participate in the policy process. In the past, regional governments did not participate in national policy decision making; however, the central government now includes provincial governments in the national level policy process by listening to their opinions. While regional government autonomy is guaranteed by law, it is still common for them to follow the policy directions of the central government. The regional governments are highly invested in forest policy for economic reasons. Although closely associated with the specialties of their respective regions, their forestry expertise is inferior, which means that the regional government, officially responsible for the forest sector, generally only focuses on law enforcement activities.

Intergovernmental organizations, Foreign government aid agencies

As the power for economic funding has a significant influence on the decision-making process, Indonesia as a developing country is very sensitive to aid projects provided by international organizations and developed countries. At present, the influence of international organizations on Indonesian forest policy is significant. In particular, the REDD+ program, one of the most important initiatives in Indonesia's forest policy, is supported by United Nations' funding and administration and the FCPF. Other developed countries interested in conserving and protecting Indonesia's tropical forests have also developed individual projects, several international organizations dedicated to forests in Indonesia are working together. And Germany has established a separate office to support Indonesia's Sustainable Forest Management (SFM) project and has shown a strong interest in forest policy comparable to that of the Ministry of Environment and Forestry. Because of their access to significant funding, the international policy actors are voluntarily and actively involved in influencing Indonesia's forest policy rather than becoming involved in the needs of Indonesia's national forest policy decision-making process. For example, in 2007, Norway agreed to provide \$1 billion in support for the LOI (Letter of Intent) for REDD+ cooperation with Indonesia to directly implement the Forest Moratorium policy, which involved a two-year suspension new licenses for peatlands and primary forests in Indonesia. International policy actors are involved in Indonesia's forest policy primarily to fulfill the responsibilities of the global community. Therefore, they are participating in the policy process through their support of forest projects and acting as policy advisors in Indonesia. Because these organizations are essentially actors from outside Indonesia, their expertise on Indonesian forests alone may be less than that of the Indonesian specialists; however, while they have organized themselves as general forest or tropical forest experts to enhance their institutional expertise, many Indonesian experts are also included in many of the intergovernmental organization. International actors are highly specialized policy actors in implementing policies consistent with general forest policies and/or international standards.



### **9.1.2 Subjects**

<International NGOs, Indonesian national NGOs, International Academic Organizations, National Research Institutes, the Media, the Business Sector>

While this type does not have a high level of power over the deforestation policy, these policy actors have great interest in the forest policies. Actors belonging to this type do not lead policy formation and implementation, but have significant influence. Although not always interested in Indonesia's forest 'policy process', these policy actors are constantly concerned about forest issues and problems. Most of these actors are professionals with good technical knowledge, experience and beliefs in the relevant field, and therefore are willing to be active participants in the policy process if asked by the Indonesian government actors leading the policy process, and often voluntarily participate so that their beliefs and opinions can be reflected in the policy decisions. This type also includes private business entrepreneur actors interested in the policy process for their livelihood or business profits because of the effect of deforestation on their business.

#### International NGOs, Indonesian National NGOs

As the Indonesian forests have a significant impact on the global environment, environment-based NGOs have shown great interest in Indonesia's forest policies. In particular, global NGOs and civil societies have monitored developments in both the Amazon and Indonesian forest. Under the former centralized and closed Indonesian political situation, the government neglected the influence of these NGOs on forest policies; however, as the government now takes time to listen to the opinions of the NGOs, the NGOs have greater opportunities to participate in the policy process. International and National NGOs are also involved in the policy process by publishing reports and commenting on the actions of the government and private businesses. International NGOs such as Greenpeace and WWF, which have significant global support, are supported globally, are actively engaged in forest protection and conservation in Indonesia and have established an independent office in Indonesia. In addition to directly participating in the deforestation policy process, they also influence public opinion by informing Indonesian nationals and the world about the Indonesian forest situations and policies. Therefore, while their relative power is low, the ripple effects of their collective

actions are much greater than their inherent power, as they are not afraid to push their arguments because if these issues are brought to the attention of the governments, businesses, and the general public through the media, they may be partially accepted or even resolved. NGOs tend to have stronger ideals than official international organizations or other developed countries and often strongly question the policies or efforts of the Indonesian government, and therefore can pressure it into compliance. While the Indonesian government often agrees to listen to NGOs officially and allows them to participate in the decision-making process, their opinions are not directly reflected in the policy. Therefore, NGOs voluntarily and actively participate in the decision-making process by continuously voicing their opinions to the government and attending official government public hearings.

Indonesia's national NGOs are less influential than the international NGOs. Often with support of international NGOs, the role of the national NGOs is to communicate with Indonesian village residents and assist them in implementing small-scale forest projects so that the national or global policies can be actively applied at the village level. Therefore, while they are small level actors, the national NGOs provide a voice from the field to the national and regional government policy process.

#### National Research Institutes

The national research institutes operating under the Ministry of Environment and Forestry regularly research the Indonesian forests to provide Indonesian forest policy directions for government policy. The research institutes also collaborate with international academic agencies/institutions and international actors but are primarily focused on research that the Indonesian government supports. These actors are an important professional group in the Indonesia's deforestation prevention policy, and their participation in the policy process ensures a professional and informed voice in the policy process. Most of these organizations share similar policy directions with the Ministry of Environment and Forestry.

#### International Academic Agencies

Because of the global interest in Indonesia's forests, many excellent international researchers are based in Indonesia. For example, CIFOR, which conducts a lot of tropical forest research

worldwide, has established its headquarters in Indonesia as a research base for Asian forest. International research/academic agencies provide the research for international conventions and international regulations and conduct research supported by many international organizations and countries, including Indonesia. While these actors are generally considered to be more internationally recognized than the national research institutes for their expertise in international field studies, they have no direct power to influence the policy process; however, their expert technical knowledge is their power and strength. Even though the Indonesian Ministry of Environment and Forestry has great administrative power in the deforestation policy decision-making process, international actors with economic power seek technical advice from the international academic agencies, which increases the presence of international research institutes in the policy process.

#### Private Business Organizations

Indonesia's forests are part of the agriculture and forestry and natural resources primary industry economic sector, that employs 45 % of Indonesians, contributes 13 % to GDP, and has a gross value of \$14,570 million (Lebedys & Li, 2014). Therefore, many enterprises in Indonesia are directly linked to Indonesia's deforestation prevention policies, so private business organizations are sensitive to the forest policies and participate actively in the policy process. When Indonesia had a lower development level, there was less international focus on its forest, which meant that many private enterprises were involved in illegal forest activities. In particular, local community-based enterprises had been involved in negative behavior with the tacit complicity of local governments. However, as it has been recognized that these illegal activities can cause enormous problems for business operations, most are now trying to follow the government policies and regulations, but at the same time are becoming involved in the policy process to reduce any unfavorable impacts on their business. The Indonesian government has also seen that these enterprises are important actors in the policy process and seek to directly or indirectly involve them in the policy process rather than unconditionally regulating them. Private business organizations are involved in the policy networks by participating in government public hearings and discussions and participating in local government-level policies. However, as the profit-making forest activities of forest-based

enterprises often conflict with environmental issues, they often have conflicting relationships with the environmental NGOs.

### Media

They are policy actors who meet various other policy actors professionally and attend public hearings or debates hosted by governments or other policy actors. However, during the policy process, they participate in this process with their professional duties, not actively participating in the policy, such as giving opinions. These policy actors are responsible for delivering the current vivid information and knowledge acquired through participation in the policy process to the general public through media such as newspapers, TV, and the Internet. However, these media do not simply convey facts, but they produce articles containing opinions of the media according to the vision of each media and distribute them to the public, which can lead to some form of public opinion on the current policy. In addition, editorial criticism or support for a policy content or government policy direction is one indirect way media participates in policy.

### **9.1.3 Context Setters**

<Ministry of Agriculture, Ministry of Trade, Ministry of Foreign Affairs>

While the ‘Context Setters’ have relatively high direct power and influence on the deforestation policies, they are generally weak policy actors compared to the others. Other than Ministry of Environment and Forest, other central government ministries are not concerned with the forest, and even if some of their work is related to forests, the overall interest of these institutions is low. However, they are policy actors who can positively express their opinions through policies directly affecting their jurisdiction.

### Other Ministries

The administration, politics and economy of a nation are formed and determined through a convergence of all fields. In Indonesia, where the forests account for a significant proportion of the country’s economy and society, the deforestation policies are not simply policies governed by the Ministry of Environment and Forestry. In particular, the jurisdiction over

natural resources and industry often overlaps with the Ministry of Agriculture. As Indonesia's imports and exports of timber and various forest products have a large impact on the economy, the Ministry of Environment and Forestry needs to cooperate with the Ministry of Trade. Therefore, the decision-making process for all government policies must include input and cooperation from other relevant ministries.

#### **9.1.4 Crowds**

<District Governments, Indigenous People>

This group is the least influential of the policy actors in the deforestation policy network, as these policy actors generally participate in the policy network through suggestions or coercion by other policy actors. Therefore, these actors are more directly affected by the policies than having any effect on the decision-making process.

##### District Governments

After the national level policies are established, all district's stakeholders participate in the Provincial level policy network and act as the direct partners in the various deforestation prevention projects supported by the international actors, donors, and international and national NGOs. They are also the active voice of the Indigenous people to the provincial government, but they do not have any decisive influence on the policy process. However, more recently, these actors have been increasing their capacity through project and policy participation with the support and cooperation of the international actors.

##### Indigenous Peoples

The indigenous people are generally involved in the various deforestation combating projects rather than directly participating in the government policy decision-making process, therefore, they are actors in the policy network. Residents living near forests or who have livelihoods directly related to the forest are often less willing to participate in the decision-making process. In the past, many have been very distrustful and rebellious about the constantly changing

government policy directions. However, more recently, they have become more self-reliant by participating in small-scale forestry projects and cultivating the policy capacity of the village communities. Although their impact on the deforestation policies is low, Indonesia's forest policy is essentially a policy for the citizens/people of the country; therefore, from this perspective, the indigenous people are very important policy actors in terms of their far-reaching power, as these are the actors that the policy makers must be mindful of in the policy decision process.

## **9.2 Interaction**

This study examined the origins of interactions among the policies and traces how policy actors became involved in policy networks. Here, a statistical analysis of the types of interactions is given, using the survey results and interviews with the policy actors.

### **9.2.1 Instruments of participation in the policy network**

Participation in the policy network of this study implies the involvement of policy actors in policy-decision making in any way beyond the simple exchange of information and opinions between actors (Rhodes, 2008). The questionnaire and interviews used in this study include questions on how the actors participated in the decision-making. Each actor selects up to three of the given presented examples, and the results are analyzed using multiple response analysis, a tool in SPSS.

Table 20. Type of participation of actors in Indonesia deforestation-prevention policies (SPSS Display)

Content	Responses		Percent of cases
	N	Percent	
Prepare draft policy	7	3.9%	9.7%
Hold public hearings and discussions	4	2.2%	5.6%
Attend public hearings and discussions	37	20.4%	51.4%
Provide scientific/technical advice	14	7.7%	19.4%
Provide political, economic or social advice	14	7.7%	19.4%
Provide funding	16	8.8%	22.2%
Send the own organization opinion to the policy maker	11	6.1%	15.3%
Protest against the current policy direction	5	2.8%	6.9%
Communicate with organizations other than policy makers	28	15.5%	38.9%
Carry out a small-scale forest project in regional level	25	13.8%	34.7%
Publish related research report and produce promotional material	20	11.0%	27.8%
Do not know	0	0.0%	0.0%
Others	0	0.0%	0.0%
Total	181	100.0%	-

Frequency analysis indicates that each actor chose, on average, 2.5 out of a total of 13 presented options. It is clear that each policy actor is involved in different types of processes in the formulation for deforestation prevention in Indonesia. The rightmost column of Table 20 indicates the percentage of respondents who selected the given content among all respondents. As shown in Table 20, more than half of the respondents (51.4%) attend public hearings or debates hosted by policymakers. This is given multiple response analysis values corresponding to 20.4% of the total content items. The Indonesian government is working to open policymaking in a transparent way to various organizations and stakeholders. An effort related to this goal is that of holding public hearings and discussions on the policymaking process. Thus, participation in this would not mean active participation in policy, but it is a means of expressing interest in policy and an opportunity to participate actively. The second-highest ranking was information and opinion exchange with policy actors other than policymakers

(15.5%). Then, carrying out small-scale local forest projects, come next. The provision of economic funding in support of the policy combating deforestation in Indonesia accounts for 8.8% of the total, and these mainly were international actors. Finally, the percentage of actors who provided political advice to policymakers and those providing political, economic, and social advice are both at 7.7%.

### **9.2.2 Motivation for participation in policy network**

The interactions within the deforestation-prevention policy network in Indonesia are identified through the initiative for and occasion on which policy actors participated in decision making. Questionnaires and interviews were used to determine how each actor was involved in decision-making. Each actor can select up to two of the given examples, and the results are analyzed using the multiple response analysis on SPSS.

Table 21. Motives for participation of actors in Indonesia deforestation-prevention policies (SPSS display)

Content	Responses		Percent of Cases
	N	Percent	
Fulfill the official duties	14	11.4%	19.4%
Respond to request of the policy maker	15	12.2%	20.8%
Interference in policy maker's policy direction	10	8.1%	13.9%
Change awareness of the public and government	10	8.1%	13.9%
Monitor the policy formulation process	18	14.6%	25.0%
Comply with international regulations on policy	22	17.9%	30.6%
Obtain information on current policy issues	15	12.2%	20.8%
Maintain or maximize the organization's economic profits	7	5.7%	9.7%
Inform policy makers about the situation of the field	10	8.1%	13.9%
Have no specific motivation and interest	0	0.0%	0.0%
Others	2	1.6%	2.8%
Total	123	100.0%	-



Actors involved in decision-making in the deforestation prevention policy had become members of the policy network for various reasons, and each actor chooses an average of 1.7 responses from those provided. Approximately one-third of the policy actors (30.6%) participate to ensure that Indonesia's deforestation prevention policies are formed and implemented in compliance with international regulations and bring international regimes to policymakers' attention. This response is calculated in multiple response analysis as corresponding to 17.9% of total content items, the highest of the different motives for policy participation. This demonstrates the importance of the initiative in the Indonesian policy-making process involving international actors, and it can be concluded that the tropical rainforests of Indonesia are perceived to have a significant impact on the global environment. Second, the rate of policy participation for monitoring policy processes is high (14.6%). These top two responses reflect that international actors support the access of the Indonesian government as the government of a developing country to the policy network. Many actors are simply watching the content and process of forest policy in Indonesia. As forestry has an enormous impact on the national economy, many businesses have close ties to deforestation policies. For this reason, many people, a figure that we obtained at 12.2%, are sensitive to current policy issues. Actors who participate in the policy network at the request of policymakers, attending meetings and providing scientific advice, along with government actors who participated in the policy-making process as official policymakers, occupy next place. Then, other policy actors, such as media actors, participate in the policy process to inform the public of relevant information on policies.

### **9.3 Network Structure**

In policy network analysis, network structures are the patterns of relationships among policy actors or the type of framework in which the network is formed. In a policy network, various forms of linkages exist, and these have structural attributes. Although the various variables that make up network structures are mentioned in numerous studies, this study applies the following sub-system.

First, this study assesses the degree of cohesion of the Indonesian deforestation policy network. Cohesion refers to direct connections between actors in the network due to frequent contact. The cohesion of a network is defined as the combination of a single set of actors with a strong, direct, frequent, or positive linkage between organizations in the network (Wasserman & Faust, 1994). Thus, if a network is strengthened, cohesion will increase as the size of a single connection increases in the single unified setting of an organization. This cohesion is an integral part of determining the overall attributes of the policy network and whether it is sustainable. For this reason, this study analyzes cohesion as the first aspect of the analytical elements of network structure.

Second, this study analyzes the centrality of policy networks. Centrality is used to measure the relative importance within the network as a concept of power and influence. Freeman (1992), who made the most outstanding contribution to the development of the centrality of the network, distinguishes between Local and Global centrality. Local centrality can be expressed as Degree Centrality, and Global centrality is related to Closeness Centrality, Betweenness Centrality, and Prestige Centrality. This allows the researcher to identify the actors who strongly influence the policy process, such as the deforestation policy process.

Third, this study examines whether the policy network is open or closed. Openness indicates the degree to which policy actors can freely participate in the network and the degree of the freedom of the information flow. Participation indicates the inclusion or exclusion of actors and explains the policy's stability and changes (Bulkeley, 2000: 731). Openness is essential in a network structure because policy outputs are derived from the interaction of related actors through formal and informal participation.

Fourth, the study identifies the forms of linkage among the actors involved in policy formulation. It examines vertical and horizontal linkages according to the degree and direction of influence of power, and it identifies the democracy and transparency of the formulation process. It also shows how power interactions can occur among central governments, regional governments, and the private sector.

### 9.3.1 Cohesion

This study surveys and interviews 72 policy actors. The policy network investigated consists of 174 interactions of 72 policy actors, where each policy actor has relationships with 2.42 other policy actors, on average. Density varies depending on the degree of interaction and the number of policy actors. Therefore, even if the frequency of interaction is high in the network, the density is low if the number of policy actors is relatively large or if interactions are concentrated among certain policy actors. In this policy network, many actors are involved in policy, and the interactions of actors are concentrated in the Ministry of Environment and Forestry, such that the network density is relatively low. However, the values for the cohesion indicators cover one network for one policy at a time, there is no control group to compare the values. Therefore, a clear definition of the meaning of one of the above measurement values is difficult.

No.of Tie	Avg.Degree	Density	Avg.Distance	SD Distance	Diameter
174	2.417	0.034	2.619	1.105	6

Figure 12. Results of cohesion analysis for the policy network for deforestation-prevention policies (Ucinet display)

The above cohesion values result from the analysis of the actors who interact with their organizations through questionnaires and interviews. In addition, this study analyzes the characteristics of networks based on the interactions between actors on information provision and trust through interviews. Likewise, this study compared the differences in the cohesion of the networks from the cohesiveness of the relationships.

Table 22. Results of cohesion analysis for Relation, Information and Trust Networks in the Indonesian deforestation-prevention policies

	<b>Relation Network</b>	<b>Information Network</b>	<b>Trust Network</b>
Number of Link	174	134	135
Average Degree	2.417	1.861	1.875
Density	3.4%	2.6%	2.6%
Average Distance	2.619	2.374	2.056
SD Distance	1.105	1.043	0.928
Diameter	6	7	5

The comparison of Cohesion between the networks for relation and the network for information and trust, shown in the above Table 22, does not have important implications for analyzing the network structure. However, the basic structure of information for each interaction network and the numerical difference between each network can be confirmed. In the relationship network, a general interaction between actors, one actor had a relationship with an average of 2.42 actors, and interactions with the actors providing information on the policy are relatively low, at 1.86. Further, the number of actors who are trusted in the network is 1.88. The Information Network confirmed that any two actors are connected on average in 2.37 steps. The average distance of the Trust Network is 2.06, which is closer than that for the relationship network and the Information Network, and the standard deviation (SD) of the distance is also the smallest in the Trust Network. These results were confirmed by investigating the value of the diameter.

### **9.3.2 Centrality**

#### **9.3.2.1 Relation Network**

The results of the network's centrality on the formation of common relationships in the deforestation prevention policies process in Indonesia are as follows. This study did not divide the relationship between actors into cooperation and conflict and analyzed all these forms of interaction as an integrated word called 'relation.' The Ministry of Environment and Forestry

overwhelmingly held first place for all centrality indicators. In addition, the second place for most indicators, the Ministry of Environment and Forestry, has a large gap for the value. These centrality indicators are calculated using UCINET's centrality analysis tool and expressed as normalized values by the program, rather than the simple number of the actor or relation. Based on the questionnaire and interviews and using the data, the centralities of 72 policy actors are calculated. The top 10 policy actors are listed in Table 23 below.

### Degree Centrality

The Ministry of Environment and Forestry, the main policymaker of deforestation prevention policies in Indonesia, had the highest centrality and the value (0.676) is overwhelmingly higher than other policy actors (Table 23). The Ministry of Environment and Forestry leads the preparation of the government-led national policy and plays a significant role in forming the policy network by holding public hearings or debates. This high Degree Centrality confirms that many actors have a direct relationship with the Ministry of Environment and Forestry. Next, Greenpeace (0.211), the provincial government (0.197), and the district government (0.197) have high connection centrality as well, with no significant difference in their values. High Degree Centrality is measured by policy actors in various categories, including NGOs, international organizations, research institutions, and private businesses. It is noteworthy that Greenpeace, a global NGO that is active in Indonesia, takes second place in Degree Centrality. After Indonesian government actors, the UN-REDD+ Task Force, an international organization, confirms that it is highly influential in the policy network. Among the top 10 actors, 6 were Indonesian national actors, including 3 Indonesian governments-levels (administrations), and 4 were policy actors with international backgrounds.

The Degree Centrality of the Ministry of Environment and Forestry was three times higher than that of Greenpeace (0.211), which is the second-highest in centrality, and it has close to seven times the centrality of the eighth-ranked pair FORDA and GIZ. This indicates how high the level of influence and power is that the Ministry of Environment and Forestry has in the policy network for Indonesian deforestation policies. For reference, GIZ shows a higher Degree Centrality than other countries' aid agencies because the German government supports projects

that are underway in the Kalimantan region, where the regional-level interviews were conducted.

Table 23. Top 10 policy actors in Degree Centrality of the Relation Network on Indonesian deforestation-prevention policies

	<b>Name of organization</b>	<b>Category</b>	<b>Degree Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.676
2	Greenpeace	International NGO	0.211
3	Provincial Government	Regional government	0.197
3	District Government	Regional government	0.197
5	UN-REDD+ Task Force	Intergovernmental organization	0.155
5	Center for International Forestry Research (CIFOR)	International academic agency	0.155
5	State Forest Public Company	National organization	0.155
8	German Development Agency (GIZ)	Foreign government agency	0.099
8	Forest Research and Development Agency (FORDA)	National research institute	0.099
8	Asia Pulp & Paper	National business enterprise	0.099

Degree Centrality of the Relation Network can be visualized in the following network diagram, the NetDraw program, used for the visualization of network structure. This network represents the results of selecting actors with whom another actor has a relationship with their own organization, resulting in a directional relation between actors, represented by an arrow line. Each actor is represented by a node indicated by a circle, and an abbreviation for each actor's institution's name is written next to the corresponding node. The degree of direct expression of influence can be confirmed by the size of the circle of actors, and the color of the node expresses the category to which the given actor belongs.

Green nodes represent the central government, and the largest green circle in the center is the Ministry of Environment and Forestry. As with the centrality Figure 12 below, this diagram shows the overwhelming influence of the Ministry of Environment and Forestry on the deforestation prevention policy network in Indonesia. We interviewed each of the four directorates of the Ministry of Environment and Forestry (Planning REDD+, Forest Product, Climate Change, and Production FMUs Bureau) to identify their interaction. However, since the other actors could not accurately identify the directorates of the Ministry of Environment

and Forestry, the Ministry of Environment and Forestry was regarded as one actor in their interaction, and it is expressed in the diagram in Figure 13. It has relationships with 48 policy actors and thus is the most important actor in the policy network. Greenpeace, an international NGO, is selected from 15 policy actors, and the provincial and district government are also relatively central in the network. The UN-REDD+ Task Force and CIFOR, classified as international actors, and the Indonesian State Public Company are located between the Ministry of Environment and Forestry and the above-mentioned policy actor-network, and they each have a degree value of 11. The nodes on the outside of the network diagram are mostly composed of actors who have chosen certain policy actors and have not themselves been selected by others.

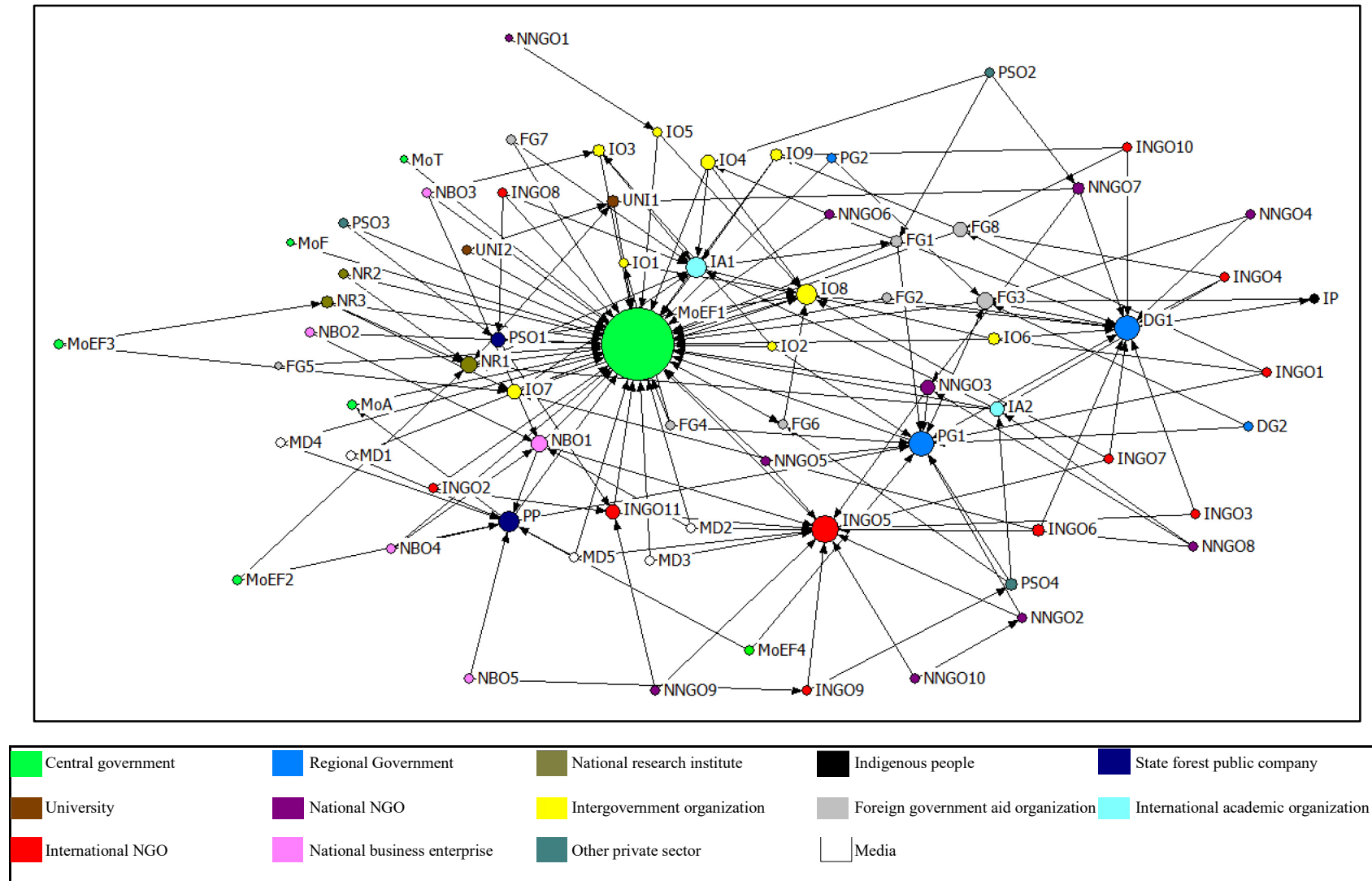


Figure 12. Structure of Relation Network for Indonesian deforestation-prevention policies



### Closeness Centrality

Table 24. Top 10 policy actors in Closeness Centrality of the Relation Network for Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Closeness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.755
2	Provincial Government	Regional government	0.542
3	Greenpeace	International NGO	0.514
4	UN-REDD+ Task Force	Intergovernmental organization	0.507
5	German Development Agency (GIZ)	Foreign government agency	0.493
5	Center for International Forestry Research (CIFOR)	International academic agency	0.493
7	State Forest Public Company	National organization	0.490
7	Forest Watch Indonesia	National NGO	0.490
9	Asia Pulp & Paper	National business enterprise	0.480
10	Perkumpulan	National NGO	0.473

The Ministry of Environment and Forestry exhibits an overwhelmingly high value (0.755), which can easily mobilize the network resource related to the policy, and policy actors can easily access the information in the network. Next, the provincial government (0.542), Greenpeace (0.514), and the UN-REDD+ Task Force (0.507) show a high degree of centralization, and they are located at the center of the network.

### Prestige Centrality

Prestige Centrality also had its highest value (0.584) in the Ministry of Environment and Forestry. It is noticeable that CIFOR (0.204), which does not occupy the top position for the previous central indicators, is ranked just behind the Ministry of Environment and Forestry. CIFOR has a great deal of interaction with other actors with high prestige. Prestige Centrality thus emerges for actors who were not related to the top actors in the frontal centrality indicators. Although the differences in value do not appear to be large, the rank of the centrality value also changed significantly.

Table 25. Top 10 policy actors in Prestige Centrality of the Relation Network for Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Prestige Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.584
2	Center for International Forestry Research (CIFOR)	International academic agency	0.204
3	Provincial Government	Regional government	0.198
4	UN-REDD+ Task Force	Intergovernmental organization	0.196
5	Greenpeace	International NGO	0.186
6	State Forest Public Company	National organization	0.168
7	Asia Pulp & Paper	National business enterprise	0.149
8	Forest Research and Development Agency(FORDA)	National research institute	0.137
9	United Nations Framework Convention on Climate Change (UNFCCC)	Intergovernmental organization	0.131
10	District Government	Regional government	0.125
10	Food and Agriculture Organization (FAO)	Intergovernmental organization	0.125

#### Betweenness Centrality

In Betweenness Centrality, the Ministry of Environment and Forestry was the most influential broker in Indonesia's deforestation-prevention policy network. The Ministry of Environment and Forestry, which has an overwhelming influence on policy networks, has high control over information and resources in this policy network. Theoretically, this means that there is a great risk to the content and direction of the policy, depending on the willingness of this Ministry.

Table 26. Top 10 policy actors in Betweenness Centrality of the Relation Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Betweenness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.677
2	Greenpeace	International NGO	0.144
3	Provincial Government	Regional government	0.097
4	District Government	Regional government	0.072
5	State Forest Public Company	National organization	0.055
6	German Development Agency (GIZ)	Foreign government agency	0.046
7	UN-REDD+ Task Force	Intergovernmental organization	0.033
8	Food and Agriculture Organization (FAO)	Intergovernmental organization	0.028
9	World Resources Institute	International academic agency	0.027
10	United Nations Framework Convention on Climate Change (UNFCCC)	Intergovernmental organization	0.024

#### Comparison of type of centrality in the Relation Network

The ten actors who have the highest values in the four centrality indicators are compared in table 28 below. In addition to the Degree Centrality, which is representative of influence and power within the network, it is confirmed that Indonesia's Ministry of Environment and Forestry has the highest ranking for all centrality indicators.

In the list of top 10 actors with high centrality, there are from 4 to 6 international actors for each indicator. In particular, this ratio has the highest Betweenness Centrality and can confirm the structural position in the network of government actors and international actors located at a high frequency between other actors. Various actors place the name of their organization in the top actor list for each centrality indicator, with different values and rankings. Even though no significant difference is found in the centrality values of the actors, with the exception of the Ministry of Environment and Forestry, these different values and rankings show that these indicators clearly mean different things.

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

Table 27. Top 10 policy actors in Degree, Closeness, Prestige, and Betweenness Centrality of the Relation Network for Indonesian deforestation-prevention policies

	Degree Centrality	Closeness Centrality	Prestige Centrality	Betweenness Centrality
1	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry
2	Greenpeace	Provincial Government	Center for International Forestry Research (CIFOR)	Greenpeace
3	Provincial Government	Greenpeace	Provincial Government	Provincial Government
4	District Government	UN-REDD+ Task Force	UN-REDD+ Task Force	District Government
5	UN-REDD+ Task Force	German Development Agency (GIZ)	Greenpeace	State Forest Public Company
6	Center for International Forestry Research (CIFOR)	Center for International Forestry Research (CIFOR)	State Forest Public Company	German Development Agency (GIZ)
7	State Forest Public Company	State Forest Public Company	Asia Pulp & Paper	UN-REDD+ Task Force
8	German Development Agency (GIZ)	Forest Watch Indonesia	Forest Research and Development Agency (FORDA)	Food and Agriculture Organization (FAO)
9	Forest Research and Development Agency (FORDA)	Asia Pulp & Paper	United Nations Framework Convention on Climate Change (UNFCCC)	World Resources Institute
10	Asia Pulp & Paper	Perkumpulan	District Government	United Nations Framework Convention on Climate Change (UNFCCC)
10			Food and Agriculture Organization (FAO)	

The correlation among the centralities is analyzed by Ucinet, and the resulting data are shown in Figure 13. Eigenvector centrality located in the third column of the figure is the word used in the Ucinet program and is a centrality indicator that has the same meaning as Prestige Centrality. The value of a matrix with the same value is 1.0, and the closer the value is to 1.0, the greater the similarity of the two matrices.

It is confirmed that the Betweenness Centrality, which indicates the degree to which one actor is located among other actors, and Degree Centrality, which is the degree to which the actor is centrally located in the network, are most similar to each other (value 0.951) in centrality indicators. On the other hand, Betweenness Centrality and Closeness Centrality were calculated to have a correlation value of 0.690, showing the lowest similarity between the two indicators.

SIMILARTIES

-----

Measure:	CORREALATION
Variables are:	COLUMNS
Input dataset:	M:
Similarity Matrix:	M:

		1	2	3	4
		Degre	Close	Eigen	Betwe
		-----	-----	-----	-----
1	Degree	1.000	0.753	0.925	0.951
2	Closeness	0.753	1.000	0.924	0.690
3	Eigenvector	0.925	0.924	1.000	0.870
4	Betweenness	0.951	0.692	0.870	1.000

Figure 13. Correspondence analysis for Centrality in the Relation Network (Ucinet display)

### **9.3.2.2 Information Network**

The results of the network centrality of the actors providing information about the deforestation prevention policy process in Indonesia are as follows: The Ministry of Environment and Forestry occupies first place in all centrality indicators, as with the Relation Network in the previous section. However, there is not a large gap between the second-place actor in some centralities. The specific values for each centrality and the top 10 policy actors can be found in Table 28 below.

#### Degree Centrality

In the Information Network for deforestation policy in Indonesia, the Ministry of Environment and Forestry was the most central, and its value for centrality (0.563) was much higher than that of other policy actors. This implies that actors belonging to the policy network obtained information on policy formulation and implementation from the Ministry of Environment and Forestry. The UN-REDD+ Task Force (0.282) and CIFOR (0.197), the international actor, showed a high Degree Centrality in the Information Network after the Ministry of Environment and Forestry. Then Greenpeace (0.127) and World Bank (0.127) ranked fourth in the rankings with FORDA (0.127), the Indonesian government research institute. The policy actors that constitute this policy network have the greatest information dependency on the Ministry of Environment and Forestry, and the centrality value of the Ministry of Environment and Forestry is twice the UN-REDD+ Task Force, which has the second-highest value. In addition, the high dependence of the actors on international information confirms that intergovernmental organizations, agencies of a foreign government, and international NGOs are currently active in Indonesia's deforestation prevention policy and play an important role in it. Among the top 10 actors in that Network, four actors are Indonesian government and national actors, and 6 are policy actors at the international level.

Table 28. Top 10 policy actors in Degree Centrality of the Information Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Degree Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.563
2	UN-REDD+ Task Force	Intergovernmental organization	0.282
3	Center for International Forestry Research (CIFOR)	International academic agency	0.197
4	Greenpeace	International NGO	0.127
4	World Bank	Intergovernmental organization	0.127
4	Forest Research and Development Agency (FORDA)	National research institute	0.127
7	German Development Agency (GIZ)	Foreign government agency	0.099
8	Provincial Government	Regional government	0.085
8	State Forest Public Company	National organization	0.085
10	World Resources Institute	International Academic Agency	0.070

The structure of the Information Network can be seen in the figure, which visualizes the Degree Centrality of each actor. The large green circle node of the diagram indicates the high centrality of the Ministry of Environment and Forestry, and the actors with low centrality values are located around it. The next largest node features those international actors whose institutional abbreviations start with 'I' (yellow circle node), and they are also located at the center of the Information Network. Although the international actors mentioned here are largely intergovernmental organizations and agencies of foreign governments, international NGOs such as Greenpeace are also found to have a high Degree Centrality.

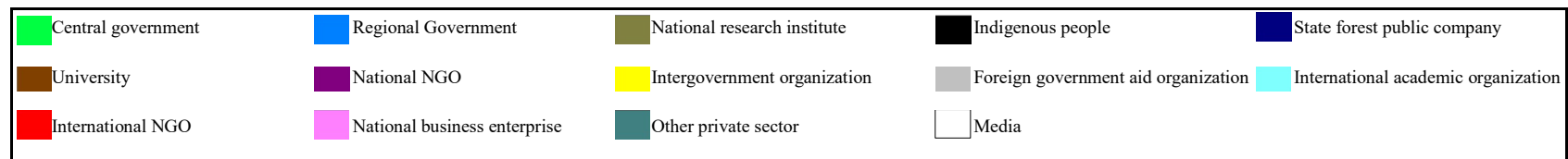
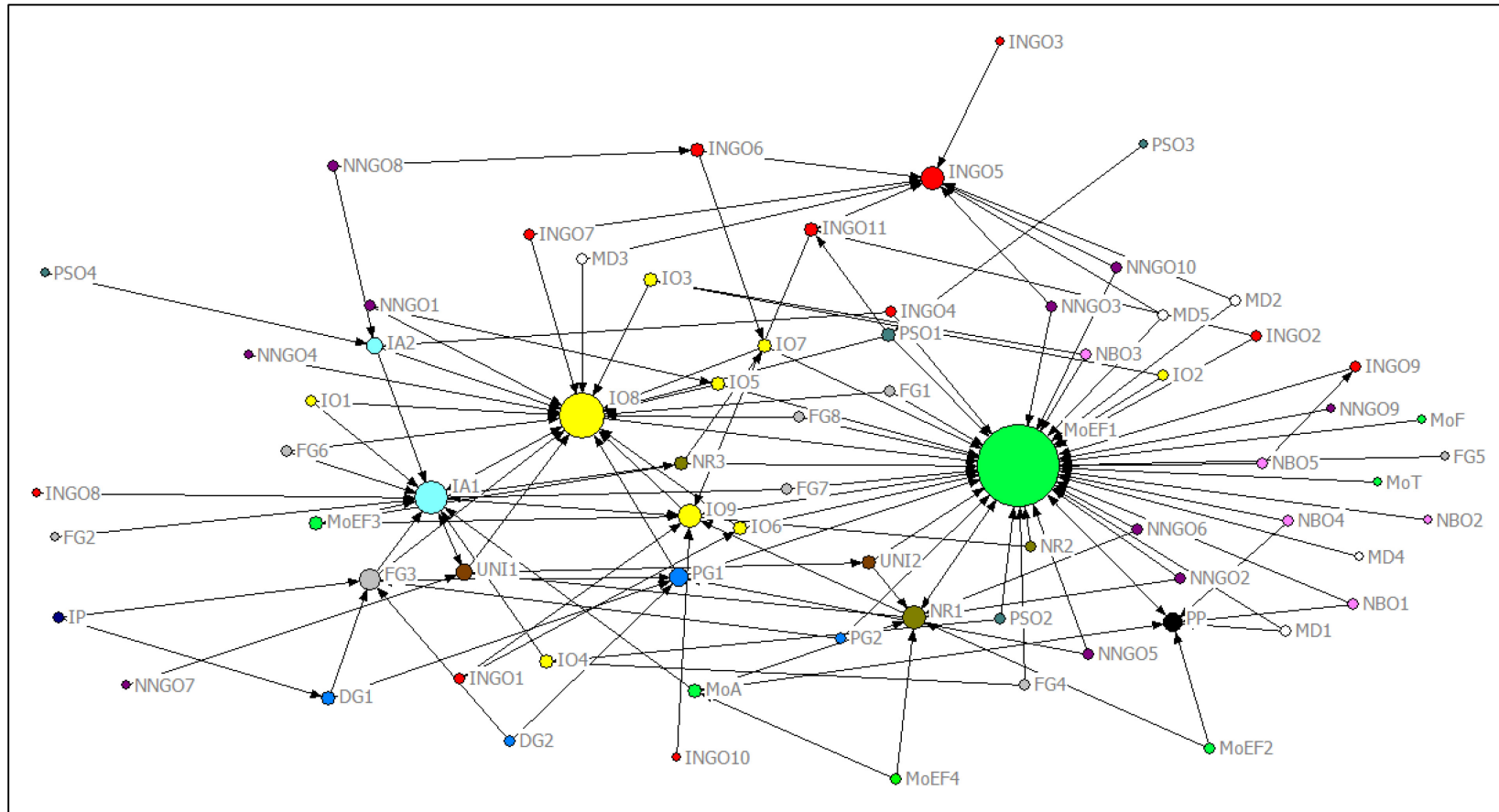


Figure 15. Structure of Information Network for Indonesian deforestation prevention policies



### Closeness Centrality

Closeness Centrality indicates how far an actor is located from the center of the network. It is seen that the Ministry of Environment and Forestry (0.651) is located at the center of the given Information Network. The next ranked are the UN-REDD+ Task Force (0.568) and the World Bank (0.500). Table 30 shows that the top 10 organizations for Closeness Centrality include a number of international actors and research institutes that act as donors and technical advisers, enabling them to quickly find relevant information and access accurate information more easily than other actors.

Table 29. Top 10 policy actors in Closeness Centrality for the Information Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Closeness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.651
2	UN-REDD+ Task Force	Intergovernmental organization	0.568
3	World Bank	Intergovernmental organization	0.500
4	Provincial Government	Regional government	0.461
4	United Nations Framework Convention on Climate Change (UNFCCC)	Intergovernmental organization	0.461
6	Center for International Forestry Research (CIFOR)	International academic agency	0.458
6	Daemeter	Private sector organization	0.458
8	Forest Research and Development Agency (FORDA)	National research institute	0.449
8	Research Center for Climate Change (DNPI)	National research institute	0.449
10	United Nations Environment Programme (UNEP)	Intergovernmental organization	0.447

### Prestige Centrality

Prestige Centrality (see Table 30), which comprehensively computes the influence of an organization's own centrality and that of the organizations directly connected with it, assigns the highest value (0.565) to the Ministry of Environment and Forestry. The UN-REDD+ Task

Force, which ranked second in other centrality measures, has the second-highest centrality value in Prestige Centrality. The highest rank for this centrality exhibited a significant difference in the value of centrality but had a similar type of centrality.

Table 30. Top 10 policy actors in Prestige Centrality for the Information Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Prestige Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.565
2	UN-REDD+ Task Force	Intergovernmental organization	0.343
3	World Bank	Intergovernmental organization	0.208
4	Center for International Forestry Research (CIFOR)	International academic agency	0.192
5	Forest Research and Development Agency (FORDA)	National research institute	0.174
6	Provincial Government	Regional government	0.157
7	United Nations Framework Convention on Climate Change (UNFCCC)	International organization	0.140
8	Daemeter	Private sector organization	0.130
9	Research Center for Climate Change (DNPI)	National research institute	0.127
9	United Nations Development Programme (UNDP)	International organization	0.127

### Betweenness Centrality

In Betweenness Centrality, the Ministry of Environment and Forestry was the most influential broker in the Information Network and had high control over the information in it. A university (Bogor Agricultural University) that did not take a top position in other centralities for the Information Network appeared here in the top 10 of Betweenness Centrality. However, it is confirmed that the value showed remarkably small differences down the rank order. Thus, the centrality value of actors beyond the top three or four has no significant meaning. Greenpeace and the UN-REDD+ Task Force have high control over the resources of the Information Network for deforestation prevention policies in Indonesia, and if these actors are in the opposite direction of policy direction, they are likely to have a negative impact on the policy.

Table 31. Top 10 policy actors in Betweenness Centrality for the Information Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Betweenness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.622
2	UN-REDD+ Task Force	Intergovernmental organization	0.261
3	Center for International Forestry Research (CIFOR)	International academic agency	0.125
4	World Bank	Intergovernmental organization	0.085
5	Forest Research and Development Agency (FORDA)	National research institute	0.058
6	World Resources Institute	International academic agency	0.053
7	Provincial Government	Regional government	0.049
8	German Development Agency (GIZ)	Foreign government agency	0.047
9	Greenpeace	International NGO	0.042
10	Bogor Agricultural University	University	0.036

#### Comparison of each type of centrality in the Information Network

Table 33 below compares ten actors with high scores in the four centrality indicators of the Information Network. In addition to that, for Degree Centrality, which is an indicator value for influence and power within the network, the Indonesian Ministry of Environment and Forestry has the highest centrality for all centrality indicators. International actors accounted for 55% of the top 10 lists on all for centrality indicators. The study subjects of this policy network study are 72 policy actors, of which the 32 international actors accounted for 44.4% of the total, and the ratio of international actors at the top of the centrality of the Information Network is greater than the total rate.

In the Information Network, it is clear that international organizations or research institutes that support economic cooperation or give policy advice in the Indonesian forest sector are located at the highest levels in the policy network.

Table 32. Top 10 policy actors in Degree, Closeness, Prestige, and Betweenness Centrality of the Information Network for Indonesian deforestation prevention policies

	<b>Degree Centrality</b>	<b>Closeness Centrality</b>	<b>Prestige Centrality</b>	<b>Betweenness Centrality</b>
1	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry
2	UN-REDD+ Task Force	UN-REDD+ Task Force	UN-REDD+ Task Force	UN-REDD+ Task Force
3	Center for International Forestry Research (CIFOR)	World Bank	World Bank	Center for International Forestry Research (CIFOR)
4	Greenpeace	Provincial Government	Center for International Forestry Research (CIFOR)	World Bank
5	World Bank	United Nations Framework Convention on Climate Change (UNFCCC)	Forest Research and Development Agency (FORDA)	Forest Research and Development Agency (FORDA)
6	Forest Research and Development Agency (FORDA)	Center for International Forestry Research (CIFOR)	Provincial Government	World Resources Institute
7	German Development Agency (GIZ)	Daemeter	United Nations Framework Convention on Climate Change (UNFCCC)	Provincial Government
8	Provincial Government	Forest Research and Development Agency (FORDA)	Daemeter	German Development Agency (GIZ)
9	State Forest Public Company	Research Center for Climate Change (DNPI)	Research Center for Climate Change (DNPI)	Greenpeace
10	World Resources Institute	United Nations Environment Programme (UNEP)	United Nations Development Programme (UNDP)	Bogor Agricultural University

In the Ucinet display (see Figure 16) below, the correlation of each centrality indicator is checked. Degree Centrality and Betweenness Centrality have the highest correlation, with 0.977, and they thus exhibit a very similar network structure. The networks with the lowest correlations are the closeness and betweenness networks, both with a value of 0.672. In addition, in the display below, the Prestige Centrality represented by the Eigenvector was a centrality indicator with the structure most similar to the other three centrality indicators.

SIMILARTIES

-----

Measure:	CORREALATION
Variables are:	COLUMNS
Input dataset:	M:
Similarity Matrix:	M:

		1	2	3	4
		Degre	Close	Eigen	Betwe
		-----	-----	-----	-----
1	Degree	1.000	0.689	0.915	0.977
2	Closeness	0.689	1.000	0.907	0.672
3	Eigenvector	0.915	0.907	1.000	0.906
4	Betweenness	0.977	0.692	0.906	1.000

Figure 16. Correspondence analysis for Centrality in the Information Network (Ucinet display)

### 9.3.2.3 Trust Network

The results of the Trust Network centrality showing the results of selecting actors who trust each given actor in the network of the Indonesian deforestation prevention policy process are as follows. The Ministry of Environment and Forestry took first place for all centrality indicators, such as the Relation and Information Network, as shown in the previous section. In

the Trust Network, international actors are located in several places directly under the Ministry of Environment and Forestry, and their centrality is remarkable.

### Degree Centrality

The results of the centrality of the Trust Network in which each policy actor chooses which other actors to trust are shown in Table 34 below. The Ministry of Environment and Forestry has the highest Degree Centrality (0.451). Because it is responsible for the formation and implementation of government-led policies, the ministry has a high level of trust among policy actors through its relationships with them in the policy network at public hearings and debates. The UN-REDD+ Task Force (0.296) and the World Bank (0.211) are ranked next after the Ministry of Environment and Forestry, whose Degree Centrality is 1.5 times that of the UN-REDD+ Task Force, which has the second-highest Degree Centrality and thus is second-most centralized. And the Ministry of Environment and Forestry exhibited close to six times the centrality value of the eighth-ranked FAO, GIZ, and State Forest Public Company. Among the top ten actors, there are 3 Indonesian national actors, all of which can be regarded as governmental actors, and the remaining 7 are actors based on international backgrounds. These are the organizations that promote the capacity building of the Indonesian government and community development while promoting international cooperation projects in Indonesia. They are international organizations and actors in international research institutes that actively engage in research and provide technical advice on policies. It can be assumed that the social and economic cooperation and technical advice that international actors provide backgrounds the trust of other policy actors. For reference, this study interviewed regional government actors in West Kalimantan, where GIZ is implementing a community social support program. For this reason, GIZ showed greater centrality in our study than aid agencies from other countries.

Table 33. Top 10 policy actors in Degree Centrality of the Trust Network on Indonesian deforestation prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Degree Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.451
2	UN-REDD+ Task Force	Intergovernmental organizations	0.296
3	World Bank	Intergovernmental organizations	0.211
4	Center for International Forestry Research (CIFOR)	International academic agency	0.183
5	Greenpeace	International NGO	0.169
6	Forest Research and Development Agency (FORDA)	National research institute	0.155
7	World Resources Institute	International academy agency	0.113
8	State Forest Public Company	National organization	0.085
8	Food and Agriculture (FAO)	Intergovernmental organizations	0.085
8	German Development Agency (GIZ)	Foreign government agency	0.085

The fact that the center of Trust Network shows such an overwhelming influence of the Ministry of Environment and Forestry is brought home by a diagram (see Figure 17). In the Trust Network, the Ministry of Environment and the Forestry is represented by the largest node in the diagram, with 32 connections to other policy actors. The nodes for international actors such as the UN-REDD+ Task Force, CIFOR, and the World Bank, located near the Ministry of Environment and Forestry, exchange trust with nodes of 21, 15, and 13 actors, respectively. These actors themselves, along with the Ministry of Environment and Forestry, also connect other actors in the heart of this Trust Network. A small-sized node actor with one or two trust connections with other policy actors constitutes the exterior of this network structure, and there are 49 such actors.

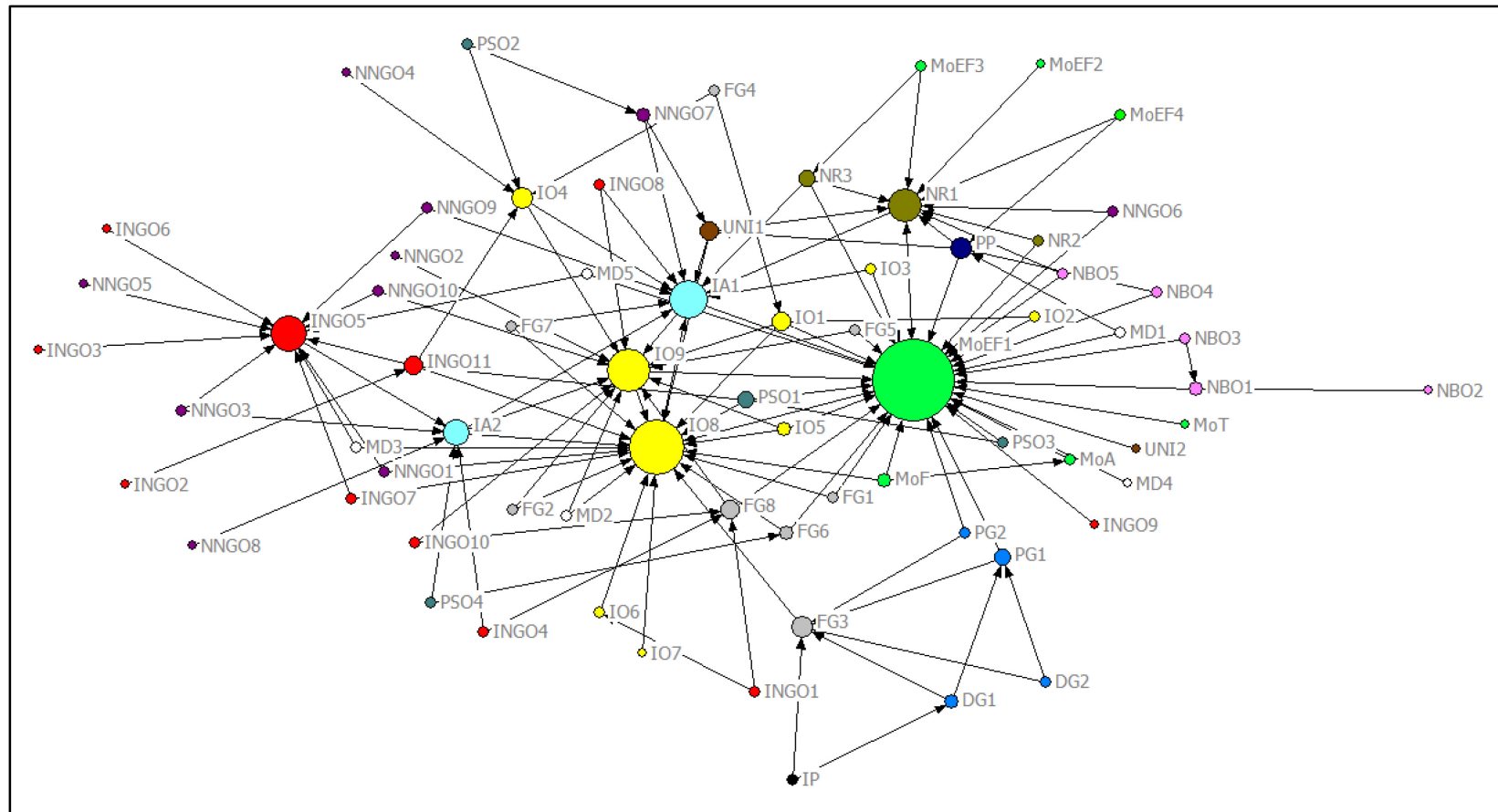


Figure 17. Structure for Trust Network in Indonesian deforestation prevention policies



### Closeness Centrality

Closeness Centrality is an indicator to determine how centrally the policy actors are located in the Trust Network. The top 10 policy actors of the Trust Network are listed in Table 35. With the highest value of 0.597, the Ministry of Environment and Forestry is located at the center of the network. This is followed by UN-REDD+ Task Force (0.546), CIFOR (0.514), and the World Bank (0.514). The centrality values of these organizations were close to that of the Ministry of Environment and Forestry. As shown in Table 34, eight of the actors among the top 12 policy actors in Closeness Centrality were institutions with an international background. The international actors who provided economic support, policy, and technical advice in conjunction with the Ministry of Environment and Forestry led the Trust Network in the center of the network structure.

Table 34. Top 10 policy actors in Closeness Centrality of the Trust Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Closeness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.597
2	UN-REDD+ Task Force	Intergovernmental organization	0.546
3	Center for International Forestry Research (CIFOR)	International academic agency	0.514
3	World Bank	Intergovernmental organization	0.514
5	Asian Development Bank (ADB)	Intergovernmental organization	0.441
6	Daemeter	Private sector organization	0.438
7	World Resources Institute	International academy agency	0.433
7	United Nations Development Programme (UNDP)	Intergovernmental organization	0.433
9	Forest Research and Development Agency (FORDA)	National research institute	0.430
10	Norwegian Agency for Development Cooperation (NORAD)	Foreign government agency	0.418
10	United States Agency for International Development (USAID)	Foreign government agency	0.418
10	The Jakarta Post	Media	0.418

### Prestige Centrality

Prestige Centrality comprehensively calculates the influence of one actor's own centrality and the organizations directly connected with the actor. The values of the actor's Prestige Centrality are presented in Table 35. The Ministry of Environment and Forestry in the Trust Network also had the highest Prestige Centrality value (0.493). The UN-REDD+ Task Force ranked second in the centrality indicators of the Trust Network, also has the second-highest Prestige Centrality value (0.366). The large gap of Prestige Centrality between the first- and second-ranked reveals the influence of the Ministry of Environment and Forestry. Although Prestige Centrality was also more prominent in international organizations, aid agencies, and research institutions, Indonesian national policy actors were more visible than in the other centrality indicators of Trust Networks. The list of actors in Table 36 confirmed the indirect influence of the national actors in this network.

Table 35. Top 10 policy actors in Prestige Centrality of the Trust Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Prestige Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.493
2	UN-REDD+ Task Force	Intergovernmental organization	0.366
3	World Bank	Intergovernmental organization	0.297
4	Center for International Forestry Research (CIFOR)	International academic agency	0.287
5	Forest Research and Development Agency (FORDA)	National research institute	0.201
6	Asian Development Bank (ADB)	Intergovernmental organization	0.164
7	World Resources Institute	International academy agency	0.149
7	United Nations Development Programme (UNDP)	Intergovernmental organization	0.149
9	State Forest Public Company	National organization	0.135
9	Bogor Agricultural University	University	0.135

### Betweenness Centrality

The actor's values for Betweenness Centrality are shown in Table 36. The Ministry of Environment and Forestry had the highest centrality value of 0.508 in the Betweenness

Centrality, and this centrality value increases as the distance between different actors get shorter. The second most influential broker was the UN-REDD+ Task Force (0.279). The latter had the highest level of control over information. The World Bank (0.149) and CIFOR (0.141) were also in the top four on the list. The international actors, in conjunction with the Ministry of Environment and Forestry, which had an overwhelming influence in the Trust Network, had a high control of information and resources in the network, based on the high reliability of other policy actors. This indicates that these actors may distort information in the policy process or disrupt the relationship of one actor to another.

Table 36. Top 10 policy actors in Betweenness Centrality of the Trust Network on Indonesian deforestation-prevention policies

	<b>Name of Organization</b>	<b>Category</b>	<b>Betweenness Cen.</b>
1	Ministry of Environment & Forestry	Central government	0.508
2	UN-REDD+ Task Force	Intergovernmental organization	0.279
3	World Bank	Intergovernmental organization	0.149
4	Center for International Forestry Research (CIFOR)	International academic agency	0.141
5	Greenpeace	International NGO	0.106
6	World Resources Institute	International academy agency	0.091
7	Forest Research and Development Agency (FORDA)	National research institute	0.072
8	Food and Agriculture (FAO)	Intergovernmental organization	0.059
9	German Development Agency (GIZ)	Foreign government agency	0.055
10	World Wildlife Fund (WWF)	International NGO	0.049

#### Comparison of each Centrality in the Trust Network

The policy actors who had high values for each of the centrality indicators of the Trust Network for deforestation policies in Indonesia are presented in Table 37. The Ministry of Environment and Forestry was the highest ranked and the UN-REDD+ Task Force the second-highest ranked; this is in accordance with other centrality indicators. The UN-REDD+ Task Force, which ranked second after the Ministry of Environment and Forestry, was highly trusted by actors in the network on Indonesian deforestation prevention policies. Furthermore, this indicates that the impact of the REDD+ program on these policy processes was very high. One may assume

that REDD+ accounts for a very high proportion in the Indonesian deforestation-prevention policy network because the influence of institutions that provide technical advice and support projects on REDD+ to developing countries is very high in the Trust Network.

Table 37. Top 10 policy actors in Degree, Closeness, Prestige, and Betweenness Centrality of the Trust Network on Indonesian deforestation prevention policies

	<b>Degree Centrality</b>	<b>Closeness Centrality</b>	<b>Prestige Centrality</b>	<b>Betweenness Centrality</b>
1	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry	Ministry of Environment & Forestry
2	UN-REDD+ Task Force	UN-REDD+ Task Force	UN-REDD+ Task Force	UN-REDD+ Task Force
3	World Bank	Center for International Forestry Research (CIFOR)	World Bank	World Bank
4	Center for International Forestry Research (CIFOR)	World Bank	Center for International Forestry Research (CIFOR)	Center for International Forestry Research (CIFOR)
5	Greenpeace	Asian Development Bank (ADB)	Forest Research and Development Agency (FORDA)	Greenpeace
6	Forest Research and Development Agency (FORDA)	Daemeter	Asian Development Bank (ADB)	World Resources Institute
7	World Resources Institute	World Resources Institute	World Resources Institute	Forest Research and Development Agency (FORDA)
8	State Forest Public Company	United Nations Development Programme (UNDP)	United Nations Development Programme (UNDP)	Food and Agriculture (FAO)
9	Food and Agriculture (FAO)	Forest Research and Development Agency (FORDA)	State Forest Public Company	German Development Agency (GIZ)
10	German Development Agency (GIZ)	Norwegian Agency for Development Cooperation (NORAD)	Bogor Agricultural University	World Wildlife Fund (WWF)
10		United State Agency for International Development (USAID)		

It is noteworthy that four actors ranked high in all four centrality indicators of the Trust Network. In addition, international policy actors with diverse backgrounds such as the World Bank, CIFOR, and Greenpeace were at the top of the lists. These international actors demonstrated high reliability in the policy process for preventing deforestation.

The names of the organizations of the Indonesian domestic actors, who were highly ranked in the centrality of other networks, were not frequently highly ranked in the Trust Networks. In particular, the provincial government and district government, which ranked at the top in other networks, were not ranked (Table 37).

SIMILARTIES

-----

Measure: CORREALATION

Variables are: COLUMNS

Input dataset: M:

Similarity Matrix: M:

		1	2	3	4
		Degre	Close	Eigen	Betwe
		-----	-----	-----	-----
1	Degree	1.000	0.752	0.915	0.971
2	Closeness	0.752	1.000	0.907	0.701
3	Eigenvector	0.910	0.922	1.000	0.867
4	Betweenness	0.971	0.701	0.867	1.000

Figure 18. Correspondence analysis for Centrality in the Trust Network (Ucinet Display)

The correlation between each centrality was analyzed by Ucinet. The results are depicted in Figure 18. The Eigenvector Centrality, found in the third column of the matrix in the Figure 17, is the term employed by Ucinet. It is same centrality indicator as Prestige Centrality.

Identical matrices have a value of 1.0. Furthermore, the more similar two matrices are, the closer the values will be to 1.0. The similarity between each centrality indicator in the relationship network was between 0.690 and 0.971. The similarity between Degree Centrality and Betweenness Centrality was the highest with a value of 0.971. Prestige Centrality had the highest similarity with the other actors. When examining the correlation between the Degree Centrality, which directly represents the most important and representative power and influence, and the other centrality indicators, the analysis revealed that the structure of the matrix of Closeness Centrality was the most different to that of Betweenness Centrality (0.701).

#### Comparison of each type of centrality in each network

According to Table 38, which lists the top 10 actors of Degree Centrality in three networks, the Ministry of Environment and Forestry's Degree Centrality value was highest for Relation, Information, and Trust Network. The Ministry of Environment and Forestry had a very concentrated general relationship with actors. However, their Degree Centrality in Information and Trust was less.

The top 10 list of Degree Centrality values shows the proportion of international actors was 40%, 60%, and 70% for Relation, Information, and Trust Network, respectively. The policy actors that participate in the Indonesian deforestation prevention policy networks rely heavily on international actors in relation to information and trust.

In the list of actors ranked in the top three for Degree Centrality, various categories of policy actors influenced the network. However, the Ministry of Environment and Forestry was the major policy maker of Indonesian deforestation prevention policies. Actors in various categories ranging from Indonesian government actors to international donors, academic actors, and NGO and private business actors can be found in the Relation Network. However, the influence was concentrated on actors classified as international donors and academic actors for networks that rely on Information and Trust.

Table 38. Top 10 policy actors in Degree Centrality of each network in Indonesian deforestation-prevention policies

	Relation Network		Information Network		Trust Network	
	Name of Organization	Degree	Name of Organization	Degree	Name of Organization	Degree
1	Ministry of Environment & Forestry	0.676	Ministry of Environment & Forestry	0.563	Ministry of Environment & Forestry	0.451
2	Greenpeace	0.211	UN-REDD+ Task Force	0.282	UN-REDD+ Task Force	0.296
3	Provincial Government	0.197	Center for International Forestry Research (CIFOR)	0.197	World Bank	0.211
4	District Government	0.197	Greenpeace	0.127	Center for International Forestry Research (CIFOR)	0.183
5	UN-REDD+ Task Force	0.155	World Bank	0.127	Greenpeace	0.169
6	Center for International Forestry Research (CIFOR)	0.155	Forest Research and Development Agency(FORDA)	0.127	Forest Research and Development Agency (FORDA)	0.155
7	State Forest Public Company	0.155	German Development Agency (GIZ)	0.099	World Resources Institute	0.113
8	German Development Agency (GIZ)	0.099	Provincial Government	0.085	State Forest Public Company	0.085
9	Forest Research and Development Agency(FORDA)	0.099	State Forest Public Company	0.085	Food and Agriculture (FAO)	0.085
10	Asia Pulp & Paper	0.099	World Resources Institute	0.070	German Development Agency (GIZ)	0.085

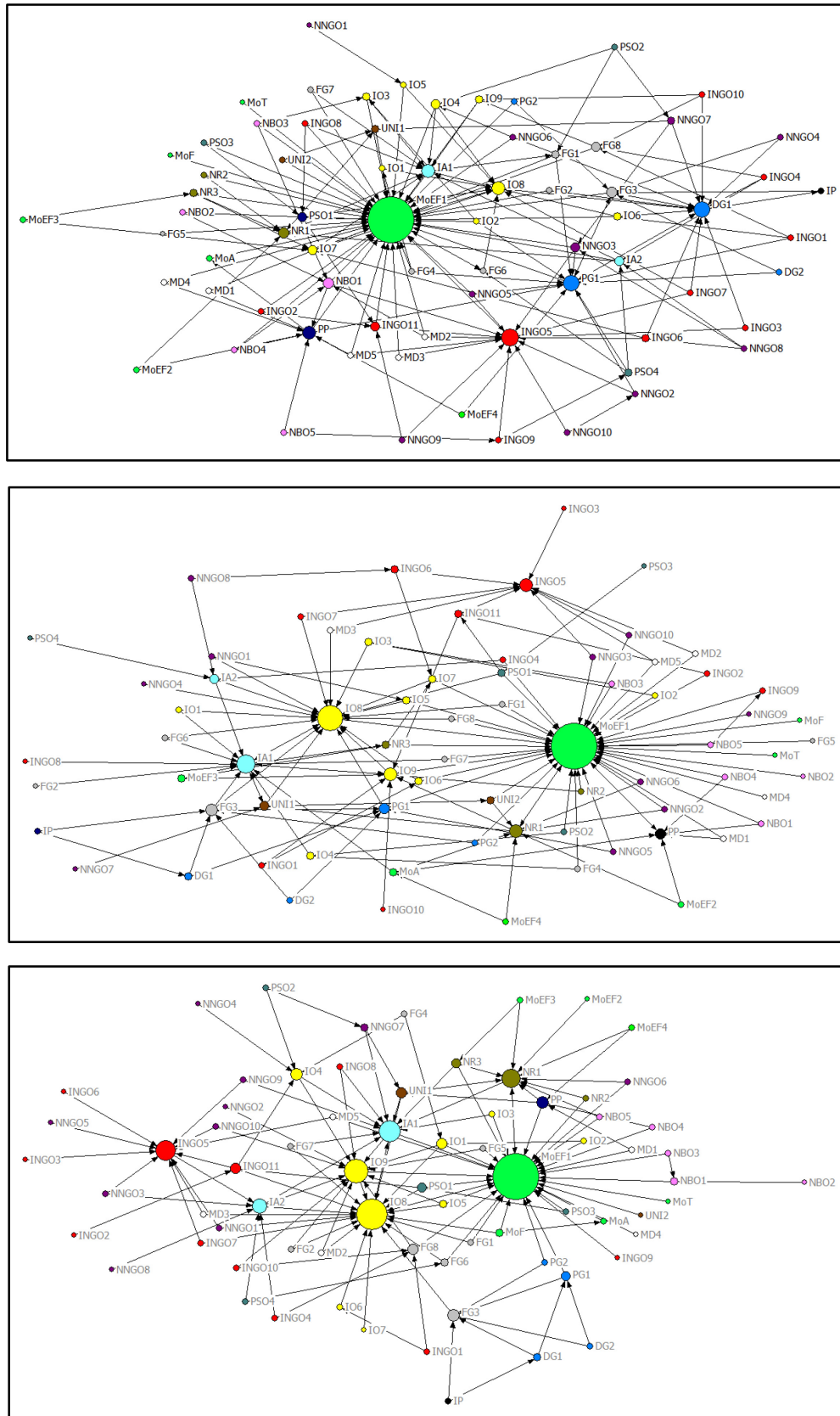


Figure 19. Structures of Relation(above), Information(middle) and Trust Network(below) in Indonesian deforestation-prevention policies



In addition, the provincial government and district government had high values for Degree Centrality in Relation Network. Furthermore, they had a direct relationship with many policy actors. However, their centrality values were low in the Information and Trust Networks. It was further revealed that other actors did not rely on local government resources.

Three centrality diagrams are depicted together in Figure 19 in order to identify the attributes easily and compare the three network structures. Relation Network is identified by a higher density diagram than the other two networks. Consequently, there were many interactions among actors in the policy network. However, there were not many actors who exchanged information about policies. Furthermore, interaction with them (Information Network) was not frequent in comparison to the general relationship among actors (Relation Network). A similar structure is observed in the network of interaction that reveals the trust associated with the policy process (Trust Network).

There is no doubt that the Ministry of Environment and Forestry had the greatest influence in each network because the size of the green circle is overwhelmingly large in all three diagrams. Furthermore, the centrality of this actor is overwhelmingly high in Relation Network. In Information and Trust Networks, the degree of centrality into the Ministry of Environment and Forestry was relatively weak. In particular, at the bottom of the diagram of the Trust Network, the actors of the nodes comparable to the Ministry of Environment and Forestry that appear around the latter are depicted.

In relation to the distribution of the network structure nodes, a structure in which nodes having the same color are relatively gathered is shown in all network diagrams. The color of the node is an index for facilitating the classification of actors. This pattern is observed in the distribution of intergovernmental organizations. These are represented as yellow nodes located at the upper center of the Relation Network structure. The distribution of international NGOs is illustrated as red nodes, which are gathered at the lower part of the same network structure. Although each node does not form a completely distinct pattern, it is evident that actors belonging to the same category are closely related within the policy network.

A numerical and clearer picture of the centrality of impacts on the Ministry of Environment and Forestry in Indonesia's deforestation prevention policies is shown in Table 39. This table is a statistical analysis of Degree Centrality, in which the number of actual interactions among

policy actors is directly calculated as the centrality value. However, since there was a large number of actors and the central value of the Ministry of Environment and Forestry was overwhelmingly high, the statistical analysis results for all actors were limited when the numerical values were too small. Consequently, descriptive statistics were added to the centrality values of the top ten actors.

As noted in the previous table and the diagram for Degree Centrality, the centrality of the Ministry of Environment and Forestry was the highest in the Relation Network, thus, resulting in an increase in the average value of the top ten actors. However, the standard deviation (0.171013) of the centrality of each actor was the highest, and thus, the gap between the actors was very large. Through this, the overwhelming influence of the Ministry of Environment and Forestry was again revealed in the general interaction among actors. On the other hand, in the Trust Network, the standard deviation of the centrality value among the top ten actors was 0.115503, which shows that the influence structure is distributed evenly.

Table 39. Descriptive statistics in Degree Centrality of three networks on Indonesian deforestation-prevention policies

<b>All actors</b>					
Network	N	Minimum	Maximum	Mean	Std. Deviation
Relation Network	72	0.014	0.676	0.06360	0.084742
Information Network	72	0.014	0.563	0.04994	0.074808
Trust Network	72	0.014	0.451	0.05150	0.068668
<b>Top 10 actors</b>					
Network	N	Minimum	Maximum	Mean	Std. Deviation
Relation Network	10	0.099	0.676	0.20430	0.171013
Information Network	10	0.070	0.563	0.17620	0.149954
Trust Network	10	0.085	0.451	0.18330	0.115503

The descriptive statistics of centrality indicators other than Degree Centrality in the three networks are summarized in Table 41. Because each indicator had a different calculation method, the comparison of the values between the indicators is meaningless. However, this table shows that although Relation Network had the highest value for all the indicators, this value did not result in a high average value.

Table 40. Descriptive statistics in Closeness and Prestige, and Betweenness Centrality of each network on Indonesian deforestation-prevention policies

<b>Closeness Centrality</b>					
Network	N	Minimum	Maximum	Mean	Std. Deviation
Relation Network	72	0.310	0.755	0.43271	0.063395
Information Network	72	0.264	0.651	0.39514	0.060717
Trust Network	72	0.274	0.597	0.37374	0.061637
<b>Prestige Centrality</b>					
Network	N	Minimum	Maximum	Mean	Std. Deviation
Relation Network	72	0.010	0.584	0.09272	0.073350
Information Network	72	0.009	0.565	0.09014	0.076438
Trust Network	72	0.010	0.493	0.08633	0.080810
<b>Betweenness Centrality</b>					
Network	N	Minimum	Maximum	Mean	Std. Deviation
Relation Network	72	0.000	0.677	0.01940	0.081345
Information Network	72	0.000	0.622	0.02793	0.092981
Trust Network	72	0.000	0.508	0.02493	0.072540

Comparison of influence and centrality

This section compares the actual influence of the actors identified by the policy actor in the policy process with the values of the centrality of the analyzed network structure.

Table 41. Survey results of influential policy actors in the Indonesian deforestation-prevention policy network

Content	Responses		Percent of Choices
	N	Percent	
Ministry of Environment & Forestry	72	43.1%	100.0%
UN-REDD+ Task Force	32	19.2%	44.4%
State Forest Public Company	16	9.6%	22.2%
Greenpeace	9	5.4%	12.5%
World Bank	9	5.4%	12.5%
Provincial Government	8	4.8%	11.1%
Ministry of Agriculture	4	2.4%	5.6%
World Wildlife Fund (WWF)	4	2.4%	5.6%
Norwegian Agency for Development Cooperation (Norad)	3	1.8%	4.2%
Ministry of Trade	2	1.2%	2.8%
German Development Agency (GIZ)	2	1.2%	2.8%
Center for International Forestry Research (CIFOR)	1	0.6%	1.4%
Forest Research and Development Agency (FORDA)	1	0.6%	1.4%
Asian Development Bank (ADB)	1	0.6%	1.4%
Food and Agriculture Organization (FAO)	1	0.6%	1.4%
United National Environment Programme (UNEP)	1	0.6%	1.4%
Total	167	100.0%	-

An analysis of the results of each actor's choice of the actors who were considered to be the most influential in the Indonesian deforestation preventing network is presented in above Table 41. Actors were able to indicate up to three in the list of policy actors. The multiple response analysis tools of SPSS were employed to analyze the results. Each actor reflected the experience, knowledge, and tendency of the actor in relation to other actors that his or her organization had in this policy network. One policy actor selected about 2.3 influential actors among 72 actors. However, only 16 actors were selected by at least one, and 60 actors were not selected. On the other hand, the Ministry of Environment and Forestry was selected as the most influential actor by all 72 actors, including themselves. In the interview, 32 actors identified the UN-REDD+ Task Force as an influential actor, accounting for 44.4% of the 72 actors. UN-REDD+ Task Force was calculated as multiple response analysis values corresponding to 19.2% of the total policy actors.

### **9.3.3 Openness**

In particular, forests are not only the objects or targets of political action by governments and politicians but also the livelihood of ordinary citizens. Furthermore, forests directly affect their lives in general. Forestry is related to the economic interests of business enterprises and the environmental conservation interests of international actors. Consequently, there is a great demand for the participation, openness, and transparency of various stakeholders, including citizens, in policy formulation and implementation. In this study, the open structure was defined as the structure of networks that allow non-government actors to access the policy network easily. If a network is closed and actors cannot access the policy network or if it is difficult to enter the network, it is referred to as a closed structure. Openness is determined on the basis of the increase in the number of actors and diversification of types, the efforts of the government to accept non-government actors, the efforts of non-government actors to enter, and whether the claims of non-government actors in actual policies are reflected.

In Indonesia, the authoritarian political system collapsed in 1998, and the direct presidential elections were introduced in 2004, allowing the public to participate in the political process. Furthermore, public participation is guaranteed in the legislative process, which is specified in the Constitution. According to the Constitution, which was amended in 2004, having citizen rights and the right to live in Indonesia guarantees political participation in the legislative

process. It is stipulated that the contents of public participation, such as drafting, debating, oral, or written answer forms, should be specified in the draft legislation, which should be actively realized. In addition, the implementation of the local autonomy system has also expanded the opportunities for political participation by regional governments and the public. The regional representative council has been able to reflect the demands of the regional government in the policy-making process. Furthermore, the openness of the policy network in the domestic political structure in Indonesia has been enhanced as the participation of the people and the regional government in the policy process is legally guaranteed.

This political structure in the process has also increased the openness of the forestry sector and the policy network for deforestation prevention. The participation of actors other than the government has increased, and actors have been diversified. In addition, the opinions of various actors have been increasingly reflected in the policy process. At the beginning of the policy debate, the central government, i.e., the Ministry of Environment and Forestry, holds public hearings and debates with local governments and academia and listens to various actor's opinions at different levels. In addition, government officials actively participate in seminars and debates hosted by NGOs and make efforts to reflect diverse opinions in the government's policy process. In the case of the Forest Moratorium (Suspension of New License and Improving the Forest Governance of Primary Forest and Peatland), which was implemented in 2011, the renewal of the Forest Moratorium is conducted every two years under the authority of the president. However, before the government decided to renew this policy, other ministries, academia, regional governments, and business groups were given an opportunity to express their views and argue their opinions.

Notwithstanding, these legal backgrounds, structures, and the government did not lead to complete realization with the substantive openness of the deforestation preventing policy in Indonesia. In the interviews with the policy actors, the opinions of those who thought their organizations were not well reflected in this policy process were revealed. These actors included NGOs that offered different directions to government policy direction. They said that they lacked information about the progress of the policy, did not know what policies the government was currently pursuing, and did not know how to participate in the policy process. Among the non-governmental actors, small actors who did not have much interaction with the other actors held such opinions. The regional government actors and local community actors

felt that it was necessary to consider the relationship between the limitations of their involvement in the policy process and the administrative efficiency in the decision-making process of the Ministry of Environment and Forestry. Nonetheless, they thought it was still very difficult for the opinions of actors located at the edge of the policy network were communicated to central actors.

#### **9.3.4 Typology of linkages**

In the studies for the policy network, analyzing whether the actor's linkage structure is vertical or horizontal helps to determine the democracy of the policy process. The key actor of the old policy decision-making process was the central government. Because the central government had almost all the information, no other actors were included in the decision-making process. Currently, however, the central government is no longer the dominant force. Furthermore, the demands of non-central government actors' participation in the policy are increasing. Whether or not the government accepts the demands of the citizens and reflects them in its policies will determine the degree of the development of democratization. Because it is believed that successful policy implementation is possible through this, Indonesia's deforestation prevention policy needs to confirm how the linkage structure between the central government and other actors is formed. The vertical linkage structure is a hierarchical interaction relation in which the actions of the central government are dictated by actors based on law and authority. In contrast, in horizontal linkage structure, the actors' exchange information and opinions equally.

The Ministry of Environment and Forestry has been overwhelmingly influential in the Indonesian deforestation prevention policy network. As the Regional Administrations Act (Law No 22/1999) became effective, the role of the regional government became important, and regional governments had separate rules, strategies, and action plans, but the central government still had strong control over the entire territory of Indonesia. Because of the high importance of forests and the environment, in particular, deforestation policies are dominated by the central government. Through the policy network analysis of this study, it can be confirmed that the Ministry of Environment and Forestry in Indonesia occupies a lot of information and dominates the policy process. Among the interviews of the policy actors, the actor who had the greatest influence on the activities of the affiliated organizations (actors) was

the Ministry of Environment and Forestry overwhelmingly, and the opinions of the Ministry of Environment and Forestry were found to directly affect the regional governments.

This tendency can be easily found in the relationship between Indonesian domestic actors. The relationship with international actors such as donors is often led by local governments, but since the central government has the power to decide before the project is actually implemented at local sites, a vertical linkage between central and regional governments is clearly explained. However, policy actors who are affected legally and administratively but do not have a direct relationship with the central government did not show a vertical linkage with the Ministry of Environment and Forestry. This was more so in relation to indigenous people. Also, as we have seen through analysis of previous multiple streams, NGOs freely express opinions within the policy network and form a relatively horizontal relationship with government actors. International donors, the next most influential actors, form a horizontal linkage with other policy actors. They also had a horizontal relationship with the Ministry of Environment and Forestry, exchanging information and economic goods. In addition, international NGOs and research institutes are freely expressing their opinions as independent actors who do not have a vertical relationship with other actors in the network.

The Indonesian deforestation prevention policy network has vertical linkages and horizontal linkages depending on actors, and various forms of relationships are being formed. The increasingly horizontal network is more likely to involve more actors, and the size of the network is also expected to increase. However, the Ministry of Environment and Forestry is still at the top of its vertical linkage as a central administrative body in charge of the national forest policy. By sharing the power and information of the Ministry of Environment and Forestry with other actors, the ministry can expect to further develop and democratize the decision-making process of preventing Indonesia's deforestation.



## **V. Discussion and Conclusions**

## **10. Discussion**

### **10.1 Summary of the results**

#### **10.1.1 Multiple Streams Framework**

This part of the study has analyzed the Problem Stream, the Political Stream, and the Policy Stream in the multiple streams framework and applied it to examine the background of deforestation prevention policies in Indonesia. Although deforestation has been a long-recognized problem in Indonesia, the specific deforestation in Indonesia's tropical forests has not yet been reduced considerably, and the toll of the environmental burden imposed by the international community on Indonesia has been increasing. This situation was identified as the Problem Stream. Indonesia has been undergoing a major political change from a strong central government to local autonomy as the local governments autonomy has been strengthened. International stakeholders, having become interested in the situation in Indonesia, have also led the local residents of Indonesia to become involved in deforestation issues. The frequent clashes between stakeholders with different interests were confirmed through the Indonesian media, summarized as the second Political Stream of the Multiple Stream Framework. Finally, the Policy Stream has been organized into efforts to prevent the deforestation of Indonesian forests by domestic as well as international stakeholders. With the research and international cooperation projects becoming more specific over time, detailed efforts to prevent deforestation in Indonesia have been identified.

Indonesia has a powerful presidential system with great power and authority over the entire society of the nation, and the willingness of one president potentially has the influence to change society as a whole. The announcement of President SBY at the G20 Summit in 2009 has had a great impact on Indonesian policy direction. The announcement to reduce Indonesia's greenhouse gas emissions by up to 41 percent by 2020 opened the Policy Window on policy changes to prevent deforestation in Indonesia. This announcement has led to changes of direction of policies related to deforestation prevention or changes of the existing policies.

#### **10.1.2 Policy Network**

Within the second analytical approach, the study focused on the attributes of policy actors, their

interactions, and network structures to confirm the formulation process of deforestation prevention policies in Indonesia. First, this study classified actors according to the power and interest of actor policies. Furthermore, this study investigated and analyzed the means and motives driving the policy process by interviewing 72 out of 114 people identified as actors included in the policy process.

In the network structure analysis, the structure was divided into Relation, Information, and Trust Network, and the cohesion, centrality, openness, and typology of linkage were analyzed. In particular, centrality was the central analytical variable that was used to identify influential actors in each network and to examine the extent of their influence. All three networks confirmed the overwhelming influence of the Ministry of Environment and Forestry, a key policy maker in Indonesia's deforestation prevention policies. The Ministry of Environment and Forestry has the highest centrality value in the Relation Network which expresses general interaction between actors, and has a great gap to the next policy actors. However, in the Information Network and the Trust Network, the centrality value of the Ministry of Environment and Forestry was relatively low, and the centrality was distributed to other actors.

Doubtlessly, the Ministry of Environment and Forestry exerts absolute influence on the process of policy formulation; however, it means that related information about the policy is owned by other organizations and that information dependency and reliability of other actors are dispersed. The subjects on which actors depend were mainly international donors and academia. Moreover, centrality is divided into four indicators: Closeness, Prestige, and Betweenness Centrality, in addition to Degree Centrality, which is directly calculated by influence on the network. Actors with high centrality values are represented differently for each indicator with different characteristics, and the role of each actor in the network structure is examined.

In the deforestation prevention policies formulation process in Indonesia, many policy actors who want to participate in the policy network can access it without big barriers; hence, this policy network can be expressed as an open one. However, the participating policy actors felt that their opinions were not actively reflected in the policy, and they were dissatisfied with the rigid policy structure. Consequently, only a small number of policy actors actively participate in the policy, with many passive actors created who do not contribute on account of external actors or their own will. This can be observed in the current policy network structure for deforestation prevention in Indonesia. The network is an open one from the outside; however,

policy actors are accepted as part of a rigid network.

Indonesia, which is based on a strong presidential system, has relocated its leadership to the central government and has been able to confirm the strong influence of the Ministry of Environment and Forestry in all policy processes for deforestation prevention. In particular, the actors belonging to the Indonesian government took for granted that their organizations have a vertical hierarchy with the Ministry of Environment and Forestry.

## **10.2 Review of the hypotheses**

This section reviews the hypotheses presented in Chapter 1, Introduction section, based on the research results.

1) There are three independent streams in the policy process, among which the politics stream acts as a trigger mechanism in Indonesia's forest policy and serves as a starting point for opening the policy window by coupling the three streams.

As it is postulated in the MSF, the three streams of the multiple streams framework combined together to open the Policy Window. However, as the role of the President, designated as Policy Entrepreneur, is best explained in the Political Stream, it can be concluded that Political Stream has had a decisive influence at the policy-making stage toward preventing deforestation in Indonesia. The problem of deforestation in Indonesia did not occur suddenly and has yet to be solved; however, it didn't even get dramatically worse. In addition, many development cooperation projects and research endeavors, which can be regarded as part of the Policy Stream, have been conducted, but this has not been linked to actual policy contents at the national level. However, these international trends and the indomitable will of the Indonesian political leaders who were willing to follow the streams have created the current policies to prevent deforestation in Indonesia. President Joko Widodo, the successor to Susilo Bambang Yudhoyono, has been continuing the key policy of the former regime on the basis of his interest in forests and the environment and his strong determination and drive. This is also the current political trend in Indonesia for the policy to prevent deforestation.

2) The centrality value of policy network analysis is proportional to the influence of each actor on forest policy.

In the Relation, Information, and Trust Networks identified in this study, the actor with the highest centrality was the Ministry of Environment and Forestry. Although some centrality indicators were a little different, the Ministry of Environment and Forestry took a relatively overwhelming first place in all of the network's centrality indicators. The interviews and questionnaires conducted with the actors participating in the policy network revealed that the Ministry of Environment and Forestry of Indonesia was the most influential actor. The UN-REDD+ Task Force, the State Forest Public Company, Greenpeace, the World Bank, and regional governments took the second, third, fourth, fifth, and sixth places, respectively, which could be found in the top actors' list on centrality in the network structure. This is because the centrality of each actor is generally proportional to the influence of actors involved in the policy process; hence, centrality is an indicator of both power in general and power within the network.

3) Regional governments are one of the most important policy actors, and they appear to be adversarial participants concerning the policy direction taken by the central government, thus affecting the derivation of the policy output.

The interaction and network structure analysis showed that regional governments were participating in the policy-making process under the leadership of the central government. Regional governments participated in the debate of the central government, with the Ministry of Environment and Forestry also providing the opportunity to listen to the regional government. In addition to the central government-led policy process, regional governments have also been involved in direct projects with international actors. Therefore, they were recognized as influential actors in the process of preventing deforestation in Indonesia, which was confirmed through the high centrality values of the network structures, particularly those in the Relation Network.

Regional governments tend to rely on the central government in Trust Networks and Information Networks. Even if regional governments did not fully agree with the central government's policy direction or they had objections to the details of the policy, they were

unable to express such opposition in the policy process. Therefore, the influence of regional government on policy output is insufficient.

The study was not based on the results of a large number of regional government surveys, which analyzed three different regional levels of one province. Therefore, the author acknowledges that there is a limit to generalizing the analysis results of this study to all regional governments.

4) International organizations, donors and agencies are policy actors who have the greatest influence in the policy network of Indonesia's deforestation prevention policy process.

A variety of international actors participated in the policy to prevent deforestation in Indonesia, in their capacity as advisors to apply international regimes to Indonesian policy and as donors to policies and projects, and their activities were found to have a high impact on the policy process. The list of the top 10 actors of the network's centrality indicators included five or more actors who were international. The UN-REDD+ Task Force and Greenpeace ranked second and third, respectively, behind the Ministry of Environment and Forestry, which had the highest centrality. Besides, the international actors' knowledge, technical expertise about forests, and their mobilization of funds were seen as the basis for their influence. However, there is a great gap in comparison to the influence and power of the Ministry of Environment and Forestry, the policymaker of the state-led policy, and international actors are not the most influential actors in the policy process toward preventing deforestation in Indonesia.

However, the Ministry of Environment and Forestry was relatively low on centralization when it came to centrality in the Information and Trust Network, while the centrality of the UN-REDD+ Task Force, the international actor, was high. In these networks, the percentage of international actors in the top 10 lists of centralities was high, and the gap with the Ministry of Environment and Forestry was small when compared with the Relationship Network. This confirms that international actors have a lot of information on deforestation and are highly trusted by other actors.

5) There are not many policy actors participating in the policy-making process about deforestation in Indonesia and actually affecting the policy output, and this policy network does not have an open network structure yet.

This study analyzed the policy network of 72 organizations (policy actors) participating in the deforestation prevention policy process in Indonesia; however, 114 organizations were identified through the preliminary survey. The study determined a total of 15 stakeholder categories, and all actors involved in the policy process were distributed to these 15 categories. In the actor analysis of the policy network, it was also confirmed that the policy network included all four types: Player, Subject, Context setter, and Crowd through stakeholder analysis. This can be interpreted that there are no access barriers for policy actors who are interested in the policy process. However, as indicated by the results of the previous Openness analysis, the degree of openness to policy processes that was actually felt by policy actors was not high. Power and information were overly concentrated in the Ministry of Environment and Forestry, making it difficult for policy actors to access information on policy participation. Many actors participated in the policy under the direction of the central government, and they were skeptical about their opinions being actively reflected in policy.

Although the policy network in Indonesia's deforestation policy can be regarded as open formally, it is difficult to assume that it is practically open to a high degree because of the centralized political-administrative structure. The openness of the policy network requires the efforts of the Ministry of Environment and Forestry and the active participation of other actors.

So, this hypothesis can be reformulated as 'The policy-making process for preventing deforestation in Indonesia has an open structure in which many actors can participate, but the policy actors that actually influence it are limited.'

### **10.3 Discussion of methodology**

This study aimed at analyzing the policy process for preventing deforestation in Indonesia; however, it is also the study purpose to develop an appropriate framework for an effective policy process analysis as well. This chapter discusses how suitable the analysis framework and the variables were for generating the presented results.

### **10.3.1 Analysis of the framework**

First, this section assesses how far the principles set forth at the beginning of the research were well followed concerning the analysis method and the development of the analysis framework.

#### 1) Develop an integrated theoretical framework that is based on a systematic and process-oriented perspective

This study examined the current streams in the formulation of policies to prevent deforestation in Indonesia and the policy decision-making process on these policies. To analyze this from a process-oriented perspective, the researcher developed a framework by integrating two models of policy process research. The Multiple Streams Framework can only explain the phenomenon partially. The limitation in the case of policy network analysis is that only the present situation can be explained when analyzing the current network phenomenon and structure. This study developed an analysis framework that systematically explains the process from the environmental policy context for policy formulation and the dynamics of changes to situations that occur within the decision-making process while complementing the limitations of each model through the convergence of the two models.

#### 2) Harmonize various qualitative and quantitative methodologies in analyzing policy processes.

Qualitative and quantitative research methods used to achieve effective research goals have their respective strengths and weaknesses. The study established this principle because of concerns that social and policy science studies may be biased toward qualitative research. This study is based on a policy science approach. The multiple streams framework applied in this study was conducted by employing qualitative research, and the policy network analysis was designed to focus on quantitative research. In addition, qualitative research has also been able to determine clear analysis elements and analyze them through appropriate contents and criteria.

This study was designed to employ a method that can empirically identify the network phenomena more coherently with the descriptive analysis method.



3) Select consistent and relevant analysis variables and develop specific measuring indicators

The analytical variables were determined on the basis of previous studies on the two analysis models applied while observing the above principle. To achieve the purpose of the study, the author decided on the contents to be identified through each model and on the variables and the indicators for deriving them. In addition, this study does not use analysis contents and variables derived from the theory of policy science. Instead, it is choosing appropriate variables and indicators on the basis of the policy contents and characteristics of the forest sector and its linkages to other question of land use.

Analysis of variables and indicators is addressed in detail in the next section.

### **10.3.2 Analysis of variables**

In this section, the items related to agenda-setting and the policy formation process are extracted from the ten items of FAO's "Ten things to know about forest policy." Then, this section examines whether the contents of this guideline can be evaluated through the integrated analysis framework and analysis variables developed in this study. We created questions that can evaluate each item and examined which analytical variables can be used to evaluate it. The ten headlines below are cited directly from this FAO publication (FAO, 2010).

1. A national forest policy is a negotiated agreement among stakeholders on a vision and goals for a country's forests and trees, adopted by government.

- Which actors participated in the policy process?
- What are the goals and objectives of the actors involved in the policy process?
- Are there any interactions between actors in the policy process?

This item can be confirmed through the analysis element of the actors participating in the policy process. Policy actors were classified through stakeholder analysis, and the purpose and goal that each actor had were explained. This study analyzed whether the actors form relationships

with other actors through analysis of the interaction of policy networks.

2. Forest policy goals need to address social issues and be closely aligned with the country's development goals.

- What factors have influenced the process of policy formation and policy goal setting?
- What are the social issues related to the policy?

This is a matter related to the process of agenda-setting before policy formulation, which can be confirmed through the Multiple Streams Framework. This study investigated each Problem Stream, Policy Stream, and Political Stream to identify which social issues and backgrounds influence policy formulation.

3. Initiating a policy revision requires a sound understanding of national context as well as support at a high political level and among stakeholders. Good timing is also essential.

- What is the extent of the actors' understanding of national policy?
- Does the political environment have an impact on policy formulation? And what is the role of those political actors?
- When (at what point) was the policy formed, and what is the important event or background in the policy formulation?

In analyzing policy actors during policy network analysis, this study explained what purpose each actor had and each actor's degree of understanding in relation to a given policy. The MSF identified how political factors affect the agenda-setting process and made it aware of which policy environment factor served to open the policy window during the policy formulation process.

4. Proper preparation is important including communication, capacity building, leadership support, adequate information on forests and possible future trends.

- Do actors interact with each other in policy formulation?
- What kinds of interaction and cooperation do policy actors have?
- What is the structure of the policy actors' interaction?
- How does the interaction structure between policy actors affect each actor?

This can be confirmed in the analysis element of the interaction of policy network analysis. The network structure formed through each interaction can be confirmed in the analysis element of network analysis. However, this network structure analysis focuses on identifying the attributes of the network and finding influential actors by explaining the phenomenon at that time. Therefore, it is difficult to see how the interaction between these actors affected each actor at an individual level.

5. The participation of stakeholders across all key sectors is essential, as are joint ownership of the resulting policy and shared responsibility for policy implementation.

- How do actors participate and perform activities in the policy formulation process?
- Is the policy formulation process open for actors to participate?
- Do policy actors have an obligation to participate in the policy process?

The information on the actors' participation in the policy process can be found in the "Interaction" element of the network analysis, and it is also possible to identify how the actors participated in the policy process. Furthermore, this study analyzed the "Openness" of the policy network to check whether it was easy for stakeholders to participate in the policy process. However, this study did not address the analytical variables potentially determining which actors participated in a specific policy process, nor did it determine participation was mandatory.

(Principles 6 and 7 are not relevant to this study and are excluded.)

8. Strong and professional communication from the outset and the building of sufficient capacity for those participating in development and implementation are crucial for success.

- What is the capacity of policy actors in relation to policy formulation?
- Can actors easily participate in this policy process?

In the “Actor” element of the policy network analysis, the capacity of each actor can be identified. Also, through the “Openness” and “Linkage” analysis variables, it was confirmed whether the actors could easily participate in the policy process and that the policy process is a structure network that can elicit the capabilities of the actors.

(Principle 9 is not relevant to this study and is excluded.)

10. An ongoing institutional arrangement that promotes and facilitates continuous dialog is essential for the effective implementation of a national forest policy.

- How persistent is the interaction between policy actors?
- Is there a system to encourage interactions between policy actors?

In the “Interaction” element, this study was able to see how actors were participating in the policy, and it was possible to predict whether there existed a governmental, institutional mechanism for cooperation among actors. However, as this study was conducted at a specific point in time when the policy was being formed and implemented, it was difficult to investigate the interactions among actors and the persistence of the policy network.

### **10.3.3 Correlation analysis between centrality indicators**

This study calculated the Degree, Closeness, Prestige, and Betweenness Centrality indicators to measure the policy network centrality. Since these centrality indicators used in general social network analysis are different from each other, it is not meaningful to compare the values and to understand the superiority or accuracy of the values. However, this chapter has examined whether a certain correlation of each centrality indicator can be confirmed.

Table 42. Correlation analysis between centrality indicators

Relation Network				
	Degree	Closeness	Prestige	Betweenness
Degree	1.000	0.753	0.925	0.951
Closeness	0.753	1.000	0.924	0.690
Prestige	0.925	0.924	1.000	0.870
Betweenness	0.951	0.690	0.870	1.000
Information Network				
	Degree	Closeness	Prestige	Betweenness
Degree	1.000	0.689	0.915	0.977
Closeness	0.689	1.000	0.907	0.672
Prestige	0.915	0.907	1.000	0.906
Betweenness	0.977	0.692	0.906	1.000
Trust Network				
	Degree	Closeness	Prestige	Betweenness
Degree	1.000	0.752	0.915	0.971
Closeness	0.752	1.000	0.907	0.701
Prestige	0.910	0.922	1.000	0.867
Betweenness	0.971	0.701	0.867	1.000

First, in the Relation Network, more than half of all centrality relationships have a correlation of 0.9 or more, confirming that very similar results are obtained between the indicators. The lowest correlation value was 0.690 for Closeness and Betweenness Centrality in Relation Network, and the two values showed the least similarities. Prestige Centrality is the indicator with the closest value to other centrality indicators. And Closeness Centrality indicator has a relatively low similarity with other indicators.

This tendency can be found in the Information and Trust Networks, and Prestige Centrality is

considered to be able to represent the influence of actors instead of other indicator values. On the other hand, Closeness Centrality can be found not to be a substitute for other indicators.

## 10.4 Interpretation of the findings

### 10.4.1 Type of network

It is possible to understand the attributes of the policy network for deforestation prevention in Indonesia through the Policy Network Analysis. This way, the type of network can be determined by referring to the classification method and criteria of Marsh and Rhodes (1992). The analysis results of the policy network could be summarized in the following Table 43. The characteristics of the policy network on deforestation prevention in Indonesia were tabulated for each dimension.

Table 43. Network type of policy network to preventing deforestation in Indonesia

Dimension		Analysis result	Type of network
Actor	Number of actor	Large - 114 organizations	Issue Network
	Type of interest	Encompass range of affected	Issue Network
Interaction	Frequency of interest	Contacts fluctuate in frequency and intensity	Issue Network
	Attributes of interest	Cooperative, conflict	Policy Community / Issue Network
Network Structure	Centrality	Relatively decentralized	Policy Community
	Openness	Generally open	Policy Community / Issue network
	Typology of linkage	Horizontal, vertical	Policy Community
Power	Resource	Unequal power, reflecting unequal resources and unequal access.	Issue Network

Although 72 interviews were conducted in this study, the policy actors of Indonesian deforestation prevention policies numbering 114 actors were identified, and it was confirmed that policy actors at various levels participated. The “Actor” dimension of this policy network

has the characteristic of an Issue Network. In the case of interaction, the frequency and intensity of their interactions differed for each policy actor. Although it was not revealed in the result analysis, cooperative interaction and conflict interaction were occurring in this network because the actors' interests and objectives were different. The "Interaction" dimension of the policy network is a character that appears in both the Policy Community and the Issue Network in part; however, it is close to the Issue Network in general. The Ministry of Environment and Forestry was overwhelmingly dominant in all centrality indicators of Relation, Information, and Trust Networks. The concentration of the Ministry of Environment and Forestry has been slightly eased in the Information and Trust Networks; however, the centrality value of some highly centralized actors represented by the UN-REDD+ Task Force was significantly greater than the value of other entities. As many actors in the "Actor" Dimension have been identified, they could be said to be involved in the policy network. Thus, the degree of "Openness" was high; however, policy actors have realized that there is a barrier that hinders them from reflecting their opinions in the policy. In addition, information and resources are concentrated on several policy actors centering on the Ministry of Environment and Forestry, with a vertical linkage having emerged centering on them. In this network structure, the characteristic of partial Policy Community appears to be prevalent. In the policy network for deforestation prevention in Indonesia, the various levels of actors have different resources and power, and they have unequal access to the network, which is considered to be the issue network in the "Power" dimension.

This network has an overall Issue Network character; however, it has also been observed that the characteristics of the hierarchical Policy Community also appear.

#### **10.4.2 The influence of the President of Indonesia**

In countries with a presidential system, the President elected by the people leads the policies of the nation, and so is the case with Indonesia. Since the introduction of the direct election system in 2004, Indonesia has held three presidential elections until now, and the President, elected through popular elections, has strong power and authority in Indonesia. The fact that the Policy Entrepreneur was analyzed as the President of Indonesia in the multiple streams framework on policies to prevent deforestation in Indonesia is considered to be the result of

this political situation.

However, the second analysis model of this study, the policy network analysis, focuses on analyzing the phenomenon of the policy decision-making process. The network analysis revealed that the Ministry of Environment and Forestry had the greatest influence on the decision-making process of the policy, which can be attributed to the central government's high levels of power and influence on Indonesian deforestation prevention policies. Although this study could not include the President or the President's Staff Office as an interviewee for the policy network analysis, they were not expected to have a high impact on the network because they are not actively engaged in interaction with other actors in the network. However, Indonesia has a presidential system in which the vision and goals of all ministries in Indonesia follow the policy direction of the President. This means that the great influence of the Ministry of Environment and Forestry allows that the central government and the administration representing the President's will and policy direction exert great power over the policy process.

This study confirmed the overall structures of the Indonesian policy implementation process, in which policies are formed, changed, and implemented by the will and the policy vision of the President of Indonesia. In particular, the direct influence of the President and the exercise of his power in the formation process of the Indonesian deforestation prevention policies became prominent in the nascent phase of the policy formulation.

#### **10.4.3 The influence and role of international actors**

Several groups of international actors have been identified as policy actors in the policy process for deforestation prevention in Indonesia. Because of the important environmental values of Indonesian tropical forests and the economic situation of Indonesia as a developing country, many international actors, such as Intergovernmental Organizations, foreign country aid agencies, and international NGOs, are interested in Indonesian deforestation prevention policies.

The international actors have been conducting relevant research and projects in Indonesia for a long time to resolve the problem of deforestation in the country, and their efforts have been confirmed in the Policy Stream of the multiple streams framework. In addition, in the process



of policy formulation, there are many international actors who appear as actors with high centrality in the policy network. It has been confirmed through this study that international actors have had a strong influence from the initial decision-making process and the implementation phase in the recent Indonesian policies on deforestation prevention. The international actors discussed here include various organizations at the global level. International actors who are identified as having a strong influence on the policy network to prevent deforestation in Indonesia are UN-REDD+ Task Force and World Bank (intergovernmental organizations), CIFOR and World Resources Institute (international academic institutes), Greenpeace (NGO), and GIZ (foreign government aid organization).

In addition, international actors have formed relationships with actors at various levels within the policy network, meaning that their activities in the policy network comprise diverse channels. They exchanged policy information with the Indonesian central government, occasionally acted as policy advisors, engaged in local projects, and formed relationships with regional governments and local-level actors. The international actors are evenly placed at the top of the list on the centrality of all networks; however, their centrality is shown higher in the Trust and Information Network than it is in the Relation Network. It represents the widespread activity of the Indonesian deforestation prevention policies process and the deep trust of other actors in it.

In particular, the UN-REDD+ Task Force had emerged as a highly influential actor in this policy network, indicating that REDD+ programs have a significant impact on deforestation prevention policies in Indonesia. The international actors with funding and expertise can be considered to play a very important role in the decision-making process of these policies.

#### **10.4.4 The role of non-governmental organizations (NGOs)**

The central government held public hearings or debates in which relevant organizations at various levels could participate to bring all relevant stakeholders into the policy network, and they encouraged NGOs to participate actively in public hearings. Therefore, the policy actors classified into the NGO category included in the network analysis are 11 international NGOs and 11 Indonesian national NGOs, and the number of actors in the category of policy actors was the highest. The involvement of many environmental NGOs in the policy process is a

consequence of the high environmental value of forests and the environment in Indonesia.

Greenpeace has been identified as one of the key actors actively involved in the policy process for deforestation prevention in Indonesia. They have been interested in the problem of deforestation in Indonesia for a long time and have positively posed problems to governments with wrong policy directions or to enterprises that were a cause of deforestation. And they have endeavored to ensure that Indonesia's policies move in the environmentally right direction in accordance with their beliefs.

Many NGOs are involved in this policy network, but not all NGOs are actively involved and influential in the policy process. This was more so in the case of Indonesia's national NGOs. Indonesian national NGOs moved closer and continue to be close to the policy process at the local level rather than engaging in activities targeting governments and private enterprises. As they were conducting projects for local communities in Indonesia, they made efforts to transform the local residents' consciousness, to protect their living environment, and to inform other levels of actors about the situation of local residents. It is a very different activity than that performed by international NGOs that continue to have comparatively stable economic support, strong supporters, and large pools of experts. International NGOs have actively expressed their opinions on the Indonesian deforestation prevention policy process. Although some NGOs with global backgrounds and bases have been fully localized in Indonesia, major activities in this policy network were mainly attended by foreign environmental activists belonging to international NGOs. Therefore, this study classified these organizations as international actors.

NGOs have contributed significantly to the diversity of policy actors so that various stakeholders participate in the policy network for Indonesian deforestation prevention; however, their influence on policy has not been found to be particularly high, particularly in the case of Indonesian national NGOs. For Indonesian national deforestation policies to reflect the interests and objectives of more diverse actors, it is necessary for national NGOs in Indonesia to develop their capacity to cope with the power and pressure of the Ministry of Environment and Forestry and the power of the large forestry enterprises.

### **10.5 Further consideration: Four pathways of influence**

This study analyzed Indonesia's deforestation-prevention policy process based on the stakeholders, policy actors, and relationship between actors and identified the Multiple Stream on developing new policies. The Integrated Analysis Framework developed in this study is based on the influence and power of policy actors. In the field of forestry, which is highly influenced by international norms, the influence of policy processes is receiving significant attention, and one of them is a study on 'Four Pathways of Influence' (Bernstein and Cashore, 2000; 2012). This framework provides analysis methods required by modern complex global governance by applying existing background from several kinds of literature and explaining the domestic influence of global environmental governance (Bernstein and Cashore, 2012). 'Four Pathways of Influence' framework consists of global influences on domestic corporate-level policy change: (1) International Rules, (2) International Norms and Discourse, (3) Markets, (4) Direct Access to Domestic Policy-making Processes (Bernstein and Cashore, 2012). By identifying these four pathways, it is possible to analyze transnational actors and international norms and explain how they interact with international rules and norms to influence domestic policies.

The influence of Indonesia's forests transcends national territorial boundaries and affects the global climate and environment, so relevant discussions should take into account stakeholders and various surrounding circumstances. In addition, forest policy is complex governance that has to discuss issues within the forest sector in general and is intricately connected with various issues in other sectors. Since this study considers international regimes and events with various domestic and international actors, it is a case in which the 'four pathways of influence' can be applied. The four pathways of influence on Indonesian deforestation-prevention policies process are summarized as following.

#### **International Rules**

The 'International Rules' emphasize the influence of issue-specific treaties and the policy of powerful international organizations, which are recognized as dependent on consent or coercion. The logic of this pathway is that the rule is binding and creates a 'pull toward compliance' because it exists by the proper process rules that are generally accepted, regardless

of whether the rule applies or not. Sometimes NGOs and institutions that include non-state representation can be an authoritative source of rules committed by a state or enterprise. Focusing on the logic of rules rather than starting from a specific issue system emphasizes that even if issues such as forest lack a comprehensive regime, influence along this pathway can arise from the rules of appropriate law arrangements (Bernstein and Cashore, 2012).

The problem of deforestation occurring in all countries around the world is directly affected by the International Rules, and in particular, Indonesia's tropical forests are greatly interfered with by the International Rules because of their high economic and environmental value. International treaties (conventions) comprehensively applied to forest policy include the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. International initiatives greatly influence the international rules related to Indonesia's deforestation-prevention policy in this study. International initiatives that directly affect Indonesia's deforestation policy are REDD+ and FLEGT, which are covered in Chapter 7.3 Indonesian Forest Policy of this paper. This International Regime is an area that must be dealt with in the study of forest policy in Indonesia, and is one of the critical pathways of influence in the policy process analysis. These provide essential principles that must be considered when formulating policies to prevent deforestation in Indonesia. The task of international organizations includes the observance of, support, and monitoring of international rules aimed at the international community.

The significant influence of UN organizations in the policy network analysis of this study indicates the high value of Indonesia's forests in the international community. It can also be explained that Indonesia's national capacity for the implementation of international norms is insufficient. The significant influence of international organizations proves that international rules are the crucial pathway of influence in Indonesia's policy to prevent deforestation.

### **Propositions of Four Pathways**

#### **1. International rules**

1(a) International agreements influence domestic policy to the extent that they create binding obligations on states through international law.

1(b) Transnational and/or domestic coalitions for change can activate rules in cases of non-compliance.

1(c) For countries dependent on trade or foreign capital under conditions of increasing globalization, fear of losing market share and investor confidence acts as an added incentive to comply with international rules.

1(d) Agreements on international rules with strong compliance mechanisms are more likely when such agreements reflect rules or processes already under way domestically owing to interaction with other pathways.

#### **2. International norms and discourse**

2(a) Norms agreed to in international fora and promoted by powerful or influential organizations influence the direction of policy change when governments or firms face external pressures to change policies.

2(b) Strategies for change based on international norms and discourse depend on the moral vulnerability of the target state or firm

2(c) Success depends on resonance with domestic ideology, culture and broader policy goals, not on targeting particular actors or domestic policy networks.

2(d) The importance of learning networks suggests success along this pathway is more probable when the fourth pathway (direct access) is also travelled.

#### **3. Markets**

3(a) Relative dependence on foreign markets and the success of transnational actors in persuading consumers to exercise preferences are key determinants of policy influence.

3(b) Boycott strategies give the appearance of short-term success, but long-term efforts require more enduring forms of non-state authority, such as certification.

3(c) Use of market mechanisms is more likely to produce policy change when combined with elements of other pathways, especially when institutions are able to generate their own legitimate authority, as in the case of some third-party certification systems.

#### **4. Direct access to domestic policy-making processes**

4(a) Influence can operate through the provision of financial resources to assist existing civil society organizations or to help create new organizations. These efforts can help shift the balance of power in domestic policy processes and provide access to often marginalized or disempowered organizations.

4(b) Direct influence on the domestic policy process can result from international efforts to build learning fora and training about how to produce improved environmental, social and economic performance 'on the ground'.

4(c) Policy learning is likely to have influence when it addresses specific questions that improve particular practices rather than larger issues, such as economic demands to convert natural forests to plantations.

4(d) Interventions aimed to help governments enforce or implement their own laws are more likely to succeed than attempts to directly influence the passing of new legislation. Direct access through enforcement/implementation strategies can yield swift and immediate results, as long as international actors and organizations do not make additional requirements to which the domestic government does not agree.

Sources: Bernstein and Cashore, 2012

### **International Norms and Discourses**

The 'International Norms and Discourses', implemented as institutions or constructed by a wide range of practices of global governance, can define and regulate proper domestic behavior. Therefore, they operate through adequacy logic and consequences logic as standard guidelines without considering consequences. Although discourse can work through economics, studies are particularly interested in the intentional efforts of international actors to spread or implement norms (Keck and Sikkink, 1998; Acharya, 2004).

First of all, these International Norms and Discourse can be discussed at the level of general principles for forest policy and governance. Academia generally defines Good Governance on Forest as three procedural principles: inclusiveness, transparency, and accountability (Held and Koenig-Archibugi, 2005; Esty 2006; Contreras-Hermosilla et al., 2008; Tacconi et al., 2008; Cashore, 2009) The principles of this general policy-making process can be reflected by expanding the participation of the private sector and citizens in the decision-making process, cooperating with various stakeholders, and holding public hearings. This study confirmed that meetings were held with stakeholders at various levels to establish the National Level Forestry Plan 2011-2030. However, it is evaluated that governance formation in which various stakeholders actively participate in Indonesia's forest policy process is insufficient.

One of the International Norms directly linked to Indonesia's deforestation prevention policy is SFM, and this sustainability has become a fundamental part of the Indonesian forest policy establishment process. This SFM is covered in Chapter 7.3 Indonesia Forest Policy of this paper.

### **Markets**

The 'market' involves the process or tactics of cooperating or utilizing the market to make changes in domestic policy. These include boycotts aimed at overseas export markets to pressure exporters, indirect actions such as a certification system to regulate the market or put it into social and environmental values or goals without national coordination, and general use of market mechanisms. These direct and indirect actions may be combined.

The campaigns of interested citizens, including NGOs, confirmed in this study, fall under this pathway. The campaigns and boycotts to conserve forest resources and biodiversity often occur in forest-related issues, particularly the degradation of tropical forests. In this study, actors with great influence, such as Greenpeace and WWF, were identified, and this result confirms that the market, their activities, acted as a Pathway of Influence in the policy-making process.

In general, forest certification-related factors such as FSC and PEFC play a vital role in Markets related to forest policy. However, since this study did not deal with the overall contents of forest management but focused on the areas related to forest conservation and deforestation, the pathway of influence for forest certification could not be found. These certification and market factors are elements that greatly influence sustainable forest management and must be included in the analysis of the subsequent forest policy process.

### **Direct Access to Domestic Policy-making Processes**

Direct access to the domestic policy-making process can be achieved through direct funding, capacity-building, assistance, and through co-governance attempts through partnerships between international and domestic, public and private actors and authorities. Some attempts to exert influence along these routes should explore concerns about sovereignty and risks that would be considered as external or international intrusion. Therefore, non-domestic actors should avoid direct lobbying for national autonomy in favor of strategies that change the balance of power between the interests of existing domestic organizations or participation in policy networks. International actors can complete their duties by sharing resources, knowledge, and expertise with existing stakeholders or by facilitating the creation of new coalitions.

The international forest and environment institutions, research centers, and transnational or international actors have direct access to domestic policy-making processes. They provide policy consulting, funding, or support for the capacity building of public officials so that Indonesia can formulate policies with appropriate methods, content, and composition. Most of these pathways of influence (Direct Access to Domestic Policy-making Processes) affecting Indonesia's deforestation-prevention policies are methods and means of applying the 'International Rules,' which is the first pathway. As a result of the study, aid agencies from

developed countries such as GIZ and Norad and international organizations such as ADB and UNEP were directly approaching the Indonesian policy establishment process by promoting international cooperation projects in the Indonesian forest sector and influenced forest policy.

In addition, the UN-REDD+ Task Force and FCPF, which specializes in REDD+ programs and supports Indonesian projects, is also included in this pathway. In addition, the study results confirmed by international research institutes such as CIFOR as an actor with a significant influence in this study make it possible to understand that this pathway has an important influence on Indonesia's policy to prevent deforestation.

This chapter examined the four Pathways of Influence based on the results of the integrated policy process analysis framework developed in this study. The policy process for preventing deforestation in Indonesia, which reflects many international factors and domestic issues and status, was separately identified as four pathways of influence. However, pathways also influence each other, and it can be seen that one pathway contains some of the contents of another. Each pathway of influence should be examined in detail but should be viewed from an integrated perspective.



## **11. Limitations, Significance and Future Research Topics**

### **11.1 Limitations**

#### **Uncertainty of the scope of the study target policies**

This study was aimed at analyzing the policy process of the deforestation prevention policy in Indonesia. The first uncertainty of this study is that it is difficult to separate this topic completely from other sector's policies.

The second lies in the inclusion and exclusion of specific policies in the subject of the study. Policy actors at various levels and with diverse objectives were participating in various policies against deforestation. It was attempted to analyze the general policy process and the policy network of deforestation policies without limiting its scope to only those policies that are beneficiaries of some policy actors, such as REDD+. At the beginning we presented the policies to be analyzed on the basis of the time of policy formation and the importance of policy but did not clearly distinguish the extent of the processes of conducting interviews and conducting research. In addition, actors participating in various policy processes that share similar policy goals have difficulty remembering the organization's actions and interactions with an individual policy. Therefore, the research work was conducted by defining them as general activities and interactions related to the deforestation prevention policy, rather than explicitly pointing out the partner actors involved in the formation of anyone policy. In future it is necessary to study the policy processes by establishing criteria that can determine such uncertainties.

#### **Limitations on policy actors**

The analysis of social networks, the basis of the policy network analysis method of this study, is based on the principle of surveying all actors belonging to the network and not surveying the sample. However, this study could not investigate all the actors who were identified as policy actors. Faced with difficulties posed by not interviewing all actors, the researcher of this study tried to make all actors in each category become targets of interviews and surveys evenly for network analysis; however, there were policy actors who could not participate in the survey. One of the main policy actors that failed to interviews was the Presidential Staff Office. It was

impossible to interview them because they are an organization in formal positions that are inaccessible for research. This limitation may be considered to be even greater because the Policy Entrepreneur of Indonesian deforestation prevention policy was analyzed as the President of Indonesia.

This study interviewed 63% of the pre-selected policy actors, a ratio that should be raised in the policy network analysis, with the eventual analysis of the interaction and structure of all policy actors.

### **Limitations on analytical variables and analytical elements**

This study cannot determine how often each policy actor interacted with other actors.

Furthermore, it does not determine influence by the frequency of participation in the policy; however, the number of actors that constitute the relationship is used as a criterion. This may lead to the problem that the presence of a large number of actors with homogeneity in the network would lead to the calculation of a higher centrality than that evidenced by actual influence in the policy process. This study was not conducted on a single policy or project; hence, the presence of many policy actors and various policy participation methods was expected, and it was difficult to establish a single analysis standard. Therefore, this is a limitation of this study that has already been recognized at the stage of establishing the study scope and analysis variables.

In addition, this study did not express the cooperative and conflictual attributes of interactions among policy actors numerically and did not distinguish information exchanged by actors along the lines of technical, social, or economic information. This does not distinguish the specific content of information because the study is not directed at a single policy or project, and the actor does not undergo the same interactions or perform the same actions each time.

In future research, if the researcher divides the analytical element into specific indicators and conducts the surveys, it would be possible to obtain a more specific analysis result.

## **11.2 Significance**

### **11.2.1 Research method**

This study has carried out both quantitative and qualitative approaches to analyze the deforestation prevention policy process in Indonesia. Quantitative analysis is used in all disciplines because it is a research method that ensures the objectivity of research while avoiding the subject intervention of researchers. However, since this study is an analysis of policies, including economic, social, and policy environments, the application of the standardized quantitative analysis method has limitations in describing all phenomena, so it is necessary to combine it with qualitative research.

The policy process of forest policies in Indonesia is analyzed, but prior to that, it was another important objective to make an appropriate analysis framework for the forest policy analysis. This was the priority task for analyzing the objective and explanatory policy processes. Quantitative analysis was carried out in the phenomenon of the policy process; that is, the policy network and qualitative analysis were carried out in the background description of policy formulation. Some of the current policy statutes are explained by questionnaires, i.e., quantitative analysis methods. The analysis framework completed with this combination of Multiple Streams Framework and Policy Network Analysis can be applied to other cases in the future, and it will be able to gradually improve the completeness of the current analysis framework thereafter. This study is valuable in that it has created an integrated analysis framework through these two theories. Until now, no studies have been found that analyzed the combination of these two theories.

This research began with the decision to use policy science research theories and methods that can effectively explain forest policy. In addition, even if it is a qualitative research method, the objectivity of research is enhanced by applying clear criteria and indicators based on the theory.

### **11.2.2 Research scope**

This study examined the overall decision-making process for national-level policies and projects that were formulated and implemented in response to Indonesia's deforestation problem. As in other sectors, the forest sector, particularly the Indonesian forest policy, is

closely related to other fields of policy making, so individual analysis of one policy has its limitations to fully grasp its context. That is why we analyzed the policy process of several deforestation prevention policies affected by similar regimes (especially the international regimes) in a single analysis framework to identify the overall flow of policy formulation and implementation in this area.

This study is not limited to the description of current policy networks and policy progress but also analyzes other factors that have influenced the formulation of current policies. From the background of the policy formulation to the present situation analysis on the formulation and implementation of the policy, the policy process is effectively explained based on the causal relationship, and the understanding of the policy is improved.

### **11.2.3 Analytical variables**

The analysis method and analysis indicators of this study were derived from the study methods applied in policy science and social science. The analytical variables, which are mainly used in these two theoretical backgrounds, are applied to this study. However, this study attempted to provide a basis for determining analytical variables, not a case study of previous research. Through this, objectivity to variables and indicators is secured. These grounds also reflected the specificity of forests and forest policies.

### **11.2.4 Analysis of policy process in forest sector**

It was attempted to analyze the forest policy from the perspective of policy science.

This study was not a simple case study through the application of the already known analytical methods but rather the research for the choice of appropriate analytical theories and methods. In forest policy, the application of the theory to analyze the agenda-setting process has not been used so far, although there are various factors influencing policy formulation. In particular, a study using the Multiple Streams Framework was hard to find. On the other hand, forest policy studies using policy networks are often found, but there have been a lot of studies that analyzed forest policies based on existing research examples without considering specific details of policy networks. A closer examination of the analytical methods in this study provides an added

value compared to previous studies in the forest sector. Furthermore, this study, which is a combination of these two theories, suggests various approaches to forest policy analysis.

Specific forest policies, e.g., against deforestation, are linked not only to other forest policies but also to other sectoral policies. This study analyzed the overall policy process of deforestation prevention policies in Indonesia and explained the Indonesian forest policy in a broad perspective. The overall approach can be expected to facilitate subsequent individual policy analysis.

This study can also find its importance and necessity in the analysis of the forest policy process in developing countries. It is possible to enhance understanding of forest policy formation and implementation in developing countries today through analyzing interactions between international forest regimes affecting developing countries and actors at various levels of interests. This can promote policy development in developing countries and enhance the effectiveness of future international development cooperation projects.

### **11.3 Recommendations for future research**

#### Analysis of the policy process for the regional level policy as well as national level

This study is an analysis of the overall process of policy formulation that is directly related to deforestation in Indonesia, and the stakeholders involved in this process and their activities are the main analytical subject. In the case of Indonesian domestic actors, the survey was administered to the central government, the Ministry of Environment and Forestry, the regional government of West Kalimantan, and local residents. When determining the scope of study analysis and selecting the target policies of the analysis, the policies, including those formed at the regional level, were surveyed, but this study focused on the national level policy. This is because the data on the policy process at the regional level is insufficient when compared with that on the policy process at the national level, and the policy actors participating in the deforestation prevention policies in Indonesia have not had much information about the regional policy process.

The forest sector's main policies in Indonesia are a central government-led initiative to establish a strategy, direction, and goals within a large framework, and then the central government encourages local governments to establish policies that match the characteristics of each region. As the authorities and rights of Indonesian forests are distributed among the central and local governments, not only national-level policies but also regional government forest policies are very important for preventing deforestation. In this study, the scope of the study was set to a large extent, and the results were concentrated on the decision-making process of the national level policy because of the lack of data and information. However, if future research studies and analyzes the policy decision-making process at the regional level, the analysis of the policy process for the prevention of deforestation in Indonesia can be expected to be more concrete and detailed.

Analysis of the relationship between the Ministry of Environmental and Forestry, and other ministries in the forest policy process

The policies of the central government are formed by the respective ministries; however, each sector is structurally connected by the politics, economy, and society of the country. Hence, they make their own policies while interacting with other ministries. As Indonesia has a large forest area, and as forestry underpins a large part of the economy of the whole country and is connected with various industries, the Ministry of Environment and Forestry policy requires close cooperation with other ministries. Even though the study included some of the other ministries, it was dominated by many policy actors engaged in forestry at various levels. As the policy network analyzed in this study focuses on “various levels” of actors and their interactions, future research needs to focus on interactions among organizations at the same level. In particular, the necessity of network analysis for interactions such as cooperation and conflict among the ministries with strong influence on the Indonesian policy process is of prime importance. Through these studies, we can confirm the priorities of the forest sector in Indonesian government policies and identify the role and vision of each ministry in the implementation of national policies.

Performance analysis of deforestation prevention policies

The policies that are the subject of this study are those that are actively implemented now. Therefore, the results and successes of those policies cannot be discussed in this study. If the current policies are to be finalized, or when a policy is undergoing a change, it is expected that the cause of the success or failure of the policy will be analyzed. The results of the policy process analyzed in this study can be used as a means to analyze future performance of the policy.

## **VI. List of References**



- Acharya, A., 2004. How ideas spread: whose norms matter? Norm localization and institutional change in Asian regionalism. *International Organization* 58(2): 239–275.
- Achyar, E., Schmidt-Vogt, D., Shivakoti, G., 2017. Dynamics and Effectiveness of the Multistakeholder Forum in Promoting Sustainable Forest Fire Management Practices in South Sumatra, Indonesia. In: Shivakoti, G.P., Pradhan, U., Helmi, (Eds.), *Redefining Diversity & Dynamics of Natural Resources Management in Asia*, Vol. 1 Amsterdam: Elsevier: 157-174.
- Ackermann, F., Eden, C., 2011. Strategic management of stakeholders: Theory and practice. *Long Range Planning* 44: 179-196.
- Ackrill, R., Kay, A., 2011. Multiple streams in EU policy-making: the case of the 2005 sugar reform. *Journal of European Public Policy* 18(1): 72-89.
- ACRN (Africa, Rights and Climate), 2014. FLEGT, REDD+ and community forest and land rights in Africa: lessons learned and perspectives. Africa Community Rights Network.
- Akiefnawati, R., Villamor, G., Zulfikar, F., Budisetiawan, I., Mulyoutami, E., 2010. Stewardship agreement to reduce emissions from deforestation and degradation (REDD): case study from Lubuk Beringin's Hutan Desa, Jambi Province, Sumatra, Indonesia. *The International Forestry Review* 12: 349-360.
- Anderson, W.F.A., MacLean, D.A., 2015. Public forest policy development in New Brunswick, Canada: multiple streams approach, advocacy coalition framework, and the role of science. *Ecology and Society* 20(4): 20.
- Andoh, J., Lee, Y., 2018. National REDD+ Strategy for Climate Change Mitigation: A Review and Comparison of Developing Countries. *Sustainability* 10(12): 4781.
- Andriyana, W., 2018. Pathways and Effects of the National Decentralisation Policy on Forest Governance in Java. PhD Dissertation. BOKU University of Vienna, 248
- Arts, B., 2012. Forests policy analysis and theory use: Overview and trends. *Forest Policy and Economics* 16: 7-13.
- Atkinson, M., Coleman, W.D., 1989. Strong states and weak states: sectoral policy networks

in advanced capitalist economies. *British Journal of Political Science* 14(1): 46-67.

Babon, A., McIntyre, D., Gowae, G.Y., Gallemore, C., Carmenta, R., Di Gregorio, M., Brockhaus, M., 2014. Advocacy coalitions, REDD+, and forest governance in Papua New Guinea: how likely is transformational change? *Ecology and Society* 19(3): 13.

Bakenova, S., 2008. Interpreting the emergence of water export policy in Canada. *Politics & Policy* 36(4): 676-719.

Barr, C., Resosudarmo, I.A.P., Dermawan, A. and McCarthy, J. (Eds.), 2006. *Decentralization of Forest Administration in Indonesia: Implications for Forest Sustainability, Economic Development and Community Livelihoods*. Bogor, Indonesia: CIFOR.

Béland, D., Howlett, M., 2016. The Role and Impact of the Multiple-Streams Approach in Comparative Policy Analysis. *Journal of Comparative Policy Analysis: Research and Practice* 18: 221-227.

Bernstein, S., Cashore, B., 2000. Globalization, Four Paths of Internationalization and Domestic Policy Change: The Case of EcoForestry in British Columbia, Canada. *Canadian Journal of Political Science* 33(1): 67-99

Bernstein, S., Cashore, B., 2012. Complex global governance and domestic policies: four pathways of influence. *International Affairs* 88(3): 585–604

Black, M., 1962. *Models and metaphors: Studies in language and philosophy*. Ithaca, NY, US: Cornell University Press.

Blaser, J., Sarre, A., Poore, D., Johnson, S., 2011. *Status of Tropical Forest Management 2011*. ITTO Technical Series No 38. International Tropical Timber Organization, Yokohama.

Blom-Hansen, J., 1997. A new institutional perspective on policy networks. *Public Administration* 75: 669-693.

Bochel, C., Bochel, H.M., 2004. *The social policy process*. Basingstoke: Palgrave Macmillan.

Boer, H.J., 2018. The role of government in operationalising markets for REDD+ in Indonesia. *Forest Policy and Economics* 86: 4-12.

Borg, R., Toikka, A., Primmer, E., 2015. *Social capital and governance: a social network*

analysis of forest biodiversity collaboration in Central Finland. *Forest Policy and Economics* 50: 90-97.

Borgatti, S.P., Everett, M.G. and Freeman, L.C., 2002. *Ucinet for Windows: Software for Social Network Analysis*. Harvard, MA: Analytic Technologies.

Brockhaus, M., Obidzinski, K., Dermawan, A., Laumonier, Y., Luttrell, C., 2012. An overview of forest and land allocation policies in Indonesia: Is the current framework sufficient to meet the needs of REDD+? *Forest Policy and Economics* 18: 30-37.

Brockhaus, M., Gregorio, M.D., Carmenta, R., 2014. REDD+ policy networks: exploring actors and power structures in an emerging policy domain. *Ecology and Society* 19(4): 29.

Brown, J., Peskett, L., 2011. *Climate Finance in Indonesia: Lessons for the Future of Public Finance for Climate Change Mitigation*. EDC 2020 Working Paper 11. Bonn: EADI.

Brunner, S., 2008. Understanding policy change: Multiple streams and emissions trading in Germany. *Global Environmental Change* 18(3): 501-507.

Bryson, J.M., 1995. *Strategic planning for public and nonprofit organizations*. San Francisco: Jossey-Bass.

Bryson, J.M., 2004. What to do when stakeholders matter: stakeholder identification and analysis techniques. *Public Management Review* 6: 21-53.

Bulkeley, H., 2000. Discourse coalitions and the Australian climate change policy network. *Environment and Planning C: Government and Policy* 18: 727-748.

Bulkeley, H., Andonova, L.B., Betsill, M.M., Compagnon, D., Hale, T., Hoffmann, M.J., Newell, P., Paterson, M., Roger, C., VanDeveer, S.D., 2014. *Transnational Climate Change Governance*. Cambridge: Cambridge University Press.

Burgess, R., Hansen, M., Olken, B.A., Potapov, P., Sieber, S., 2011. The Political economy of deforestation in the tropics. NBER Working Paper No. 17417.

Bushley, B.R., 2014. REDD+ policy making in Nepal: toward state-centric, polycentric, or market-oriented governance? *Ecology and Society* 19(3): 34.

Börzel, T.A., 1998. *Organising Babylon - on the different conceptions of policy networks*.

Public Administration 76(2): 253-273.

Carnegie, P.J., 2009. Democratization and Decentralization in Post-Soeharto Indonesia: Understanding Transition Dynamics. Pacific Affairs.

Carrington P.J., Scott J., Wasserman S., 2005. Models and methods in social network analysis. Vol. 28 Cambridge: Cambridge University Press.

Carter, N., Childs, M., 2018. Friends of the Earth as a policy entrepreneur: 'The Big Ask' campaign for a UK Climate Change Act. Environment Politics 27(6): 994-1013.

Cashore, B., 2009. Key components of good forest governance in ASEAN. Exlibris no.6. ASEAN-German Regional Forest Programme.

Casson, A., Obydzinski, K., 2007. From new order to regional autonomy: shifting dynamics of illegal logging in Kalimantan, Indonesia. In: Tacconi, L. (Eds.), Illegal Logging, Law Enforcement, Livelihoods and the Timber Trade. London: Earthscan: 43-68.

Cohen, M.D., March, J.G., Olsen, J.P., 1972. A garbage can model of organization choice. Administrative Science Quarterly 17(1): 1-25.

Coleman, J.S., 1988. Social capital in the creation of human capital. American Journal of Sociology 94: 95-120.

Colfer, C.J.P., Resosudarmo, I.A.P. (Eds.), 2002. Which way forward?: people, forests, and policymaking in Indonesia. Washington DC, Resources for the Future, Center for International Forestry Research (CIFOR) and Institute of Southeast Asian Studies (ISEAS).

Collins, M., Macdonald, E.A., LynnClayton, L., Dunggio, I., Macdonald, D.W., Milner-Gulland, E.J., 2011. Wildlife conservation and reduced emissions from deforestation in a case study of Nantu Wildlife Reserve, Sulawesi: An institutional framework for REDD implementation. Environmental Science & Policy 14(6): 709-718.

Collins, N., 1995. Agricultural policy networks of Republic of Ireland and Northern Ireland. Political Studies 43: 664-648.

Commission of the European communities, 2001. European Governance; A White Paper. Commission of the European Communities, Brussels.

Contreras-Hermosilla, A., Gregersen, H. M., White, A., 2008. Forest governance in countries with federal systems of government: lessons and implications for decentralization. Bogor, Indonesia: CIFOR.

Cope, S., 2001. Analyzing criminal justice policy-making: towards policy network approach? In: Ryan, M., Savage, S.P., Wall, D.S. (Eds.), Policy network in criminal justice. Basingstoke: Palgrave.

CPF (Collaborative Partnership on Forests), 2012. SFM and REDD+ (SFM fact sheet 5). Collaborative Partnership on Forests.

Crow, D.A., 2010. Policy Entrepreneurs, issue experts, and water rights policy change in Colorado. *Review of Policy Research* 27(3): 299-315.

Daugbjerg, C., 1998. Policy networks under pressure: pollution control, policy reform and the power of farmers. Aldershot: Ashgate.

Daugbjerg, C., 2009. Sequencing in public policy: the evolution of the CAP over a decade. *Journal of European Public Policy* 16: 295-411.

Daugbjerg, C., 2012. Globalization and internal policy dynamics in the reform of the common Agricultural policy. In: Richardson, J. (Eds.), Constructing a policy-making state? Policy dynamics in the EU. Oxford: Oxford University Press: 88-103.

Dkamela, G.P., Brockhaus, M., Kengoum Djiegni, F., Schure, J., Assembe Mvondo, S., 2014. Lessons for REDD+ from Cameroon's past forestry law reform: a political economy analysis. *Ecology and Society* 19(3): 30.

Dovey, P., 2005. Policy making in Britain. London: Sage.

Downs, A., 1957. An Economic Theory of Political Action in a Democracy. *Journal of Political Economy* 65(2): 135-150.

Durant, R.F., Diehl, P.F., 1989. Agendas, alternatives, and public policy: lessons from the U.S. foreign policy arena. *Journal of Public Policy* 9: 179-205.

Döhler, M., 1991. Policy networks, opportunity structures and neo-conservative reform strategies in health policy. In: Marin, B., Mayntz, R. (Eds.), Policy networks: Empirical evidence and theoretical consideration. Boulder, Colorado: Westview Press 235-296.

Eden, C., Ackermann, F., 1998. Making strategy: The Journey of Strategic Management. London: Sage.

Ekayani, M., Nurrochmat, D.R., Darusman, D., 2016. The role of scientists in forest fire media discourse and its potential influence for policy-agenda setting in Indonesia. *Forest Policy and Economics* 68: 22-29.

Elliott, C., Schlaepfer, R., 2001. Understanding forest certification using the Advocacy Coalition Framework. *Forest Policy and Economics* 2(3-4): 257-266.

Esty, D. C., 2006. Toward good global governance: the role of administrative law. *Yale Law Journal* 115(7): 1490-1562.

Exworthy, M., Powell, M., 2004. Big windows and little windows: implementation in the 'congested state'. *Public Administration* 82(2): 263-281.

FAO, 1990. Situation and Outlook of the Forestry Sector in Indonesia, Vol. 1: Issues, Findings and Opportunities, Ministry of Forestry. Jakarta: FAO.

FAO, 2010, Developing effective forest policy- FAO Forestry paper 161. Rome: FAO.

FAO, 2016. The Global Forest Resource Assessment 2015. Rome: FAO.

FAO. 2018. Strengthening National Forest Monitoring Systems for REDD+. Rome: FAO.

Fatem, S.M., Awang, S.A., Pudyatmoko, S., Sahide, M.A.K., Pratama, A.A., Maryudia, A., 2018. Camouflaging economic development agendas with forest conservation narratives: A strategy of lower governments for gaining authority in the re-centralising Indonesia. *Land Use Policy* 78: 699-710.

Fawcett, P., Daugbjerg, C., 2012. Explaining governance outcomes: epistemology, network governance and policy network analysis. *Political Studies Review* 10 :195-207.

Ferguson, I.S., 1996. Sustainable Forest Management. Melbourne: Oxford.

Fischer, F., Forester, J., 1993. The argumentative turn in policy analysis and planning. London, Duke University Press.

Flyvbjerg, B., 2001. Making social science matter. Cambridge University Press.

- Fox, J., Adhuri, D.S., Resosudarmo, I.A.P., 2006. Unfinished edifier or Pandora's box? Decentralization and resource management in Indonesia. In: Resosudarmo, B.P. (Eds.), The politics and economics of Indonesia's national resources, Institute of Southeast Asia Studies, Singapore.
- Freeman, G.P., 1992. Migration Policy and Politics in the Receiving States. *Journal International Migration Review* 26(4): 1144-1167.
- Freeman, R.E., 1984. *Strategic Management: Stakeholder Approach*. Pitman, Boston.
- Friedkin, N.E., 2004. Social cohesion. *Annual Review of Sociology* 30: 409-425.
- Gale, F., 2013. When interests trump institutions: Tasmania's forest policy network and the Bell Bay pulp mill. *Environmental Politics* 22: 274-292.
- Gale, F., Cadman, T., 2014. Whose norms prevail? Policy networks, international organizations and "sustainable forest management." *Society and Natural Resources* 27: 170-184.
- Gallemore, C., Harianson, R.D.P., Moeliono, M., 2014. Discursive barriers and cross-scale forest governance in Central Kalimantan, Indonesia. *Ecology and Society* 19(2): 18.
- Gallemore, C., Gregorio, M., Moeliono, M., Brockhaus, M., Prasti, R.D.H., 2015. Transaction costs, power, and multi-level forest governance in Indonesia. *Ecological Economics* 114: 168-179.
- Gebara, M.F., Fatorelli, L., May, P., Zhang, S., 2014. REDD+ policy networks in Brazil: constraints and opportunities for successful policy making. *Ecology and Society* 19(3): 53.
- Gené E. I. (2012) *Indonesia REDD+ Readiness - State of Play*. IGES.
- Giessen, L., Burns, S., Sahide. S.M.A.K., Wibowo, A., 2016. From governance to government: The strengthened role of state bureaucracies in forest and agricultural certification. *Policy and Society* 35(1): 71-89.
- GIZ-FORCLIME, 2017. *A Portrait of Changes in FORCLIME*. GIZ GmbH, Jakarta.
- Glück, P., 1992. *Evolution of forest policy science in Austria*. Vienna: IUFRO.
- Government of Indonesia, 2016. *First Nationally Determined Contribution*. Republic of Indonesia.

Greenpeace, 2012. The Indonesia-Norway agreement to reduce greenhouse gas emissions from deforestation and forest degradation -Greenpeace Assessment of Progress. Greenpeace.

Gregorio, M.D., Fatorelli, L., Paavola, J., Locatelli, B., Pramova, E., Nurrochmat, D.R., May, P.H., Brockhaus, M., Sari, I.M., Kusumadewi, S.D., 2019. Multi-level governance and power in climate change policy networks. *Global Environmental Change* 54: 64-77.

Groenendijk, N., 2003. Multi-level governance, network governance, and fiscal federalism theory. In A. Salminen (Eds.), *Governing Networks*. EGPA Yearbook, Amsterdam.

Gulbrandsson, K., Fossum, B., 2009. An exploration of the theoretical concepts policy windows and policy entrepreneurs at the Swedish public health arena. *Health Promotion international* 24(4): 434-444.

Hajer, M., 2005. Re-building ground zero. The politics of performance. *Planning theory and practice* 6(4): 445-464.

Hanf, K., Scharpf, F.W., 1978. *Interorganizational policy making: Limits to coordination and central control*. SAGE.

Hanneman, R.A., 2001. *Introduction to Social Network Methods*. Riverside C.A. University of California.

Hasanagas, N.D., 2011. Network analysis functionality in environmental policy: Combining abstract software engineering with field empiricism, *international Journal of Computers. Communications & Control* 4: 622-634.

Hay, C., 1998. The tangled webs we weave: The discourse, strategy and practice of networking. In: Marsh, D. (Eds.), *Comparing Policy Networks*. Buckingham: Open University Press: 33-51.

Heclo, H., 1978. Issue networks and the executive establishment. In: King, A. (Eds.), *The New American Political System*, District of Columbia: American Enterprise Institute for Public Policy: 262-287.

Heeswijk, L., Turnhout, E., 2012. The discursive structure of FLEGT (Forest Law Enforcement, Governance and Trade): The negotiation and interpretation of legality in the EU and Indonesia. *Forest Policy and Economics* 32: 6-13.



Held, D., Koenig-Archibugi, M., 2005. Global governance and public accountability. Oxford: Blackwell.

Herbert, A., 1976. Financing politics. Washington: Congressional Quarterly Press.

Houston, D.J., Richardson, L.E., 2000. The politics of air bag safety: A competition among problem definitions. *Policy Studies Journal* 28(3): 485-501.

Howlett, M., 2009. Policy analytical capacity and evidence-based policy-making Lessons from Canada. *Canadian Public Administration* 53(2): 153-175.

Howlett, M., McConnell, A., Perl, A., 2016. Weaving the Fabric of Public Policies: Comparing and Integrating Contemporary Frameworks for the Study of Policy Processes. *Journal of Comparative Policy Analysis: Research and Practice* 18: 273-289.

Hudson, J.R., Lowe, S.G., 2004. Understanding the Policy Process: Analysing Welfare Policy & Practice (First Edition). The Policy Press.

Indonesian REDD+ Task Force, 2012. REDD+ National Strategy, Jakarta: Satgas REDD+.

Indrajaya, Y., Werf, E., Weikard, H.P., Mohren, F., Ierland, E.C., 2016. The potential of REDD+ for carbon sequestration in tropical forests: Supply curves for carbon storage for Kalimantan, Indonesia. *Forest Policy and Economics* 71: 1-10.

Indrarto, G.B., Murharjanti, P., Khatarina, J., Pulungan, I., Ivalerina, F., Rahman, J., Prana, M. N., Resosudarmo, I.A.P., Muharrom, E., 2012. The context of REDD+ in Indonesia: Drivers, agents and institutions. Working Paper 92, Bogor, Indonesia: CIFOR.

Irawan, S., Tacconi, L., Ring, I., 2013. Stakeholders' incentives for land-use change and REDD+: The case of Indonesia. *Ecological Economics* 87: 75-83.

Irawan, S., Tacconi, L., Ring, I., 2014. Designing intergovernmental fiscal transfers for conservation: the case of REDD+ revenue distribution to local governments in Indonesia. *Land Use Policy* 36: 47-59.

Irawan, S., Tacconi, L., 2016. Intergovernmental fiscal transfers, forest conservation and climate change. Cheltenham and Northampton: Edward Elgar Publishing.

Irawan, S., Widiastomo, T., Tacconi, L., Watts, J., Steni, B., 2019. Exploring the design of

jurisdictional REDD+: The case of Central Kalimantan, Indonesia. *Forest Policy and Economics*.

ITS Global, 2011. *The Economic Contribution of Indonesia's Forest-Based Industries*. Melbourne: ITS GLOBAL.

Ituarte-Lima, C., McDermott, C.L., Mulyani, M., 2014. Assessing equity in national legal frameworks for REDD+: The case of Indonesia. *Environmental Science & Policy* 44: 291-300.

Jaggera, P., Rana, P., 2017. Using publicly available social and spatial data to evaluate progress on REDD+ social safeguards in Indonesia. *Environmental Science & Policy* 76: 59-69.

Jann, W., Wegrich, K., 2007. Theories of the policy cycle. In: Fischer, F., Miller, G.J., Sidney, M.S. (Eds.), *Handbook of public policy analysis: Theory, politics, and methods*. Boca Rotan, FL: CRC Press: 43-62.

Jeffrey J.C., 2018. The EPA, NHTSA, and the Multiple Streams drive climate policy outcome. *Environmental Practice* 20(1): 23-35.

Jenkins-Smith, H., Clair, G.S., 1993. The politics of offshore energy: empirically testing the advocacy coalition framework. In: Sabatier, P.A., Jenkins-Smith, H. (Eds.), *Policy change and learning*. Boulder: Westview Press: 149-176.

Johnson, G., Scholes, K., 2002. *Exploring Corporate Strategy* (6th edition). Harlow, England: Pearson Education.

Jong, W., Arts, B., Krott, M., 2012. Political theory in forest science. *Forest Policy and Economics* 16: 1-6.

Jordan, A., Greenway, J., 1998. Shifting agendas, changing regulatory structures and the 'new' politics of environmental pollution; British Coastal water policy 1955-1995. *Public Administration* 76(4): 669-694.

Jordan, A.J., Huitema, D., Hilden, M., van Asselt, H., Rayner, T.J., Schoenefeld, J.J., Tosun, J., Forster, J., Boasson, E.L., 2015. Emergence of polycentric climate governance and its future prospects. *Nature Climate Change* 5: 977-982.

Jordan, G., Schubert, K., 1992. A preliminary ordering of policy network labels. In: Jordan, G.,

Schubert, K. (Eds.), Policy Networks. European Journal of Political Research 21(1): 7-27.

Kadushin C., 2012. Understanding social networks: theories, concepts and findings. New York: Oxford University Press; 127-128.

Kaisa, K., Maria, B., Efrian, M., Sirkku, J., Moira, M., Cynthia, M., Bimo, D., 2017. Analyzing REDD+ as an experiment of transformative climate governance: Insights from Indonesia. Environmental Science & Policy 73: 61-70.

Katzenstein, P.J., 1978. Between power and plenty. Foreign economic policies of advanced industrial states. Madison: University of Wisconsin Press.

Kawai, M., Scheyvens, H., Samejima, H., Fujisaki, T., Setyarso, A., 2017. Indonesia REDD+ readiness: State of play. IGES.

Keck, M. E., Sikkink, K., 1998. Activists beyond borders: advocacy networks in international politics, Ithaca, NY, and London: Cornell University Press.

Kementerian Kehutanan (Ministry of Forestry), 2011. Rencana Kehutanan Tingkat Nasional (RKTN) Tahun 2011 - 2030 (In Indonesia). Direktorat Perencanaan Kawasan Hutan.

Kementerian Kehutanan (Ministry of Forestry), 2012. Improvement of Land Cover Change Estimate of Indonesia for Year 2011 (In Indonesian). Directorate General of Forestry Planning, Jakarta: Ministry of Forestry.

Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, 2015. Organisasi dan Tata Kerja Kementerian. Lingkungan Hidup dan Kehutanan (Nomor P.18/MENLHK-II/2015).

Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia (Ministry of Environment and Forestry), 2018. Status Tanah & Kehutanan Indonesia 2018 (In Indonesian). Jakarta: Kementerian Lingkungan Hidup dan Kehutanan

Kenis, P., Schneider, V., 1991. Policy Networks and Policy Analysis: Scrutinizing a New Analytical Toolbox. In: Marin, B., Mayntz, R.(Eds.), Policy Networks: Empirical Evidence and Theoretical Considerations. Frankfurt am Main: Campus Verlag: 25-59.

Kickert, W.J.M., Klijn, E.H., Koppenjan, J.F.M., 1997. Managing Complex Networks: Strategies for the public sector. London: Sage.

- Kilduff, M., Tsai, W., 2003. Social networks and Organizations. London: Sage.
- Kim, Y.S., Bae, J.S., Fisher, L.A., Latifah, S., Mansur, A., Lee, S.M., Kim, I.A., 2016. Indonesia's Forest Management Units: Effective intermediaries in REDD+ implementation? Forest Policy and Economics 62: 69-77.
- Kingdon, J.W., 1984. Agendas, alternatives and public policies (First Edition). Boston: Little Brown.
- Klijn, E.H., 1997. Policy Networks: An overview. In: Kickert, W.J.M., Klijn, E., Koppenjan, J.F.M. (ed.), Managing complex networks: Strategies for the public sector. London: Sage.
- Knoke, D., Kuklinski, J.H., 1982. Network Analysis. Beverly Hills: Sage.
- Korhonen, K., Hujala, T., Kurttila, M., 2012. Reaching forest owners through their social networks in timber sales. Scandinavian Journal of Forest Research 27(1): 88-99.
- Krott, M., 2005. Forest policy analysis. Dordrecht: Springer.
- Krutilla, J.V., Eckstein, O., 1958. Multiple Purpose River Development; Studies in Applied Economic Analysis, Baltimore: Johns Hopkins Press.
- Lasswell, H.D., 1948. The analysis of political behaviour, An Empirical Approach. London: Routledge and Kegan Paul, Ltd.
- Laumann, E.O., Gagnon, J.H., Michael, R.T., Michaels, S., National Health and Social Life Survey, 1992. Inter-university Consortium for Political and Social Research.
- Lebedys, A., Li, Y., 2014. Contribution of the forestry sector to national economies 1990-2011. Forest Finance Working Paper FSFM/ACC/09. Rome: FAO.
- Liu, B.F., Horsley, J.S., Levenshus, A.B., 2010. Government and corporate communication practices: Do the differences matter. Journal of Applied Communication Research 38(2): 189-213.
- Lovrić, M., Re, R.D., Vidale, E., Pettenella, D., Mavsar, R., 2018. Social network analysis as a tool for the analysis of international trade of wood and non-wood forest product. Forest Policy and Economics 86: 45-66.
- Lowi, T.J., 1976. The End of Liberalism. New York: Norton.

- Luttrell, C., Resosudarmo, I.A.P., Muharrom, E., Brockhaus, M., Seymour, F., 2014. The political context of REDD+ in Indonesia: Constituencies for change. *Environmental Science & Policy* 35: 67-75.
- Margono, B.A., Potapov, P.V., Turubanova, S., Stolle, F., Hansen, M.C., 2014. Primary forest cover loss in Indonesia over 2000-2012. *Nature Climate Change* advance online publication.
- Marin, B. and Mayntz, R., 1991. *Policy Networks: Empirical Evidence and Theoretical Considerations*. Boulder, Colorado: Westview Press.
- Marsden, P.V., 2002. Egocentric and sociocentric measures of network centrality. *Social Networks* 24: 407-422.
- Marsh, D., 1998. The Development of policy network approach. In: Marsh, D. (Eds.), *Comparing policy network*. Oxford: Clarendon Press.
- Marsh, D., Rhodes, R.A.W., 1992. Policy communities and issue networks: Beyond typology. In: Marsh, D. and Rhodes, R.A.W.(Eds.), *Policy Networks in British Government*. Oxford: Clarendon Press: 249-268.
- Marsh, D., Smith, M., 2000. Understanding policy networks: towards a dialectical approach. *Political Studies*, 48: 4-21.
- Martin, J. L., 2009. *Social structures*. Princeton: Princeton University Press.
- Maryudi, A., 2016. Choosing timber legality verification as a policy instrument to combat illegal logging in Indonesia. *Forest Policy and Economics* 68: 99-104.
- Maryudi, A., Nurrochmat, D.R., Giessen, L., 2018. Research trend: Forest policy and governance - Future analyses in multiple social science disciplines. *Forest Policy and Economics* 91: 1-4.
- Maser, C., 1994. *Sustainable Forestry: Philosophy, Science and Economics*. Florida: St Lucie Press.
- Mehring, M., Seeberg-Elverfeldt, C., Koch, S., Barkmann, J., Schwarz, S., Stoll-Kleemann, S., 2011. Local institutions: Regulation and valuation of forest use-Evidence from Central Sulawesi, Indonesia. *Land Use Policy* 28(4): 736-747.

Meoliono, M., Wollenberg, E., Limberg, G.(Eds.), 2012. The decentralization of forest governance: politics, economics and the fight for control of forests in Indonesian Borneo. London: Earthscan.

MFP, 2011. Multistakeholder Forestry Programme 3. Jakarta: MFP

Ministry of Environment and Forestry, 2016. National Forest Reference Emission Level for Deforestation and Forest Degradation. Jakarta: Ministry of Environment and Forestry

Mintrom, 1997. Policy Entrepreneurs and the diffusion of innovation. *American Journal of Political Science* 41(3): 738-770.

Ministry of National Development Planning, National Development Planning Agency, 2011. Reference book guideline for implementing green gas emission reduction action plan- Translated English Version. Bappenas: National Development Planning Agency

Montpetit, E., 2005. A policy network explanation of Biotechnology policy differences between the United States and Canada. *Journal of Public Policy* 25(3): 339-366.

Moody, J., White, D.R., 2003. Structural cohesion and embeddedness: a hierarchical concept of social groups. *American Sociological Review* 68 (1): 103-127.

Murdiyarso, D., Dewi, S., Lawrence, D., Seymour, F., 2011. Indonesia's forest moratorium: a stepping stone to better forest governance? CIFOR Working paper, Bogor, Indonesia: CIFOR.

Nachmany, M., Fankhauser, S., Townshend, T., Collins, M., Landesman, T., Matthews, A., Pavese, C., Rietig, K., Schleifer, P., Setzer, J., 2014. The GLOBE climate legislation study: a review of climate change legislation in 66 countries: fourth edition. GLOBE International and Grantham Research Institute, London: LSE.

Nachmany, M., Fankhauser, S., Davidová, J., Kingsmill, N., Landesman, T., Roppongi, H., Schleifer, P., Setzer, J., Sharman, A., Singleton, C.S., Sundaresan, J., Townshend, T., 2015. In: The 2015 Global Climate Legislation Study -A Review of Climate Change Legislation in 99 Countries, GLOBE International and Grantham Research Institute, London: LSE.

NORAD, 2011. Real-Time Evaluation of Norway's International Climate and Forest Initiative Contributions to National REDD+ Processes 2007-2010 Country Report: Indonesia. Oslo Norway.

- Nurfatriani, F., Darusman, D., Nurrochmat, D.R., Yustika, A.E., Muttaqin, M.Z., 2015. Redesigning Indonesian forest fiscal policy to support forest conservation. *Forest Policy and Economics* 61: 39-50.
- Nurrochmat, D.R., Dharmawan, A.H., Obidzinski, K., Dermanwan, A., Erbaugh, J.T., 2014. Contesting national and international forest regimes: Case of timber legality certification for community forests in Central Java, Indonesia. *Forest Policy and Economics* 68: 54-64.
- Nutt, P.C., Backoff, R., 1992. Strategic management of public and third sector organizations. San Francisco: Jossey-Bass.
- Obidzinski, K., Hernawan, D., Dermawan, A., Andrianto, A., Komarudin, H., 2012. Timber legality verification system and VPA in Indonesia: the challenge of small scale forestry sector. Paper presented at the Illegal logging and legality verification- The FLEGT/VPA as new modes of governance. December 5-7, University of Copenhagen, European Forest Institute and Yale University.
- Oborn, E., Barrett, M., Exworthy, M., 2011. Policy entrepreneurship in the development of public sector strategy: The case of London health reform. *Public Administration* 89(2): 325-344.
- Orangutan Foundation International, 2011. Orangutan foundation international 2011 annual report. Orangutan Foundation International
- Page, S.E., Siegert, F., Rieley, J.O., Boehm, H.V., Jaya, A., Limin, S., 2002. The amount of carbon released from peat and forest fires in Indonesia during 1997, *Nature* 420: 61-65.
- Paletto, A., Hamunen, K., Meo, I.D., 2015. Social network analysis to support stakeholder analysis in participatory forest planning. *Society & Natural Resources* 28(10): 1108-1125.
- Papadopoulou, E., Hasanagas N.D., Harve, D., 2011. Analysis of rural development policy networks in Greece is LEADER really different. *Land Use Policy* 28: 663-673.
- Parrotta, J.A., Trost, R.L. (ed.), 2011. Traditional Forest-Related Knowledge Sustaining Communities, Ecosystems and Biocultural Diversity. Springer, Dordrecht.
- Parsons, W., 1995. Public policy: An introduction to the theory and practice of policy analysis. Edward Elgar, Cheltenham.

Pcgn (Permanent Committee on Geographical Names), 2015. Indonesia: Administrative Divisions. Pcgn Information paper.

PEACE (PT. Pelangi Energi Abadi Enviro), 2007. Indonesia and climate change: Working paper on current status and polices. DFID, The World Bank.

Perhutani, 2015. Perum Perhutani Profile. Perum Perhutani, Jakarta.

Pescosolido, B., Rubin, B.A., 2002. The web of group affiliations revisited. *American Sociological Review* 65(1): 52-76.

Pham, T.T., Di Gregorio, M., Carmenta, R., Brockhaus, M., Le, D.N., 2014. The REDD+ policy arena in Vietnam: participation of policy actors. *Ecology and Society* 19(2): 22.

Poffenberger, M., 1997. Rethinking Indonesian Forest Policy: Beyond the timber Barons. *Asian Survey* 37(5): 453-469.

Prabhu, R., Colfer, C., Venkateswarlu, P., Soekmadi, L.C.T.R., Wollenberg, E., 1996. Testing Criteria and Indicators for the Sustainable Management of Forests. Phase I. Final Report. Bogor, Indonesia: CIFOR.

Prunomo, H., Mendoza, G.A., Prabhu, R., 2005. Analysis of local perspectives on sustainable forest management: an Indonesian case study. *Journal of Environmental Management* 74(2): 111-126.

Pump, B., 2011. Beyond metaphors: New research on agendas in the policy process. *Policy Studies Journal* 39: 1-12.

Purnomo, H., Mendoza, G.A., Prabhu, R., Yasmi, Y., 2005. Developing multi-stakeholder forest management scenarios: a multi-agent system simulation approach applied in Indonesia. *Forest Policy and Economics* 7(4): 475-491.

Rantala, S., Di Gregorio, M., 2014. Multistakeholder environmental governance in action: REDD+ discourse coalitions in Tanzania. *Ecology and Society* 19(2): 66.

Real, A.T., Hasanagas, N.D., 2005. Complete network analysis in research of organized interests and policy analysis: Indicators, methodical aspects and challenges. *CONNECTIONS* 26(2): 89-106.



Resosudarmo, I.A.P., 2004. Closer to people and trees: will decentralization work for the people and the forests of Indonesia? *European Journal of Development Research* 16(1): 110-132.

Resosudarmo, I.A.P., Atmadja, S., Ekaputri, A.D., Intarini, D.Y., Indriatmoko, Y., 2014. Does tenure security lead to REDD+ project effectiveness? Reflections from five emerging sites in Indonesia. *World Development* 55: 68-83.

Rhodes, R.A.W., 1988. Beyond Westminster and Whitehall; the subsectoral governments of Britain. London: Unwin Hyman.

Rhodes, R.A.W., 1990. Policy networks. A British perspective, *Journal of Theoretical Politics* 2(3): 293-317.

Rhodes, R.A.W., 1996. The New Governance: Governing without government. in: *Political Studies Association*: 651-667.

Rhodes, R.A.W., 2008. Policy Network Analysis. In: Robert, E., Goodin, M.M., Martin R. (ed.), *The Oxford Handbook of Public Policy*: Oxford, UK: University of Oxford Press.

Rianawati, E., 2015. Review of Community Based Wildfire Management in Indonesia. Resilience Development Initiative, Bandung.

Richardson, J.J., Jordan, A.G., 1979. *Governing under pressure, The Policy Process in a Post-Parliamentary Democracy*. Martin Robertson, Oxford.

Richardson, L.E. (Eds.), 2001. *European Union: Power and Policymaking* (2nd edition). London and New York: Routledge.

Ridde, V., 2009. Policy Implementation in an African State: An Extension of Kingdon's Multiple Streams Approach." *Public Administration* 87(4): 938-954.

Rinfret, S., 2010. Frame analysis: Interest Groups and Environmental Rules. *Western Political Science Association 2010 Annual Meeting Paper*.

Ripley, R.B., Franklin, G., 1976. *Congress, the Bureaucracy and Public Policy* (First edition). Dorsey, Homewood.

Robert, N.C., King, P.J., 1991. Policy entrepreneurs: Their activity structure and function in the policy process. *Journal of Public Administration Research and Theory* 1(2): 147-175.

Romijn, E. Ainembabazi, J.H., Wijaya, A., Herold, M., Angelsen, A., Verchot, L., Murdiyarso, D., 2013. Exploring different forest definitions and their impact on developing REDD+ reference emission levels: A case study for Indonesia. *Environmental Science & Policy* 33: 246-259.

Ruysschaert, D., Hufty, M., 2018. Building an effective coalition to improve forest policy: Lessons from the coastal Tripa peat swamp rainforest, Sumatra, Indonesia. *Land Use Policy*, in Press.

Sabatier, P.A., Hunter, S., McLaughlin, S., 1987. The devil shift: perceptions and misperceptions of opponents. *Western Political Quarterly* 41: 449-76.

Sabatier, P.A., Jenkins-Smith, H.C., 1993. *Policy Change and Learning. An Advocacy Coalition Approach*, Boulder, Colorado: Westview Press.

Sabatier, P.A., Weible, C.M., 2007. The Advocacy Coalition Framework: Innovations and Clarifications. In: Sabatier, P.A. (Ed.), *Theories of the Policy Process* (2nd edition). Boulder, CO: Westview Press: 189-220.

Sahide, M.A.K., Giessen, L., 2014. The fragmented land use administration in Indonesia - Analyzing bureaucratic responsibilities influencing tropical rainforest transformation systems. *Land Use Policy* 43: 96-110.

Sahide, M.A.K., Nurrochmat, D.R., Giessen, L., 2015. The regime complex for tropical rainforest transformation: Analyzing the relevance of multiple global and regional land use regimes in Indonesia. *Land Use Policy* 47: 408-425.

Sahide, M.A.K., Maryudi, A., Supratman, S., Giessen, L., 2016. Is Indonesia utilizing its international partners? The driving forces behind Forest Management Units. *Forest Policy and Economics* 69: 11-20.

Sandström, A., Carlsson, L., 2008. The performance of policy networks: the relation between network structure and network performance. *Policy Studies Journal* 36: 497-524.

Santika, T., Meijaard, E., Budiharta, D., Law, E.A., Kusworo, A., Hutabarat, J.A., Indrawan, T.P., Struwig, M., Raharjo, S., Huda, I., Sulhani, Ekaputri, A.D., Trison, S., Stigner, M., Wilson, K.A., 2017. Community forest management in Indonesia: Avoided deforestation in the context

of anthropogenic and climate complexities. *Global Environmental Change* 46: 60-71.

Sardjono, M.A., Inoue, M., 2017. Collaborative Governance of Forest Resources in Indonesia: Giving Over Managerial Authority to Decision Makers on the Sites. In: Shivakoti, G.P., Pradhan, U., Helmi, (Eds.), *Redefining Diversity & Dynamics of Natural Resources Management in Asia*, Vol. 1 Amsterdam: Elsevier: 175-187.

Schneider, V., 1992. The structure of policy networks: A comparison of the 'chemicals control' and 'telecommunication' policy domains in Germany. *European Journal of Political Research* 21(1-2): 109-129.

Schusser, C., Max Krott, M., Movuh, M.B., Logmani, J., Devkota, R.R., Maryudi, A., Salla, M., Bach, N.D., 2015. Powerful stakeholders as drivers of community forestry - Results of an international study. *Forest Policy and Economics* 58: 92-101.

Setiawan, E.N., Maryudi, A., Purwanto, R.H., Lele, G., 2016. Opposing interests in the legalization of non-procedural forest conversion to oil palm in Central Kalimantan, Indonesia. *Land Use Policy* 58: 472-481.

Sewell, G.C., 2005. Actors, coalitions, and the framework convention on Climate Change. PhD Dissertation, USA: MIT.

Shackleton, S.C., Wollenberg, E., Edmunds, D., 2002. Devolution and community-based natural resource management: creating space for local people to participate and benefit? *Natural Resource perspectives* 76: 1-6.

Singer, B., 2008. Putting the National back into Forest-Related Policies: the International Forests Regime and National Policies in Brazil and Indonesia. *International Forestry Review* 10(3): 523-537.

Smith, M.J., 1993. Pressure power and policy: State autonomy and policy networks in Britain and the United States. Hempel Hempstead: Harvest Wheatsheaf.

Smith, M.J., 2006. Pluralism. In: Hay, C., Lister, M., Marsh, D. (ed.), *The State: Theories and Issues*. Basingstoke and New York: Palgrave Macmillan.

Solecki W.D., Michaels, S., 1994. Looking through the post disaster policy window, *Environmental Management* 18: 587-595.

Squintani, L., Vedder, H.H.B., 2014. Sustainable Energy United in Diversity - Challenges and Approaches in Energy Transition in the European Union. European Environmental Law Forum Book Series, Vol. 1.

Storch, S., Winkel, G., 2013. Coupling climate change and forest policy: A multiple streams analysis of two German case studies. *Forest Policy and Economics* 36: 14-26.

Stone, D.A., 1989. Causal stories and the formation of policy agendas. *Political Science Quarterly* 104(2): 281-300.

Stone, D.A., 2002. *Policy Paradox: The art of political decision making* (Revised edition). New York: W. W. Norton & Company.

Sunderlin, W.D., 1996. *Shifting Cultivation and Deforestation in Indonesia: Steps Toward Overcoming Confusion in the Debate*, Jakarta: CIFOR.

Sunderlin, W.D., Resosudarmo, I.A.P., Rianto, E., Angelsen, A., 2000. The effect of Indonesia's economic crisis on small farmers and forest cover in the outer islands. Bogor, Indonesia: CIFOR.

Sunderlin, W.D., Hatcher, J., Liddle, M., 2008. *From exclusion to ownership?: Challenges and opportunities in advancing forest tenure reform*. Washington DC: Rights and Resources Initiative.

Suwarno, A., Nawir, A.A., Julmansyah, K., 2009. Participatory modeling to improve partnership schemes for future Community-Based Forest Management in Sumbawa District, Indonesia. *Environmental Modeling & Software* 24(12): 1402-1410.

Tacconi, L., Boscolo, M., Brack, D., 2008. *National and international policies to control illegal forest activities*. Bogor, Indonesia: CIFOR.

Teodorovic, J., 2008. Why education policies fail: multiple Streams model of policymaking. *Journal of the Institute of Educational Research* 40: 22-36.

Teye, J.K., 2013. Analyzing forest resource governance in Africa: Proposition for an integrated policy network model. *Forest Policy and Economics* 26: 63-70.

Thung P.H., 2019. *Decentralization of government and forestry in Indonesia*. Working Paper 249. Bogor, Indonesia: CIFOR.

UNDP Indonesia, 2015. The 2014 Forests Governance Index. Jakarta: UNDP, UN-REDD Programme and Ministry of Environment and Forestry.

United Nations General Assembly, 1992. Report of the United Nations conference on environment and development, United Nations, Rio de Janeiro.

United Nations General Assembly, 2008. Non-legally binding instrument on all types of forests. UN General Assembly Sixty-second Session Second Committee Agenda item. 54.

United Nations Development Programme, 2011. Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty. United Nations Development Programme, New York.

Vatikiotis, M.R.J., 1996. Political Change in South-East Asia: Trimming the Banyan Tree. New York: Routledge.

Waarden, F., 1992. Dimensions and types of policy networks. In: Jordan, G., Schubert, K. (Ed.), Policy Networks. European Journal of Political Research 21(1): 29-52.

Wardojo, W., Masripatin, N., 2002. Trends in Indonesian forest policy. Policy Trend Report 2002: 77-87.

Wasserman, S., Faust, K., 1994. Social network analysis; Method and Application. Cambridge University Press.

Weber, N., 2012. Reflections theories in forest policy: Testing, combining or building? Forest Policy and Economics 16: 102-108.

Weible, C.M., Sabatier, P.A., 2005. Comparing policy networks: marine protected areas in California. Policy Studies Journal 33: 181-201.

Weible, C.M., Sabatier, P.A., McQueen, K., 2009. Themes and variations: Taking stock of the advocacy coalition framework. Policy Studies Journal 37(1): 121-140.

Wiersum, K.F., Elands, B.H.M., 2013. Opinions on legality principles considered in the FLEGT/VPA policy in Ghana and Indonesia. Forest Policy and Economics 32: 14-22.

Williams, A., 2004. Governance and sustainability: An investigation of the role of policy mediators in the European Union policy process. Policy and Politics 32(1): 95-110.

Wollenberg, E., Moeliono, M., Limberg, G., Iwan, R., Rhee, S., Sudana, M., 2006. Between state and society: Local governance of forests in Malinau, Indonesia. *Forest Policy and Economics* 8(4): 421-433.

World Bank, 1990. *Indonesia: Sustainable Development of Forests, Land, and Water*, Washington, DC.: World Bank.

World Bank, 2001. *Indonesia: environment and natural resource management in a time of transition*. Washington, DC: World Bank.

Yishai, Y., 1992. From an Iron Triangles to an Iron Duet?: Health policy making in Israel. *European Journal of Political Research* 21: 91-108.

Zahariadis, N., Allen, C.S., 1995. Ideas, networks, and policy streams: Privatization in Britain and Germany. *Review of Policy Research* 14(1-2): 71-98.

Zahariadis, N., 1999. Ambiguity, time, and multiple streams, In: Sabatier, P.A.(Ed.), *Theories of the policy process*. Boulder, CO: Westview Press: 73-93.

Zahariadis, N., 2002. Rethinking European integration in the competition domain: a public policy approach. *Policy Studies Journal* 30(2): 229-239.

Zahariadis, N., 2003. *Ambiguity and Choice in Public Policy: Political Decision Making in Modern Democracies*. Washington, DC: Georgetown University Press.

Zahariadis, N., 2007. The Multiple Streams Framework: Structure, Limitations, Prospects. In: Sabatier, P.A. (ed.), *Theories of the Policy Process*. Boulder, CO: Westview Press: 65-92.

Zhu, X., 2008. Strategy of Chinese policy entrepreneurs in the third sector: challenges of “technical infeasibility”. *Policy Sciences* 41(4): 315-334.

[Media]

Mongabay, 2009. Orangutan population in Borneo park plunges 90% in 5 years, 16 May.

<https://news.mongabay.com/2009/05/orangutan-population-in-borneo-park-plunges-90-in-5-years/> [20 May 2018]

Reuters, 2007. Nations share blame for Indonesia deforestation: VP, 9 November.

<https://www.reuters.com/article/environment-indonesia-forest-dc/nations-share-blame-for-indonesia-deforestation-vp-idUSJAK6675020071109> [03 January 2019]

Reuters, 2009. Indonesia CO<sub>2</sub> pledge to help climate talks-greens, 29 September.

<https://www.reuters.com/article/idUSSP495601>, [03 January 2019]

The Jakarta Post, 2013. Map shows deforestation in Indonesia is world' fastest, 16 November.

<https://www.thejakartapost.com/news/2013/11/16/map-shows-deforestation-indonesia-world-s-fastest.html> [15 May 2018]

[Websites]

CIFOR Website (August 1, 2018 / January 3, 2022)

<https://www.cifor.org/>

Climate Watch (January 3, 2022)

<https://www.climatewatchdata.org/>

DFID website (March 3, 2019)

<https://devtracker.dfid.gov.uk/countries/ID/projects>

Ecolex Website (December 1, 2018)

<https://www.ecolex.org/>

Encyclopedia Britannica (February 20, 2018) List of presidents of Indonesia

<https://www.britannica.com/topic/list-of-presidents-of-Indonesia-2067024>

EU FLEGT Facility Website (June 5, 2018)

<http://www.euflegt.efi.int/what-is-a-vpa>

Facing Finance Website (August 1, 2018) The Rio Declaration on Environment and Development,

<http://www.facing-finance.org/en/database/norms-and-standards/the-rio-declaration-on-environment-and-development/>

FAO Website-a (March 03, 2019)

<http://www.fao.org/indonesia/programmes-and-projects/project-list/en/>

FAO Website-b (February 10, 2018) What is REDD+

<http://www.fao.org/redd/en/>

FORDA Website (January 2, 2022)

<http://www.forda-mof.org/content/publikasi>

Forest Legality Initiative, (August 4-30, 2018)

<https://forestlegality.org/risk-tool/country/indonesia>

GCF Website (November 3, 2020)

<https://www.greenclimate.fund/redd>

GIZ Website (January 3, 2019)

<https://www.giz.de/en/worldwide/352.html>

IndoComTrade Website (December 15, 2017) Invest Indonesia,

<http://indocomtrade.com/invest-indonesia/>

LESTARI Website (October 4, 2018)

<https://www.lestari-indonesia.org/en/>

Norad Website (October 10, 2018) The Government of Norway's International Climate and Forest Initiative,



<https://norad.no/en/front/thematic-areas/climate-change-and-environment/norways-international-climate-and-forest-initiative-nicfi/norways-international-climate-and-forest-initiative/>

UN-REDD Programme Website (March 1, 2019)

<https://www.un-redd.org/>

## **VII. Appendix**

## **Appendix 1.**

### **<Questionnaire for the interview>**

Date:

Time:

Place:

#### **<Organization Information>**

Name of organization:

Name of organization's informant:

Informant's title:

What type of organization is your organization? Please choose from the options below.

- 
- 1 Central government
  - 2 Provincial government
  - 3 District government
  - 4 National research institute / agency
  - 5 Indigenous people
  - 6 State forest public company
  - 7 University
  - 8 National NGO
  - 9 Intergovernmental organizations
  - 10 Foreign government aid organization
  - 11 International academic organization
  - 12 International NGO
  - 13 National business enterprise / organization

- 14 Other private sector organization
- 15 Media
- 16 Others

What is the mission of your organization?

**<Participation in deforestation prevention policy>**

When did your organization first take participate in the policy process in deforestation prevention in Indonesia?

(Multiple response) - You can choose from the choices below.

\* How (What type) did you participate in the policy process on deforestation prevention in Indonesia?

- 1 Prepare draft policy
- 2 Hold public hearings and discussions
- 3 Attend public hearings and discussions
- 4 Provide scientific/technical advice
- 5 Provide political, economic or social advice
- 6 Provide funding
- 7 Send the own organization opinion to the policy maker
- 8 Protest against the current policy direction
- 9 Communicate with organizations other than policy makers
- 10 Carry out a small-scale forest project in regional level
- 11 Publish related research report and produce promotional material
- 12 Do not know
- 13 Others

\* Why (What motivate) did you participate in the policy process on deforestation prevention in Indonesia?

- 1 Fulfill the official duties
- 2 Respond to request of the policy maker
- 3 Interference in policy maker's policy direction
- 4 Change awareness of the public and government
- 5 Monitor the policy formulation process
- 6 Comply with international regulation on policy
- 7 Obtain information on current policy issues
- 8 Maintain or maximize the organization's economic profits
- 9 Inform policy makers about the situation of the field
- 10 Have no specific motivation and interest
- 11 Others

**<Networking activities with other organizations>**

Your organization is involved in the policy process on deforestation-prevention policies in Indonesia. Please think back to when your organization participated in the policy process and answer the following questions.

There is no correct answer. I would like to hear your organization's subjective opinion.

Please write up to three organizations.

- a. What organization is your organization regularly or often interacting with?
  
  
  
  
  
- b. Which organization provides information about policy and decision-making process to your organization?
  
  
  
  
  
- c. What organization is your organization trusted in policy decision?
  
  
  
  
  
- d. Which organization is the most influential in the policy process?
  
  
  
  
  
- e. Which organization (Who) is the most influential actor in the Indonesian deforestation prevention policy.

If you cannot find the option you want, please write it directly.

## Appendix 2.

### <CIFOR's Publications on Forest Policy and Deforestation in Indonesia (2000-2021)>

Year	Title of publication
2021	The context of REDD+ in Indonesia: Drivers, agents and institutions [2nd edition]
2021	ReCLAIM – Restoring Coastal Landscape for Adaptation Integrated Mitigation
2021	The potential of agarwood as a climate- resilient livelihood option in Indonesia
2021	The politics of the green economy in provincial Indonesia: Insights from coal and oil palm sector reforms in East Kalimantan
2020	West Papua, Indonesia: Low-emission rural development (LED-R) at a glance
2020	Collecting Evidence of FLEGT-VPA Impacts for Improved FLEGT Communication
2019	Drivers of forest loss in Papua and West Papua
2019	The Adaptive Collaborative Management Multi-Stakeholder Forum: Jambi, Indonesia
2019	The SIPKEBUN Working Group Multi-Stakeholder Forum: Central Kalimantan, Indonesia
2019	Provincial Council on Climate Change: East Kalimantan, Indonesia
2019	A Community-based monitoring system for peat swamp forest restoration
2019	Connecting the dots in the forest-migration nexus: A case study from Malinau, Indonesia
2019	Decentralization of government and forestry in Indonesia
2019	The role of multi-stakeholder forums in subnational jurisdictions: Framing literature review for in-depth field research
2019	The role of multi-stakeholder forums in subnational jurisdictions: Methods training manual and tools for in-depth research
2019	Participatory Action Research to Community-Based Fire Prevention and Peatland Restoration

2018	Local perspectives on drivers of deforestation and degradation and effectiveness of financial incentive mechanisms in Bach Ma National Park
2018	An analysis of multiple ecosystem services under future oil palm expansion scenarios in Central and West Kalimantan, Indonesia
2018	Implementing sustainability commitments for palm oil in Indonesia: Governance arrangements of sustainability initiatives involving public and private actors
2018	North Kalimantan, Indonesia: Low-emission rural development (LED-R) at a glance
2018	Aceh, Indonesia: Low-emission rural development (LED-R) at a glance
2018	East Kalimantan, Indonesia: Low-emission rural development (LED-R) at a glance
2018	West Kalimantan, Indonesia: Low-emission rural development (LED-R) at a glance
2017	Governing mangroves: Unique challenges of managing Indonesia's coastal forests
2017	The policy network analysis of the palm oil sector in Indonesia: What sustainability to expect?
2017	The palm oil global value chain: Implications for economic growth and social and environmental sustainability
2017	Analyzing multilevel governance in Indonesia: Lessons for REDD+ from the study of land-use change in Central and West Kalimantan
2016	Impacts of industrial timber plantations in Indonesia: Analysis of rural populations' perceptions in Sumatra, Kalimantan and Java
2016	Drivers and effects of agrarian change in Kapuas Hulu Regency, West Kalimantan, Indonesia
2015	Forest and land-use governance in a decentralized Indonesia: A legal and policy review
2015	Managing oil palm landscapes: A seven-country survey of the modern palm oil industry in Southeast Asia, Latin America, and West Africa
2015	Social impacts of oil palm in Indonesia: Gendered perspective from West Kalimantan
2015	Land-based investment and green development in Indonesia: Lessons from Berau District, East Kalimantan
2015	Deforestation-free commitments: The challenge of implementation-An application to Indonesia



2015	Estimation of annual greenhouse gas emissions from forest and peat lands in Central Kalimantan
2015	Standard Methods for Estimating Greenhouse Gas Emissions from the Forestry Sector in Indonesia
2014	Timber legality verification system and the voluntary partnership agreement in Indonesia: Challenges of the small-scale forestry sector
2014	Large-scale plantations, bio-energy developments, and land use change in Indonesia
2014	Above-ground biomass and carbon stocks in a secondary forest in comparison with adjacent primary forest on limestone in Seram, the Moluccas, Indonesia
2014	Impacts of oil palm plantations on forests and people in Papua: Case study from Boven Digoel District
2014	CIFOR and Indonesia: Partnership for forests and people
2014	Opportunities for implementing REDD+ to enhance sustainable forest management and improve livelihoods in Lombok, NTB, Indonesia
2014	Decline of a once-important non-timber forest product in Indonesia
2014	Challenge of establishing REDD+ on the ground: Insights from 23 subnational initiatives in six countries
2013	Guidebook on integrating community-based adaptation into REDD+ projects: Lessons from Indonesia and the Philippines
2013	Integrating adaptation into REDD+: Potential impacts and social return on investment in Setulang, Malinau District, Indonesia
2013	The Context of REDD+ in Papua New Guinea: Drivers, agents, and institutions
2013	Conversion of intact peat swamp forest to oil palm plantation: Effects on soil CO <sub>2</sub> fluxes in Jambi, Sumatra
2012	Unpacking tenure security: Development of a conceptual framework and application to the case of oil palm expansion on customary land in Kapuas Hulu District, West Kalimantan, Indonesia
2012	Tropical wetlands for climate change adaptation and mitigation: Science and policy imperatives with special reference to Indonesia
2012	The context of REDD+ in Indonesia

2012	Introduction: Tropical wetlands for climate change adaptation and mitigation: Science and policy imperatives with special reference to Indonesia
2012	CIFOR and Indonesia: Partnership for forests and people
2011	Preventing the risks of corruption in REDD+ in Indonesia
2011	Lessons for REDD+ from measures to control illegal logging in Indonesia
2011	Indonesia's forest moratorium: A stepping stone to better forest governance?
2011	Policy and institutional frameworks for the development of palm oil-based biodiesel in Indonesia
2010	REDD+ politics in the media: Case study from Indonesia
2010	Reducing forestry emissions in Indonesia
2010	Carbon storage in mangrove and peatland ecosystems: Preliminary account from plots in Indonesia
2010	REDD, forest governance, and rural livelihoods
2010	Financial governance and Indonesia's Reforestation Fund during the Soeharto and post-Soeharto periods, 1989-2009: Political, economic analysis of lessons for REDD+
2009	Emerging REDD+: Preliminary survey of demonstration and readiness activities
2009	Evolving landscape of REDD+ projects
2007	Managing forest resources in a decentralized environment: lessons learnt from the Malinau research forest, East Kalimantan, Indonesia
2007	Will forests remain in the face of oil palm expansion? Simulation model for Malinau, Indonesia
2007	Forest rehabilitation in Indonesia: Where to after three decades?
2006	District governments and poverty alleviation in forest areas in Indonesia
2005	A/R clean development mechanism project activities: Legal framework in Indonesia
2005	Fighting forest crime and promoting prudent banking for sustainable forest management: Anti-money laundering approach

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

2005	Learning to adapt: Managing forests together in Indonesia
2004	Analysis of forestry sector conflict in Indonesia 1997 - 2003
2003	Decentralization of administration, policy making, and forest management in Ketapang District, West Kalimantan
2003	Learning in adaptive collaborative management of community forests: Lessons from Indonesia
2001	Banking on sustainability: Structural adjustment and forestry reform in post-Suharto Indonesia
2000	The Impact of sectoral development on natural forest conversion and degradation: Case of timber and tree crop plantations in Indonesia
2000	Effect of Indonesia's economic crisis on small farmers and natural forest cover in the outer islands
2000	Wild logging: Rise and fall of logging networks and biodiversity conservation projects on Sumatra's rainforest frontier

Sources: CIFOR Website, 2022

### Appendix 3.

#### <Raw analysis data of Ucinet>

##### VII.3.1 Relation Network

###### MULTIPLE CENTRALITY MEASURES

-----

Input dataset: Rel (C:\Users\XXX\Documents\UCINET data\Data\Rel  
Output dataset: Rel-cent (C:\Users\XXX\Documents\UCINET data\Rel-Cent  
Treat data as: Undirected  
For valued data: Use tie strengths when possible  
Type of scores to output: Normalized  
Undefined dist in closeness: replace with max dist + 1

Principal eigenvalue was: 4.22805517965701

###### Centrality Measures

		1	2	3	4
		Degree	Closeness	Eigenvector	Betweenness
		ess	ess	ector	n
		-----	-----	-----	-----
1	DG1	0.197	0.449	0.125	0.072
2	DG2	0.028	0.360	0.036	0.000
3	FG1	0.056	0.464	0.115	0.013
4	FG2	0.028	0.461	0.080	0.001
5	FG3	0.099	0.493	0.122	0.046
6	FG4	0.042	0.455	0.099	0.001
7	FG5	0.014	0.433	0.066	0.000
8	FG6	0.042	0.449	0.093	0.005
9	FG7	0.028	0.436	0.089	0.000

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

10	FG8	0.070	0.455	0.091	0.020
11	IA1	0.155	0.493	0.204	0.017
12	IA2	0.085	0.467	0.118	0.027
13	INGO1	0.042	0.368	0.045	0.001
14	INGO10	0.042	0.359	0.036	0.002
15	INGO11	0.070	0.464	0.113	0.012
16	INGO2	0.028	0.438	0.079	0.000
17	INGO3	0.028	0.380	0.035	0.002
18	INGO4	0.042	0.370	0.038	0.003
19	INGO5	0.211	0.514	0.186	0.114
20	INGO6	0.056	0.399	0.054	0.010
21	INGO7	0.042	0.401	0.057	0.003
22	INGO8	0.042	0.438	0.102	0.000
23	INGO9	0.042	0.364	0.029	0.007
24	IO1	0.042	0.444	0.099	0.000
25	IO2	0.042	0.455	0.101	0.001
26	IO3	0.056	0.441	0.111	0.001
27	IO4	0.070	0.455	0.125	0.011
28	IO5	0.042	0.447	0.089	0.028
29	IO6	0.056	0.470	0.107	0.008
30	IO7	0.085	0.461	0.131	0.024
31	IO8	0.155	0.507	0.196	0.033
32	IO9	0.056	0.452	0.103	0.009
33	IP	0.028	0.353	0.028	0.000
34	MD1	0.028	0.444	0.085	0.000
35	MD2	0.042	0.458	0.104	0.000
36	MD3	0.028	0.455	0.087	0.000
37	MD4	0.028	0.444	0.085	0.000
38	MD5	0.042	0.467	0.106	0.001
39	MoA	0.028	0.444	0.085	0.000
40	MoEF1	0.676	0.755	0.584	0.677
41	MoEF2	0.028	0.348	0.034	0.001
42	MoEF3	0.028	0.321	0.026	0.000

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

43	MoEF4	0.028	0.370	0.041	0.000
44	MoF	0.014	0.433	0.066	0.000
45	MoT	0.014	0.433	0.066	0.000
46	NBO1	0.099	0.480	0.149	0.008
47	NBO2	0.028	0.436	0.083	0.000
48	NBO3	0.042	0.438	0.095	0.000
49	NBO4	0.042	0.447	0.102	0.000
50	NBO5	0.028	0.345	0.022	0.002
51	NNGO1	0.014	0.310	0.010	0.000
52	NNGO10	0.028	0.350	0.026	0.000
53	NNGO2	0.042	0.382	0.046	0.004
54	NNGO3	0.070	0.490	0.117	0.023
55	NNGO4	0.028	0.353	0.028	0.000
56	NNGO5	0.042	0.473	0.109	0.001
57	NNGO6	0.042	0.467	0.094	0.002
58	NNGO7	0.056	0.378	0.042	0.008
59	NNGO8	0.042	0.357	0.033	0.001
60	NNGO9	0.028	0.346	0.034	0.000
61	NR1	0.099	0.467	0.137	0.016
62	NR2	0.028	0.438	0.081	0.000
63	NR3	0.056	0.449	0.099	0.012
64	PG1	0.197	0.542	0.198	0.097
65	PG2	0.028	0.447	0.080	0.000
66	PP	0.155	0.490	0.168	0.055
67	PSO1	0.070	0.452	0.121	0.002
68	PSO2	0.042	0.345	0.032	0.001
69	PSO3	0.028	0.436	0.079	0.000
70	PSO4	0.056	0.380	0.049	0.007
71	UNI1	0.056	0.452	0.095	0.008
72	UNI2	0.028	0.438	0.076	0.000

72 rows, 4 columns, 1 levels.

-----

Running time: 00:00:01 seconds.

Output generated: 00 0 00 00:00:00

UCINET 6.677 Copyright (c) 2002-19 Analytic Technologies

### VII.3.2 Information Network

#### MULTIPLE CENTRALITY MEASURES

-----

Input dataset: Inf (C:\Users\XXX\Documents\UCINET data\Data\Inf  
Output dataset: Inf-cent (C:\Users\XXX\Documents\UCINET data\Inf-cent  
Treat data as: Undirected  
For valued data: Use tie strengths when possible  
Type of scores to output: Normalized  
Undefined dist in closeness: replace with max dist + 1

Principal eigenvalue was: 4.51475887124367

#### Centrality Measures

		1	2	3	4
		Degree	Closeness	Eigenvector	Betweenness
		-----	-----	-----	-----
1	DG1	0.042	0.332	0.038	0.003
2	DG2	0.028	0.330	0.036	0.000
3	FG1	0.028	0.441	0.119	0.000
4	FG2	0.014	0.316	0.025	0.000
5	FG3	0.099	0.403	0.115	0.047
6	FG4	0.028	0.408	0.080	0.007
7	FG5	0.014	0.397	0.074	0.000
8	FG6	0.028	0.382	0.070	0.000
9	FG7	0.028	0.441	0.099	0.006
10	FG8	0.028	0.441	0.119	0.000
11	IA1	0.197	0.458	0.192	0.125
12	IA2	0.070	0.397	0.085	0.053
13	INGO1	0.028	0.338	0.044	0.000



*An analysis of the process of policy-making to prevent deforestation in Indonesia*

14	INGO10	0.014	0.335	0.027	0.000
15	INGO11	0.056	0.368	0.065	0.011
16	INGO2	0.028	0.406	0.083	0.004
17	INGO3	0.014	0.264	0.009	0.000
18	INGO4	0.028	0.418	0.085	0.013
19	INGO5	0.127	0.357	0.072	0.042
20	INGO6	0.042	0.341	0.030	0.008
21	INGO7	0.028	0.384	0.055	0.007
22	INGO8	0.014	0.316	0.025	0.000
23	INGO9	0.028	0.399	0.085	0.000
24	IO1	0.028	0.382	0.070	0.000
25	IO2	0.028	0.401	0.083	0.004
26	IO3	0.042	0.372	0.067	0.005
27	IO4	0.042	0.357	0.046	0.005
28	IO5	0.042	0.444	0.127	0.006
29	IO6	0.042	0.447	0.125	0.010
30	IO7	0.056	0.461	0.140	0.026
31	IO8	0.282	0.568	0.343	0.261
32	IO9	0.127	0.500	0.208	0.085
33	IP	0.028	0.290	0.020	0.000
34	MD1	0.028	0.403	0.090	0.000
35	MD2	0.028	0.418	0.084	0.007
36	MD3	0.028	0.384	0.055	0.007
37	MD4	0.014	0.397	0.074	0.000
38	MD5	0.028	0.418	0.084	0.007
39	MoA	0.056	0.376	0.069	0.013
40	MoEF1	0.563	0.651	0.565	0.622
41	MoEF2	0.028	0.318	0.039	0.000
42	MoEF3	0.042	0.372	0.069	0.000
43	MoEF4	0.028	0.330	0.032	0.000
44	MoF	0.014	0.397	0.074	0.000
45	MoT	0.014	0.397	0.074	0.000
46	NBO1	0.028	0.403	0.090	0.000

An analysis of the process of policy-making to prevent deforestation in Indonesia

47	NBO2	0.014	0.397	0.074	0.000
48	NBO3	0.028	0.401	0.083	0.004
49	NBO4	0.028	0.403	0.090	0.000
50	NBO5	0.028	0.399	0.085	0.000
51	NNGO1	0.028	0.366	0.062	0.000
52	NNGO10	0.028	0.418	0.084	0.007
53	NNGO2	0.028	0.410	0.097	0.000
54	NNGO3	0.028	0.418	0.084	0.007
55	NNGO4	0.014	0.364	0.045	0.000
56	NNGO5	0.028	0.408	0.095	0.000
57	NNGO6	0.028	0.410	0.097	0.000
58	NNGO7	0.014	0.290	0.014	0.000
59	NNGO8	0.028	0.300	0.015	0.002
60	NNGO9	0.014	0.397	0.074	0.000
61	NR1	0.127	0.449	0.174	0.058
62	NR2	0.028	0.415	0.101	0.000
63	NR3	0.056	0.449	0.127	0.014
64	PG1	0.085	0.461	0.157	0.049
65	PG2	0.028	0.418	0.089	0.006
66	PP	0.085	0.423	0.124	0.019
67	PSO1	0.056	0.458	0.130	0.034
68	PSO2	0.028	0.408	0.080	0.007
69	PSO3	0.014	0.316	0.017	0.000
70	PSO4	0.014	0.285	0.011	0.000
71	UNI1	0.070	0.406	0.110	0.036
72	UNI2	0.042	0.423	0.111	0.006

72 rows, 4 columns, 1 levels.

-----

Running time: 00:00:01 seconds.

Output generated: 00 0 00 00:00:00

UCINET 6.677 Copyright (c) 2002-19 Analytic Technologies

### VII.3.3 Trust Network

#### MULTIPLE CENTRALITY MEASURES

-----

Input dataset: Tru (C:\Users\XXX\Documents\UCINET data\Data\Tru  
Output dataset: Tru-cent (C:\Users\XXX\Documents\UCINET data\Tru-cent  
Treat data as: Undirected  
For valued data: Use tie strengths when possible  
Type of scores to output: Normalized  
Undefined dist in closeness: replace with max dist + 1

Principal eigenvalue was: 4.54267379516505

#### Centrality Measures

		1	2	3	4
		Degree	Closeness	Eigenvector	Betweenness
		-----	-----	-----	-----
1	DG1	0.042	0.306	0.021	0.003
2	DG2	0.028	0.305	0.020	0.000
3	FG1	0.028	0.413	0.111	0.000
4	FG2	0.028	0.374	0.085	0.000
5	FG3	0.085	0.374	0.073	0.055
6	FG4	0.028	0.329	0.033	0.001
7	FG5	0.028	0.403	0.102	0.000
8	FG6	0.042	0.418	0.115	0.014
9	FG7	0.028	0.380	0.084	0.000
10	FG8	0.070	0.418	0.116	0.038
11	IA1	0.183	0.514	0.287	0.141
12	IA2	0.113	0.433	0.149	0.091
13	INGO1	0.028	0.313	0.021	0.001

*An analysis of the process of policy-making to prevent deforestation in Indonesia*

14	INGO10	0.028	0.346	0.053	0.000
15	INGO11	0.070	0.401	0.089	0.049
16	INGO2	0.014	0.287	0.011	0.000
17	INGO3	0.014	0.276	0.011	0.000
18	INGO4	0.028	0.338	0.034	0.002
19	INGO5	0.169	0.380	0.083	0.106
20	INGO6	0.014	0.276	0.011	0.000
21	INGO7	0.028	0.378	0.058	0.004
22	INGO8	0.028	0.360	0.075	0.000
23	INGO9	0.014	0.376	0.064	0.000
24	IO1	0.070	0.441	0.164	0.023
25	IO2	0.028	0.380	0.085	0.000
26	IO3	0.028	0.401	0.101	0.000
27	IO4	0.085	0.390	0.095	0.059
28	IO5	0.042	0.433	0.149	0.000
29	IO6	0.028	0.360	0.050	0.008
30	IO7	0.014	0.355	0.047	0.000
31	IO8	0.296	0.546	0.366	0.279
32	IO9	0.211	0.514	0.297	0.149
33	IP	0.028	0.274	0.012	0.000
34	MD1	0.028	0.382	0.081	0.000
35	MD2	0.028	0.374	0.085	0.000
36	MD3	0.028	0.378	0.058	0.004
37	MD4	0.014	0.376	0.064	0.000
38	MD5	0.028	0.418	0.074	0.038
39	MoA	0.028	0.378	0.079	0.000
40	MoEF1	0.451	0.597	0.493	0.508
41	MoEF2	0.014	0.302	0.026	0.000
42	MoEF3	0.028	0.303	0.043	0.000
43	MoEF4	0.028	0.306	0.043	0.000
44	MoF	0.042	0.415	0.121	0.002
45	MoT	0.014	0.376	0.064	0.000
46	NBO1	0.042	0.382	0.074	0.028

An analysis of the process of policy-making to prevent deforestation in Indonesia

47	NBO2	0.014	0.277	0.010	0.000
48	NBO3	0.028	0.380	0.073	0.000
49	NBO4	0.028	0.382	0.081	0.000
50	NBO5	0.028	0.386	0.089	0.000
51	NNGO1	0.028	0.378	0.058	0.004
52	NNGO10	0.028	0.370	0.049	0.005
53	NNGO2	0.014	0.341	0.038	0.000
54	NNGO3	0.028	0.320	0.030	0.000
55	NNGO4	0.014	0.282	0.012	0.000
56	NNGO5	0.014	0.276	0.011	0.000
57	NNGO6	0.028	0.386	0.089	0.000
58	NNGO7	0.042	0.348	0.057	0.008
59	NNGO8	0.014	0.303	0.022	0.000
60	NNGO9	0.028	0.370	0.048	0.006
61	NR1	0.155	0.430	0.201	0.072
62	NR2	0.028	0.386	0.089	0.000
63	NR3	0.056	0.413	0.132	0.012
64	PG1	0.056	0.392	0.078	0.037
65	PG2	0.028	0.388	0.073	0.005
66	PP	0.085	0.399	0.133	0.014
67	PSO1	0.056	0.438	0.132	0.012
68	PSO2	0.028	0.286	0.020	0.001
69	PSO3	0.028	0.382	0.081	0.000
70	PSO4	0.028	0.333	0.034	0.001
71	UNI1	0.070	0.408	0.135	0.015
72	UNI2	0.014	0.376	0.064	0.000

72 rows, 4 columns, 1 levels.

-----  
Running time: 00:00:01 seconds.

Output generated: 00 0 00 00:00:00

UCINET 6.677 Copyright (c) 2002-19 Analytic Technologies