

1 Article

2 Voluntary Sustainability Certification and State 3 Regulations: Paths to Promote the Conservation of 4 Ecosystem Services? Experiences in Indonesia

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11 **Abstract:** The Forest Stewardship Council initiated a pilot Forest Certification for Ecosystem
12 Services (ForCES) project from 2011 to 2017 to improve and promote sustainable forest management
13 addressing a range of ecosystem services. Three sites in Indonesia were studied in the pilot. Whilst
14 the development of the certification standard was largely by a partnership between the certification
15 standard organization, civil society and research organisations, implementation and monitoring of
16 the impact of this voluntary sustainability standard will entail interaction with state regulations.
17 This study sought to understand how certification and state regulations concerning ecosystem
18 services in Indonesia interplay, particularly in the agenda setting and negotiation stage. Using the
19 conceptual lenses of transition theory and state and non-state market-based governance, the
20 interrelationships between ecosystem services certification and regulations were found to be both
21 complementary, supporting and antagonistic. The majority were complementary. Antagonism
22 occurred where regulations do not accommodate land use issues and due to different contradictory
23 state regulations. The voluntary instruments were developed largely in the absence of state
24 involvement and without any substitution with regulatory standards. Given the increasing
25 proliferation of voluntary market-driven initiatives at farm, forest concession and landscape level,
26 stakeholders developing and managing voluntary standards need to collaborate with national and
27 local governments to create synergy to enable their acceptance, adoption and effectiveness to
28 positively enhance the conservation of ecosystem services through incentivizing market-based
29 instruments.

30 **Keywords:** ecosystem services; voluntary sustainability certification; state regulation; plural
31 governance arrangements; Indonesia

33 1. Introduction

34 The Forest Stewardship Council (FSC) is an international organization providing a system for
35 voluntary accreditation and independent third-party certification. This system allows certificate
36 holders to market their forest products and services as the result of environmentally appropriate,
37 socially beneficial and economically viable forest management. FSC sets the standards for the
38 development and approval of FSC Stewardship Standards, based on the FSC Principles and Criteria
39 and sets standards for the accreditation of conformity assessment bodies (also known as certification
40 bodies) that certify compliance with FSC's standards. Based on these standards, FSC provides a
41 system for certification for organizations seeking to market their forest products as FSC certified. FSC
42 certification was arguably the first fully-fledged forest-related global non-state market-driven
43 (NSMD) governance (also known as private governance), created in 1993 through transnational
44 environmental and social groups [1]. FSC certification recognizes responsible "sustainable" forest



45 management through independently verified compliance with a set of underlying principles, criteria
46 and indicators that delineate the ecological, social, economic and policy impacts resulting from forest
47 management for specific objectives [2].

48 To contribute to tackle the threats to maintaining ecosystem services worldwide [3], FSC led the
49 Forest Certification for Ecosystem Services (ForCES) project from 2011 to 2017 to improve and
50 promote sustainable forest management considering a range of ecosystem services, and to address
51 threats to ecosystem services by providing greater incentives to those practicing responsible forest
52 management [4], [5, 6]). The project was intended as a pilot to identify and certify ecosystem services,
53 test possible business models, and study the benefits of certification on preservation of ecosystem
54 services. It was executed as a multi-stakeholder partnership with the Centre for International Forest
55 Research (CIFOR) providing scientific support and backstopping, WWF Indonesia, SNV Vietnam,
56 FSC Chile and the Asia Network for Sustainable Agriculture and Bioresources (ANSAB) as in-
57 country partners, largely funded by a grant from the Global Environment Facility (GEF) of the United
58 Nations Environment Program (UNEP). The project was conducted in ten pilot sites in Chile,
59 Vietnam, Nepal and Indonesia which covered a range of land-use types and status protected areas,
60 forest concessions, conservation areas, small-scale farms and community-managed forest areas.
61 Outcomes outlined at the beginning of the project were the development of scientifically tested and
62 auditable ES indicators for assessing compliance with certification criteria, a methodology to assess
63 social and environmental benefits of FSC certification, and the design of new certification business
64 models for rewarding the provision of ecosystem services. Among these planned outcomes, the
65 priority was enabling a global FSC system for certifying ecosystem services to be in place as a tool to
66 give ample incentives to forestry stakeholders practicing sustainable forest management. Because of
67 the ForCES project, in 2018 FSC developed new tools seeking to govern how ecosystem services are
68 provisioned. The resulting standard and accompanying documents outline compliance requirements
69 for ecosystem services within FSC certification, as voluntary additions to FSC Forest Management
70 Certification [7]. In Indonesia, a diverse set of stakeholders were consulted on and drafted a national
71 Ecosystem Services standard. The FSC ES certification is therefore a voluntary sustainability
72 standard, a form of NSMD governance.

73 Another form of NSMD governance of forest ecosystems is the REDD+ framework, which
74 addresses deforestation and land degradation by financially rewarding developing countries for
75 emissions reductions associated with a decrease in the conversion of forests to alternate land uses.
76 REDD+ finance can come from public and private, bilateral and multilateral sources. Payments for
77 Ecosystem Services (PES) occur when the beneficiaries or users of an ecosystem service make
78 payments to the providers of that service. In practice, this takes the form of payments made in return
79 for a flow of benefits or ecosystem services [8], such as the amount of carbon sequestered, or input-
80 based payments based on management practices applied to restore or protect ecosystems, such as
81 forest restoration programs [8]. The concept of PES aims to incentivize land and forest owners to
82 ensure a guaranteed flow of ecosystem services [9].

83 Laws and regulations have been the main forms of governance used by governments, juxtaposed
84 with customary law by locals and traditional authorities [10]. However, governance arrangements
85 can be driven by non-state actors, international markets and consumers' agency, with non-state
86 governance increasingly emerging as an alternative to command-control mechanisms such as laws
87 and regulations [11]. In the Netherlands for example, voluntary sustainability standards are actively
88 promoted by the government as an alternative and addition to regulations [12]. Cashore et al. [13]
89 suggest that NSMD governance excludes governments from formal participation in governance, as
90 non-state actors govern all processes. However, state and non-state actors operating in the same
91 sector can create interrelationships between policy instruments such as state regulations and
92 voluntary standards, tools and guidelines. Interrelationships between policy instruments and
93 sustainability tools are important to improve effective land use [11]. However, interactions between
94 state and NSMD governance arrangements can cause difficulties in attributing causality of impacts



95 to specific policy instruments [11]. These interrelationships exist horizontally between stakeholders
96 – and also vertically from global to national and vice versa. Types and pathways of
97 interrelationships between state governance and NSMD governance have been shown to occur at
98 three main stages in the regulatory process of agenda setting and negotiation, implementation, and
99 monitoring and enforcement [14]. Lambin et al. [11] then identified three main interactions—
100 complementarity, substitution, and antagonism— occurring at these different stages. Complementarity indicates mutual interactions between two instruments—public regulations and
101 sustainability standards are positively reinforcing—e.g. both governance instruments seek to fill the
102 gaps of the other. Substitution is when non-state-driven regulations are adapted to state regulations.
103 Complementarity and substitution may intertwine and overlap. Antagonism is when governance
104 instruments conflict with each other at any stage of the process. The purpose of defining
105 interrelationship aims to provide clarity on the interrelationships between certification and
106 regulations [11]. Interrelationships between governance arrangements are often more complex in
107 practice with intricate constellations, bricolage and hybrids, involving other forms of governance
108 alongside state and NSMD such as customary and project-based governance [15]. As new forms of
109 governance related to ecosystem services expand, this new grey space of governance raises questions
110 on how well the certification of ecosystem services fits with and is situated within state regulations.
111

112 A useful lens to view the introduction of ecosystem services certification into state governance is
113 transition theory. This theory originates from the technological sector and seeks to understand
114 complex sociotechnical transitions from an evolutionary economics perspective [16-18]. The resulting
115 Multi-Level Perspective (MLP) on transitions has been employed in policy contexts to analyze
116 conditions at regime, landscape and niche level (c.f. [19-21]). A transition is viewed in the MLP as a
117 regime shift from one sociotechnical regime to another causing radical changes in existing systems.
118 The term ‘radical’ addresses the speed of changes, rather than the size of changes. Radical changes
119 may be sudden but also incremental, piecemeal and slow. Niches are where new innovations,
120 including policy instruments, are developed and radical novelties emerge. The MLP conceptualizes
121 interests in the alignment of paths within levels. Levels are defined as interactions between processes
122 with three levels identified: technological niche, sociotechnical regime, and sociotechnical landscape.
123 A sociotechnical regime refers to the coordination between technology and social groups, such as
124 scientists, policy makers, and users. Both niche and regime communities may share rules that
125 coordinate actions. These rules maybe stable and well-articulated for regimes, whereas for niche-
126 innovations they are often unstable and emergent [18]. Three types of rules are recognized: cognitive
127 (belief systems, guidance, goals, agenda, learning processes), regulative (regulations, standards,
128 laws), and normative (role relationships, values and behavioral norms) [18]. Niches are where
129 innovations, including policy instruments, are developed and radical change emerges. Actors’ ability
130 to acquire knowledge and understand cognitions and activities make links between processes at
131 different levels and highlight that the dynamics from a MLP are socially constructed. In the context
132 of ecosystem certification, niches can be seen as incubations for creating and testing new
133 sustainability tools [21]. ForCES can be seen as a novel certification tool located at niche level. A
134 transition to a regime level - the current law and regulations on ecosystem services - is driven by
135 exogenous factors such as climate change, biodiversity deterioration and global policy initiatives
136 tackling environmental degradation and deforestation such as REDD+ and payments for ecosystem
137 services [21].

138 In this study transition theory and governance concepts are used as frameworks to understand how
139 voluntary certification and state regulations concerning ecosystem services evolved and interact in
140 Indonesia, especially in the development stage of agenda setting and negotiation. The questions
141 investigated are:

- 142 1. How are ecosystem services translated into state regulations in Indonesia?
- 143 2. How are ecosystem services defined in the FSC ecosystem services certification?



144 3. What are the interrelationships between state regulations and FSC ecosystem services
145 certification in Indonesia?

146 4. What opportunities and synergies exist between certification and regulations regarding
147 ecosystem services in Indonesia?

148 **2. Materials and Methods**

149 *2.1. Data collection*

150 Data was collected in two stages. For primary data, first a purposive sampling design accompanied
151 by snowballing was used to identify 21 key informants from the Indonesian government, FSC and their
152 partners in the ForCES initiative (WWF, CIFOR, United National Global Environmental Facility). The
153 snowballing process ended when informants did not provide new names or information. This resulted
154 in 13 semi-structured interviews in 2017 with national government officials, researchers, project
155 implementers (timber companies, auditors, REDD+ proponents) and consultants involved directly and
156 indirectly in the ForCES project. The interviews were conducted in Bahasa and English using a
157 guideline covering the four research questions.

158 Secondary data was gathered on three areas; (1) Indonesian state regulations based on official
159 documents, policy documents, websites, databases, media and press releases; (2) FSC ES certification
160 documents including FSC International Generic Indicators (IGIs), the ES Procedure and FSC Ecosystem
161 Services Strategy based on literature provided by FSC and partners on the standard and their websites.
162 At the time of the fieldwork the project was ongoing and the standard was under development, with
163 the first public consultation on the standard completed and the second draft under public consultation;
164 (3) Documents on REDD+ and PES projects in Indonesia indicating the possibilities, shortcomings,
165 synergies and opportunities of how REDD+ and PES sites could become certified by ForCES. The
166 review of relevant literature also aimed to deepen understanding and triangulate the interview data.
167

168 *2.2. Content analysis*

169 The interview transcripts and literature on regulations and FSC certification were read and
170 analyzed for definitions of ES, the scope of these ES, and policies strategies and rules related to ES.
171 Keywords were manually coded using a two stage thematic analysis framework, with codes allocated
172 based on meaningful expressions and single or short sequences of words and sentences. Content was
173 first categorized under the headings of laws (Undang-Undang or UU), government regulation in lieu
174 of law (Peraturan Pemerintah Pengganti Undang-Undang or Perpu), government regulation (Peraturan
175 Pemerintah or PP), ministerial regulation (Peraturan Menteri), ministerial decree (Keputusan Menteri
176 or Kepmen) and circulation letters (Surat Edaran). The review of regulations was limited to Ministerial
177 level regulations (rather than provincial and local level) to provide a picture of how state regulations
178 governing ecosystem services are implemented on a national level. FSC normative documents were
179 classified and coded as Policy, Standard, Directive, Advice Note, Procedure, Interpretation, Guidance
180 Document, and National Standard. The ForCES documents were classified as Standard, Procedure,
181 Guideline and Directive. Multiple coding was possible for each document. In the second categorization
182 stage, documents were classified according to the four research questions..

183 **3. Results**

184 The results of the document reviews combined with interviews provide a picture of how
185 ecosystem services are dealt with in state regulations and in private sector voluntary market-based
186 standards.

187 *3.1. Ecosystem services in Indonesian state regulations*

188 Two main laws regulate forestry in Indonesia: Law No. 5/1990 on Conservation and Law No. 41/1999
189 on Forestry, both which form the basis for a series of technical regulations, shown in Table 1. Law



190 No.5. covers how to manage and conserve supporting ecosystem services, exotic plants and wildlife
 191 including allowable utilization under certain conditions and monitoring of hunting, trading and
 192 research. This law does not explicitly mention the term ecosystem services. It states the types of
 193 organizations that can govern the ES such as national parks, nature parks, forest parks, nature
 194 sanctuaries and wildlife reserves. Law No. 41 defines forests as “a unity of ecosystem in the form of
 195 landscape containing biological resources dominated by trees in the natural alliance of its
 196 environment, which one cannot be separated”. Thus, ES are implicitly regulatory embedded in
 197 forests. ES are also seen as forest products alongside the biotic and abiotic functions such as plants
 198 and soils, and the law defines that ES also comprise tourism, water and beauty of nature. Shown in
 199 Table 1, ecosystem services were specified in nineteen regulations.

200 **Table 1.** Indonesian regulations dealing with ecosystem services

| State regulation | Type of ecosystem services | | | |
|---|----------------------------|------------|------------|----------|
| | 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 UNFCCC | | | 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 | | | | x |



| State regulation | Type of ecosystem services | | | |
|---|----------------------------|------------|------------|----------|
| | Provisioning | Supporting | Regulating | Cultural |
| Business Guideline for Tourism Activity on Protected Forest | | | | |
| 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 |

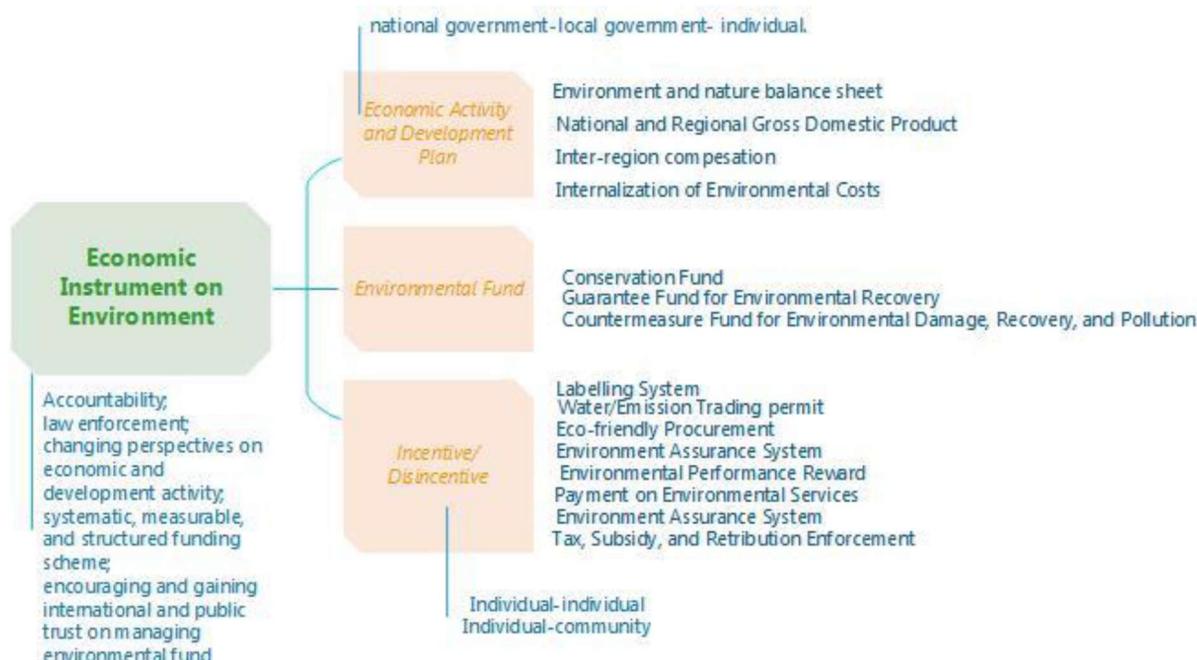
201

202 However, not all these laws define or deal with ecosystem services consistently. Government
 203 Regulation No. 46/2017 on Environmental Economic Instruments specifically explicitly explains the
 204 scope of environmental services, whereas Government Regulation No. 28/2011 on Nature
 205 Conservation and Preservation Management openly mentions tourism, water and carbon as a part of
 206 ecosystem services without explaining the scope of these ecosystem services. Article 6 of Law No.
 207 41/1999 states that forests have three functions: conservation (due to their biodiversity, protection (for
 208 their ecological functions), and production (for timber or for future conversion). Regulations
 209 No.45/2004 on Forest Protection, No. 44/2004 on Forest Planning, No. 6/2007 jo PP3/2008 Forest
 210 Management, Planning and Utilization, No. 46/2017 on Environmental Economic Instruments, and
 211 No. 28/2011 on Nature Conservation and Preservation Management however all have different
 212 interpretations of forests and ES. The first three regulations govern provisioning services with timber
 213 and non-timber forest products the most mentioned. Regulation No. 28/2011 regulates nature
 214 conservation and preservation management but does not explicitly mention ES, instead forest
 215 services are addressed in terms of wildlife and unique ecosystems. Regulation No. 46/2017
 216 specifically defines environmental services as benefits derived from ecosystem and environment for
 217 human beings and for survival inter alia resource provision, regulating services, natural processes,
 218 and cultural preservation. Another example is the Law No. 32/2009 on Environmental Protection and
 219 Management which governs natural resources, human health, economic growth, energy,
 220 transportation, agriculture, industry and international trade with the aim of minimizing impacts on
 221 environment, by requiring an Environmental Impact Assessment of potentially harmful activities.
 222 However Perpu No.1/2004 which amended the 1990 Law on Forestry, allows mining in state forests
 223 which had been established before the 2004 law was enacted.

224 Twelve years after being mandated in Articles 42 and 43 of Law No. 32/2009, the Government
 225 Regulation No. 46/2017 on Economic Instruments on the Environment was adopted. This regulation
 226 explicitly defines environmental services as "the benefits of ecosystems and the environment for
 227 human beings and the survival of life which includes the provision of natural resources, natural and
 228 environmental arrangements, advocates of natural processes, and the preservation of cultural
 229 values". The regulation seeks to improve accountability and law enforcement on environmental
 230 protection and management by changing the behaviour of the government concerning economic and
 231 development activity; requiring systematic, measurable and structured funding scheme; and
 232 encouraging and gaining international and public trust on managing environmental funds. However,
 233 the regulation does not explain how to measure the benefits of environmental services or how to
 234 measure the impacts of restoration and conservation activities. Three main economic instruments are
 235 identified in the regulation, shown in Figure 1. The first instrument, Economic Activity and
 236 Development Plans, aim to internalize environmental externalities at national, regional and local
 237 scale. The second instrument, the Environmental Fund, acts as a monetary redirecting process
 238 between the government as environmental provider and individuals as beneficiaries through a
 239 performance-based agreement to increase environmental services. The fund covers water protection,
 240 biodiversity protection, carbon sequestration, nature preservation and other environmental services,
 241 operating on national-regional government, regional-government, national government-

242 individual, and regional government-individual scales. Compensation can be monetary or non-
 243 monetary based on the costs of environmental conservation, community empowerment and
 244 implementation, which can be paid to the ecosystem services provider through grant mechanisms,
 245 based on criteria including proof of land ownership, authority to provide, generate and increase
 246 environmental services and measurable valuation. Compensation is promoted to fund restoration,
 247 conservation, biodiversity enrichment, community capacity improvement on environmental
 248 protection, renewable energy, sustainable economic development and its supporting infrastructure.
 249 Compensation can be financed from national or regional budgets, or from other sources. Incentives
 250 include eco-friendly labelling systems; procuring eco-friendly goods and services; tax, subsidy and
 251 retribution enforcement; eco-friendly financial institutions; waste and emission trading permits;
 252 environment assurance; payments for environmental services and performance rewards on
 253 environmental management and protection. The third set of instruments, aim to provide incentives
 254 and disincentives through a range of mechanisms, taxes, subsidies and permits for non-governmental
 255 actors to protect environment and limit environmental degradation by reducing liability, easing
 256 implementation, facilitation and assistance; guidance and support, rewards and acknowledgement
 257 and promoting corporate public performance beyond that required in laws to apply sustainable
 258 consumption and production.

259

260 **Figure 1.** Visualization of Government Regulation No. 46/2017 on Economic Instrument on Environment

261

262 In 2009, the Government participated in two international initiatives to support REDD+
 263 readiness: The World Bank's Forest Carbon Partnership Facility and the UN-REDD Programme. At
 264 the national level, a REDD+ strategy was developed, a legal framework to regulate REDD+ was
 265 established under Ministerial Regulation P.30/2009 for the Implementation Procedures of Reducing
 266 Emissions From Deforestation and Forest Degradation (REDD). This regulation includes a national
 267 reference emission level and a system to monitor greenhouse gas removals and emissions from
 268 forests. At the sub-national level, several provincial governors are strong supporters of the REDD-
 269 plus concept and have issued decrees, established working groups and encouraged the involvement
 270 of external, non-governmental actors to promote REDD+ activities.

271

Indonesian regulations that address ES have been triggered by international agreements such as
 272 the United Nations Framework Convention on Climate Change (UNFCCC) and Convention on
 273 Biological Diversity (CBD) leading to Ministerial Regulation P.30/2009. The implementation of
 274 Reducing Emissions From Deforestation and Forest Degradation (REDD) provoked Ministerial

275 Regulation P.36/2009 Procedures for Licensing for Commercial Utilization of Carbon Sequestration
 276 and/or Storage in Production and Protected Forests, the 2009 Government pledge to cut greenhouse
 277 gas (GHG) emissions by 2020 and National Action Plan Addressing Climate Change. Prioritization
 278 of forest rehabilitation in the National Medium-Term Development Plan 2010-2014 stems from the
 279 UNFCCC COP 13 in Bali to implement the Kyoto Protocol. Laws that facilitate REDD+ have been
 280 enacted: guidance REDD+ pilot projects (Ministerial Decree P68/2008); mechanisms for reducing
 281 emissions from deforestation and degradation (Ministerial Decree P30/2009), Ministerial Regulation
 282 P20/2012 setting principles and criteria for demonstration activities and rights and obligations of
 283 forest carbon project proponents.
 284

285 *3.2. Ecosystem services governance by non-state market-driven initiatives*

286 The most recent FSC Principles and Criteria document (FSC-STD-01-001 V5-2) from 2015 [22] is
 287 explicit in defining ecosystem services as: "The benefits people obtain from ecosystems including
 288 provisioning services such as food, forest products and water; regulating services such as regulation
 289 of floods, drought, land degradation, air quality, climate and disease; supporting services such as soil
 290 formation and nutrient cycling; and cultural services and cultural values such as recreational,
 291 spiritual, religious and other non-material benefits". Additional incentives for forest owners and
 292 managers to address ES were however seen as much needed, given the main focus on exploiting
 293 timber in the FSC standards. FSC and the ForCES partners recognized that forests also provide other
 294 goods and services and that beneficiaries of forest ecosystem services and products can be any person,
 295 group of persons or entity that uses or is likely to use the benefits, which can include persons, groups
 296 of persons or entities located around forest areas such as local communities, indigenous peoples,
 297 forest dwellers, neighbours, downstream water users, tenure and use rights holders. In the ForCES
 298 Guidance document, end users such as consumers or indirect beneficiaries of carbon mitigation are
 299 however not considered as beneficiaries [23].

300 Given this context, the ForCES project [4-6] sought to provide additional incentives to forest
 301 owners and managers and community-based forest organizations to promote sustainable forest
 302 management and set aside forest areas to protect biodiversity in intact landscapes. The aim of the
 303 project was to adopt FSC standards to emerging ecosystem services markets and target ecosystem
 304 services with present or future market potential and to generate and distribute income from
 305 ecosystem services besides from timber to forest concession owners and managers. After planning
 306 and implementing management activities to protect or restore ecosystem services at the three ForCES
 307 project pilot sites (shown in Table 2), developing impact indicators and establishing methodologies
 308 for monitoring these, these tools were tested and developed through certification of the sites and
 309 identifying business models of who would pay for the certified ecosystem services, how, and how
 310 much for each ecosystem service at each site. Of the three sites, only in the East Kalimantan site did
 311 stakeholders decide to pursue ES certification.

312
 313 **Table 2** ForCES project pilot sites Indonesia
 314

| Site name | Forest type | Area in hectares (ha) | Governance model | Ecosystem services being managed |
|-----------|---|---------------------------------|---|----------------------------------|
| Lombok | Semi-evergreen tropical mountain forest | 3,036 ha (185 FSC certified) | Managed by four community forest groups Government owned Forest Management Unit (<i>Kesatuan Pengelolaan Hutan</i>) | Watershed services |

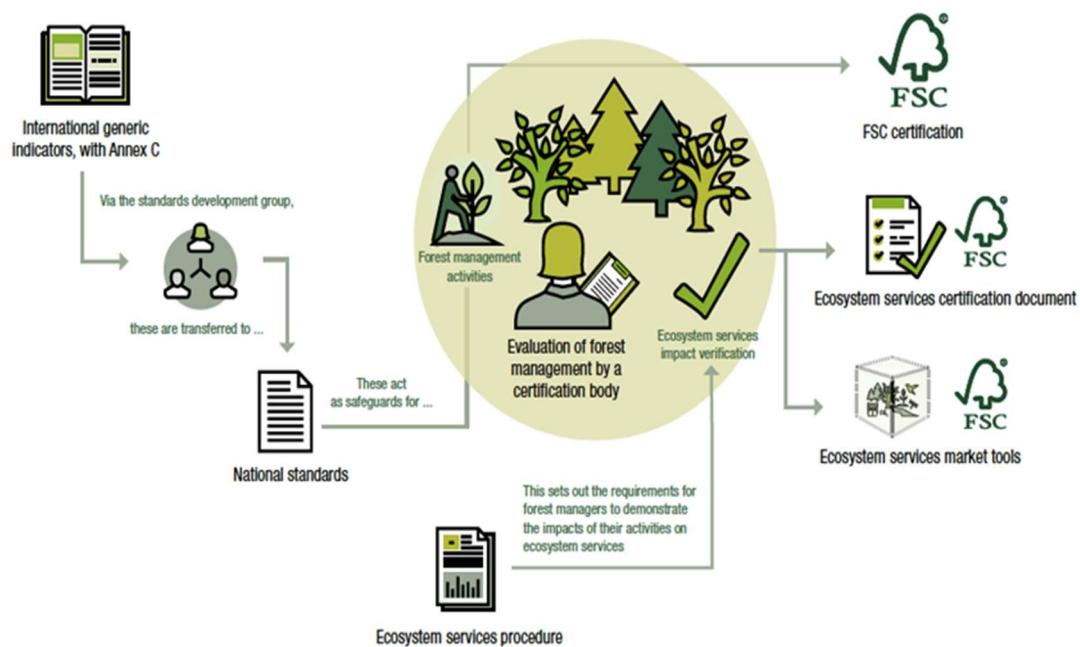
| | | | | |
|--------------------|--|--|--|--|
| East Kalimantan | Natural tropical forest (lowland and highland Dipterocarp) | 93,425 ha (84,850 FSC certified 15,857 ha Protected area) | Privately owned forest concession logging company PT. Ratah Timber Protected area | Biological diversity conservation Carbon sequestration and storage |
| West Kalimantan | Natural tropical forest and lake | 7,076 ha | Government owned Forest Management Unit (<i>Kesatuan Pengelolaan Hutan</i>) National Park Ecotourism areas managed by communities in two villages, collaborative management approach | Biological diversity conservation Recreational services |

315

316 During the project, an FSC Ecosystem Services Procedure was established and final policy
 317 document published in May 2018. This procedure established new tools to strengthen incentives for
 318 the protection of ecosystem services. FSC sees its certification as providing businesses with a
 319 'safeguard model': providing a guarantee to potential buyers of FSC-certified products about how
 320 social, environmental, and economic values are protected in forests. To effectively apply this to
 321 emerging markets for ecosystem services, FSC-certified forest management unit (FMU) concession
 322 holders and managers needed to augment this with information about the quantity of the ecosystem
 323 service: known as a 'quality model'. FSC ES certification aimed to do this by develop its own systems
 324 and tools for quantifying ecosystem services and incorporating systems developed from other quality
 325 models (e.g. Verified Carbon Standard, Gold Standard Foundation). The first tool is the FSC
 326 Ecosystem Services Procedure, which allows FSC certificate holders to demonstrate the impact of
 327 their forest management activities on ecosystem services. Once impacts are verified, FSC certificate
 328 holders can make Ecosystem Services Claims, to provide governments, investors, buyers and
 329 businesses with assurance that the impacts they are paying for do preserve ecosystem services. These
 330 procedures were included the FSC global strategy as Annex C, as an addition to FSC's International
 331 Generic Indicators. FSC saw this as enabling the promotion and wider adoption of ES tools, riding
 332 on the broad interest in ecosystem services among FSC network members [5]. Previously ES had been
 333 mainly addressed in FSC Principle 9 on the Maintenance of High Conservation Value Forests. ES
 334 certification therefore became embodied as an FSC standard (FSC-STD-60-004 V1-0 EN International
 335 Generic Indicators), procedures (FSC-PRO-30-006 Demonstrating the Impact of Forest Stewardship
 336 on Ecosystem Services), a discussion paper (FSC-DIS-30-006 Market Tools and Trademark Use for
 337 Demonstrated Ecosystem Services Impacts) and guideline (FSC-GUI-30-006 Guidance for
 338 demonstrating ecosystem services impacts).

339 FSC ES certification can be adopted by privately-owned forest concessions and community-
 340 owned forests, as long as they can prove their ability to demonstrate their environmental activities.
 341 Figure 2 shows how FSC ES certification can be obtained by forest owners and the focus on ES in
 342 FSC certification.

343 **Figure 2.** ForCES ecosystem services certification process



344

345

Source: [24].

346 ES certification is seen by FSC and the developing partners as part of a broader strategy to
 347 increase the market value of sustainable timber and the FSC brand. The explicit attention to ES
 348 emphasizes the verification of the outputs, outcomes and impacts of managing and governing forests
 349 to maintain and improve ecosystem services. A measurable and verifiable theory of change adapted
 350 to the local context is compulsory for forest concession holders seeking ES certification, with
 351 assessment methods aiming to be credible through their third party nature, and being replicable due
 352 to being based on verifiable information such as scientific publications.

353 Stakeholders in the ForCES project also sought to stimulate one complementary regulatory
 354 process supporting ES. For example, WWF Indonesia worked with the government of Lombok to
 355 formulate regulations concerning tourism in a protected area.

356 Interviewees mentioned concerns about the legitimacy of voluntary standards such as the
 357 Round Table for Sustainable Palm Oil (RSPO) certification and a number of cases where FSC has
 358 disassociated itself from timber companies, refusing the certification of any wood produced by
 359 companies, even if it was harvested in FSC-certified forests [25]. Such dissociation has not happened
 360 specifically for ES certification, and the state did not play a role in these affairs as they are internal to
 361 the certification systems. This is unlike the role of the state in Indonesian Sustainable Palm Oil
 362 certification (ISPO), where the government is certification owner but has also revoked certification
 363 for companies not complying with the ISPO standard [26]. The existence of both mandatory, such as
 364 the mandatory government ISPO alongside and voluntary standards such as RSPO was also stated
 365 to create confusion among public, consumers and private sector.

366 At least 39 REDD+ and PES projects and schemes have been commenced in Indonesia, which
 367 provide another form of NSMD governance of forest ecosystems [27, 28]. These have been
 368 implemented by non-governmental organisations and private sector and most were in the design
 369 phase or early implementation stages, with the oldest originating from 2001. These projects mainly
 370 address two ecosystem services: carbon and watershed protection and vary in terms of payments,
 371 some being output based - measuring the additionality of the REDD+ projects to business as usual
 372 situation – the most common type of schemes for PES [8] and others are input based. The PES schemes
 373 have been developed with small number of stakeholders and communities in sites in Lombok,
 374 Kapuas Hulu, West Kalimantan and East Kalimantan. Private sector enterprises and a state company

375 have been involved in five of the projects as buyers and have used the carbon offsetting system as
376 part of their corporate social responsibility schemes, mainly to avoid planned deforestation.

377 Zero-deforestation commitments advocating responsible sourcing of agricultural value chain
378 commodities such as palm oil, timber, soya and cacao. These aim to end deforestation caused by
379 activities in the supply chain. By 2018 a number of commitments by the private sector had been
380 announced in Indonesia, most at a definition level, such as the Accountability Framework, and some
381 and identification level such as High Carbon Stock Approach (HCSA) and deforestation and forest
382 degradation monitoring, for example by Global Forest Watch and WWF. State regulations, such as
383 the extended 2017 Moratorium on primary forest clearing and conversion of peatlands, 2016 Palm oil
384 permit moratorium, setting up the Peatland Restoration Agency and 2014 Plantation Act stimulated
385 private-NGO-civil society and research partnerships, such the HCSA initiative between Indonesia's
386 Palm Oil Smallholder Union, NGOs the Forest Trust and Greenpeace, private sector and later the
387 UNDP. These were later endorsed by the then Deputy Director for International Cooperation and
388 Climate Change Finance at the Ministry of Finance of Indonesia the government "to support the
389 enabling condition to achieve our government's National Determined Contribution target" [29].
390 Starting in 2013, companies made forest-related sustainability commitments in their palm oil and
391 pulp and paper value chains in Indonesia termed "No Deforestation, No Peat, No Exploitation"
392 (NDPE). Many of these initiatives have since converged in the form of jurisdictional multi-
393 stakeholder initiatives involving government, companies, and civil society at subnational level, such
394 as the South Sumatra Eco-Region Alliance/Partnership Consortium for Landscape Management and
395 the Central Kalimantan Commitment to Sustainable Palm Oil [30, 31].
396

397 **4. Discussion: Interrelationships between state and non-state ecosystem services governance 398 arrangements, opportunities and synergies**

399 Transition theory emphasizes that changes cannot be expected to happen overnight or
400 substantially at local, national, regional or global scale. The empirical results of this study reflect this,
401 showing how after seven years ES certification is still in its infancy. In comparison, FSC forest
402 management certification, one of the oldest voluntary sustainability standards, has taken over two
403 decades to become mainstreamed as a form of NSMD recognized in both production landscapes and
404 consumer markets [14, 32]. ES certification was developed as an add-on to FSC certification. This
405 pairing strategy aims to speed both voluntary sustainability certification instruments in gaining
406 traction and uptake from a niche to regime level. FSC is trying to elevate the ES concept to more
407 tangible practices to demonstrate restoration and conservation activities have positive impact on the
408 provision of ecosystem services, evidenced in terms of the pledge in the FSC Global Strategy 2015-
409 2020. ES certification can be seen as a new social-technical system innovation which may take place
410 in the next 20 to 30 years. This prediction is based on the experience of FSC Forest Management
411 certification and Chain of Custody certification, which took around 20 years to become one of the
412 most influential and widely adopted voluntary sustainability certification schemes in the world [14,
413 33].

414 *4.1. Interactions between voluntary ecosystem services certification and Indonesian state regulations*

415 Transition theory predicts that the planning of novel practices and structural change presuppose
416 each other[18]. In this case in Indonesia, ES certification as a novel practice and governance
417 arrangement was found to interact with state regulations with different complementarities,
418 antagonisms and absences of collaboration, mirroring the interactions conceptualised by Lambin [11],
419 and summarised in Table 3.
420

421 **Table 3** Interactions between state regulations and non-state market driven ecosystem services
422 governance in Indonesia

| Type of interactions | Examples |
|----------------------|----------|
|----------------------|----------|

Complementary

- Private or hybrid instruments reinforce state regulations
 - Private or hybrid instruments fill policy gaps
 - State threatens regulations for private sector to adopt voluntary standard
 - State promotes information sharing and greater transparency
 - State participates in multi-stakeholder roundtables
 - State collaborates with NGOs and local communities for natural resource co-management
 - State encourages private sector standards to converge
 - ES certification fits into the tools (labelling systems) included in Government Regulation No. 46/2017 on Economic Instrument on Environment.
 - ES Certification fills policy gaps on halting deforestation and promoting sustainability; Fills gaps on how to measure impacts of restoration and conservation projects
 - No examples found for ES certification. State mandatory standards ISPO for palm oil and SVLK for timber
 - ES certification reinforces government Indonesian Timber Legality Verification System (*Sistem Verifikasi Legalitas Kayu*, SVLK).
 - No examples found for ES certification
 - State collaboratively working with CSOs and community stakeholders on ecotourism in a ForCES project
 - No examples for ES certification, but apparent in REDD+ and PES projects
-

Substituting

- State endorses certification in public policies
 - State adopts certification standards in laws
 - No endorsement by state of ES certification
 - No aspects of ES certification adopted in laws, although RSPO oil palm certification standards mirrored in ISPO, and aspects of timber legality VPA adopted in SVLK timber legality system
-

Antagonism

- Different instruments propose conflicting management practices and/or different incentives
 - Standard owner's dissociation of non-compliant companies.
 - Existence of norms undermines efforts to develop stronger regulations
 - Various instruments and initiatives define ES inconsistently
 - Disassociation of companies from FSC and RSPO certification, no state role. Created consumer confusion.
 - Unclear land tenure makes compliance with ES certification challenging
-

Absence

- Private instruments developed without state involvement
 - State develops ES certification instruments without private sector involvement
 - ES certification in Indonesia, some limited state involvement in one ForCES project
 - No example for ES certification
-

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A number of complementary interrelations were found. Multilateral, international environment agreements are known to be important triggers in forming new and reformed regulation as a means of demonstrating international commitments [34]. In this case, Indonesian regulations that address ES were triggered by international agreements such as the UNFCCC, CBD, REDD and Kyoto Protocol. State regulations, particularly on Environmental Economic instruments, created a legal

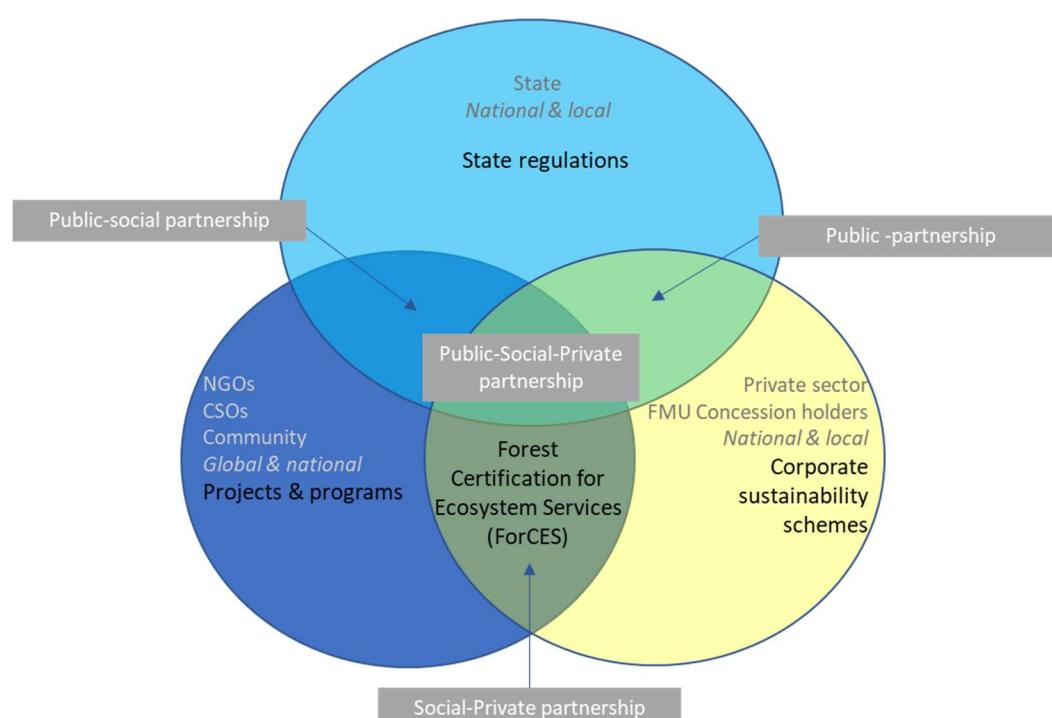


429 entrance point and enabling condition for market driven governance arrangements, such as the ES
 430 certification. However, whilst the Economic Instruments Law talks specifies ecolabels, it does not
 431 explicitly specify voluntary sustainability standards, such as ES certification or voluntary certification
 432 schemes such as FSC and RSPO, where specific ecosystem services are made explicit.

433 This experience mirrors Milder and colleagues [35] findings relating to SAN/Rainforest Alliance
 434 certification, that policies are sometimes in synergy and sometimes at cross-purposes. This
 435 complementarity can create enabling conditions for private governance such as setting up laws and
 436 regulations on land rights and deregulating bottlenecks in value chain certification, but multiple laws
 437 and regulations in conjunction with sustainability tools and private initiatives can create difficulties
 438 in determining which were effective and contributed to meet sustainability goals. Pacheco et al's [36]
 439 investigation of the state and private certification regimes governing palm oil supply in Indonesia
 440 show a similar situation also how complementarities emerged among instruments with global reach,
 441 but that disconnects persist especially within state regulations, between regulations and private
 442 standards, and between standards operating across different territorial scales.

443 In ES certification in Indonesia - shown in Figure 3 - a multi-stakeholder social-private partnership
 444 between civil society, private sector and non-governmental entities collaborated to create
 445 new type of governance for ecosystem services. This is form of NSMD governance where civil society
 446 and industry collaborate, also termed corporate governance [37]. The collaboration has not yet led to
 447 public-social-private governance arrangement foreseen by Delmas and Young [38]. This difference
 448 may be due to the niche innovation status of ES certification, given that market demand for ES
 449 products and certification is not yet well-established and the ForCES project acted as an incubator for
 450 creating and testing new sustainability tools [21].
 451

452 **Figure 3.** Forest Ecosystem Services Certification governance as a social-private partnership
 453



454
 455 (adapted from Delmas and Young [38])
 456

457 As ES certification is in the process of being scaled up in the socio-technical innovation journey,
 458 further complementarity could be gained. ES certification has already resulted in changes in FSC
 459 certification such as the FSC IGIs and FSC FM National Interpretation, and to upscale further, the
 460 civil society, NGO and private sector partners behind ES certification may need to engage with other
 461 certification schemes to enact a regime change. ES certification could potentially fill gaps in



462 commodity value chain certification schemes, which while making some ES explicit, have a
463 commodity limited focus, rather than an ecosystem or landscape. The more holistic approach taken
464 by ES certification and the tools and guideline developed, including the High Conservation Value
465 (HCV) concept, is complimentary with initiatives such as the Accountability Framework Initiative,
466 the Policy Transparency Toolkit (SPOTT), Global Canopy's Forest 500 initiative, the TRASE platform
467 and Global Forest Watch which support monitoring and reporting. The ES certification approach may
468 help fill gaps, particularly when initiatives are in a pilot phase – allowing complementarity to be
469 designed in- and where initiatives do not have global application or do not focus on all or the same
470 commodities. Increased complementarity can enable broader focus on ecosystem services, increase
471 uptake and drive innovation to a regime level.

472 Equally, ES certification could engage with ES initiatives such as REDD+ and PES projects to
473 increase additionality. Given that the REDD+ and PES projects in Indonesia are more embedded in
474 state regulations, they offer a window of opportunity for ES certification, which provides a developed
475 set of tested tools that both private and state sector can use to measure and verify impacts. ES
476 marketplace websites such as Ecosystem Marketplace and Watershed Projects provide information
477 about the PES projects that also provide opportunities to further develop ES tools, overcome
478 challenges and improve positive impacts. REDD+ projects are more effective when tenure rights are
479 clear [39], but as many REDD+ and PES projects struggle to be effective due to tenure issues [40, 41],
480 and this was problematic in some sites of the ForCES project as well [6], uncertain and contested
481 tenure is also highly likely to hinder ES certification. State lands and natural resources which are used
482 and claimed by communities, invite different interpretations of who has actual rights and
483 responsibilities over them. Government licenses to use or convert forests on community-claimed
484 lands in Indonesia has led to conflict [42]. This in turn can reduce incentives to protect forests.

485 The growing number of corporate voluntary zero deforestation commitments and multi-
486 stakeholder initiatives can be also seen as an additional, complimentary exogenous factor that may
487 aid adoption of ES certification at a regime level, akin to the way that the High Conservation Value
488 toolkit has been adopted in RSPO and FSC certification [43].

489 Secondly, some antagonistic interrelations were found among state regulations concerning ES,
490 and between state regulations and ES certification.

491 Several of the regulations provide conflicting definitions of ES, their scope in terms of land-use,
492 and how ES are measured and governed. Using the lens of transition theory, FSC certification can be
493 seen as an innovation regime, given its development and mainstreaming into market-based
494 governance in the last two decades [32]. The characteristics of an innovation regime, as defined by
495 Grin et al. [18], include clear cognition (indicated by the set of belief systems embodied in the
496 standard and processes, guidance documents with goals and agenda) and norms (embodied in the
497 FSC principles and criteria setting out role relationships, values and behavioural norms). According
498 to this definition, the state regulatory regime has not yet reached an innovation status, as it includes
499 outdated concepts which conflict with recent regulations which have a more explicit focus on
500 ecosystem services e.g. carbon and watershed protection.

501 Antagonism between state regulations and ES certification occurs mainly due to unclear land
502 and resource tenure norms which undermines efforts to develop stronger regulations and make
503 compliance with ES certification challenging.

504 Such antagonism between state and private schemes also occurred in the sphere of timber
505 legality certification in Indonesia, where proponents of the four main schemes (FSC, PEFC, LEI, and
506 SVLK) delegitimize each other's schemes, suggesting that legitimacy is a tool in market competition
507 to win market acceptance and share [44]. Although the FSC scheme was considered the best scheme
508 according to the Forest Certification Assessment Guide (FCAG), small-scale forest holders prefer the
509 SVLK scheme, which had the lowest FCAG score, because of its mandatory nature and available
510 subsidies.

511 Antagonism could be reduced by better linking existing state regulations to private standards at
512 multiple levels, and embracing sectoral and multi-stakeholder approaches of commodity value chain
513 certification and corporate sustainability initiatives, with more integrated territorial, landscape level

514 management and governance. Accommodating and coordinating multilevel governance in
515 landscapes (such as those in the ForCES project) beset with institutional fragmentation and
516 jurisdictional mismatches, alignment with local initiatives and governance structures, and
517 frameworks to assess and monitor the performance of multi-stakeholder approaches implies moving
518 beyond existing administrative, jurisdictional, and sectorial silos, where multi-stakeholder platforms
519 and bridging organizations and individuals are seen as key [45].

520 Thirdly, no substitution was found between the state endorsing or adopting ES certification. This
521 maybe however because the concept is too recent. Examples from timber and oil palm certification
522 schemes, which explicitly mention ecosystems services [12, 46], and have a longer process of
523 development show how the state has adopted many of the concepts of timber VPA and palm oil
524 certification. These commodity certification schemes also followed a similar development
525 trajectory: starting as private, civil society and NGO governance arrangements with later state
526 adoption of many concepts in mandatory standards. In 2011 Indonesia's Ministry of Agriculture
527 decreed the mandatory Indonesian Sustainable Palm Oil (ISPO), which with many similarities to the
528 three voluntary, certification systems of Roundtable on Sustainable Palm Oil (RSPO), the
529 International Standard for Carbon Certification (ISCC) and the Sustainable Agriculture Network
530 (SAN). Areas of commonality and difference are apparent. The four standards cover a similar range
531 of topics, but the depth, breadth, and level of detail in addressing key issues varies, reflecting goals
532 of the different initiatives behind each standard but also indicative of a process of converging,
533 emerging norms for sustainable good practices in oil palm [46].

534 A fourth category, where an absence of interactions was found, was also evident. In this case ES
535 certification was promulgated by adopting NSMD governance, with the ForCES project used to
536 develop the ES standard developed by civil society, non-governmental and research stakeholders as
537 key stakeholders in the agenda-setting and negotiation phase, with only one example of engagement
538 with the Indonesian government. These private-social agents collaborated at niche and regime level
539 to formulate a supporting environment for ForCES and FSC to work the field. Paraphrasing Mokyr's
540 [47] analogy, they prepared the environment for seeds to grow because eventually "the environment
541 into which these seeds are sown is, of course, the main determinant of whether they sprout" or die.
542 Agents in state and non-state systems did not interact to endorse or implement the voluntary
543 standard into a state regulation. This is in contrast to the legally binding Voluntary Partnership
544 Agreement (VPA) on timber legality standards developed between EU and Indonesian public,
545 private and civil society actors to promote trade in legal timber products and improve forest
546 governance. This led to the SVLK Indonesian mandatory timber legality assurance system [48].
547

548 4.2. Opportunities to create synergies by closing the gap between translations of ES in state regulations and 549 voluntary certification

550 Different complementarities, antagonisms and absences of collaboration characterize the current
551 governance arrangements of ecosystem services by the state, private sector and civil society. Building
552 connections and enhancing complementarities could be important ways to gradually reduce
553 antagonisms and fill the voids.

554 The results of the analysis of Indonesian regulations show that various terms for the concept of
555 ES are used and that these differ and lack consistency, with different regulations using different
556 terms, some without clear definitions, leading to confusion and creating the possibility for different
557 interpretations. State regulations concerning ES are biased against improved forest management due
558 to problems in practice to access credit and the high transaction costs to obtain and process permits,
559 the lack of tenure security and unclear tenure and resource rights and weak institutional capacity to
560 enforce forestry regulations and avoid forest encroachment. These results confirm Lambin et al's [11]
561 findings on the limitations of command-and control instruments. They found uncompensated
562 opportunity costs, a lack of government enforcement, decreased governmental power in response to
563 transnational markets, and unanticipated spill-over effects outside the regulator's jurisdiction.

564 As the laws on forestry and conservation were enacted over twenty years ago, they largely
565 predate the international and national adoption of ecosystem services. However, the recent

566 Government Regulation No. 46/2017 on Environmental Economic Instruments provides clearer
567 definitions of types of ES and opening for market driven initiatives which seek to enhance, protect
568 nature and to mitigate impacts on ecosystems. However, this regulation adds to the complexity of
569 existing regulations on natural resources. An abundance of state regulations does not imply their
570 efficacy, particularly when land tenure is in dispute [49].

571 Ecosystem services are clearly defined in the ES certification standard and procedure, providing
572 a bridge between some state regulations and ES certification, as well as a complimentary bridge to
573 other voluntary commodity certification standards, corporate deforestation commitments, REDD+
574 and PES.

575 Given that this study is based on a single, recent case (the ForCES project and resulting ES
576 standard) of market-driven governance, a limited number of informants, and scrutinized only state
577 regulations and policies that directly affect land use (protected areas and other land use restrictions)
578 relating to forestry and agriculture, the generalizability of lessons to other forms of voluntary,
579 market-driven initiatives is limited. Mather [50] notes that state governance of land use has
580 traditionally relied on mixes of command-and-control instruments covering both direct land use
581 policies (such as protected areas and other land use restrictions) with land-based activity policies
582 (such as agricultural and forestry policies) and indirect land use policies (macro-economic, trade,
583 fiscal and property law). As this study scrutinized only state regulations and policies directly
584 affecting land use and agricultural and forestry policies, a wider review of policies is recommended
585 in future studies.

586 The existence of multiple laws and regulations in parallel with market-driven certification also creates
587 difficulties in unentangling and determining the impacts of the different state and NSMD governance
588 arrangements and determining the effectiveness of each in reaching sustainability goals at different
589 scales [35, 51], enabling policies and private initiatives to be implemented more cost-effectively.

590 5. Conclusions

591 This study aimed to understand the interrelationships between ecosystem services certification
592 as a voluntary sustainability standard and state regulations concerning ecosystem services in
593 Indonesia. The study is framed using conceptual frameworks of transition theory and governance,
594 focusing on statutory and non-state market-based governance arrangements and their
595 interrelationships in the agenda setting and negotiation stages of the development of the ES
596 certification.

597 Public regulations in Indonesia are shifting towards more explicit attention to and governance
598 of ecosystem services. Forests are defined as an ecosystem unit in the form of landscape, containing
599 biological resources dominated by trees, which are not be separate. Therefore, ES are embedded in
600 regulations covering forest ecosystems and their products- mainly timber and non-timber, but also
601 services. Recent regulations have defined the benefits of ecosystems for people and life including the
602 provision of natural resources, natural and environmental arrangements, natural processes and for
603 their cultural values. The many interpretations of ecosystem services in Indonesian regulations and
604 policies however, which appear to trigger confusions i.e. how forest owners and managers should
605 comply with the different regulations. Statutory regulations are mandatory, based on a carrot and
606 stick policy design, creating obligatory requirements for companies and individuals, whilst there are
607 few regulatory or fiscal incentives for compliance with voluntary standards, stakeholders,
608 particularly NGOs and CSOs, and competitive and supply chain based pressure appears to provide
609 an alternative incentive.

610 The FSC ES certification standard and procedures provide one clear definition of ES compared
611 to the multitude of definitions of ES in state regulations. ES certification is an option under FSC Forest
612 Management Certification, aiming to demonstrate the impact of restoration and conservation
613 initiatives by forest managers in return for monetary incentives.

614 At all levels of the governance process—agenda setting and negotiation, implementation and
615 monitoring and enforcement, complementary, substituting and antagonistic interrelationships
616 occurred between voluntary sustainability standards as non-state market driven governance



617 arrangements, and state governance arrangements. An absence of any interrelations was also found.
618 Although the ES certification standard is voluntary, and the Indonesian government was hardly
619 involved in its development, it is generally complementary to state regulations: filling gaps and
620 providing tools to measure benefits and impacts of restoration and conservation activities. As the
621 majority of connections were complementarity, and as FSC certification and ES certification has a
622 strong focus on stakeholder engagement, traction can be gained using an stakeholder approach that
623 includes public, social and private sector stakeholders to reduce antagonistic relationships, which is
624 known to suppress innovation. Antagonism occurs also in the state regulations where various
625 regulations are existing with varying ES terms in the regulations leading to public confusion.

626 While ES certification is novel to Indonesia and globally, the system appears to have synergies
627 with other market driven ES projects, by allowing the certification of ES and bringing them to the
628 input-based ES market, as well as providing tools to measure and quantify ES.

629 Two major aspects need to be addressed if the concept of ES certification is to move from a niche
630 to regime innovation. The first is the interlinked issue of transparency, legitimacy and accountability
631 that dogs voluntary NSMD standards in general [52, 53]. Concerns about the lack thereof have led to
632 the counter-development of southern standards [54], such as the Indonesian Sustainable Palm Oil
633 (ISPO) and the Indonesian Timber Legality Verification System (Sistem Verifikasi Legalitas Kayu,
634 SVLK). Also, there have been cases where after pressure and campaigns, certification standards such
635 as FSC have disassociated themselves from companies seen to be not complying with their standards.
636 Experiences with NSMD commodity certification suggest whilst voluntary sustainability standards
637 were introduced as innovations with high expectations of solving multiple sustainability issues
638 including safeguarding ecosystems, they generally have not been a panacea with expected outcomes
639 and impacts [51, 55]. Without support from enabling regulations it is questionable if ES certification
640 can have either the intended impact [51]. or gain a sufficient “logic of appropriateness” as it
641 progresses through the phases of innovation, to garner sufficient legitimacy [1]. The second major
642 barrier is the underlying issue of land and natural resources tenure rights and responsibilities.
643 Without clarification, the potential access, benefits and costs that could accrue from ES certification
644 rest on rocky ground, as has been shown in other NSMD approaches such as PES and REDD+
645 initiatives [39, 56].

646 In summary, three types of interactions between ES certification and regulatory governance
647 arrangements were found. The majority of the interrelationships are largely complementary with
648 Indonesian state regulations with non-state arrangements filling policy and regulatory gaps, such as
649 providing tools to verify the impacts of certification as a tool to protect ecosystem services. Voluntary,
650 non-state market driven governance such as certification, some REDD+ and PES schemes and
651 corporate zero deforestation commitments focus mainly on private sector activities – both on
652 producers such as timber concessions but also on companies as buyers and consumers. The
653 development of ES certification in Indonesia has also involved stakeholders such as small-scale
654 farmers, communities, NGOs and civil society organisations, but the state was only involved when
655 protected areas were included in a landscape level initiative. State regulations governing ES are
656 abundant and operate on different scales, with antagonism among state regulations when
657 instruments conflict each other at any different stage of the regulatory process and do not address
658 unclear land tenure, undermining certification. To further the acceptance and adoption of Ecosystem
659 Services certification as an effective non-state market-driven policy instrument for land use
660 governance and conservation, both FSC as a standard organization and its civil society and non-
661 governmental organization, and private sector partners arguably need to engage more with national
662 and local -national policies and regulatory processes to ensure synergistic interactions to move from
663 a niche level innovation to a regime changing socio-technical transformation.

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