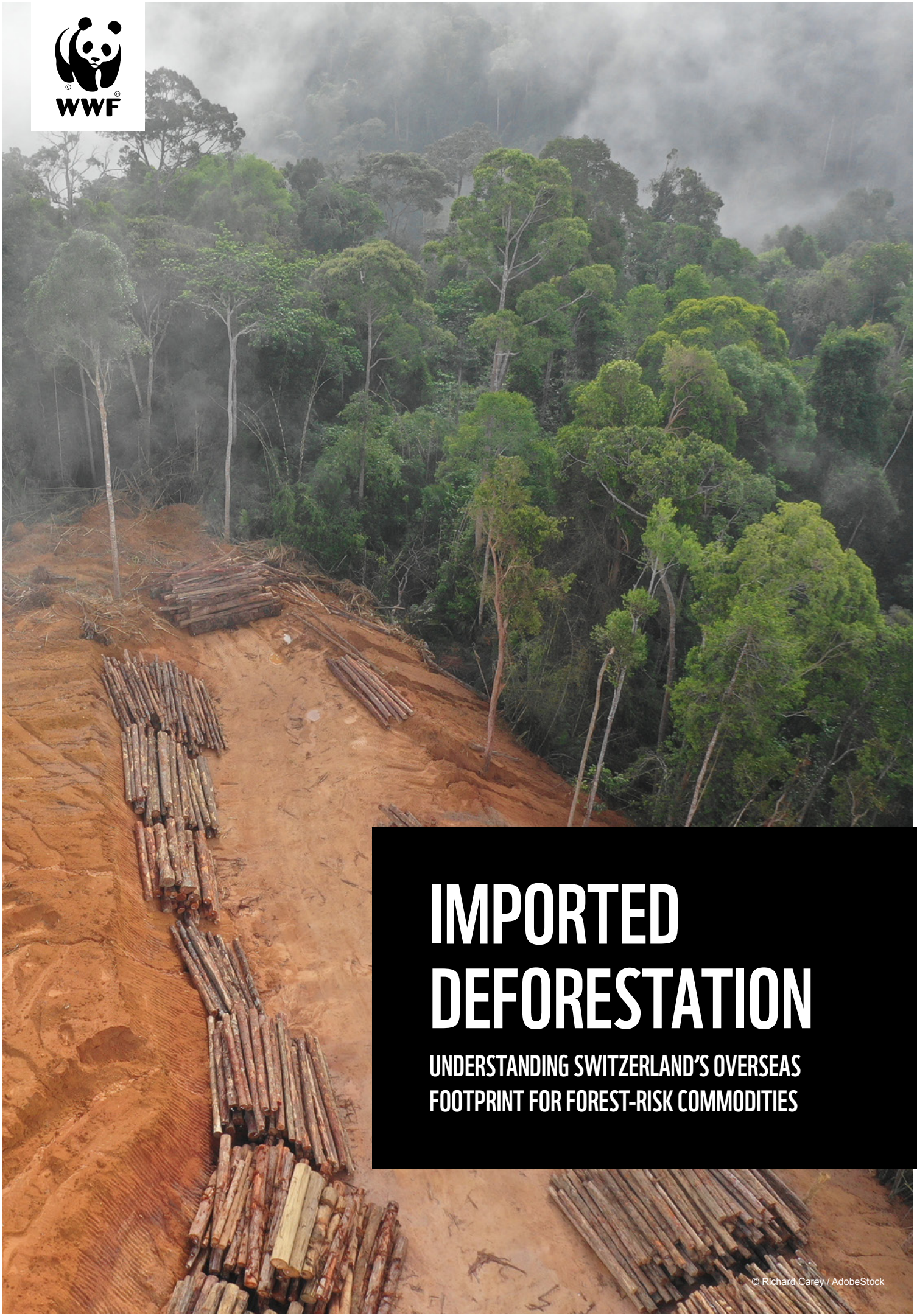

IMPORTED DEFORESTATION

UNDERSTANDING SWITZERLAND'S OVERSEAS FOOTPRINT FOR FOREST-RISK COMMODITIES

This report summarises findings of original research undertaken by 3Keel, commissioned by WWF-Switzerland;
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Design: 3Keel
Publication date: December 2020
The full report is available at www.wwf.ch/riskybusiness

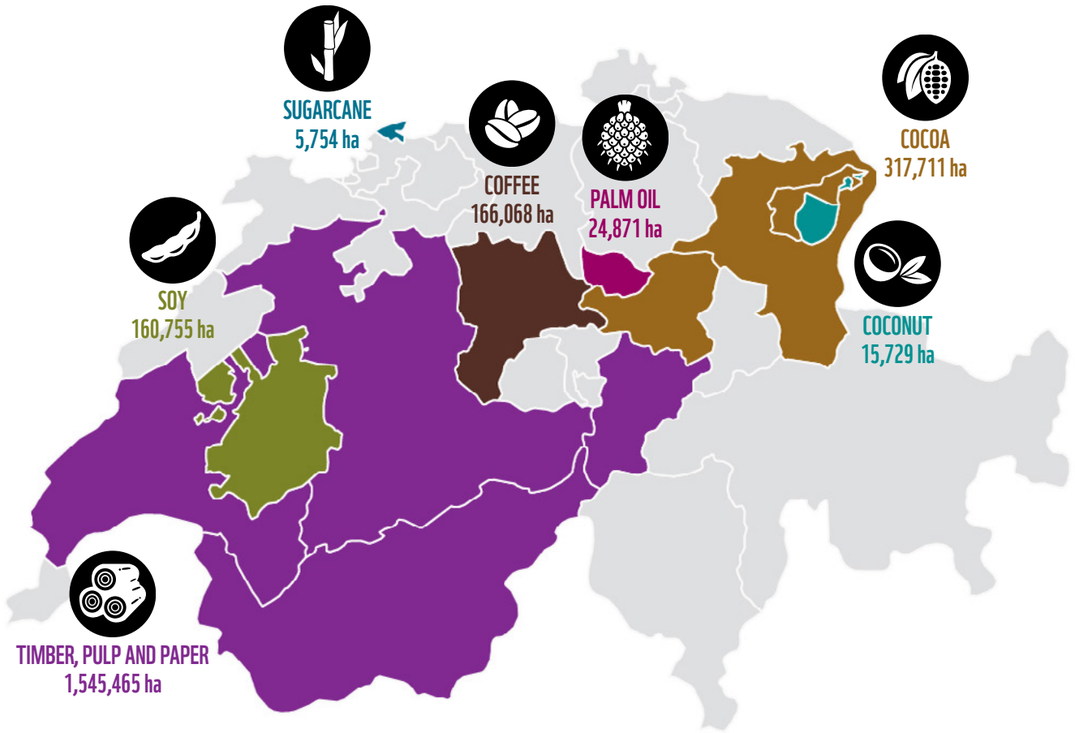
CONTENTS

BACKGROUND

The demand for agricultural and forest commodities drives deforestation and habitat conversion in the countries in which they are produced, contributing to biodiversity loss greenhouse gas emissions, and human rights abuses.

More than 50% of global forest loss and land conversion is attributable to the production of agricultural commodities and forestry products demanded by consumers. Despite increasing initiatives including certification, corporate commitments and market incentives aimed at halting the loss of forest and habitats, the rate of commodity-driven land use change does not appear to be declining, and the negative impacts on local people and nature continue[1].

Area of overseas land required each year to supply Switzerland's imports of forest and agricultural commodities (annual average 2015-19)



KEY FINDINGS FOR SWITZERLAND

Between 2015 and 2019, an area almost three times the size of Switzerland – 11.2 million hectares – was required to meet Switzerland's demand for just eight agricultural and forest commodities; cocoa, coconut, coffee, palm oil, pulp & paper, soy, sugarcane and timber. This is equivalent to around half the area of Switzerland - or nearly twice its own forest area - each year. Although this land footprint has not increased over the period, despite initiatives by government, industry and NGOs, it is also not declining.

The footprint of commodities is the productive area overseas that is required to supply Switzerland's imports, based on average volumes of the commodities imported into Switzerland each year (including raw materials, ingredients and finished products) and the average production per hectare of the commodities in specific countries, during the period 2015-2019. An overview of the methodology, assumptions and limitations is given in a dedicated section at the end of the report.

High risk land footprints

Of the commodities investigated here, by far the largest land footprints for Switzerland are associated with imports of forestry products – timber and pulp and paper – which together had a land footprint of 1.5 million hectares. Although the majority of this is in medium-low or low risk countries like Sweden and Germany, some imports of timber originate in China and some pulp and paper imports in Brazil, both of which are high risk for deforestation and human rights violations.

Switzerland's share of the global production area is also notably large for cocoa (3% of global cocoa production area) and coffee (2%), particularly when it is considered that Switzerland accounts for just 0.1% of global population.

Almost one-quarter (22%) of Switzerland's overseas land footprint is in countries at high or very-high risk of deforestation, weak governance and poor labour standards.

This is particularly true for coffee, cocoa, soy and palm oil where between half and three-quarters of the import footprint is in high or very-high risk countries, and none of the import volumes come from low risk countries.

The pathways by which deforestation occurs are complex and depend on multiple factors. Tracing imported commodities back to the specific parcel of land on which they were produced is also subject to uncertainties due to a lack of transparent trade information. However, with significant imports coming from countries in which there are high rates of deforestation, there is an unacceptably high risk that Switzerland's consumption of these eight commodities contributes to the conversion and clearance of forests for agriculture or logging operations.

Greenhouse gas emissions

The greenhouse gas emissions associated with habitat conversion for Switzerland's imports of agricultural commodities amounted to an estimated three million tonnes CO_2eq per year between 2015-19. This is equivalent to approximately 9% of Switzerland's national emissions each year[2]. Soy imports were by far the largest contributor, accounting for around 60% of annual emissions on average, followed by cocoa which accounted for almost one third of emissions on average per year. The figures do not include emissions associated with forest products – timber and pulp and paper – which comprise a considerable land footprint and will therefore add significantly to emissions.

TAKING ACTIONS TO ADDRESS THE DESTRUCTION OF NATURE OCCURRING AS A RESULT OF OVERSEAS PRODUCTION OF COMMODITIES IS VITAL TO PROTECT WILDLIFE, HABITATS AND LOCAL POPULATIONS WHO DEPEND ON THEM

Overseas impact

Despite growing focus from civil society on the overseas impact of Switzerland's demand for agricultural and forest products, the monitoring and mitigation of the overseas impacts of imported goods are not yet required by the Swiss government.

The majority – an average of 65% - of the imports of these eight commodities are estimated to be for consumption within Switzerland. The majority of the land footprint is therefore driven by domestic demand rather than onward trade. Switzerland also hosts corporate headquarters or major offices of several large international traders in agricultural and forest commodities and thus has a greater impact and responsibility than consumption alone suggests. These volumes are only included within the current study if they are imported into and/or consumed within Switzerland.

The output of this report is not intended to encourage actors to try to avoid sourcing from high-risk areas – as these will shift anyway – but instead to encourage engagement with suppliers and producers on ways to reduce the risk of deforestation in supply chains.

Circumstances like the Covid-19 pandemic and intensifying impacts of climate change have increased awareness of the fragility and global inter-connectedness of our food supply chains. Taking actions to address the destruction of nature occurring as a result of overseas production of commodities is vital to protect wildlife, habitats and local populations who depend on them, for increasing resilience to climate change and to ensure the sustainable future of food production.

This report provides an indication of the overall scale of Switzerland's total overseas land footprint from eight commodities from 2015 to 2019, inclusive. It also indicates the relative levels of risk of each of the commodities and an indication of where the Swiss government, businesses and civil society might target their efforts to have most impact in reducing their deforestation footprint overseas.

SPECIAL NOTE ON CERTIFICATION

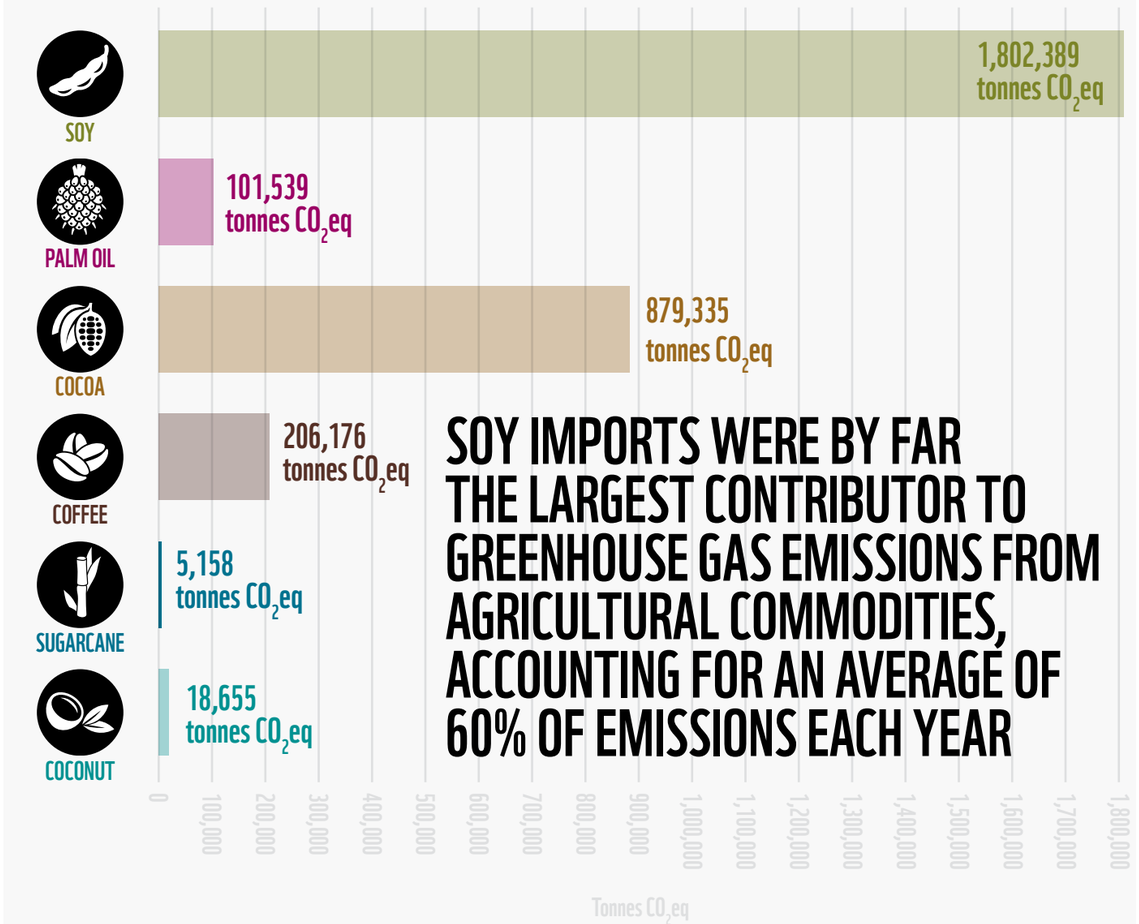
Credible standard and certification schemes, when effectively implemented, remain an important tool to support sustainable production of commodities: they help promote better practices at farm level, strengthen collaboration of stakeholders and incentivise investments in production areas.

In order to achieve impact at scale, WWF believe that certification must be complemented (depending on the context) with measures like:

- Strengthening national regulation and/or local law enforcement;
- Facilitating access for remote smallholders to capacity building programs and finance;
- Development of more holistic approaches including crop diversification and creation of landscapes or jurisdictional approach in producing areas;
- Large scale and reliable monitoring systems e.g. using geo spatial data at deforestation fronts;
- Increased uptake of certified segregated volumes and transparency by purchasing companies.

WWF remains committed to working with a broad spectrum of economic, environmental and social stakeholders, and to helping identify holistic solutions that go beyond certifications.

Greenhouse gas emissions from land use change associated with Switzerland's imports, by commodity



GLOBAL SNAPSHOT

SOY · PALM OIL · COCOA · TIMBER, PULP AND PAPER · COFFEE · SUGARCANE · COCONUT

MEXICO
RISK SCORE: 10

13,389 ha

HONDURAS
RISK SCORE: 11

8610 ha

GUATEMALA
RISK SCORE: 10

11,674 ha

COLOMBIA
RISK SCORE: 11

23,195 ha · 213 ha

ECUADOR
RISK SCORE: 10

43,967 ha

PERU
RISK SCORE: 11

2,172 ha · 7,510 ha

ARGENTINA
RISK SCORE: 9

7,510 ha · 285 ha

PARAGUAY
RISK SCORE: 11

5,698 ha · 659 ha

CÔTE D'IVOIRE
RISK SCORE: 10

593 ha · 86,657 ha · 6,053 ha

NIGERIA
RISK SCORE: 11

29,141 ha

BRAZIL
RISK SCORE: 11

75,664 ha · 9,540 ha · 33,777 ha · 794 ha

MOZAMBIQUE
RISK SCORE: 11

901 ha

RUSSIA
RISK SCORE: 10

28,413 ha

ETHIOPIA
RISK SCORE: 9

12,398 ha

MADAGASCAR
RISK SCORE: 9

4,106 ha

CHINA
RISK SCORE: 9

32,448 ha

VIETNAM
RISK SCORE: 9

11,488 ha

CAMBODIA
RISK SCORE: 11

1,391 ha

MALAYSIA
RISK SCORE: 10

8,428 ha

INDONESIA
RISK SCORE: 12

6,867 ha · 6,947 ha · 9,642 ha · 1,343 ha

RISK SCORE

- > 11 Very High Risk
- 9-10 High Risk
- 7-8 Medium Risk
- 5-6 Medium-low risk
- 4 Low Risk

RECOMMENDATIONS

Switzerland is signatory to several international instruments and commitments to prevent deforestation. It has agreed to the United Nations Strategic Plan for Forests 2017-2030 which includes a goal to '*Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation…*'[3]. Under the Sustainable Development Goals Switzerland is also committed to '*halt(ing) deforestation*'[4] and under the Aichi biodiversity targets to ensuring that the '*rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced*'[5].

However, global deforestation and biodiversity loss continues at an alarming rate and failure to fully account for Switzerland's deforestation footprint and associated risks overseas threatens the country's environmental credibility and the long-term sustainability of commodity supply.

We call on…

THE SWISS PARLIAMENT, THE FEDERAL COUNCIL AND ADMINISTRATION TO:

→ Secure high environmental and social standards and safeguards that are in alignment with Switzerland's commitments on climate, nature and people in all future trade agreements.

→ Establish mandatory due diligence laws (following the latest UK and EU parliament recommendation[6] and according to UN Guiding Principles and the OECD Guidelines) that would force companies to show that products they sell in the Switzerland do not drive global deforestation or violate human rights.

→ Require businesses and financial institutions that import forest-risk commodities to identify, mitigate and report on risks and impacts in their supply chains or investment portfolios in line with the Accountability Framework[7].

→ Set time-bound, legally binding targets to halt deforestation and conversion embedded within commodity supply chains by 2030 e.g. following the Amsterdam Partnership Declaration– to be set by the end of 2021.

→ Push for strong action targets, in partnership with key producer and consumer countries to protect species and habitats as part of the Post-2020 Global Biodiversity Framework under the Convention on Biological Diversity and the commitment to the 2030 Agenda for Sustainable Development, including goals linked to forest risk mitigation (Sustainable Development Goals 6, 12 and 15)

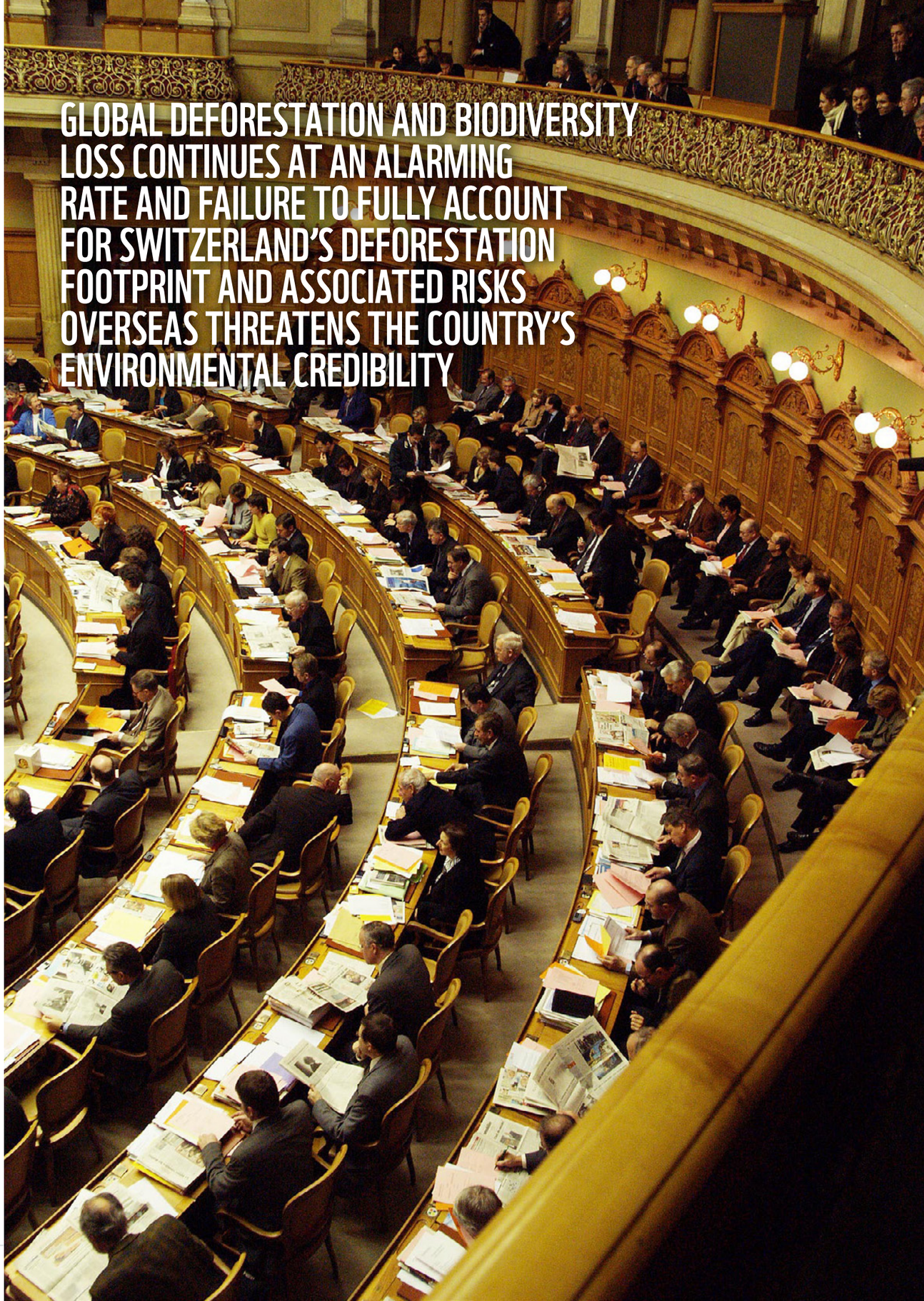
→ Promote and invest in projects that improve sustainability in "risky" production landscapes, including restoration of destroyed or degraded landscapes, and transforming supply chains (e.g. through SECO and SDC programs).

COMPANIES TO:

→ Understand the risks within supply chains by keeping track of the origins of the raw materials.

→ Set and disclose robust time-bound commitments and action plans according to The Accountability Framework[8] to eliminate deforestation and natural habitat conversion from supply chains and implement these as soon as possible. This includes the:

- Non-acceptance of raw materials produced in any area that has been converted or degraded after the cut-off date on which the company has committed not to contribute any more to these impacts. This applies to the conversion or loss of natural forests, High Conservation Value zones, High Carbon Stock areas, peat bogs and other natural ecosystems (savannas, natural meadows, wetlands etc)



- The recognition of customary, land, land use and other rights associated with communities' and indigenous people's rights

→ Regularly monitor the time-bound targets following suitable methods for assessing social, environmental, and land use outcomes related to the commitment scope. Validate progress through an independent and rigorous verification process.

→ Report publicly on progress and outcomes related to the implementation of commitments on a regular basis.

→ Engage with suppliers and support implementation of policies and commitments across entire supply chains. Engage in jurisdictional approaches in sourcing destination and invest in forest landscape conservation and restoration projects.

→ Advocate for further action and improved transparency among peers and wider stakeholders (e.g. government and civil society) for policies to achieve deforestation/conversion-free supply chains such as supporting calls for robust environmental and social standards in trade agreements, joining national commodity platforms, etc.

FINANCIAL INSTITUTIONS TO:

→ Set policies as well as pre-screening and monitoring systems to ensure that no lending or investments are associated with illegal environmental or social practices, or with the destruction of natural forests and other natural habitats.

→ Report publicly on risks and impacts and on the progress in mitigating them, and request clients to do so too.

→ Understand opportunities and enable the transition to sustainable commodity production (e.g. finance sustainable agriculture practices, nature-based solutions, and support projects to improve sustainability in at-risk landscapes).

→ Streamline environmental, social and governance (ESG) risk management related to deforestation by:

- Using the Accountability Framework to systematically assess how companies in an institution's portfolio measure up against its own policies and global good practice for ethical supply chains.
- Using Framework-aligned tools such as CDP Forests[9], Forest 500[10], Supply Change[11], etc. to integrate best available information and analysis on deforestation and associated risks and impacts – including GHG emissions – into decision-making.

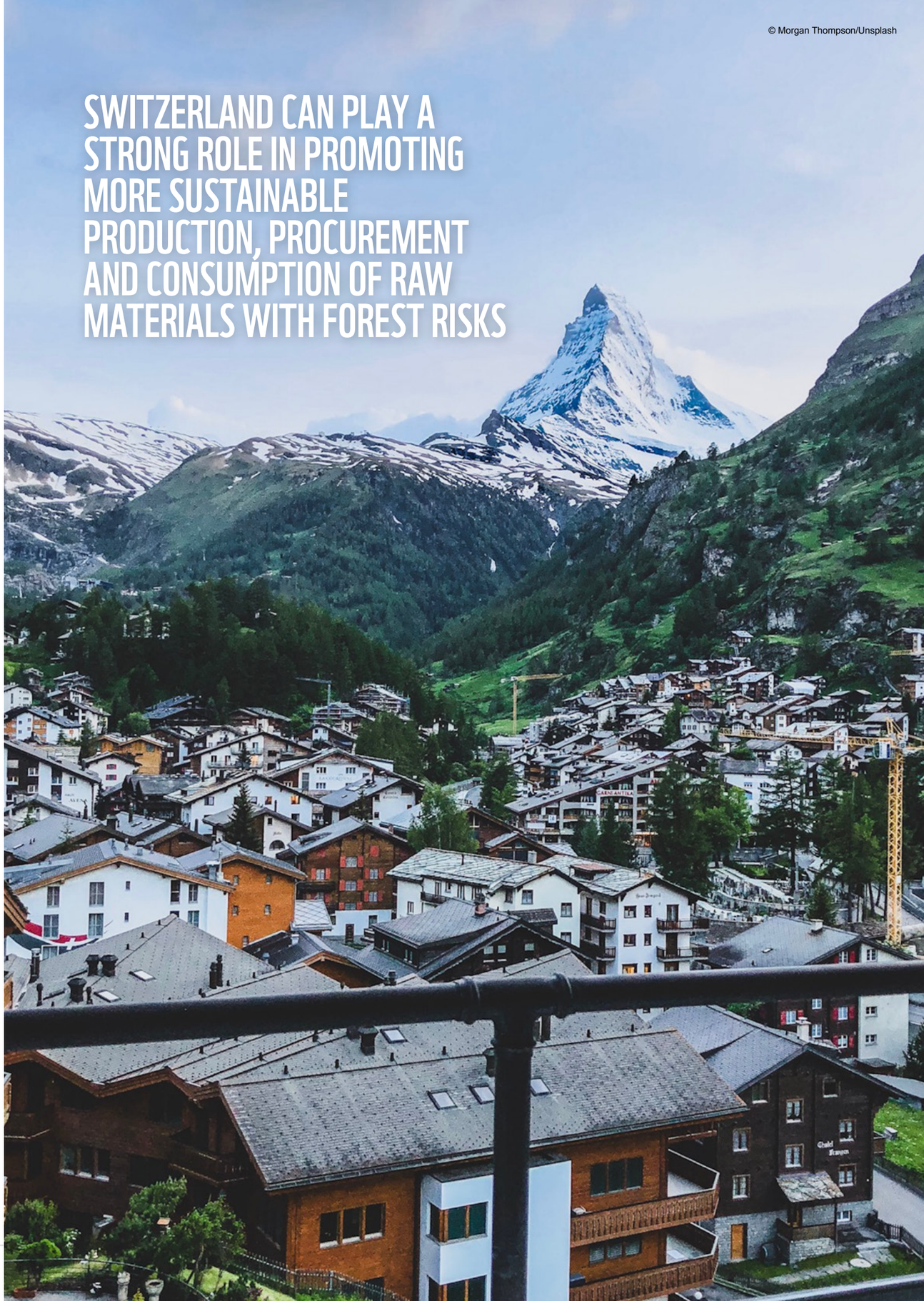
CITIZENS TO:

→ Adopt a "Planet Based Diet[12]" and eat more sustainably:

- Eat more plants than animals – find tasty ways to reduce consumption of meat and dairy products.
- Choose sustainable food with a preference for organic (or other ISEAL member certifications[13] or labels[14] such as RSPO for palm oil, Rainforest Alliance, UTZ, Fairtrade, etc.) and sustainable, locally grown products.
- Only buy as much food as you really would like to eat to reduce food waste.

→ Support citizen initiatives or referenda on new policies and legislation in favour of greener supply chains and further transparency and scrutiny over trade deals.

→ Demand greater transparency and action from supermarkets and brands to ensure that products are not associated with deforestation, habitat conversion or human rights abuses. Check their commitments and make choices accordingly.



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SOY

Soy (or soybean, or soya), *Glycine max*, is a leguminous species native to east Asia, grown for its edible bean. It is grown widely in Asia and the Americas.

The soybean contains 38% protein; it produces more protein per hectare than any other major crop. Soybean oil is also the second most widely used vegetable oil (after palm oil), accounting for 25% of global consumption of vegetable/animal oils and fats[15]. Globally, around 70% of soy is used for animal feed and only around 6% of global soy production is used for direct human consumption[16].

Soy production has increased eightfold since the 1960s and doubled between 2000 and 2018. This growth in production has been dominated by three countries: Argentina, Brazil and the US, which together account for more than 80% of global production. The rate of growth has been particularly rapid in South America, with Brazil projected to become the largest global soy producer in 2019-20[17].

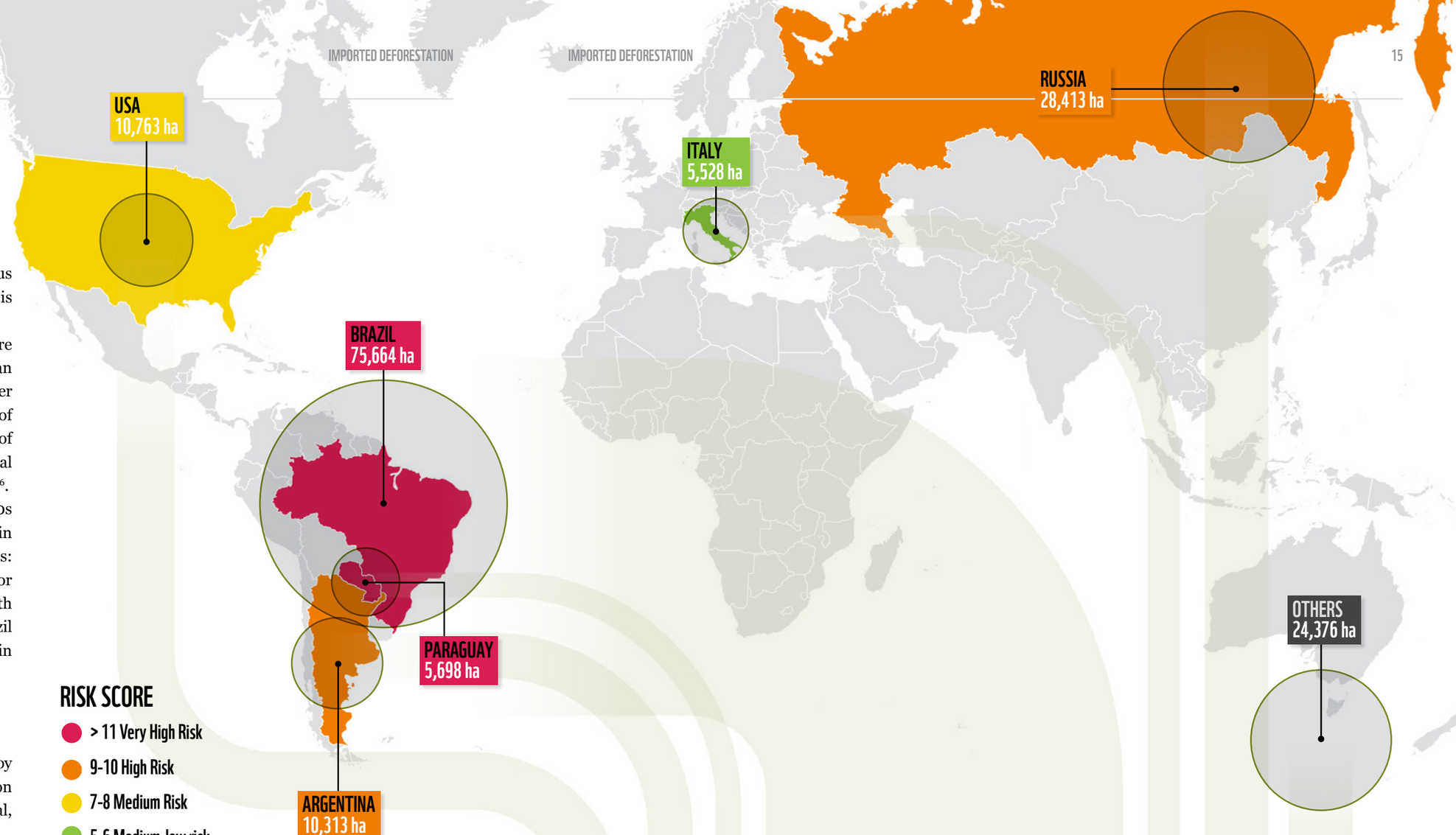
Swiss imports and consumption

Switzerland imported an average of 332,000 tonnes of soy per year between 2015-19. By far the largest proportion of this – 81% - was in the form of soil oil cake and meal, which is commonly used in livestock feed.

Around half of Switzerland's direct soy imports come from Europe, but trade data does not allow clarification of what proportion of this is soy grown in Europe compared to soy produced elsewhere and imported to Switzerland through European countries. When reassigned back to origin country, it is estimated that over half – 56% - of soy imports originate in Brazil.

The land required overseas to supply this demand for soy was an average of 160,000 hectares per year. In line with being the source of the largest volumes, by far the largest footprint of soy imports was in Brazil which accounted for an average of 47% of Switzerland's annual land footprint for soy.

Soy contributed by far the greatest proportion of emissions from land use change across the agricultural commodities analysed here. Average annual emissions were over 1.8 million tonnes CO_2eq, which accounts for 60% of the emissions from the agricultural commodities



AVERAGE ANNUAL VOLUME OF IMPORTS

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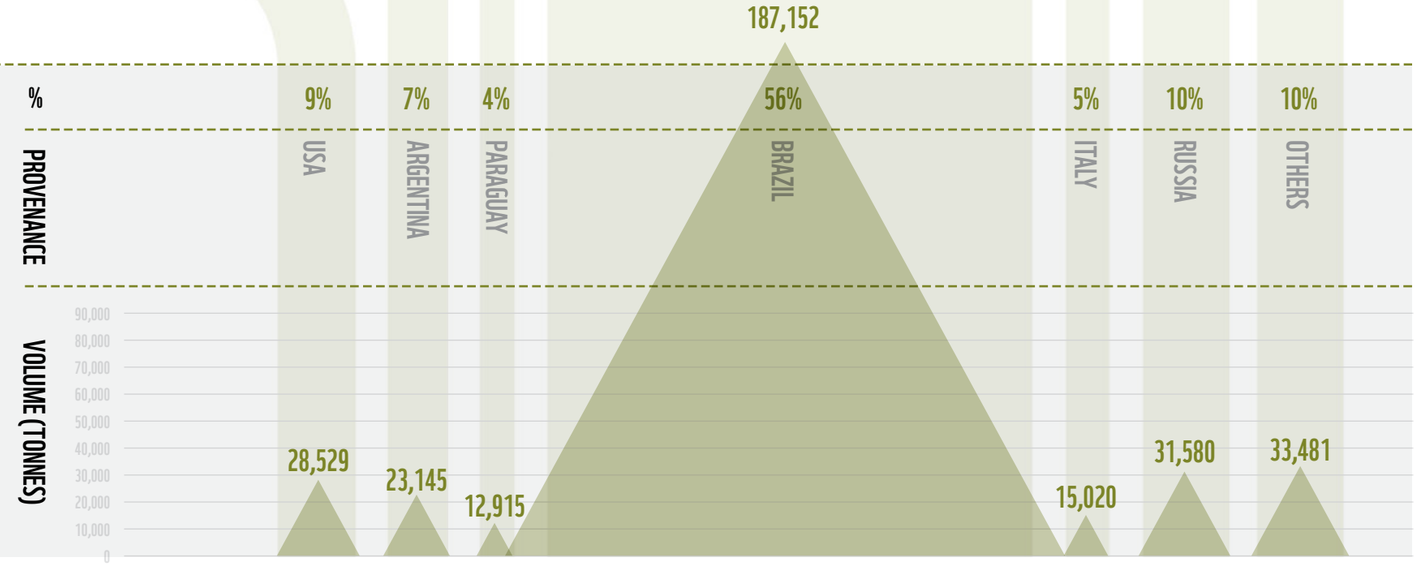

analysed here.

Three-quarters (75%) of Switzerland's soy imports come from high and very-high risk countries; Brazil, Paraguay, Argentina and Russia.

Impacts and risks

The expansion of soy production in South America has been strongly associated with deforestation and other natural habitat destruction[18]. One study estimated that soy production accounted for 0.6 million hectares of land use change per year between 2000 and 2011 in Argentina, Bolivia, Brazil and Paraguay[19].

Soy can also act as an indirect driver of deforestation, displacing cattle ranching towards the forest frontier. It has also been linked with aggressive speculation over land values. Soybean expansion has been associated with poor labour conditions and violations of human rights in Brazil[20] and Paraguay[21]. Excessive use of agrochemicals is a major environmental threat linked to soy production, which could pose widespread health risks to people living near soy farms[22].

The most prominent soy certification schemes are ProTerra, ISCC (International Sustainability and Carbon Certification)[23] and the Roundtable on Responsible Soy (RTRS), but these currently account for only around 2.6% of global soy production.

In 2011, Switzerland established the Soy Network (Soja Netzwerk) Switzerland which aims to ensure that all the soy for the Swiss market is responsibly produced according to the following standards and certifications; the Basel Criteria, Bio Suisse Guidelines, ProTerra Standard, the RTRS Non-GM Standard, Danube Soya Standard, Europe Soya Standard and the ISCC PLUS Non-GMO. In 2017, soy produced to one or more of these standards reportedly accounted for 96% of Switzerland's imports[24].

SOY PRODUCTION HAS INCREASED EIGHTFOLD SINCE THE 1960s AND DOUBLED BETWEEN 2000 AND 2018

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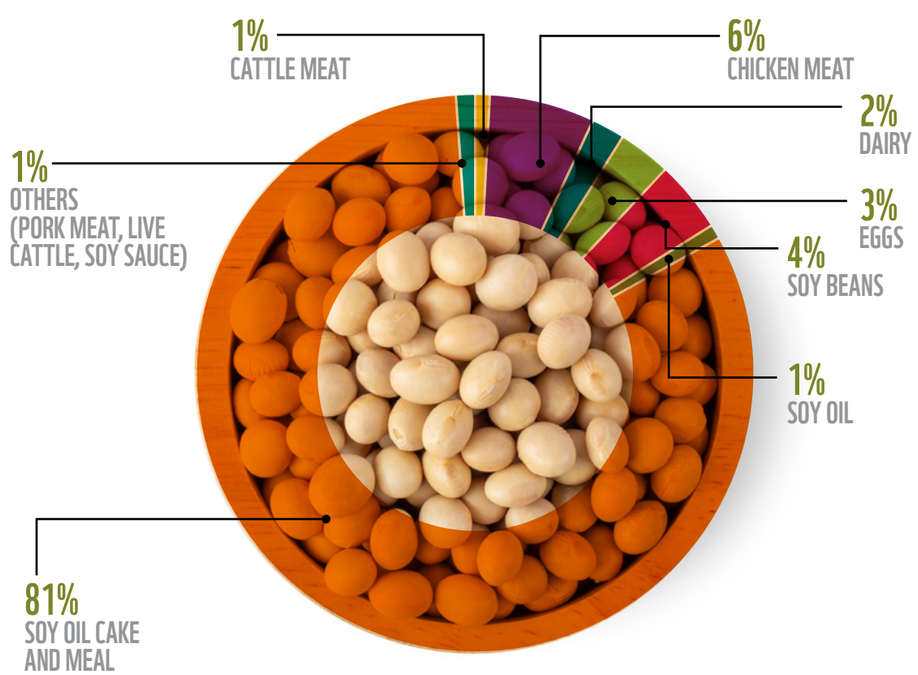
SWITZERLAND'S IMPORTS OF SOY BY PRODUCT TYPE (AVERAGE, 2015-19)



RECOMMENDATIONS FOR SOY

Government

- Encourage consumers to reduce their consumption of animal products through communication campaigns and education.
- Support the integration of sustainability criteria in trade agreements and facilitate investment in ecosystem conservation and restoration programmes in high risk producer countries.
- Develop an overall feed import reduction strategy with a binding, scheduled action plan to achieve the National Environmental Goals for Agriculture[25] (specifically on ammonia and nitrate reduction[26]). Incentivise the local production of soy and viable alternatives.

Companies

- Support the Cerrado Manifesto[27] and implement concrete actions: traceability of supplies, purchases of certified soybeans, agreements and monitoring of suppliers, etc.
- Join the Swiss Soy Network and actively contribute to implementing a "zero deforestation soy" commitment and avoiding traders that still purchase soy from deforested areas.
- For animal feed; promote the use of local and responsible alternatives to imported soybeans, as well as farming systems that reduce the consumption of imported soybeans, such as grassland systems.

Investors

- Be vigilant about investments in ecosystems that are still little publicized (e.g. Gran Chaco) and future deforestation fronts (particularly in Africa).
- Measure the exposure to deforestation risk from the soy in their portfolios.

Consumers

- Diversify sources of protein in the diet, by eating and learning how to cook vegetable proteins.
- Reduce consumption of animal products (meat, eggs, dairy products) and choose certified soy products.

PALM OIL

The oil palm, *Elaeis guineensis*, is native to west and south-west Africa and is now planted widely in tropical lowlands.

Palm oil is the most productive oil crop per hectare and is extremely versatile: palm oil, palm kernel oil and their derivatives are estimated to be present in more than 50% of packaged supermarket products.

Global palm oil production has increased from 15.2 million tonnes in 1995 to an estimated 62.9 million tonnes in 2017. Large-scale palm oil plantations produce approximately 60% of the world's production with much of the rest grown by an estimated three million smallholders.

Palm oil is predominantly produced by Indonesia (46% global production) and Malaysia (34%). There has also been a marked increase in palm oil production in other parts of the world in recent years, largely in South and Central America, Thailand and western Africa.

Swiss imports and consumption

Swiss imports of palm oil, palm kernel oil, oilcake and palmitic acid between 2015 and 2019 were predominantly from Malaysia (34%) and Indonesia (28%).

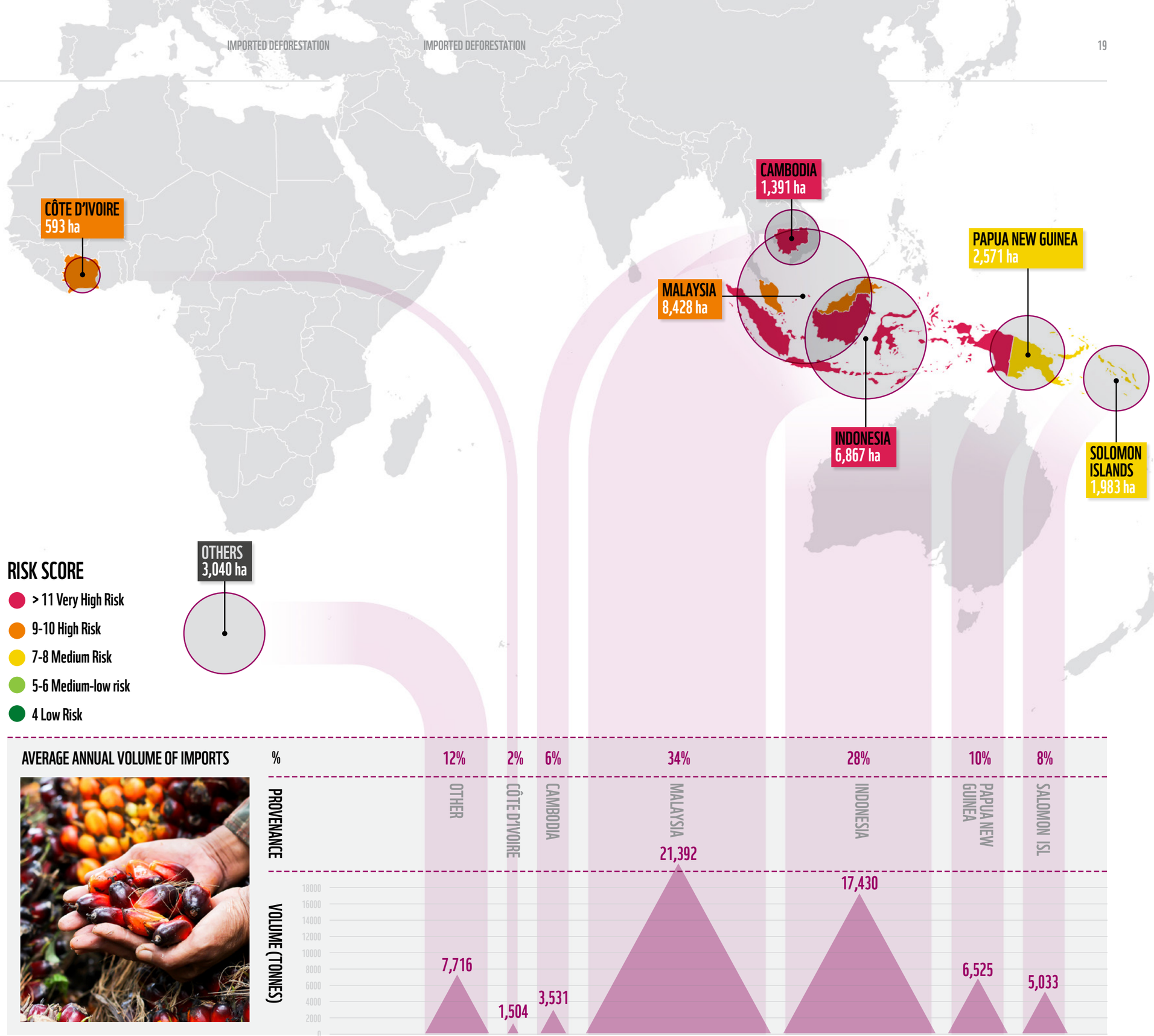
Palm oil and its fractions are ingredients within many hundreds of imported product types. Much of this import is essentially untraceable without intensive research into the manufacture of individual products.

Total Swiss consumption of palm oil – including raw materials and a conservative estimate of embedded palm oil – was on average more than 63,000 tonnes per year from 2015 to 2019. The largest proportion of these imports was in the form of palm oil (42% of total import volumes) and the next largest proportion was embedded within soap (38%).

The land required overseas to supply Switzerland's demand for palm oil was an average of almost 25,000 hectares per year between 2015-19. Together Malaysia and Indonesia account for over 60% of this footprint.

Greenhouse gas emissions associated with the production of palm oil for Switzerland's imports were an average of approximately 102,000 tonnes CO_2eq per year. However, emissions figures are not available for Indonesia, so this figure is a significant underestimate of the actual total.

Nearly 70% of Switzerland's palm oil footprint was in



high and very-high risk countries, including Malaysia, Indonesia, Cambodia and Côte d'Ivoire. In fact, none of the imports of palm oil are from low or medium-low risk countries.

Impacts and risks

The expansion of palm oil cultivation has long been linked with deforestation. A study concluded that 45% of oil palm plantations studied in southeast Asia were in areas that were forests in 1989[28]. A significant part of this deforestation is embedded in global trade[29]. Forest clearance associated with palm oil expansion has forced indigenous peoples off their land in a number of Asian and African countries. Forced labour and other abusive labour practices have been reported on palm oil plantations.

The main certification scheme for oil palm is the Roundtable on Sustainable Palm Oil (RSPO). RSPO certified palm oil now accounts for 21% of global production. Switzerland has established The Palm Oil Network (Palmoel Netzwerk). Founding members include Barry Callebaut, Coop, Migros and Nestlé Switzerland, who all committed to import 100% of their palm oil from RSPO-certified and segregated sources. However, a number of critiques have reduced confidence that RSPO certificates guarantee palm oil is produced without deforestation and exploitation. This has prompted a drive to develop a more robust standard.

Indonesia and Malaysia have both developed national palm oil certification systems in recent years. It is important to note that neither national standard has criteria preventing deforestation, other than in instances where deforestation would be illegal.

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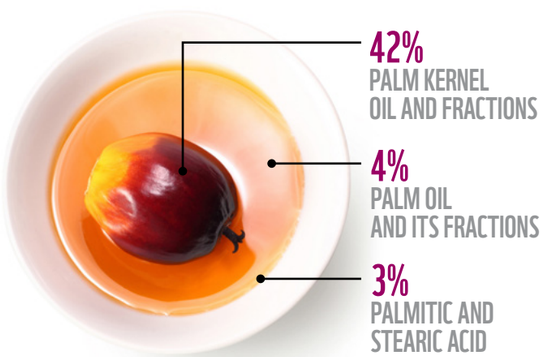
SWITZERLAND'S IMPORTS OF PALM OIL BY PRODUCT TYPE (AVERAGE, 2015-19)



45% OF OIL PALM PLANTATIONS IN SOUTHEAST ASIA CAME FROM AREAS THAT WERE FORESTS IN 1989 ACCORDING TO A RECENT STUDY

RECOMMENDATIONS FOR PALM OIL

Government

- Pursue the integration of social and environmental criteria in free trade agreements with producer countries and develop a transparent and solid import control framework.
- Establish strong technical and diplomatic partnerships with producer countries to strengthen national standards and support their transition to responsible production.

Companies

- Have an NDPE (No Deforestation, No Peat, No Exploitation) procurement policy covering all of the company's volumes, including non-food (palm oil fractions and derivatives for detergents, soaps, etc.).
- Join the Swiss network for responsible palm oil.
- Guarantee the traceability of your supplies (including non-food!) to the plantations, in particular by using the 100% segregated RSPO certification (when volumes are available) associated with the preservation of the High Carbon Stock (HCS) areas.
- Do not systematically aim at substituting palm oil with other oils or fats because of the potentially higher impact in terms of land use associated with alternatives, but instead reduce its use and favour palm oil certified to RSPO or ISCC standards.
- Use new mapping tools (remote sensing, geo-satellite data, etc.) in partnership with suppliers to have real-time monitoring of palm oil production.

Investors

- Be vigilant about investments in regions with high forest cover, in areas close to protected areas (nature reserves, national parks, etc.) and in the upcoming deforestation fronts (especially Africa).
- Do not systematically dis-invest in palm oil, but instead encourage improved practices whilst withdrawing from markets/companies that do not show good performance.

Consumers

- Reduce your consumption of processed products potentially containing palm oil by cooking your own dishes from raw ingredients.
- Consume RSPO-certified palm oil products as a minimum.

COCOA

Cocoa comes from the seeds found inside the fruits of the cocoa tree, *Theobroma cacao*. Cocoa requires a humid, tropical climate so production is limited to those areas within 10 degrees of the equator.

Cocoa is produced in 62 countries worldwide but over 66% of global cocoa production is located in Africa, with the two largest producing countries being Côte d'Ivoire (37% of global production) and Ghana (18%). The third largest producer globally is Indonesia. The majority of cocoa is produced by smallholders, with more than 90% of global cocoa production originating from farms covering only 2-5 hectares.

Global production of cocoa was around 5.3 million tonnes of cocoa beans in 2018, having increased steadily from 4.3 million tonnes in 2010. There are a number of co-products manufactured from cocoa beans (e.g. cocoa liquor, cocoa paste and cocoa powder), but the primary end use is chocolate and chocolate products.

Swiss imports and consumption

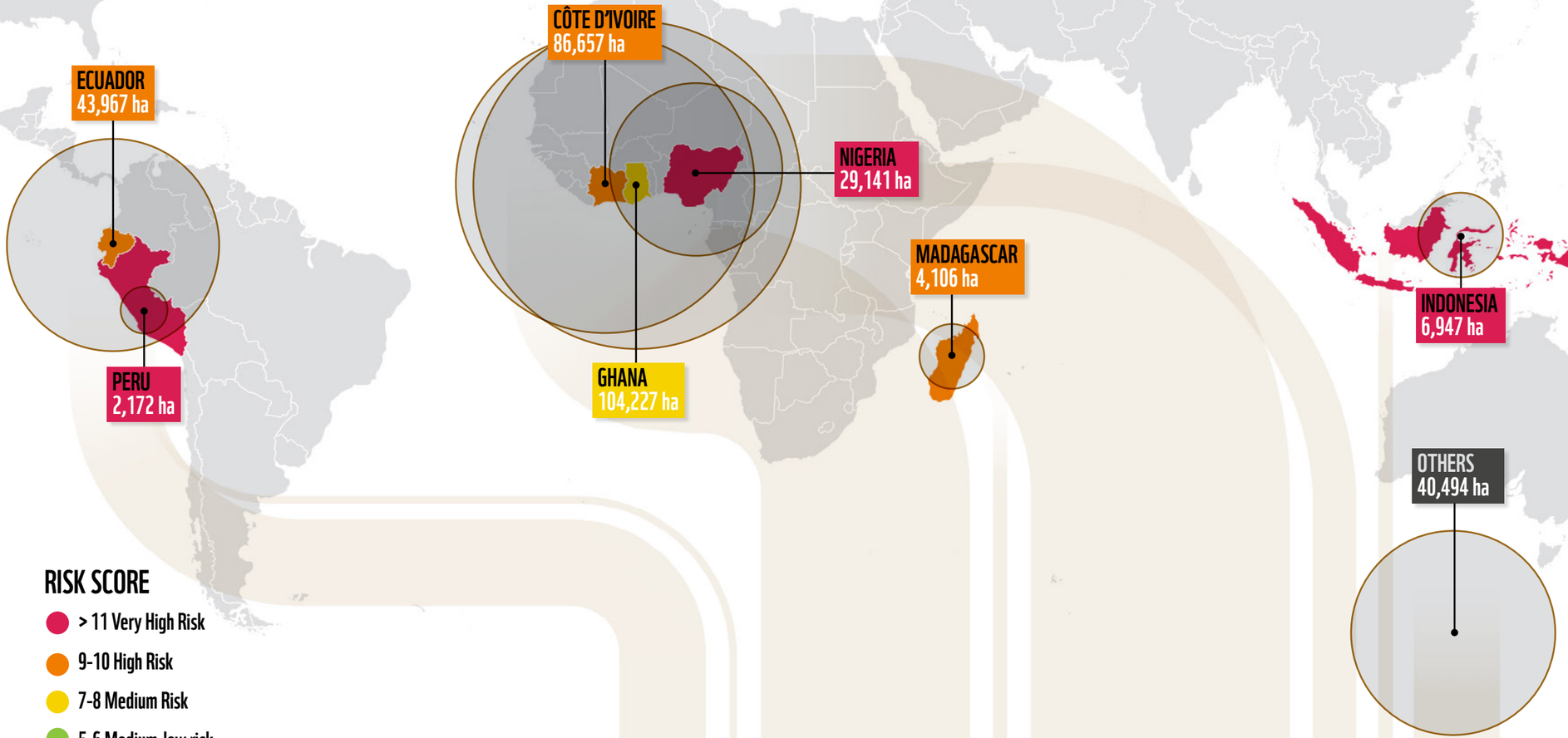
Switzerland required an average of over 300,000 hectares per year between 2015-19 - equivalent to around 7% of Switzerland's land area – to meet its demand for cocoa. The size of this land area has increased steadily over the period, due to increasing import volumes.

Nearly half (45%) of Switzerland's cocoa imports are in the form of cocoa beans and a further 40% comprise cocoa butter and cocoa paste. This is high relative to other countries and reflects the use of cocoa as a raw material in Switzerland's chocolate manufacturing industry. Correspondingly, over half (55%) of the cocoa imported to Switzerland is re-exported, much of it as chocolate.

The largest land footprints were in Ghana and Côte d'Ivoire which together account for 60% of the footprint of Switzerland's cocoa imports. The third largest land footprint was in Ecuador, which is also the third largest source of cocoa imports to Switzerland by volume.

Switzerland's cocoa footprint comprises 3% of the global cocoa footprint, which is high relative to the country's proportion of global population (0.1%) and global gross domestic product (0.58%)[30].

The greenhouse gas emissions from land use change



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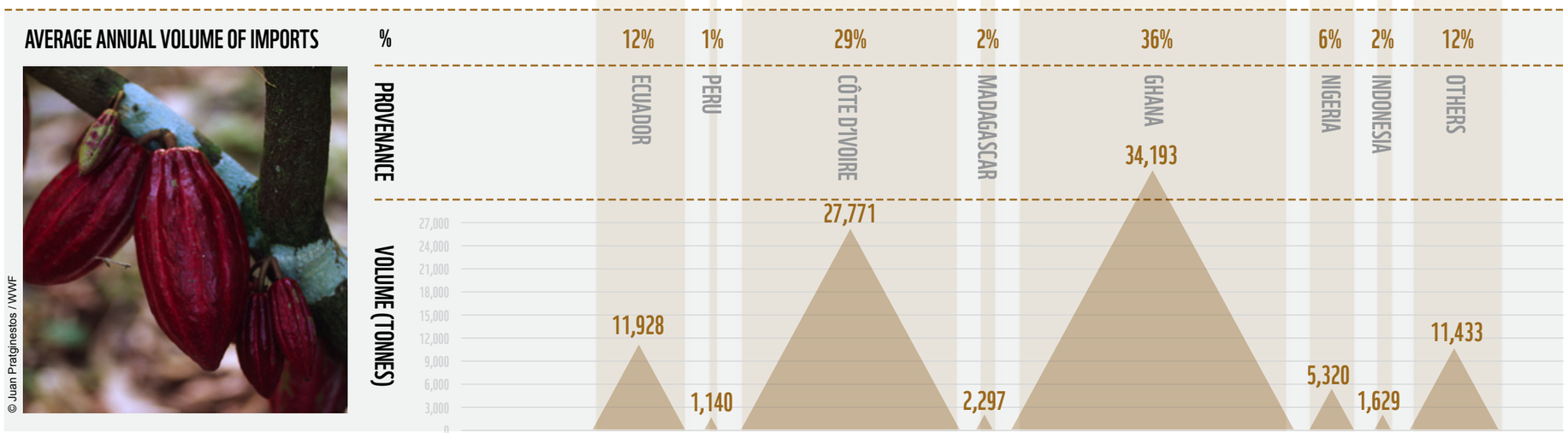
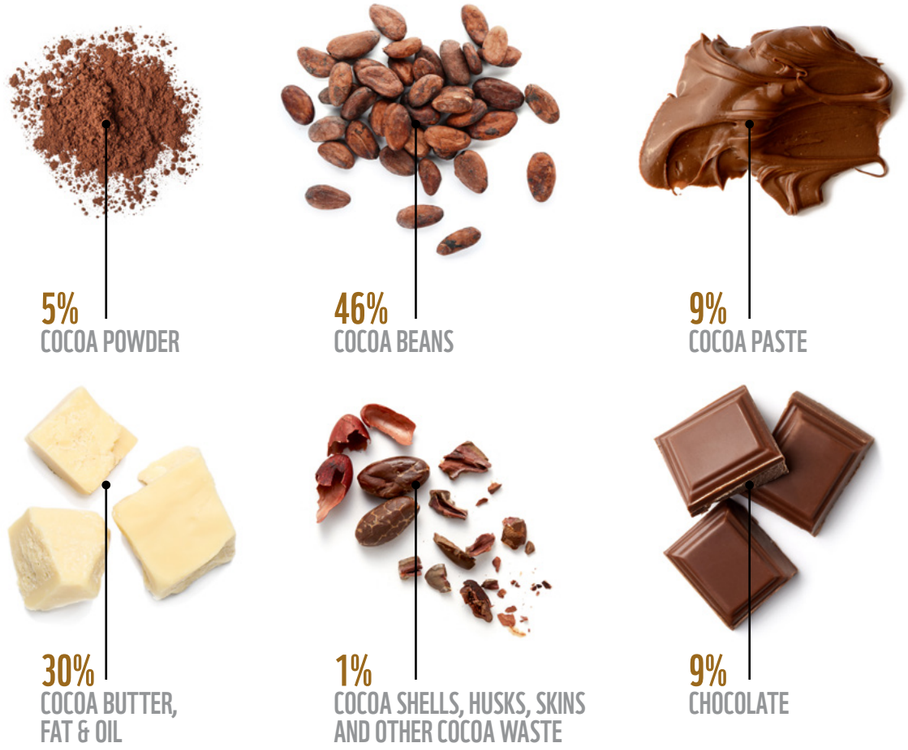


SWITZERLAND'S IMPORTS OF COCOA BY PRODUCT TYPE (AVERAGE, 2015-19)



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associated with Switzerland's cocoa imports were an average of 879,000 CO_2eq per year, accounting for almost one third (29%) of emissions from the commodities analysed here.

Over half – 54% - of Switzerland's cocoa imports are from countries which are at high or very-high risk of deforestation; Côte d'Ivoire, Ecuador, Nigeria, Peru, Indonesia and Madagascar. The majority of the remaining footprint is from Ghana (33%) which is rated as medium risk due to moderate national forest loss but has a cocoa sector which has been found to rely on unpaid labour and has been directly associated with deforestation.

Impacts and risks

Deforestation for cocoa production has been reported in major producing countries in West Africa, including Côte d'Ivoire and Ghana, as well as in South America. Cocoa is produced both from full-sun and shade grown varieties. The former has advantages in being higher yielding. The latter is produced in agroforestry systems that can play a role in forest restoration programmes, but, with a potentially lower yield, may require greater land take.

In priority tropical forest biodiversity hotspots, cocoa agroforestry systems can act as a valuable mechanism for buffering and connecting important forest habitat. However, the current combination of low investment in farmers (financially and in terms of skills and management training) and ageing trees is causing a reduction in cocoa yields, which means farmers must expand production into new areas. One alternative is to promote the rehabilitation of existing plantations, thus reducing the need for expansion.

Cocoa cultivation provides a livelihood for millions of smallholders in countries such as Côte d'Ivoire, Ghana, Indonesia and Nigeria. But it must be noted that typically cocoa farmers receive a small percentage of overall cocoa price. Low income, combined with difficulties in obtaining high yields (due to small farm size, lack of training or ability to invest in production improvements), mean that many cocoa farmers rely on loans and are unable to save money.

Cocoa cultivation is in some cases associated with serious human rights abuses. The US Department of Labour List of Goods Produced by Child Labour or Forced Labour includes cocoa produced in seven countries on their List of Goods Produced by Child Labour: Brazil, Cameroon, Côte d'Ivoire, Ghana, Guinea, Nigeria, and Sierra Leone.

Certification schemes for cocoa are fairly well advanced, and there are a number of standards in use. The major third-party certification schemes are Fairtrade, UTZ, and Rainforest Alliance (the latter two in the process of merging at the time of writing). All three schemes include criteria on conservation, with varying levels of protection against deforestation. In 2017, an estimated 23% of the cocoa produced globally was compliant with Rainforest Alliance, UTZ, Fairtrade or organic standards[31].

In March 2017, the Cocoa & Forests Initiative, the first collective industry commitment, was launched to end deforestation and forest degradation covering the global cocoa supply chain.

RECOMMENDATIONS FOR COCOA

Government

- Support international projects and initiatives aimed at preserving and restoring forests in the main producing countries based on the Cocoa and Forestry Initiative (CFI).

Companies

- Participate in multi-stakeholder initiatives for responsible cocoa supply chains (such as the Cocoa and Forestry Initiative, or the Swiss Cocoa Platform) and develop concrete and ambitious action plans.
- Develop and invest in agroforestry cocoa production projects (in line with your production landscape), particularly those that restore degraded land and protect ecosystems.
- Re-think your supply chains and invest in projects that guarantee producers a decent income.

Investors

- Stop investments involving deforestation and develop those aimed at restoring degraded lands and plantations (e.g. Land Degradation Neutrality Fund, etc.)

Consumers

- Try to avoid buying processed chocolate products, which generally contain lower quality chocolate likely to be produced in less sustainable ways, and buy environmentally and socially certified chocolate (Rainforest Alliance, Fairtrade, organic etc) wherever possible.

TIMBER, PULP AND PAPER

The timber sector encompasses a wide range of products across six main sectors; fuelwood, furniture, particleboard, plywood, sawnwood, and pulp and paper. These are collectively referred to as 'timber, pulp and paper'.

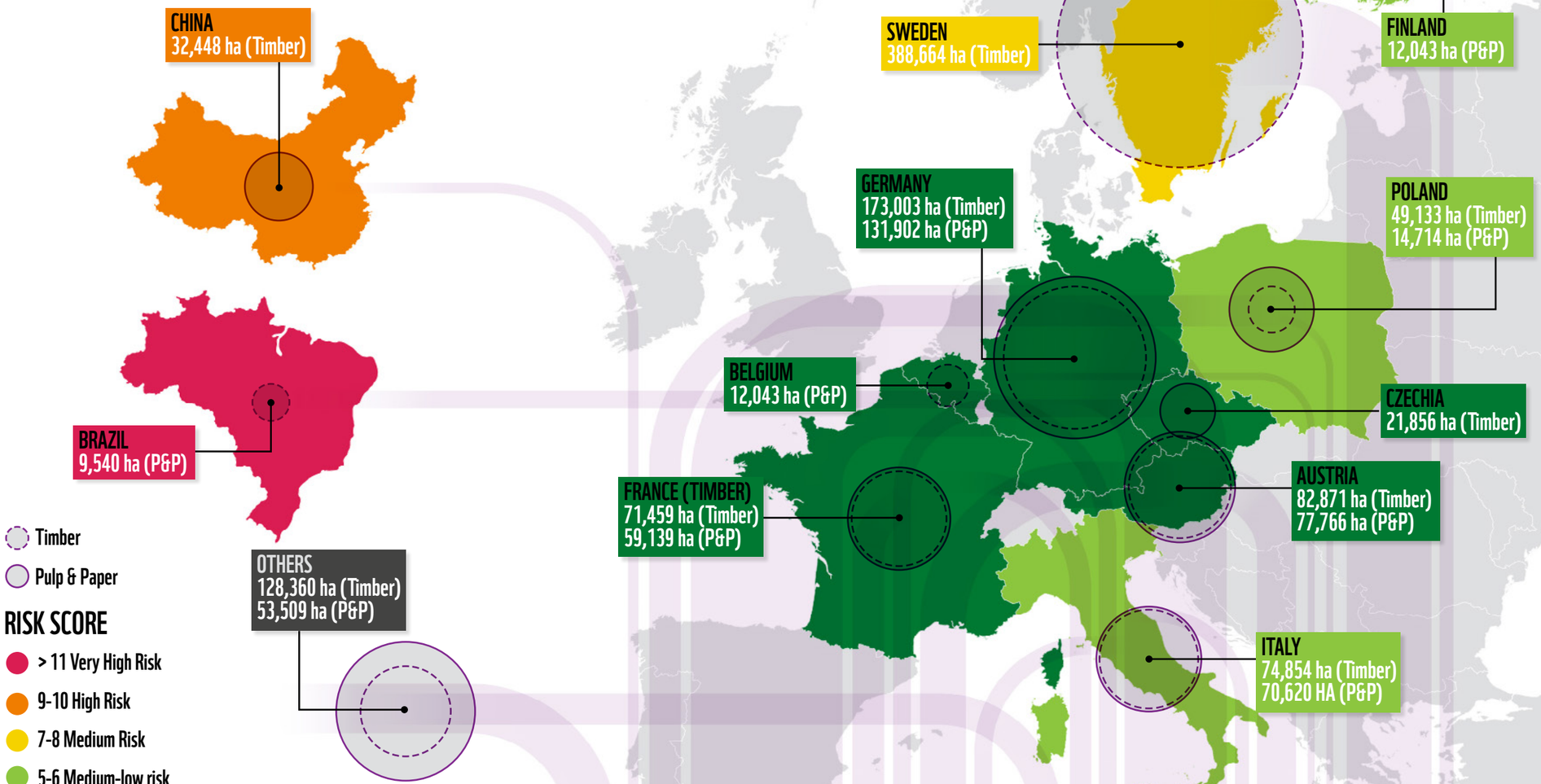
There are two major production systems for timber: plantations and natural forest. The bulk of the world's forest is natural forest, with an estimated 33.75 billion hectares in 2020. Around 30% of the world's forests, 1.15 billion hectares, are designated as production forest, with a further 20% (approximately 750 million hectares) designated as multiple use, i.e., serving multiple functions including timber production. The area of planted forest is an estimated 290 million hectares of plantations[32]. Softwood species dominate global timber trade.

Pulp and paper is used in a wide range of products including books, magazines, stationery, packaging and tissues. It is predominantly produced from cellulose derived directly from pulp grade logs, from wood chips and wood reclaimed from other manufacturing processes (e.g., furniture making), and from recycled paper. There has been a steep rise in the use of recovered and recycled paper in recent decades.

Swiss imports and consumption

Switzerland imported an average of 4.5 million Wood Raw Material Equivalents (WRME m^3) of timber per year between 2015 and 2019, and around 5.2 million WRME m3 of pulp and paper products. Significant categories of timber included furniture (21%), builders joinery and carpentry (17%) and fuelwood (not including charcoal) (11%). The largest categories in pulp and paper imports were paper and paperboard, chemical pulp (10%), toilet paper (6%) and newsprint (5%).

The land required overseas to supply Switzerland's demand for timber was an average of 634,000 hectares per year between 2015-19, equivalent to around 16% of Switzerland's total land area and 51% of its domestic forest area per year. Pulp and paper imports required a further



AVERAGE ANNUAL VOLUME OF IMPORTS

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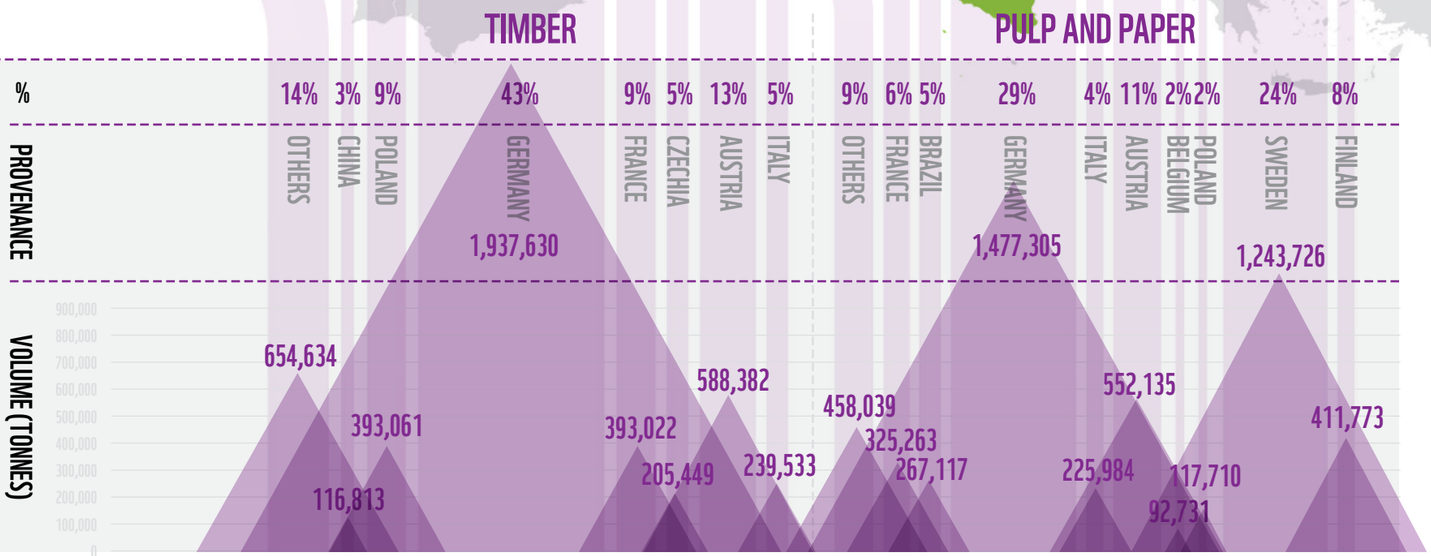


900,000 hectares per year between 2015-19, equivalent to a further 20% of Switzerland's total land area and two-thirds of its domestic forest area per year.

The land footprint for both timber and for pulp and paper appears to have declined over the period, corresponding with decreasing volumes of imports.

The majority of the footprint of Switzerland's imports of timber, pulp and paper was in low and medium-low risk countries. However, the size of the footprint means that the impacts are still important. For timber, source countries included Germany, Austria and France and for pulp and paper they include Belgium, France, Germany, Austria and Italy.

Around 5% of the timber import footprint is from a high-risk country, China. Approximately 43% of the footprint of Switzerland's pulp and paper imports is in Sweden which is medium risk due to the significant extent of the area of forest cover loss in the country. A small volume – 1% - of pulp and paper imports come from a very high-risk country; Brazil.

Impacts and risks

Unsustainable and illegal harvesting of timber has been cited as a major driver of deforestation,[33] forest degradation, habitat destruction, and species loss in some of the most biodiverse and ecologically important places in the world.[34] Whilst the production of commercial timber provides a livelihood for millions of people, it has also been associated with negative social outcomes, including land grabs and forced labour.

Responsible forest management can maintain the ecological and social benefits that forests provide, whilst achieving economic viability and contributing to the national economy of producer countries. The Forest Stewardship Council (FSC) is a well-established certification for sustainably produced wood products covering an area of 200 million hectares of forest globally in 2020[35].

In Switzerland, there are currently no 'due diligence' requirements for timber or wood products[36] which means that beyond the requirement to record the origin and species, importers are not required to do a risk assessment for illegally produced and traded timber[37]. Plans to bring Swiss timber legislation in line with two major pieces of European timber legalisation - the EU Timber Regulation (EUTR) and the EU's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan[38] were endorsed by the Swiss Parliament in early 2020[39].

RECOMMENDATIONS FOR TIMBER, PULP & PAPER

Government

→ Strengthen law enforcement mechanisms and increase control of certificate of origins and species at entry as per the ordinance on the Declaration for Timber and timber products[40].

Companies

→ At a minimum, follow the mandatory Declaration on origins and species, and ensure that the wood purchased has been legally produced.

→ Opt for FSC-certified products or recycled wood and do not purchase wood species that are categorized as threatened by the IUCN.

→ Develop 'cradle to cradle' approaches for wood products, by using recycled wood and ensuring it is recycled at the end of the chain.

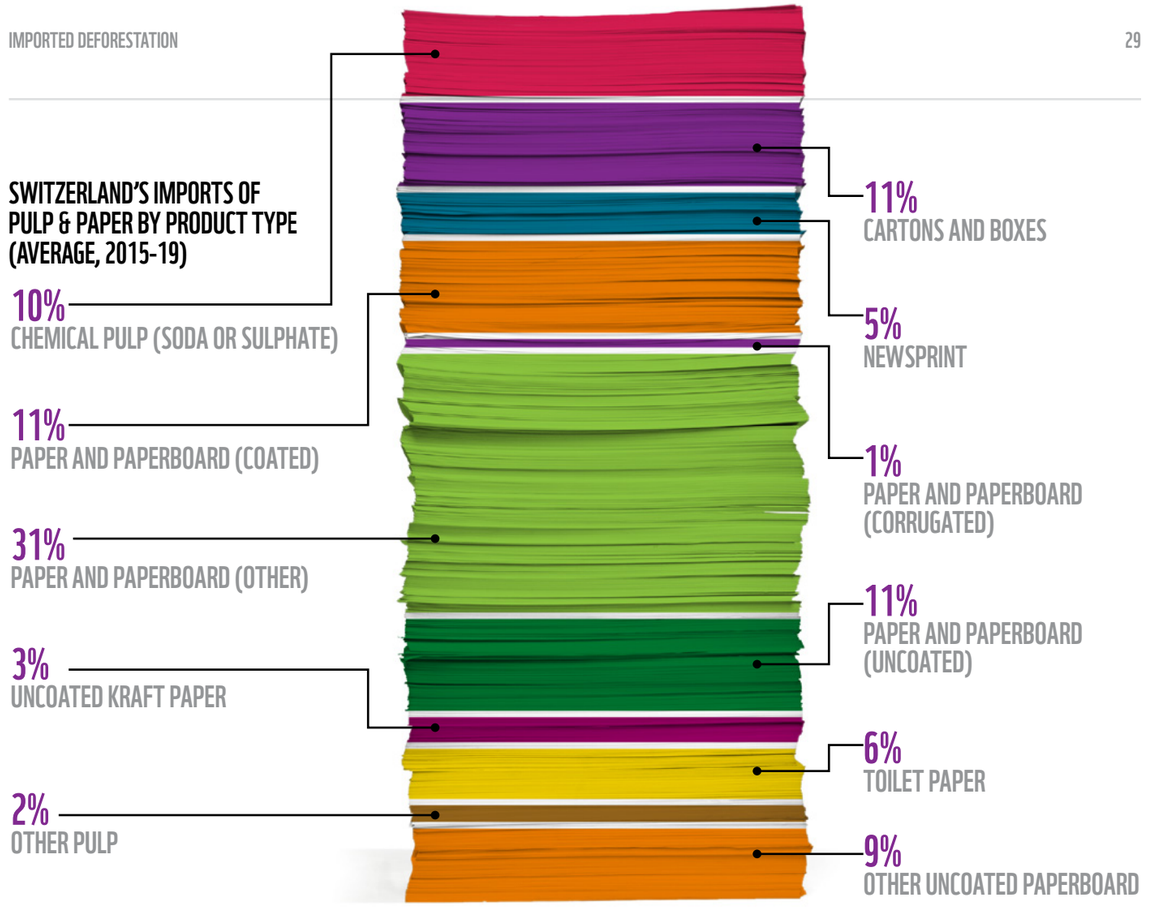
Investors

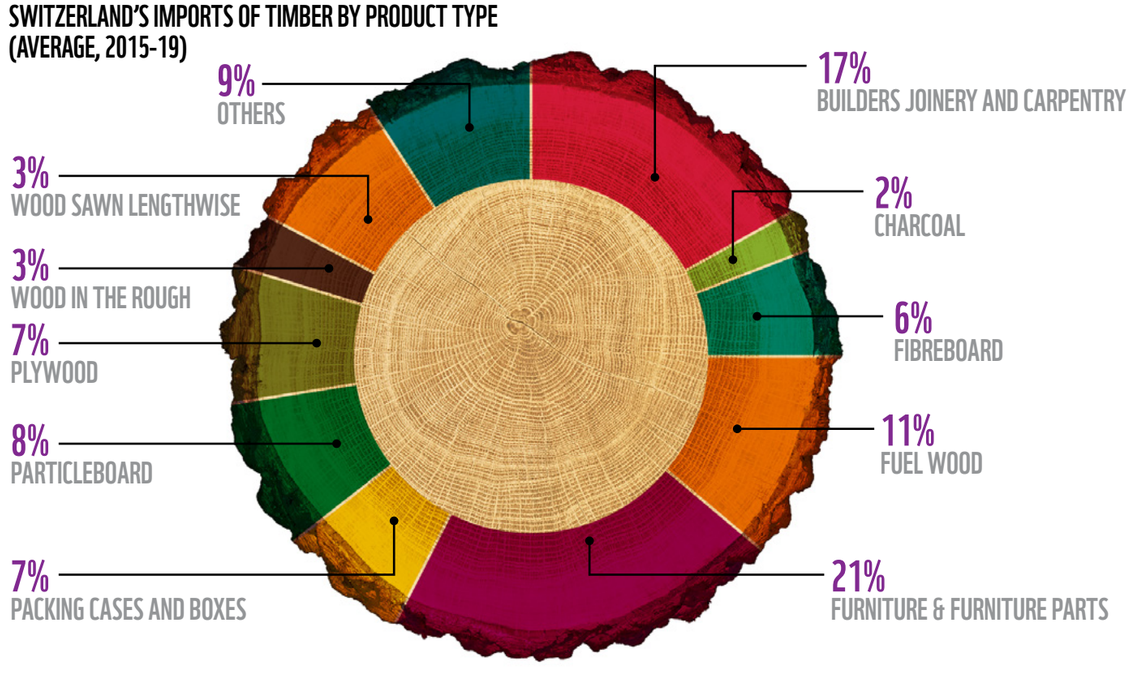
→ Support the development of sustainable forest management by investing in forestry companies to support the towards responsible management and FSC certification and restoration of degraded lands or degraded forests.

Consumers

→ Buy FSC certified wooden products and furniture.

→ Buy recycled or FSC certified fibre or paper products.





COFFEE

Coffee grows on a shrub as coffee 'cherries' which are processed to produce coffee beans.

There are two main varieties of coffee; Arabica (*Coffea arabica*) which accounts for 57% of global production and Robusta (*Coffea canephora*) which comprises 43%.

Coffee is produced primarily around the equatorial belt, where there is an average temperature of 20°C, fertile soil, sufficient amount of rain, and alternating dry and rainy seasons.

Coffee is grown in 80 countries primarily throughout Latin and South America, Central and East Africa, and Southeast Asia. The two biggest producers are Brazil (accounting for 34% of global production) and Vietnam (16%). Approximately 70% of coffee production is by smallholder farmers.

Swiss imports and consumption

The land required overseas to meet Switzerland's demand for coffee was an average of 166,000 hectares per year between 2015-19. The size of this land footprint has increased steadily over the period due to increasing import volumes.

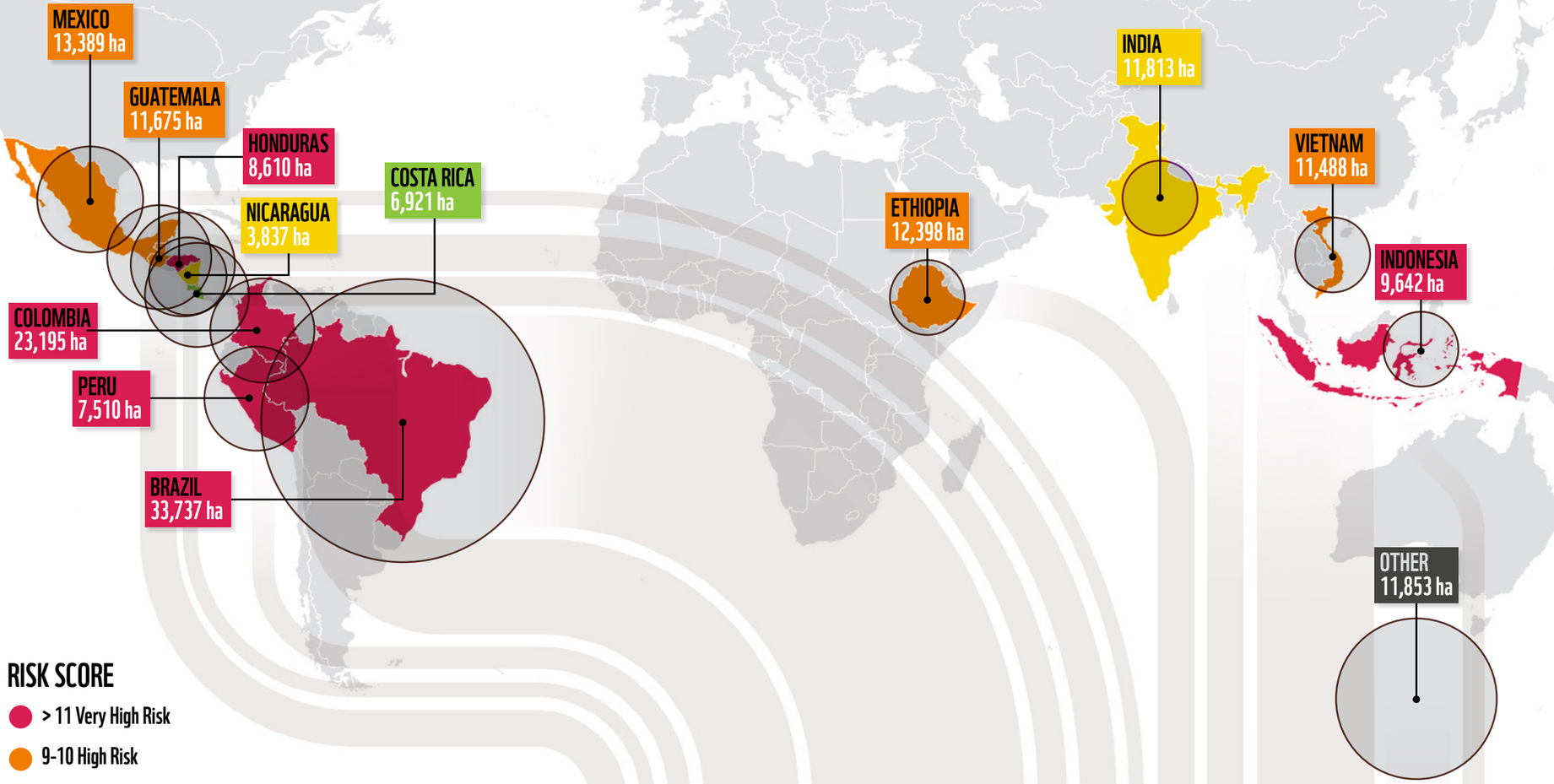
The largest footprint for Switzerland's coffee imports was in Brazil, which accounted for an average of 20% of the footprint area, or 64,000 hectares per year. Compared to other commodities analysed here, coffee is sourced from a high number of countries with 12 countries each accounting for over 2% of Switzerland's imports by volume.

The greenhouse gas emissions from land use changes associated with Switzerland's imports of coffee were an average of 206,000 tonnes CO_2eq per year, which accounts for around 7% of the emissions from the commodities analysed here.

By far the largest proportion of coffee imports to Switzerland, at 82%, is in the form of unroasted coffee and a further 6% is unroasted, decaffeinated coffee.

Around half of Switzerland's coffee imports are consumed domestically. The other half are re-exported, usually after roasting in Switzerland; roasted coffee comprises over 90% of Switzerland's coffee exports. Some coffee is also processed to produce coffee extracts or essences.

Almost three quarters of Switzerland's coffee imports



RISK SCORE

- > 11 Very High Risk
- 9-10 High Risk
- 7-8 Medium Risk
- 5-6 Medium-low risk
- 4 Low Risk

AVERAGE ANNUAL VOLUME OF IMPORTS

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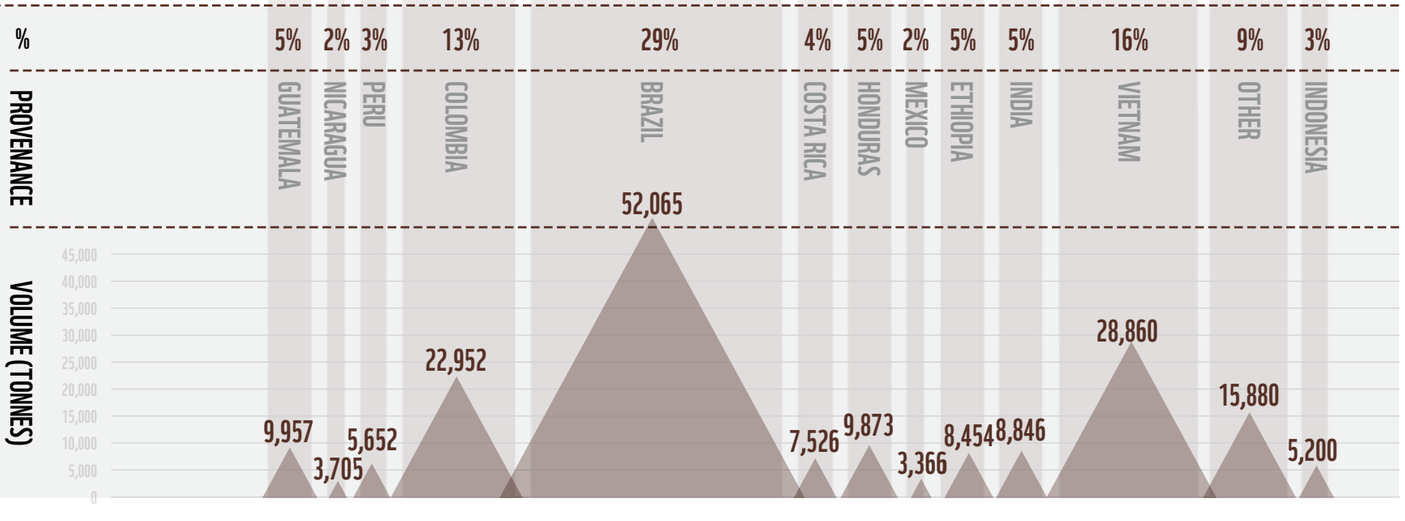


(72%) come from countries rated as high or very-high risk, including Brazil, Colombia, Ethiopia, Guatemala, Indonesia, Honduras, Mexico and Peru. Furthermore, none of Switzerland's coffee imports come from low risk countries.

Switzerland's share of the global coffee production area is notably high (2%) when it is considered that Switzerland accounts for just 0.1% of global population.

Impacts and risks

Coffee was traditionally grown under shade trees which shield the coffee bushes from sunlight and pests. However, there has been a move since the 1970s towards higher-yielding open-sun production which entail increased rates of forest clearance. There is evidence that in countries where coffee production is expanding, including Vietnam and Ethiopia, this expansion is being achieved through deforestation.

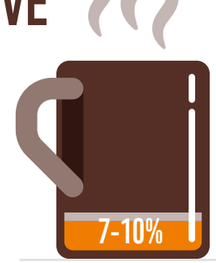
Coffee yields are predicted to be negatively affected by climate change. In combination with increasing consumer demand for coffee globally, there is therefore the risk that deforestation will increase.

There are significant social and economic issues around coffee production. Global coffee prices have fallen since the 1980s and the proportion that producers receive is estimated to be only 7-10% of the value of a cup of coffee[41]. In combination with low and declining yields, this means that the livelihoods of coffee farmers are threatened.

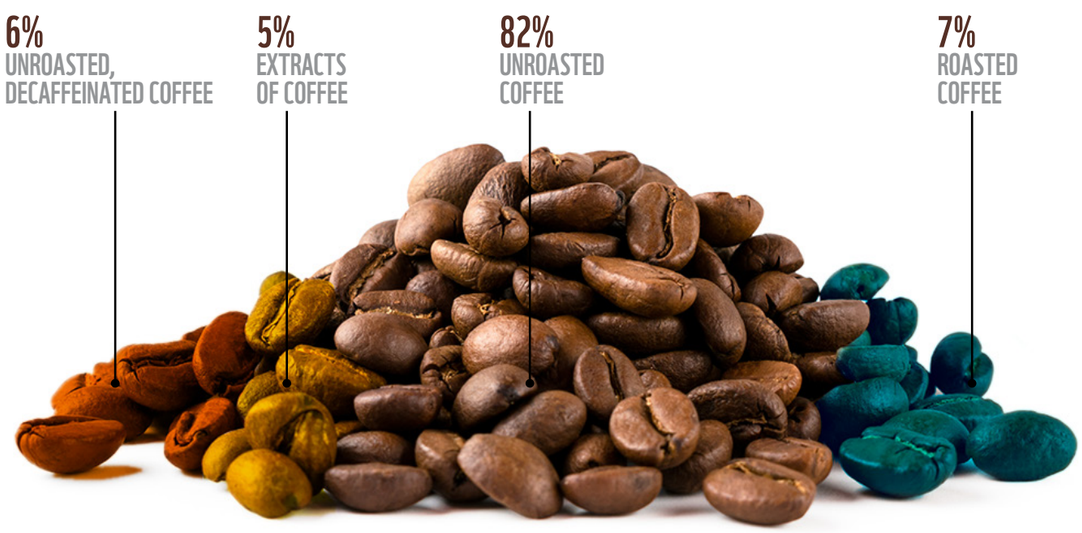
There have also been reported cases of forced labour and child labour in coffee production. Companies including Nestlé and Jacobs Douwe Egberts have acknowledged instances where their coffee has been purchased from plantations where forced labour has been found.

Certification of coffee is well-established and growing; the certified area of coffee production increased by almost 80% between 2011-18. The most common standards are the 4C code, Fairtrade, Rainforest Alliance, UTZ and organic which together covered an estimated 22% of the global coffee area in 2017. Private corporations, including Nespresso and Starbucks, also have their own standards and global initiatives such as the Global Coffee Platform (GCP) and the Sustainable Coffee Challenge (SCC) aim to coordinate action on improving the sustainability of coffee. Nevertheless, smallholders face significant challenges to achieving certification under these schemes.

THE PRICE THAT PRODUCERS RECEIVE IS ESTIMATED TO BE ONLY 7-10% OF THE VALUE OF A CUP OF COFFEE



SWITZERLAND'S IMPORTS OF COFFEE BY PRODUCT TYPE (AVERAGE, 2015-19)



COFFEE YIELDS ARE PREDICTED TO BE NEGATIVELY AFFECTED BY CLIMATE CHANGE. IN COMBINATION WITH INCREASING CONSUMER DEMAND FOR COFFEE GLOBALLY, THERE IS THEREFORE THE RISK THAT DEFORESTATION WILL INCREASE.

SUGAR CANE

Sugar cane (*Saccharum officinarum*) is a tall perennial member of the grass family, which grows as thick stems of around 3-6m tall. It is thought to originate in New Guinea but is now cultivated in more than 70 countries, mostly in the tropics[42].

Sugar cane production has increased from 1.23 billion tonnes in 1995 to 2.02 billion tonnes in 2018. Brazil and India have remained the biggest producers, together accounting for 56% of global sugar cane production in 2018.

Although the main use of sugar cane is for sugar, other uses include alcohol, bioplastics and cosmetics. Increasingly, sugar cane is used as a feedstock for ethanol biofuel production, an alternative to fossil fuels. This is particularly the case in Brazil. Sugar mills are able to quickly shift between sugar and ethanol production in response to global demand and market prices.

Swiss imports and consumption

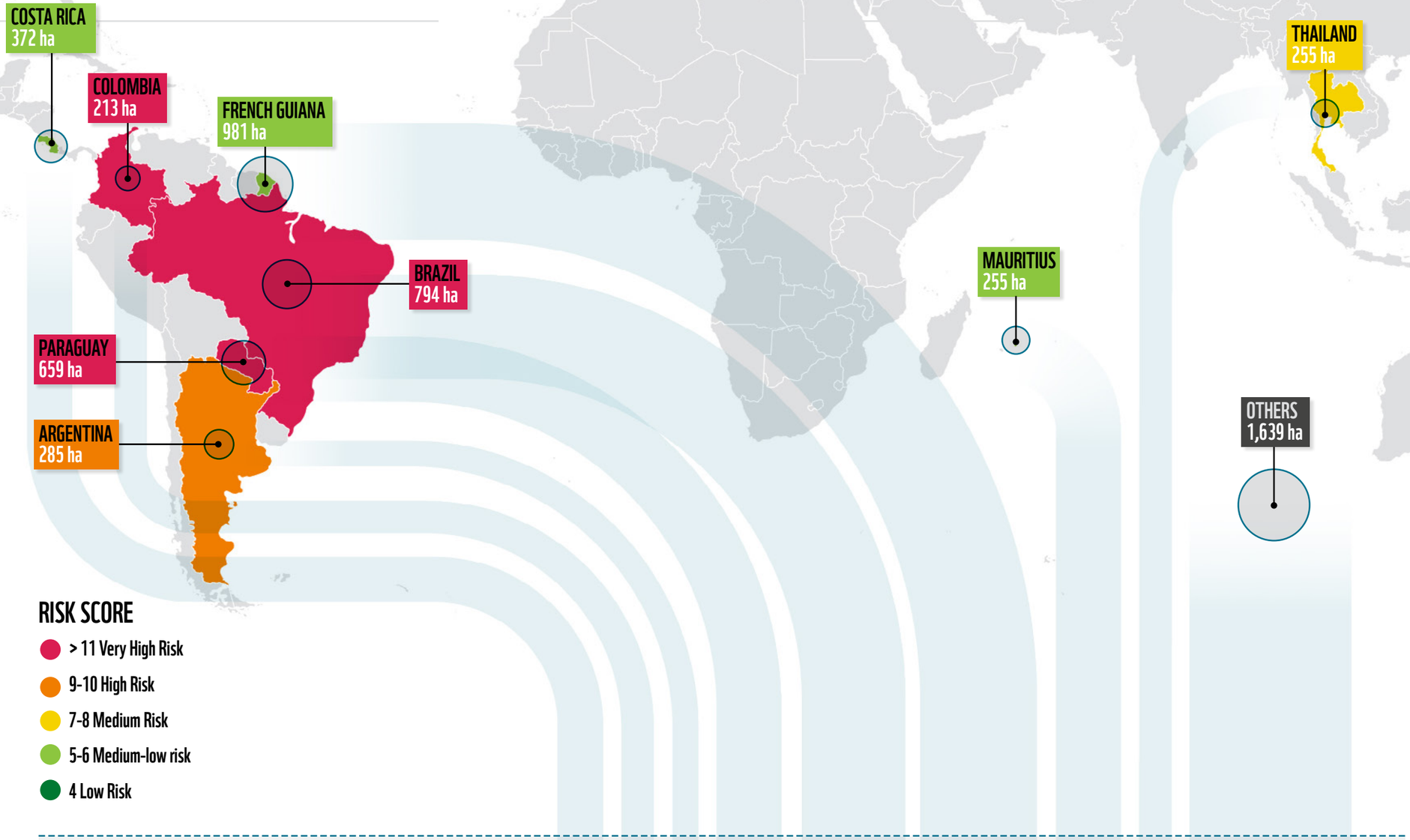
Switzerland imported an average of 35,000 tonnes of sugar cane on average between 2015-19. The largest proportion was in the form of sucrose, which comprised nearly 40% of imports per year. Raw sugar cane accounted for the next largest proportion at 18%.

Import volumes have fluctuated over the period and show no clear upward or downward trend, except for an apparent slight decrease in 2017 when the end of the EU sugar quota led to very low prices for European sugar beet.

The land required overseas to supply Switzerland's demand for sugar cane was an average of 5,700 hectares per year for 2015-19. The biggest footprint is in French overseas territories which accounted for 17% of the footprint per year on average.

Greenhouse gas emissions associated with the production of Switzerland's imports of sugar cane were an average of around 19,000 tonnes CO_2eq per year, around 1% of the emissions associated with the agricultural commodities analysed here.

One third of the sugar cane footprint was in high or very-high risk countries including Brazil, Colombia and Argentina. Other imports come from Thailand (medium risk) and Costa Rica, French Guiana and Mauritius (all medium-low risk).



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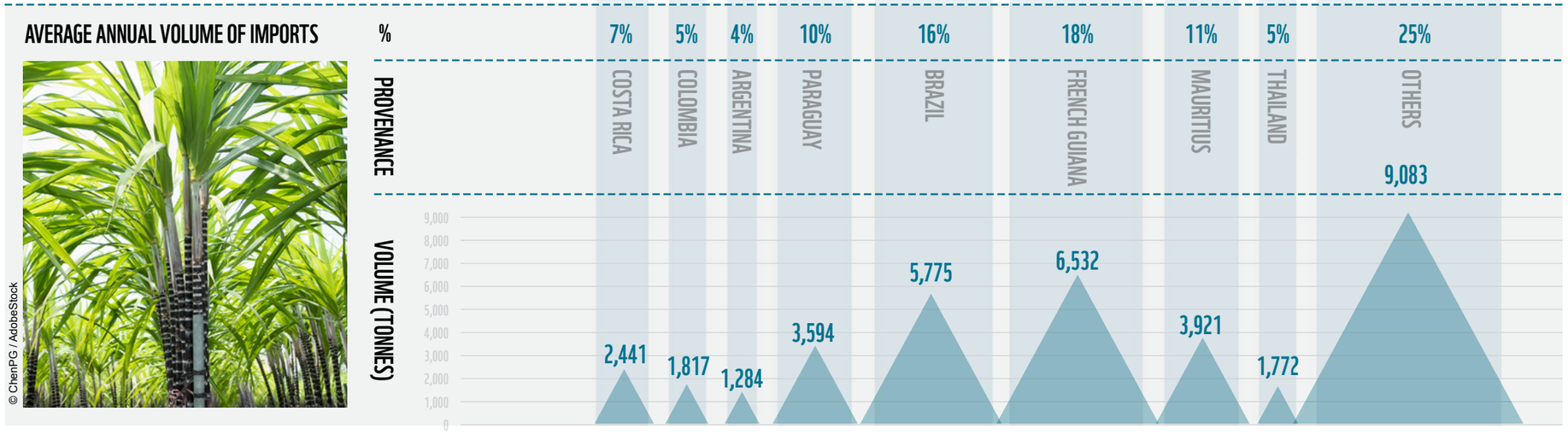


Impacts and risks

Sugar cane is grown in several countries with valuable and biodiverse habitats including tropical forest. However, evidence suggests that, at least in Brazil, expansion of sugar cane plantations has generally been onto pastureland or existing cropland, rather than into forest land. There is still the risk, however, that the displacement of existing production may lead indirectly to the clearance or conversion of habitats.

Other environmental impacts of sugar cane production include depletion of water sources; sugarcane is a water intensive crop and around half of all sugarcane globally is irrigated, requiring around 1,600 litres of water to produce 1kg of sugar[43,44].

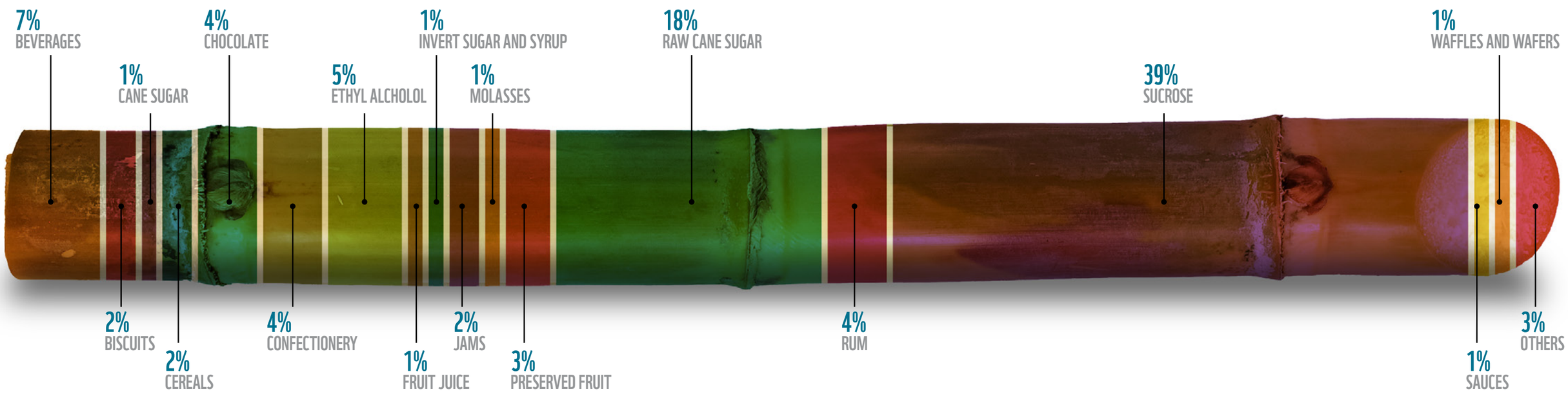
Sugarcane production is particularly associated with a number of social issues. Although it is a source of rural employment providing an estimated 100 million livelihoods, the prices received by producers are very low and volatile[45]. The particular complexities and distortions of sugar pricing mean that standards such as Fairtrade are also not able to guarantee a minimum price for sugar[46]. Consequently, there is significant poverty amongst sugar cane producers.

There are also incidences of forced and child labour and the US Department of Labour lists 13 countries including India, Thailand, Colombia and Mexico where sugarcane production is found to involve child labour.

Certification of sugar is relatively well-established and, after the UK and Germany, Switzerland is one of the most important markets in Europe for Fairtrade cane sugar, and particularly organic Fairtrade cane sugar[47]. However, certifications cover only 7-9% of global sugar cane production and the transparency and traceability of the supply chains remains very low.

SUGAR CANE REQUIRES AROUND 1,600 LITRES OF WATER TO PRODUCE 1KG OF SUGAR

SWITZERLAND'S IMPORTS OF SUGAR CANE BY PRODUCT TYPE (AVERAGE, 2015-19)



COCONUT

Coconuts grow on coconut palms in tropical regions within 20 degrees of the equator.

Today, coconuts are grown in more than 80 countries across Asia, Africa, America and Oceania[48]. It is estimated that up to 90% of coconut production is on smallholder farms of less than 4ha[49] although plantations also exist.

Coconuts are widely used in products ranging from coconut milk and cream to confectionary, cosmetics and homewares. Global demand for coconut products has grown rapidly over recent years and is projected to grow at an average of 13% from 2019 to 2026[50]. In particular, global demand for coconut water – thanks to perceptions of it as a 'super food' – and for coconut milk as a dairy alternative have expanded hugely.

However, coconut production in many of the major producing countries has stagnated due to the aging of coconut palms beyond peak productivity as well as the impact of pests and diseases.

Swiss imports and consumption

Switzerland imported an average of 67,000 tonnes of coconuts per year between 2015-19. By far the largest proportion – 60% - was in the form of coconut oil, followed by soap (11%).

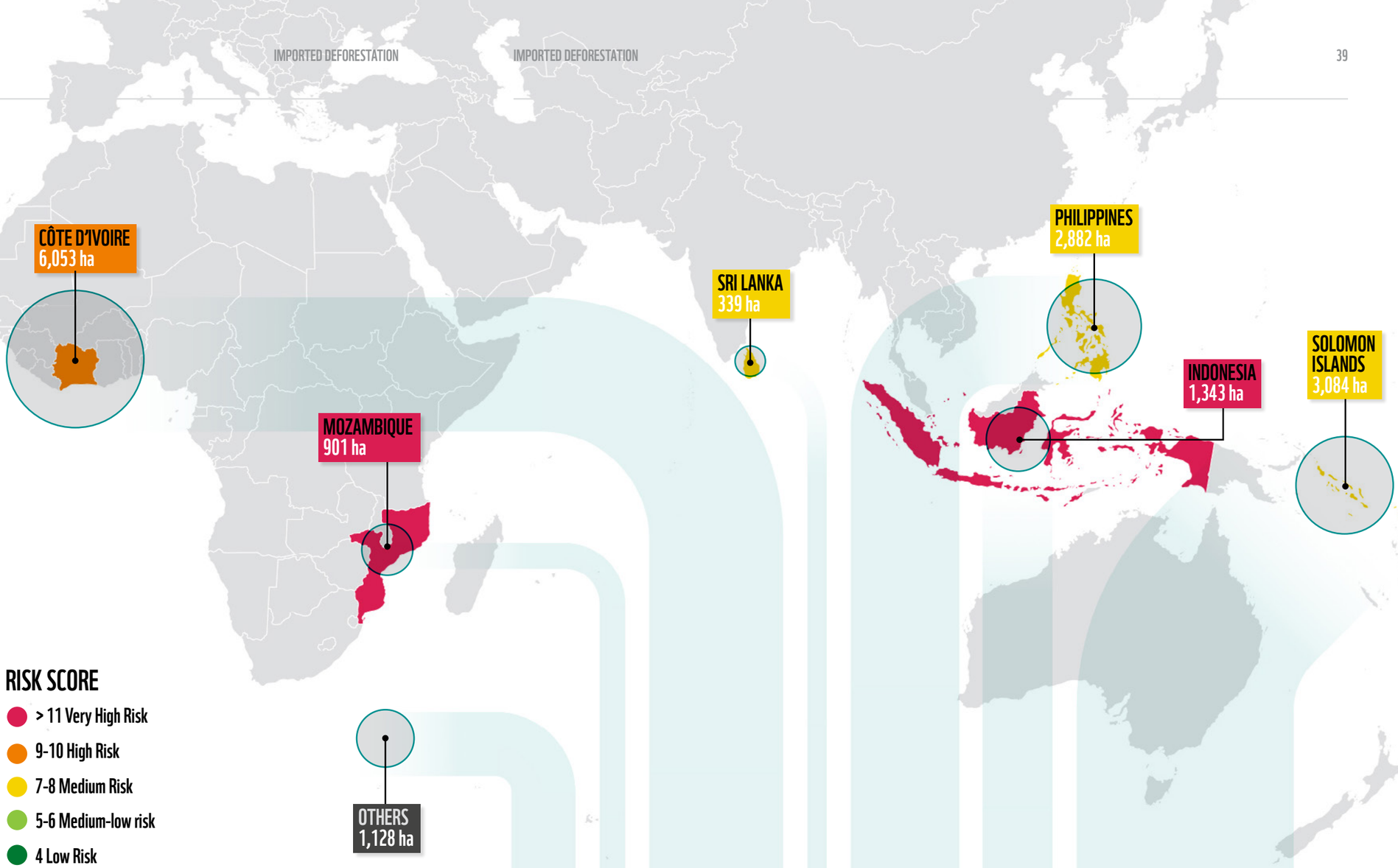
In line with the rapid increase in demand for coconuts globally, coconut imports to Switzerland have increased significantly over the period, by around 15%.

The main source countries for coconut imports to Switzerland were the Solomon Islands (34% of imports by volume) and Côte d'Ivoire (21%).

The land required overseas to supply this demand was an average of 16,000 hectares per year between 2015-19. The largest footprint is in Côte d'Ivoire, which accounted for an average of nearly 40% of the footprint of Switzerland's coconut imports per year, due to a combination of the scale of demand and very low yields per hectare.

Associated greenhouse gas emissions for Switzerland's imports of coconuts were around 26,000 tonnes CO_2eq per year which is less than 1% of the emissions across the commodities analysed here.

Over half – 53% - of the coconut import footprint was in countries rated as high or very-high risk for deforestation



AVERAGE ANNUAL VOLUME OF IMPORTS

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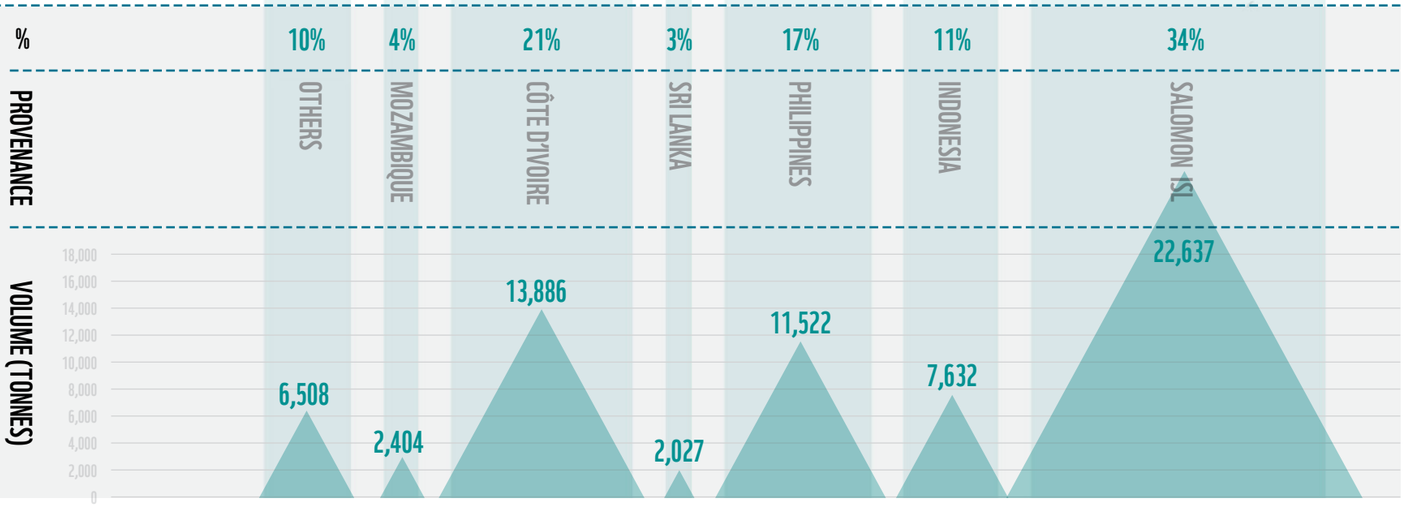

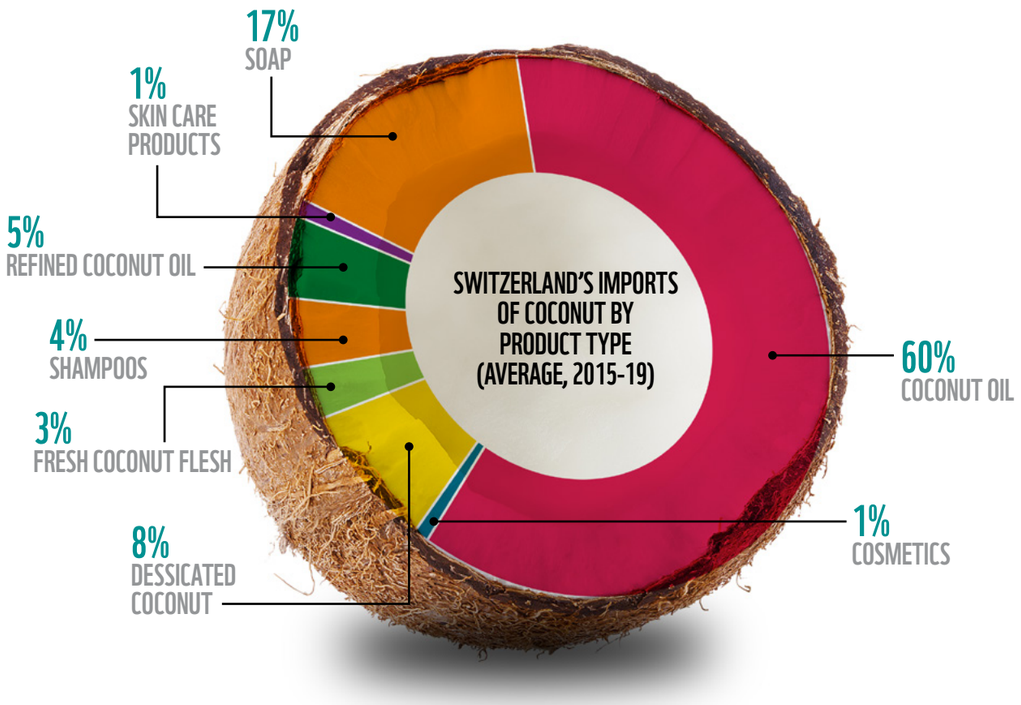

including Indonesia, Mozambique and Côte d'Ivoire.

Impacts and risks

Most of the global production of coconuts occurs in tropical island nations. Many of these areas were forested in the past and supported high levels of biodiversity but have experienced significant forest clearance, with some evidence that expanding coconut plantations has been amongst the drivers[51]. Declining yields creates an increased risk of the expansion of coconut production into forested areas.

There are also social issues involved in coconut production. Incomes from coconut farming are very low and the majority of the 3.5 million coconut farmers in the Philippines live below the poverty line, earning less than $1 per day[52]. Low incomes encourage the use of unpaid or child labour and coconut production is listed on the US Department of Labour's list of goods produced by child labour or forced labour in the Philippines, which is the second largest producer of coconuts globally[53,54].

There is so far very limited certification of coconuts. Since 2013, Fairtrade have provided certification for whole coconuts, but do not currently certify any processed forms[55]. There have been only a few other small-scale efforts to date, most of which involve only a small number of producers and buyers.

There is significantly less reporting to date on the sustainability of coconuts compared to other commodities analysed here. However, with rapidly increasing global demand, action is critical. Several companies headquartered in Switzerland are beginning to include coconuts in their sustainable sourcing policies, including Barry Callebaut[56], Nestlé[57] and Florin AG[58]. This could create a potential market for certified sustainable coconuts but, as yet, there are no broad supply chain certifications for coconut products.

GLOBAL DEMAND FOR COCONUT PRODUCTS HAS GROWN RAPIDLY, IN PARTICULAR, COCONUT WATER – THANKS TO PERCEPTIONS OF IT AS A 'SUPER FOOD'

OVERVIEW OF METHODOLOGY

The method used in this report was developed by consultancy 3Keel, using publicly available data sources. It is intended to be replicable to allow the data to be compared year by year, and across different commodities and countries. The precise method used to calculate imports and the land required to supply them varies to some extent from commodity to commodity, depending on production process, use and data availability. Full details are available in the technical report that can be downloaded at: www.wwf.ch/de/stories.

There are limitations to this analysis, which we set out below. Even so, this approach allows an adequate estimation of the magnitude of the impacts to then offer recommendations for further action.

Imports and land footprint

For all commodities, data from UN Comtrade was used to quantify imports (net weight of imports) for the period 2015-19. Data was collected for:

- Raw materials (e.g. palm oil, soy meal).
- Commodities that are part of, or an ingredient in, imported manufactured goods (e.g. cocoa in chocolate).
- Commodities 'embedded' within imported products as part of the production process (e.g. soy meal used in pig feed and hence 'embedded' in imported pig meat).

Many commodities are used in thousands of different products; this analysis was confined to product categories that are cited in the literature as being major uses of the commodity. This means that the figures in this report are likely to be underestimates. Where a commodity is imported as an ingredient or is embedded, the weight of imported goods was adjusted to an estimated weight of the commodity using a mid-range conversion factor derived from published literature.

Working out the country of production

It is not straightforward to work out where Switzerland's imported commodities were originally grown. The first step was to take the direct country of origin for imports to Switzerland as reported in UN Comtrade data. Swiss imports from these exporter countries were then assumed to come from the countries that supplied that country in the same proportion e.g. imports of cocoa into Switzerland from France (which does not grow any cocoa domestically) were re-assigned to the countries supplying cocoa to France, in the same proportions.

Land footprints for agricultural commodities were estimated from the reported yield across the area under cultivation for each commodity for a given country and year, as recorded in the FAO STAT database.

Yields can vary considerably based on production systems as well as climatic conditions. These differences can mean that the Swiss footprint may decrease even as import volumes go up, for example due to a good harvest year, or a switch in buying patterns to countries with higher yields.

For pulp and paper and timber, yield was based on the net annual increment[59] for the forest in the country.

Risk rating

Having derived a minimum estimate of the provenance of Switzerland's imports and the associated land footprint, this study explored the potential risks linked with imports from these countries. We didn't include all countries in the risk analysis; only countries that account for at least 2% of the volume imported into Switzerland were included.

Using cut-off criteria allowed us to focus on countries where production for the Swiss market has a significant land footprint, rather than a larger number of countries with very small production areas. We used four indicators to explore deforestation and key social and governance risks (see table).

For each producer country the criteria were scored and added to give a total out of 12. These were then allocated to five categories: very high risk (total score of 11 or more), high risk (9-10), medium risk (7-8), medium-low risk (5-6) and low risk (4 or less). Being based on national-level datasets, these represent the generic level of risk, not the risk specific to a commodity or the part of the country it may be sourced from. It also represents an unmitigated level of risk i.e. before any action may have been taken to ensure that production destined for Switzerland is not directly linked to deforestation or social challenges.

It is important to recognise that the limited traceability of supply chains means that the large majority of Swiss imports can't be traced back to specific locations or risks. The risk of a commodity being associated with deforestation or social and governance problems can vary considerably within a country or between different production systems.

The risk-based approach doesn't specify any direct link or cause from Swiss imports and consumption to impacts in producer countries. It also uses risk factors covering the same period as production, which may not be a reliable indicator of the risks associated with future imports. Despite its limitations, the risk-based approach highlights the need for Swiss actors to manage their potential risk of creating negative impacts overseas.

Deforestation is a complex, non-linear process by which land may be degraded or converted for other purposes before becoming productive agricultural land. The authors argue that it is therefore not necessarily valid to link Swiss demand directly to changes in the area of land used for a particular commodity in a particular country, though the large scale of demand from a high-value market can clearly create incentives to increase production.

Limitations

Generating results across eight commodities and the numerous supplying countries involved is a highly complex task. Throughout this report, a conservative approach was used, adopting first-order estimates and indicating where assumptions have been made. This means that the figures presented are likely to underestimate total Swiss consumption and overseas land footprint.

Data challenges and assumptions adopted for the analysis

Lack of reliable, consistent and up-to-date evidence on social and environmental impacts.
The method used can only estimate footprint and risk at a country level, which may overlook important localised impacts. We recognise the limitations of this, given the potential for variation within countries and in specific commodity-production systems.

Complex/long supply chains.
Tracing back to country of production wasn't attempted if via more than one intermediary. Estimates for original country of production are based on balance of imports and domestic production in the country exporting directly to Switzerland.

'Hidden' commodity use.
Use of a commodity during production, where it doesn't form part of the final product – e.g. timber in producing smoked fish – is impossible to trace accurately and is excluded from the analysis.

Poor data on typical commodity use in products.
The volume of a commodity 'embedded' in finished products varies significantly. Only significant uses could be included, so the figures are likely to be underestimates e.g. small amounts of palm oil may be embedded in a huge range of additional products beyond those that could be analysed.

Variability in production systems complicates footprint.
Converting import volumes/weight to land footprint is based on agricultural yield data. These vary year-by-year, across and within countries. Changes in Switzerland's overseas footprint could result from changes in yield or buying patterns, as well as from changes in level of Swiss consumption.

Lack of publicly published data on Switzerland's imports of certified commodities.
We hoped to understand what actions are being taken to mitigate risk in supply chains through the use of independently-certified sustainable products. For many commodities, no data is available on the proportion of certified imports.

Risk Factor	Description	Rationale	High Risk	Medium Risk	Low Risk
Deforestation extent	Area of forest cover loss 2015-19 (GFW)	Amount of deforestation	≥ 1M Ha	500k to 1m Ha	<500k Ha
Deforestation rate	% natural forest loss 2010-15 (FAO)	Rate of deforestation	≥1%	0.1% to 1%	≤0%
Rule of law	World Bank Rule of Law score (World Bank)	Perceptions of how good laws are and how well they are implemented	<-0.3	-0.3 to 1	≥1
Labour rights	Labour standards score (ITUC)	Perception of how well basic labour rights are implemented	4-5	2-3	=1

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