Voluntary Sustainability Standards and Biodiversity:

Understanding the potential of agricultural standards for biodiversity protection

SSI Policy Brief

State of Sustainability Initiatives

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This policy brief provides a summary of the findings of joint research conducted by International Institute for Sustainable Development in collaboration with the Convention for Biological Diversity Secretariat analyzing the potential contribution of voluntary sustainability standards to support biodiversity protection. *The State of Sustainability Initiatives Focus Report: Standards and Biodiversity* to be released in 2017 will provide the full results.

Key Points

- Agriculture is responsible for 70 per cent of projected losses in terrestrial biodiversity due to widespread land conversion, pollution and soil degradation.
- Voluntary sustainability standards offer an opportunity to reduce the impact of agriculture and to promote best practices, which can also improve yields and help to feed a growing population.
- Agricultural production compliant with these standards has grown at an average of 35 per cent per annum between 2008 and 2014.
- Standards already cover a significant portion of some commodity markets. Half of global coffee production, 30 per cent of cocoa production, 22 per cent of palm oil production and 18 per cent of global tea production is standard compliant; however, standard-compliant production only accounts for a small portion of total global agricultural land area with minimal presence in major staple crops.
- While most existing sustainability standards address many key biodiversity issues, an absence of performance requirements and impact data makes it challenging for policy-makers to determine where standards are most effective in preventing biodiversity loss.
- The distribution of compliant production is primarily determined by where compliance costs are lowest rather than where need is greatest.
- Policy-makers need to become engaged in setting ground rules to ensure the credibility of standards.
- Policy-makers should demand access to impact and other data gathered as part of the certification process.
- Policy-makers need to facilitate the strategic implementation of standards in areas where biodiversity concerns are greatest through joint planning and financial support.

1.0 Introduction

The rate of biodiversity loss attributed to human activities has reached alarming levels over the past several decades, with the species extinction rate having increased 1,000 fold since the industrial revolution.[1] Historically, agriculture has been the single most important source of terrestrial biodiversity loss, with 70 per cent of projected losses in terrestrial biodiversity being attributed to agriculture through widespread land conversion, pollution and soil degradation.[2] Curbing biodiversity loss, therefore, necessarily implies addressing agriculture's impact on biodiversity.

However, increased yields through more intensive production practices and the expansion of agriculture area have been key to enabling improved food security over the past century. With the population level expected to increase to 9.7 billion by 2050, the continued growth and/or improved efficiency of agricultural production is likely to remain a necessity for the foreseeable future.[3]

The challenge facing policy-makers is therefore how to maintain or improve the productive efficiency of agriculture while preserving biodiversity. Fortunately, there is a growing understanding of the environmental impacts of different agricultural practices, which has, in turn, given rise to "best practices" for agricultural production.[4] One of the rapidly expanding ways by which these best practices are being developed, promoted and implemented is through a system of voluntary sustainability standards[5] operating across multiple agricultural sectors. As these initiatives grow in popularity, it becomes increasingly important to understand how and where they may contribute to biodiversity protection.

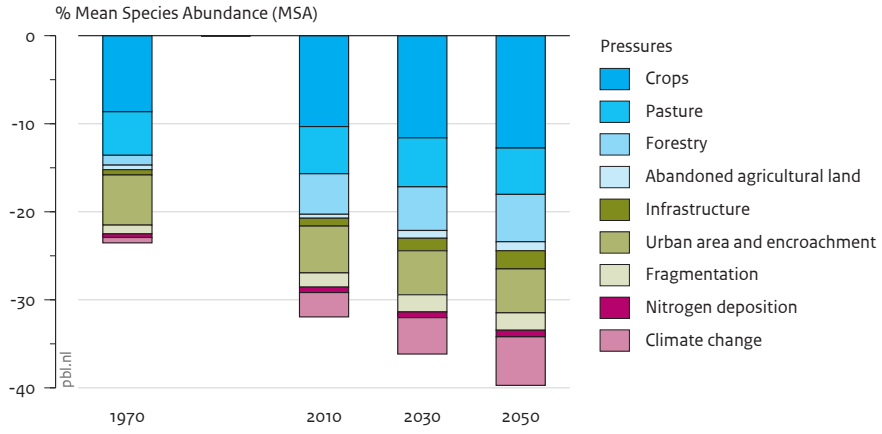

Figure 1. Relative pressures driving global biodiversity loss: Agriculture represents the single most important driver of biodiversity loss.

Source: Planbureau voor de Leefomgeving (PBL Netherlands Environmental Assessment Agency, n.d., CC licence 3.0)

[1] The species extinction rate has far surpassed the speciation rate, with half of species extinctions occurring on land in the last 20 years due primarily to land-use change, species introductions and climate change (Rockstrom, 2009).
[2] The agricultural sector contributes 22 per cent of all greenhouse gas emissions, and agricultural runoff has in part led to the creation of 400 oceanic dead zones around the world (Secretariat of the Convention on Biological Diversity, 2014; The Economics and Ecosystems of Biodiversity [TEEB], 2015).
[3] The intentional modification of diets towards "low-impact" protein sources (the livestock sector alone is responsible for 14.5 per cent of global greenhouse gas emissions) as well as reducing food waste (1.3 billion tonnes of food gets lost or wasted every year) represent other key pathways to meeting the food needs of present and future generations while reducing the environmental burden of agricultural production (Speller, 2016; TEEB, 2015).
[4] There is clear evidence that cost-effective agricultural production is dependent on biodiversity for soil formation, nitrogen fixing, pollination, micro-climates, pest management, genetic diversity, etc. This suggests that the objective of increasing agricultural productivity need not be in conflict with that of biodiversity preservation (TEEB, 2015).
[5] Voluntary sustainability standards are governed and managed by private entities that establish criteria for sustainable agricultural production and management practices. Agricultural producers adhering to an initiative's standards may be granted a certification of compliance and/or the right to use a label with their products.

In 2014, the Secretariat of the Convention on Biological Diversity (CBD) launched a multistakeholder process aimed at identifying a generic and cross-cutting set of indicators to help governments and standard-setting bodies monitor and manage the impacts of agricultural production on biodiversity loss (see Table 1). The resulting set of thematic areas (impact categories) provides a reference point for policy-makers seeking to manage agriculture-driven biodiversity loss. The suggested indicators illustrate how the impact categories can be measured and form a useful reference point for understanding how voluntary standards might contribute to the efforts of policy-makers in reducing biodiversity loss. This brief outlines the results of an analysis by IISD and the CBD that applies the indicators to major international voluntary standards operating in eight agricultural markets: bananas, cocoa, coffee, cotton, palm oil, soy, sugar and tea.

Table 1. The biodiversity impact indicators for commodity production

Theme	Indicators	Objective
Habitat Conservation	HC1: Percent of farm area in land classes of different habitat quality	To prevent adverse impacts on biodiversity by promoting diversity of land classes, particularly those with high conservation value
	HC2: Conversion of natural habitat cover in terms of land-use change over time	To prevent adverse impacts on biodiversity by reducing or preventing land conversion for agricultural production
	HC3: Area-based conservation management by land area	To prevent adverse impacts on biodiversity through intentional management of land area under production
Water Use	WU1: Water use per unit area or unit product	To prevent adverse impacts on biodiversity caused by the overuse of water through production and processing
Water Quality	WQ1: Pesticide and organic fertilizer use per unit area or unit product	To prevent adverse impacts on biodiversity from the overuse of synthetic inputs
	WQ2: Biological oxygen demand at sampling sites	To prevent adverse impacts on biodiversity caused by runoff from agricultural production
Soil Fertility	SF1: Soil organic matter per unit volume	To prevent adverse impacts on soil biodiversity by promoting high soil carbon content
Climate Change	CC!: Fossil fuel use per unit area or product	To prevent adverse impacts on biodiversity due to climate change
	CC2: Carbon footprint of product or land area	To prevent the adverse impacts on biodiversity due to climate change

Voluntary sustainability standards can help policy-makers in the implementation of their own laws and policies.

2.0 The Potential of Voluntary Sustainability Standards

The rise of voluntary sustainability standards is closely related to a growing awareness of the impacts that consumption and production patterns have on sustainable development. Since the 1992 Rio Earth Summit, where sustainable consumption and production were edified under Principle 8 of the Rio Declaration, consumers have increasingly demanded proof of sustainable production practices, particularly in products coming from regions where laws and enforcement mechanisms are considered weak. While the first initiatives, such as Organic, Fairtrade and Rainforest Alliance initially targeted niche markets catering to "green consumers," there has been a growing emphasis on broad "market transformation" through voluntary standard systems explicitly tailored to mainstream markets.[6]

Scope of Review

The State of Sustainability Initiatives Biodiversity and Standards Review covers 14 major international standards operating in the banana, cocoa, coffee, cotton, palm oil, soy, sugar and tea sectors:

Fairtrade International
Rainforest Alliance
Ethical Tea Partnership
Global Coffee Platform (formerly 4C)
UTZ Certified
IFOAM (organic)
Proterra
Roundtable on Responsible Soy
Roundtable on Sustainable Palm Oil
Bonsucro
Better Cotton Initiative
Cotton Made in Africa
GlobalGAP
Roundtable for Sustainable Biomaterials

Production volumes compliant with an internationally recognized standards grew at an average rate of 35 per cent per annum from 2008 to 2014 across the banana, cotton, coffee, cocoa, tea, sugar, palm oil and soybean sectors combined.[7] In absolute terms, the land area covered by voluntary standards has now become a non-negligible factor in many commodity markets. By 2014, four of the eight markets reviewed had achieved compliance rates of 10 per cent or more of global production (see Table 2). Based on current market trends and existing "unimplemented" corporate commitments to sustainable sourcing, we expect that standard-compliant production for each of the eight markets will have reached 10 per cent or more of total global production by 2020.[8]

The growth of voluntary standards represents an important opportunity for all stakeholders to play a proactive role in encouraging and managing the transition towards more sustainable agriculture, by enabling informed consumer choice and direct participation in rule setting for international trade. The democratization of international markets, a cornerstone principle of sustainable development, enabled by voluntary standard systems may represent one of the most compelling arguments for their proliferation.

By allowing consumers and companies to choose sustainable products, voluntary standards can empower the market to include the costs of biodiversity protection within the pricing mechanism.[9] The value of standard-compliant production across the eight commodities where voluntary sustainability

[6] A number of single-sector Voluntary Sustainability Standards have emerged focused on catering to mainstream markets such as BCI, RSPO, RTRS and Bonsucro (Komives & Jackson, 2014; Potts et al., 2014).
[7] Data for "2014" is the data most recently available at the time of writing, and may include statistics from 2013 and 2015. In the majority of cases, the latest data available is for 2014 (Lernoud et al., 2015). See forthcoming ITC/FIBL/IISD *State of Sustainable Markets 2017* for the most recent market data available.
[8] In the case of soy, we expect 10 per cent of global trade, rather than global production, to be standard compliant by 2020 (McCarthy, 2016).
[9] With the introduction of products identified as "sustainable," producers can compete on sustainability and/or earn a premium for the adoption of sustainable practices. To the extent that prices more accurately reflect the costs of sustainable production with the presence of voluntary standards, there is no guarantee that the final price, in an imperfect market, will offer "full cost internalization." It should be noted, as well, that not all initiatives are associated with premiums, and not all market benefits come in the form of premiums per se.

standards operate (including fisheries and timber) was estimated to be worth more than USD $50 billion in 2014. The transition towards sustainable production thus represents a vehicle for directing "investment" by consumers and companies in the promotion of sustainable practices.

Voluntary sustainability standards can help policy-makers in the implementation of their own laws and policies. The monitoring, enforcement and traceability systems applied by standards can augment the monitoring and enforcement capacities of local governments.[10] Data collected by voluntary standards boards can also help policy-makers determine the sustainability status of a given sector. For instance, the Roundtable on Sustainable Palm Oil and World Resources Institute have teamed up to develop Oil Palm Production Maps to track and prevent potential deforestation.[11]

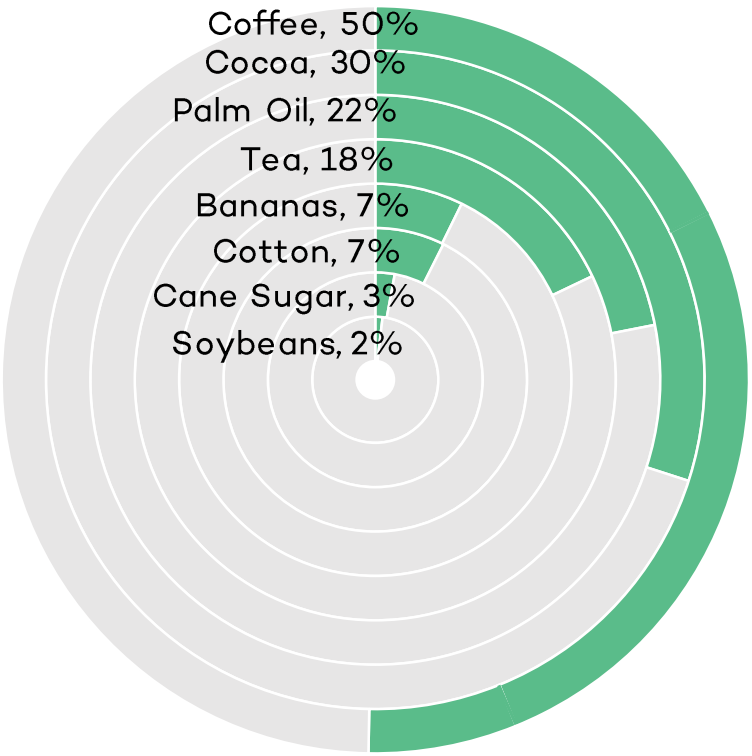

Figure 2. Voluntary sustainability standard-compliant share of global production (by volume, 2014).

Source: Lernoud et al. (2015); all data for standard-compliant volumes unless otherwise specified; adjusted for multiple certification

But voluntary standards also face specific limitations in addressing biodiversity loss. One of the most obvious is linked to their reliance on developed country consumption for their current market status. In a recent survey of 16 standards, all had their headquarters in a developed country, with the majority of board members on most initiatives being based in Northern economies.[12] These trends reflect the reality that virtually all standard-compliant products are sold in developed economies. For voluntary sustainability standards to effectively address biodiversity at the global scale, they will need to find a way to gain traction in developing country consumer markets as well.

Notwithstanding this limitation, voluntary standards establish an increasingly sophisticated infrastructure for identifying, enforcing and measuring levels of compliance with best practices that can assist policy-makers in their efforts to implement and regulate biodiversity conservation.

[10] Increasingly, voluntary sustainability standards are being used as a basis for demonstrating due diligence in the sourcing of legally harvested forest products under the EU FLEGT regime and the US Lacey Act (Castka et al., 2016). Voluntary standards could be used as a basis for measuring achievement towards national targets for sustainable agriculture production.

[11] The mapping tool developed by the World Resources Institute and the RSPO lowers the risk that companies are purchasing palm oil associated with deforestation (Baer, 2014).

[12] See Potts et al. (2014) for detailed information on the governance structures of selected international standards.

3.0 Standards and Biodiversity

Most existing voluntary sustainability standards already address biodiversity, though room for improvement remains. Voluntary sustainability standards offer several pathways to support biodiversity. While many of these pathways are dependent on the specific enforcement and governance mechanisms associated with a given initiative, the most explicit mechanisms arise in the form of production requirements. The content of requirements, as well as the stringency of the timeline for demonstrating compliance with such requirements, represent a logical starting point in determining the potential any given standard has for addressing biodiversity concerns.

Voluntary standards employ a wide variety of methodologies for granting "recognition of compliance," but most systems distinguish between critical requirements—requirements that must be met ***prior*** to any recognition of compliance under the system—and other requirements that can be met ***after*** recognition of compliance under the system.[13] An assessment of critical requirements across initiatives thus provides a snapshot of where initiatives have prioritized action.

Land conversion from natural vegetation to agriculture use represents the single most important driver of biodiversity loss arising from agriculture, with approximately 38 per cent of global land area being appropriated for agricultural production (Food and Agricultural Organization, 2016; World Bank Group, 2016). The degree to which sustainability standards address the problem of forest conversion is therefore key to the role they play in promoting biodiversity. Perhaps not surprisingly, the vast majority of standards surveyed (87 per cent) report having some form of critical criterion prohibiting the conversion of forestlands for agricultural purposes. Similarly, 80 per cent of the initiatives surveyed include critical requirements on the protection of areas with high conservation value.

Table 2. Average coverage of biodiversity impact indicators for commodity production by major agricultural standards

Habitat Conservation	Percentage of farm area in land classes of different habitat quality	66%
	Conversion/loss of natural habitat cover (land-use change over time)	75%
	Area-based conservation management	61%
Water Use and Quality	Water use per unit product	82%
	Pesticide and inorganic fertilizer use per unit area or unit product	59%
	Biological oxygen demand at sampling sites	58%
Soil Fertility	Soil organic matter	58%
Climate Change	Fossil fuel use per unit area or unit product	53%
	Carbon footprint of product and land use	44%

Source: Information on voluntary sustainability standards criteria obtained from the International Trade Centre Standards Map (standardsmap.org) verified with online standards documentation and the standards themselves.

[13] In some cases, criteria may operate as "options" or "recommendations."

"The market distribution of compliant production plays a key factor in determining the role voluntary sustainability standards play in reducing biodiversity loss ."

The standards surveyed displayed significant alignment with other key biodiversity parameters. Table 2 provides a high-level overview of the distribution of coverage across the five themes and the nine indicator groupings. The average coverage across all indicator groups was approximately 62 per cent (where a score of 100 per cent represents a critical requirement) showing a substantive correlation between the standards surveyed and the core biodiversity themes. Of note was the alignment of sustainability standards and the specific themes of habitat preservation (75 per cent) and water-use management (82 per cent), for which there is a relatively higher concentration of critical requirements. To determine the level of attention to each specific indicator group, our analysis considered a variety of potential requirements related to the objective associated with each indicator.[14] Highlights across the indicator groupings include:

- The vast majority (nearly all) of the standards reviewed include critical requirements related to the protection of areas with high conservation value (80 per cent), forests (87 per cent), wetlands and watercourses (73 per cent)
- Approximately two thirds of the standards reviewed have critical requirements related to the **monitoring** of inputs with important biodiversity impacts, including requirements for water pollution prevention (73 per cent), pesticide use and monitoring (67 per cent) and irrigation management (67 per cent).
- Only half or less have critical requirements directly mandating **outcomes** with important biodiversity impacts such as requirements for targeted pesticide application (53 per cent), maintenance of soil fertility (47 per cent), greenhouse gas emissions reduction (33 per cent) and synthetic fertilizer reduction (20 per cent).
- Critical requirements for **biodiversity risk reduction** are found in a little more than a third of the initiatives surveyed.
- Only two (13 per cent) of the initiatives surveyed contained "no net biodiversity loss" as a critical requirement.

These findings underscore the focus of voluntary standards on mandating **management practices** rather than **performance outcomes.** While this approach holds the advantage of maximizing flexibility for different producing conditions, it also raises important questions regarding the actual impacts of such initiatives.

[14] For example, the "objective" of the "Percent of farm area in different classes of habitat quality" is "To prevent adverse impact on biodiversity by promoting diversity of land classes, particularly those with high conservation value"—see Table 1 above. Voluntary sustainability standard criteria related to this objective was thus identified as "promoting" the specific biodiversity impact indicators for commodity production indicators.

4.0 Understanding Biodiversity Impacts

A criteria-based analysis of different voluntary sustainability standards offers a high-level snapshot of how these initiatives are attending to key biodiversity themes. However, the identification of requirements for production only represents one component of a package of variables necessary to produce improved biodiversity outcomes. Other key factors in determining actual outcomes include the rigour of the conformity assessment systems, the appropriateness of the measures used to determine compliance and distribution of compliant production with respect to biodiversity hotspots. It is also worth noting that since standards only set parameters for compliance, the actual process enabling the transition to compliance (and associated outcomes) may depend more on access to technical assistance, training and financial support than the requirements themselves.

Voluntary sustainability standards have made significant progress in developing conformity assessment processes for supply chains, and third-party certification is now the dominant form of assurance provided by most initiatives. Third-party certification ensures independence of the data collection, verification and attestation stages of making a claim to compliance—in short, maximizing the objectivity and accuracy of market claims. The data collected by the auditing processes potentially offers a valuable repository for managing biodiversity loss across individual sectors. But certification-related data is typically considered confidential under most existing initiatives, rendering it difficult to take advantage of this opportunity. If the potential contribution of sustainability standards in fulfilling biodiversity policy objectives is to be met, the accessibility of existing data collected by standards will need to be improved significantly.

Different initiatives apply different philosophies for assessing compliance with criteria. Since auditors cannot always be present while practices are occurring, they must look for circumstantial evidence that such practices are applied. This ranges from written policies, to the presence of equipment used for specific practices, to financial documentation, to physical evidence of practices being applied. The vast majority of this evidence can only ***imply*** compliance with requirements and typically does not offer any guarantee that such criteria are being applied in a way that actually delivers the desired outcomes. This challenge is only aggravated by the natural gravitation of voluntary standards towards the stipulation of management requirements rather than performance requirements. Increasingly, voluntary standards have recognized this challenge, and are investing heavily in impact research as part of a longer-term continual improvement process.[15] However, the learning curve is steep and the data incomplete, suggesting a need for significant and ongoing investment in impact assessment associated with different criteria, practices and initiatives.

Finally, although most sustainability standards have criteria related to biodiversity protection, not all initiatives prioritize biodiversity loss equally. In our review, approximately half of the initiatives surveyed had the prevention of deforestation as a major rationale for their establishment and thus might be considered as giving biodiversity preservation a higher-order priority.[16] But even where the substantive rationale for an initiative is largely aligned with the minimization of biodiversity loss, the actual distribution of adoption will depend on political, structural and market forces that may or may not be aligned with actual biodiversity needs. The market distribution of compliant production therefore plays a key factor in determining the role voluntary sustainability standards play in reducing biodiversity loss.

[15] There are growing number of industry standards for impact assessment such as ISEAL's Impacts Code and the Committee on Sustainability Assessments' Sustainability Metrics (Committee on Sustainability Assessment, 2013, 2015; ISEAL Alliance, 2014).
[16] Prioritization should not, of course, be confused with actual impact. Standards that prioritize social justice or water conservation may nevertheless result in significant positive biodiversity outcomes.

The cereals sector provides one obvious example of this challenge. Maize, rice and wheat account for 38 per cent of the world's cropland area and, as a group, represent the greatest displacement of natural vegetation across the planet. However, these three sectors also display some of the lowest levels of activity for voluntary sustainability standards. Organic certification is the only major international initiative present across these crops and accounts for less than 0.5 per cent of global production in each of these sectors. The absence of significant adoption of voluntary sustainability standards in the cereals sector, despite their obvious impact on biodiversity loss, is symbolic of the challenge initiatives face when they rely on market forces to determine where and when they are applied.

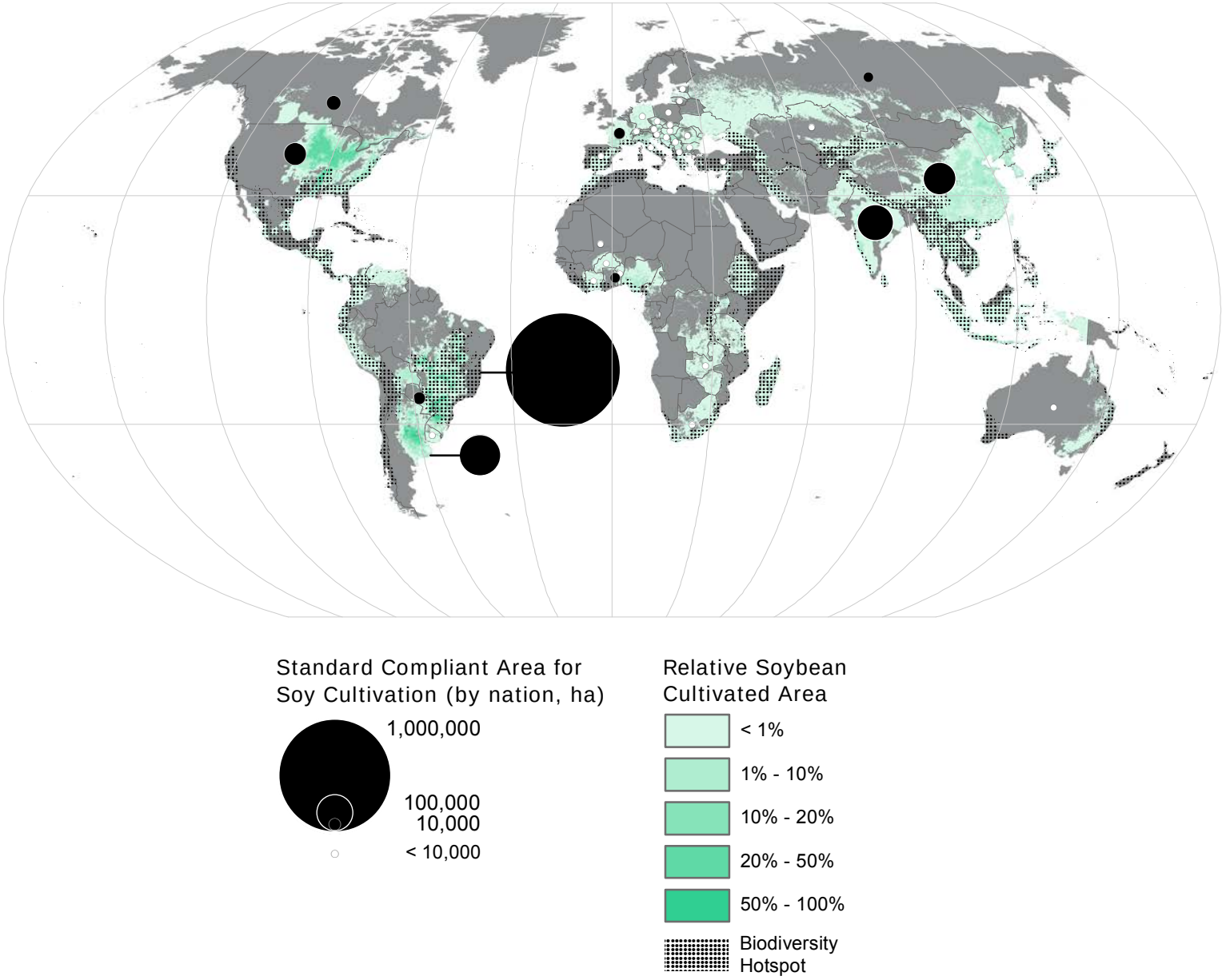

Figure 3. Soy production and biodiversity hotspots: Mapping the distribution of standard-compliant production

Source: Figure 2 – Global biodiversity hotspots defined by the presence of 1500 endemic vascular plant species where 30 per cent of its original natural vegetation remains (biodiversity hotspot data obtained from the Critical Ecosystem Partnership Fund [Critical Ecosystem Partnership Fund, 2016]). Global soy cultivation density spatial data was obtained from Monfreda et al. (2008), modified to show areas overlapping biodiversity hotspots. Standard-compliant soy agricultural areas obtained from Lernoud et al. (2015). Physical features obtained from Natural Earth (file:///C:/GIS/Physical%20Features/Hydrology/ne_10m_ocean/ne_10m_ocean.README.html) and Manual Shaded Relief (http://shadedrelief.com/manual_relief/)).

The systemic market pressure to recognize compliance where it "matters least" may represent one of the most significant challenges facing the voluntary sustainability standards sector.

The soy sector, on the other hand, offers an example where the standards focus on forest conversion. There has been a corresponding concentration of voluntary standard adoption in regions where forest conversion is a major and current issue. Figure 3 shows the proportional concentration of certified production in South America, particularly in Brazil, where soy production impinges directly on biodiversity hotspots.[17] This is important given the rapid rate of land conversion attributed to the growth in demand for, and production of, Brazilian soy. Even in this case, however, areas in Africa and Southeast Asia, where soy production also threatens biodiversity hotspots, reveal proportionately lower levels of compliant production. Moreover, in the absence of Geographic Information Systems (GIS) data for compliant farms, it remains difficult to determine whether or not certified farms within a given country are operating in those areas where land conversion is actually occurring.[18]

Building on these observations, examining the ratio of area dedicated to standard-compliant versus conventional agricultural production for specific crops can be insightful. Although an increasing share of global production is being produced in accordance with one or another voluntary sustainability standard, the percentage of coverage at the regional and national levels varies considerably. Overall, standard-compliant production is most likely to excel where the cost of compliance is least—which is to say, where either factor endowments such as climate or geography or socioeconomic conditions allow for lower-cost sustainable production. In principle, this is the miracle of voluntary standards, and markets more generally—they can automatically promote a concentration of production where sustainable production is most efficient. However, this outcome can be entirely undermined where markets allow for leakage in the form of conventional production. Under such cases, which is the general rule, then the most egregious production practices (those that are the most important to correct to protect biodiversity) are also the least likely to "transition" to standard-compliant production.

The systemic market pressure to recognize compliance where it "matters least" may represent one of the most significant challenges facing the voluntary sustainability standards sector. At a minimum, the reliance of voluntary standards on market forces for determining the distribution and intensity of compliance points towards a potential misalignment between the intentions of such initiatives and their actual outcomes or impacts. It also provides a strong rationale for policy supporting the design and rollout of standards explicitly targeting areas of greatest need for biodiversity protection.

[17] This is likely a result of the initial focus of the Roundtable on Responsible Soy and its partners on protecting the Amazon rainforest.
[18] The standards reviewed were not able to consistently provide GIS data for compliant farms. This represents a major barrier to understanding the role of standards in protecting biodiversity, and the potential role of policy-makers in complementing voluntary standards.

5.0 Conclusions

Although sustainable agriculture is not explicitly named as a Sustainable Development Goal (SDG), it represents a foundation, without which, achievement of the vast majority of SDGs simply will not be possible. Meeting SDG 2 (Zero Hunger) and SDG 15 (Life on Land) necessarily implies more efficient, biodiversity-friendly agriculture—without it, each of these goals runs the risk of impeding achievement of the other. SDG 12 (Sustainable Consumption and Production), particularly through the operation of credible, evidence-based voluntary standard systems, can play an important role in ensuring that both SDG2 and SDG15 are effectively managed such that they are mutually supportive.

To the extent that voluntary sustainability standards enable market forces towards a transition to sustainable agriculture, they must be welcomed and encouraged by the policy community. With respect to biodiversity preservation, voluntary sustainability standards have the potential to directly and concretely support all the Strategic Goals within the Convention of Biological Diversity's Strategic Plan: 2011-2020 (The Aichi Targets; see Table 3). However, meeting this potential is fundamentally dependent on the actual performance of individual standards in operation. Based on our review, the following broad conclusions can be drawn:

- Voluntary sustainability standards are addressing key biodiversity issues in their systems and represent a legitimate (and major investment) vehicle for implementing biodiversity protection through global supply chains.
- Voluntary sustainability standards offer a non-negligible supportive infrastructure for the implementation of biodiversity protection-related policy.
- Voluntary sustainability standards can provide invaluable data on sector performance (rate of biodiversity friendly production) to policy-makers, but current data collection and dissemination systems employed by the standards do not facilitate such use.
- The reliance of voluntary standards on market forces for adoption represents a major financial resource for the implementation of biodiversity policy, but may also reduce the ability of initiatives to address biodiversity loss where it is needed most.
- The focus on management requirements rather than performance requirements combined with the absence of accessible, real-time performance and outcome data, reduces the ability of policy-makers to leverage standards effectively.

Table 3. Potential contribution of voluntary sustainability standards to the CBD Strategic Plan 2011–2020 ambitions and performance of individual standards.

CBD Strategic Plan 2011–2020: Aichi Strategic Goals	Potential Contribution of Voluntary Sustainability Standards
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	By entering mainstream commodity markets, standards are potentially enabling the mainstreaming of biodiversity-friendly production
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use	Promoting biodiversity protection and sustainable production by stipulating requirements for sustainable production
Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	Safeguarding ecosystems by requiring buffer zones and the restoration of high biodiversity ecosystems
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	Improving productive efficiency and market access (farmer benefits) while improving global food security (consumer benefits)
Strategic Goal E: Enhance implementation through participatory planning, knowledge management, and increasingly rely on multistakeholder participatory processes for governance and capacity building	Increasingly relying on multistakeholder participatory processes for governance and rule development, and thus can promote participatory governance in international supply chains

6.0 Policy Options

Based on our observations, there is a clear rationale for policy-makers to support the evolution of voluntary sustainability standards in ways that can help ensure that they play a constructive role in meeting biodiversity targets. Following our analysis, we propose five areas where policy intervention could significantly support the contribution of standards to biodiversity protection:

POLICY OPPORTUNITY 1 – Support Biodiversity-Driven Implementation: Policy-makers can collaborate with voluntary standards during their rollout strategies in their respective countries to facilitate and provide incentives for adoption in areas where they will have maximum impact. Setting national targets and/or requirements for levels of standard-compliant production could support the achievement of SDG2, SDG12 and SDG15 simultaneously.

POLICY OPPORTUNITY 2 – Offer Leadership in the Development of Integrated Data Systems: Policy-makers can finance the development of national, regional and international data collection and sharing systems that enable voluntary standards (and other stakeholders) to share data with the general public and policy-makers along harmonized parameters so that their role as data collectors can be leveraged to support effective biodiversity management at the national and regional levels.

POLICY OPPORTUNITY 3 - Support Voluntary Sustainability Standards in the Development of Effective Requirements: Policy-makers can provide financing to standards and research partners to determine the biodiversity-specific impacts of agricultural production within specific crops so that these can be effectively integrated into the standards development and implementation processes.

POLICY OPPORTUNITY 4 – Support Impact Research and Analysis: Policy-makers can provide financing to researchers to determine the biodiversity impacts of voluntary standards operating in key sectors as a basis for continual improvement and for determining the strategic application of policy support to such initiatives. Impact data and analysis at the field level as well as data on market distribution and trends should be prioritized, allowing for farmers and other stakeholders to make real-time course corrections toward sustainability and biodiversity protection.

POLICY OPPORTUNITY 5 – Implement a Policy Framework for Credibility Assurance: To ensure market fairness and the overall effectiveness of the voluntary sustainability standards sector in meeting stated (biodiversity) objectives, policy-makers can set credibility, accuracy and evidence-based ground rules to ensure that market claims are supported by responsible practice and expected outcomes.

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