

13 SUGAR MARKET



Sugar is a food additive used in drinks and foodstuffs of all kinds. It is produced from sugar cane¹ and sugar beets, which currently account for approximately 75 per cent and 25 per cent of the world's sugar production, respectively.² Sugar cane is a tall perennial grass native to New Guinea and was first used to produce crystalline sugar in India around 300 BC. Following its migration to Indochina and the Mediterranean by AD 1000, sugar cane production eventually found its way to Latin America through colonialism. Today, the majority of global production comes from Brazil, India and China, and Brazil alone accounts for more than half of all cane sugar exports (Higman, 2013). In 2012, 143 million metric tons of cane sugar were produced from sugar cane harvested on 26 million hectares, equivalent to 0.5

per cent of the world's agricultural area.³ About one-third of all cane sugar was exported in 2012, for a value of US\$17.1 billion (see Table 13.1).

Sugar cane cultivation is an important part of the rural development strategy in many countries, perhaps most notably in Brazil, where in the Cerrado region sugar production was shown to be positively correlated with higher levels of economic and social development (Martinelli, Garrett, Ferraz, & Naylor, 2011). Notwithstanding, the crop has long been the subject of media campaigns highlighting specific cases of forced labour, child labour, and land tenure issues, as well as health-related issues affecting sugar cane cutters.

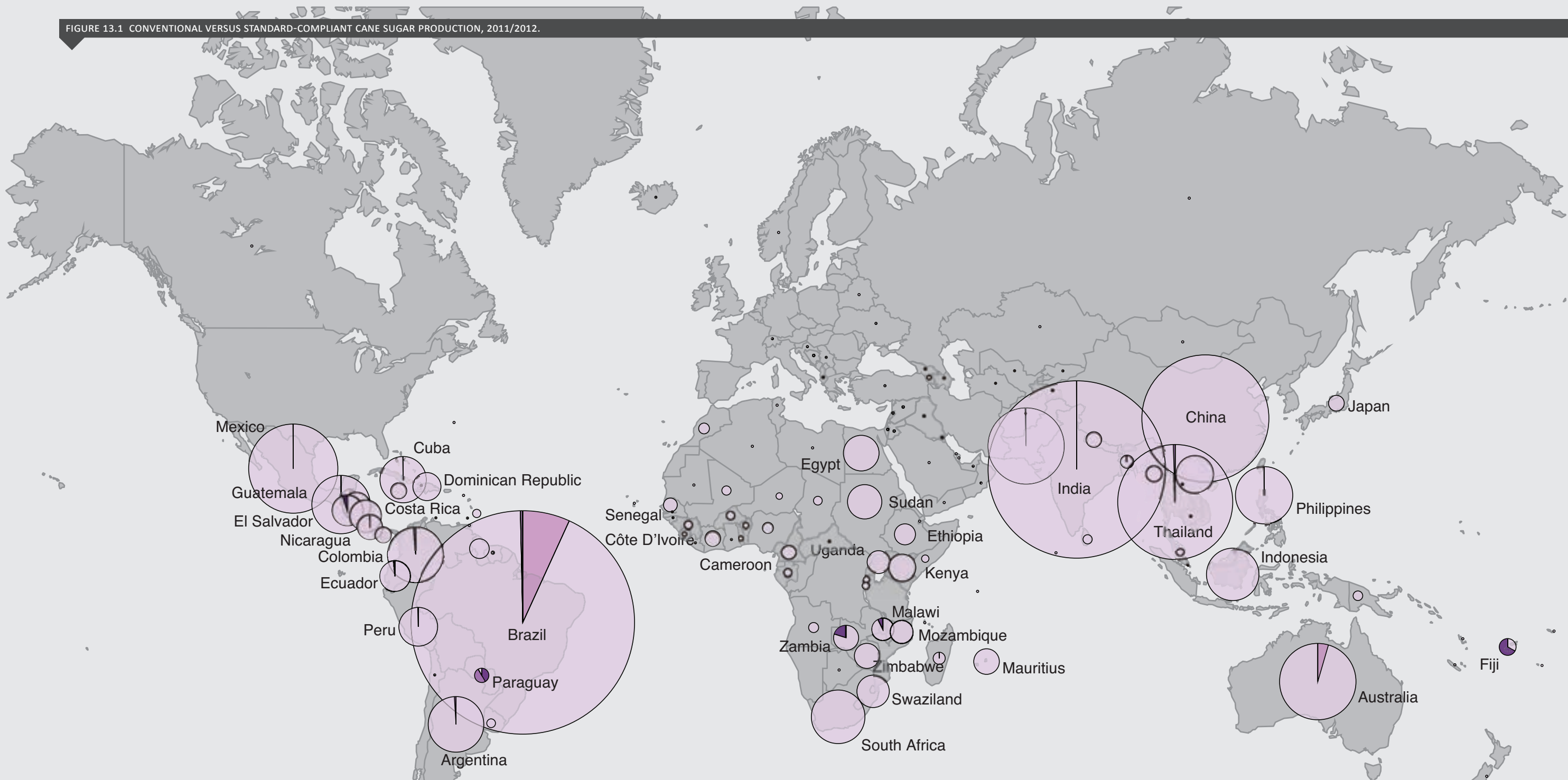
Sustainability issues within the sugar sector have driven the development of production compliant with four voluntary sustainability initiatives: Organic, Fairtrade, Rainforest Alliance and Bonsucro. Working conditions among sugar cane cutters (Fairtrade) and soil and personal health (Organic) were the main drivers of certification until 2011. The entry of Bonsucro and Rainforest Alliance certified production points toward the use of sugar standards to enable better supply chain risk and environmental management in mainstream channels. In 2012, standard-compliant sugar accounted for 2.7 per cent of all cane sugar production (see Figure 13.1; Figure 13.2 breaks this down by voluntary sustainability standard), and its sales accounted for 1 per cent of global exports.

¹ Sugar cane crushing involves the production of sugar cane juice, which can be used for the production of ethanol or raw sugar, and bagasse, a fiber that is used for energy production, often to power the processing facilities. Additionally, molasses is a by-product of the conversion process of sugar cane juice into raw sugar, and it can be used for the production of alcohol (e.g., rum), ethanol, animal feed or table molasses. Sugar cane processing factories can be one of three types: factories used for the production of raw sugar only (from sugar cane juice), factories used for the production of ethanol only (from sugar cane juice), or integrated factories where sugar cane juice is used for both the production of sugar and ethanol and the molasses by-product (created from raw sugar production) is used for the production of ethanol. Roughly 80 per cent of factories in Brazil use this integrated method, allowing for the production of varying amounts of ethanol or sugar depending on the respective opportunity costs of producing either product (Gopal & Kammen, 2009). This section focuses on sugar production; for more information on ethanol and bagasse produced from sugar cane, see Section 6.

² Sugar and syrups are also produced from the saps of certain species of maple trees and from sweet sorghum, although total production volumes are insignificant on a global scale (UN Development Programme, 2010b).

³ 4,911,622,650 hectares in 2011 (Food and Agriculture Organization, 2013).

FIGURE 13.1 CONVENTIONAL VERSUS STANDARD-COMPLIANT CANE SUGAR PRODUCTION, 2011/2012.



Circle size represents total production volumes; coloured slices represent volumes of standard-compliant sugar production. Aggregate compliant production across initiatives does not reflect total sustainable production in Paraguay, Cuba, India, Philippines or Costa Rica, as these countries are producers of double-certified Fairtrade/Organic sugar. Standard-compliant sugar sales represented 1 per cent of total exports in 2012, although compliant production (which includes Bonsucro) reached 3 per cent of global production during the same year. The compliant sugar landscape has been and will be heavily influenced by Bonsucro moving forward, especially as the organization establishes larger markets for its compliant sugar. Brazil, Australia and Belize are the largest producers of compliant sugar, while Brazil and India are the largest producers of cane sugar by volume. Fairtrade certified sugar (orange) is mostly (about 60 per cent) produced and sold in the former British colonies of Belize and Fiji and is destined for the British market, where it accounts for one-third of retail sugar sales.

*Based on total production volumes allocated proportionately to 27 mills in Brazil and two in Australia.
**Based on available country-level sales and aggregate production data.
***Based on available country-level sales data. It is estimated that the sales are large relative to total production volumes (relative to other voluntary sustainability standards in sugar and other commodity sectors), at about 90 per cent (IISD, H. Willer, Research Institute of Organic Agriculture/Forschungsinstitut für biologischen Landbau (FiBL), personal communication, July 16, 2013).
Sources: Fairtrade Labelling Organizations (FLO), 2012; International Trade Centre, 2013c; IISD, H. Willer, FiBL, personal communication, 2013.



TABLE 13.1 STANDARD-COMPLIANT AND CONVENTIONAL KEY STATISTICS FOR CANE SUGAR PRODUCTION AND TRADE.

KEY STATISTICS

Top 5 producers (71% of global) (2012)	Brazil (30%), India (19%), China (10%), Thailand (8%), Mexico (4%)
Top 5 producers of standard-compliant cane sugar (91% of global) (2011/2012)	Brazil (75%), Australia (5%), Belize (5%), Paraguay (3%), Fiji (3%)
Top 5 exporters (86% of global) (2012)	Brazil (57%), Thailand (15%), India (6%), Guatemala (5%), Cuba (3%)
Top 5 sellers of standard-compliant cane sugar (68% of global) (2011*)	Brazil (19%), Paraguay (17%), Belize (14%), Thailand (10%), Fiji (8%)
Top 5 importers (35% of global) (2012)	China (11%), Indonesia (8%), United States (6%), Republic of Korea (5%), Malaysia (5%)
Global production (2012)	142.6 million metric tons
Global exports (2012)	46.1 million metric tons
Trade value (2012)	US\$17.1 billion
Global area harvested (2012)	25.8 million hectares** (0.5% of agricultural area – compare to 163 million hectares for rice, 217 million hectares for wheat, 36 million hectares for cotton)
Total number of jobs in sugar cane production (2013)	250,000 in Brazil (accounts for one-quarter of global production)***
Major international voluntary sustainability standards	Bonsucro, Fairtrade, Rainforest Alliance, Organic
Standard-compliant production (2011 and 2012)	3.8 million metric tons (2.7% of total production)
Standard-compliant sales (2011)	478,000 metric tons (16% of compliant production, 1% of total exports, 0.3% of global production)
Key sustainability issues	Water management, land rights, climate change, working conditions, pest management

* Data for Fairtrade and Organic sugar only. Bonsucro and Rainforest Alliance had not yet established significant markets for their compliant sugar at the time of writing (mid-2013).

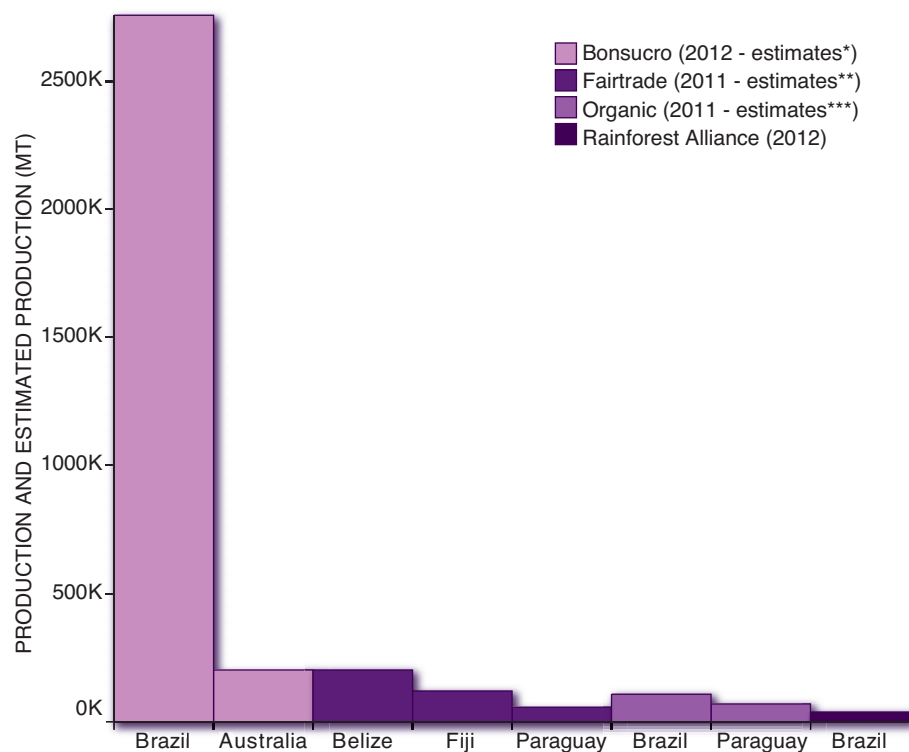
** In Brazil, about 55 per cent of sucrose (so-called ATR or totally recoverable sugar) in harvested cane is used for ethanol production (S. Gudoshnikov, International Sugar Organization, personal communication, 2013).

*** Including temporary cane cutters. These jobs are fast disappearing, however, due to the conversion to mechanical harvesting, which is currently at 50 per cent in Brazil (K. Ogorzalek, WWF, personal communication, 2013).

Sources: Top 5 producers: IndexMundi, 2013b; Top 5 exporters and total export value: International Trade Centre, 2013c; Top 5 importers: S. Gudoshnikov, International Sugar Organization, personal communication, September 20, 2013; U.S. Department of Agriculture (USDA), 2013d; Top producers and sellers of standard-compliant product: IISD, H. Willer, personal communication, August 26, 2013; FLO, 2012; Global production and global exports: S. Gudoshnikov, International Sugar Organization, personal communication, 2013; Total number of jobs in Brazil: K. Ogorzalek, WWF, personal communication, September 14, 2013; Standard-compliant production (2011 data for Organic, 2012 data for Bonsucro, Fairtrade and Rainforest Alliance): Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.



FIGURE 13.2 LEADING PRODUCERS OF STANDARD-COMPLIANT CANE SUGAR BY STANDARD, 2011/2012.



*Based on total production volumes allocated proportionately to 27 mills in Brazil and two in Australia.

**Based on available country-level sales and aggregate production data.

***Based on available country-level sales data. It is estimated that the sales are large relative to total production volumes (relative to other voluntary sustainability standards in sugar and other commodity sectors), at about 90 per cent (IISD, H. Willer, FiBL, personal communication, July 16, 2013).

Sources: FLO, 2012; IISD, H. Willer, FiBL, personal communication, July 16, 2013.





Market reach

Approximately 3.8 million metric tons of cane sugar were standard-compliant in 2012 (see Figure 13.3), equivalent to 2.7 of global production. Cane sugar sold as compliant accounted for 1 per cent of exports during the same year.

Growth

Standard-compliant cane sugar production grew at an average annual rate of 106 per cent from 2008 to 2012.

Regional importance

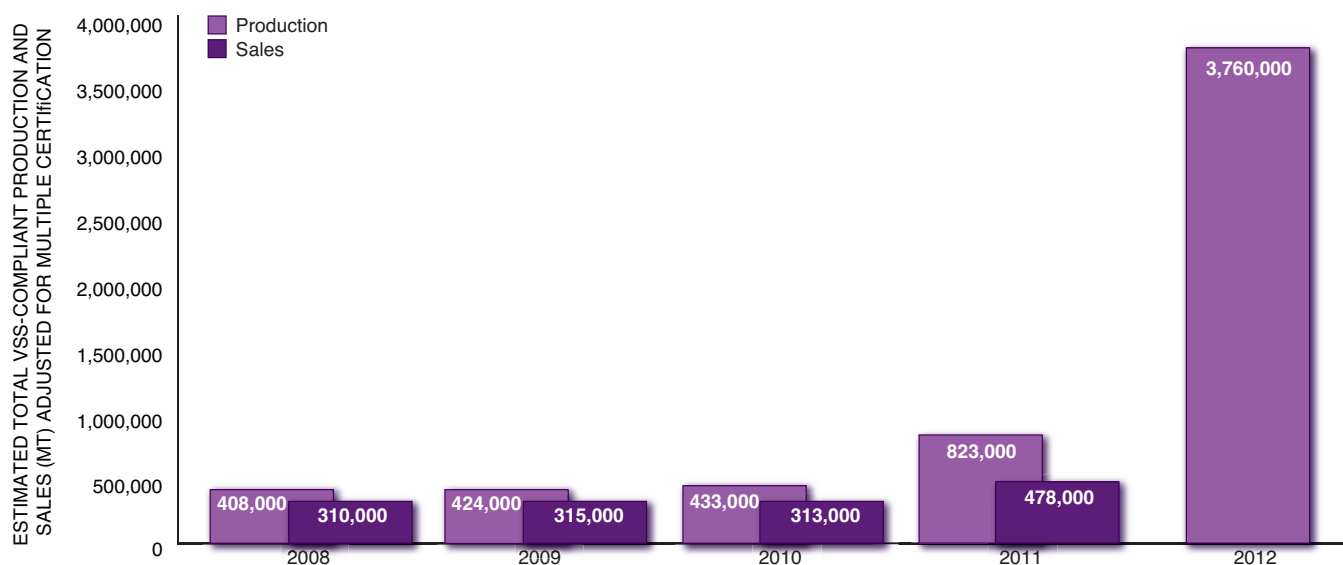
Brazil (75 per cent), Australia (5 per cent), and Belize (5 per cent) produce 85 per cent of the world's standard-compliant cane sugar

Pricing and premiums

Premiums range from 10 to 15 per cent for Organic sugar (International Sugar Organization, 2011) to 21 per cent for double-certified Fairtrade/Organic compliant sugar.

FIGURE 13.3 GROWTH IN STANDARD-COMPLIANT CANE SUGAR PRODUCTION AND SALES, 2008–2012.

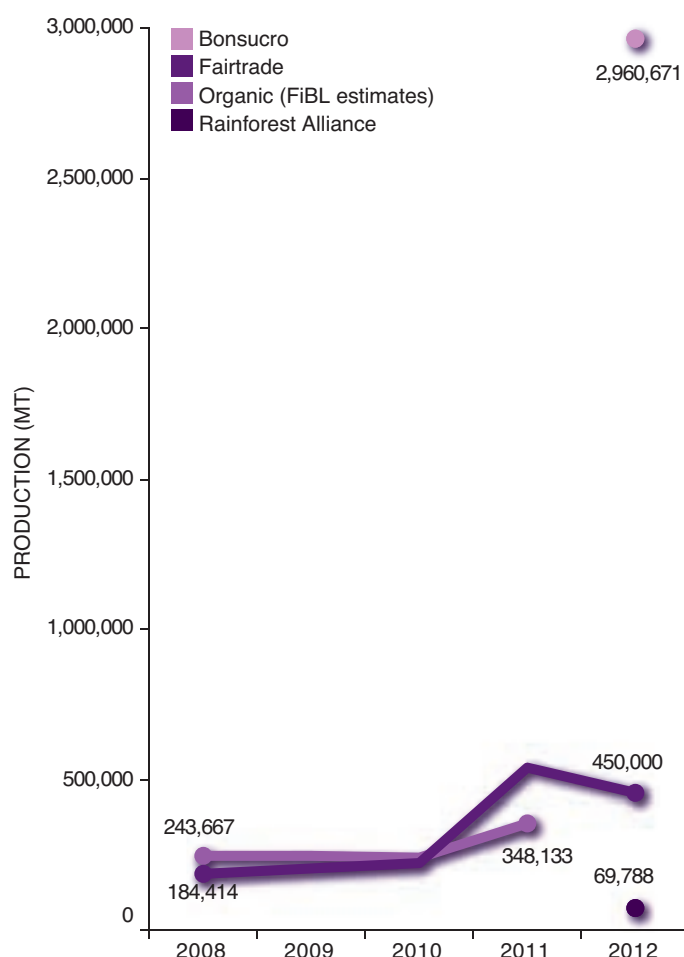
Standard-compliant sugar cane production has increased steadily from 2008, but increased 4.5-fold year over year from 2011 to 2012, reflecting the emergence of the Bonsucro standard.⁴



Sources: Bonsucro, 2013d; FLO, 2011b, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

⁴ Assumptions: sales remain the same for Organic and Fairtrade from 2011 to 2012; 2009 Fairtrade production volume is an average of 2008 and 2010 volumes; Organic sales volumes are 90 per cent of production volumes.

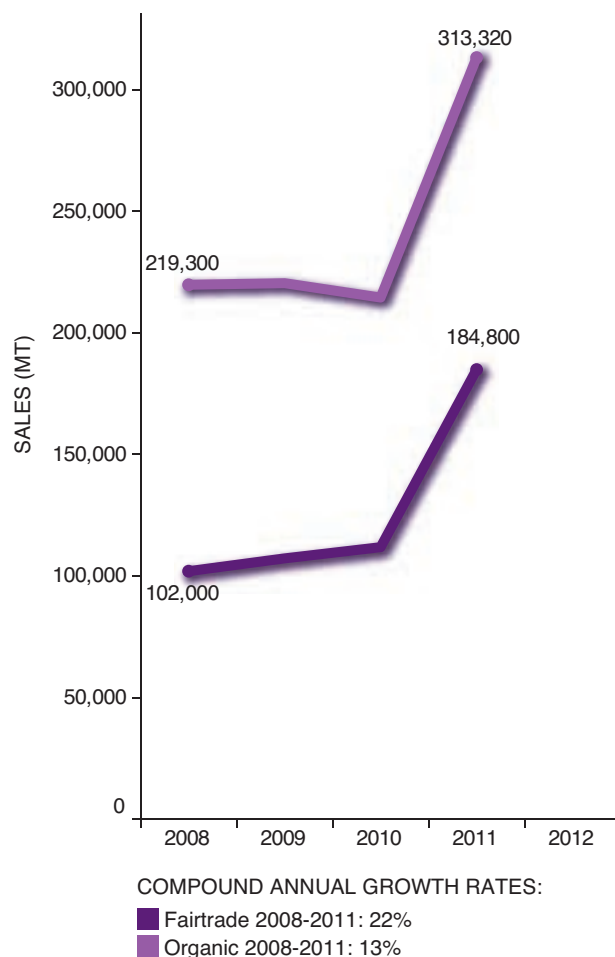
FIGURE 13.4 FAIRTRADE, ORGANIC, BONSUCCRO AND RAINFOREST ALLIANCE CANE SUGAR PRODUCTION, 2008–2012.



*Based on available sales data. It is estimated that the sales are large relative to total production volumes (relative to other voluntary sustainability standards in sugar and other commodity sectors), at about 90 per cent (IISD, H. Willer, FiBL, personal communication, July 16, 2013).

Sources: Bonsucro, 2013d; FLO, 2011b, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

FIGURE 13.5 FAIRTRADE AND ORGANIC CANE SUGAR SALES, 2008–2012.



While Bonsucro had not reported any specific volumes of compliant sales at the time of writing, the potential market for Bonsucro compliant sugar is significant. Credits have been traded for Bonsucro sugar, although they represent a very small proportion of what has been produced.

Sources: Bonsucro, 2013d; FLO, 2011b, 2012; C. Guinea, Rainforest Alliance, personal communication, July 3, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.



In 2012, 2.7 per cent (3.8 million metric tons) of the world's cane sugar was produced in compliance with a global sustainability standard, with 16 per cent of compliant production actually sold as compliant, equivalent to 0.3 per cent of global production and 1 per cent of exports (see Table 13.2). The cane sugar sector represents a relatively small but growing market for sustainability standards, and its recent expansion has been driven by several factors, including the following:

- Private sector commitments by companies like Tate and Lyle Sugars, which sources 100 per cent of its retail sugars as Fairtrade certified (Fairtrade sugar accounted for one-third of the British retail sugar market in 2011, largely a result of this commitment [Martin, 2012]). Growth in confectioners' commitments to source sustainable ingredients has also been a major impetus, with Ferrero Group purchasing Bonsucro cane sugar credits (Sunshine Sugar, 2013) and Cadbury Dairy Milk committing to sourcing Fairtrade sugar (Martin, 2012).
- Access to trade quotas for certain countries (in the case of Fairtrade) or standard-compliant products (in the case of Organic) has also been a key factor in the development of voluntary sustainability standards within the market. Illustrating the former case, Fairtrade certification has generally occurred in countries that have access to EU sugar import quotas, and who were former beneficiaries of other preferential trade agreements under the African, Caribbean and Pacific (ACP) Sugar Protocol Programme, which ended in 2009; for a list of countries see European Commission (2013b). These ACP countries include Belize, Fiji and Zambia, which accounted for more than three-quarters of Fairtrade sugar sales in 2011. Illustrating the latter case, Organic certified sugar imports have access to U.S. specialty sugar tariff rate quotas.
- Risk management regarding labour practices has been a significant factor in the development of the Bonsucro standard, and the acceptance of the standard into the EU Renewable Energy Directive was also a leading factor in membership formation.⁵

Despite these drivers, the sustainable sugar market remains quite small relative to other sustainable commodity sectors.⁶ Although the development of mainstream-oriented standards is a relatively new phenomenon within the sugar sector, the lower levels of developed economy consumption of sugar cane sugar offer a more systemic explanation for the relatively small size of the sustainable sugar market. Lower developed economy consumption of cane sugar relative to other commodities is partly the result of EU and U.S. domestic sugar beet production—the growth of which itself has

been stimulated through developed country subsidies over the past several decades.⁷

Sugar cane production systems themselves are very diverse, however, and generalizations regarding their sustainability as a crop rarely hold across all producing countries. The crop is grown in many locations, in many climates, on many soil types, in both developed and developing countries, under a variety of business models ranging from small-scale single farms to multiple-unit managements (including large cooperatives and vertically integrated estates), and with varying levels of state support and control.⁸

The birth of modern voluntary sustainability standards within the sector can be traced back to the precursor initiatives of Fairtrade under the alternative trade movement, which were primarily motivated by poor working conditions and general poverty among sugar cane workers in the development of markets for Fairtrade sugar. Indeed, sustainability within the sugar sector has historically been defined in terms of poverty reduction, worker health and safety, and labour rights. Reports of child and forced labour by organizations including the U.S. Department of Labor (2012) in Bolivia, Brazil, Burma, Colombia, Dominican Republic, Pakistan and Paraguay, and Human Rights Watch (2004) in El Salvador continue to this day. Land tenure issues have also made international headlines on several occasions (see Hodal, 2013).

More recently, sugar cane production has been associated with a host of environmental challenges as well, most notably:

- Sugar cane's water requirements vary but generally are high. The crop has low resistance to drought, and in terms of intensity of rainfall over its growing period (1,500 millimetres to 2,500 millimetres over 270 to 365 days), on the whole requires a similar amount as cotton (700 millimetres to 1,300 millimetres over 180 to 195 days), and slightly more than bananas (1,200 millimetres to 2,200 millimetres over 300 to 365 days) (Food and Agriculture Organization of the United Nations (FAO), 1986). In Brazil, many plantations are rain fed, but in other parts of the world they rely heavily on irrigation, sometimes at the expense

5 Although the European Union Renewable Energy Directive applies to sugar-based ethanol production, Bonsucro's compliance with the EU Directive has facilitated overall growth of the Bonsucro initiatives.

6 For example, certified product accounts for over 20 per cent of total supply for both the coffee and cocoa sectors.

7 Subsidies for domestic sugar production have led to a persistent reduction in the levels of sugar imports by developed economies. One study suggested that elimination of the subsidies in the United States alone would have in 1998 increased imports by about 1.6 million metric tons (Beghin et al., 2003), which at the time was about 8 per cent of the global trade of sugar and more than 10 per cent of the cane sugar trade. Developed economy sugar imports dropped from nearly 52 per cent in 1992 to less than 24 per cent of global sugar trade in 2012 (S. Gudoshnikov, International Sugar Organization, personal communication, 2013). As a reference, 53 per cent of the world's coffee trade was imported by developed economies in 2012 (USDA, 2013b).

8 In the Philippines 67 per cent of sugar cane is produced on farms of five or fewer hectares, while in Brazil the majority of farms range from 20 hectares to 500 hectares. In Pakistan, most production is carried out on farms of 4.7 hectares or less.

of other crops in a manner that depletes aquifers and river environmental flows.⁹

- The area under sugar cane cultivation grew from just over 19 million hectares in 2000 to nearly 24 million hectares in 2010 (FAO, 2013). One of the major drivers of growth in sugar cane production comes from increased demand for ethanol as an alternative to non-renewable fuel sources. While there is little evidence that current expansion of sugar cane production (in Brazil or elsewhere) is a direct driver of deforestation, it is suspected by some of being an indirect driver, as it displaces land used for other purposes.¹⁰
- In addition to carbon release and climate change as a result of indirect deforestation, the burning of fields before manual harvesting is commonplace in many sugar cane producing areas in order to eliminate foliage and venomous snakes before harvesting. This represents another source of greenhouse gas emissions, not to mention local air pollution (Tsao et al., 2011). The elimination of this practice has been shown to reduce sugar's carbon footprint by over 20 per cent (Panosso et al., 2011).
- Sugar cane typically requires a nitrogen application of 75 kilograms per hectare, although this varies significantly by place, yield and production practices. Australia averages about 170 kilograms per hectare, while in India applications can reach 300 kilograms per hectare. Excessive application combined with poor irrigation practices can contribute to eutrophication of local water bodies.

Fairtrade and Organic certified sugar accounted for the entire supply of compliant sugar until mid-2011, which at that time was just over 800,000 metric tons.¹¹ From 2008 to 2011, average annual growth rates in production and sales of compliant sugar were steady, at 26 per cent and 16 per cent, respectively (see Figure 13.3).

In 2005, with the support of WWF, stakeholders were brought together under the auspices of the Better Sugar Cane Initiative, which subsequently became Bonsucro. Bonsucro represented a first effort to facilitate a mainstream transformation of the sugar cane sector. Actual implementation of the Bonsucro initiative has been delayed by the complexities of the sugar cane market, with the first Bonsucro-compliant production being made available to the market in 2012. Over the course of a single year, from 2011 to 2012, total standard-compliant volumes increased nearly five times,

with Bonsucro certified sugar accounting for over 75 per cent of standard-compliant sugar production (see Figure 13.4).¹²

Rainforest Alliance also began certifying its first production in 2012 with a view to entering mainstream markets as well. The Rainforest Alliance sugar program, however, is only in its trial stages.

As of 2012, neither Bonsucro nor Rainforest Alliance has reported any formal sales volumes of compliant sugar, leaving any indication of the appetite for certified sugar on mainstream markets largely in question.¹³ Coca-Cola, however, bought credits in Brazil in 2011, and in April of 2013 the confectioner Ferrero Group was the first company to purchase Bonsucro credits (5,000) from a certified mill in Australia. One industry expert noted that about 2 per cent of Bonsucro's production (roughly 60,000 metric tons) had likely been sold off as certified by mid-2013 (see Hills, 2011; Sunshine Sugar, 2013). While this represents a small amount relative to total certification, it is important evidence of the existence of demand, and the Ferrero purchase highlights that confectioners' general push toward sustainable sourcing will likely have a significant impact on the sugar sector as well as the cocoa sector.¹⁴

Using available hard data, however, as of 2012 only 16 per cent of total compliant production was actually sold as compliant (see Figure 13.5). While the sustainable sugar market is still largely "under construction," all signs point toward continued opportunity for growth. On the one hand, the overall percentage of both global exports and production that is currently standard-compliant is still very small. On the other hand, both the more mature and newer voluntary sustainability standards are continuing to experience growth in both production and sales. Moreover, the recent and rapid growth of Bonsucro certified production points toward a significant mainstream momentum behind the initiative. However, full success will clearly rely on the ability of the initiative to build the market for its certified supply within the coming years.

9 In Maharashtra, India, for example, sugar cane accounts for 4 per cent of the area under cultivation but 60 per cent of the state irrigation supply and has contributed heavily to groundwater depletion in the area (WWF, 2005).

10 A recent study in the Proceedings of the National Academy of Sciences of the United States of America found that planned ethanol expansions in Brazil will indirectly contribute to carbon emissions through their displacement of cattle ranchers: "Our simulations show that direct land-use changes will have a small impact on carbon emissions because most biofuel plantations would replace rangeland areas. However, indirect land-use changes, especially those pushing the rangeland frontier into the Amazonian forests, could offset the carbon savings from biofuels" (Lapola et al., 2010, p. 3388).

11 As opposed to coffee, for example, where multiple voluntary sustainability standards have been active in the sector for over a decade.

12 Assuming Organic volumes remained the same from 2011 to 2012.

13 This is not to say that Bonsucro and Rainforest Alliance certified sugar are not sold—they are, but in such a way that doesn't differentiate certified product from uncertified product.

14 In the cocoa sector, sales of compliant product were about 10 per cent of the export market, and standard-compliant production accounted for about 22 per cent of global supply in 2012.

13.3 MARKET PERFORMANCE



TABLE 13.2 IMPORTANCE OF VOLUNTARY SUSTAINABILITY STANDARD (VSS) CANE SUGAR PRODUCTION AND SALES RELATIVE TO THE GLOBAL MARKET.

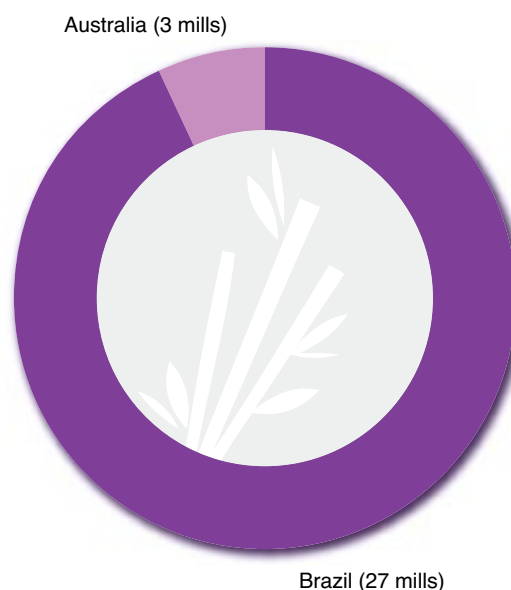
	VSS production (mt)	VSS production market share of global production	VSS production market share of global exports	VSS sales (mt)	VSS sales market share of global production	VSS sales market share of global exports
Bonsucro	2,960,000	2%	6%	n/a	n/a	n/a
Fairtrade	450,000	0%	1%	313,320	0%	1%
Rainforest Alliance	69,788	0%	0%	0	0%	0%
Organic	339,133	0%	1%	184,800	0%	0%
Global VSS production / sales (mt and %), adjusted for multiple certification	3,760,000	3%	8%	478,000	0%	1%

Sources: Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

Bonsucro

Bonsucro was founded in 2007 and spent its first three years developing and revising its standard. Between 2010 and 2011, the organization worked on building certified supply, which was first available in 2012. Within the first year of launching Bonsucro certified production, Bonsucro certified cane sugar accounted for over 2 per cent of the world's cane sugar production, with 3 million metric tons of cane sugar certified,¹⁵ and 30 mills achieving certification in both Brazil and Australia by mid-2013. Although the majority of these mills (27) are in Brazil (see Figure 13.6), the first Australian Bonsucro certified sugar was sold in April 2013, when the New South Wales Sugar Milling Cooperative Ltd and Manildra Harwood Sugar sold 5,000 credits to the confectionary group Ferrero under the brand name "Sunshine Sugar" (Sunshine Sugar, 2013). Although actual market recognition for Bonsucro certified sugar is still under development, the organization has established a target of reaching 20 per cent of global sugar cane production as Bonsucro certified by 2017.

FIGURE 13.6 BONSUCCRO CERTIFIED MILLS, 2013.



Source: Bonsucro, 2013a.

¹⁵ Bonsucro's production is typically split between production for ethanol and sugar. The total certified area of Bonsucro in 2011/2012 was 685,589 hectares, which produced 3 million metric tons of sugar and 2.2 million cubic metres of certified ethanol.

Fairtrade International

Between 2008 and 2012, total Fairtrade sugar production volumes more than doubled, growing from 184,000 metric tons to 450,000 metric tons. From 2008 to 2011, sales volumes increased more than 1.5 times, from 102,000 metric tons to 184,800 metric tons, representing an average annual growth rate of 22 per cent (see Figure 13.8 and Table 13.4).

Fairtrade sugar production accounted for 0.3 per cent of all cane sugar production in 2011, at 450,000 metric tons produced on 79,000 hectares. In 2011, the five largest sources of Fairtrade cane sugar accounted for 92 per cent of total sales and came from what are relatively minor exporters globally: Belize (accounting for 38 per cent of global Fairtrade production), Fiji (22 per cent), Zambia (16 per cent), Paraguay (11 per cent) and Malawi (5 per cent) (see Figure 13.7 and Table 13.3).¹⁶ Although Fairtrade certified sugar sales represent a relatively small percentage of global sugar cane exports, with 1 per cent overall market penetration, Fairtrade sugar nevertheless constitutes a major export market for the select countries where Fairtrade production has been concentrated.

A common thread observed among the larger Fairtrade sugar source countries is their shared heritage as former beneficiaries of the EU Sugar Protocol, as well as their continued access to EU sugar import quotas. While the European Union once guaranteed payments equivalent to European market prices for 18 ACP countries under the Protocol (sometimes at three times the international market price), the EU sugar market reform, which started in 2006, eventually led to a phasing out of the program, which was completely eliminated in 2009. The larger reform resulted in increased market access and competition among ACP countries and least developed countries and has been a stimulus for the adoption of Fairtrade by producer organizations in select countries that previously benefited from the EU sugar protocol and other policies (e.g., Belize, Fiji and Zambia), in an effort to maintain price stability¹⁷

and allow for product differentiation on international markets.¹⁸ Perhaps not surprisingly in light of this legacy, the vast majority of Fairtrade sugar is destined for the British market, where Fairtrade has one-third of the sugar consumer market (Martin, 2012).

Fairtrade's certified sales account for about 64 per cent of total Fairtrade cane sugar production, pointing toward a relatively robust demand to production ratio. One of the explanations for the high ratio of sales to production (higher than the average for voluntary sustainability standards in the sugar sector and higher than most other Fairtrade commodities available on the market) likely relates to the reliable demand from Tate and Lyle for the UK sugar market.

From 2013 to 2014, Fairtrade sugar will be rolling out a new business model that will continue to incorporate support growth from ACP countries and least developed countries and will work more closely with the private sector to help establish markets for their product. The organization is also in the process of rolling out programs in Mozambique, Jamaica and Swaziland. Of the 37,200 farmers with Fairtrade sugar certifications in 2011, 57 per cent were in Latin America and the Caribbean, 27 per cent in Africa and the Middle East, and 16 per cent in Asia and Oceania.¹⁹

¹⁶ These countries were ranked 16th, 17th, 9th, 26th and 11th, respectively, in terms of global export performance in 2012.

¹⁷ FLO (2012) stated, "Going forward, the Fairtrade sugar sourcing plan will aim to support growth from ACP (African, Caribbean and Pacific) and least developed countries, recognizing that sugar farmers in these countries experience very low prices and are not prepared for the challenges of operating in fully liberalized trade environments" (p. 84).

¹⁸ Since 1975 the European Union has maintained guaranteed tariff-free market access at EU prices with 18 ACP countries under the Sugar Protocol, a part of a the larger Cotonou Agreement between the European Union and ACP countries. Under the Protocol, these countries were allocated 1.3 million metric tons of guaranteed tariff-free imports at prices equivalent to what was paid to beet farmers, which were often far above global prices, due to a series of domestic protectionist measures (import controls, price support and export subsidies) (Lorentzen, 2009). In 2002, Brazil and Australia filed a complaint to the World Trade Organization regarding the European Union's common market organization for sugar (notably that it was "dumping" subsidized sugar on the world market), of which the Sugar Protocol was an integral part. Thailand followed in 2003, and in late 2009 the Sugar Protocol expired in the context of a larger reform of the EU sugar market (see European Commission, 2012a; 2012b; 2013; Fairtrade Foundation, 2013; World Trade Organization, 2013).

¹⁹ 21,100 certifications in Latin America and the Caribbean, 10,100 in Africa and the Middle East, and 6,000 in Asia and Oceania.

TABLE 13.3 FAIRTRADE CANE SUGAR SALES BY COUNTRY, 2011.

	Sales (mt)
Belize	69,900
Fiji	40,700
Zambia	30,000
Paraguay	20,700
Malawi	8,500
Other	15,000
Total	184,800

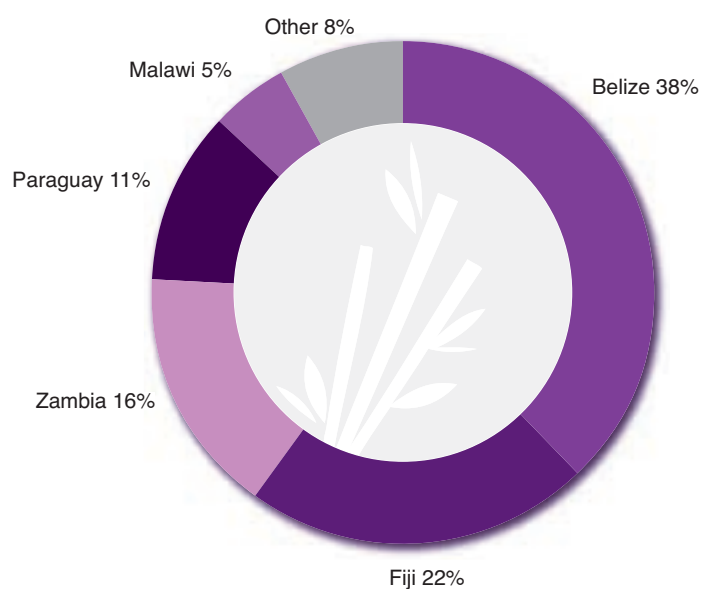
Source: FLO, 2012.

TABLE 13.4 FAIRTRADE CANE SUGAR AREA HARVESTED, PRODUCTION AND SALES, 2008–2012.

	Area harvested (ha)	Production (mt)	Sales (mt)
2008	--	184,000	102,000
2010	59,200	219,300	111,600
2011	79,300	533,900	184,800
2012	--	450,000	--

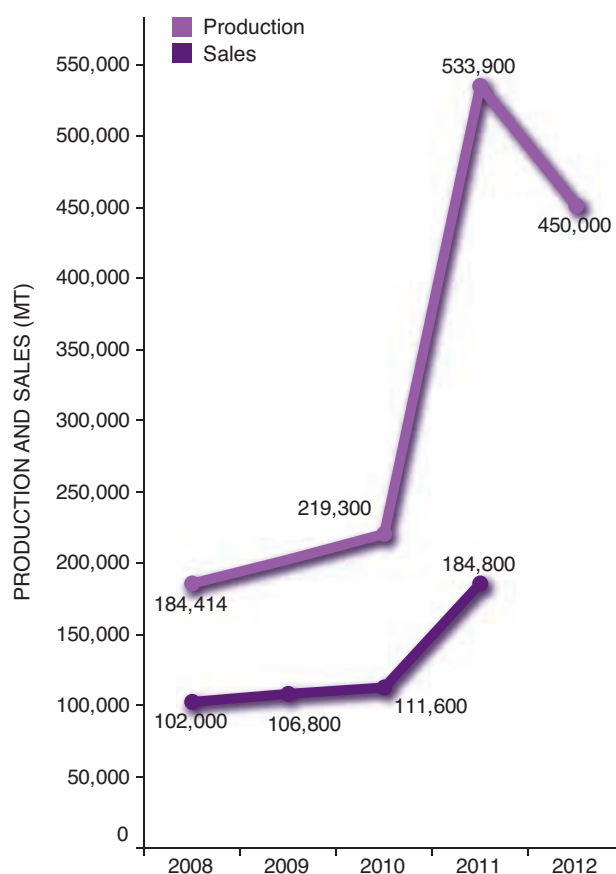
Sources: M. Berresheim, Fairtrade, personal communication, 2013; FLO, 2011b, 2012.

FIGURE 13.7 FAIRTRADE CANE SUGAR SALES BY COUNTRY, 2011.



Source: FLO, 2012.

FIGURE 13.8 FAIRTRADE CANE SUGAR PRODUCTION AND SALES, 2008–2012.



Source: M. Berresheim, Fairtrade, personal communication, September 10, 2013; FLO, 2011b, 2012.

Rainforest Alliance

Rainforest Alliance launched its sugar program in 2009 and is still considered to be under a trial phase. The organization first began certifying farms in 2011, and in 2012 production accounted for 0.05 per cent of global cane sugar production, with 70,000 metric tons produced. As of 2013, the organization actually only had two certified farms, one in Brazil (accounting for 35,000 metric tons) and one in El Salvador (accounting for 35,000 metric tons). Rainforest Alliance has not yet established a market for its product (see Figure 13.9) (C. Guinea, Rainforest Alliance, personal communication, 2013).

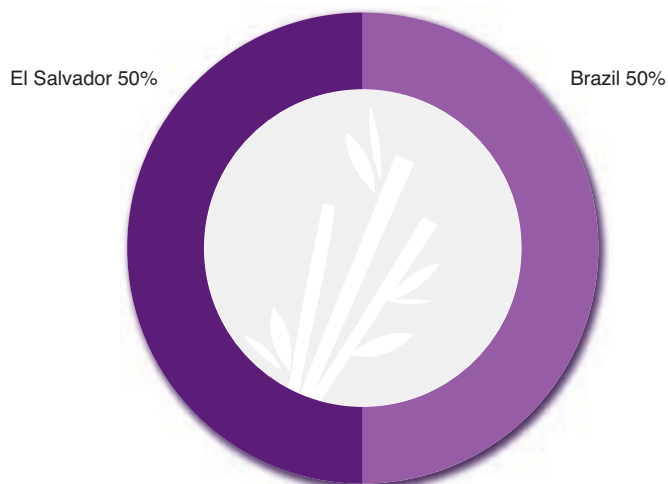
International Federation of Organic Agriculture Movements (IFOAM, or “Organic”)

Organic cane sugar grew at an average of 13 per cent per annum between 2008 and 2011. Between 2010 and 2011, Organic cane sugar sales experienced single-year growth of almost 50 per cent (see Figure 13.11 and Table 13.6). Paraguay, which produces 85 per cent of all double-certified Fairtrade/Organic cane sugar, was a factor in this increase in production, which can also partly explain the similar trend in Fairtrade and Organic production volumes between 2010 and 2011.

By 2011, Organic production, at 339,133 metric tons certified on 59,140 hectares, accounted for 0.24 per cent of global production and 1 per cent of global cane sugar exports. Organic production, in contrast to Fairtrade production, is sourced from traditionally larger exporting countries. The top source countries for Organic sugar account for 68 per cent of global Organic sugar supply: Brazil (94,000 metric tons, or 0.5 per cent of exports), Paraguay (65,000 metric tons, or 82.3 per cent of exports), and Thailand (51,700 metric tons, or 1.3 per cent of exports) (see Figure 13.10 and Table 13.5).²⁰

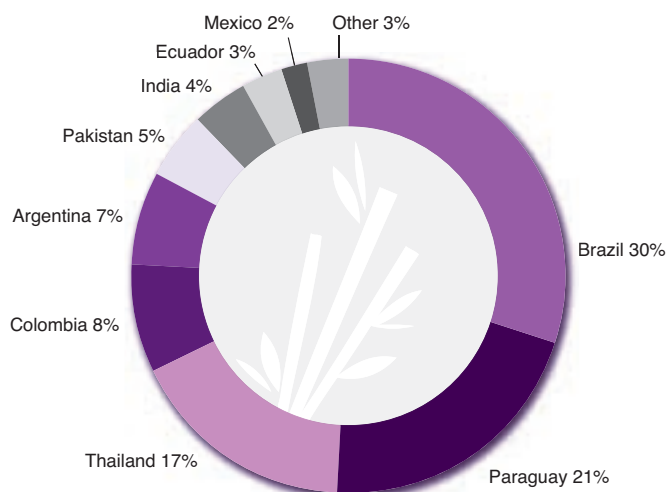
FiBL estimates that approximately 90 per cent of total organic certified production volumes are actually sold as certified (see Figure 13.11). Also regarding production, there is likely more sugar produced organically that is simply not certified as such. In India, for example, many producers implement organic practices such as permaculture and do not have access to synthetic pesticides (K. Ogorzalek, WWF, personal communication, September 14, 2013). Area harvested, a third indicator of scope, shrank slightly from the 2008–2009 season (51,288 hectares) to the 2009–2010 season (47,508 hectares) and jumped up to 59,140 hectares in the 2010–2011 season.

FIGURE 13.9 RAINFOREST ALLIANCE CANE SUGAR PRODUCTION BY COUNTRY, 2012.



Source: C. Guinea, Rainforest Alliance, personal communication, 2013.

FIGURE 13.10 ORGANIC CANE SUGAR SALES BY COUNTRY, 2011.



Source: IISD, H. Willer, FiBL, personal communication, August 26, 2013.

²⁰ Brazil and Thailand are the world's largest and second-largest cane sugar producers, respectively.

TABLE 13.5 ORGANIC CANE SUGAR SALES BY COUNTRY, 2011.

	Sales (mt)
Argentina	20,400
Bangladesh	30
Brazil	94,000
Colombia	25,000
Costa Rica	1,200
Cuba	4,500
Ecuador	9,000
Guatemala	1,000
Haiti	300
India	12,000
Madagascar	90
Mexico	6,000
Pakistan	17,000
Paraguay	65,000
Peru	3,600
Philippines	2,500
Thailand	51,700

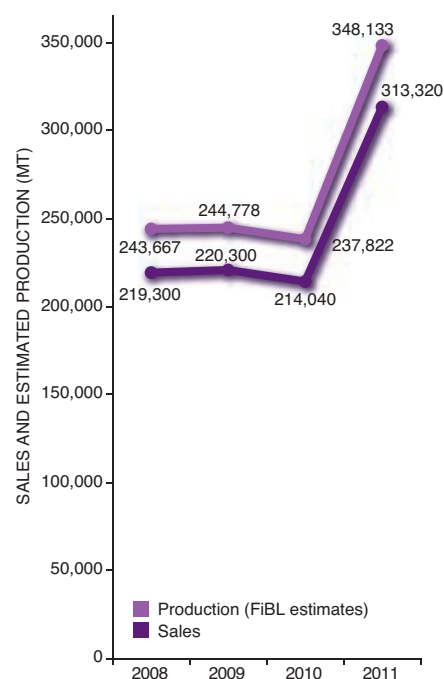
Source: IISD, H. Willer, FiBL, personal communication, 2013.

TABLE 13.6 ORGANIC CANE SUGAR AREA HARVESTED AND SALES, 2008-2011.

	Area harvested (ha)	Sales (mt)
2008	54,800	219,300
2009	53,650	220,300
2010	47,590	214,040
2011	58,840	313,320

Source: IISD, H. Willer, FiBL, personal communication, 2013.

FIGURE 13.11 ORGANIC CANE SUGAR PRODUCTION AND SALES, 2008-2011.



Source: IISD, H. Willer, FiBL, personal communication, 2013.

13.4 SUPPLY



In 2011 and 2012, Brazil, Australia, Belize, Paraguay and Fiji, accounted for 91 per cent of all production of sustainable sugar (see Figure 3.12). The top five cane sugar exporters during the same year were Brazil, Thailand, India, Guatemala and Cuba, which accounted for 89 per cent of all volume exported, revealing a similar concentration of supply for sustainable sugar than that observed in conventional global sugar cane markets.

Table 13.7 shows the intensity of sustainable production, or percentage of total national production that comply with a voluntary sustainability standard. In Brazil and Thailand, the two largest cane sugar producers globally, 7 per cent and 1 per cent of production were standard-compliant in 2012, respectively. While Belize, Fiji and Paraguay aren't among the 20 largest producers, these export-based sugar markets (see Figure 13.13) supplied much of the Fairtrade market. In Belize, about 38 per cent of the cane sugar exported in 2012 was certified Fairtrade, and 27 per cent in Fiji. Rather remarkably, Paraguay, the largest producer of double-certified Fairtrade/Organic sugar, likely exported nearly exclusively standard-compliant sugar in 2012.

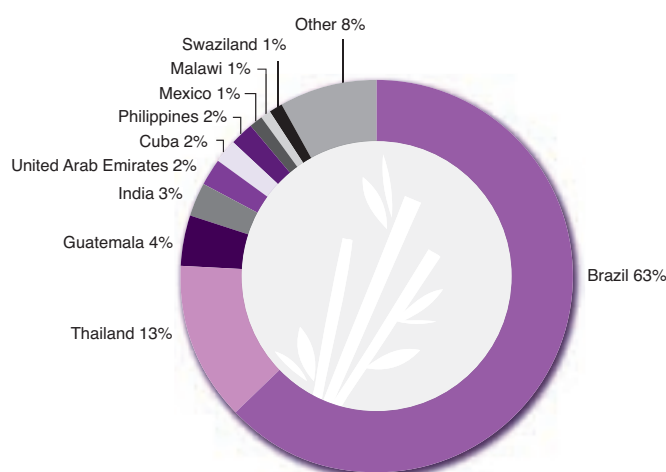
The lower intensity levels of the larger sugar production and exports globally is likely due to a combination of the early stage of development of the sustainable sugar market as well as the historical trade linkages between colonies and their former mother countries. Certainly in the case of Fairtrade, it is clear that these

channels have been developed more readily than other sugar trade channels without this heritage.

While the historical distribution of supply of standard-compliant sugar didn't coincide much at all with the distribution of overall global sugar production or exports as recently as in 2011, changing supply patterns for the voluntary sustainability standard market as a whole are occurring as Bonsucro expands production and sales. Indeed, the distribution of standard-compliant sugar production has already begun to map more closely onto the distribution of global exports in 2012 (see Figure 13.13, Figure 13.14 and Figure 13.16).

Figure 13.17 and Figure 13.15 highlight the importance of Bonsucro certified production relative to Fairtrade, Organic and Rainforest Alliance production. Bonsucro certification in Brazil was (likely) well over 2.5 million metric tons, although the breakdown of Bonsucro's certified volumes between Brazil and Australia was not available at the time of writing.

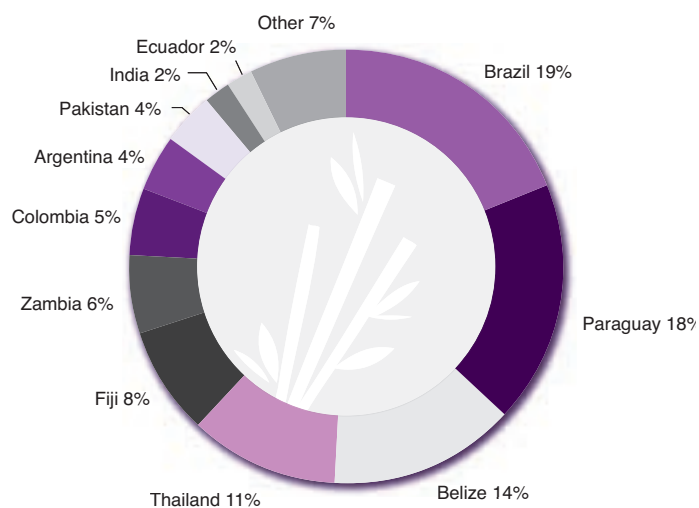
FIGURE 13.12 PRODUCTION OF CANE SUGAR (STANDARD COMPLIANT AND CONVENTIONAL), BREAKDOWN BY COUNTRY, 2013.



Source: IndexMundi, 2013b.

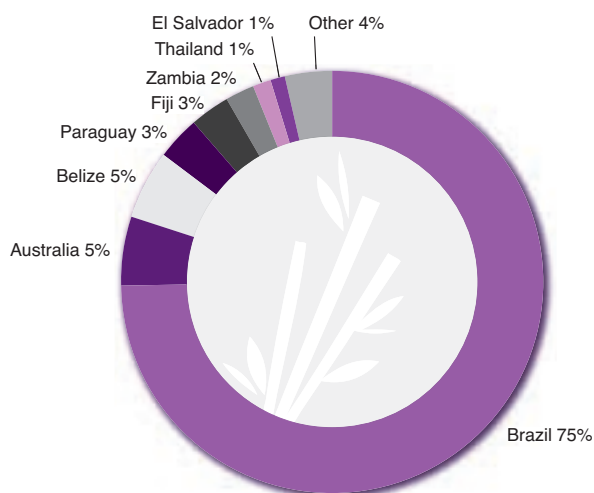


FIGURE 13.13 EXPORT VOLUMES OF CANE SUGAR, BREAKDOWN BY COUNTRY, 2012.



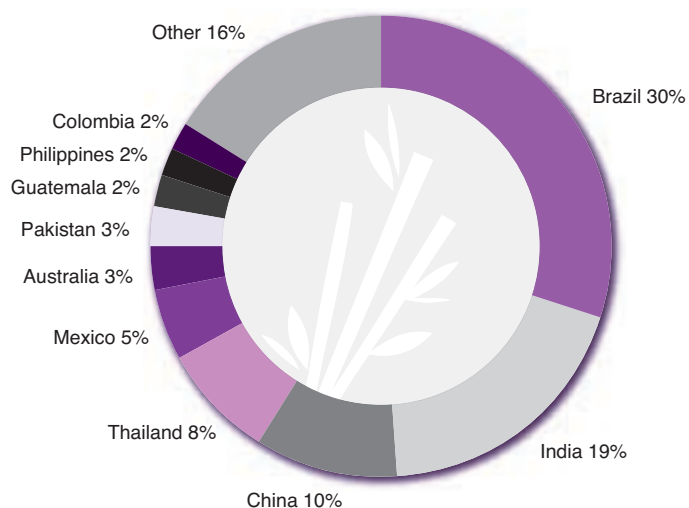
Source: International Trade Centre, 2013c.

FIGURE 13.14 SALES VOLUMES OF STANDARD-COMPLIANT CANE SUGAR BY COUNTRY (FAIRTRADE AND ORGANIC), 2011.



Sources: FLO, 2012; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

FIGURE 13.15 VOLUMES OF STANDARD-COMPLIANT CANE SUGAR BY COUNTRY, 2012.

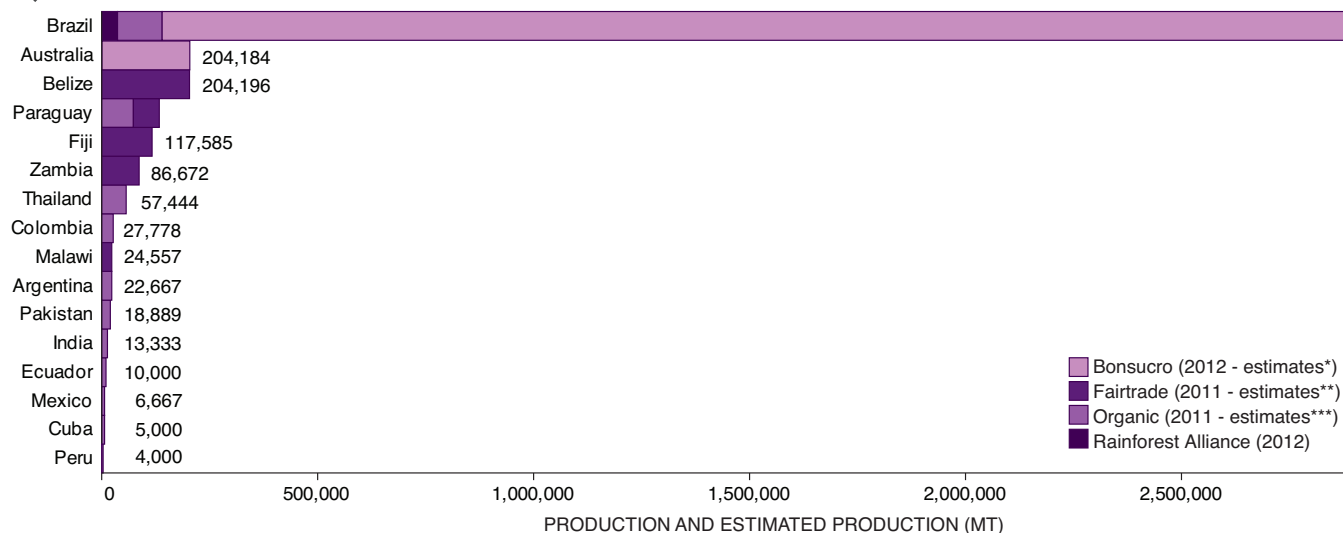


Where space permits, data points are visible.

Sources: Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.



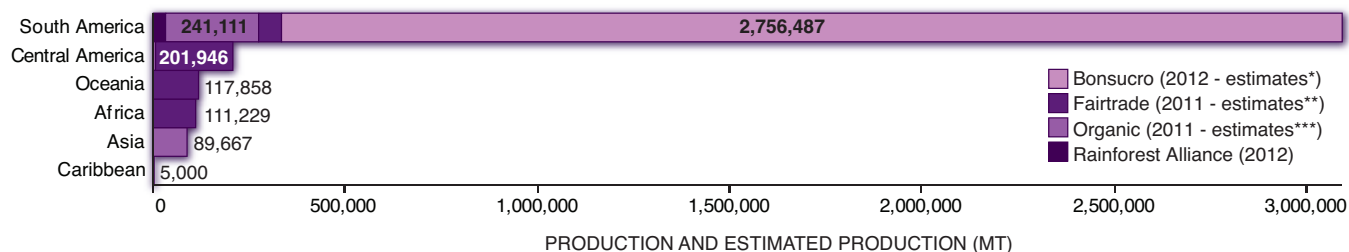
FIGURE 13.16 PRODUCTION VOLUMES OF STANDARD-COMPLIANT CANE SUGAR BY COUNTRY.



Where space permits, data points are visible.

Sources: Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

FIGURE 13.17 PRODUCTION VOLUMES OF STANDARD-COMPLIANT CANE SUGAR BY CONTINENT.



Where space permits, data points are visible.

*Based on total production volumes allocated proportionately to 27 mills in Brazil and two in Australia.

**Based on available country-level sales and aggregate production data.

***Based on available country-level sales data. It is estimated that the sales are large relative to total production volumes (relative to other voluntary sustainability standards in sugar and other commodity sectors), at about 90 per cent (IISD, H. Willer, FiBL, personal communication, July 16, 2013).

Sources: Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

TABLE 13.7 STANDARD-COMPLIANT PRODUCTION AS A PERCENTAGE OF TOTAL NATIONAL PRODUCTION FOR THE 20 LARGEST CANE SUGAR PRODUCERS, 2012.

Dashes represent negligible or no standard-compliant production relative to national production. They may also reflect an absence of data.

	Bonsucro (2012*)	Fairtrade (2011 - estimates **)	Organic (2011 – estimates***)	Rainforest Alliance (2012)	Total (2011/2012)
Brazil	6.8%	-	0.3%	0.1%	7.2%
India	-	-	0.1%	-	0.1%
China	-	-	-	-	-
Thailand	-	-	0.5%	-	0.5%
Mexico	-	-	0.1%	-	0.1%
Australia	4.5%	-	-	-	4.5%
Pakistan	-	-	0.4%	-	0.4%
Guatemala	-	-	-	-	-
Philippines	-	-	0.1%	-	0.1%
Colombia	-	-	1.2%	-	1.2%
Argentina	-	-	1.0%	-	1.0%
South Africa	-	-	-	-	-
Indonesia	-	-	-	-	-
Cuba	-	-	0.3%	-	0.3%
Peru	-	-	0.4%	-	0.4%
Vietnam	-	-	-	-	-
Egypt	-	-	-	-	-
Sudan	-	-	-	-	-
Swaziland	-	-	-	-	-

*Based on total production volumes allocated proportionately to 27 mills in Brazil and two in Australia.

**Based on available country-level sales and aggregate production data.

***Based on available country-level sales data. It is estimated that the sales are large relative to total production volumes (relative to other voluntary sustainability standards in sugar and other commodity sectors), at about 90 per cent (IISD, H. Willer, FiBL, personal communication, July 16, 2013).

Sources: Bonsucro, 2013d; FLO, 2012; C. Guinea, Rainforest Alliance, personal communication, 2013; IndexMundi, 2013b; IISD, H. Willer, FiBL, personal communication, August 26, 2013.

13.5 PRICING AND PREMIUMS



Sugar's role as an intermediary input into a wide number of processed products arguably reduces its ability to build significant consumer demand for standard-compliant products across the vast majority of global sugar consumption. Sugar is highly fungible, with a relatively small portion of production being amenable to a specialty sugar market.

Nevertheless, premiums for standard-compliant cane sugar range from about 10 per cent for Organic to 21 per cent for double-certified Fairtrade/Organic. The exclusive presence of Organic and Fairtrade in the sugar standards universe until 2011 has defined voluntary sustainability standard activity in the sugar sector as niche market oriented and allowed certification to operate as a market differentiator. This context has arguably supported the relatively high level of premiums offered across the sector thus far. Higher premium levels are also supported by the relatively high ratio of demand (sales) to supply (production) across these initiatives as well.

Fairtrade is the only standard in the sugar sector that formally requires premiums. Unlike Fairtrade's flagship commodities, such as coffee and cocoa, the Fairtrade sugar standard does not stipulate a minimum price. However, it does require a fixed premium of US\$60 per metric ton above world market prices, or approximately 17 per cent based on 2013 prices.²¹

There are no fixed premiums for Organic certified cane sugar, although Fairtrade requires that US\$80 per metric ton of sugar be paid for Fairtrade-Organic certified production, or roughly 21 per cent above 2013 prices. Data on premiums for straight Organic certified cane sugar are largely anecdotal, although it has been reported that premiums paid for Organic sugar in Brazil range from 15 to 20 per cent (International Sugar Organization, 2011).

As of 2012, neither Rainforest Alliance nor Bonsucro had actually sold any certified production as certified, thereby eliminating the potential for generating a premium. Because these are mainstream-oriented initiatives, one can expect their premiums, if they exist at all, to be lower than those found in Fairtrade and Organic. An important question looking forward will be the expected impact of Bonsucro and Rainforest Alliance certified sales on the potential for premiums across both the Fairtrade and Organic markets.

From a supply perspective, with Bonsucro certified production currently coming only from Brazil and Australia, it is unlikely that these purchases will have a significant impact on Organic and Fairtrade supply in the medium term. From a demand perspective, the story may be different as potential buyers of Fairtrade or Organic sugar resolve to purchase Bonsucro (or Rainforest Alliance) certified sugar as an alternative approach to managing risk and sustainability along their supply chains.

²¹ Seventeen cents per pound in June 2013 (IndexMundi, 2013b). It should be noted that Fairtrade premiums are not necessarily cash premiums for the producers but are distributed democratically by the producer organizations. In Belize, for example, free inputs such as fertilizers were distributed, and in Fiji producers recently received what would be the equivalent of a first social security check (K. Ogorzalek, WWF, personal communication, 2013). Fairtrade's growth in sales over the past several years has resulted in a parallel growth in total value added through the Fairtrade premium. Fairtrade estimates total premiums received by producers through Fairtrade sugar in 2008 to be €4 million, which rose to an estimated €7.4 million in 2011.



Building demand represents the single biggest obstacle facing the sustainable sugar sector. While Fairtrade and Organic certification have managed to maintain relative robust levels of demand compared to overall supply, the more mainstream initiatives have built up supply without any clear evidence of market demand. Notwithstanding this general context, there are a number of indicators pointing toward the sugar sector's potential for rapid growth in the coming years.

Over the past several years the sustainable sugar market has experienced significant growth driven by major commitments from large chocolate manufacturers. If chocolate manufacturers were to extend their sustainable sourcing commitments to the sugar portion of their supply chains, one could expect significant demand growth for standard-compliant sugars in the relatively near future.²² At the very least, major chocolate manufacturers with significant commitments for sustainable sourcing represent low-hanging fruit for the sugar sector. In the meantime, Bonsucro's existing partnerships with Coca-Cola, Cadbury Schweppes and Bacardi

may play a significant role in moving standard-based cane sugar production beyond its current niche status.

The EU Renewable Energy Directive is also likely to operate as a positive driver for the sector, albeit an indirect one. The directive is expected to stimulate the adoption of standard compliance for sugar cane production feeding into ethanol production. Sugar cane production for food usage is likely to also move toward compliance as part of the biofuels certification process.

While there are a variety of signals pointing toward potentially rapid growth and uptake of standard-compliant sugar in the coming years, such growth cannot be taken for granted. The fungible nature of sugar, its use as an ingredient in other processed goods, and the relative absence of any major news media coverage on sugar sustainability issues in recent years may result in reduced downstream demands for compliant production.

²² Hershey's, Mars and Ferrero Group have all committed to source 100 per cent of their cocoa from sustainable sources by 2020 (see Halliday, 2009; Nieburg, 2012a, 2012b).



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