

Forest Landscape Audit: A Proposed New Mechanism for Auditing Forest Governance

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Techniques do not yet exist for auditing multi-sectoral forest governance, since the magnitude and scope of multi-sectoral auditing, along with the ever-changing interests of government, business, NGO, and local community on reaching agreed standards, have hindered the development of suitable auditing metrics. I propose forest landscape auditing (FLA) as a mechanism to monitor and assess the economic performance, efficiency, and effectiveness of forest governance.

I focus on formulating auditing mechanism for individual forest landscape, instead of all forests. Indicators and criteria for auditing are derived exclusively for each landscape which may or may not applied to other landscapes. I standardise the mechanism for auditing to enable consolidation and comparability between landscapes. Simulation and analytical tools will be used to provide evidence for assessing the economy, efficiency, and the effectiveness of a landscape governance.

This pilot effectiveness audit was conducted in Sendang landscape Southern Sumatera Indonesia. Sendang (Sembilang Lalan Dangku) is a landscape in which conservation endeavors in Sembilang – a shelter for thousands of migrating birds from Siberia every year- and Dangku -a sanctuary for the endangered Sumatran tigers- need to be reconciled with the development arrangements in Lalan -the construction of modern feeder port in Tanjung Api-api, the concession of coal mining neighboring to Dangku conservation area, and the expansion of palm oil companies. This audit aimed at identifying non-synergistic regulations throughout the multi sector landscape using Ostrom's principles as general criteria.

I found that regulations within Sendang's multi sector landscape are non-synergistic. The regulation settings regarding government, business, NGO and local community, in either local, central, or international level, within forestry, agriculture, and mining, are mostly overlapped, conflicting to each other, and unclear. This poor setting leads to equally depriving implementations. Government authorities and influence are not as prescribed in the regulations; companies bypass the regulations; and local communities are in constant conflict with either the government or companies. Improvements on the existing regulation setting is novel.

I propose three audit recommendations for more synergistic regulations. First, significant investment in additional resources such as human, capital, infrastructure, and technology to upgrade the coordination and performance of institutions implementing the existing regulations. Second option is restructuring current regulations to balance controls and authority and account for power differentials. Third scenario is to combine investment and restructuring regulation. Some investments are made to support more effective implementation but amendments to regulations are needed to support change. Determining which of the three options is most suitable for Sendang requires further audits of efficiency and economic performance. My next stage of this project will undertake those audits, which will then help guide changes that will be proposed to improve effectiveness.

Keywords: Governance; landscape; forest; performance; audit; indicator metrics; multi-sector.

INTRODUCTION

The sustainable use of forests needs good forest governance. Conserving the environmental and social values of forests for future benefits is often in conflict with gaining income from uses such as logging, agriculture, mining, tourism and infrastructure development (Sayer, Maginnis, and Laurie 2005, Lele 1991, Pearce, Barbier, and Markandya 2013, Stern, Common, and Barbier 1996). Forest governance is needed to strike a balance between development and conservation (Bhattarai and Hammig 2004). Every governance actor –government, business, community, and NGOs - needs to have commonly accepted rules and regulations to enable monitoring of the sustainable use of forests (Ostrom 2005, Nagendra and Ostrom 2012, World Resource Institute 2013).

Multi layered auditing has been a useful mechanism for monitoring the compliance of governance actors to rules and regulations. Companies or governments utilise **first party auditing** by internal auditors to conduct routine inspections and to suggest recommendations (Gray 2000, Bommel, Turnhout, and Cook 2016, Power 1997, Ramanan 2014, Andon, Free, and O'Dwyer 2015). For more independent recommendations, **second party auditing** by external auditors, such as public accountants and SAI (Supreme Audit Institution authorised to audit all public related matters (Pollitt and Summa 1997, Blume and Voigt 2007, Pollitt and Summa 1996)), examine compliance to social and environmental aspects of sustainability. Companies, government and NGOs utilise **third party auditing** to certify the sustainability of a company's products. In this audit, a business entity as the first party engages a certification body –government or NGO- as a second party to certify its products through a voluntary audit by third party auditors.(Elad 2001, Perego and Kolk 2012, Silva-Castañeda 2012, Bommel, Turnhout, and Cook 2016, Nsenkyiere and Simula 2000).

The implementation of multi layered auditing in developed countries has resulted in desirable impacts. Forests owned by companies or private individuals are encouraged to adopt sustainable practices -fulfilling the present needs without sacrificing those of future generations- (IUCN 1980) through Environmental Management Systems (EMS) which should be monitored regularly(Radu 2012, Newsom, Bahn, and Cashore 2006) . This internal audit provides inputs for external audits and certifications (Overdevest and Rickenbach 2006, Marx and Cuypers 2010). Forest certification bodies such as Forest Stewardship Council (FSC) and PEFC (Program for the Endorsement of Forest Certifications) claim to have promoted the establishment of self-governing mechanisms within forests in Canada, Norway, and the US. (Tikina 2010, O'Reilly 2006). Government auditors utilise this certification to monitor the compliance of companies or private individuals to public regulations (INTOSAI WGEA 2013).

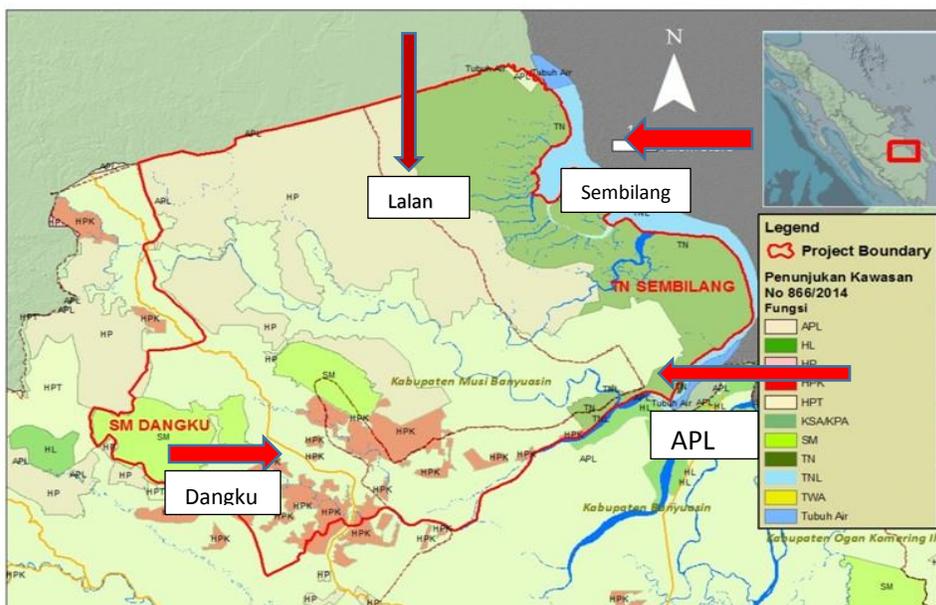
In developing countries such as Indonesia, however, auditing the compliance of forestry operations to applicable standards and regulations in isolation from other sectors is problematic. Local communities often view forests as belonging to them, according to either traditional customs (Davidson and Henley 2007, Colfer and Resosudarmo 2002) or Islamic principles (Sait and Lim 2006, Sardar 2014). These pre-existing ownership claims overlap with the later entitlements decreed by ministries or local governments (Sahide et al. 2016). Traditional claims and conflicting rules and regulations amongst public institutions has meant that forestry activities cannot be

monitored independently from other utilisations, such as agriculture (e.g. oil palm), mining (gold, coal, oil), infrastructure (roads, harbours, housing) and conservation and tourism (wildlife reserves, national parks) (Silva-Castañeda 2012, Hamilton-Hart 2015). Yet, it seems that auditing governance across the broad aspect of multiple sector interactions is quite challenging in the audit scope determination (INTOSAI WGEA 2013, Bommel, Turnhout, and Cook 2016, Turner 2006).

We propose Forest Landscape Auditing (FLA), a performance audit aimed at identifying overlapping initiatives, non-synergistic regulations, and financial flows across sectors and levels within a landscape (Sayer et al. 2013). Performance auditing should be an independent, objective and reliable examination of whether government undertakings, systems, operations, programmes, activities and organizations are operating in accordance with the principles of effectiveness, efficiency and economy (3E's), and whether there is room for improvement (ISSAI 2016c, b).

This paper focuses on identifying non-synergistic regulations within the Sembilang-Lalan-Dangku (Sendang) landscape in Sumatra, Indonesia (Fig.1). This is the effectiveness part of the 3Es, in which the audit aims at assessing the synergy of multi sectoral regulations in reconciling two conservation interests; the protection of migrating birds from Siberia in Sembilang (Boer and Pratiwi 2016) and a reserve for the endangered Sumatran tigers in Dangku (Wibisono and Pusparini 2010)- with developments in Lalan; the construction of Tanjung Api-api feeder port (Hamdani et al. 2014) and the expansion of palm oil plantations (Susila and Bourgeois 2006). Synergistic regulations are achieved if governance in Sendang enables companies, government, NGOs, and local communities to **define boundaries, justify appropriation, collective choice and arrangement, apply sanctions, solve disagreements, delimit rights, and monitor progress towards these ends** (Ostrom 1990, 2005, Nagendra and Ostrom 2012). This study will focus on elaborating alternative governance arrangements for improving and evaluating options for analysing the next objective of a forest landscape performance audit: identifying the efficiency and economic impacts of governance investments.

Sendang Landscape Map



Source: ZSL(<http://sriwijayapeat.org/2016/06/07/green-growth-di-gambut-di-dangku-sembilang-seperti-apa>)

Figure 1. A map of the Sendang landscape showing Sembilang conservation area situated in the northeast (emerald green) and Dangku reservation (lime green) in the southwest. In between are the production forests of the Production Forest Management Unit Lalan (blush pink and salmon pink areas) and non-forested land (APL) mostly used for oil palm plantations (faded green areas)

Forest regulation in Indonesia

Land tenure in Indonesia is characterised by overlapping authorities and regulations. Indonesia's 187,918.3 million hectares (MHa) of terrestrial lands are classified into **Forest Areas**, which occupy two-thirds, or 120,918.3 MHa and non-forest **Lands**, the remainder (Kementerian Lingkungan Hidup dan Kehutanan 2015). The Ministry of Environment and Forestry determined the boundaries of forest areas regardless of existing uses (Undang Undang Republik Indonesia 1999). The remaining area was then designated as Lands, administered under the National Land Agency (Undang Undang Republik Indonesia 1960). On the land it administers, this agency is authorised to issue three kinds of rights. Right to Exploit (HGU), for companies to exploit land for plantations, logging, or mining once the plantation permit or the concession right is obtained. Right to Ownership (Hak Milik) for individuals or organisations to own lands privately, and Rights to Use (Hak Pakai) for individuals or local cooperatives to exploit particular areas for private uses or small businesses, but without any right of ownership (Peraturan Presiden Republik Indonesia 1996).

The National Bureau of Spatial Planning and Development has the authority to conduct a national spatial planning exercise (Peraturan Presiden Republik Indonesia 2015) and, if necessary, change the classification of an area from **Forest Area** into **non-forested land** and vice versa (Peraturan Presiden Republik Indonesia 2010, Suryadi 2011). Under Local Governance Law No 32 Year 2004, each of 542 local governments (provincial, district, or municipal) was given authority to issue plantation permits within its territory, consistent with the national spatial planning by The National Bureau of Spatial Planning and Development (Undang Undang Republik Indonesia 2004). This law was recently amended with Law No 23 Year 2014, limiting the authority to only provincial governments (Undang Undang Republik Indonesia 2014). With several institutions authorised to award forest tenure entitlements over a particular area, claims to land are highly contentious. (Mulyani 2015, Sumarjono and Purnomo 2016).

The nested enterprises: Forest Management Unit

A similar pattern of complexity applies to the governance of Indonesia's forests. Forests are administered as Forest Management Units, which are authorised by the Ministry of Environmental and Forestry and can be one of three types (Peraturan Menteri Kehutanan 2009a). **Protection Forests** (Hutan Lindung), are areas protected from any timber exploitation but are available to be used for non-timber forest products or be replanted with native trees. **Conservation Forests** (Hutan Konservasi) are forests prohibited from any activities except for tourism and conservation such as wildlife reserves and national parks. In contrast, **Production forests** (Hutan Produksi), are areas designated for generating commercial timber products and services. These are further classified into **Fixed Production Forests** (Hutan Produksi Tetap) for maximum timber production including harvesting and replanting, **Limited Production Forests** (Hutan Produksi Terbatas) for careful selective cutting of timber in environmentally sensitive areas, and **Conversion Production Forests** (Hutan Produksi Konversi) where changes in forest lands to plantations, mining, housing

etc. are allowed (Peraturan Pemerintah Republik Indonesia 2007, Peraturan Menteri Kehutanan 2010a). Within the different types of forests, different tenures can exist. **Private forests** (Hutan Hak) are non-forested land areas owned by private entities, which are to be converted into protection or conservation forests at some stage, to meet environmental objectives. **Industrial forests (Hutan Tanaman Industri)** are areas which are licensed specifically to timber companies for plantation forestry (Peraturan Menteri Kehutanan 2010a). **Smallholder forests (Hutan Rakyat)** are areas for small local timber companies or cooperatives to exploit as commercial businesses (Peraturan Menteri Kehutanan 2012); **Community Forests (Hutan Kemasyarakatan)** are areas for local community groups in partnership with Forest Management Unit to utilise the timber and non-timber products (Peraturan Menteri Kehutanan 2007a); **Village Forests (Hutan Desa)** (Peraturan Menteri Kehutanan 2008a, 2014) are areas for local villagers to gain individual benefits from existing forests-; and **customary forests (Hutan Adat)** are areas for customary people to retain their cultural and religious ties to the forest whilst exploiting limited numbers of products (Surat Edaran Menteri Kehutanan 2013).

An Overview of the Sendang Landscape

In the Sendang landscape, forestry regulations stipulate that only areas within Lalan are available for business development. Ministry of Environmental and Forestry established the 31,752 hectare Wildlife Reserve in Dangku, Musi Banyuasin (MUBA) district in 2001, primarily for the conservation of Sumatran Tiger (*Panthera Tigris*) habitat (<http://bksdasumsel.org/pages-43-smdangku.html>). Ministry of Environmental and Forestry also established 202,896 hectare National Park in Sembilang in 2003 to protect the mangrove forests, which are habitat for birds migrating to and from Siberia. This area is listed amongst the RAMSAR sites of globally significant wetlands (<http://sembilangnationalpark.org/sejarah-taman-nasional-sembilang/>). Later in 2009 the Ministry of Environmental and Forestry established the 269,298 hectare Production Forest Management Unit Lalan also in MUBA district to manage the areas in between the wildlife reserve and the wetland conservation area (<https://ForestManagementUnitplalan.wordpress.com/>). This Forest Management Unit is now administered at the provincial level, following the new local governance Law no 23 year 2014. Its areas were established as a limited production forest and can accommodate only selective timber harvesting within its boundaries. It is not possible to convert any of these forest areas for agriculture or to use them for mining, as the landscape is not designated for conversion (Peraturan Menteri Kehutanan 2009b). Companies can however apply for permits and concessions in certain locations within adjacent Non Forest Land (Peraturan Presiden Republik Indonesia 1996).

Regulations

Among the crucial issues for land entitlement in Indonesia is the jurisdictions under which areas fall. Companies located only in MUBA district can apply to Bupati (the head of a district). If areas cross the district boundaries then they must apply to the Provincial governor (Peraturan Menteri Kehutanan 2008b) and if they include land in more than one province they must apply to the relevant central government ministry (Peraturan Menteri Kehutanan 2007b). For timber companies, the process for permit application is initiated from either the provincial or district Department of Forestry (Surat Keputusan Menteri Kehutanan 2002) which will then coordinate with the relevant forest management unit who will again coordinate with the Ministry of Environmental and Forestry (Peraturan Menteri Dalam Negeri 2010). Once the location is verified,

logging permits will be issued by the head of district, Governor or Ministry of Environmental and Forestry (Peraturan Menteri Kehutanan 2007b).

The bureaucratic process to obtain plantation permits within Sendang are lengthy. Initially, a company proposes a **Location Permit** to the head of district or governor (Peraturan Menteri Pertanian 2007). The local Department of Agriculture will verify that the proposed location is correctly mapped and is suitable for plantation development (BAPPEDA Sumsel 2005). If the location is in conversion production forest, this local department will request the company to obtain the Decree of Forest Release from the Ministry of Environmental Forestry prior to the permit issuance (Peraturan Menteri Kehutanan 2010b). Once the Location Permit is approved, the company must apply for an **Environmental Permit** to the Environmental Impact Control Agency (BAPEDAL), a unit under the Ministry of Environmental Forestry, which will then coordinate with similar agencies at the local district or province level (BAPEDALDA). These bodies will conduct a series of assessments, including Environmental Impact, environmental monitoring, and environmental management (Peraturan Menteri Lingkungan Hidup RI 2013, Peraturan Menteri Negara Lingkungan Hidup 2009). Once the ministry's Environmental Impact Control Agency is satisfied with the result, the Environmental Permit is issued (Peraturan Pemerintah Republik Indonesia 2012). Having both Location Permit and Environmental Permit in hand, the company is now eligible to apply for a **Plantation Permit** to the provincial governor or the district head for provincial and district scaled plantation companies. If the plantation company is a national or multinational corporation, the plantation permit must be issued by Ministry of Agriculture (Peraturan Menteri Pertanian 2007, 2013).

The process for acquiring a mining license is equally complex. The Departments of Mining in both MUBA district and provincial levels nominate areas for new mining concession to the Bupati (head of the district) or Governor who will, if it accords with the approved local spatial plan, propose the nominated areas to the Ministry of Mining (Peraturan Daerah Provinsi Sumatera Selatan 2011, Peraturan Menteri ESDM 2009a). Ministry of Mining receives proposals from all parts of Indonesia, and coordinates with the Ministry of Environmental and Forestry before conducting auctions for exploration and exploitation rights (Peraturan Pemerintah Republik Indonesia 2010b). Any company interested to participating in the auctions is required to produce **survey documents** at their own cost detailing the mineral potential within the proposed working areas. The procurement officials from the Ministry of Mining evaluate all the survey documents and the bid offered by the companies (Peraturan Menteri ESDM 2009a). Once the officials nominate a winner, the Minister will consult the President who will discuss with the House of Representatives regarding the profit sharing arrangements (Peraturan Pemerintah Republik Indonesia 2010a). Once the recommendation from the House of Representatives is received, the Minister of Mining will issue a **Concession Certificate** (Peraturan Menteri ESDM 2009b).

Once the permits or concessions have been obtained, the company can apply for the Right to Exploit (HGU) from the National Land Agency. The National Land Agency will issue the certificate, after coordination with its Provincial Land Office, Ministry of Environmental and Forestry and The National Bureau of Spatial Planning and Development in order to confirm that the concession area is not subject to any other legitimate land claims, such as forests or private ownership claims (Peraturan Menteri Agraria dan Tata Ruang 2015).

There has been endeavours to simplify the complexity through 'One door policy'. Application for permits and concession are submitted through the Department of Local Investments at Sumsel or MUBA or the Investment Coordinating Board of the Republic of Indonesia (BKPM) at ministerial level. This local and central institutions are designated to align investment planning with the

issuance of ‘hustle-free’ permits and concessions through improved coordination amongst all relevant local department and ministries (Peraturan Gubernur Sumatera Selatan 2009, Peraturan Presiden Republik Indonesia 2014).

Implementation of regulations

Despite the complex bureaucracy, business growth in Sendang has been rapid. Since 2009, Production Forest Management Unit Lalan has allocated almost 50% of its area to 10 timber companies(2012b) . Thirteen oil palm plantations have been granted with a total area of more than 67,000 hectares (Wijaya 2016b). The palm oil plantations are located inside and surrounding the limited production forest (Wijaya 2016d). Two mining sites are operating inside the Dangku area for coal extraction (Wijaya and Rahmat 2016). A consortium of foreign investors from China and Rusia has acquired permits to construct Tanjung Api-api harbour in Sembilang, situated only four kilometres from the protected wetland habitat (2015, 2017). The fast growth of development initiatives has raised concerns on whether the one door policy have opened the opportunity for certain governance actors bypassing some regulatory procedures (Wijaya 2016c, 2012a).

Conflicts and overlapping permits are apparent throughout the entire landscape. Local prawn farming and timber extraction have both encroached on Sembilang National Park (Irene 2014, Lubis and Suryadiputra 2004, Nurdin 2017). Government regulation no 51/2014 for the construction of a modern harbour at Tanjung Api-api is against Forestry Law no 41/1999 (Peraturan Pemerintah Republik Indonesia 2014, Undang Undang Republik Indonesia 1999). In Lalan, six permits for timber companies inside the limited production forest overlap with the rights of utilisation of village forests (Wijaya 2016d). Likewise, 19 permits for oil palm plantations overlap with timber concessions(Wijaya 2016c). In Dangku, five permits for oil palm plantations overlap with concessions for oil and gas mining(Wijaya 2016a). Moreover, the customary people of Tungkal Ulu claim customary trusteeship over the conservation forests and demand their rights for a customary forest area within the wildlife reserve(Faiz 2006), regardless the fact that Forestry Law 4/1999 prohibited any utilisation other than conservation inside a conservation forest. The local ‘One Door Policy’ is facing difficulties coordinating with central governments and vice versa, due to unlinked data access and internet failure.

The conservation significance of Sendang and the myriad land use conflicts occurring there, are a focus of attention of foreign aid agencies and NGOs(Wulandari 2016). Several agencies have initiated projects on sustainable development of the landscape in collaboration with South Sumatera province. The German Society for International Cooperations (GIZ) focuses on organisational empowerment, specifically within Forest Management Units (https://www.giz.de/en/html/about_giz.html). The Zoological Society of London (ZSL) and Deltares, an NGO from the Netherlands, with its KELOLA SENDANG project concentrates on the governance of peatland, watershed infrastructure, and forest fire mitigation (<https://www.zsl.org/>). Similarly, the Japanese International Cooperation Agency (JICA) (<https://www.jica.go.jp/english/>) and the Belantara Foundation (<http://belantara.or.id/>), funded by one of the biggest timber companies in Indonesia, have committed to support conservation and rehabilitation within degraded areas in Sembilang and Dangku respectively . The Foundation of Netherlands Volunteers (SNV) a non-profit organisation under the Dutch Ministry of Foreign Affairs (<http://www.snv.org/>), and The Sustainable Trade Initiatives (IDH), a public-private partnerships of companies, donors, and governments in European countries

(<https://www.idhsustainabletrade.com/about-idh/>), are promoting sustainable plantations of rubber and palm oil.

Mapping the governance networks

I used an actor network analysis to map and evaluate the interactions amongst the diversity of governance actors. The subjects are the government, companies, local communities, and NGOs, classified into three levels –local, national, and international (Tabel.2). Gephi 9.0 software was used to produce two diagrams based on two sets of data measuring interactions between the actors. The first diagram (Fig. 2) illustrates how the governance network should function based on relevant regulations, whilst the second (Fig. 3) describes the governance network based on actual observation. The objective of this analysis was to determine whether or not the governance arrangements are synergetic and effective.

The first analysis was conducted upon applicable regulations. The data set were derived from regulations within forestry, agriculture, and mining sectors. In each sector, more in-depth analysis on regulations were conducted regarding every different actor -government, company, local community, and NGO- in each different level -district, provincial, and central-. All of the relevant regulations are synthesised to map the interactions and networks amongst actors. Overlapping regulations were shown in repeated interactions between actors.

Second analysis were conducted from the implementation of the designated regulations. The data set were obtained from documentaries (government documents, publications, records obtained from public documents, published materials, and the official websites of each actor), statements (interviews, both direct interview and indirectly quoted from headline and news), and on site observations (Mautz and Sharaf 1961). The data were corroborated for its relevance and reliability, before were synthesised to map the interactions and networks amongst actors (ISSAI 2016a, Jeppesen 1998).

Gephi 9.0 were utilised to help illustrating the actor network analysis. The mapping of all connections was extrapolated using Force Atlas feature to group connected actors into separate corners. I used analysis of betweenness centrality and eigenfactor to produce a diagram reflecting influence and closeness of interactions amongst actors into different sizes and colours. Actors with most connections and central roles were illustrated with bigger size and distinct colours (Bastian, Heymann, and Jacomy 2009).

Actors	Local	National	International
Government	Governor or Bupati (Head of Districts)	President	
	Department of and Agriculture Province or districts	Ministry of Agriculture	JICA
	Local Environmental Impact Control Agency (BAPEDALDA)	Environmental Impact Control Agency (BAPEDAL)	GIZ
	Department of Mining	Ministry of Mining & Energy	IDH
	Department of Forestry District or Province	Ministry of Environmental & Forestry	
	Head of Land Office in Provincial Level	Land Office Agency	
	KPH Production Lalan	Sembilang NP & Dangku WR	
	BKSDA Sumsel	BKSDA	
Companies	Bayu kahuripan Indonesia	MAKIN group / Gudang Garam	
		Mega hijau Bersama	
		Mentari Subur Abadi	
	Panca Tirta Budi Agung	Lonsum/Salim Ivomas	Indofood Agri
		Pinangwitmas sejati	
	Surya Cipta Kahuripan	Lonsum (Salim Ivomas Pratama)	Indofood Agri
Community	Tungkal Ulu Customary People		
	Forest Villagers		
	Small holder forester	None	None
	Community forester		
NGO	Rambang Dangku Bersatu	AMAN	ZSL
		Belantara Foundation	Deltares
			SNV

The Criteria

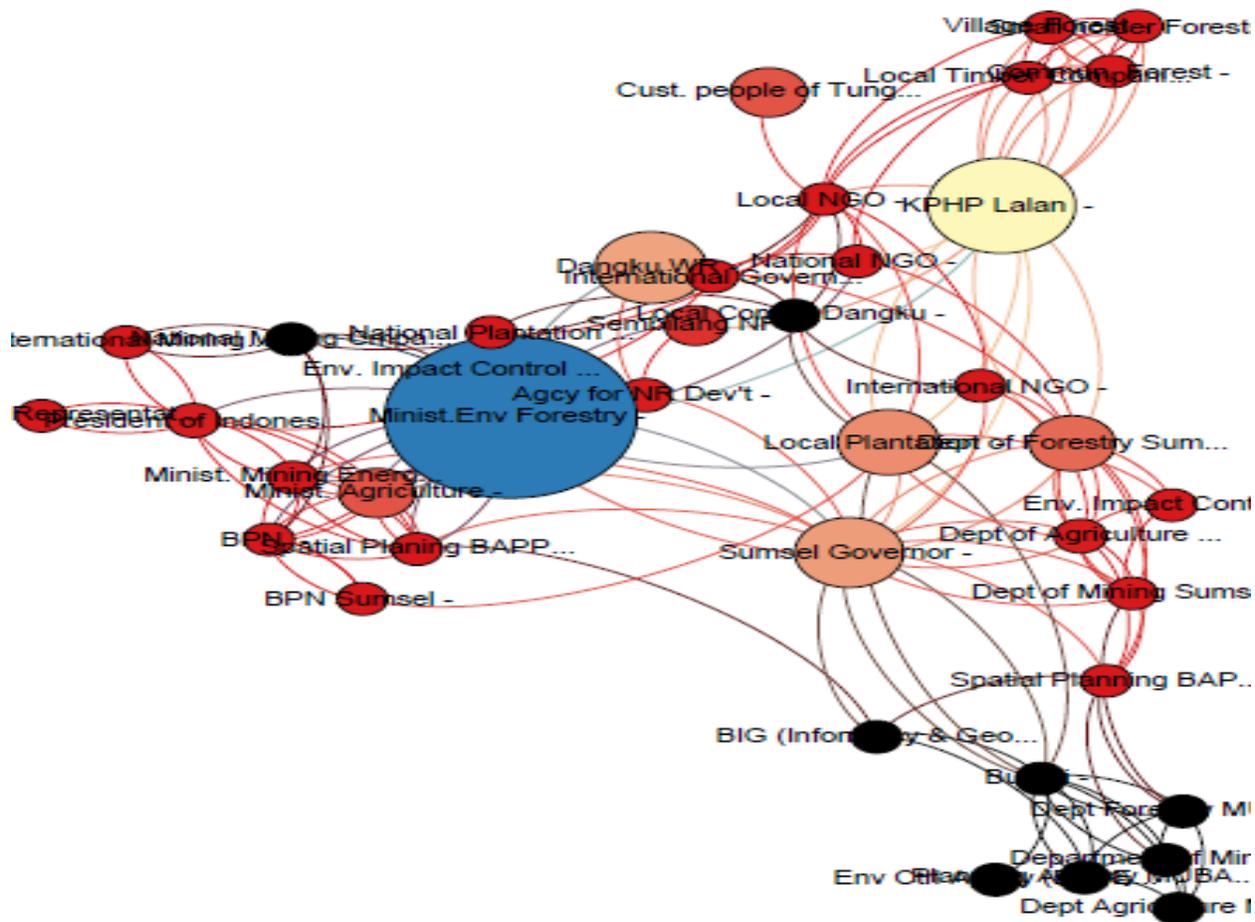
Effective governance of forest should be sustainable. Ostrom (1990) in her observations over vast numbers of long lasting utilisation over common pool resources, pointed out eight principles of a sustainable governance of forest in a large scaled system. **Defined boundaries** is a principle for clear arrangement of rights and obligations of each participating governance actor. Every actor has a common understanding of rules and regulations upon forest as a common resource. Regulations are to be unambiguous and non-conflicting to each other to avoid any misinterpretation and disagreement from unclear authority and limitations. **Justified appropriation** refers to fair distribution of forest benefits by the designated appropriators to acknowledge each actor's intention and interest. **Collective choice and arrangement** is also paramount. Any actor has a right to propose to revisions or amendments on operational arrangement, to which most fitted to their needs. **Applied sanctions** enforces penalties or sanctions for every violation regarding the mutually agreed rules and regulations. The enforcement of sanctions and penalties should be conducted gradually by neutral appropriators, such as the nested enterprise or the legal enforcement. A mechanism to **solve disagreements** is implemented to resolve conflicts among appropriators, participants, or official. In such arrangement, the authority of appropriators shall not be confronted to others by **delimiting rights** of any participating actor. **Monitoring** is a mechanism to assess the system, ensuring the regulations are implemented, appropriators are accountable, and the governance sustained. In a complex arrangement, appropriators are institutionalised through a **nested enterprise**, in which the function of appropriation, monitoring, legal enforcement, setting up boundaries, and solving disagreement are designated to multi layered enterprises.

Ostrom principles will be adopted as the criteria in this performance audit of effectiveness. Criteria are the benchmarks upon which the effectiveness of regulations is measured (ISSAI 2016b, c, Pollitt and Summa 1996, France 2001). Audit criteria for landscape auditing is not yet available since the existing audit mechanism is a compliance, emphasising on sectoral based auditing (France 2001, Miteva, Loucks, and Pattanayak 2015, Rametsteiner and Simula 2003, INTOSAI WGEA 2013). Thus, best practices' common principles on effective regulations are adapted into the criteria for this audit purpose (ISSAI 2016c).

Results 1 : Regulation data set

The two governance networks, the theoretical and the effective are quite different. Figure 2 shows the interactions among forest related institutions based on regulations. It is a complicated structure, as might be expected from all of the regulations and implementation processes that are in place. Dominance and influence is shown by the size of each circle. The Ministry of Environmental and Forestry should have the most influence over local communities and regional and national governance actors, followed by Production Forest Management Unit Lalan as the intermediary for interactions among local communities, NGOs, Ministry of Environmental and Forestry and local governments. Local departments and local communities have the least direct communications as such interactions are mostly through the governor or Bupati as intermediary. NGOs, on the other hand, are situated between local communities and local governments or Ministry of Environmental and Forestry. These organisations appear to have the least intense communications with other sector ministries.

Governance Actor Interaction in Sendang (Regulations)



Findings on the governance of regulations

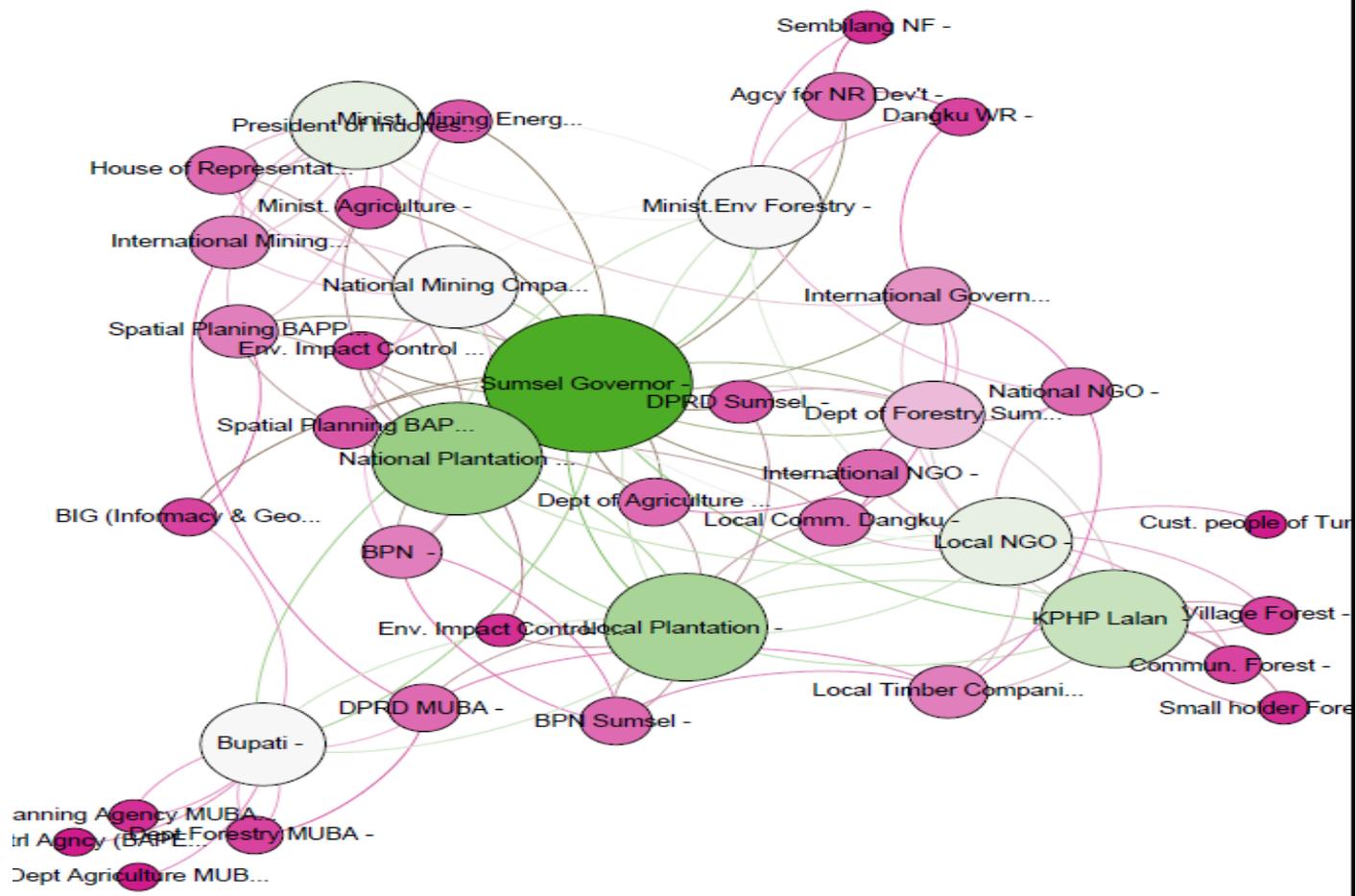
Many regulations covering the Sendang landscape are incoherent and in conflict with each other. Although jurisdictions seem to **limit the rights** of governance actors, the fact that each local authority and ministry can issue decrees on the use of forest or non-forested land, has failed to function in ways that provide proper **definitions of boundaries**. Ministry of Environmental and Forestry with its intermediary role lacked the authority to enforce its authority over Ministry of Agriculture, Ministry of Mining, National Land Agency, The National Bureau of Spatial Planning and Development, Sumsel governor, and MUBA head of district. The absence of clear boundaries has made any attempt at “**justifiable appropriation**” futile. All actors are regulated into three opposing poles and this renders coordination time consuming and inefficient. Companies need to act rapidly and to make money and therefore lack the incentive to voluntarily apply regulations. The inexistence of **applied sanctions** such as blacklists, fines, or prosecutions, has opened opportunities for companies with more access to government agencies to bypass the regulations. Without proper enforcement, **collective choice and arrangement** is problematic as none of the actors is entitled to the flexibility on designing the operational rules. Under the Department of

Forestry Sumsel, the Forest Management Unit lacks the authority to “**monitor**” and report to central government bodies and national companies. The Forest Management Unit role of objectively **solving disagreements** is compromised due to the inexistence of information from monitoring. Hence, the effectiveness of Production Forest Management Unit – Lalan as a **nested enterprise** is problematic. Governance according to the regulations has not been effective in Sendang.

Result 2: Implementation data set

Figure 3 shows the actor network based on the reality that I observed on the ground. It is quite different from the one that is supposed to pertain based on regulations. Complexity comes from the unstructured interactions of companies with almost every government actor. The Sumatera Selatan governor and the national plantation companies seemed to have a determining role in mediating all parties as well as having the greatest influence over other actors. This reality is in complete contrast to what the regulations stipulate. The Ministry of Environmental and Forestry has only half of the influence over other governance actors that regulations say it should have. National companies have strengthened their roles by penetrating through subsidiary local companies, eliminating lengthy regulations by utilising their parent company’s access to local and national government. The most crucial difference is the absence of interactions between government actors. Local communities seem to be the most passive actors, whilst NGOs concentrate on the forestry sector and lack interactions with ministries in other relevant sectors. Poor coordination is shown among local governments, local communities, and the Ministry of Environmental and Forestry. Companies with direct accesses to almost all government actors bypass the Ministry of Environmental and Forestry bottleneck by acting as their own intermediaries. Judging from the map of interactions in Figure 3, it appears that the cumbersome and costly bureaucracy is itself one of the causes of opportunism and improvisation. Whilst this improvisation may improve communications, it raises concerns over verification and transparency amongst government institutions. Bypassing procedures and a lack of oversight is the likely cause of the existing problem of overlapping land ownership claims within the landscape.

Governance Actor Interaction in Sendang (Reality)



Findings on the governance of regulation’s implementation

The implementation of regulation is also non-synergistic and not effective. It is quite problematic to **define boundaries**, as actors with more access to influence and resources seem to be able to bypass procedures and regulations. **Appropriation** is a formality, as access to common resources is negotiable in the absence of **applied sanctions** and clear boundaries. **Collective choice and arrangement** exists in only polarised groups with common interests who interact often, such as national/local plantation companies, the provincial department of forestry with Ministry of Environmental and Forestry, the Governor with the Bupati, etc. Actors with more access to appropriators are entitled to have more rights. This lack of trust and respect is probably the cause of the failure of Production Forest Management Unit-Lalan to conduct its **monitoring** and become an effective **nested enterprise**.

Conclusions and Recommendations

My Forest Landscape Audit has shown that the multi-sector governance arrangements in place in the Sendang landscape, both according to regulations and as they are actually implemented, are not effective. There are three generic options for improving effectiveness. First, investing in additional resources such as human, capital, infrastructure, and technology to upgrade the performance of existing institutions. Ministry of Environmental and Forestry, for example, could

invest in an online database jointly with The National Bureau of Spatial Planning and Development, Ministry of Agriculture, Ministry of Mining, and local governments to enable faster coordination and communication. However, as money can be a crucial handicap, a second option is to restructure current regulations to balance controls and authority and account for power differentials. For instance, Ministry of Environmental and Forestry is given power to not only consider but also decline any unsuitable permit application. Similar authority should also be given to the provincial governor because his staff know the reality of the governance arrangements than the centralised ministries. To strengthen governance, Forest Management Units should be equipped with authority to act on behalf of Ministry of Environmental and Forestry to independently monitor governance as a nested enterprise because the Forest Management Units will then have the needed authority to oversee governance by the governor as well as all the other actors. This option might not always be possible because of the complicated procedures of the legislative system. A third scenario might be to combine investment and restructuring regulation. Some investments are made to support more effective implementation but amendments to regulations are needed to support change. While this seems to be more realistic, the reconciliation process is time consuming and expensive. Determining which of the three options is most suitable for Sendang requires further audits of efficiency and economic performance. The next stage of this project will undertake those audits, which will then help guide changes that will be proposed to improve effectiveness.

The improvement of governance in Sendang may be more difficult than in other parts of Indonesia. The governance reality in the landscape is heavily depended on the agency of different actors. The power differentials amongst the people in different roles is not a function of the regulatory situation but rather a function of their position in social networks operating within the landscape. The personal characteristics of actors is not reflected in the formal regulatory system. The situation and power relationships in other landscapes may be completely different. A further component of this research will be to repeat the same analysis in two different landscapes in order to identify common elements and also to examine how local context impacts on governance.

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