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Certify and shift blame, or resolve issues? Environmentally and socially responsible global trade and production of timber and tree crops

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ABSTRACT

Certification of adherence to social and environmental standards allows companies involved in the (global) trade of commodities to dissociate themselves from negative impacts in the public eye. It can go beyond compliance with legal requirements. Certification can be an attempt to shift blame to uncertified others, but it can also contribute to resolving the underlying issues of concern. We provide a framework for a study of when, where and how certification schemes emerge and evolve, with specific attention to the degree to which underlying issues get addressed. Three strands of literature are combined in this framework (1) the issue–attention cycle as a schematic representation of public concerns shaping policy responses; (2) the management swing potential defined as the gap between best and worst current production systems and the basis for defining standards and (3) global value chains that link distant producers and consumers, and the power relations along these chains, including standards and certification. Based on literature review, we introduce a set of four propositions that inform testable specific hypotheses. We outline questions for reviews, in subsequent papers of this issue, of the experience on timber, oil palm, coffee, cacao and rubber as tropical-forest-margin commodities dominated by global trade.

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1. Introduction

Agriculture meeting local and distant needs and supplying to globalizing markets remains the largest driver of land degradation, species loss and conversion of natural habitats. Agriculture used 37.7% of the world's land area in 2012 (World Bank 2015a). Nearly three-quarters (71%) of all tropical deforestation between 2000 and 2012 was caused by commercial agriculture (Lawson et al. 2014). Forests and forest-derived agricultural landscape mosaics are parts of ecosystems in which human actions and management to increase provisioning services often interferes with the regulatory, cultural and supporting services. Extracting and producing food, forage, fiber, bio-energy and pharmaceuticals as provisioning service needs to be reconciled with other 'ecosystem services', as all can lead to human benefits. The non-provisioning ecosystem services, however, are still not normally measured and valued in economic terms, and they tend to be ignored in decision-making. The ecosystem service of food production contributes by far the most economic activity (in current accounting systems) and employment, but its sustainability depends on the way the trade-offs with other ecosystem services are managed locally (e.g. impacts on water and soil quality and availability) and globally (e.g. impacts on macro-climate). In 2014, agriculture was responsible for 32% and 17%,

respectively, of the aggregate Gross Domestic Product of low and lower middle-income countries (World Bank 2015b). There are major economic and social concerns as to how the expansion of agriculture interacts with local rights, values and interests. Specific issues range from the profitability and risks of various ways of farming for smallholders, to the fairness of the terms of trade at the farm gate, reliance on child labor, viability of rural communities, communal and private resource-use rights and free and prior informed consent to changes brought about by new modes of production. The recently (September 2015) globally agreed set of Sustainable Development Goals provides a framework for the way all such issues may need to be addressed in the search for sustainable agriculture (Costanza et al. 2016).

In response to emerging and growing concerns over the environmental and social consequences of resource use and value chains in agricultural, forestry and fishery sectors, private and informal initiatives have been developed to create markets for goods that are sustainably produced in environmentally and socially responsible conditions (Potts et al. 2014). Citizens and business enterprises step in where formal government systems are not seen to be adequate in securing public goods. The organic movement traces its European roots to the first half of the twentieth century when mechanized agriculture

based on external inputs raised concerns over human health effects, product quality and loss of 'naturalness' and the spiritual quality of agriculture. The movement gained momentum in the aftermath of Rachel Carson's publications on the risks of chemical pesticides (Lytle 2007). The organic and ecological movements created a range of different standards that are used to certify and eventually label products. Social concerns over economic disparity and working conditions, referring to pre-independence colonialism critiques as in the Havelaar brand of coffee (Simpson & Rapone 2000), started a separate arena where standards and certification emerged, with varying degrees of overlap between ecological and socio-economic concerns. Both streams of standards (definition of norms) and certifications (the associated documentation and assurance system), however, differentiated themselves from mainstream trade in forest and agroforestry commodities. Over time, initiatives captured under the term 'sustainability standards' which refers to the standard itself as well as the associated certification system (Milder et al. 2015) have moved towards the mainstream characterized by buy-ins from the private sector, public sector and NGOs, as well as a convergence of issues addressed by individual certification schemes (Potts et al. 2014). Sustainability concerns are increasingly reflected in business transactions (Roland Berger 2010), by publications by major consulting companies (e.g. Hanifan et al. 2012), as well as by the attention paid to the topic by business journals (e.g. Haanaes et al. 2013) and international organizations (e.g. Ionescu-Somer & de Man 2013).

Standards and associated certification systems show that environmental and social impacts of production are no longer considered the sole responsibility of producers and producing countries but also part of the responsibilities of processor and consumer countries (Kogg & Mont 2012). They are seen as social regulations that re-embed market transactions in social relations (Raynolds 2012): both as part of a de-commoditization process, moving it up on the commodity-branded product-service-experience ladder (Onkvisit & Shaw 1989), and as a new phase in the multi-stakeholder and collective (among transnational corporations) sustainability standard initiatives (Daviron & Vagneron 2011). Certification of adherence to standards allows a binary reflection of sustainability concerns (meeting or not meeting the certification criteria). Changes triggered by adherence to a standard and certification include those at the production level as well as those required throughout the supply chain to ensure this becomes a 'chain of custody'. Globally, there now are many well-established initiatives, as shown by the recent launch of

the United Nations Forum on Sustainability Standards (UNFSS), a joint initiative by the Food and Agriculture Organization of the United Nations, the International Trade Centre, United Nations Industrial Development Organization (UNIDO), United Nations Environment Programme and United Nations Conference on Trade and Development, which aims 'to make voluntary sustainability standards a driver and avoid it being an obstacle to sustainable development in developing countries' (UNFSS 2016).

Contextually, standards and associated certification systems differ among commodities and due to heterogeneity in primary concerns, their extent differs between markets (Manning et al. 2012). For example, in coffee and cacao, 'fair trade' concerns over farm gate prices for smallholders developed separately from environmental concerns over 'organic' or 'bird-friendly' coffee, before initiatives arose that address both. In oil palm, its potential use as biofuel sparked debate beyond its use as an ingredient for the food industry, with only gradual recognition of the smallholder oil palm growers; in response to social and environmental criticism, the oil palm industry pioneered a negotiation platform between producers, consumers and NGO's in the Round Table for Sustainable Palm Oil (RSPO), an example mirrored in other more recent 'roundtable' efforts. Overall initiatives in coffee, timber and cocoa are older than the RSPO, while initiatives addressing concerns in sustainable rubber production systems are at an even younger stage. In part of the literature (Bush et al. 2013 for aquaculture), the concept of certifiability (alignment with the principles and criteria) is differentiated from the administrative process of certification (meeting the agreed indicators and having compliance documented). This distinction helps conceptually, although evidence on certification is more easily obtained than that on certifiability.

Despite the progress on sustainability concerns and initiatives in the agricultural and forest-commodity value chains, responses from private enterprises and public officials can initially reflect denial of the underlying issues and can be emotionally loaded whenever social and/or ecological 'issues' emerge and are advocated by civil society organizations. Reference to national sovereignty may be made, and ulterior motives of protectionism of domestic production in the countries that are showing concerns over social and environmental issues may be alluded to. Beyond this initial phase, opportunities may open up for subsequent fact finding that often leads to a more nuanced perspective on multiple causes and the variable extent of the issue, and provides space for people along the value chain to seek partial solutions.

As one of those partial solutions, enterprises may obtain certification to a sustainability standard as part of their product differentiation and/or risk-management strategy, thereby resolving that the respective product is not part of the problem. Independent certification can prove this claim, but a more integral solution would be to deal with the root causes of the underlying social and ecological issues. Rather than subscribing to a beyond-compliance political strategy (Rivera et al. 2009), standard development and certification may implicitly shift blame and responsibility elsewhere, by emphasizing that a specific subset of the producers is not part of the problem that gave rise to the public debate.

Yet, most certification schemes aim beyond product differentiation at a widespread compliance with agreed 'good practice'. This can, beyond a compliance threshold that may depend on the issue of concern, lead to a situation where blame is not only shifted, but is also dealt with. The process of certification has been widely studied (see e.g. Cashore et al. 2004; Potts et al. 2014), and the jury is still out on whether certification has had the expected impacts on the ground (Blackman & Rivera 2011; Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). Evaluation, however, depends on the scale of assessment. It remains elusive to what degree explicit sustainability standards and the implication that non-certified producers are responsible for the issues that gave rise to the public debate in the first place, will reduce the severity of these issues. It would do so if certification is a transient phenomenon that leads to general compliance with new standards, beyond the need for continued market differentiation. But where the intermediaries of certification have found a new business model, vested interest may go against such transient role. As Bush et al. (2013) argued for aquaculture and Kaplinsky et al. (2011) for timber and cassava, no drive to improve practice and certification is to be expected if the demand for certified products is less than what is certifiable (over time). In those situations, certification can lead to a segmentation of markets, without incentives for change on the ground.

To shed light on such questions and to understand the potential role that certification as a societal and economic process plays in the way value chains evolve, addressing social, environmental and economic concerns, we initiated a set of scoping studies across major globally traded commodities originating in the tropics and subtropics. The present paper is an introduction to, and framework for, a set of papers that focus on when, where and how certification schemes evolve as a partial response to issues or concerns raised on commercial, export-oriented tree crop and timber commodities.

As a conceptual framework, and as basis for understanding the partly contrasting certification histories of commodities such as cacao, coffee, rubber, oil palm and timber, we build on three strands of literature that focus on (1) the timelines and processes in which standards and certification emerge and evolve in the multi-stakeholder environment of public discourse, (2) the scope for differentiation, through a well-defined standard, between worst and best practices and (3) the structure of the value chain between primary producers and consumers that influences the procedures for certification and the way feedback signals beyond price and measurable product quality can be transmitted. The three partial frameworks are (1) the issue–attention cycle that describes stages in the public policy response to newly emerging issues; (2) management swing potential as a quantification of the difference between best and worst case production systems, evaluated from the perspective of one or more ecosystem services and/or the effect on social issues and (3) governance of global value chains (GVCs) as a concept that interacts with systems of sustainability initiatives and standards.

After introducing these three basic concepts, we review how they interact in shaping the learning curves of emerging sustainability governance for tropical tree crops and timber, based on the experience with cacao, coffee, rubber, oil palm and timber and their interactions with ecosystem services. Sustainability refers to the standards and underlying issues, certification to completion of administrative procedures and documentation. In each case the local, national and global levels interact and issues that passed an attention threshold in one location may influence the dynamics elsewhere when GVCs respond. Based on a first comparison between the five commodities, we frame a set of formal propositions that can be tested at commodity level.

2. Policy issue–attention cycle

Public attention on environmentally- or socially harmful production and business practices follows a predictable pattern, the 'policy issue–attention life cycle' (Tomich et al. 2004) (Figure 1). While many 'new' issues emerge every year, only some reach the center of public attention, while others gradually fade. Public attention, in many cases, does not remain sufficiently focused upon any given issue to generate enough political pressure to cause effective change (Downs 1972). Public perceptions evolve over time through the media that give political prominence influenced by social interactions. The cycle runs through five phases: (1) *Scoping*: the pre-problem stage where new issues can emerge; (2) *Stakeholder analysis*: alarmed discovery and emotional debates

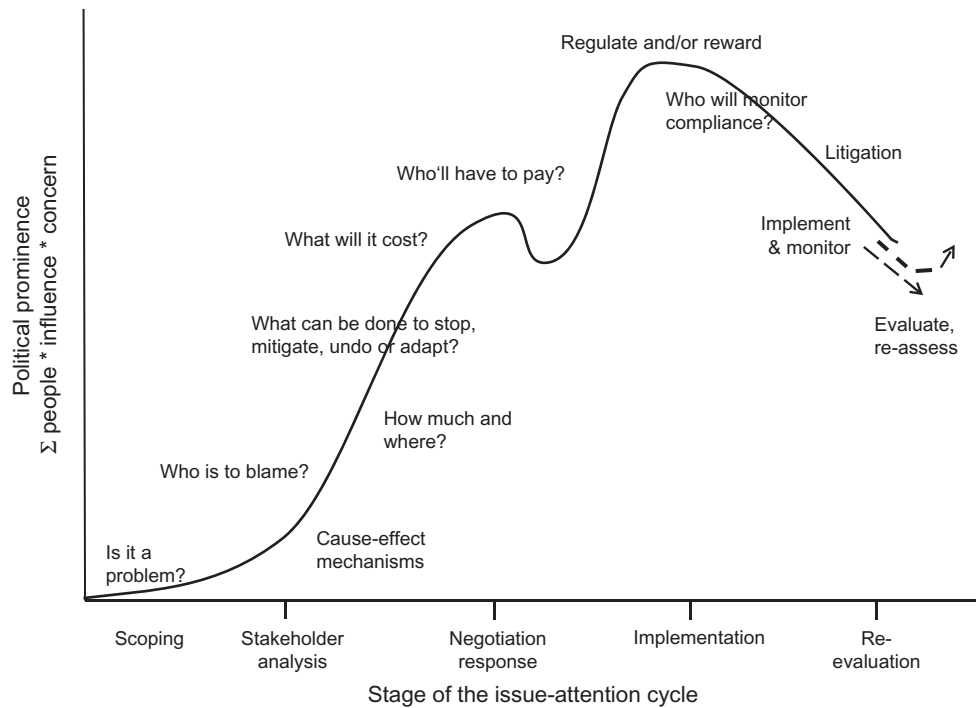


Figure 1. Issue-attention cycle and shifting key questions (Tomich et al. 2004).

pitting denial versus advocates of perceived urgency; (3) *Negotiating response*: exploring solutions alongside the cost of significant progress, analyzing trade-offs and synergy with other issues of importance; (4) *Implementation*: gradual decline of intense public interest and (5) *Re-evaluation*: the post-problem stage (Downs 1972; Tomich et al. 2004; Rivera et al. 2009). Movements from one stage to the next may be triggered by key changes, so-called punctuated shifts, which move a situation from an existing to a new equilibrium (Holt & Barkemeyer 2012). In this process, the media sets the pace for the agenda shifts for what public attention focuses on (ibid.). Political prominence may slow down or decrease upon realizing the cost of adjusting practices and implementing change.

In the case of commodity production and value chains, sustainability concerns mostly emerge in countries where final 'sensitive' consumers are located and have the power to make their voices heard, and where governments and the private sector have some sort of democratic downward accountability vis-à-vis consumers. In turn, private enterprises are somehow compelled to answer those concerns and, as a result, sustainability targets and social acceptability increasingly shape the way large businesses do business (as described in e.g. Roland Berger 2010); for example, through internal or public codes of conduct, green procurement policies or third-party voluntary certification (Searcy 2009; Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). Such changes in business practices then may lead to changes in

governance systems, both public and private (Lambin et al. 2014), that connect consumers of tropical commodities via GVCs to producers who are locally embedded in production landscapes.

For example, in 1983, the UN set up a committee 'to propose long-term environmental strategies for achieving sustainable development to the year 2000 and beyond' that led to the Brundtland report (WCED 1987). The term 'sustainability' started to be used in the worldwide media from about 1990 with substantial increases in its occurrence from 2002 onward (Barkemeyer et al. 2010, 2014; Pérez-López et al. 2013) and was mainstreamed in newspapers worldwide (Holt & Barkemeyer 2012). In the mid-1990s, UK media campaigns raised public concerns over environmental issues and worker welfare in export production in the food sector which reinforced pressure by civil society organizations on sourcing practices of corporations (Hughes 2005). Private sector buy-ins to sustainable development in food and agriculture started in the 1990s with the launch to the World Business Council for Sustainable Development in 1992. In the timber sector, the lack of agreement on a global compact on forests led several environmental NGOs in the run up to Rio 1992 to group together and call for the adoption of private voluntary certification (later to become the FSC) which would reward responsible companies with market premium prices (Cashore et al. 2004). However, agenda setting varies by region; it is shaped by the regional context and its associated legal context (Barkemeyer et al. 2010). Media reporting on environmental issues are

predominant in the global North while socio-economic issues are issues in the media of the South (Barkemeyer et al. 2013). With regards to stage three and four of the issue–attention cycle, over the past 15 years, the focus of trade negotiations has shifted from predominantly environmental to include social issues such as distributional effects (Ekins & Voituriez 2009).

3. Management swing potential

Whenever issues arise on the social or environmental side-effects or impacts of production, the opportunity of a ‘boycott’ emerges. On one hand this puts pressure on the value chain and tests how serious the concerns are and how far consumers want to go. On the other hand it stimulates the search for alternatives. These alternatives can be other products that can substitute for the contested ones; they can be the same product but originating from areas where the issues supposedly do not exist, or can be a subset of the products from the contested area but not tainted by the issue of current concern. The opportunity for consumers to switch to other products and source areas or ways of production shapes the further progress along the issue cycle. An important question is to what extent issues are associated with specific products and not with others (product ‘A’ is bad, ‘B’ good), or with specific ways of production (production process ‘X’ is bad, ‘Y’ good).

The term ‘management swing potential’ of production systems refers to the difference between the best and worst current production systems of the same commodity (Davis et al. 2013). It developed in response to distinctions between different types of feed sources for biofuel production that still are reflected in the regulation of bioenergy, and called attention to the wide variation within a single product. For example, in biofuel production, management practices influence the level of emissions and hence environmental impact (Davis et al. 2013), and palm oil is both the best and the worst currently known biofuel from a net emissions perspective, depending on where and how it is produced. Management practices influence yield and economic performance, as well as the social and environmental consequences of production, usually leading to differences between actual and potential yield (van Ittersum et al. 2013). The ‘management swing potential’ as defined by Davis et al. (2013) is defined per unit product, as a footprint. It thus combines production level and negative impacts, allowing for a direct comparison between less-productive and less-environmentally intrusive production systems. Those that are more productive, require less area for the same production volume, but have more negative impacts per unit land used. Comparisons at product level are

attractive for GVCs, but they do not fully substitute for concerns expressed per unit land used for production, or effects per household involved on the social side. This debate is known as the integration versus segregation, or sharing versus sparing comparison (van Noordwijk et al. 1995, 2012; Lusiana et al. 2012). Our observation is that in a typical issue–attention cycle, the starting points are ‘worst case’ examples of child labor, human conflict, forest destruction or loss of flagship biodiversity, while the industry may deny and respond by juxtaposing ‘best case’ examples, both sides claiming that their examples represent reality. Recognition of the ‘management swing potential’ by all parties involved is then an important step toward establishing thresholds and standards that differentiate ‘acceptable’ from ‘non-acceptable’ and define the certifiable. The best case shows that it is possible to selectively source from issue-free production chains and it suggests that it may be possible to improve elsewhere; the worst case remains a reminder of the urgency of dealing with the issues. To some extent, the best and worst cases are more relevant than the average or ‘representative’ performance.

Instead of boycotting a product as such, consumers are invited to buy certified (and by implication boycott noncertified) forms of the contested product. A wide management swing potential offers scope for differentiation by standards and certification within a single commodity, a narrow swing potential suggests that shifts to other products or ways to meet consumer demand are needed. Where the management swing potential includes modes of production (or their social or environmental consequences) that breach existing legislation, a legally enforceable (at least in theory) baseline or ‘minimum acceptable practice’ is defined that allows voluntary, private standards to articulate additional performance. Over time, issues can be resolved by dealing with the illegal bottom end of the management swing potential, by an upward shift of what is considered minimum acceptable practice and/or by widespread voluntary acceptance of more stringent norms (Figure 2).

4. The GVC concept, governance, and standards

4.1. Governance of the GVC

GVCs in tropical forest and agroforestry commodities contribute to economic growth and rural income, while linking producers in developing countries to consumers in both developed and developing countries. GVCs affect environmental values and social relations, shifting pressures and opportunities (Meyfroidt et al. 2010; Rueda & Lambin 2013). If not managed well, trade-induced growth may

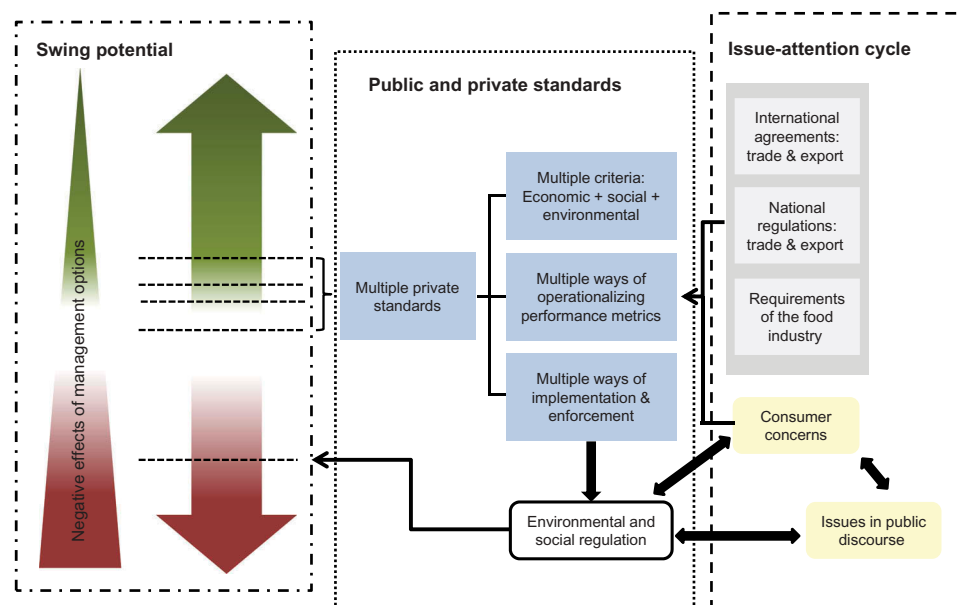


Figure 2. Management swing potential: management options, standards and legally enforceable ‘good practice’ baselines, in response to public concerns at consumer level.

contribute to depletion and degradation of the environment and natural resources’ availability due to unsustainable resource management practices, as recent examples from the expansion of oil palm and other commodities show (Barracough 2000; Sheil et al. 2009; Wilcove & Koh 2010). It may also involve land grabbing (von Braun & Meinzen-Dick 2009), rent seeking, local institutional disruption and more pronounced social polarization (Wilkinson 2007; McCarthy et al. 2012). On the positive side, global trade may bring improved entrepreneurship and new perspectives on land rights, social inclusion, benefits redistribution and migrant labor into traditional communities, some of which are welcome, others not (Berlan 2013).

The GVC concept analyses how actors work together across vast spatial distances in bringing products from production to markets (Sturgeon 2008; Ponte & Sturgeon 2013). The concept incorporates analysis of chain governance, which deals with such issues as the ‘regime of rule-making and rule-keeping’, the nature of power relations between actors, and processes of legitimization. Governance is characterized by three key variables: complexity of transactions, ability to codify transactions and the capabilities in the supplier-base (Gereffi et al. 2005). ‘Complexity of transaction’ refers to complexity regarding information and knowledge on product and process specifications that need to be exchanged between parties involved. ‘Ability to codify’ refers to what extent this information and knowledge can be exchanged efficiently without further investment. ‘Capabilities’ refer to the capabilities of the suppliers who are involved in the transaction (Gereffi et al. 2005). Combinations of these three key variables

lead to five different linkage patterns between actors in the chain: market (where transactions easily switch between buyer–seller partners), modular (suppliers produce according to customer’s specifications), relational (mutual dependence due to asset specificity), captive (suppliers face substantial costs when switching) and hierarchy (vertical integration, managerial control) (Gereffi et al. 2005; Sturgeon 2008) (Figure 3). Between the five linkage patterns, the degree of explicit coordination and power asymmetry among participants in the GVC increases from market to hierarchical form of governance (Gereffi et al. 2005). Distribution of power is further shaped by the market structure the industry, e.g. the number of suppliers and buyers, is embedded in (Lee et al. 2012), as well as the institutions that structure business relationships and location (Sturgeon 2008). Governance structures in value chains are dynamic over time (Gereffi et al. 2005). In the food industry and agribusiness, the retail end of GVCs is often highly concentrated, which enables retailers to greatly influence pricing and further contract terms, which at the production end may be passed on to suppliers, workers and working conditions (Hughes 2005). ‘Institutions’ may include organizations as well as regulations, e.g. competition laws, at local to global levels; in the context of the issue–attention cycle, it may include the media.

Over time, complexity of transactions may change, e.g. by an increasing number of process and product attributes as specified by standards. Advances in science can help in capturing product attributes, e.g. more advanced tests for pesticide residues. Advances in information technology facilitate real-time tracking of production practices. Capabilities of producers can

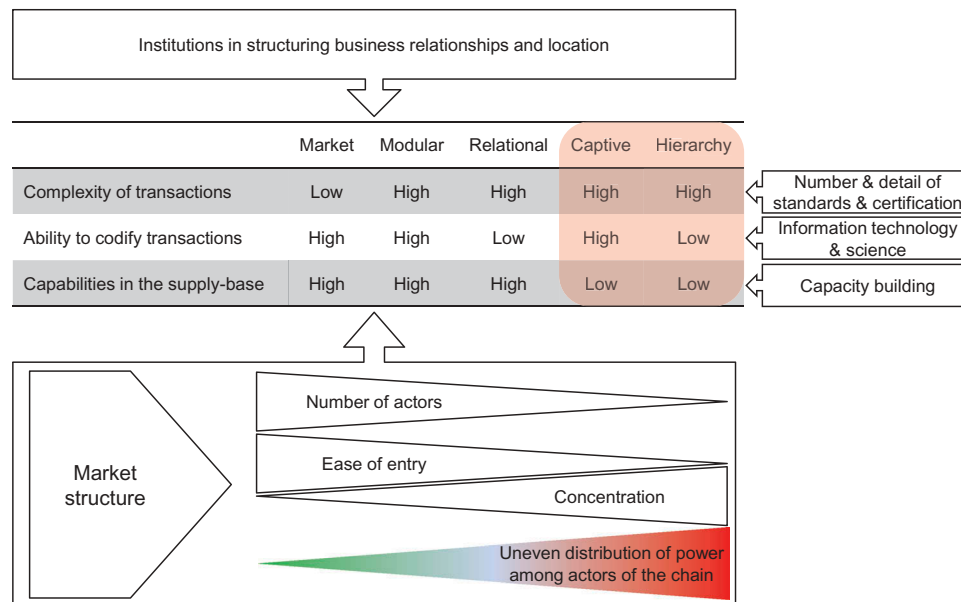


Figure 3. Determinants of global value chain governance. Modified from Gereffi et al. (2005).

be enhanced by training and capacity building programs. Worries over exclusion from value chains and disadvantaged small producers refer to the captive or hierarchy governance structures.

4.2. Standards and certification as shifting governance mechanisms in GVC

Standards and certification are one mechanism of governance in GVCs (Humphrey & Schmitz 2001). Formally, a standard is a document that ‘provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose’ (ISO 2015a). Standards often go hand-in-hand with certification, which refers to ‘the provision by an independent body of written assurance (a certificate) that the product, service or system in question meets specific requirements’ (ISO 2015b). Standards can be product-based, e.g. allowable pesticide residue levels, or process characteristics, requiring verification of the way products are derived beyond its measurable characteristics. Process standards result in adoption of certain management practices. Another classification of standards differentiates between risk management and product differentiation standards (Hartmann et al. 2010; Henson & Humphrey 2010). The former ensures that a product complies with the process and product requirements while the latter strive to add value to consumers, which alternative products do not possess. Product differentiation standards are directly labeled on the product, directly visible to consumers and are part of a marketing tool (Henson & Humphrey 2010). These can be part of business strategies in mature markets as shown for coffee (Ponte 2002).

Standards can be set by public or private entities; they can further be differentiated whether adoption is mandatory or voluntary (Henson & Humphrey 2010). On one extreme, public regulations are mandatory standards issued by a state or local government institution that are eventually binding to all bodies under their jurisdiction. In contrast, voluntary private standards are binding to those parties involved in a particular business transaction and the degree of commitment to the standard specifications might be negotiable among the parties.

Private standards initially emerged in the form of product standards specifying product quality, where actors globally sourced supplies that adhered to specific characteristics; they thus facilitated an information exchange and trade among partners (Nadvi & Wältring 2004). In agriculture, standards are part of a commoditization process, which is characterized by product homogeneity and substitutability between suppliers (Daviron & Vagneron 2011). Private standards are part of a multistakeholder complementary coregulatory system (Henson & Humphrey 2010; Ponte et al. 2011) in the context of changing consumer demand, market concentration and competitiveness strategies. Voluntary standards have been coined ‘social regulation’ (Raynolds 2012) since they are driven by individual as well as private and public collective action and actors.

Adoption of private standards spreads depending on the context and conditions in producing countries (Manning et al. 2012). Adoption of private standards tends to be favored in contexts where (1) the type of product has high requirements regarding traceability (Cerutti et al. 2015); (2) in extractive businesses; (3) where commodities are identifiable in end products or (4) where there are shorter supply chains with

fewer actors (Alvarez & von Hagen 2011). Private standards tend to be more viable in contexts with higher levels of producer and institutional preparedness (Alvarez & von Hagen 2012). The degree of the chain's fragmentation and number of actors involved are important variables to consider. They influence the cost of putting a certification system in place: the fewer and bigger the actors, the lower the unit cost of certification (cf. Lee et al. 2012). Within such a setting, the role of national intermediaries is not well understood (Manning et al. 2012) but can be important in influencing, e.g. supplier capacity and/or system implementation costs.

Private standard systems coexist due to issues of competition, scope, legitimacy and reputation of individual standards (Smith & Fischlein 2010), but they also complement each other and in several cases have been proven to learn from each other, a process leading towards 'benchmarking for equivalence' or harmonization of standards (Overdevest & Zeitlin 2014). In some contexts, trade-based standards imply a shift from territory-based to flow-based structures of governance (Sikor et al. 2013). This may lead to the adaptation of existing institutions as well as the creation of new ones. For example, in the case of FSC certification in the Congo basin, new institutions are set up that regulate relationships between logging companies and neighboring communities, creating a less conflict-prone environment and contributing to more equitable revenue-sharing mechanisms (Cerutti et al. 2014).

Public legislation and private standards often interact; this interaction shapes the context in which producers and the respective value chains operate and hence shape individual actor's responses (Berman 2013). Standard systems are heterogeneous and evolve dynamically over time. They also vary depending on the national or global contexts in which they developed and have been implemented (Manning et al. 2012; Vellema & van Wijk 2015).

As part of the standard evolution, a body of standards referred to as sustainability standards occurs (cf. e.g. Potts et al. 2010, 2014; Ponte et al. 2011) which over time have increased in scope. These are voluntary private standards and initially addressed selected social or environmental concerns particular to a commodity or site but also came recently to cover more issues of social equity and environmental health, such as energy and water use and even animal welfare (Fulponi 2007). Sustainability standards consist of four components: the standard itself, the assurance system, i.e. certification, a label and capacity building (Milder et al. 2015). Certifiable are those producers who adhere to the standard but not to the assurance system. Sustainability standards are part of a multitude of sustainability initiatives that include eco-labeling programs, corporate social

responsibility programs, business-to-business initiatives and round tables (Potts et al. 2010). Such standards are part of industry self-regulation and complement public regulation of environmental and social concerns via command and control strategies or market-based mechanisms supported by public disclosure (Blackman 2010). Adherence to, and implementation of, sustainability standards imply a shift from state to market regulation of sustainability concerns as well as a shift from national to global governance of sustainability concerns (Vermeulen 2010).

Sustainability standards as they emerge in negotiations among stakeholders are typically multidimensional and complex (cf. Potts et al. 2010). Some attributes of the products and processes are observable (e.g. absence of pesticide residues), while others are not (e.g. implementation of soil management practices). Trade-offs are common, as an increased number of products and processes attribute leads to increased complexity of transactions, which is not always matched by an increased ability to codify information. Hence, following information presented in Figure 2, at the upstream end of the value chain standards can be associated with increased levels of complexity and therefore potentially shift governance from market to modular or other governance types depending on the capabilities of the supplier base.

5. Ecosystem service effects of tropical commodity production

The three concepts – the issue–attention cycle, management swing potential and GVCs – interact with the landscapes from which tropical commodities are derived and the livelihood options, often defined on the basis of more than one tradable commodity of the people concerned. The net effects with spatial aggregation, time lags and internal feedbacks are ultimately expressed at the level of a landscape and the ecosystem services it provides (Minang et al. 2015). Despite rich and growing debates on the concept of ecosystem services, this study adopts the definition of ecosystem services as 'the direct and indirect flux contribution of ecosystems to human wellbeing' (Braat & de Groot 2012). The concept embraces operational distinction between goods and services, which is relevant to the agricultural landscape where human actions have a strong role in intensively transforming the natural ecosystem to production systems and finally to goods benefitting human wellbeing.

The ecosystem service concept is offered to provide qualitative metrics in evaluating various scenarios of production systems (de Groot et al. 2010). Within this concept, the logical chain of ecosystem structure, processes, and functions is important for

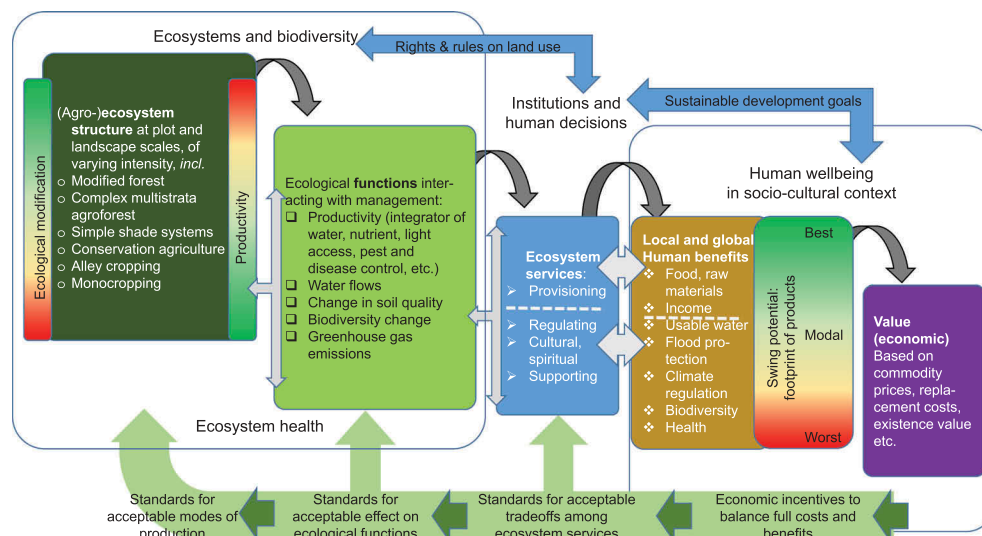


Figure 4. Cascade of agro-ecosystem structure, processes and function as joint determinants of the management swing potential in relation to human wellbeing. Modified from Braat and de Groot (2012).

understanding the management swing-potential (Figure 4).

In a landscape where different land-use systems interact, agricultural practices vary in structure and components from a simple mono-cropping, where a single commodity is planted, to more complex, multi-strata agroforestry practices where a variety of annual and perennial crops are planted or grow together. Structures and components of an agro-ecosystem determine how such a management unit functions in a landscape in its interaction with other land management units. Agriculture cultivations primarily can be categorized as having agronomic functionality as a commodity production system (as provisioning services) to provide food (goods) and ecological

functionality (as regulating services) with cultural and spiritual values linking to sociocultural characteristics of local communities (Table 1).

Both smallholders and larger scale agribusiness enterprises act as land managers dealing with multiple objectives, limited resources and capital, and incomplete knowledge of how their management systems respond to external variables ranging from climatic variation to policy levers, resulting in a wide variety of agricultural management states. These various management intensities within agro-ecosystems produce multiple services and levels of delivery, but in principle, when an agro-ecosystem is managed mainly for the delivery of a single service (e.g. food production), other services are nearly always affected

Table 1. Typology of ecosystem services from agricultural landscape, based on benefits people derive (left column: Braat & de Groot (2012) and based on aspects of landscape (ecosystem) structure and function (van Noordwijk 2006) multiple measurable aspects within each main category), with examples of aspects on the cross section of the classification systems.

Structure and functions of landscapes Main services based on human benefits types		Productivity & direct profitability	Water	Carbon stocks, GHG emissions	Biodiversity	Human health, landscape beauty
Examples						
Provisioning services	Food, raw materials, genetic resources, medicinal resources	Production and extraction of goods	Good quality water, fish		Agro-biodiversity	
Regulating services	Air quality regulation, climate regulation, moderation of extreme events, regulation of water flow, waste treatment, erosion prevention, maintenance of soil fertility, pollination, biological control	Maintenance of soil fertility	Buffering water flow, biological purification of water, coastal protection	Mitigation of global climate change, influences on local climate	Pest control, pollination, aspects of agro-biodiversity, human disease control	Aspects of human health and disease prevention
Habitat services	Maintenance of life cycles of migratory species (incl. nursery service), maintenance of genetic diversity		Aquatic habitats for biota		Biodiversity conservation for utilitarian and intrinsic reasons	Existence and intrinsic values
Cultural and amenity services	Esthetic information, opportunities for (agro) recreation and tourism, inspiration for culture, art and design, spiritual experience, information for cognitive development	Agro-tourism	Waterfalls, water-based recreation		Eco-tourism	Religion and identity-related values, inspiration and knowledge

negatively (Figure 4) (Braat & de Groot 2012). For example, rubber, cacao and coffee can be grown in shade as well as full sun systems with different implications for biodiversity and watershed services. As well, crops can be produced at varying management intensities with different qualities and quantities of external inputs, which impacts on a different level of environmental indicators. For example, timber can be managed with or without a management plan, in industrial plantations or natural forests, with different social, ecological and financial implications.

6. Propositions

We formulated a set of four ‘propositions’ for each of the three basic concepts that informed our analysis of when, where and how standards and certification evolve (Figure 5). Up front, we found that the dominant way of assessing the effect of certification had focused on a much more limited question: Are there net benefits for farmers/producers participating in a specific form of certification of a defined standard? However, the temporal dimension of issue cycles means that combinations of before/after and with/without cost and benefit metrics cannot grasp the counterfactual of a specific standard or mode of certification: the emergence of the standard changed the public debate and the opportunities for positioning of all actors involved, whether or not they participated in the scheme as such. For our analysis, we aimed at understanding the processes in the public/policy domain that shape (through issue–attention cycle dynamics) the way GVCs interact with socioecological systems from which commodities are derived (with their management swing potential). Our initial propositions were modified in the process of the

reviews: some needed further clarification and distinctions; others were not testable with available evidence or evidence that can be easily obtained. We present here a set of four propositions that are used as the basis for the case studies in this special issue.

Proposition 1: *Public discourse on sustainability concerns and associated actions is part of an issue–attention cycle with progression between stages.*

This proposition focuses on how sustainability concerns and actions can gradually progress towards different stages of issue maturity and eventually manifest into actions. These progressive stages as described in the issue–attention cycle diagram (Figure 1) are influenced by, first, gaps between worst and best cases of farming practices. When gaps are extreme and relatively comparable, public attention will more likely observe social and environmental problems among agricultural practices and their impacts, thus, trigger further actions towards improvement. Second, it is influenced by agents who frame sustainability concerns and take actions to draw public and media attentions. In this case, one can assume that NGOs are the most active agents as groups of pioneers that advance sustainability concerns. Third, it is influenced by geographical locations where unsustainable practices are suspected to happen. For example, malpractices at sites bordering well-known national parks are more likely to capture public attention. Naturally, public attention will progress into the next stage of issue–attention cycles, such as applications of voluntary standards and other policy instruments to counteract malpractices. Fourth, it is influenced by time lags in connections to size of agent influence and geographical

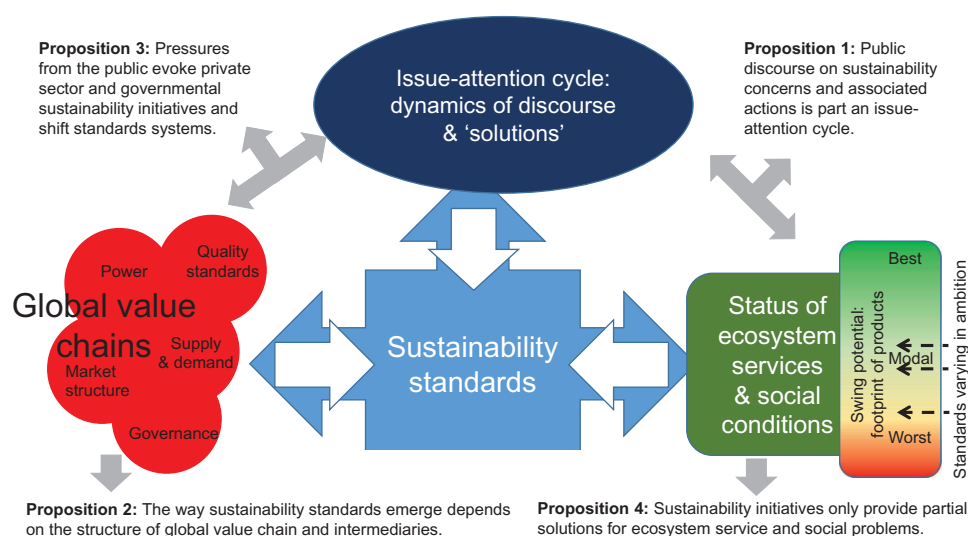


Figure 5. Conceptual framework of standards and certification adhered to sustainable environmental and social conditions of commodity production.

locations. Over time, when NGOs with stronger influences rally and attack malpractice, it may spill over to areas of low public interest, e.g. further away from national parks.

Proposition 2: *The way sustainability standards, initiatives and certification emerge is highly dependent upon the structure of global value chains and intermediaries.*

In this proposition, we focus on how the structure of GVCs, with its various complexity and power, directs opportunity for the emergence of standard initiatives and certification. As discussed earlier (Section 4), product quality and quantity are the main entry points for standards to emerge. We assume that buyers are more likely to be present and push certification schemes when centers of commodities are able to ensure continuous supplies of high-quality products. Thus, capacities of producers – human capital and asset base – consequently contribute to, or are even the drivers of, such standards and certifications for premium products. With lower supplier capability, standard systems are less likely to emerge and consequently suppliers might be excluded from the chain or lose power previously held. Intermediaries are backbones for changes in the complexity of transactions, able to codify transactions and capabilities at the supply-base end of GVCs. In the context of certification, one can scrutinize the dynamic of power relations between smallholders and firms influenced by the participation of intermediaries in the process. From the perspective of the economy of scales, the number of agents (i.e. producers, suppliers), buyers and intermediaries may leverage the emergence of voluntary actions toward certification. At the end, from the companies' perspective, we assume that the potential (reputational) gain from obtaining certification is greatest for companies close to the threshold between certifiable to being certified. On the other hand, companies with niche markets or with a comparative market advantage on specific products may have a sufficiently strong brand that does not require certification. Where demand for certified products exceeds the part of production chains that is certifiable, a positive pressure toward improvement can be expected. Otherwise, certification can focus on the certifiable and not lead to change of practice.

Proposition 3: *Pressures from the public (consumers) evoke private sector and governmental sustainability initiatives and shift standards.*

The main issues that arise from this perspective are to what extent the dynamics or components of standards are mainstreamed in business-to-business

transactions and no longer need to be labeled on the product, even going beyond public regulation. We assume that these are influenced by public discourse on private standards stringency and the creation of market incentives that recognize top performers. The dynamic shifting may also be influenced by company (internal) and commodity value-chain characteristics, for instance, the size of companies and the presence of multinational corporations in the value chain. In connection to Proposition 1, the role and capacity that national and international media play in setting the agenda and variation of the contexts in different regions will be re-emphasized. As enabling conditions, performance of public governance working toward sustainability goals – including gaps and framework conditions under which provision of public goods is optimized via voluntary private standards – needs to be scrutinized (cf. Vorley et al. 2010).

Proposition 4: *Sustainability initiatives, standards and certification only provide partial solutions for ecosystem service and social problems.*

Proposition 4 highlights the core question of actual performance of sustainability initiatives, standard settings and certifications: To what extent do these schemes help close the gaps between best (highlighted by the scientists, industry, NGOs or other stakeholders) and worst (focused on by the critics, scientists, industry, NGOs or other stakeholders) management systems of commodity production? As part of the issues, one can observe how engagement with certification procedures primarily increases and improves the level of documentation and management articulation, before it changes production and sourcing practices.

7. Way forward

The propositions formulated here were used as the basis for a set of case studies that are reported in this issue of the journal, with the concluding paper revisiting the degree to which they need to be modified on the basis of these studies.

In proposition 2, the category of 'certifiable', meeting all the essential criteria, is differentiated from the 'certified' one, having the documented proof of adherence. Seen as a two-by-two table, this classification has two interesting combinations: certified-but-not-certifiable and certifiable-but-not-certified. The first is a major concern. Whenever certified producers are found, in public scrutiny, to not comply with parts of the stated standards the club good of a certification scheme is at stake. Avoiding this risk drives certifiers to include a safety margin above stated standards or be selective in who gets selected into certification schemes.

The presence of the ‘certifiable but uncertified’ category, however, also undermines certification schemes claim that they advance sustainability at large. High transaction costs of certification and low premium prices or other farmgate advantages of being certified make it attractive, however, for producers to stay in this category. Across the various commodities and certification schemes we expect to find an empirical basis for rejecting or accepting such statements made at a higher level of abstraction.

The studies presented in this Special Issue complement recent work on certification and address some of the gaps identified by previous research. First, the set of case studies presented here complements the review of impact assessment studies of Blackman and Rivera (2011) who review impact assessment studies of eco-certification programs in banana, coffee, fish and forest products and tourism. Their review shows that only a small percentage of studies is sufficiently rigorous to provide credible results on impacts. The contextual analysis along the value chain as well as at the macro level of the present set of studies highlights the complexities in designing rigorous impact assessment studies that would account for factors at this level. Second, the current set of case studies also complements the review of Alvarez and von Hagen (2011) by explicitly describing local ecologies where value chains touch base. Third, by focusing on the issue–attention cycle, the framework developed here complements the recent review of interactions among complementary policy instruments by Lambin et al. (2014) and the analysis of the commoditization process by Daviron and Vagneron (2011) by a global as well as country-specific historic perspective on sustainability concerns and how they have been addressed over time. The case studies of the following papers apply the framework and thereby contribute to an empirical validation of the propositions put forward.

Fourth, the present set of studies also contributes to putting a monitoring system in place for documenting and analyzing the medium to long-term impacts of private certification and public governance systems in selected sites. The sites are part of the sentinel sites network of the Global Research Program on Forests, Trees and Agroforestry of the CGIAR. This directly addresses a gap identified by the Steering Committee of the State-of-Knowledge Assessment of Standards and Certification (2012) and also addresses the key question of under which conditions private governance systems can contribute to sustainability.

Lastly, by combining research on the swing potential, management practices and governance systems, the current set of research also combines focus on what has so far often been considered separate issues.

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References

- Alvarez G, von Hagen O. 2011. The impacts of private standards on producers in developing countries: literature review series on the impacts of private standards - part II. Geneva: International Trade Centre.
- Alvarez G, von Hagen O. 2012. When do private standards work? literature review series on the impact of private standards - part IV. Geneva: International Trade Centre.
- Barkemeyer R, Comyns B, Figge F, Napolitano G. 2014. CEO statements in sustainability reports: substantive information or background noise? *Accounting Forum*. 38:241–257.
- Barkemeyer R, Figge F, Holt D. 2013. Sustainability-related media coverage and socioeconomic development: a regional and North-South perspective. *Environ Planning C Government Policy*. 31:716–740.
- Barkemeyer R, Holt D, Figge F, Napolitano G. 2010. A longitudinal and contextual analysis of media representation of business ethics. *Eur Business Rev*. 22:377–396.
- Barracough SL. 2000. *Agricultural expansion and tropical deforestation: international trade, poverty and land use*. Abingdon (UK): Routledge.
- Berlan A. 2013. Social sustainability in agriculture: an anthropological perspective on child labour in cocoa production in Ghana. *J Dev Stud*. 49:1088–1100.
- Berman D. 2013. Make it that way? the impact of multiple standards regimes. *Int J Soc Agric Food*. 20:69–89.
- Blackman A. 2010. Alternative pollution control policies in developing countries. *Rev Environ Econ Policy*. 4:234–253.
- Blackman A, Rivera J. 2011. Producer-level benefits of sustainability certification. *Conserv Biol*. 25:1176–1185.
- Braat LC, de Groot R. 2012. The ecosystem services agenda: bridging the worlds of natural science and economics, conservation and development, and public and private policy. *Ecosyst Serv*. 1:4–15.
- Bush SR, Belton B, Hall D, Vandergeest P, Murray FJ, Ponte S, Oosterveer P, Islam MS, Mol AP, Hatanaka M, Kruijsen F. 2013. Certify sustainable aquaculture? *Science*. 341:1067–1068.
- Cashore B, Auld G, Newsom D. 2004. *Governing through markets. forest certification and the emergence of Non-State authority*. New Haven (CT): Yale University Press.
- Cerutti PO, Lescuyer G, Tsanga R, Nziengui Kassa S, Mapangou PR, Essiane Mendoula E, Yembe-Yembe RI. 2014. Social impacts of the forest stewardship council

- certification - an assessment in the Congo basin. Bogor: CIFOR.
- Cerutti PO, Sola P, Chenevoy A, Iiyama M, Yila J, Zhou W, van Noordwijk M. 2015. Woodfuel a priority for national and international development strategies in SSA? what are the socio-economic and environmental impacts? Bogor: Center for International Forestry Research (CIFOR).
- Costanza R, Fioramonti L, Kubiszewski I. 2016. The UN sustainable development goals and the dynamics of well-being. *Front Ecol Environ*. 14:59–59.
- Daviron B, Vagneron I. 2011. From commoditisation to de-commoditisation ... and back again: discussing the role of sustainability standards for agricultural products. *Dev Policy Rev*. 29:91–113.
- Davis SC, Boddey RM, Alves BJR, Cowie AL, George BH, Ogle SM, van Wijk MT. 2013. Management swing potential for bioenergy crops. *GCB Bioenergy*. 5:623–638.
- de Groot RS, Alkemade R, Braat L, Hein L, Willemen L. 2010. Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecol Complexity*. 7:260–272.
- Downs A. 1972. Up and down with ecology - the “issue-attention cycle”. *Public Interest*. 28:38–50.
- Ekins P, Voituriez T. 2009. Overview and general introduction. In: Ekins P, Voituriez T, editors. *Trade, globalization and sustainability impact assessment*. London: Earthscan.
- Fulponi L. 2007. The globalization of private standards and the agri-food system. In: Swinnen J, editor. *Global supply chains, standards and the poor*. Wallingford (UK): CABI; p. 5–18.
- Gereffi G, Humphrey J, Sturgeon T. 2005. The governance of global value chains. *Rev Int Political Economy*. 12:78–104.
- Haanaes K, Michael D, Jurgens J, Rangan S. 2013. Making sustainability profitable. *Harv Bus Rev*. 110–114. Available from: <http://hbr.org/2013/03/making-sustainability-profitable/ar/1>
- Hanifan GL, Sharma AE, Mehta P. 2012. Why a sustainable supply chain is good business. *Accenture/Outlook J High Perform Bus*. Available from: <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Outlook-Why-sustainable-supply-chain-is-good-business.pdf>
- Hartmann M, Frohberg K, Fischer C. 2010. Building sustainable relationships in agri-food chains: challenges from farm to retail. In: Fischer C, Hartmann M, editors. *Agri-food chain relationships*. Wallingford (CT): CAB International; p. 25–44.
- Henson S, Humphrey J. 2010. Understanding the complexities of private standards in global agri-food chains as they impact developing countries. *J Dev Stud*. 46:1628–1646.
- Holt D, Barkemeyer R. 2012. Media coverage of sustainable development issues - attention cycles or punctuated equilibrium? *Sustainable Dev*. 20:1–17.
- Hughes A. 2005. Responsible retailers? ethical trade and the strategic re-regulation of cross continental food supply chains. In: Fold N, Pritchard B, editors. *Cross-continental food chains*. Abingdon (UK): Routledge.
- Humphrey J, Schmitz H. 2001. *Governance in global value chains*. Brighton: Institute of Development Studies.
- Ionescu-Somer A, de Man R. 2013. Sustainable sourcing of agricultural raw materials a practitioner's guide. Sustainable Agriculture Initiative (SAI) Platform, Brussels, CSL Learning Platform of IMD's Global Center for Sustainability Leadership (IMD-CSL), Lausanne, the International Trade Centre (ITC), Geneva, and the Sustainable Trade Initiative (IDH), Utrecht.
- ISO. 2015a. Standards. What is a standard? [cited 2015 Oct 10]. Available from: <http://www.iso.org/iso/home/standards.htm>
- ISO. 2015b. Certification. [cited 2015 Oct 10]. Available from: <http://www.iso.org/iso/home/standards/certification.htm>
- Kaplinsky R, Terheggen A, Tijaja J. 2011. China as a final market: the Gabon timber and Thai cassava value chains. *World Dev*. 39:1177–1190.
- Kogg B, Mont O. 2012. Environmental and social responsibility in supply chains: the practise of choice and inter-organisational management. *Ecol Econ*. 83:154–163.
- Lambin EF, Meyfroidt P, Rueda X, Blackman A, Börner J, Cerutti PO, Wunder S. 2014. Effectiveness and synergies of policy instruments for land use governance in tropical regions. *Global Environ Change*. 28:129–140.
- Lawson S, Blundell A, Cabarle B, Basik N, Jenkins M, Canby K. 2014. Consumer goods and deforestation: an analysis of the extend and nature of illegality in forest conversion for agriculture and timber plantations. Washington (DC): Forest Trends.
- Lee J, Gereffi G, Beauvais J. 2012. Global value chains and agrifood standards: challenges and possibilities for small-holders in developing countries. *Proc Natl Acad Sci (PNAS)*. 109:12326–12331.
- Lusiana B, van Noordwijk M, Cadisch G. 2012. Land sparing or sharing? exploring livestock fodder options in combination with land use zoning and consequences for livelihoods and net carbon stocks using the FALLOW model. *Agric Ecosyst Environ*. 159:145–160.
- Lytle MH. 2007. *The gentle subversive: Rachel Carson, silent spring, and the rise of the environmental movement*. Oxford: Oxford University Press.
- Manning S, Boons F, von Hagen O, Reinecke J. 2012. National contexts matter: the co-evolution of sustainability standards in global value chains. *Ecol Econ*. 83:197–209.
- McCarthy JF, Gillespie P, Zen Z. 2012. Swimming upstream: local Indonesian production networks in “globalized” palm oil production. *World Dev*. 40:555–569.
- Meyfroidt P, Rudel TK, Lambin EF. 2010. Forest transitions, trade, and the global displacement of land use. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1014773107.
- Milder JC, Arbuthnot M, Blackman A, Brooks SE, Giovannucci D, Gross L, Zrust M. 2015. An agenda for assessing and improving conservation impacts of sustainability standards in tropical agriculture. *Conserv Biol*. 29:309–320.
- Minang PA, van Noordwijk M, Freeman OE, Mbow C, de Leeuw J, Catacutan D, editors. 2015. *Climate-smart landscapes: multifunctionality in practice*. Nairobi: World Agroforestry Centre (ICRAF).
- Nadvi K, Wältring F. 2004. Making sense of global standards. In: Schmitz H, editor. *Local enterprises in the global economy issues of governance and upgrading*. Cheltenham: Edward Elgar.
- Onkvisit S, Shaw JJ. 1989. The international dimension of branding: strategic considerations and decisions. *Int Marketing Rev*. 6:22–34.
- Overdevest C, Zeitlin J. 2014. Assembling an experimentalist regime: transnational governance interactions in the forest sector. *Regul Governance*. 8:22–48.
- Pérez-López D, Moreno-Romero A, Barkemeyer R. 2013. Exploring the relationship between sustainability

- reporting and sustainability management practices. *Bus Strategy Environ.* 24:720–734.
- Ponte S. 2002. The 'latte revolution'? regulation, markets and consumption in the global coffee chain. *World Dev.* 30:1099–1122.
- Ponte S, Gibbon P, Vestergaard J. 2011. Governing through standards: an introduction. In: Ponte S, Gibbon P, Vestergaard J, editors. *Governing through standards: origins, drivers and limitations*. Basingstoke (UK): Palgrave Macmillan; p. 1–24.
- Ponte S, Sturgeon T. 2013. Explaining governance in global value chains: a modular theory-building effort. *Rev Int Political Economy.* 21:195–223.
- Potts J, Lynch M, Wilkings A, Huppé G, Cunningham M, Voora V. 2014. The state of sustainability initiatives review 2014: standards and the green economy. Winnipeg: International Institute for Sustainable Development (IISD) & International Institute for Environment and Development (IIED).
- Potts J, van der Meer J, Daichman J. 2010. The state of sustainability initiatives review 2010: sustainability and transparency. Winnipeg: International Institute for Sustainable Development (IISD) & International Institute for Environment and Development (IIED).
- Raynolds LT. 2012. Fair trade: social regulation in global food markets. *J Rural Stud.* 28:276–287.
- Rivera J, Oetzel J, deLeon P, Starik M. 2009. Business responses to environmental and social protection policies: toward a framework for analysis. *Policy Sci.* 42:3–32.
- Roland Berger. 2010. Sustainable sourcing and SCM. next level in procurement excellence. Budapest: Roland Berger GmbH.
- Rueda X, Lambin EF. 2013. Linking globalization to local land uses: how eco-consumers and gourmants are changing the Colombian coffee landscapes. *World Dev.* 41:286–301.
- Searcy C. 2009. The role of sustainable development indicators in corporate decision-making. Winnipeg: International Institute for Sustainable Development.
- Sheil D, Casson A, Meijaard E, van Noordwijk M, Gaskell J, Sunderland-Groves J, Kanninen M. 2009. The impacts and opportunities of oil palm in Southeast Asia. Bogor: Center for International Forestry Research (CIFOR).
- Sikor T, Auld G, Bebbington AJ, Benjaminsen TA, Gentry BS, Hunsberger C, Upton C. 2013. Global land governance: from territory to flow? *Curr Opin Environ Sustainability.* 5:522–527.
- Simpson C, Rapone A. 2000. Community development from the ground up: social justice coffee. *Hum Ecol Rev.* 7:46–58.
- Smith TM, Fischlein M. 2010. Rival private governance networks: competing to define the rules of sustainability performance. *Global Environ Change.* 20:511–522.
- Steering committee of the State-of-Knowledge assessment of standards and certification. 2012. Toward sustainability - the roles and limitations of certification. Washington (DC): RESOLVE, Inc.
- Sturgeon T. 2008. From commodity chains to value chains: interdisciplinary theory building in an age of globalization. Cambridge (MA): Industrial Performance Center, Massachusetts Institute of Technology.
- Tomich TP, Chomitz K, Francisco H, Izac A-MN, Murdiyarso D, Ratner BD, van Noordwijk M. 2004. Policy analysis and environmental problems at different scales: asking the right questions. *Agric Ecosyst Environ.* 104:5–18.
- UNFSS. 2016. objectives. United Nations Forum on sustainability standards. [cited 2016 Oct 07]. Available from: <http://unfss.org/about-us/objectives/>
- van Ittersum MK, Cassman KG, Grassini P, Wolf J, Titttonell P, Hochman Z. 2013. Yield gap analysis with local to global relevance—A review. *Field Crops Res.* 143:4–17.
- van Noordwijk M. 2006. RUPES typology of environmental service worthy of reward. Bogor: World Agroforestry Centre.
- van Noordwijk M, Tata HL, Xu J, Dewi S, Minang PA. 2012. Segregate or integrate for multifunctionality and sustained change through rubber-based agroforestry in Indonesia and China. In: Nair PKR, Garrity D, editors. *Agroforestry-the future of global land use*. Dordrecht, The Netherlands: Springer; p. 69–104.
- van Noordwijk M, van Schaik CP, De Foresta H, Tomich TP. 1995. Segregate or integrate nature and agriculture for biodiversity conservation. In: *Proceedings of CBD Biodiversity Forum; 1995 Nov 4-5; Jakarta: World Agroforestry Centre (ICRAF), Bogor*. Available from: <http://www.worldagroforestry.org/sea/Publications/files/paper/PP0033-04.pdf>
- Vellema S, van Wijk J. 2015. Partnerships intervening in global food chains: the emergence of co-creation in standard-setting and certification. *J Clean Prod.* 107:105–113.
- Vermeulen WJV. 2010. Sustainable supply chain governance systems: conditions for effective market based governance in global trade. *Prog Ind Ecol Int J.* 7:138–162.
- von Braun J, Meinzen-Dick RS. 2009. Land grabbing by foreign investors in developing countries: risks and opportunities. Washington (DC): International Food Policy Research Institute.
- Vorley B, Beemans A, Homer S. 2010. Food-related voluntary sustainability standards: a strategy guide for policy makers. Paper presented at the TSPN Members Meeting, Bern.
- WCED. 1987. Our common future. World Commission on Environment and Development. London (UK): Oxford University Press.
- Wilcove DS, Koh L. 2010. Addressing the threats to biodiversity from oil-palm agriculture. *Biodivers Conserv.* 19:999–1007.
- Wilkinson J. 2007. Fair trade: dynamic and dilemmas of a market oriented global social movement. *J Consum Policy.* 30:219–239.
- World Bank. 2015a. Agriculture & rural development. [cited 2015 Oct 03]. Available from: <http://data.worldbank.org/topic/agriculture-and-rural-development>
- World Bank. 2015b. World development indicators. [cited 2015 Oct 01]. Available from: <http://wdi.worldbank.org/table/4.2>