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UNDERSTANDING INTERRELATIONSHIPS BETWEEN STATE REGULATIONS AND VOLUNTARY SUSTAINABILITY STANDARDS:

A CASE STUDY OF PUBLIC REGULATIONS AND CERTIFICATION FOR ECOSYSTEM SERVICES IN INDONESIA

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Understanding Interrelationships between State Regulations and Voluntary Sustainability Standards: A Case Study of Public Regulations and Certification for Ecosystem Services in Indonesia

This thesis is submitted to the Wageningen University and Research in partial fulfilment, of the requirements for the Award of Master of Forest and Nature Conservation

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Abstract

Forest Stewardship Council (FSC), to help to tackle degrading problems and threats to ecosystem services, initiated a pilot project to improve and promote sustainable forest management for a range of ecosystem services through the medium of FSC certification namely the Forest Certification for Ecosystem Services (ForCES) project. Through the ForCES project FSC has engaged in developing a set of ecosystem service tool: the FSC-PRO-30-006 Demonstrating the Impact of Forest Stewardship on Ecosystem Services. On the ground, be it in agenda setting and negotiation, implementation and monitoring, public regulations interact with Voluntary Sustainability Standard (VSS). Henceforth, the research aims to understand on how certification and state regulations of ecosystem services interplay in Indonesia especially in the agenda setting and negotiation stage. The interrelationships between ES certification vary among complementary, supporting and antagonistic. However, the nuance of the interrelationships tends to complementary rather than the other two types of interrelationships. Antagonism occurs in the public regulations where some regulations are not accommodating particularly land use issues which are required settled by governmental interventions. Reflecting on the theory and concepts operated, the combination of theory and concepts in the research shows the ability of the combination to analyse how ecosystem services are translated in regulations and policy in Indonesia. However, I suggest to further exercise power relations, trust and legitimacy issues between ES certification and ES public regulations. Power, trust and legitimacy play crucial roles as they are embedded on agency to govern rulers—cognitive (belief systems, guidance, goals, agenda, learning processes), regulative (regulations, standards, laws), and normative (role relationships, values and behavioural norms) and resources (ecosystem services).

Keywords: *ecosystem services, voluntary certification, public regulations, interrelationships, Indonesia*

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Acronyms

CBD	Convention on Biological Diversity
ES	Ecosystem services
FFI Indonesia	Flora Fauna International Indonesia
ForCES	Forest Certification for Ecosystem Services
FSC	Forest Stewardship Council
IGIs	International Generic Indicators
IMP	*Inisiasi Multi Pihak*
KMPH Sesaot	Kelompok Mitra Pelestarian Hutan Sesaot
MEA	Multilateral environment agreements
MLP	Multi-level Perspectives
NSMD	Non-State Market Driven
NTFPs	Non-timber forest products
PES	Payment on Environmental Services
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
RSPO	Roundtable on Sustainable Palm Oil
SVLK	*Sistem Verifikasi Legalitas Kayu*—Indonesian Timber Legality Verification System
TEEB	The Economics of Ecosystems and Biodiversity
UNFCC	United Nations Framework Convention on Climate Change

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Figures and tables

1. Introduction

1.1. Ecosystem services: the concept and origin

The concept of ecosystem services (ES) and research on ecosystem services has mushroomed for more than two decades. The concept has been ramped up through research and policies. Costanza et al. (1997), G. Daily (1997), G. C. Daily et al. (2000), and De Groot, Wilson, and Boumans (2002) are among the research papers that have generalized the concept. Policies, agreements, and protocols on global level meetings have been enacted from Ecosystem Approach (2000) to Natural Capital (2010).

The Millennium Ecosystem Assessment (MA), one of United Nations initiatives, has influenced the spreading of the concept of ES in academic and development circles. The MA has worked towards assessing the ramifications of ecosystem change for human welfare (Assessment, 2005). MA defined ES as "the benefits people obtain from ecosystems" and classified the multiple forms of these services, both direct and indirect, essentially arguing that conservation of ecosystems can simultaneously serve development goals (Assessment, 2005). In addition to the MA's definition, there are two other commonly cited and representative definitions of ES from Daily and Costanza. These two definitions will be used as the underlying definition of what ES are throughout this research:

> "Ecosystem services are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life. They maintain biodiversity and the production of ecosystem goods, such as seafood, forage timber, biomass fuels, natural fiber, and many pharmaceuticals, industrial products, and their precursors" (G. Daily, 1997, p. 3).

> "Ecosystem goods (such as food) and services (such as waste assimilation) represent the benefits human populations derive, directly or indirectly, from ecosystem functions" (Costanza et al., 1997, p. 253).

Mainstreaming of ES into scientific research started with the publication of Costanza et al. in Nature (1997). In 1997, two relevant publications founded and defined the concept of ES. Two perspectives can be distinguished: the natural science perspective defining ES as the relevant conditions and processes (G. Daily, 1997) and the social science perspective defining ES as the benefits for human populations (Costanza et al., 1997). The concepts are universal and complementary each other. These two concepts are employed in this study as the main concepts of ES being operationalized.

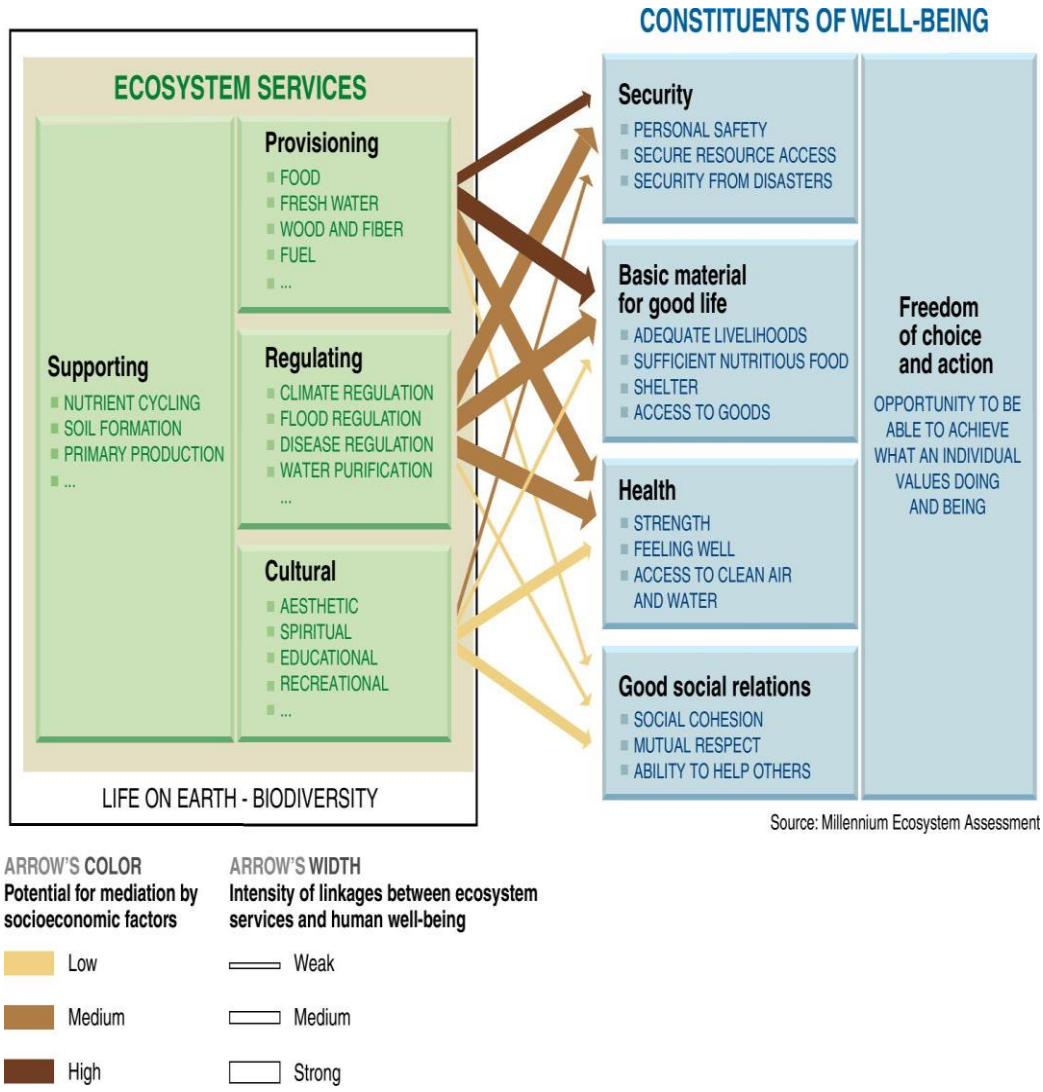


Figure 1.1. The categorization of ecosystem services

ES have been categorized in a number of different ways: by provisioning, regulating, supporting, and cultural (see Fig 1.1). Provisioning services are tangible products that come from forests, such as fresh water, wood, non-timber forest products (NTFPs)—food, fibre, forest fruits, and rubber sap. ES can be culturally beneficial—aesthetic, spiritual, educational, and recreational. ES have two important mantles designated to regulate and support the whole system. Climate, flood, and disease regulation, and nutrient cycling and soil formation exemplify regulating and supporting function of ecosystems, respectively.

According to scientific research in the context of the MA, human beings cannot take ecosystem services for granted anymore (Assessment, 2005). Changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes—e.g. exponential population growth, and the exacerbation of poverty for some groups of people (Assessment, 2005). It is estimated that the loss

of global land-based ecosystem services alone has a value equivalent to around € 50 billion per year.

The loss has important consequences for the long-term viability of businesses dependent on these services, in particular those with supply chains based on ecosystem services (TEEB, 2008). There is hope, however, as according to the latest Global Forest Assessment (GFA) released by FAO in 2015 the rate of forest loss has been halved between 1990-2000. Regardless of the positive sign, challenges remain on the extent world's forest continues dwindling, on gaining traction in implementing sustainable forest management practices required together with sound policies and on ensuring a steady supply of forest goods and services to the future generations.

Given the current environmental degradation in the world, one of the avenues is to capture this lost value in some way: to add value to the sustainable management of ecosystems and maintenance of the services they provide by devising procedures to gain positive return on investment. Economic valuation or commodification of ecosystem services and biodiversity (Balmford et al., 2008) has gained enormous rationales and avenues, with more measurement tools, business and policies becoming available. Environmental and forest valuation have led to the amplification of the recognisability of ecosystem services at policy level (Paavola & Hubacek, 2013).

1.2. Certification of Ecosystem Services

Forest Stewardship Council (FSC), to help to tackle degrading problems and threats to ecosystem services, initiated a pilot project to improve and promote sustainable forest management for a range of ecosystem services through the medium of FSC certification. FSC has been developing certification of ecosystem services since 2011 in the Forest Certification for Ecosystem Services (ForCES) project that ended in March 2017.

The FSC was the leading implementing agency, CIFOR provided scientific support and backstopping, and the WWF Indonesia, SNV Vietnam, FSC Chile, and ANSAB were the leading country partners. The project was largely funded by a grant from the Global Environment Facility (GEF) through the United Nations Environment Program (UNEP). The effort was aimed to address threats to ecosystem services by giving greater incentives to those practising responsible forest management. The project was piloted in four countries, Chile, Vietnam, Indonesia and Nepal. Ten pilot sites varied from protected areas, forest concessions, and conservation area to small-scale farms and community-managed forest areas. General outcomes outlined at the beginning of the project were the development of scientifically tested and auditable ES indicators for assessing compliance with certification criteria, development of a methodology to assess social and environmental benefits of FSC certification, and the design of new certification business models for rewarding the provision of ecosystem services. Among those planned outcomes, the priority was enabling a global FSC system for certifying ecosystem services to be in place as a tool to give ample

incentives to forestry stakeholders who are practising sustainable forest management.

Through the ForCES project FSC has engaged in developing new ecosystem service tools of which the FSC-PRO-30-006 *Demonstrating the Impact of Forest Stewardship on Ecosystem Services* is the consequential novel policy tool in addition to the Annex C of the International Generic Indicators, which outlines the additional compliance requirements for ecosystem services within the FSC certification. FSC ES tools are voluntary addition to the FSC Forest Management Certification in which ES have so far been mainly addressed in the FSC Principle 9: Maintenance of High Conservation Value Forests (HCVF) maintaining areas of environmental and social value. ES certification comes as a voluntary add-on to forest management certification.

The new tools can make FSC certification more applicable to ecosystem service markets by disclosing information about the impact of FSC-certified forest stewardship on the provision of ecosystem service. Preliminary research commissioned by FSC on ecosystem service market suggests opportunities, in improved stakeholder relations, potential increased revenue, and demonstrating ethical and social responsibility to costumers for FSC-certified ecosystem services (FSC, 2017b). The certification scheme covers biodiversity conservation, watershed protection, ecotourism, soil conservation, and carbon storage and sequestration (FSC, 2015b).

Table 1.1 Key characteristics of each ES site

	Chile	Indonesia	Nepal	Vietnam
Governance				
Specific on PES law exists	No	Draft	No	Yes
Other specific PES regulations or policies	No	Yes	No, but possibly not needed to implement PES in community-managed forests	Yes
REDD+ pilot country	No	Yes	Yes	Yes

The thesis focuses on Indonesia as a case study. Table 1.1 provides the summary of key characteristics of each site. The site election has been made based on the fact that Indonesia has drafted specific law on Payment on Environmental Services (PES) and has participated in the REDD+ project. Forest ownerships have been varied among country sites. Furthermore, Indonesia compared to the other country sites, has other specific PES regulations. The selection is based on the outlook of the four pilot countries related to their ES regulatory framework, which puts Indonesia as the highest country owning its forested land compared to the other countries—91% is owned and managed by the government and there exists specific law and regulations on ES. The government leases approximately 57% of the public forest management to business and private sector, while the rest remain maintained by the government in various types of forest (Savilaakso, Guariguata, & Jaung, 2013). The selection is presumed to be representative beyond the project sites as the FSC certification

operates at national level and the ES concept is relatively new all over the world at policymaking level.

1.3. Certification as a non-state market driven governance

The ecosystem service certification scheme has been developed based on the concept of Voluntary Sustainability Standard (VSS), a form of Non-State Market Driven (NSMD) governance, similarly to existing timber certification process and governance. Arguably the first full-fledged forest-related global NSMD system was the FSC certification program, which was created in 1993 through transnational environmental and social groups (Bernstein & Cashore, 2007). FSC recognizes responsible management through independently verified compliance with a set of underlying principles, criteria and indicators that delineate the ecological, social, economic and policy impacts resulting from forest management for specific objectives (Romero et al., 2013). For these reasons, this research will use NSMD governance as a conceptual framework of the emerging certification for ecosystem services.

Governance arrangements can stem from non-state actors, driven by international markets and consumers' agency, and non-state governances have emerged as an alternative to command-control mechanisms, i.e. laws and regulations (Lambin et al., 2014). Laws and regulations have been the main forms of governance by governments juxtaposed with customary law by locals and traditional authorities (Galanter, 1966). In the same fashion, (Cashore, Van Kooten, Vertinsky, Auld, & Affolderbach, 2005) stated that NSMD governance excludes governments from formal participation, meaning that non-state actors govern all processes. The roles of state and non-state actors in the same sectors will possibly create interrelationships between policy instruments such as public regulations and voluntary standards, tools, and guidelines.

The interactions between public regulations and NSMD governance can cause difficulties to attribute impacts under specific policy instruments. These interrelationships can be seen from not only horizontally—at the same level, but also may occur vertically i.e. from global to national and vice versa. This is crucial when it comes to defining and analysing the type of interrelationships that may occur. Interrelations between NSMD and state regulations are not empirically proven (Gulbrandsen, 2014) (Bernstein & Cashore, 2004). Moreover, their interrelationships do not effectively ply together and result inevitably intricate constellations on the ground (Ingram, Ros-Tonen, & Dietz, 2015). A new form of governance related to ecosystem services is expanding and requiring to be studied, given this grey area on how well certification for ecosystem services as a tool or norms fits with and is situated in relation to national bounded and strict state regulation. Therefore, having the tool implemented on the ground requires assembling and garnering studies, lessons, stories from a large number of case studies representing various combinations of state regulations and VSS. A better understanding of how best to combine, sequence, and target different policy mixes is strongly needed in every step taken by FSC and the stakeholders in order to have continual improvement in place. In the same fashion, this should be done to minimize the effect of path dependency

and optimize interrelationships between public regulations and VSS for the particular type of land use. Thus, the study contributes to fill and enrich the knowledge gap about how ES certification interacts with state regulations. The interrelationships between those different tools contribute to the efficacy of the new ES tool.

1.4. REDD+ and PES projects in Indonesia

The REDD+ is a framework through which developing countries are rewarded financially for any emissions reductions achieved associated with a decrease in the conversion of forests to alternate land uses. REDD+ finance can come from public and private, bilateral and multilateral, and alternative sources. PES occurs when the beneficiaries or users of an ecosystem service make payments to the providers of that service. In practice, this may take the form of a series of payments in return for receiving a flow of benefits or ecosystem services. The basic idea is that whoever provides a service should be paid for doing so (Smith et al., 2013). The payments are made based on the actual services bestowed such as amount of carbon sequestrated. On the other hand, input-based payments are payments based on management's practices being applied to restore or protect ecosystem for instance forest restoration program (Smith et al., 2013). These two initiatives are positioned as external factors in the study as the initiatives can be other possibilities for the ES certification tow work jointly with.

2. Research objectives and questions

2.1. General research objective

The research aims to understand ecosystem services certification and the interrelationships between ecosystem services certification as a voluntary sustainability standard and state regulations of ecosystem services in Indonesia.

2.2. Specific research objectives

The research specifically addresses:

a. Analysing how ecosystem services are translated in regulations and policy in Indonesia;
b. Analysing how ecosystem services concept is defined and addressed in the FSC Ecosystem Services (ES) Certification;
c. To discover and analyse interrelationships between FSC Certification of Ecosystem Services and Indonesian state regulations in the context of ecosystem services;
d. To explore the possible opportunities and synergies for the Ecosystem Services (ES) certification in terms of the existing interrelationships in Indonesia.

2.3. General research question

"What are interrelationships between Ecosystem Services (ES) Certification and state regulations in Indonesia?"

2.4. Specific research question

Due to the broad research question, it is breakdown into the following specific research questions:

1. How is the policy design[1] of ecosystem services translated in state regulations in Indonesia?
2. How are ecosystem services defined into in the FSC Ecosystem Services Certification standards and procedures?
3. What interrelationships— complementary, substitution, and antagonism take place between state regulation and VSS in terms of the emerging ecosystem service certification in Indonesia?
4. What are the possible opportunities and synergies for the ecosystem service certification in accordance with the existing interrelationships in Indonesia?

[1] Policy design refers to avenues and means—laws and regulations, in which policy goals are embedded *en-route* to alter complex social dimensions, which efforts possibly are less or more well-ordered and motives desired are multifarious and wide-raging, endeavoured to be attainable (Linder & Peters, 1988)

3. Theoretical and conceptual frameworks

This section explains the concepts, characteristics, and instruments, which are employed in the research to help construct a conceptual framework to analyse the case, thereby giving direction to overall study. The separation of the concepts of policy instruments used is: where, when, and to what extent are market driven tools adopted will determine the extent that governance exists.

3.1. Transition Theory

Transition theory is proposed as the overarching theory that will guide and help analyse the case. Herewith the explanation of the theory and the description why/how the theory is the best to depict the case.

'Transition' in terms of transition theory means a regime shift from one socio-technical regime to another one. The theory departs radical changes in large socio-technical systems e.g. transition from oil and coal-based heating to gas heating or transition from mail coaches to trains. The term 'radical' means to the speed of changes, not the size of changes. Radical changes are possibly sudden but may also be incremental, piecemeal and slow. in policy level, it is mainly the case that policy innovations will be slow and incremental. Transitions can be long term processes that last for about 40-50 years. On the other hand, fast transitions, so called breakthrough can happen relatively fast in 10 years. Meanwhile, new social-technical system innovations emerge in 20-30 years (Grin, Rotmans, & Schot, 2010). In the study, innovations specifically address to policy innovations. The adoption of the socio-technical transitions in the policy context is pertinent supported by earlier study by Schot, Hoogma, and Elzen (1994) that the development of niches are influential especially where market demands are not well-established yet (Savilaakso & Guariguata, 2017).

Changes in socio technical systems are called socio technical transitions due to alterations in the configuration of transport, energy, and agriculture system, which require changes in technology, policy, markets, consumer practices, infrastructure, cultural meaning and science (Grin et al., 2010). However, transition theory does not solely contribute to the social-technical change and innovation. The theory scrutinizes and points out to the organisational hierarchies comprised by agency, organisations, society and world system.

To understand better complex socio technical transitions, scholars (Rip and Kemp, 1998; Kemp et al., 1998; Schot, 1998; and Geels, 2002a; 2004; 2005a) had studied how to connect STS and evolutionary economics (Grin et al., 2010). Evolutionary economics emphasises on interdependencies, competition, growth, resource constraints and structural changes. The merging between these two is called Multi-Level Perspective (MLP) on transitions.

Socio-technical perspectives embarks from science and technological studies (STS) that the development of technology is 'heterogeneous engineering". The variety of engineering processes implies that these processes do not merely involve materials

and creational innovations. But, there are greater factors and influences to get the innovations operationalized. Such factors are resource mobilization, social networks (e.g. funds, potential users, firms), market constructions, attractive visions of the innovations, and regulatory frameworks (Grin et al., 2010). These kind of innovations mentioned in advance also occur in environmental policy fields. There are innovations such as sustainability tools i.e. third-party certification, sustainable forest management toolbox, which are available to achieve forest sustainability. Therefore, the study adopts the way of thinking.

MLP puts interests in the alignment of paths within levels. Levels, in MLP, are defined as interactions between processes. These three levels are technological niche, socio-technical regime, and socio technical landscape. Niches are where new innovations, including policy instruments, are developed and radical novelties emerge. In the context of ES certification, niches are quite different. Niches are incubations for creating and testing new sustainability tools (Savilaakso & Guariguata, 2017).

For regimes, these communities are large and stable, while for niches they are small and unstable. Both niche and regime communities share certain rules that coordinate action. These rules are stable and well-articulated; for niche-innovations, they are unstable and emergent (Grin et al., 2010). The term socio-technical regime refers to the coordination between technology and social groups. Social groups which interactions generated by e.g. scientists, policy makers, users through mutual dependencies. On the other hand, technology term refers to a bunch of engineers. Regimes also contain three types of rulers: cognitive (belief systems, guidance, goals, agenda, learning processes), regulative (regulations, standards, laws), and normative (role relationships, values and behavioural norms) (Grin et al., 2010).

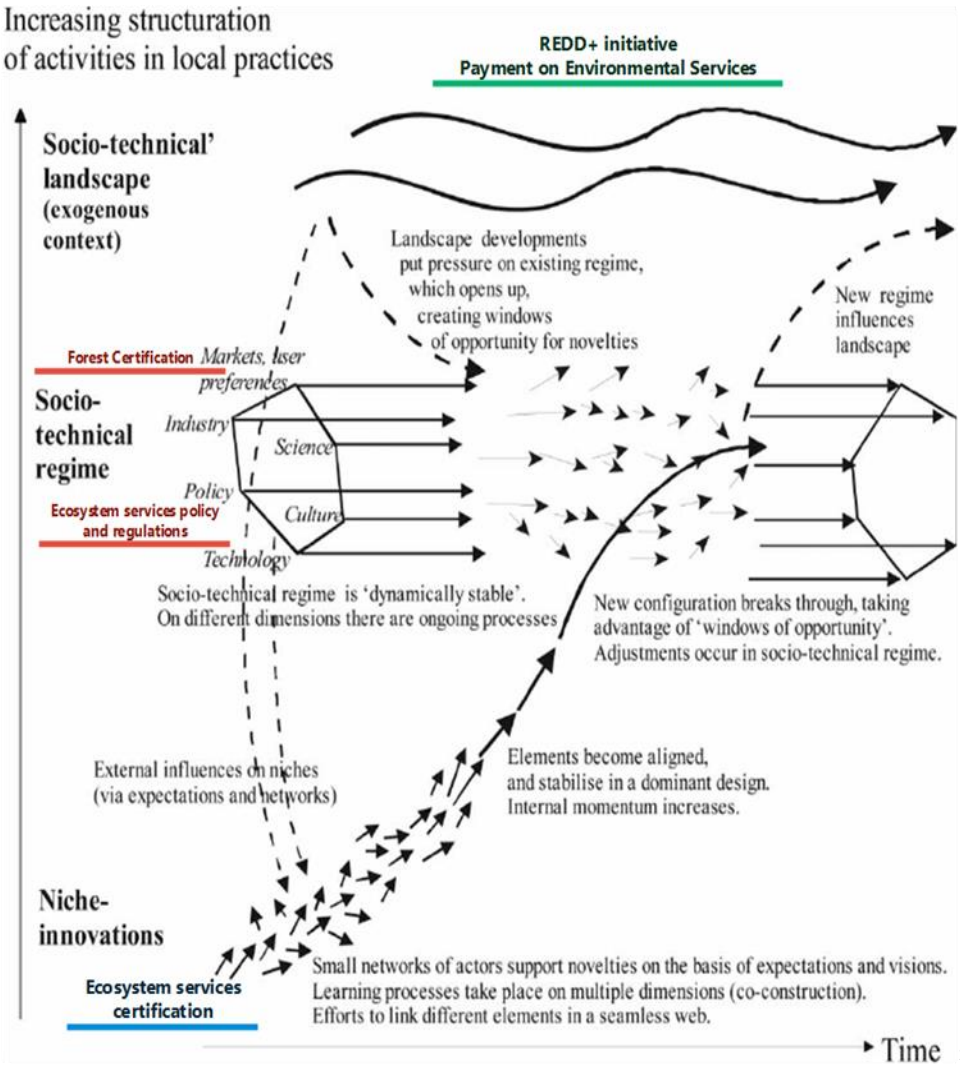
Meanwhile, landscape level is not determined but provides external deep-structural forces to lower level. These external forces do not mechanically impact niches and regimes, but need to be perceived and translated by actors to exert influence. Then, actors try to make sense of rules: cognitive (e.g. belief systems, guiding principles, goals, innovation agendas), regulative (e.g. regulations and laws), and normative (e.g. role relationships as well as values and behavioural norms).

Transition theory had faced a criticism on the lack of agency (Geels, 2011). Actors in their ability of acquiring knowledge and understanding hence cognitions and activities make the linkages between processes at different levels; the dynamics in MLP are not mechanical, but socially constructed. In the regime and niches level, there is a multidimensional model of agency:

- Actors are embedded in regulatory structures and social networks and reproduce them through their actions
- Actors are not passive rule-followers but active rule users and makers

Niche-innovations build up internal momentum, through learning processes, price/performance improvements, and support from powerful groups. Changes at the landscape level create pressure on the regime. Destabilisation of the regime creates windows of opportunity for niche-innovations. The alignment of these processes

enables the breakthrough of novelties in mainstream markets where they compete with the existing regime (Geels, 2011). Fig. 3.1 has become a standardised picture of this dynamic.



[2]

Figure 3.1 Multi Level Perspectives (MLP) in ES transitions (adapted from (Geels, 2011))

Small and diverging arrows in the niche level refer to uncertainties and flux happened. The existing dynamics in the regime and landscape level have greater influences in the niche level. The influences are indicated by downward dotted arrows. At every level, arrows are leading to scattered directions, indicating transitions are not linear causality and each level is open. There is no such isolated system.

The theory has five different types of pathways which result in transition—transformation pathway, de-alignment and re-alignment pathway, technological substitution pathway, mixing pathway and reconfiguration pathway. The last

[2] Downward dotted arrows indicate exogenous factors can directly influence regime and niches, also open regime for new innovations; small and diverging arrows show scattered directions and transitions are non-linear.

pathway mentioned proposes symbiotic innovations embedded in the regime to solve local problems. If this is linked to the ES certification, reconfiguration pathway is best suited to the scheme considering ES certification is an add-on to the FSC IGIs. Reconfiguration pathway (Fig. 3.2) forecasts niche innovations pathway from being an add on, linkage, component/replacement to existing innovation in the regime level until resulting new architecture of elements and linkages. Along the process, external factors are crucial which can be varied. Reconfiguration pathway characterizes as a stepwise process and cascade dynamics. As such happened in the transition of factory production where one additional component became a driver for a major reconfiguration (Grin et al., 2010).

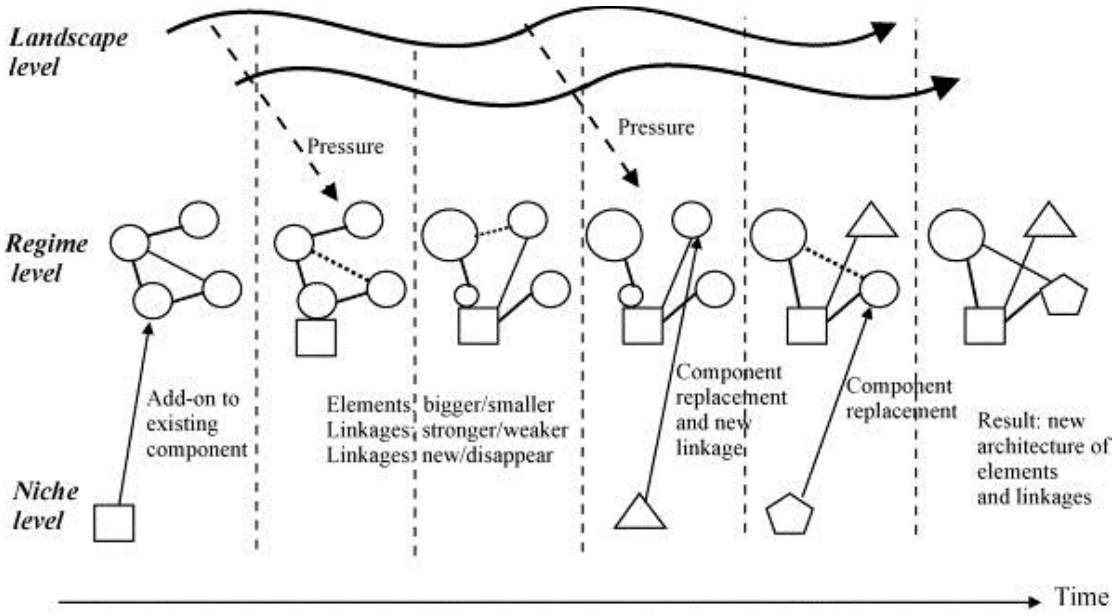


Figure 3.2. SNM Reconfiguration pathway (Grin et al., 2010)

Re-structuration has always involved transforming existing resources and relations of power to defeat inertia and stagnation (Grin et al., 2010). Different types of power are related to different types of competencies and ability to draw on the regime between actors (Grin et al., 2010). Furthermore, building trust in order to foster change is consequential too, as is legitimacy. Power, trust, and legitimacy are closely linked to agency (actors) who run and drive rulers and resources (Grin et al., 2010).

In sum, although the theory was developed based on technological innovations, the theory is well suited for describing and the current situation of certification for ecosystem services and the basic assumptions behind it. The adoption is through using the same concept in the governance study. The niche innovation in the study is not a technological innovation but a sustainability tool namely ES certification. Consequently, regime and landscape are also policy tools, be it command and control instruments or projects driven by multilevel events.

The theory had been employed in some scientific works that scrutinised policy context to help analyse the current condition at regime, landscape, and niche level such as Savilaakso and Guariguata (2017) and Mwangi and Wardell (2012). FSC

Ecosystem Services (ES) Certification, as a novel certification tool, at the moment, is in the niche level (RQ2), which attempts to be in the regime level, which at the moment is the current ES law and regulations (RQ1), through forces from exogenous factors (Fig 2)—i.e. climate change, biodiversity deterioration, and environmental degradation and landscape level developments, such as collaborative governance, honed ES valuation tools which lead to more reliable assessment results, and global policy initiatives in tackling environmental degradation and deforestation (i.e. REDD+ and PES).

The theory corresponds governance as a matter of planning approach between novel practices and instances of structural changes. This concept emerges from how creative agency contribute to bring a reorientation of co-evolution in mutually reinforcing novel practices (niche) structural changes (regime) and towards sustainable development (Grin et al., 2010). In this study, two reinforcements of novel practices and structural changes are construed in to Non-State Market Driven (NSMD) governance and public governance respectively.

3.2. Public Governance

Governmental policy instruments i.e. laws and regulations are command and control instruments and a top-down approach, which have mushroomed during the last three decades in addressing, mitigating, and adapting environmental problems (Andreen, 1992). Government literally commands industries to meet specific environmental standards, either directly through legislation or indirectly through delegated authority, and controls their behaviour through the threat of negative sanctions.

Legally, there is little or no room for firms to avoid regulatory obligations. The principal rationale underlying mandatory regulation is the theory of deterrence, under which compliance is treated as a function of the probability of an offender being punished and the severity of the penalty (Tietenburg, 1992) by enacting public instruments, regulations, laws, and regulations to combat deforestation directly i.e. forest policy and indirectly i.e. trade policies.

3.3. Non-state Market Driven (NSMD) Governance

There are an immense amount of concepts, ideas, and notions vis-á-vis the greater amount of involvement from non-state actors in steering the evolvement of norms and rules with their different characteristics, scopes, depth, and prospects for transforming the global marketplace deliberately. These concepts, ideas, and notions have emerged in purpose of shedding light to government-to-governance in the field of natural resources such as agriculture and forestry. The proliferations of the concepts are well captured by scholars: public private governance (Börzel & Risse, 2005), new public management (Salaman & Storey, 2002), and non-state market driven (Cashore, 2002).

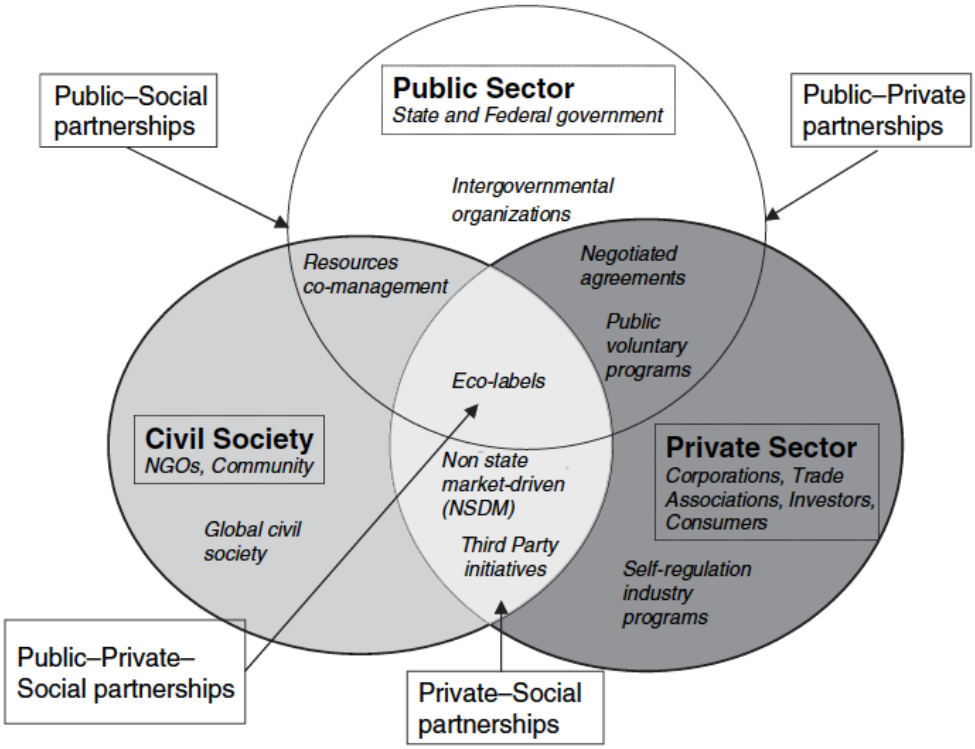


Figure 3.3 Environmental governance systems (Delmas & Young, 2009)

In the amidst of smorgasbord concepts, Delmas and Young (2009) attempted to map environmental governance systems (Fig. 3.3) based on actors involvement in formation and implementation in an attempt to convey clarity. VSS systems are an innovative market-based approach to promote sustainable production and business practices. VSS developed through NSMD governance is devoid from government in creating and running the standards and principles. Some of the best-known sustainability standards—e.g. Fairtrade International, the Forest Stewardship Council (FSC), and the Marine Stewardship Council (MSC)—are widely known labels worldwide (Schmitz-Hoffmann, Schmidt, Hansmann, & Palekhov, 2014).

The governance of ES certification is similar to how FSC has been governing. ES certification is embedded optionally in the FSC. Therefore, NSMD governance has been chosen as one of concepts of the study. NSMD governance is one of avenues used in the creation of VSS as a promising tool to deter and solve environmental, social, and economic problems among other governance instruments—roundtables, multi-stakeholder process, public-private partnership, and hybrid governance, to name a few (van den Berg, Ingram, Judge, & Arets, 2014). NSMD Governance forces its authority located in market transactions through third party evaluation and eschews roles of government compared to public-private governance and traditional governance (Fig. 3.4) (Cashore, 2002).

NSMD governance instruments are defined here as deliberative and adaptive governance institutions designed to embed social and environmental norms in the global marketplace that derive authority directly from interested audiences, including

those they seek to regulate, not from sovereign states. Operationally, they use global supply chains to recognize, track, and label products and services from environmentally and socially responsible businesses.

Features	NSMD Governance	Shared Private/Public Governance	Traditional Government
Location of authority	Market transactions	Government gives ultimate authority (explicit or implicit)	Government
Source of authority	Evaluations by external audiences, including those it seeks to regulate	Government's monopoly on legitimate use of force, social contract	Government's monopoly on legitimate use of force, social contract
Role of government	Acts as one interest group, land-owner (indirect potential facilitator or debilitator)	Shares policy-making authority	Has policy-making authority

Figure 3.4 Comparisons of NSMD authority (Cashore et al., 2005)

NSMD governance has five features to identify and render from other type of governances—role of state, role of the market, social domain, and enforcement (Fig. 3.5). FSC exemplifies NSMD governance which has three functions in global governance 1) facilitating a solution to complex multi-interest problems, 2) brokering knowledge and norms among a wide range of stakeholders, and 3) constituting a learning network in environmental governance (Pattberg, 2005).

Role of the market	Products being regulated are demanded by purchasers further down the supply chain
Role of the state	State does not use its sovereign authority to directly require adherence to rules
Role of stakeholders and broader civil society	Authority is granted through an internal evaluative process
Enforcement	Compliance must be verified

Figure 3.5 Key figures of NSMD governance (Cashore et al., 2005)

Certification agencies must be independent from the standard-setting body and the organizations seeking certification, and they must have well defined procedures, guidelines and training to ensure that they can provide independent verification of whether a project's activities are in accordance with the standard (Upton & Bass,

1995). In order to ensure credibility, the certification process must be overseen by an accreditation body independent from certification companies, ensuring consistency and compliance with the standard and certification procedures (Higman, 2013). In essence, accreditation bodies 'certify the certifiers'. These NSMD features and concept of compliance are relevant concepts in which way that ES certification is developed, based upon FSC forest management certification (FSC, 2015a). To sum up, both concepts are used to get an in-depth analysis, explaining how the ES certification works.

3.4. Defining Interrelationships

Interrelationships between policy instruments and sustainability tools are imperatives to ameliorate the effectiveness land use. Interrelationships occur in different stages of policy making: agenda setting and negotiation; implementation; and monitoring and enforcement (Lambin et al., 2014) respectively. However, this research touches on the first stage of governance process–agenda setting and negotiation, as provided in Fig. 3.6 as the FSC tools for certifying ecosystem services have not yet been officially approved except for the Annex C and are currently in the public consultation stage.

	Complementary	Substitution	Antagonism
Agenda setting and negotiation	- Private or hybrid instruments reinforcing public regulations - Private or hybrid instruments filling a policy gap - Governments designing environmental legislation in response to actions by civil society - Governments threatening to strengthen public regulations for private actors to adopt voluntary standards - Governments promoting information sharing and greater transparency - Governments participating to multistakeholder roundtables - Government collaborating with NGOs and local communities for co-management of natural resources - Government encouraging private standards to converge	- Governments endorsing certification in public policies - Governments adopting private standards into law	- Different instruments prescribing conflicting management practices with different incentives - Governments refusing to endorse the more effective labels, contributing to consumer confusion - Corporations lobbying against standards and dictating lax environmental policies - Existence of one set of norms undermining efforts to develop stronger regulations

Figure 3.6 Typology of possible interrelationships between public, private, and hybrid instruments in land use management during agenda setting and negotiation (Lambin et al., 2014)

According to Lambin et al. (2014), there are three main interactions—complementarity, substitution, and antagonism—that occur at the different stages of governance process: agenda setting and negotiation; implementation; and monitoring and enforcement (Linder & Peters, 1988) (Gulbrandsen, 2014). Complementarity indicates mutual interactions between two instruments—public regulations and sustainability standards are positively reinforcing—e.g. both governance instruments are trying to fill the gaps of the other. Substitution is shown when non state-driven regulations are accustomed to state laws and regulations—e.g. the adoption of liquid biofuel standards by the European Union Renewable Energy Directive (EU RED) (Schmitz-Hoffmann et al., 2014). Complementary and substitution may intertwine and overlap to each other (Lambin et al., 2014). On the contrary, antagonistic is defined when two governance instruments conflict each other at any different stage of the regulatory process e.g. Indonesian Palm Oil Pledge (IPOP) disbandment (Pirard, Rivoalen, Lawry, Pacheco, & Zrust, 2017). The Indonesian Ministry of Agriculture accused IPOP violated anti-trust regulations by forming a cartel of excluding other players in the market. The purpose of defining interrelationship aims to give clarity on what indicators are used in the research to examine interrelationships between ES certification and ES public regulations.

4. Research methods

The study elicited through single-descriptive study, which employ one case trying to explain a general phenomenon: the development of FSC certification of ecosystem services in the ForCES project in ten sites in four countries. Indonesia was selected as a case as it as one of the ForCES project countries that can help answer the research questions, fill knowledge gaps, and illustrate current situation.

The research mainly focused on the FSC Procedure for Demonstrating the Impact of Forest Stewardship on Ecosystem Service (the ES Procedure) and on the Annex C of the IGIs, as these are the key documents. At the time of the research, the 1st public consultation of the ES procedure had been completed and the 2nd draft was under 2nd public consultation during the document review. Hence, the research was confined to the 2nd draft of the ES procedure and its documents.

4.1. Data collection method

There were two stages of data collection: the primary and secondary data collection stages. To collect primary data, semi structured interviews were conducted. Meanwhile, literature reviews and secondary data collection were employed to enrich the data and were used in triangulation of the data. The research employed purposive sampling design accompanied by snowballing to identify particular people to answer the research questions. Purposive sampling of government representatives, researchers, project implementers, advisors, who were involved directly or indirectly in the project, was an informant selection tool to deliberately choose informants. Furthermore, the informant selection was snowballed, assigned by key informant. Snowballing process came to an end when informants were not able provide reference people to get new or complete information.

Purposive sampling is a data collection technique that simply puts what knowledge to be known, and sets out some reliable measures to ensure the competency of the potential informants (Tongco, 2007). Purposive sampling suits to a research that needs specific type of knowledge and skill, or conducts comparative studies, case studies, and when the sampling set is too small (Tongco, 2007). On the one hand, snowball sampling will be operated to assess hidden population (Penrod, Preston, Cain, & Starks, 2003). The “hidden” populations mean either research has limited sources, such as small population or the research issues are sensitive (Browne, 2005). The research was carried on according to Fig. 4.1 below.

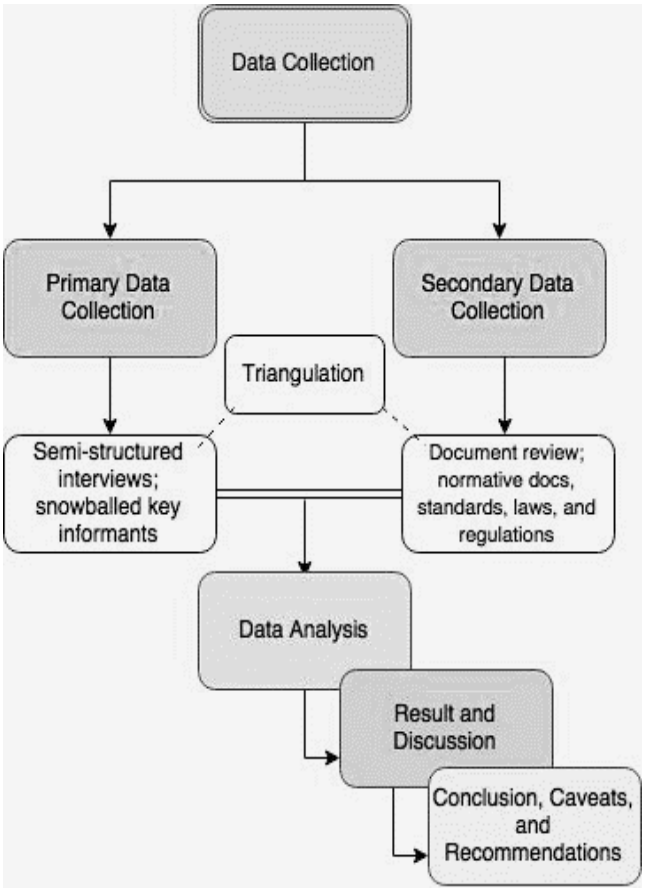


Figure 4.1 Flowchart of research design

A more detailed explanation of data collection methods is as follows:

a. Semi-structured interviews

The focus of the case study was on how public regulation and certification play out at national level. The interest is in certification for ecosystem services as a governance tool and how the governance system, including public regulation has evolved in Indonesia over time. The research questions below are organized and broken-down under three different sections that describe 1) certification for ecosystem services scheme (RQ1), 2) interrelationships between public regulations and certification at national level (RQ3), and finally 3) strategies and possibilities of upcoming collaborations among governance instruments (RQ4) (See Annex I). RQ2 was also examined through normative documents review (see below Content analysis and policy documents).

The interviews were consisted of some initial concepts in order to find out more detailed information concerning people's insight about ES certification. Moreover, the interviews enabled new concepts to emerge from the interview processes (Boyce & Neale, 2006). Interviews were also used to clarify gap information and triangulate the documents. The rationale of informants was based on their degree involvement in the project, related institutions, expertise, cost and time constraint. However, due to time constraints and willingness to get involved in this research, the following informants were managed to be interviewed during the fieldwork as provided below:

Table 4.1. Description of informants

No	Name	Position/Role	Contacted	Interviewed
1	Angga Prathama Putra	Responsible Forest National Coordinator WWF Indonesia	Yes	Yes
2	Johan Kieft	UN Global Environment Facility	Yes	No response
3	Hartono Prabowo	FSC Indonesia Representative	Yes	Yes
4	Syafrudin Syafi'i	Forest Coordinator for NTB- WWF Indonesia-Lombok Office	Yes	Yes
5	Kurniawan	PES and NTFP Officer WWF Indonesia-Lombok Office		
6	M. Ridha Hakim	Small Island Partnership and Governance Leader	Yes	Yes
7	Sri Wahyudi	Sustainability Manager PT. Ratah Timber	Yes	Yes
8	Dinda Trisnadi	Auditor SCS	Yes	Yes
9	Zaenal Abidin	Auditor SGS	Yes	yes
10	Amy Duchelle	CIFOR REDD+ researcher	Yes	yes
11	Hayu Wibawa	LEI (Lembaga Ekolabel Indonesia)	Yes	No response
12	Ahmad Kusworo	FFI Indonesia	Yes	Yes
13	Joseph Hutabarat	FFI Indonesia	Yes	No response
14	Dian Intarini	FSC Bonn (Former REDD+ CIFOR)	Yes	Yes
15	Haryo Pambudi	Ministry of Forestry and Environment	Yes	No response
16	Laksmi Dhewanti	Ministry of Forestry and Environment	Yes	No response
17	Chris Henschel	FSC ES Programme Director	Yes	Yes
18	Iwan Kurniawan	Director of The Borneo Initiatives	Yes	Yes
19	Dwi Rahmad Muhtaman	Sustainability expert	Yes	Yes
20	Aditya Bayunanda	WWF GFTN Director	Yes	No response
21	Tri Nugroho	PES expert (former WWF Indonesia PES expert)	Yes	No response

Table 4.2. Description of informants' organisation

Organization	Relations to ES in Indonesia
WWF Indonesia	ForCES leading and implementing partner
CIFOR	Scientific support and backstopping
PT. Ratah Timber	FSC Certified forest concession, which was the only FSC certified company involved in the process as a piloted area
Kelompok Mitra Pengaman Hutan (KMPH) Sesaot	Community forest (Izin Usaha Pengelolaan Hutan Kemasyarakatan-IUPHKm) in Rinjani Protected Areas
SGS Indonesia	Pilot-audited in PT. Ratah Timber
SCS Indonesia	Pilot-audited in KMPH Sesaot
Flora Fauna Indonesia	REDD+ proponent
Dwi Rahmat Muhtaman	Sustainability consultant

The ES certification project involved a small number of organizations in Indonesia (UN GEF, FSC, WWF Indonesia, CIFOR, PT. Ratah Timber, and KMPH Sesaot)

(Table 4.2). All stakeholders were covered except from the government (Ministry of Environment and Forestry—MoEF) and the funding (UN Global Environment Facility). Once stakeholders were identified, I contacted them and removed those that did not response, leaving thirteen key informants (see Annex) represented those institutions directly and indirectly involved in the process. Informants from the Ministry of Environment and Forestry were excluded from further consideration after several attempts of communication. The policy analysis was done without direct communication with the government authority—one of research limitations.

The small number of organizations involved in the project and interview gathered mean bias exists when construe the interviews. The bias is the limitation of the study. Perspectives from additional stakeholders were necessary to enrich information and fill gaps on missing information. In research question four that looked at other possible opportunities and synergies for ES development, informants were CIFOR scientists who studies REDD+ in Indonesia and Flora Fauna International (FFI) Indonesia which is one of REDD+ proponents in Indonesia. Every stakeholder did not get the same semi-structured questions as they have worked in the different type of institutions and the questions depended on their role—state, private, civil society, NGO, community, scientific backstopping. The semi-structured question list based on the research questions and case outline is included in Annex 1.

Table 4.3. Stakeholder mapping in answering research questions

Research questions	Stakeholders involved
1. Analysing how ecosystem services are translated in regulations and policy in Indonesia;	Indonesian ministries related; Ministry of Environment and Forestry (Unable to get interviewed)
2. Analysing how ecosystem services concept is translated and addressed in the FSC Ecosystem Services (ES) Certification;	FSC ES Project Manager WWF Indonesia CIFOR SGS Indonesia SCS Indonesia Dwi Rahmad Muhtaman
3. To discover and analyse interrelationships between FSC Certification of Ecosystem Services and Indonesian state regulations in the context of ecosystem services;	WWF Indonesia CIFOR PT. Ratah Timber KMPH Sesaot SGS Indonesia SCS Indonesia Dwi Rahmad Muhtaman
4. To explore the possible opportunities and synergies for the Ecosystem Services (ES) certification in terms of the existing interrelationships.	Flora Fauna International (FFI) Indonesia CIFOR

Interview protocol was used at the interviews. At the beginning of each interview, the researcher introduced herself, the rationale for the informant selection, the

interview objectives and the length of interview. Furthermore, the researcher asked for respondents' permission to making notes and will use a tape recorder during the interview process. Additionally, probing techniques were used, such as clarification and repetition of the question or answer. This technique was used to ensure that the responses are complete, clear, relevant and consistent (Kumar, 2014)

Interviews and document collections were conducted in English or Bahasa Indonesia —face to face or by Skype—during September and October 2017 and recorded. Some informants, who have a little knowledge about ES, were not willing to get recorded, and one focus group discussion where WWF Indonesia Lombok team and IMP were the participants. Interview with FSC ES Programme Director was done to extract and further triangulate the information.

b. Content analysis and policy documents

Additional data was collected through a literature review to answer the RQ2 on the possible opportunities and synergies for the ecosystem service certification in accordance with the existing interrelationships in Indonesia. Policy documents, websites, databases, media and press releases were used to gather the information. Document reviews were carried out to learn the developed standards of the ecosystem service certification, its governance, policy and normative documents e.g. *FSC International Generic Indicators* (IGIs), the ES Procedure and FSC Ecosystem Services Strategy to complement interviews.

The policy and normative documents were categorized as a means to answer each research question. The first categorization was between policy and normative documents. Policy documents in Indonesia can be categorized as follows: Law (*Undang-Undang* or UU), Government Regulation in Lieu of Law (*Peraturan Pemerintah Pengganti Undang-Undang* or Perpu), Government Regulation (*Peraturan Pemerintah* or *PP*), Ministerial regulation (*Peraturan Menteri*), Ministerial Decree (*Keputusan Menteri* or Kepmen) and Circulation Letters (*Surat Edaran).* In this research, the public regulations were confined to Ministerial regulations to give picture how Indonesian regulations govern ecosystem services until the policy concepts are implemented technically. FSC has several types of normative documents—Policy (POL), Standard (STD), Directive (DIR), Advice Note (ADV), Procedure (PRO), Interpretation (INT), Guidance Document (GUI), and National Standard (NS). However, in ES certification scheme, four types of normative documents used are Standard (STD), Procedure (PRO), Guideline (GUI) and Directive (DIR).

In the second categorization, the policy and normative documents were put into the following categories based on the research questions: Translation of ecosystem services in state law and regulations (RQ1); Translation of ecosystem services in ES Standard and Procedures (RQ2); Interrelationships among public regulations and certification (RQ3; and Upcoming collaborations among governance instruments (RQ4). The categories correspond with the interview

categorization to seek clarity in which research question the documents were analysed.

Specifically, for RQ4, REDD+ and PES mechanisms exemplify two mechanisms, which can be synergized creating opportunities among them. This was addressed through scrutinizing REDD+ and PES project documents. REDD+ project provides scheme to participants to get incentivized with flexible system in developing countries, notably combating deforestation and land degradation. PES is similarly a mechanism, which governs to incentivize land or forest owners for a guaranteed flow of ecosystem services (Fripp, 2014). Therefore, REDD+ and PES projects were scrutinized to find out possibilities, shortcomings, synergies and opportunities among those initiatives, whether REDD+ and PES sites can get certified by FSC ES Certification Scheme or not.

4.2. Data Analysis

Documents and interviews were analysed by making categorization as explained above and examining relevant written documents to search for ES definitions, ES scope, referencing to policy documents, strategies, and rules as keywords. Manual coding was employed for aiding the researcher to analyse both datasets to get saturated data, as they are only six transcripts of the interviews. Thematic analysis framework was used in the coding to segment documents and interview transcripts into meaningful expressions, single or short sequences of word or sentences. This resulted in a list of categorization codes and categories attached to the texts. Annex II presents the summary of coding regulation documents, ES certification standard and procedures, and interview documents.

5. Results

To provide the results, this section is composed as four subsections that correspond to the questions. RQ1 is presented in ES public regulations in Indonesia: Shifting towards an avowed design; RQ2 is presented in the subsection on ES certification scheme and its pilot project in Indonesia; RQ3 is presented in the subsection on the interrelationships between ES public regulations and ES certification in Indonesia; and the last one is RQ4 that is provided in the international initiatives as exogenous possibilities.

Results are gauged from two document reviews and interviews. Subsection 5.1; 5.2; 5.3 and 5.5 are generated from document reviews. Subsection 5.4 is generated from interview results mainly, where some document reviews included. In the text below, codes R1 until R6 indicate information and statements generated from interviews.

5.1. ES public regulations in Indonesia

Unfortunately, it was not possible to interview informants from the government participated in the research to clarify and triangulate how ES concept interplays in the hierarchical regulations in Indonesia. Therefore, the section is based on document review of the public regulations in Indonesia regarding natural resources management

Law No 12/2011 Regulation of Law has been posited as a cornerstone for law hierarchy in Indonesia public policy design. Policy documents in Indonesia can be categorized as follows: Law 1945 Constitution of Indonesia (*Undang-Undang* or UU), Government Regulation in Lieu of Law (*Peraturan Pemerintah Pengganti Undang-Undang* or Perppu), Government Regulation (*Peraturan Pemerintah* or PP), Presidential Regulation (*Peraturan Presiden* or Perpres), Ministerial Regulation (*Peraturan Menteri*).

Table 5.2 maps the public policies in Indonesia to govern ecosystem services from the high mandate—law, until the technical regulations—ministerial regulation in order to implement the mandate into actions and uptakes. The table shows that all ecosystem services are varied mentioned in the regulations. Government Regulation No. 46/2017 Environmental Economic Instrument specifically explains explicitly the scope of environmental services. On the other hand, Government Regulation No. 28/2011 Nature Conservation and Preservation Management openly mentions tourism, water and carbon as a part of ecosystem services without providing explanations about the scope of ecosystem services beforehand in the document.

Table 5.1. Regulation mapping on ES in Indonesia

Public regulation	*Provisioning*	*Supporting*	*Regulating*	*Cultural*
Law No. 5/1990 Ecosystem and Nature Conservation	x	x	x	x
Law No. 41/1999 on Forestry	x	x	x	x
Law No. 32/2009 on Environmental Protection and Management	x	x	x	x
Law No. 17/2004 on the Ratification of Kyoto Protocol to the UNFCC			x	
Regulation in Lieu of Law No.1/2004 Amendment of Law No.41/1999 on Forestry	x	x	x	x
Government Regulation No.45/2004 Forest Protection	x	x	x	x
Government Regulation No. 44/2004 Forest Planning	x	x	x	x
Government Regulation No. 6/2007 jo PP3/2008 Forest Management, Planning and Utilization	x	x	x	x
Government Regulation No. 46/2017 Environmental Economic Instrument	x	x	x	x
Government Regulation No. 28/2011 Nature Conservation and Preservation Management		x	x	x
Ministerial Regulation P.6/2009 Establishment of Forest Management Unit	x	x	x	x
Ministerial Regulation P.6/2010 Norms, Standard, Criteria, and Procedure Forest Management on Production and Protected Forest	x	x	x	x
Ministerial Regulation P.42/2009 Template, Criteria, and Standard on Water Catchment Area Management	x	x	x	
Ministerial Regulation P.36/2009 Procedures for Licensing for Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests	x	x	x	
Ministerial Regulation P.30/2009 The Implementation Procedures of Reducing Emissions From Deforestation and Forest Degradation (REDD)	x	x	x	
Ministerial Regulation P.22/2012 Business Guideline for Tourism Activity on Protected Forest				x
Ministerial Regulation P.31/2016 Business Guideline for Tourism Activity on Production Forest				x
Ministerial Regulation P.68/2008 on the Implementation of Demonstration Activities on Reducing Emission from Deforestation and Forest Degradation			x	

Forest regulation in Indonesia has two laws on forestry—Law No.5/1990 and Law No.41/1999 as considerations and references to enact derivative regulations that are more technical. The term "ecosystem services" is "defined varied in both laws. The scope of the laws are forest and forest conservation and not defining specifically what ecosystem The law states also types of institutional forms that can possibly govern the ES and has its own criteria such as national park, nature park, forest park, nature sanctuary, and wildlife reserve.

The first law is Law No. 5/1990 on ecosystem and natural resource conservation issued in 1990. The scope of the law covers how to manage and conserve supporting ecosystem services, exotic plants and wildlife including allowable utilization under certain conditions and monitoring system e.g. hunting, trading, research. The law does not mention explicitly about ES.

On the other hand, the second law is Law of Forestry No. 41/1999. It defines forest in the public regulation as:

> "Forest is a unity of ecosystem in the form of landscape containing biological resources dominated by trees in the natural alliance of its environment, which one cannot be separated"

ES are embedded in the public regulations defined as part of forest ecosystem. ES is one of derivative forest products besides biotic and abiotic materials e.g. plants and soils, respectively. The law specifically defines ES comprised of tourism, water, and beauty of nature.

Article 6 Law No. 41/1999 specifically mentions that forest has three functions limited to conservation, protection, and production (Fig. 5.3). Therefore, the function posit as a base of establishing types of forest area, which is classified as production forests (timber production), limited production forests (some areas protected), conversion forests (for future conversion), protection forests (protected for their ecological functions) and conservation forests (protected for their biodiversity). Further, conservation forest is comprised by natural forest reserves, conservation forest area, and hunting park. Both laws embody all types of ecosystem services.

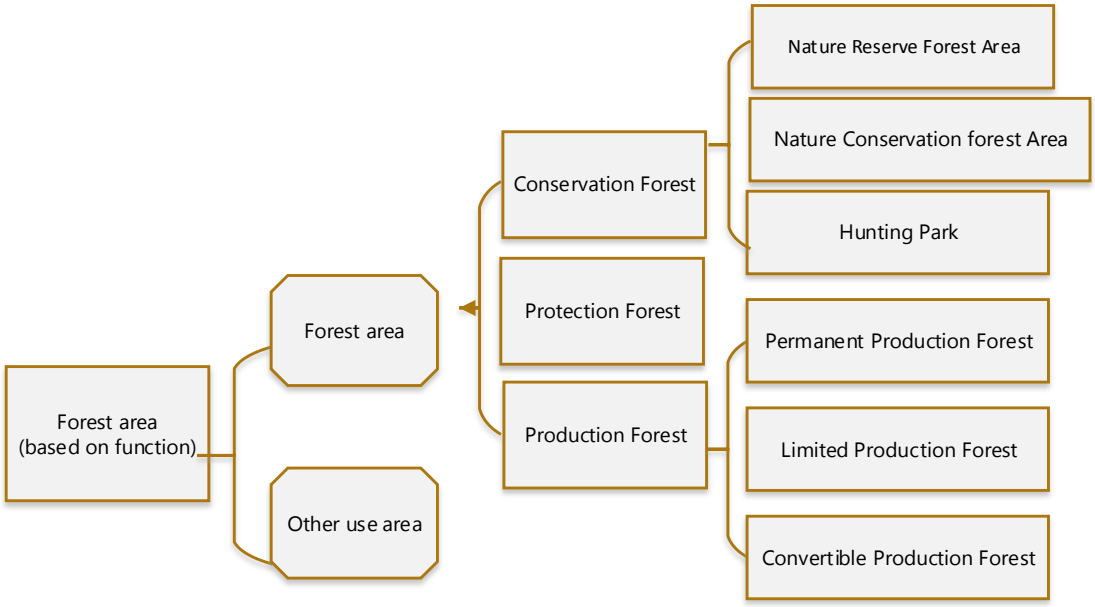


Figure 5.1 Administrative classification of forest area based Law 41/1999 on Forestry

Government Regulation No.45/2004 Forest Protection, Government Regulation No. 44/2004 Forest Planning, Government Regulation No. 6/2007 jo PP3/2008 Forest Management, Planning and Utilization, Government Regulation No. 46/2017 Environmental Economic Instrument, and Government Regulation No. 28/2011 Nature Conservation and Preservation Management have different interpretations about forest and ES. In the first three regulations respectively, they govern provisioning services with mainly timber and non-timber forest products mentioned. Government Regulation No. 46/2017 specifically has defined environmental services as benefits derived from ecosystem and environment for human beings and for survival *inter alia* resource provision, regulating services, natural processes, and cultural preservation. Lastly, Government Regulation No. 28/2011 regulates nature conservation and preservation management but does not mention explicitly about ES. However, the regulation covers forest services in terms of wildlife and unique ecosystem.

Law No. 32/2009 on Environmental Protection and Management was issued in 2009 governing policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered to minimize impacts on environment. Environmental Impact Assessment (EIA) and supporting documents stated in the law must accompany all activities that are potentially able to do any harm to. The particular law was enacted for more than ten years after law on conservation and forestry.

The government then issued a regulation in lieu of law (called *Peraturan Perundang-undangan*—abbreviated *Perppu* in Indonesia)—Perppu No.1/2004 that amended the 1990 Law on Forestry, in acknowledging mining in the state forest area that was established before the law enacted. Below this *Perppu*, there are other government regulations: Government Regulation No. 3/2008 Forest Management and Management Plans, and Forest Utilization; Government Regulation No. 28/2011

Nature Reserve Area and Nature Conservation Area; and recently Government Regulation No. 46/2017 Economic Instrument on Environment.

The government enacted Government Regulation No. 46/2017 on Economic Instrument on Environment. It is a key regulation in the public regulation related to ecosystem services. The regulation explicitly defines environmental services as the benefits of ecosystems and the environment for human beings and the survival of life which includes the provision of natural resources, natural and environmental arrangements, advocates of natural processes, and the preservation of cultural values. However, the regulation does not explain specifically how to measure benefits of environmental services and how to measure impacts of restoration and conservation activities as such.

The regulation enacted twelve years later since mandated in Article 42 and 43 Law No. 32/2009 due to public needs and political regime. The economic instrument on environment aims to accountability and law enforcement on environmental protection and management; changing perspectives behaviour of government in economic and development activity; systematic, measurable, and structured funding scheme; and encouraging and gaining international and public trust on managing environmental funds.

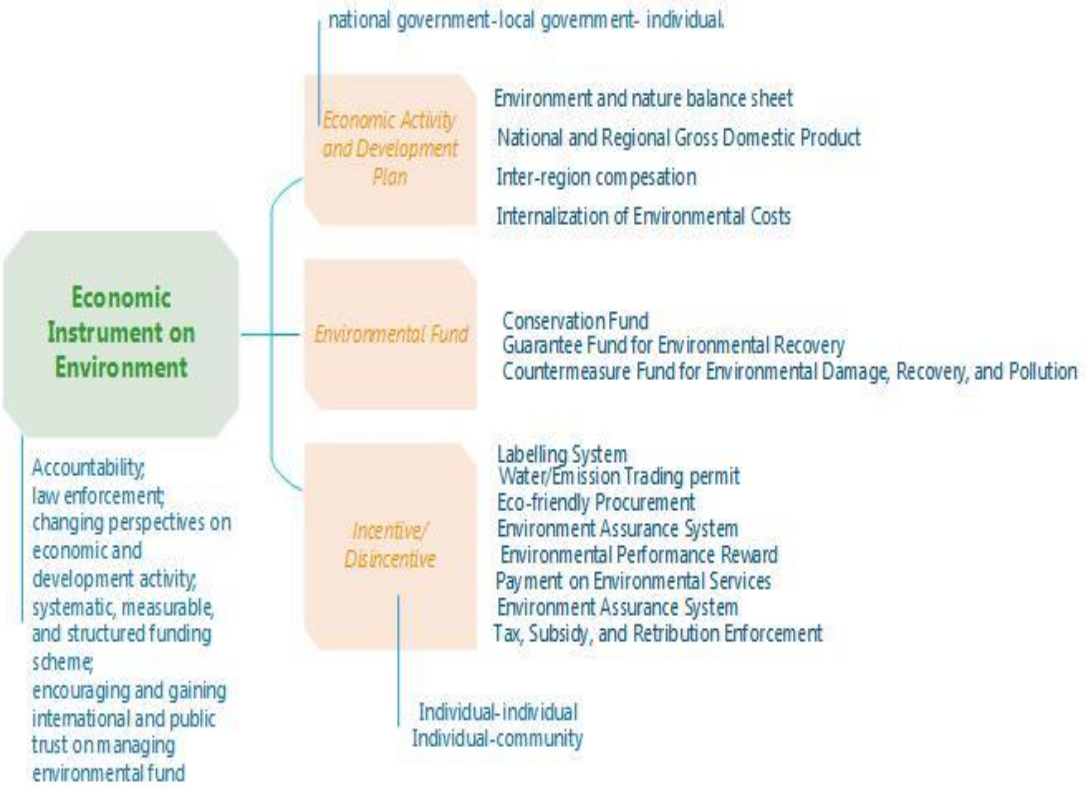


Figure 5.2 Visualisation of Government Regulation No. 46/2017 on Economic Instrumemt on Environment

The types of economic instrument on environment the regulation covers are economic activity and development plan; environmental fund; and incentive/disincentive (Fig. 5.4). The economic activity and development plan mentioned in the regulation, *inter alia*, are environmental and natural balance sheet; regional and national gross domestic product on environment; compensation

between regions; and internalization of environmental costs. The specific instrument aims to internalize environmental aspect in the economic and development plans implemented in national, regional, and individual scope.

According to the regulation, the other scheme for ES is environmental compensation between regions. The scheme is a monetary redirecting process between government and individual as environmental provider and beneficiary through a performance based agreement to increase environmental services. Compensation between regions aims to compensate for environmental provider paid by beneficiaries. The scheme covers water protection, biodiversity protection, carbon sequestration, nature preservation, and other environmental services. The compensation scheme can be between national-regional government, regional-regional government, national government-individual, and regional government-individual. Compensation can be monetary or non-monetary compensation based on environmental preservation costs, community empowerment costs, and implementation costs.

Compensation is given to the environmental provider through grant mechanism with criteria as follows: proof of land ownership; authority to provide, generate and increase environmental services; and measurable valuation. Detailed compensation must be included and stated in national and regional work and budget plans. Compensation is strongly promoted to fund restoration, conservation, biodiversity enrichment, community capacity improvement on environmental protection, renewable energy, sustainable economic development and its supporting infrastructure, and other activities in accordance with the development and needs of environmental services agreed upon environmental provider and beneficiary. The sources come from national and regional budget or any other sources.

Incentive is one of the economic instruments on environment. It is comprised of developing eco-friendly labelling system; procuring eco-friendly goods and services; tax, subsidy, and retribution enforcement; developing an eco-friendly financial institution; developing waste/emission trading permit; developing environment assurance; developing payment on environmental services; and developing performance reward on environmental management and protection. The economic instrument incentivises non-governmental actors that do such measures to protect environment and ensure no such environmental degradation in the form of remission of liability; ease of requirements on activity implementation; facilitation and assistance; guidance and support; reward and acknowledgement; and public performance promulgation. Specifically, this instrument intends to achieve law enforcement; implement reward and punishment mechanism; distribute evenly environmental risks and impacts; promote innovation; undertake activities in the field of environmental protection and management beyond that required; and apply sustainable consumption and production.

One of a means in the incentive scheme is waste/emission-trading permit, which is conducted by the national and regional government. The tool is proposed to decrease environmental pollution level; govern quota allocation of waste/emission disposal;

support the implementation of environmental compensation between regions; and support continual improvement on impact management. National and regional government must establish institutional forms; trading mechanism; and provisions on the application of other related environmental economic instruments and encourage the effectiveness of trading.

The other ES compensation scheme in the regulation is to develop payment on environmental services based on performance and individual basis. As stated in the regulation, payment on environmental services regions is a monetary redirecting process between individuals or communities as environmental provider and beneficiary through a performance based agreement to increase environmental services. This tool is purposely done as social encouragement for nature conservation and environmental preservation, and supports the implementation of environmental compensation administered by national and local government. The development of the scheme will be elaborated by a ministerial regulation covering on how to establish institution, identification, verification, validation, system information and capacity improvement.

Indonesia also has a range of policy and other documents relevant to forest and ecosystem management under Ministry of Environment and Forestry (before Ministry of Forestry and Ministry of Environment was separate in institutional form). The main policy documents are included *inter alia*, which are derivated and technical documents for enforcements:

- Ministerial Regulation P.6/2009 Establishment of Forest Management Unit
- Ministerial Regulation P.6/2010 Norms, Standard, Criteria, and Procedure Forest Management on Production and Protected Forest;
- Ministerial Regulation P.42/2009 Template, Criteria, and Standard on Water Catchment Area Management;
- Ministerial Regulation P.31/2016 Business Guideline for Tourism Activity on Production Forest;
- Ministerial Regulation P.22/2011 Business Guideline for Tourism Activity on Protected Forest;
- Ministerial Regulation P.36/2009 Procedure for Licensing of Carbon and/or Carbon Storage in Production and Protected Forest;
- Ministerial Regulation P.30/2009 The Implementation Procedures of Reducing Emissions From Deforestation and Forest Degradation (REDD).

These regulations mention one of ES explisitly i.e. Ministerial Regulation P.31/2016 Business Guideline for Tourism Activity on Production Forest and Ministerial Regulation P.22/2011 Business Guideline for Tourism Activity on Protected Forest. The other regulation, for instance Ministerial Regulation P.6/2009 Establishment of Forest Management Unit, defines ES is comprised of water, tourism, biodiversity protection, environmental protection, and carbon storage. Ministry of Environment and Forestry (MoEF) is hitherto working jointly with NGOs to form a technical regulation related to ecotourism in production forest, yet it is still on going progress in finalisation and validation.

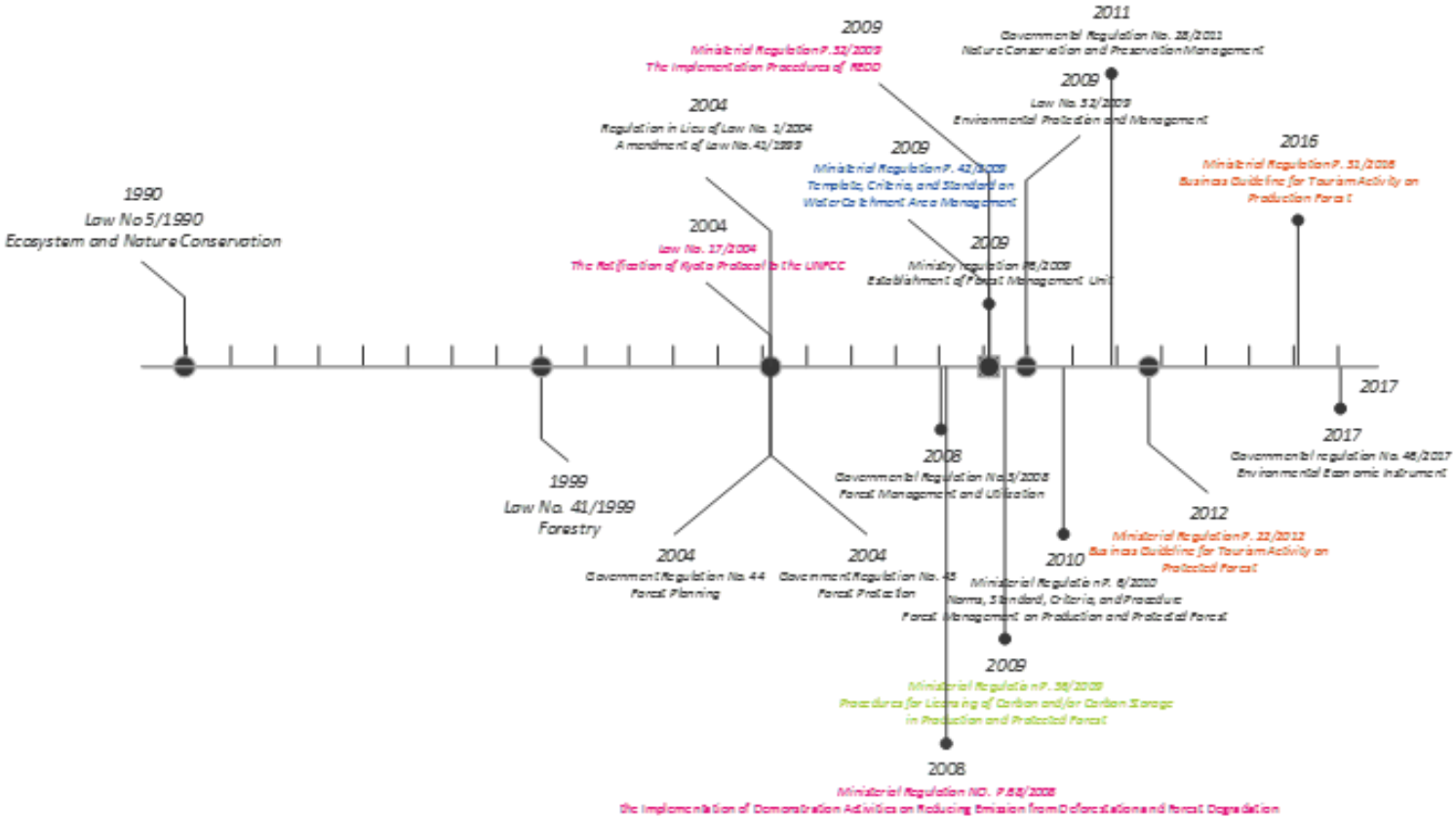


Figure 5.3 the Timeline of Indonesia public regulations on forestry and environment

The regulations are not limited to those depicted in Fig. 5.5. Instead, Fig. 5.5 simplifies the intricate and long-drawn-out development of regulations in Indonesian public policy pertaining to natural resources especially ecosystem services. Regulations passed by Ministry of Environment and Forestry are shifting from implicsit to explicsit policy in the field of natural resources especially ecosystem services. For instance, carbon related regulations were enacted in 2009 responding to the signing of United Nations Framework Conventions on Climate Change by Indonesia. The different clours indicate different ES: green for carbon, blue for water, orange for tourism and magenta for REDD implementation.

REDD+ implementations in Indonesia had been put into a law and a regulation: Law No.17/2004 on The Ratification of Kyoto Protocol to The United Nations Framework Convention On Climate; Regulation of Minister of Forestry Number P.68/Menhut-II/2008 on the Implementation of Demonstration Activities on Reducing Emission from Deforestation and Forest Degradation;

5.2. ES Certification: The development

FSC ES certification: the *mise-en-scene*

The ES certification has been created as a NSMD governance arrangement to give additional incentives to forest concessions and community-based forest managements, which set aside forest areas to protect biodiversity, wildlife, intact landscape to promote sustainable forest management. The land allocation based on the public regulation exist in Indonesia can be possibly construed that FMUs cannot operationalize the specific areas and must manage the areas responsibly because it contains high forest value or ecological function. The novel certification scheme also means to give income from ecosystem services besides from timber.

FSC ES certification procedure

The FSC Principles and Criteria (FSC-STD-01-001) defines ecosystem services as: "The benefits people obtain from ecosystems including provisioning services such as food, forest products and water; regulating services such as regulation of floods, drought, land degradation, air quality, climate and disease; supporting services such as soil formation and nutrient cycling; and cultural services and cultural values such as recreational, spiritual, religious and other non-material benefits.

Additional incentives are strongly required for forest concessionaries since there are a lot of pressure to the existence of forest cover. Forest is not seen solely on its timber production capability but also their ability to provide other goods and services. Beneficiaries of the ecosystem service are any person, group of persons or entity that uses or is likely to use the benefits obtained from nature provided by the forest areas, but are not limited to, persons, groups of persons or entities located in the neighbourhood of the forest areas. End users such as consumers or indirect beneficiaries of carbon mitigation are not considered beneficiaries. Examples of beneficiaries of the ecosystem services are local communities, indigenous peoples,

forest dwellers, neighbours, downstream water users, tenure and use rights holders (FSC-PRO-30-006 V1-0EN).

The certification scheme covers private owned forest but also to community owned forest, which can prove their ability to demonstrate their environmental activities. Below, Fig. 5.6 presents how FSC ES certification can be obtained by forest owners and the role of the new ES tools in FSC forest certification. ES certification has standard, procedure, guideline and discussion paper documents, which are FSC-STD-60-004 V1-0 EN International Generic Indicators, FSC-PRO-30-006 Demonstrating the Impact of Forest Stewardship on Ecosystem Services, FSC-DIS-30-006 Market Tools and Trademark Use for Demonstrated Ecosystem Services Impacts, and FSC-GUI-30-006 Guidance for demonstrating ecosystem services impacts (which under development).

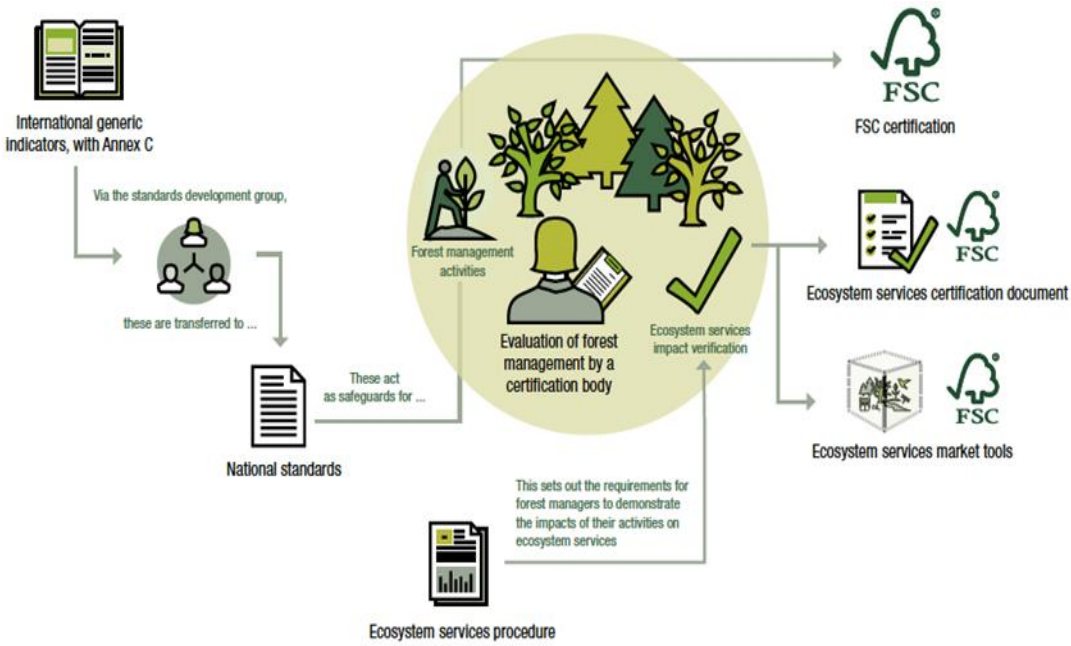


Figure 5.4. ES certification process (FSC, 2017a)

FSC ES tools are part of a broader strategy to increase the market value of FSC. The ES tools emphasise on how to verify impacts in ecosystem services. Therefore, in one of principles, it states that methods must be applied to measure outputs, outcomes, and impacts. A measureable and verifiable theory of change is compulsory. Therein, methods are suitable for the local context and the outcome indicator to be measured. Also, methods are credible and based on reliable information such as scientific publications, replicability and experts endorsements.

Seven steps direct forest owners to demonstrate impacts. The steps are shown in Fig. 5.7 below:

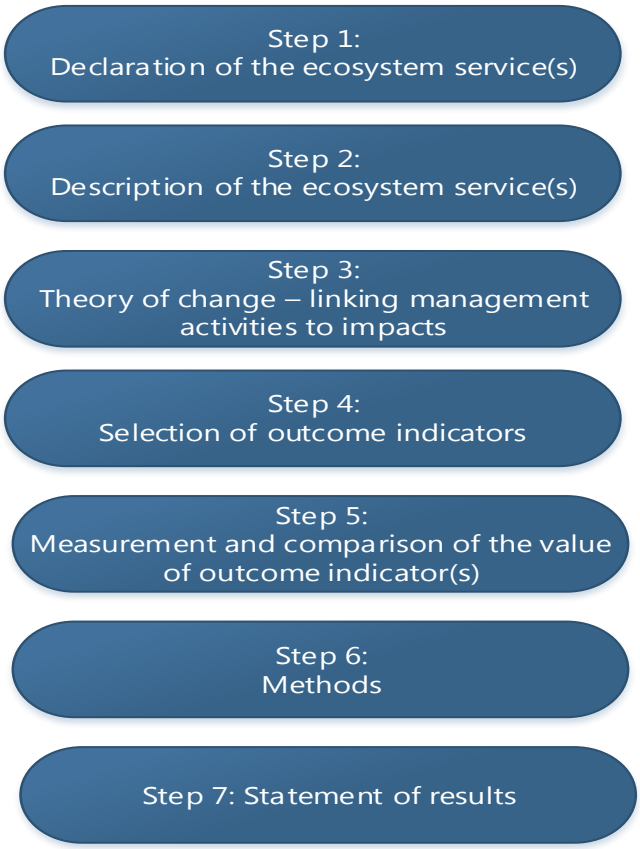


Figure 5.5. Consecutive steps of ES Demonstrating Impacts (Source: FSC-PRO-30-006)

FMUs must be able to define and perform changes in their management activities to achieve theory of change in step 3 (Fig. 5.8). The ToC describes how management activities lead to the impacts. It is created by the certificate holder or one aspiring to become certificate holder so the ToC is not appointed. Also, it is most often retrospective description of the pathways to impacts.

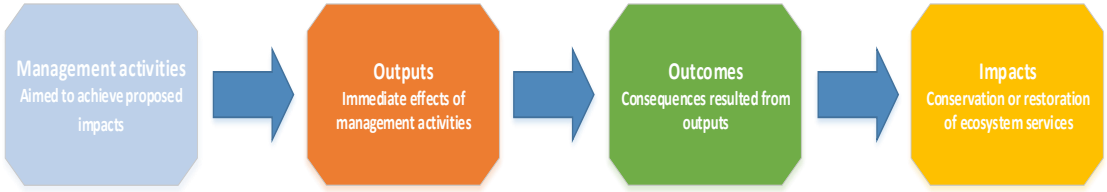


Figure 5.6. ES Theory of Change

The process of ES certification is that FSC certification body issues an ES certificate to the forest companies, which if successful, will be verified, and they are then eligible to using promotional claim. ES certification applies to both FSC certified and uncertified forest companies. However, ES certification will be less complicated for the certified ones. Also, types of business are not an issue. The tool can be applied to state or private owned forest companies and community-owned forests as complied with standard and principles.

5.3. ES pilot projects in Indonesia

The ES certification project to establish ES standard and procedure had been piloted in Kalimantan and Lombok. In Kalimantan the piloting took place in forest concession

of Ratah Timber (PT Ratah Timber—company), which is accounted for its biodiversity and carbon storage, whereas in Lombok the ES certification was piloted in a community forest (*IUPHHK-HKm*) namely Kelompok Mitra Pengaman Hutan (KMPH) Sesaot, whichis a protected area managed by community accounting for water services. These two sites contributed to the development of the FSC-PRO-30-006 *Demonstrating the Impact of Forest Stewardship on Ecosystem Services* and were audited by third party certification bodies for Annex C: Additional Requirements for Ecosystem Services FSC-STD-60-004 V1-0 EN International Generic Indicators) and the other standards in FSC-STD-60-004 V1-0 EN International Generic Indicators.

Ratah Timber is FSC-FM certified management unit operated in West Kalimantan. The forest management unit harvests timber from natural forest. The FMU manages 93.425 Ha of natural forested area that is being granted since 2010 and valid for 45 years. Ratah Timber is at the moment entering their second cycle of forest management. Some timbers are Meranti, Bangkirai, Nyatoh, Meranti Batu dan Kayu Kamper. There are two types of forest according to its functionality: production forest and limited production forest.

The area is dominated by *Dipterocapaceae* (25 species) whereas the remaining is mixed among *Euphorbiaceae* (25 species), *Leguminoseae* (17 species) and other species. Amidst of the species, there are 18 rare/protected species. The company also surveyed on faunal abundance. The survey showed that the forest area is habitat for various endangered, vulnerable and endemic species. Numerically, there are 29 mammals, 43 reptiles, and 7 birds which belong to the aforementioned categories.

The company is paying attention to the abundance of rare species by conducting integrated monitoring and protection measures such as clear boundaries especially when High Conservation Value present; different labelling systems between commercial species and rare species; implementing reduced impact logging to minimize disturbance; rehabilitating and enriching activities on endangered/vulnerable species; and prohibitinghunting activities. Ratah Timber has HCV map (all types of HCV exist) and forest types to guide them for their management and operational plan. Additionally, in terms of certification, the company has been practising sustainable forest management, traceability and legal origin whose are part of company's commitment on implementing sustainability.

KMPH Sesaot is managed under Inisiasi Multi Pihak (IMP)—Multi Party Initiative, which is a governed upstream farmer group in West Lombok. IMP was established in 2007 legally through regulation enacted by West Lombok District. Stakeholders coming from various institutions comprise IMP—academician, civil society, government, community, and entrepreneur. IMP has a legal right to govern since the enactment of Decree of West Lombok Regent. WWF Indonesia-West Nusa Tenggara initiated the initiative, local and provincial governments in Lombok including Mount Rinjani National Park Agency since. In West Lombok, the local government enacted local regulation to govern ecosystem services especially payment for watershed area namely Regional Regulation of West Lombok No. 4 Year 2007 on Ecosystem services (R3).

The regulation mandates IMP to manage projects specifically the PES-like scheme related to environmental services although IMP is not based on governmental institution. IMP ensures that the projects are done and implemented well according to the main aim, which is to sustain natural resources in West Lombok. IMP is able to work efficiently and effectively under the local regulations in West Lombok District. IMP aims to broaden their impacts in the provincial level.

However, a regulatory challenge has been identified. Law No. 23/2014 on Local Government specifically was enacted to recentralize authority from district level to provincial level including on forestry authority. The law is not directly relevant to ES, but it has implications. One of the implications is confusions between district and provincial level on the authority of natural resource management. In regard of ES certification, the role of IMP is to support activities of the farmer group promoting to sustainable natural resources management. IMP positions to help the community prepare their readiness to get certification so that the community can independently restore and improve the function of the area. The existence of ES certification has helped already the community to demonstrate their impacts on environment. ES certification is not conflicting with local regulations. The thing that must be clarified at the moment is about how the province plays the role of the authority for managing forest.

Payment scheme is clear; it goes to the district government. Then, the public fund will be given to IMP as a grant. Farmer groups can access the fund by proposing restoration or maintenance activities that can be validated and measured by IMP. Beneficiaries are coming from downstream, which gain benefits for water availability. Beneficiaries' pay IDR 1000 monthly attached to their water payment receipt, which they should pay to state owned company managing water provision in Indonesia.The payment system is still an issue. The national government did not have regulation governing economic instruments for environment—later the government enacted PP 46/2017 on Economic Instruments on Environment. IMP plans to expand their work to approach hotels and offices, which also gain benefits from forest restoration and protection in the upstream. Appraisal has been legally stated on the decree as 30% for the community and the remaining is going to the government. ES in Lombok is distinctive on how it gets governed. Community, which legally owns them, voluntarily protects the forest. The community does restoration, low level of extraction because they just consume non-timber forest products and does some agroforestry (R3). The pilot audit was not merely checking/verifying Annex C but also pick appropriate standard from different principles such as IGIs Principle 4. Community Relations 7.1 (R1). The pilot audits were conducted in both sites. Based on the pilot audit experiences, ES certification was easier to be done in management unit which is already certified for forest management compared to uncertified one. However, both pilot sites were successful to present evidences in demonstrating their activities either forest conservation or restoration.

5.4. The interrelationships between ES certification scheme and ES public regulations in Indonesia

The existing of voluntary standard is helping for forest sustainability, especially standard body, despite the fact that many timber companies are hesitant to get certified due to lack of their skills and knowledge on how to comply with the standard. Table 5.2 provides summary of findings from interview results and they are discussed in the following paragraph below.

Table 5.2 Summary of findings based on interviews

	Issues mentioned by informants
Public regulations	The main setback is external issue which is not under the scope of forest owners to solve i.e. legality of forest area; Solving unclear forest areas is far from forest owners' domain; Public regulations play a role as an enabler to create environment of sustainable forest management.
ES certification	ES certification is not conflicting with the existing regulations; ES certification helps communities to prove their impacts on environmental protection; Voluntary certification helps private sector to achieve sustainability; Many companies are hesitant to get certified due to lack of skills and knowledge; still remains a novelty in the certification field and on consumer side, it is infrequently demanded; Private sector partly hopes for being excluded from mandatory scheme once they get voluntary certified; Adopting credit systems such as RSPO might be one of innovations for ES; Certification must be understood as a means of improvement to achieve efficiency and effectiveness in forest management; The declining numbers of forest concessions in Indonesia since 1990s—from 400 concessions to 140 concessions to date.; Ongoing work between the ministry and WWF Indonesia on forming and hence enacting such an accommodative regulation for production forest holders to venture ecotourism in their business design; There are hopes so as ES certification evolve especially in helping forest concessionaires financially regaining through sustainable and responsible ways; Identification other services in particular landscapes that potentially can be expanded is extremely consequential followed by market and investment research; Joint certification can reduce certification costs that mainly are burdensome leading to more effective and efficient planning
Pilot audits	How the applicability of international standard—how community's skill overcomes challenge to demonstrate their impact scientifically; Exist other ways to demonstrate their impacts in a simpler way rather than demonstrating scientifically, which most communities do not possess the skills and knowledge—consider scale, intensity, risk
Opportunities	Consumer paradigm shifting needed in downstream supply chain; A market opportunity that ES certification can be opened to companies' CSR. The Borneo Initiative (TBI) is a good initiative to help fund timber companies to get FSC certified;

All interrelationships have occurred between ES certification and ES public regulations in Indonesia (Table 5.3). The existing environmental regulations tends to

be unable to accommodate innovative ideas such as ForCES in voluntary standard. Interrelationship between voluntary standard and regulations tends not to be in harmonic way. Voluntary certification also has relation to legitimacy issues mentioned by one of informants, which some voluntary standards are facing such as RSPO and FSC disassociation case with the government. The existence of mandatory and voluntary standards creates public confusion in which standard leads to sustainability (R5).

Table 5.3 Interrelationships occurred between public regulations and ES certification

Type of interrelationship	Situation in Indonesia
Complementary	
Private or hybrid instruments reinforcing public regulations	-
Private or hybrid instruments filling a policy gap	Certification is a means to fill policy gaps on halting deforestation and promoting sustainability; Gaps on how to measure impacts of restoration and conservation projects.
Governments designing environmental legislation in response to actions by civil society	New government regulation on environmental compensation (Government Regulation No. 46/2017 on Economic Instrument on Environment)
Governments threatening public regulations for private actors to adopt voluntary standard	-
Governments promoting information sharing and greater transparency	Reinforcing government produce governmental certification scheme to ensure legality—the emergence of Indonesian Timber Legality Verification System (SVLK)
Governments participating to multi-stakeholder roundtables	-
Governments collaborating with NGOs and local communities for co-management of natural resources	Collaboratively working with various CSOs and stakeholders
Governments encouraging private standards to converge	-
Substituting	
Governments endorsing certification in public policies	No endorsement
Governments adopting private standards in law	Some discreet adoptions (R6)
Antagonism	
Different instruments conflicting management practices with different incentives	Various economic instruments and initiatives
Governments refusing to endorse the more effective labels, leading to consumer confusion	FSC disassociation experience (R6)
Existence of one set of norms undermining efforts to develop stronger regulations	No. However, on legality such governments give land with unclear ownerships therein it makes failure to comply with the certification principles (R5).

Voluntary standard bodies are required to more actively get involved in policy making. The main assumption why voluntary certification slows in Indonesia is due to low involvement in how forestry regulations are developed and implemented in Indonesia.

Standard bodies tend to put more focus on certification and business development rather than getting involved in regulation making. Standard bodies can be more actively involved in decision and policymaking by employing audit findings to influence regulations in order to aid forest owners to comply with the standards. Therefore, strong communication between standard bodies and government is needed to traverse mutual understanding in agenda setting as well as in implementation and monitoring process. The communication process can possibly be improved through involving NGOs as mediating parties or appointing representatives as such FSC does in Indonesia. The representative aims to smoothen communication with the government. However, communication is expected to be more progressive to help set enabling conditions for certification. Institutionally, no resistance materializes regarding voluntary standard scheme. Some governmental leaders are endorsing voluntary standard. However, when it comes to lower level staffs, there might be some individuals in the government who are resistant with voluntary standard or certification scheme in general (R5). Additionally, they tend to promote governmental legality mechanism (R6).

Some mandatory standards adopt voluntary ones. However the standard adoptions are not openly admitted (R6). In the infancy stage, planning to grant waiver to forest companies which get certified by voluntary standard was in place. The waiver was a form of recondition. Recently, the waiver was withdrawn. The withdrawal appears as conflicting. The reason behind the withdrawal was personal ego of some people who did not accept an argument that voluntary standard is more stringent than mandatory one (R6). Furthermore, using foreign standard was considered of not being nationalist. At the moment, this is not an issue anymore. Voluntary standard has been seen as a tool of improving good governance in Indonesia (R5). Moreover, voluntary standard is more into business to business. On the other hand, mandatory leads to improvement of good governance in forestry especially in timber sector. Therefore, conflicting is not a suitable condition anymore to describe the situation.

Regarding ES especially in terms of carbon, there are some potential conflicts hence due to enormous resources and opportunities. Variety of regulations, standards and procedures concomitant with carbon coming from different institutions will definitely create intricate constellations be it in the agenda setting, implementation and monitoring and verification. Carbon market is more established compared to the other services. Yet, the market is more regulated. Therefore, precautions of conflicting and overlapping agendas should be in place. Market for the other services henceforth must be either identified or established (R6).

5.5. International initiatives as exogenous factors

Indonesia has been active in the international negotiations on REDD+ and has been narrated as a REDD+ central point due to the number of REDD+ demonstration projects ((IGES), 2012).

In 2009, the Government confirmed its participation in two international initiatives to support REDD+ readiness activities: the World Bank's Forest Carbon Partnership

Facility and the UN-REDD Programme. At the national level, various activities are underway to formulate a REDD+ strategy, a legal framework to regulate REDD+ has been established, and work on a national reference emission level and on establishing a system to monitor GHG removals and emissions from forests is under way. At the sub-national level, several provincial governors are strong supporters of the REDD-plus concept and have issued decrees, established working groups, and encouraged the involvement of external actors to promote REDD+ activities. REDD+ demonstration activities and projects are either in the design phase or at early implementation stages across much of Indonesia.

There are at least nine projects (Table 5.4) in Indonesia according to a recent scientific report written by Suich et al (2017) (Suich, Lugina, Muttaqin, Alviya, & Sari, 2017). The projects are divided into two main ecosystem services: carbon and watershed protection. The projects vary in terms of payment. Some projects are output based, and the others remain input based. Output based payments are common scheme for PES. (Smith et al., 2013).

PES has been scattered being implemented with small number of actors and community involved in practical level. Therefore, REDD+ is posited as a catalyst to bring justice for ecosystem services valued by broader stakeholders. In addition, these projects might provide a window of opportunity for ES certification to gain traction in regime level. There are several REDD+ sites in Indonesia that are in Lombok, Kapuas Hulu, West Kalimantan, and East Kalimantan (Table 5.4). REDD+ projects have determined how much compensation communities will get (appraisal system).

Projects measure additionality of the REDD+ projects, which means output based PES. Some companies eager to have offsetting system for their corporate responsibility. ES marketplace websites e.g. Ecosystem Marketplace (ecosytemmarketplace.com) and Watershed Projects (watershedconnect.org) have provided information about on-going projects that can be opportunities to jointly work on developing either the ES tool and ES projects.

The other global initiative is zero-deforestation commitment, which implements responsible sourcing from agricultural supply chain commodities such as palm oi, soya, and cacao. The initiative targets companies that are aiming to end deforestation from their supply chain. At the moment, agricultural commodities (mainly palm oil and timber plantations) driving companies to deforestation, (various companies mainly soy, cocoa, palm oil and timber companies) are still in the definition and identification level in Indonesia. However, they need to move beyond identification and monitoring of deforestation. The initiative can be one of additional exogenous factors to bring ES certification in the regime level akin to HCV toolkit is adopted in RSPO certification. Fig. 5.9 below describes various initiatives to define, identify and monitor deforestation. ES certification can be possibly well-suited tool to forest protection.

Figure 5.7. Commodity supply chain initiatives to define, identify and monitor deforestation (Proforest, 2017)

Table 5.4 Key features of implementation Payments for Environmental Services (PES) scheme in Indonesia (Suich et al., 2017)

Scheme	Province	Commencement	Seller	Buyer	Payment (IDR)	Intermediary	Activity
Water							
Cidanau	Banten	2001	c. 30 farmer groups	State-owned enterprise	1.2 million per ha	Stakeholder group	Tree planting, agroforestry
Mount Rinjani Payments for Watershed Services	Lombok/West Nusa Tenggara	2009	25 groups in 12 villages	Water association members/users	30-80 million per group	NGO	Rehabilitation, reforestation
Aceh Payments for Watershed Services	Aceh	2009	10 farmer groups	Companies	70-90 million per contract	NGO & stakeholder group	Tree planting, prevent tree cutting & pollution
Sumberjaya	Lampung	2007	3 villages	Company	1.5-1.6 million per ha	NGOs	Tree planting, river bank conservation, construction of terraces & sediment pits
Carbon							
Ketapang	West Kalimantan	2013*	Villages	Donors (including private foundations)	100,000,000 per village annually	NGO	Avoiding planned deforestation
Merangin	Jambi	2013*	Villages	Donors (including private foundations)	100,000,000 per village annually	NGO	Avoiding planned deforestation
Rimba Raya	Central Kalimantan	2008* (no sales yet)	Private sector (ecosystem restoration concession licence)	Private sector	No applicable (90 million t, 30 years; 2.2 million verified carbon units)		Avoiding planned deforestation
Berau Forest Carbon Programme	East Kalimantan	2007	Villages	Donor (international)	USD 25,000 per village annually	NGO	Reduced deforestation, forest rehabilitation
Kalimantan Forest & Climate Partnership	Central Kalimantan	2007-2014*	Villages	Donor (international)	AUD 1.8 million total	Kalimantan Forests & Climate Partnership	Tree planting, intended canal blocking

6. Discussion

> *"What could be a new policy framework to foster efficient transitions to sustainability? Indeed, the recurring issue of coordination mechanisms—be it at local, national, regional or global level—is a crucial one. One thing is already obvious: transition to sustainability demands serious changes in the way humans do business with each other and with the earth, in the face of a fractured, unequal world." (Mancebo & Sachs, 2015)*

The quote from Francois Mancebo is a fitting portrayal in a nutshell how transition is not an instant change and it indeed demands radical. Changes cannot be expected to happen overnight and substantially required at every locus—local, national, regional, and global. According to the results and the theory, ES certification is still in its infancy. Therefore, looking back to the theory, the speed of the transition needed is not as long as FSC needed to be in the regime of sustainable forest management field. ES certification comes up as an adds-on to FSC Forest Management certification. The pairing strategy is expected to fasten the tools to gain traction in the regime level.

On top of that, FSC has scheduled to finalize its ecosystem services tools, with approval in March 2018. Prominently, ES certification has been included in the FSC global strategy to promote the ES tools more widely adopted. A lot of interest in ecosystem services is among the wider FSC network making the expansion should be easier (FSC, 2017a).

6.1. Different translations of ES in public regulations and ES certification scheme

Policy design correlates with avenues and means in attempts for unravel complexity in social dimensions (Linder & Peters, 1988). The findings on ES regulations in Indonesia show that in the regulations, various terms are used. Comparing two different tools on how the tools translate ES concept results in difference. ES concept in ES certification standard and procedure are more straightforward and defined. In the standard procedure, ES are comprised as carbon, biodiversity, soil conservation, tourism, and watershed protection. On the other hand, ES public regulations are lacking of consistency e.g. using different terms within the (unconnected) regulations without clear definition, leading to user confusion and variety of interpretation.

Furthermore, law of forestry and conservation were enacted for more than twenty years ago. These laws are possibly outdated based on time and content. Additionally, the government recently imposed Government Regulation No. 46/2017 Environmental Economic Instrument to govern economic instrument for environmental compensation for all types of ES including waste management system. The regulation adds to the complexity of existing regulations on natural resources. The abundance of public regulations do not imply their efficacy when land tenure is in dispute (Wright, 2011).

ES public regulations are biased against improved forest management (e.g., lack of credit and high transaction costs to process permits); lack of serious governmental commitment to enforce forestry regulations; lack of tenure security or unclear tenure and resource rights; and, weak institutional capacity to enforce the adoption of forestry regulations and avoid encroachment. The results confirm with previous findings of Lambin et al. (2014) on limitations possessed by command-and control instruments. They found uncompensated opportunity costs, lack of government's enforcement, decreased governmental power in response to transnational markets, and unanticipated spill-over effects outside the regulator's jurisdiction.

Public regulations are triggered by international events such as United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD) e.g. Ministerial Regulation P.30/2009 The Implementation Procedures of Reducing Emissions From Deforestation and Forest Degradation (REDD and Ministerial Regulation P.36/2009 Procedures for Licensing for Commercial Utilization of Carbon Sequestration and/or Storage in Production and Protected Forests enacted two years after UNFCCC COP 13 in Bali on the meetings of Kyoto Protocol. International events driving regulations also occurred in the FairWild Standard (FWS, www.fairwild.org/), a standard providing guidance on sustainable collection and fair trade of wild-harvested plants, fungi and lichen. Multilateral environment agreements (MEAs) are important triggers to form new and reformed regulations as a means of showing international commitments (Morgan & Timoshyna, 2016).

6.2. Interrelationships between ES certification and ES public regulations

As mentioned in the theoretical framework about planning of novel practices and structural change, these two presuppose each other (Grin et al., 2010). ES public regulations and ES certification scheme interacts in the three different types of interrelationship. The governance of ES certification complies with how the assumption earlier that certification scheme is promulgated by adopting NSMD governance. Organically, certification scheme is developed without the purview of the government. On the other hand, role of stakeholders and civil society are broader here in agenda setting and negotiation also partaking more in stimulating regulatory processes e.g. WWF Indonesia working jointly with the ministry on formulating tourism regulation in forest concessions. In sum, agency in the niche level and regime level are interacting not in endorsing nor adopting voluntary standard into public regulations, but they jointly collaborate to formulate accommodating environment for both tools to work in the field. In other words, they prepare the environment for the seeds to grow because eventually (Grin et al., 2010) "the environment into which these seeds are sown is, of course, the main determinant of whether they sprout" (Mokyr, 1992, p. 299) or die over other innovations.

Fig. 6.1 portrays the constellation of governance inspired by the concept of Delmas & Young (2009) of environmental governance systems. The figure says that public private partnership does not take place in the case of ES certification leading to more public social partnership where civil society, NGOs, private sector and non-governmental entities initiate to create new type of governance for ecosystem

services. This is predictable considering how FSC ES certification scheme was developed. And there is no public private partnership among three actors resulting on labelling systems in the field of forestry and ES compared to the Delmas and Young's concept.

When both concepts are overlaid, we find that ES certification is governed as NSMD rather than "public private social partnership" concept. The partnership can be also called private social because civil society and private sector collaborate to help devise new tool in demonstrating impacts of forest reforestation and conservation. The form of partnership is also called corporate governance, which civil society and industry are collaborated (Stringer, 2006). Meanwhile, civil society apprises information, knowledge and aspiration to the government through public social partnership to promote accommodating regulations and policy that can fill existing gaps.

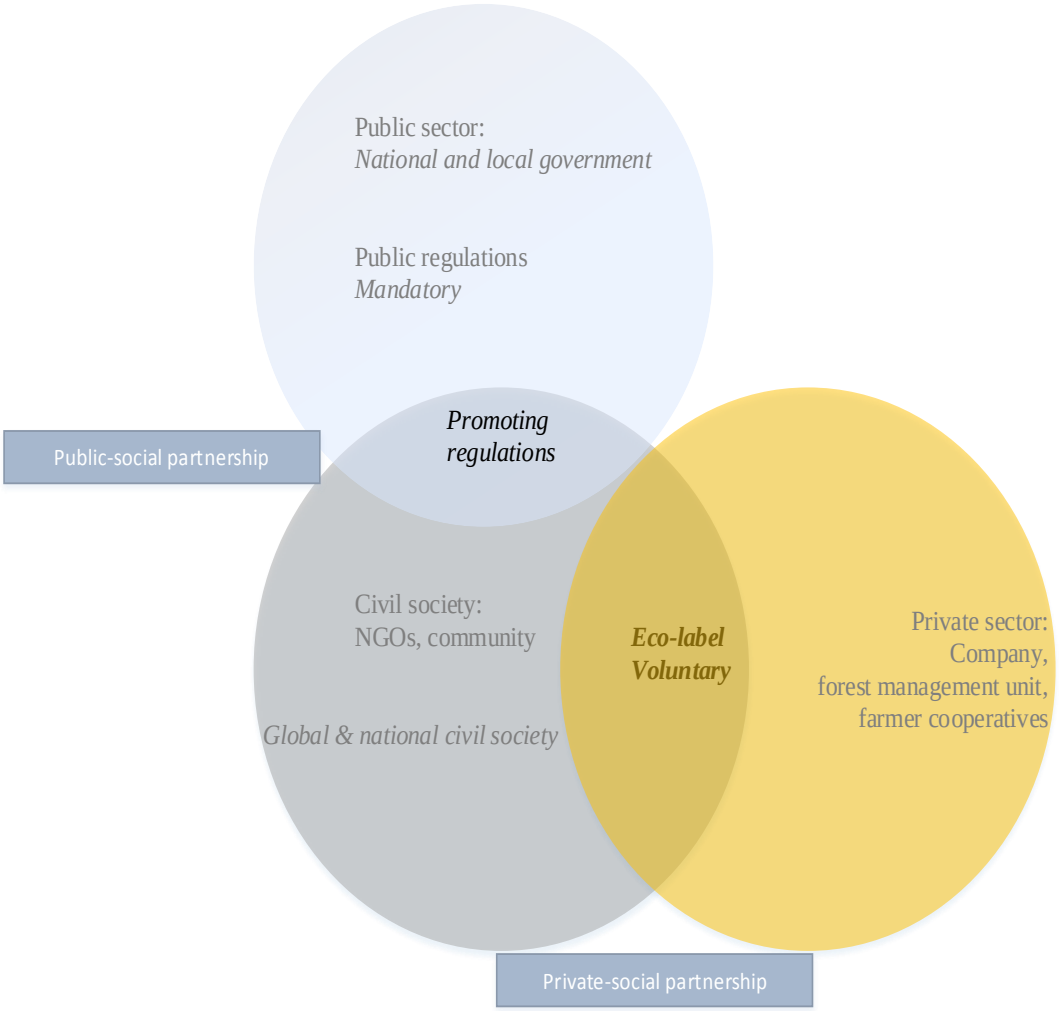


Figure 6.1. ES certification governance (adapted from Delmas and Young (2009))

Earlier research shows diverse policies are sometimes in synergy or at cross-purposes. Some examples of governmental influences are creating enabling conditions for private governance; setting up laws and regulations on land rights; deregulating bottlenecks throughout supply chain (Milder, Newsom, Lambin, & Rueda, 2016). These multiple laws and regulations side-by-side to adjacent to

sustainability tools or private innitiatives consequently create difficulties to appoint which policies or private innitiated tools are effective in terms of sustainability (Milder et al., 2016). The earlier research mentioned previously, measured impacts of certification on biodiversity at multiple scales generated from the experience of the SAN/Rainforest Alliance system. The research is another good supporting finding on how public policies interrelate with sustainability standards that are at some points can be a bottleneck or accomodating private innitiatives.

6.3. Revisiting the Transition Theory and possibility of transition based on the existing interrelationships and ES projects in Indonesia

FSC is trying to elevate ES concept into more tangible practices to demonstrate restoration and conservation activities have positive impact on the provision of ecosystem services. This effort is taken up seriously as a pledge in the FSC Global Strategy 2015-2020. The innovation is not long term (40-50 years) nor breakthrough (10 years), instead new social-technical system innovation (20-30 years). The prediction is based on the other FSC certification schemes—Forest Management and Chain of Custody certification, which were needed around 20 years of innovation to become one of the most influential certification schemes in the world. The seriousness of FSC is also seen in how they communicate and engage with the government e.g. FSC Indonesia representative as a means of bridging communication between the industry and the government, also NGOs.

Transition theory has helped to map the situation between two sustainability tools. First, the regime is quite old considering some outdated concepts in laws and regulations overlapping with newest enacted regulations which are more explicitly focused on ecosystem services e.g. carbon and watershed protection. ES certification is put as an add-on to the existing regime of FSC certification scheme as a cognitive ruler. Regime is not only inhabited by public regulations but also two other rulers—cognition (belief systems, guidance, goals, agenda, learning processes) and norms (role relationships, values and behavioural norms) (Grin et al., 2010). Therefore, the role of agency here is important to operationalize rulers and resources.

Reconfiguration pathway is predicted as socio technical innovation journey for scaling up ES certification. ES certification scheme possibly alters the other FSC certifications in the future. This argument based on the existing documents required to be renewed e.g. FSC IGIs and FSC FM National Interpretation. Notwithstanding, along the process, external factors are crucial. As mentioned before the importance role of MEAs, ES certification is required to engage with other ES projects such as REDD+ and PES projects.

There are nine identified REDD+ and PES projects in Indonesia (Table 5.2). These projects are possibly able to jointly work with the ES certification in order to operationalise the tools broadly. These projects can also be seen as window opportunity for ES certification to get the tools tested on broadening beyond private sector. However, a caveat of the projects is that the projects are still struggling tenure issues, which perhaps can hinder or obstruct for getting certified. State lands which, in

reality, are used and claimed by communities, invite different interpretations of who has actual rights over them. Government issuance of licenses to use or convert forestlands on community-claimed lands can lead to conflict. This in turn can reduce incentives to protect forests. For example, REDD+ projects are effective when tenure rights are clear (Sunderlin et al., 2014). Therefore, there is the need to become cautious particularly on tenure issues on choosing ES sites to work with.

On the other hand, there is a window opportunity for ES certification fill the gap of commodity supply chain initiatives as provided in the Fig. 5.9. The picture implies that there is no tool available in protection initiative. Other initiatives—definition, identification and monitoring, have their tools already in place; Accountability framework, High Conservation Value (HCV), and Global Forest Watch respectively. ES certification tools can probably seize the gap to make the tools widely applied.

6.4. Limitation and recommendation

The results are based on secondary information (regulations, reports, procedure, etc.) and a limited number of informants—an unfortunately absence of informants from government (due to lack of availability and no-response). The results may offer generalizable lesson learnt remembering ES certification is novelty and not many people are familiar yet to the concept. Also, time constraint is a factor that needs to be considered especially required to approach informants and getting familiarized with the aim of the study. In order to better understand the whole interrelationships interplay, I suggest to not solely eliciting in agenda setting and negotiation level but also more exploration in the future implementation and monitoring system of ES tools have been officially implemented.

According to Mather (as cited in Lambin et al. (2014)), public sector governance of land use traditionally has relied on mixes of command-and-control instruments: direct land use policies (e.g., protected areas and other land use restrictions); land based activity policies(e.g., agricultural and forestry policies); and indirect land use policies (e.g., macro-economic, trade and fiscal policies, property law) (Mather, 2006). However, the study only scrutinised command-and-control instruments that directly affect land use (e.g., protected areas and other land use restrictions) and policies relating to land-based activities (e.g., agricultural and forestry policies).

In terms of the theoretical framework, transition theory is an appropriate theory to examine interrelationships between VSS and public regulations and to combine with public governance and NSMD governance concept. However, power, trust and legitimacy which three of them are connected and crucial, were not included in the study. Power, trust, and legitimacy are closely related to agency (actors) who will direct and drive rulers and resources.

Legitimacy is also an issue that needs to be addressed. The issue had emerged some counters to Northern standards such as the emergence of southern standards (Schouten & Bitzer, 2015) such—Indonesia Sustainable Palm Oil (ISPO) and Indonesia Timber Verification System (SVLK)—and disassociation (FSC disassociation case in Indonesia). The other evidence comes from sustainable coffee partnerships in Peru.

The partnerships rely on certification standards and lack of coordination cause competitions and confusions on definitions of "sustainable coffee" —especially between FairTrade and organic standards (Bitzer, Francken, & Glasbergen, 2008), that can be interpreted which sustainability standards lead to the sustainability. These experiences from other commodity certifications provide as lesson learn that business-to-business mechanism is not a panacea. Without supports from enabling regulations innovations can possibly get smaller and replaced by other innovations. Therefore, I suggest to further pay attention to power, trust, and legitimacy in the arena of regime between agents. In addition, further research are suggested to exercise Actor-Networks Theory (ANT) in ES certification field. ANT brings emphasization on bricolage, heterogeneity and messiness of innovations in locals to reveal social and technical elements interrelate each other.

7. Conclusion

The research aimed to understand ecosystem services certification and the interrelationships between ecosystem services certification as a voluntary sustainability standard and state regulations of ecosystem services in Indonesia by the help of some theoretical and conceptual frameworks operationalised in the research—transition theory, public governance, Non-state Market Driven governance, and the types of interrelationships in the agenda setting and negotiation.

The combination of theory and concepts in the research shows the ability of the combination to analyse how ecosystem services are translated in regulations and policy in Indonesia; how ecosystem services concept is defined and addressed in the FSC Ecosystem Services (ES) certification; discover and analyse interrelationships between FSC Certification of Ecosystem Services and Indonesian state regulations in the context of ecosystem services; explore the possible opportunities and synergies for the Ecosystem Services (ES) certification in terms of the existing interrelationships in Indonesia.

The theory and the concepts help the direction of the research in finding how interrelationships occurred between ES regulations and ES certification. The concepts are used; public governance and NSMD governance, have helped the discussion of the research played in the theoretical concept. Below are provided the key conclusions of the study arranged according to the order of research questions respectively:

Q1. Based on the findings, ES public regulations in Indonesia are shifting from implicitly to be more explicitly defined ES. Forest is defined a unity of ecosystem in the form of landscape containing biological resources dominated by trees in the natural alliance of its environment, which one cannot be separated. Therefore, ES are embedded in the public regulations defined as part of forest ecosystem. ES is the one of derivative forest products besides biotic and abiotic materials. Recent regulations have been defined as the benefits of ecosystems and the environment for human beings and the survival of life which includes the provision of natural resources, natural and environmental arrangements, advocates of natural processes, and the preservation of cultural values. The various translation of ES may trigger various interpretations leading to user confusions i.e. forest owners to comply with various regulations. In terms of traditional governance, ES public regulations are mandatory, imposing stick-and-carrot policy design, no room for firms to avoid regulatory obligations, and no incentives imposed for being certified by voluntary standard in general.

Q2. ES certification standard and procedures have defined ES in terms of carbon, biodiversity, watershed protection, soil conservation and ecotourism which are clearer and straightforward compared to the public ES regulations. ES certification comes as an optionality in the FSC Forest Management Certification. The certification aims to demonstrate impact of restoration and conservation uptakes by forest managers in order to get monetary incentives for doing so. ES is based on NSMD governance, without purview of the government, complementary the gaps of ES public regulations especially tools to measure benefits and impacts of restoration and conservation activities.

Q3. In all levels of governance process—agenda setting and negotiation, implementation; and monitoring and enforcement, interrelationships between VSS and public governance occurred. Three types of interrelationships have occurred—complementary, substituting, and antagonism, however leaning to complementarity. Currently, FSC has focused more on stakeholder engagement. Engaging with stakeholders e.g. market, government, and established networks of FSC is a key important point to make ES certification gain traction because antagonistic relationships tend to supress innovations. Antagonism occurs also in the public regulations where various regulations are exist with varying ES terms in the regulations leading to public confusion.

Q4. Based on the novelty of ES certification and the identified ES projects in Indonesia, there is a possibility of having synergies with existing ES projects through certifying the impacts and bringing them to the input based ES market. The identified projects were triggered by MEAs which are external stressors in innovation transition.

In sum, the interrelationships between ES certification are varied among complementary, supporting and antagonistic. However, the nuance of the interrelationships tends to be complementary rather than the other two types of interrelationships. ES tools are filling policy gaps where no specific regulations on impact measurements. Antagonism occurs in the public regulations where some regulations are not accommodating particularly land use issues which are required to be settled by governmental influence. Moreover, ES regulations are abundant and operating various terms.

Annex I Semi-Structured Interview Guideline

Translation of ecosystem services in state law and regulations (RQ1)	- Please state related national laws and regulations, which are concomitant to regulate ecosystem services covering watershed, carbon, biodiversity, soil conservation. - In which area these law and regulations are implemented? Private sector, conservation areas, and any kind of land use types. - In which type of instruments does each law and regulations bound? Law (*Undang-Undang* or UU), Government Regulation in Lieu of Law (*Peraturan Pemerintah Pengganti Undang-Undang* or Perpu), Government Regulation (*Peraturan Pemerintah* or PP), Presidential Regulation (*Peraturan Presiden* or Perpres), Presidential Instruction (*Instruksi Presiden* or Inpres), Ministerial Decree (*Keputusan Menteri* or Kepmen) and Circulation Letters (*Surat Edaran)*
FSC ES Certification strategies and interrelationships among public regulations and certification (RQ2 and RQ3)	- To what extent do sustainability standards go beyond regulation? - What new concepts have you seen emerging in Indonesia's state regulations over the last five years? - Why they have emerged in your opinion? - Was the issue already addressed in some voluntary standard or was it addressed first in a state regulation? - What do you think that is? - Does public regulation follow or lead? When and how? - Can the current regulations and voluntary standards help overcome environmental and social issues? - What are the issues and how? - Why do you think that is the case?
Upcoming collaborations among governance instruments (RQ4)	- Is there any adoption of the standard (parts or concepts) in laws and regulations? In what kind of instruments? - What kind of collaborations and synergies (projects, supports, etc.) exists? Between standard setter and the government—ministries related? - How many ministerial agencies are involved—their roles, outcomes? - Is there any possibility REDD+ and PES area to get certified by the FSC ES Certification? How?

Annex II Coding

Category	Code[3]
(Q1) ES regulations in Indonesia	
Law (*Undang-Undang*)	D1,D2,D3
Regulation in Lieu of Law (*Peraturan Pengganti Undang-Undang*)	D4
Government Regulation (*Peraturan Perundang-undangan*—Perppu)	D5, D6,D7,D8,D9,D10
Minister Regulation (*Peraturan Menteri*)	D11,D12,D13,D14,D15,D16,D17
(Q2) Ecosystem Services certification	
Certification process	R1, R3, R4
Stakeholder involvement	R1, R3
Standard formulation process	R4, R3
Benefit to forest	R6
(Q3) Interrelationships between public regulations and ecosystem services certification	
Complementary	
reinforcing public regulations	
filling a policy gap	
designing environmental legislation in response to actions by civil society	R6
threatening public regulations for private actors to adopt voluntary standard	
promoting information sharing and greater transparency	
participating to multi-stakeholder roundtables	
collaborating with NGOs and local communities for co-management of natural resources	R6
encouraging private standards to converge	
Substitution	
Endorsing certification in public policies	
Adopting private standards into law	R6
Antagonism	
Different instruments	R4
Conflicting management practices with different incentives	R5
Governments refusing to endorse	R5
consumer confusion	R6
(Q4) Possible opportunities and synergies for the ecosystem service certification with other existing ES projects	
REDD+ projects	R2
PES	R2

[3] DR: regulation documents; DV: ES certification documents; and R: interview documents

Annex III Principle 5 Annex C: Additional Requirements for Ecosystem Services*

I. General Indicators

1) A publicly available* Ecosystem Services Certification Document is developed and includes:
   i. A declaration of the ecosystem services* for which a promotional claim is being or will be made;
   ii. A description of the current condition of the declared *ecosystem services**;
   iii. Legal* tenure* to manage, use and/or receive payments for declared ecosystem services*;
   iv. Management objectives* related to maintenance and/or enhancement of declared ecosystem services*;
   v. Verifiable targets* related to maintenance and/or enhancement of declared ecosystem services*;
   vi. Management activities and strategies related to declared ecosystem services*;
   vii. Areas within and outside of the Management Unit* that contribute to the declared ecosystem services*;
   viii. Threats to the declared ecosystem services* within and outside of the Management Unit*;
   ix. A description of management activities to reduce the threats to declared ecosystem services* within and outside of the Management Unit;
   x. A description of the methodology used to evaluate the impacts of management activities on the declared ecosystem services* within and outside of the Management Unit*, based on the FSC Procedure for Demonstrating the Impact of Forest Stewardship on Ecosystem Services;
   xi. A description of monitoring results related to the implementation of management activities and strategies related to the maintenance and/or enhancement of declared ecosystem services*;
   xii. A description of results of the evaluation of impacts of activities and threats on the declared ecosystem services;
   xiii. A list of communities and other organizations involved in activities related to the declared ecosystem services*; and
   xiv. A summary of culturally appropriate* engagement* with Indigenous Peoples* and local communities*, related to the declared ecosystem services* including ecosystem services* access and use, and benefit sharing, consistent with Principle* 3 and Principle* 4.
2) The results of the evaluation of impacts demonstrate that verifiable targets* for the maintenance and/or enhancement of the declared ecosystem services* are met or exceeded; and
3) The results of the evaluation of impacts demonstrate no negative impacts from management activities on the declared ecosystem services* within or outside of the Management Unit*.

II. Management Indicators

A. All Services

1) Management indicators for all Ecosystem Services* ensure:
    i. Peatlands* are not drained;
    ii. Wetlands*, peatlands*, savannahs or natural grasslands* are not converted to plantations* or any other land use;
    iii. Areas converted from wetlands*, peatlands*, savannahs or natural grasslands* to plantation* since November 1994 are not certified, except where:
        a) The Organization* provides clear and sufficient evidence that it was not directly or indirectly responsible for the conversion; or
        b) The conversion is producing clear, substantial, additional, secure, long-term* conservation* benefits in the Management Unit*; and
        c) The total area of plantation* on sites converted since November 1994 is less than 5% of the total area of the Management Unit*.
    iv. Knowledgeable experts independent of The Organization* confirm the effectiveness of management strategies and actions to maintain and/or enhance the identified High Conservation Value* areas.

B. Carbon Sequestration and Storage

1) In addition to requirements to maintain environmental values* in Principle* 6, and Principle 9* when promotional claims are made regarding carbon sequestration and storage, the following are demonstrated:
    i. Forests* are identified to be protected due to their carbon stocks, according to the FSC Guidance for Maintaining and Enhancing Ecosystem Services.
    ii. Management activities maintain, enhance or restore* carbon storage in the forest*; including through forest* protection* and reduced impact logging practices for carbon, as described in the FSC Guidance for Maintaining and Enhancing Ecosystem Services.

C. Biological Diversity* Conservation*

1) In addition to provisions to protect biological diversity in Principle* 6 and Principle* 9, when promotional claims are made regarding biological diversity* conservation*, the following are demonstrated:
    i. Management activities maintain, enhance or restore*:
        a) Rare and threatened species* and their habitats*, including through the provision of conservation zones*, protection areas*, connectivity*, and other direct means for their survival and viability; and
        b) Natural landscape-level characteristics, including forest* diversity, composition and structure.
    ii. The conservation area network*, and conservation areas outside the Management Unit*:
        a) Represents the full range of environmental values* in the Management Unit*;
        b) Has sufficient size or functional connectivity, to support natural processes;
        c) Contains the full range of habitats present for focal species* and rare and threatened species*; and

d) Has sufficient size or functional connectivity with other suitable habitat to support viable populations of focal species* including rare and threatened species* in the region.

iii. Knowledgeable experts independent of The Organization* confirm the sufficiency of the conservation area network*.

D. Watershed Services

1) In addition to measures to protect water in Principle* 6 and measures to reduce the impact from natural hazards* in Principle* 10, where promotional claims are made regarding watershed services

i. An assessment identifies:

a. Hydrological features and connections, including permanent and temporary water bodies*, watercourses*, and aquifers*;

b. Domestic water needs for Indigenous Peoples* and local communities* within and outside of the Management Unit* that may be impacted by management activities;

c. Areas of water stress* and water scarcity*; and

d. Consumption of water by The Organization* and other users.

2) Measures are implemented to maintain, enhance or restore* permanent and temporary water bodies*, watercourses*, and aquifers*;

3) Chemicals, waste and sediment are not discharged into water bodies*, watercourses* or aquifers*; and

4) Management activities and strategies respect universal access to water, as defined in the UN resolution on the human right to water and sanitation.

E. Soil Conservation

1) In addition to measures related to soil in Principle* 6 and Principle* 10, where promotional claims are made regarding soil conservation, the following are demonstrated:

i. Vulnerable or high risk soils are identified, including thin soils, soils with poor drainage and subject to water logging, and soils prone to compaction, erosion, instability and run-off;

ii. Measures are implemented to reduce compaction, erosion and landslides;

iii. Management activities maintain, enhance or restore soil fertility and stability; and

iv. Chemicals and waste are not discharged into soil.

F. Recreational Services

1) In addition to measures to assess, prevent, and mitigate negative impacts of management activities on social values identified in Principle* 2 to Principle* 5 and Principle* 9, where promotional claims are made regarding recreational services, the following are demonstrated:

i. Measures are implemented to maintain, enhance or restore*:

a) Areas of importance for recreation and tourism including site attractions, archaeological sites, trails, areas of high visual quality and areas of cultural or historical interest; and

b) Populations of species that are a tourist attraction.

ii. The rights, customs and culture of Indigenous Peoples* and local communities* are not violated by tourism activities;

iii. In addition to health and safety practices in Criterion* 2.3, practices are implemented to protect the health and safety of tourism customers;

iv. Health and safety plans and accident rates are publicly available in recreational areas and areas of interest to the tourism sector; and

v. A summary is provided of activities that demonstrate prevention of discrimination based on gender, age, ethnicity, religion, sexual orientation or disability.

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