

Risky Business has been co-produced by WWF and RSPB to summarise new research investigating the global impact of the UK's commodity needs. The report helps quantify the overseas footprint linked to the UK's import of seven key commodities: beef and leather, cocoa, palm oil, pulp and paper, rubber, soy, and timber.

The report provides key insights into which countries have high social and deforestation risks. A series of recommendations are proposed for the UK government, businesses and citizens, so that we can help meet shared international commitments to reduce deforestation and promote sustainable development.



WORKING  
TOGETHER TO  
UNDERSTAND  
RISKS TO NATURAL  
CAPITAL



giving  
nature  
a home



Understanding the UK's overseas footprint  
for deforestation-risk commodities







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## 3keel

This report summarises the findings of original research undertaken by 3Keel, commissioned by WWF and RSPB:

### DEFORESTATION AND SOCIAL RISKS IN THE UK'S COMMODITY SUPPLY CHAINS

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Visit [wwf.org.uk/riskybusiness](http://wwf.org.uk/riskybusiness)

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**International trade can have positive impacts: generating shared prosperity, jobs and growth that can help improve livelihoods around the globe. But it can also have negative impacts on societies, economies and ecosystems.**

It is estimated that commercial agriculture accounts for almost three quarters of the destruction of tropical rainforests.<sup>1</sup> This has huge impacts on people and wildlife as well as on carbon storage. The UK – as the world’s fifth largest economy – is a major importer and consumer of seven commodities often linked with this loss of forest and the associated social challenges: beef and leather, cocoa, palm oil, pulp and paper, rubber, soy, and timber. The nature of UK trade in these commodities will therefore have a significant bearing on the ability to achieve the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

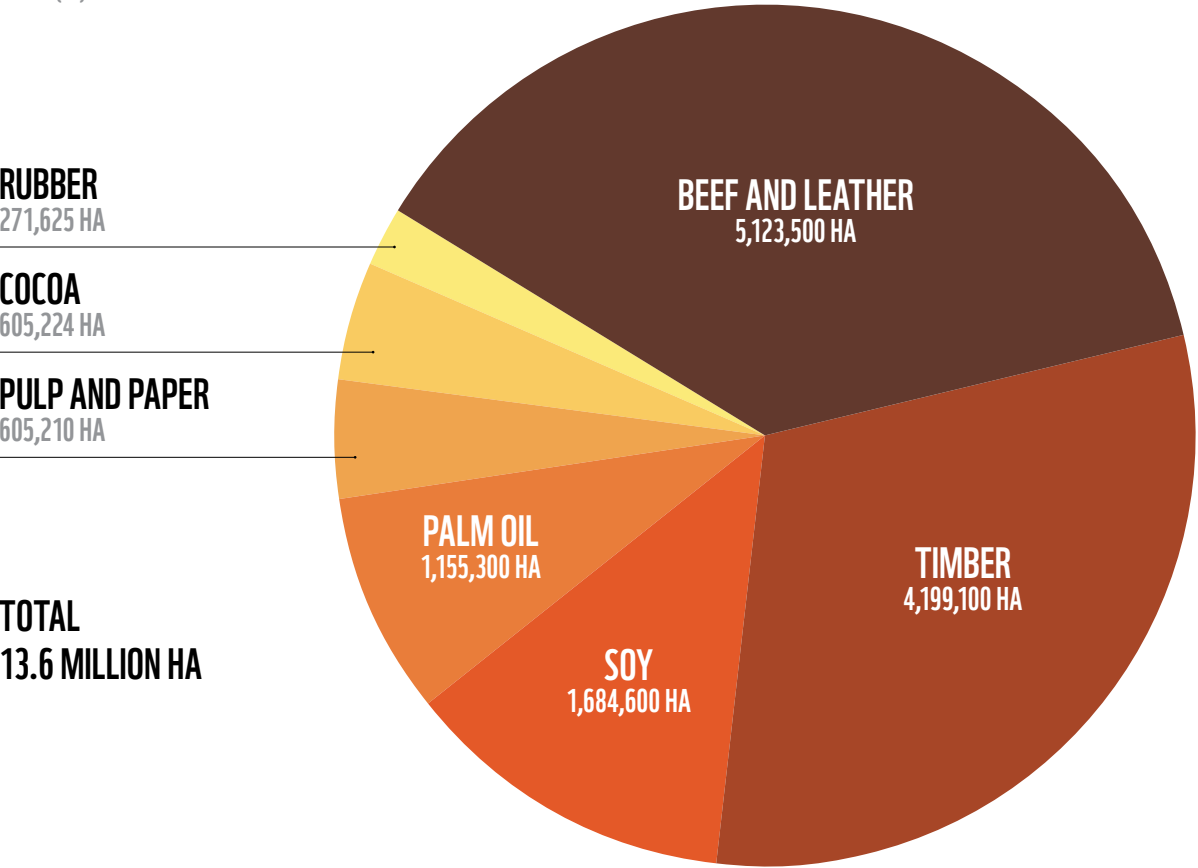
The UK government and a number of key UK business actors are well aware of the challenges. Many companies have demonstrated their commitment to tackling global deforestation, by setting voluntary, time-bound goals for achieving deforestation-free supply chains either individually or through groups such as the WWF Global Forest and Trade Network, Consumer Goods Forum and the Tropical Forest Alliance 2020. Businesses and the UK government have committed to international initiatives including the New York Declaration on Forests (2014) and the Amsterdam Declaration on Sustainable Supply Chains (2015). Yet despite high level commitments and initiatives, deforestation persists; so do the many social and environmental risks it brings.

In this report, we help to quantify the scale of the potential overseas impact linked to the UK’s import of seven key agricultural commodities. We intend that this will act as a focus for current and future efforts to tackle deforestation risks linked to these imports. In the report, we estimate the total land footprint associated with the UK’s imports between 2011 and 2015. We identify the countries affected and the risk that the trade is contributing to deforestation. We then recommend actions that the UK government, businesses and citizens can take to help meet shared international commitments to reduce deforestation and promote sustainable development.




1 Lawson, S (2014) Consumer Goods and deforestation: An analysis of the extent and nature of illegality in forest conversion for agriculture and timber plantations.  
[http://www.forest-trends.org/documents/files/doc\\_4718.pdf](http://www.forest-trends.org/documents/files/doc_4718.pdf)

**THE FOOTPRINT DEMONSTRATES THAT THE UK ECONOMY IS DEPENDENT ON HUGE AREAS OF OVERSEAS LAND TO SUPPORT OUR LIFESTYLES.**

FIGURE 1:  
**AVERAGE TOTAL ANNUAL FOOTPRINT PER COMMODITY, 2011-15**  
ALL FIGURES IN HECTARES (HA)



	AVERAGE ANNUAL IMPORTS AND FOOTPRINT 2011-15	RISKS	NOTES
<b>BEEF AND LEATHER</b> 	<p>Each year the UK imports an estimated <b>400,000 TONNES OF BEEF AND 57.5 MILLION SQ METRES OF BOVINE LEATHER.</b></p> <p>The average land footprint for beef and leather is estimated at <b>5.1 MILLION HECTARES</b> – or half the area of Iceland.</p>	<p>We produce almost 80% of our own beef in the UK. But beef and leather still cause our highest land footprint overseas – by far. This huge land requirement is due partly to very extensive (or low density) production systems in some countries.</p> <p>We import beef and leather from a large number of countries, including several where there's a high risk of deforestation and social challenges.</p>	<p>Data availability is particularly challenging for beef and leather production and trade.</p> <p>Various efforts are being made to improve sustainability and transparency of production, but no widespread certification standard exists.</p>
<b>COCOA</b> 	<p>Each year on average, the UK imports almost <b>550,000 TONNES OF COCOA.</b></p> <p>To meet this demand requires <b>600,000 HECTARES.</b> That's around 6% of the global land area harvested for cocoa in 2013.</p>	<p>Côte d'Ivoire increasingly dominates UK cocoa imports. They accounted for more than 80% in 2015.</p> <p>Yields are higher in Côte d'Ivoire than in other cocoa-producing countries. This helps to reduce the land footprint. But there are high risks of deforestation and social challenges in the country.</p>	<p>Cocoa certification schemes are fairly well advanced and cover more than 20% of global production. A new partnership to tackle deforestation in cocoa supply chains – the Cocoa &amp; Forests Initiative – was launched in March 2017.</p>
<b>PALM OIL</b> 	<p>Each year on average, the UK consumes <b>1.1 MILLION TONNES OF PALM OIL.</b></p> <p>This includes oil 'embedded' in other imported products, such as soap.</p> <p>The estimated land area required to satisfy this level of palm oil consumption is <b>1.16 MILLION HECTARES.</b></p>	<p>Palm oil and its derivatives are used in a huge variety of products, and it's often impossible to trace the source of the 'embedded' palm.</p> <p>Nearly two-thirds of our palm oil is from high-risk countries – Indonesia and Malaysia.</p>	<p>RSPO certification can help to mitigate risks and is now widely adopted by large UK companies when they source palm oil.</p> <p>The UK National Statement on Sustainable Palm Oil has improved market penetration of credibly certified palm oil and increased transparency. But the commitment only covers around 40% of the total UK import volume, once derivatives and embedded palm oil are considered.</p>
<b>PULP AND PAPER</b> 	<p>On average, the UK imported <b>10.3 MILLION TONNES OF PULP AND PAPER</b> a year between 2011 and 2015.</p> <p>It takes approximately <b>600,000 HECTARES</b> to produce this.</p>	<p>Only 70,000 hectares of this footprint comes from high-risk countries. Of the rest, the largest amount is from Sweden and the US, but Finland and China are also significant.</p>	<p>Certification schemes used for timber production can be used for pulp and paper. Additional schemes exist for recycled material.</p> <p>There is limited transparency on the proportion of UK pulp and paper imports that are certified sustainable or made from recycled material.</p>

	AVERAGE ANNUAL IMPORTS AND FOOTPRINT 2011-15	RISKS	NOTES
<b>RUBBER</b> 	<p>Every year, the UK imports almost <b>370,000 TONNES OF NATURAL RUBBER</b> as raw materials and embedded in goods such as vehicle tyres.</p> <p>The estimated area required to produce this is <b>270,000 HECTARES</b> – or around 2.7% of the global harvested area in 2013.</p>	<p>Imports are largely from traditional rubber-producing countries in Asia: China, Indonesia, Malaysia, Thailand and Vietnam. Imports from Côte d'Ivoire increased rapidly between 2011 and 2015 – from 4% to 18% of the total.</p> <p>With the exception of Thailand, all these countries are rated high risk. They account for 69% of our imports in this sector.</p>	<p>There is currently no independent, third-party verification certification system specifically for natural rubber. But rubber plantations can be FSC certified, and rubber can be a non-timber forest product from FSC-certified forests.</p>
<b>SOY</b> 	<p>Every year the UK consumes around <b>3.3 MILLION TONNES OF SOY.</b></p> <p>Over 75% of this is related to our consumption of livestock.</p> <p>Meeting this demand requires an estimated <b>1.68 MILLION HECTARES</b> of land. This is just under 1% of the global area of soy cultivation from 2011-14.</p>	<p>77% of UK soy imports come from high-risk countries: Argentina, Brazil and Paraguay.</p> <p>Brazil's soy moratorium had a major impact on breaking the cycle of deforestation and soy expansion in the Amazon. But it has increased the pressure on the Cerrado biome.</p>	<p>RTRS or ProTerra certification could ameliorate risks, but currently they account for only around 2% of global production.</p>
<b>TIMBER</b> 	<p>There's been a rapid growth in UK annual timber imports – from an average <b>8 MILLION 14.5 MILLION TONNES</b> between 2011 and 2015. Much of this increase is due to rapid growth of fuelwood imports, principally from the US.</p> <p>The estimated total annual footprint for UK imports of timber (2011-15 average) is <b>4.2 MILLION HECTARES.</b></p>	<p>Although most of the UK's timber imports are sourced from low-risk countries, an estimated 750,000 hectares of our footprint is Brazil, China and Russia, where there are high risks of deforestation and social challenges.</p>	<p>Well-established certification schemes help to mitigate risks. These are widely used by UK companies, but don't cover all the UK market.</p> <p>The EU Timber Regulation is intended to close the market to illegal timber. And the UK government's Timber Procurement Policy is creating market incentives for sustainably produced timber.</p> <p>Platforms such as the Global Forest &amp; Trade Network (GFTN) help companies share good practice.</p>
<b>TOTAL</b>	<p>UK'S AVERAGE ESTIMATED OVERSEAS FOOTPRINT PER YEAR</p> <p><b>13,600,000 HECTARES</b></p>	<p><b>44%</b></p>	<p>PERCENTAGE OF THE LAND FOOTPRINT FROM UK IMPORTS THAT IS IN HIGH OR VERY HIGH RISK AREAS</p>

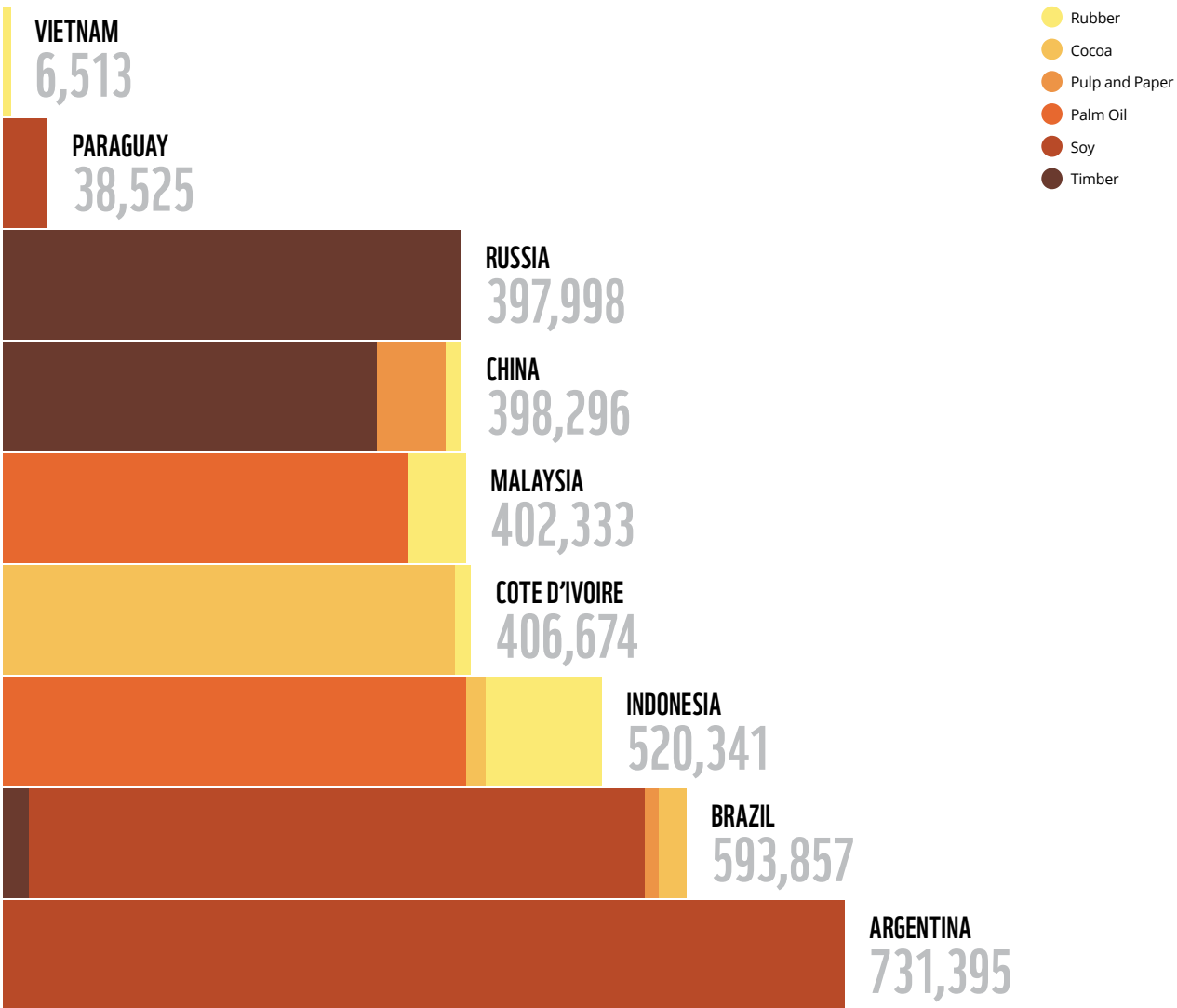
It is important to note that this report explores the UK’s footprint between 2011 and 2015, and the countries these commodities were sourced from during that period. Changes in the pattern of countries the UK sources from alter risk profiles and overall land footprint, as the yields and environmental and social factors vary substantially between countries. Emerging frontiers of deforestation, such as in Papua New Guinea and West and Central Africa, need to be recognised and monitored as potential sources of deforestation risk that lie beyond the scope of this analysis.

The pathways by which deforestation occurs are complex and depend on multiple factors, so it is not possible to say where deforestation occurs as a direct result of trade with the UK. With such a large land footprint in areas of

high deforestation, **there is an unacceptably high and immediate risk that UK consumption of these seven commodities leads to the conversion or degradation of forests due to agriculture and/or logging operations.** Increased demand, lack of investment in sustainable production and unsustainable consumption patterns are likely to increase this pressure on forests and other valuable habitats.

**The output of this report should not be used to step back from high-risk areas, which will anyway change over time, but instead is intended to encourage businesses to engage with suppliers and where possible, directly with their producers on how to reduce risk in their supply chains and hence negative impact on the ground.**

FIGURE 2:  
LAND FOOTPRINTS FOR HIGH-RISK PRODUCTION AREAS



# RECOMMENDATIONS

UK businesses and UK government have taken some positive steps but deforestation persists and biodiversity continues to be lost at an alarming rate. Failure to fully address our deforestation footprint and associated risks overseas jeopardises the UK’s credibility as a leader on reducing global deforestation and may imperil our security of supply. Moreover, it could negatively impact the livelihoods of communities and perpetuate deforestation, biodiversity loss and poverty in key producer countries – jeopardising the realisation of the Sustainable Development Goals.

It is neither realistic nor desirable to boycott these risky commodities. Nor would we want this report to be used to blacklist imports from particular countries, which will simply displace risks and jeopardise the livelihoods of responsible producers, or divert attention from the need to support investment in better, more efficient production practices. We believe that the UK has a strong role to play in both reducing consumption of forest risk commodities but also recognising which products and companies are acting responsibly and sustainably.

AS THE UK ESTABLISHES NEW PARTNERSHIPS ON THE INTERNATIONAL STAGE, WE CALL FOR ACTION TO PROMOTE TRADE THAT SUPPORTS SUSTAINABLE DEVELOPMENT AND DOES NOT DRIVE ENVIRONMENTAL DEGRADATION AND LAND-USE EMISSIONS OVERSEAS.



# WE CALL ON THE UK GOVERNMENT TO:

Demonstrate global leadership in addressing deforestation and its associated environmental and social issues, in line with the Sustainable Development Goals.

- Recognise the UK's impact on natural capital overseas within the 25 Year Environment Plan, and work with business to design an appropriate policy framework to manage such impacts.
- Ensure that key policy measures are analysed for deforestation risk – e.g. renewable energy incentives, UK Industrial Strategy, DFID Economic Development strategy.
- Conduct sustainability impact assessments and incorporate the highest environmental and social safeguards into any new trade agreements, to ensure that new UK trade relationships do not contribute to a new wave of deforestation or negative social impacts.
- Champion the implementation of the Action Agenda of the New York Declaration on Forests, to realise the shared ambition to halve natural forest loss globally by 2020, and strive to end it by 2030.

Work with co-signatories of the Amsterdam Declaration on sustainable commodity supply chains to accelerate action to fulfil the commitments.

- Maintain and extend the national statement on palm oil, and initiate similar time-bound targets and reporting commitments on other commodities with viable measures of sustainability, particularly soy, timber, pulp and paper, and cocoa.
- Fund robust monitoring of public and private commitments as for the National Statement on Palm Oil.
- Encourage companies to adopt high environmental and social standards in multi-stakeholder certification schemes, and convene roundtables to drive progress where such approaches have gained little or no uptake, notably for beef and leather, soy and rubber.
- Create market incentives for operators proactively managing their deforestation risk, through adopting and implementing sustainable public procurement policies across these high risk commodities, building on the example of the Timber Procurement Policy and the requirement in the Government Buying Standards for certified sustainable palm oil.
- Recognise that whilst some UK companies are undertaking voluntary action to address the risks, policy action will be required to accelerate progress across all UK imports.

Use UK influence and development assistance to support producer countries in ensuring sustainable production and trade of forest-risk commodities.

- Ensure effective implementation and enforcement of the EU Timber Regulation, to prevent illegally harvested timber and wood products entering the UK.
- Continue to invest in lowering the deforestation risk in key sourcing countries, working with UK companies sourcing from there. This should build on successful support for Forest Law Enforcement, Governance and Trade (FLEGT) in Côte d'Ivoire, Indonesia and Vietnam, while exploring other options to support countries with high deforestation and significant trade with the UK, notably Argentina, Brazil and Paraguay.
- Measures could include promoting integrated land use planning, and supporting sustainable intensification while preventing land conversion. Investments can include finance, technical assistance and access to new technologies (e.g. satellite monitoring, new crop varieties).
- Work with key intermediary countries, e.g. China for rubber and timber.

# WE CALL ON UK COMPANIES TO:

Manage the risks associated with their corporate footprint.

- Make a clear commitment, with time-bound targets for change, to eliminate illegal and unsustainable sources of these commodities.
- Accelerate implementation of commitments to eradicate deforestation from supply chains, using existing data sources to analyse and disclose deforestation risks – drawing on country risk assessments, transparency and corruption indices, and new data sources (e.g. SPOTT for palm oil, timber, pulp and paper; TRASE for soy).
- Report publicly in simple and open terms on progress on an annual basis, using clear metrics or existing tools such as CDP forest footprint disclosure.
- Help customers understand choices and pricing, to create a more equitable global market, reduce wasteful consumption, and promote investment in sustainable production.

Support multi-stakeholder action to promote sustainable practices.

- Support the development of transparent, multi-stakeholder governance to reduce deforestation and social risks in key sourcing countries, including higher environmental and social standards in multi-stakeholder certification schemes.
- Invest in initiatives to develop sustainable supply chains, including through support to smallholder producers and jurisdictional approaches.
- Collaborate with other companies to drive impact at scale through increased market demand for sustainable production, e.g. policy advocacy, preferential sourcing approaches.

# WE CALL ON THE UK PUBLIC TO:

- Reduce the number of products that you buy that have environmentally damaging ingredients, and prevent waste by only buying what you need.
- Look for products that are certified to credible environmental and social standards (e.g. FSC for wood products, RSPO for palm oil).
- Ask companies what they are doing to manage their deforestation footprint.
- Buy from brands and companies that have committed to addressing deforestation and governance risks, and who openly report on progress.
- Eat healthily while reducing your consumption footprint, using advice in the WWF Livewell report.



## 1

## UNDERSTAND THE COMMODITY

Drawing on published literature to describe commodity, major uses, areas where it is produced.

## 2

## ESTIMATE IMPORT VOLUMES

Use Comtrade data to estimate import volumes and country of production, drawing on published literature to interpret data for embedded imports.

## 3

## ESTIMATE COUNTRY OF PRODUCTION

Draw on Comtrade and FAO STAT databases to analyse source of direct and indirect imports.

## METHOD USED FOR THE ANALYSIS

This report provides an indication of the overall scale of the UK's total overseas land footprint from seven commodities from 2011 to 2015. It also indicates the relative levels of risk of each of the commodities and an indication of where the UK government, businesses and civil society might target their efforts to have most impact in reducing our forest footprint overseas.

## OVERVIEW OF METHOD

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 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:

[wwf.org.uk/riskybusiness](http://wwf.org.uk/riskybusiness)

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 except beef and leather, data from UN Comtrade was used to quantify imports (net weight of imports) for the period 2011-15. 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. natural rubber in imported car tyres).
- 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. Import figures for beef and leather imports are derived from published literature.

## 4

## ESTIMATE HECTARE EQUIVALENT

Combine outputs from previous steps with FAO STAT data (e.g. yield) to estimate land footprint.

## 5

## ASSIGN RISK STATUS TO PRODUCER COUNTRIES

Use four indicators to calculate a national level country risk rating for producer countries that are the source of at least 2% of UK import volume / UK cattle footprint.

## 6

## ASSIGN FOOTPRINT TO RISK

## WORKING OUT THE COUNTRY OF PRODUCTION

It is not straightforward to work out where UK imports were originally grown. The first step was to record country of origin reported in UN Comtrade data. UK imports were assumed to come from the countries that supplied the exporter to the UK – e.g. imports of rubber into the UK from China were allocated to producer countries using the same proportions of Chinese rubber production and imports.

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 weather conditions. These differences can mean that the UK footprint may decrease even as import volumes go up – due to a good harvest, or a switch in buying patterns to countries with higher yields.

For pulp & paper and timber, yield was based on the net annual increment<sup>1</sup> for the forest in the country. For beef & leather, footprint was estimated using the pasture land area in the country, total livestock production and conversion efficiency of cattle. Beef & leather showed by far the greatest variation in production from different systems, with cattle rearing in dryland countries such as Namibia having particularly large land requirements.

## RISK RATING

Having derived a minimum estimate of the provenance of the UK'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 the UK were included<sup>2</sup>.

Using cut-off criteria allowed us to focus on countries where production for the UK 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 overleaf.

<sup>1</sup> Net Annual Increment (NAI) is defined as the average annual volume of gross increment over the given reference period, less that of natural losses on all trees, measured to minimum diameters as defined for 'growing stock'. FAO (2012). FRA 2015 Terms and Definitions. Rome: FAO.

<sup>2</sup> Except for beef & leather. In this case, the estimated total land footprint of UK beef and leather imports was calculated, and the risk analysis conducted on countries accounting for more than 2% of that footprint.

FACTOR	DESCRIPTION	RATIONALE	HIGH RISK	MEDIUM RISK	LOW RISK
Deforestation extent	Area of forest cover loss 2011-15 (Global Forest Watch)	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 (WB)	Perception 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

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 the UK 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 UK imports can’t be traced back to specific locations or risks.<sup>1</sup> 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 UK 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 UK 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 argued that it is therefore not necessarily valid to link UK 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.

<sup>1</sup> Various initiatives are underway to improve this traceability and supply chain transparency. For example, soy from Brazil can be traced using the TRASE tool: <https://trase.earth/>

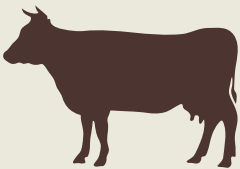
# LIMITATIONS TO THE ANALYSIS

Generating the results across seven different commodities and many supplying countries was a complex task. Throughout the writing of this report, the writers use a conservative approach – adopting first-order estimates and indicating where assumptions have been made. This means that the figures presented are likely to underestimate total UK consumption and overseas land footprint.

## DATA CHALLENGES, AND APPROACHES ADOPTED FOR THE ANALYSIS

<b>Complex/long supply chains.</b> 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 the UK.	<b>'Hidden' commodity use.</b> Use of 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.	<b>Lack of reliable, consistent and up-to-date evidence on social and environmental impacts.</b> 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.
<b>Poor data on typical commodity use in products.</b> 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.	<b>Variability in production systems complicates footprint.</b> Converting import volumes/weight to land footprint is based on agricultural yield data. These vary year-by-year, across and within countries. Changes in UK overseas footprint could result from changes in yield or buying patterns, as well as from changes in level of UK consumption.	<b>Lack of readily available data on the UK's imports of certified commodities.</b> We initially 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. Exceptions are for some palm oil products, as a result of the UK 2015 Palm Oil commitment, and some data on trade in FSC-certified material.





Beef and leather combined have by far the largest overseas land footprint of any commodity analysed in this report, despite **almost 80% of UK beef** being produced domestically.

Imports are an estimated **400,000 tonnes** annually for beef and **57.5 million square metres** of bovine leather, corresponding to an estimated land footprint of **5.1 million hectares** a year – an area two-thirds the size of Scotland. This very large land requirement is partly due to very extensive (i.e. low density of cattle) production systems in some countries.

Data availability is particularly challenging for cattle production and trade. For leather, data on production and use is particularly poor, and under-reporting or misreporting of animal leathers and synthetic alternatives makes interpreting the data a challenge. Data on the productivity of cattle pasture in different countries and regions was not available. This seems to be an important gap in global agricultural data, given the significance of cattle production for land use in many countries.

# BEEF AND LEATHER

This report focuses on beef and bovine leather as cattle are an important driver of global land-use change compared to other livestock species.<sup>1</sup> Beef is the third most popular meat in the UK, with 18kg eaten per person annually. The top 10 producer countries of cattle meat account for about two-thirds of global production – with the United States, Brazil and China being the three largest producers.<sup>2</sup> The UK is the 13th largest producer.

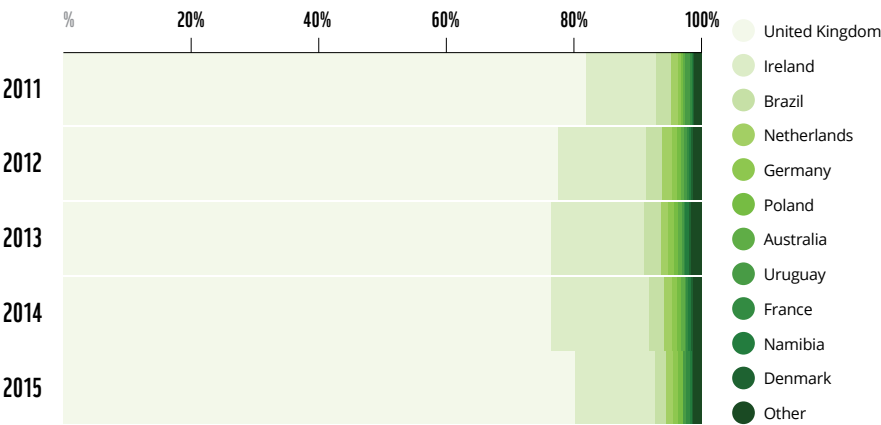
Beef and leather share the same agricultural production systems, with hides accounting for about 10% of the slaughter value of cattle<sup>3</sup>, so it makes a relatively small but worthwhile contribution to the overall profitability of the cattle sector. Bovine leather is the major source of leather globally and is the main type of leather used by UK manufacturers.<sup>4</sup>

## UK CONSUMPTION AND IMPORTS

According to the Agriculture and Horticulture Development Board (Beef and Lamb), the UK was approximately 76-82% self-sufficient in beef between 2011 and 2014.<sup>5</sup> The majority of UK beef imports are from the Republic of Ireland.

There is no UK data on total quantities of leather used, imported or produced in the UK each year. The quantity of leather material used in products is highly variable and is often unreported by relevant sectors (e.g. auto manufacturers).

FIGURE 3:  
SOURCES OF UK BEEF SUPPLY



1 FAO (nd) Cattle ranching and deforestation. Livestock Policy Brief 03.  
2 FAOSTAT.  
3 Brack, D. Glover, A. and Wellesley L. (2016) Energy, Environment and Resources Agricultural Commodity Supply Chains Trade, Consumption and Deforestation. Chatham House Research Paper.  
4 UK Leather. <http://www.ukleather.org/trade-issues/industry-statistics.htm>  
5 Agriculture and Horticulture Development Board (Beef and Lamb), UK Yearbook 2015 – Cattle.

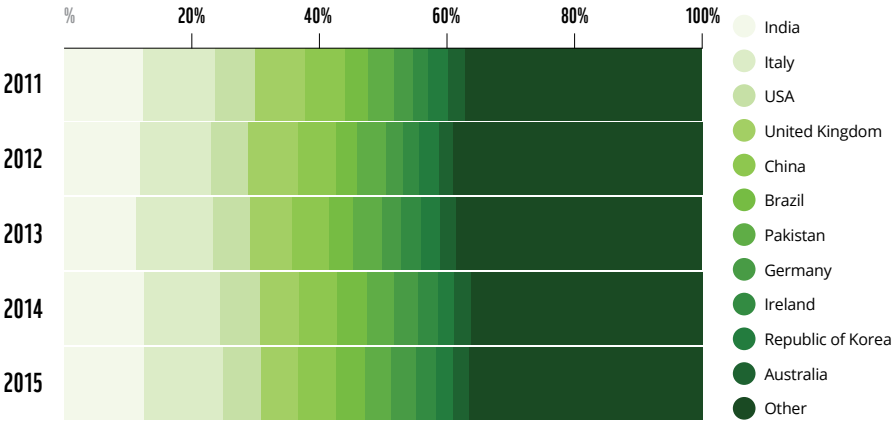
## ESTIMATES OF AREAS OF LEATHER USED IN UK SOLD PRODUCTS

The authors of the technical report used industry data on global leather use by product type as a starting point, assuming similar patterns in the UK. The total quantity of leather embedded in products sold in the UK was estimated by using information on UK leather footwear sales volumes and composition.

The provenance of each of these product types was identified by using UN Comtrade import data.

Product type	Area of leather (m²)
Footwear	33,500,000
Garments	6,000,000
Furniture	6,000,000
Auto	4,000,000
Gloves	2,500,000
Other	5,500,000

FIGURE 4:  
SOURCES OF UK LEATHER SUPPLY



**Calculating the area of grazing land associated with cattle production was particularly challenging.** Unlike crop products, such as soy and palm, the researchers found no publicly available data on cattle pasture productivity for a cross-section of countries (i.e. kilo of carcass weight per hectare of pasture). Instead the analysis adopted the method used by de Ruiter et al (2017)<sup>1</sup> that allocates total country pasture to different grazing animals based on the relative feed conversion efficiencies and overall sector production. Cattle slaughterhouses can produce a range of more than 300 products (including products like gelatin, tallow, etc). Given the two principal products (meat and leather), the share of the land footprint allocated to beef and leather as a by-product was on the basis of their mass (the hide being 10% of the mass of a sold carcass, it was allocated 10% of the land footprint).

1 de Ruiter, H., et al. (2017) Total global agricultural land footprint associated with UK food supply 1986–2011. Global Environmental Change, 43, 72–81.



IMPACTS AND RISKS

Cattle production is the dominant land use following deforestation (and the loss of other high conservation value land) in a number of globally important and threatened ecosystems, such as the Amazon and the Cerrado. It is important to note that the production of soy, which is sometimes fed to cattle, is also driving deforestation in South America.

Research for the US State Department identifies cattle ranching in Brazil as a source of forced labour in the country.<sup>1</sup> According to the International Labour Organisation, some 62% of slave labour in Brazil is employed in livestock farming-related businesses.<sup>2</sup>

Cattle rearing may not be well suited to the establishment of a global certification system because of the diversity of production systems. The Global Roundtable for Sustainable Beef (GRSB) has developed global principles and criteria for sustainable beef production but has deliberately left their application and the development of indicators to national implementing bodies<sup>3</sup> - which have not always seen standards and certification as the best way forward. For example the Brazilian Sustainable Cattle Working Group (GTPS)<sup>4</sup> has developed indicators, but has no current intention to certify production to a standard. Private companies have also experimented with various animal tracking and traceability systems.

The beef moratorium in the Amazon has led to significant efforts by Brazilian beef companies to police conformity with the Forest Code among their first tier cattle suppliers.

1 US State Department (2016) Trafficking In Persons Report. Washington, DC: US State Department.  
2 ILO (2009) Fighting Forced Labour: The Example of Brazil. International Labour Organization.  
3 [http://www.grsbeef.org/Resources/Documents/GRSB%20Principles%20and%20Criteria%20for%20Global%20Sustainable%20Beef\\_091514.pdf](http://www.grsbeef.org/Resources/Documents/GRSB%20Principles%20and%20Criteria%20for%20Global%20Sustainable%20Beef_091514.pdf) - see p7 in particular for GRSB's intentions for it principles and criteria.  
4 <http://www.gtps.org.br/en/>

FIGURE 5:  
LAND REQUIREMENT FOR UK BEEF IMPORTS, BY COUNTRY

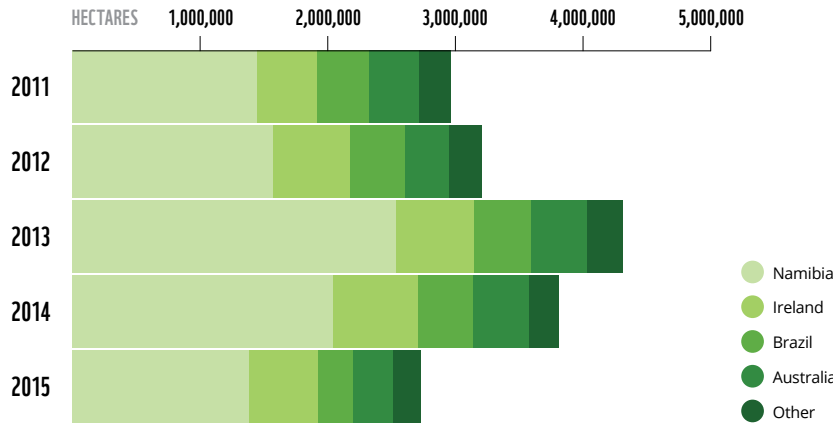
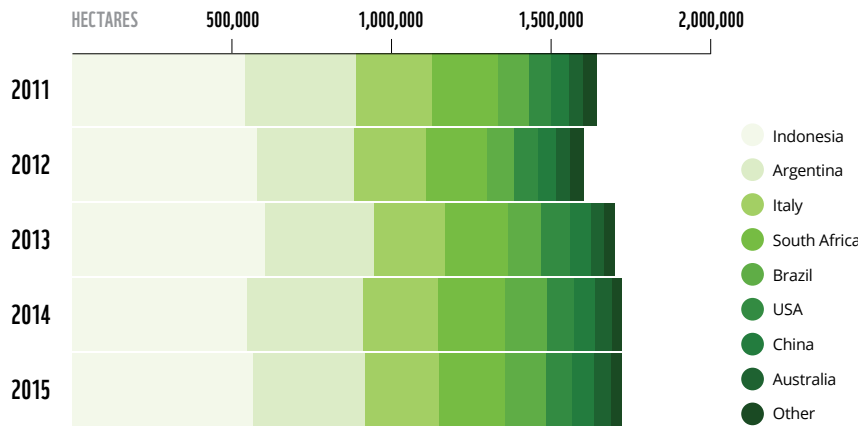
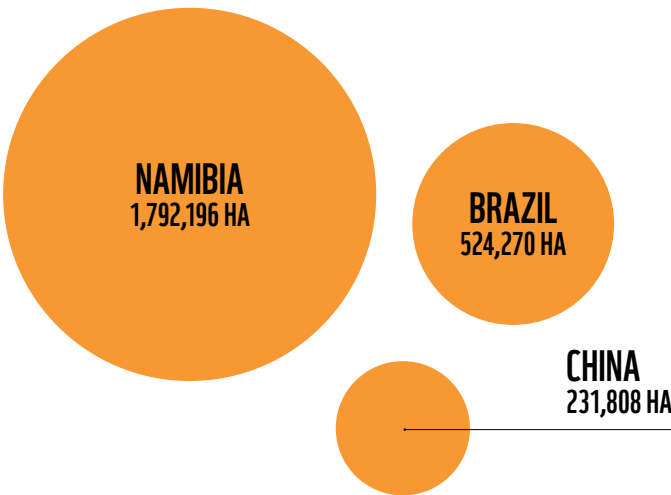


FIGURE 6:  
LAND REQUIREMENT FOR UK LEATHER IMPORTS, BY COUNTRY



HIGH RISK FOOTPRINTS



CATTLE PRODUCTION  
IS A MAJOR CAUSE OF  
DEFORESTATION IN THE  
BRAZILIAN AMAZON



# GLOBAL SNAPSHOT

From 2011-15 the UK had an annual estimated overseas land footprint of 13.6 million hectares – that's an area more than half the size of the UK – to supply imports of just seven commodities: beef and leather, cocoa, palm oil, pulp and paper, rubber, soy, and timber.



**5.1 MILLION HECTARES**

Beef and leather account for the highest footprint even though the UK produces over 75% of the beef and leather we consume domestically.



**1.1M TONNES IN 2011  
6.8M TONNES IN 2015**

increase in UK fuelwood imports, mainly coming from the US.

**IN 2015 85%**

of UK cocoa imports came from Côte d'Ivoire. We are heavily dependent on this high deforestation risk country for cocoa.



**65% OF UK OIL PALM IMPORTS**

come from high deforestation and social risk countries.



**1.68 MILLION HECTARES**

average annual soy footprint. Most comes from countries with high deforestation risk: Argentina, Brazil and Paraguay.

**6 MILLION HECTARES**

in countries at high risk of deforestation, corruption and human rights abuses is used to supply UK imports each year.



**70% OF UK NATURAL RUBBER IMPORTS**

come from countries with a high social and deforestation risk, such as Indonesia.

**2%**

**21%**

2% of global soy production is certified compared to 21% for palm oil.

UK import footprint for soy is 45% higher than palm oil.





The UK's cocoa footprint is mainly (and increasingly) from high risk countries: Côte d'Ivoire's share of UK imports has risen sharply over the period 2011-15 and now accounts for **more than 80%**.

According to FAO statistics, cocoa yields in Côte d'Ivoire are the highest of producing countries. This means that while the highest import volume was in 2015, the largest footprint was found in 2013, due to a higher proportion of imports from lower-yield producer countries.

Investment and training for small-scale farmers, to increase yields and rehabilitate existing plantations, offer scope to reduce cocoa-linked deforestation.

Cocoa provides a livelihood for many smallholders but is also associated with allegations of human rights abuses, including child and forced labour.

A range of certification standards mitigate deforestation and social risks, accounting for approximately **22% of global trade** in cocoa.

# COCOA

*Theobroma cacao* is a tropical tree species indigenous to South America. Cocoa's climate requirements mean that production is limited to within 20 degrees of the equator.

Cocoa is produced in 62 countries worldwide, but 65% of cocoa is now grown in Africa, with the two largest producers being Côte d'Ivoire (32% share of global production) and Ghana (18%). Indonesia is currently the third largest producer (17%) and is increasing production. Around 70% of the world's cocoa is produced by more than six million smallholders growing cocoa on 2-3 hectares.

Global production of cocoa beans in 2013 was approximately 4.58 million tonnes across a harvested area of 10 million hectares; this land area has steadily increased over the last decade. 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.

## UK CONSUMPTION AND IMPORTS

The UK required an average of nearly 600,000 hectares per year from 2011-15, an area nearly four times the size of Greater London, to support our demand for cocoa. Côte d'Ivoire increasingly dominates this land requirement.

Approximately 74% of the cocoa imported into the UK arrived in the form of processed chocolate goods (420,726 tonnes in 2015) at either the manufacturing or retailer stage, versus 146,860 tonnes of cocoa beans, liquor ('paste'), butter, and powder. Overall, cocoa imports to the UK have risen slightly in volume over the last five years, with a marked decline in direct imports of cocoa beans.

FIGURE 7:  
UK IMPORTS OF COCOA BY PRODUCT, 2011-15

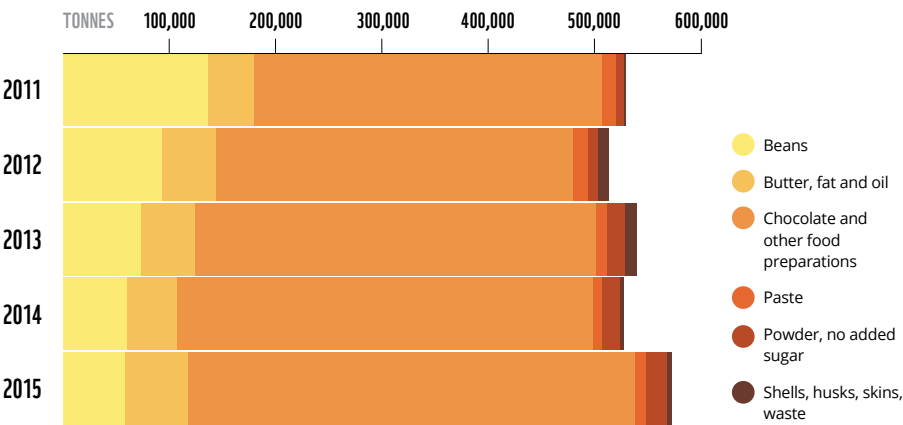
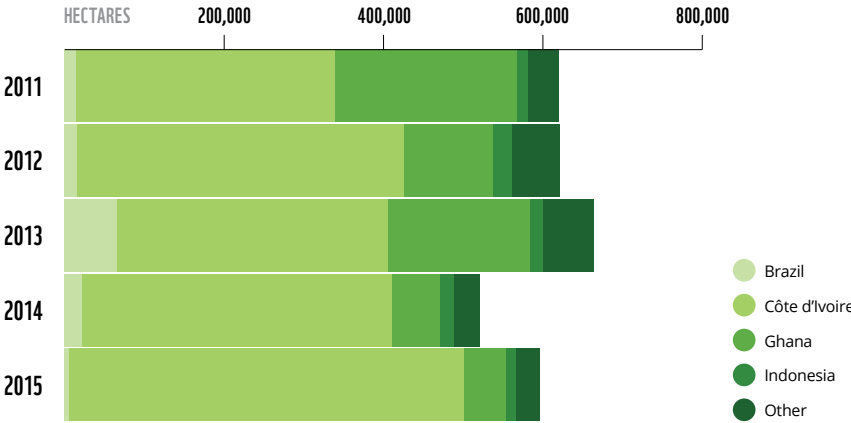
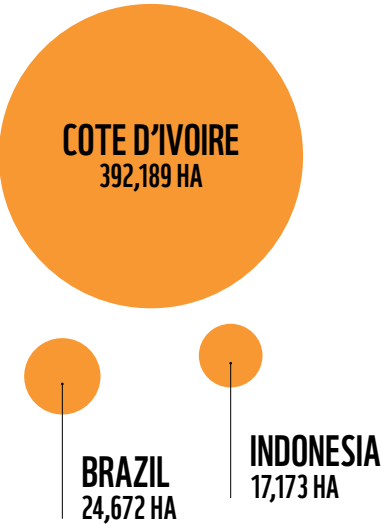


FIGURE 8:  
LAND AREA TO PRODUCE UK IMPORTS OF COCOA, BY COUNTRY



## HIGH RISK FOOTPRINTS



## IMPACTS AND RISKS

Deforestation for cocoa production has been reported in some 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 agro-forestry systems that can play a role in forest restoration programmes. But, with a potentially lower yield, this may require greater land take.

In priority tropical forest biodiversity hotspots, cocoa agro-forestry 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 producing a reduction in 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.<sup>1</sup> 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 six countries: 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 merging at the time of writing). All three schemes include criteria on conservation, with varying levels of protection against deforestation. In 2011-12, an estimated 22% of the cocoa produced globally was compliant with Rainforest Alliance, Utz, Fairtrade or organic standards.<sup>2</sup>

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.

1 2015 Cocoa Barometer. Available at: [http://www.cocoabarometer.org/Download\\_files/Cocoa%20Barometer%202015%20Print%20Friendly%20Version.pdf](http://www.cocoabarometer.org/Download_files/Cocoa%20Barometer%202015%20Print%20Friendly%20Version.pdf)

2 Potts, J., Lynch, M., Wilkings, A., Huppé, G., Cunningham, M., and Voora, V. (2014). State of Sustainability Initiatives Review. IISD & IIED.





UK imports of palm oil have a large footprint: **more than 1.1 million hectares**. Some 65% of this supply comes from countries with a high risk of deforestation and social challenges (Indonesia and Malaysia).

Good progress on certification partly ameliorates the risks. But certification needs to go further, to ensure that the standards directly address deforestation and social risks.

Between 2011 and 2015 all traceable palm oil imports came from south-east Asia, but Africa (and west Africa in particular) is a new frontier region for large-scale palm oil production. At present, smallholders account for **70-90%** of oil palm production across Africa.

# PALM OIL

The oil palm, *Elaeis guineensis*, is native to west and south-west Africa. It 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.

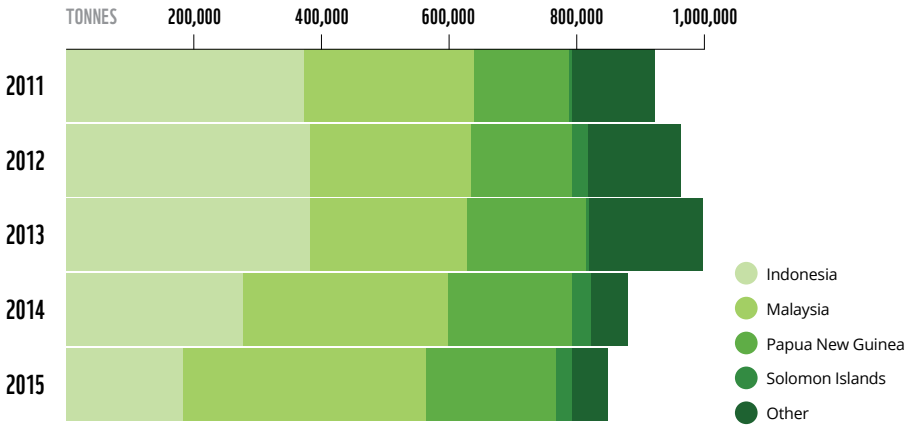
Global palm oil production has increased from 15.2 million tonnes in 1995 to an estimated 62.9 million tonnes in 2017.<sup>1</sup> This volume is predominantly produced by Indonesia (50% global production) and Malaysia (35%). There has also been a marked increase in palm oil production in other parts of the world in recent years, largely in South and Central America, Thailand and western Africa. As well as commercial plantations, an estimated three million smallholders grow oil palms, accounting for approximately 40% of total global oil palm production.<sup>2</sup>

## UK CONSUMPTION AND IMPORTS

UK imports of palm oil, palm kernel oil, oilcake and palmitic acid between 2011 and 2015 were predominantly from Indonesia (35%), Malaysia (32%) and Papua New Guinea (19%). However, 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. The 2011 palm oil mapping<sup>3</sup> estimated that finished products, including biscuits, chocolate, ice cream, margarine and soap, account for 30-50% of the total use of palm oil in the UK.

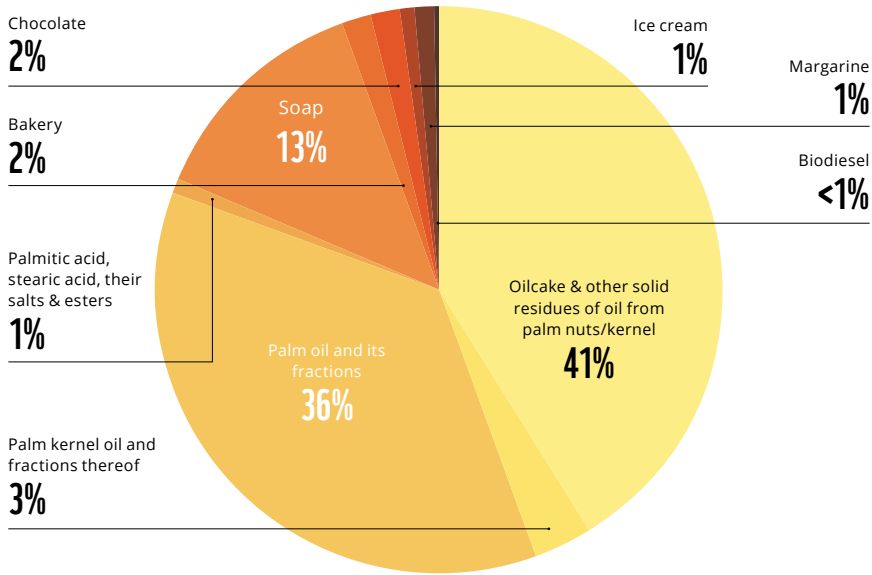
Total UK consumption of palm oil – including raw materials and a conservative estimate of embedded palm oil – was on average more than 1.1 million tonnes per year from 2011 to 2015.

FIGURE 9:  
UK IMPORTS OF PALM OIL 2011-15, BY PRODUCER COUNTRY  
(NOT INCLUDING PALM OIL EMBEDDED IN PRODUCTS)



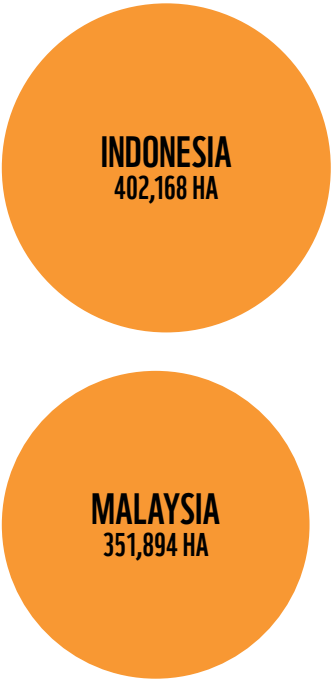
1 <http://www.globalpalmoilproduction.com/>  
2 <http://www.rspo.org/certification/smallholders>  
3 ProForest (2011). Mapping and Understanding the UK Palm Oil Use. Final Report to the Department for Environment, Food and Rural Affairs, April. DEFRA.

FIGURE 10:  
UK IMPORTS OF PALM OIL BY  
PRODUCT, 2011-15



The land area required to satisfy this level of palm oil consumption (2011-15 average) is over 1.1 million hectares, more than half the size of Wales. This is equivalent to 1.1% of global palm oil production<sup>1</sup> and 1% of palm kernel oil production for 2013.

## HIGH RISK FOOTPRINTS



## IMPACTS AND RISKS

The expansion of palm oil cultivation has long been linked with deforestation. A recent study concluded that 45% of oil palm plantations studied in south-east Asia came from areas that were forests in 1989.<sup>2</sup> A significant part of this deforestation is embedded in global trade.<sup>3</sup>

Forest clearance associated with palm oil expansion has forced indigenous peoples off their land in a number of Asian and African countries.<sup>4</sup> 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. 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.

The UK government, with oil processors and traders and a range of end-user industries, committed to achieving 100% 'credibly certified' crude and kernel palm oil by 2015. The final progress report indicated that this target was effectively met.<sup>5</sup> While this is welcome, it should be noted that this commitment only covers around 40% of total UK palm oil imports, as embedded and indirect imports as well as solid palm oil residues were all excluded from the commitment.

1 FAO STAT.  
2 Vijay V, Pimm SL, Jenkins CN, Smith SJ (2016) The Impacts of Oil Palm on Recent Deforestation and Biodiversity Loss. PLoS ONE 11 (7).  
3 Henders, S., Persson, U.M. & Kastner, T. (2015). Trading forests: land-use change and carbon emissions embodied in production and exports of forest-risk commodities. Environ. Res. Lett. 10.  
4 For example, FPP & Pusaka and Pokker SHK (2014). Securing Forests, Securing Rights. Report of the International Workshop on Deforestation and the Rights of Forest Peoples.  
5 <https://www.gov.uk/government/publications/uk-statement-on-sustainable-palm-oil-final-progress-report>



## CONTRASTING STORIES ON PALM OIL AND SOY

UK SOY IMPORTS  
**1.68M HA**  
77% COMING FROM HIGH-RISK COUNTRIES

## GOVERNMENT ACTION CAN SUPPORT PROGRESS

It is interesting to contrast the footprint, risk and risk mitigation of two of the most significant and highest risk agricultural commodities: palm oil and soy.

UK use of **palm oil** has an estimated annual average overseas footprint of 1.16m Hectares, of which 65% is sourced from high-risk countries. The links to deforestation and social impacts have been widely publicised by environmental campaigners, and prompted response from governments and the private sector like Unilever, Marks & Spencer and Waitrose among others.

Useful steps have been taken to mitigate the risks from palm oil production, including widespread uptake by large companies of a credible certification standard through the Roundtable on Sustainable Palm Oil (RSPO), which now accounts for 21% global production. While further work needs to be done to strengthen this standard (such as more stringent criteria to eliminate deforestation, banning planting on peat soils and measuring and managing greenhouse gas emissions), it has helped demonstrate willingness to address the concerns raised by palm oil expansion through multi-stakeholder processes.

The UK government has played an important role in encouraging more sustainable palm oil production, through its own commitments to procure 100% certified sustainable palm oil, engaging with companies willing to make the same commitment, and providing a framework for transparent reporting on progress. This was established through the UK Statement on Sustainable Palm Oil and the annual progress reports thereafter. Those progress reports documented a rise in the sourcing of sustainably certified crude palm oil; a welcome development to manage risks in the palm oil supply chain. What is now needed is commitment to maintain monitoring, and to broaden the national statement to include a wider range of palm oil materials and derivatives.

**The UK imports nearly three times as much soy (3.3m tonnes) as it does palm oil, yet soy has received much less attention and action.** Soy has a larger land footprint, due to both the higher volumes imported as well as the lower volumes produced per hectare compared to palm oil. UK soy imports have an estimated footprint of 1.68m ha per year – with a high proportion (77%) coming from high-risk countries. However, it hasn't yet seen widespread attention or action. Credible certification standards have been developed by the Roundtable for Responsible Soy (RTRS) and ProTerra, but after 10 years, these haven't seen notable uptake, and together still only account for around 2% global production. No reliable data is available on what proportion of UK imports is certified sustainable, so it's not clear to what extent the risks are being recognised and addressed. UK government action through similar steps to the 2015 palm oil commitment could drive increased uptake of certified product to mitigate the risks associated with UK consumption of soy.





The land area required to supply the UK's imports of pulp and paper averaged just over **600,000 hectares each year from 2011 to 2015.**

The largest footprint occurs in Sweden and the US (each averaging **over 100,000 hectares** and together accounting for 39% of the footprint). Finland and China are also significant. Only a small proportion comes from high-risk countries.

While there has been good progress in certification of timber harvesting, there is limited transparency on the proportion of UK pulp and paper imports that are certified sustainable or made from recycled material.

# PULP & PAPER

Paper is used in a wide range of products including books, magazines, stationery, packaging and tissues. It can be coated with a wide variety of materials for specific uses, such as printing photographs.

Global production of pulp reached 180 million tonnes in 2013 – 37% from North America and 22% from Asia.<sup>1</sup> Paper consumption in Europe and North America has decreased over the last decade, but remains markedly higher per capita than in Asia. Globally, there has been a shift in recent decades away from hardwood from natural forests towards ‘fastwood’ plantations, especially eucalyptus and acacia. The cellulose fibres are 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.

## UK CONSUMPTION AND IMPORTS

The UK consumed around 9 million tonnes of paper and board in 2014, down from a high of nearly 13 million tonnes in 2000. The most important source of fibre for the UK’s pulp manufacturing industry is reclaimed (recycled) paper, with more than eight million tonnes collected in 2014.<sup>2</sup> This accounts for around 70% of the fibre used in UK paper and board manufacture.<sup>3</sup> One-fifth of the fibre used in UK paper manufacture is imported pulp, and imported paper accounted for approximately half of paper and board used in the UK in 2014.<sup>4</sup> The UK is the largest net importer of paper in the world.<sup>5</sup>

UK imports of pulp and paper were relatively stable at 8.6-9.6 million tonnes from 2011 to 2015. The UK imported pulp and paper from a total of 191 countries, with the top two trading partners, Germany and Sweden, each accounting for 16% of the net weight of imports. Additional embedded imports of paper occur in packaging, which has remained relatively constant at around 1.2 million tonnes per year from 2011 to 2015. It is not possible to determine provenance of all packaging material.

1 [http://www.paper.org.uk/members/statistics/papermaking/eukey/CEPI\\_KeyStatistics\\_2014.pdf](http://www.paper.org.uk/members/statistics/papermaking/eukey/CEPI_KeyStatistics_2014.pdf)

2 CPI (2015). Annual Review 2014-15 – Working Together for a Competitive Future. Confederation of Paper Industries. Available at [http://www.paper.org.uk/information/pages/annual\\_reviews.html](http://www.paper.org.uk/information/pages/annual_reviews.html)

3 Confederation of Paper Industries (2013). Recovery and Recycling of Paper and Board. Fact Sheet. Confederation of Paper Industries.

4 The Confederation of Paper industries estimate that the UK consumed around 9.3 million tonnes of paper and board in 2014, of which the domestic production (which is based on domestic raw material, reclaimed material and imported pulp) accounted for 4.4 million tonnes. CPI (2015). Annual Review 2014-15 – Working Together for a Competitive Future. Confederation of Paper Industries. Available at [http://www.paper.org.uk/information/pages/annual\\_reviews.html](http://www.paper.org.uk/information/pages/annual_reviews.html)

5 RISI (2014), cited in Department of Energy and Climate Change and the Department for Business, Innovation and Skills (2015). Industrial Decarbonisation & Energy Efficiency Roadmaps to 2050: Pulp and Paper.

FIGURE 11:  
LAND AREA REQUIRED TO  
SUPPLY UK PULP AND PAPER

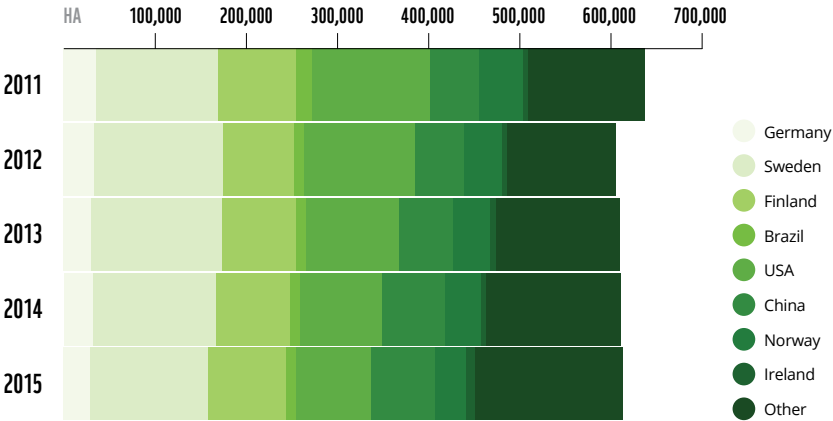
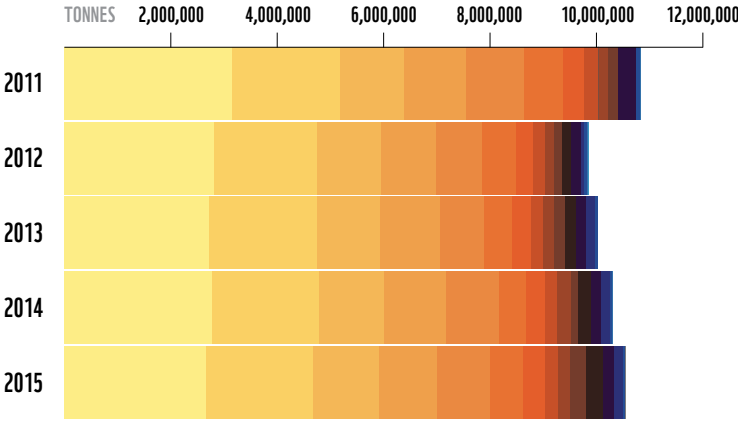
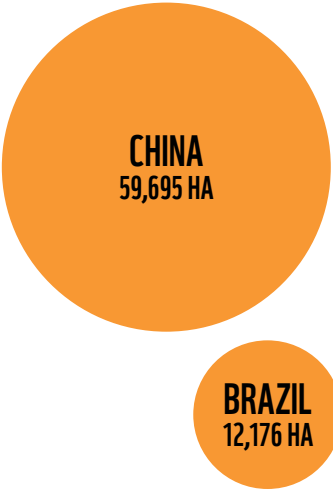


FIGURE 12:  
UK IMPORTS OF PULP AND  
PAPER PRODUCTS

- Uncoated paper and paperboard
- Coated paper or paperboard
- Packaging in imported goods
- Other
- Chemical Wood Pulp, soda or sulphate
- Newsprint
- Cartons, boxes, cases
- Printed materials
- Sanitary towels, tampons, diapers
- Waste and Scrap Paper
- Tissues, paper towels
- Toilet paper
- Combination Mechanical and Chemical pulp
- Chemical Wood Pulp, Dissolving
- Mechanical Wood Pulp
- Chemical Wood Pulp, sulphite



## HIGH RISK FOOTPRINTS



## IMPACTS AND RISKS

Social and environmental concerns are broadly the same as for timber production. Clear-felling for pulp production may have particularly high impacts on biodiversity and land degradation.

As pulp and paper is derived from trees, certification systems used in the timber sector (FSC and PEFC) are used to certify wood input. Recycled paper and board products often carry a recycling mark. The FSC has an on-product recycled label for paper products, which certifies inputs as being from recovered sources (but cannot confirm that the original source was FSC-certified).<sup>1</sup> The National Association of Paper Merchants and the Mobius Loop labels are also used for products containing recycled material.

1 FSC recycled Factsheet. <http://www.fsc-uk.org/en-uk>





UK natural rubber imports have a relatively small footprint, but the majority of this (**about 70%**) is imported from countries considered to have a high social and deforestation risk.

Indonesia accounts for **33-40% of annual imports** into the UK, while imports from Côte d'Ivoire are increasing rapidly, from **4% in 2011 to 18% in 2015**.

There is currently no certification system to ameliorate the risks.

# RUBBER

The primary source of natural rubber is the rubber tree, *Hevea brasiliensis*, which grows in humid, tropical lowland conditions.

The overwhelming majority of the world's natural rubber is produced in Asia. Thailand accounts for 30% of world production, Indonesia 26%. Along with China, India, Malaysia and Vietnam, these 'top six' producer countries account for 88% of global production. Production is traditionally dominated by smallholders in many of these countries.

The majority of rubber used in the UK and globally is synthetic, derived from petroleum. Natural and synthetic rubber can be substituted in many, but not all, uses. This report only deals with natural rubber production and use. Global production of natural rubber was 11.9 million tonnes in 2013, a 58% increase since 2000.<sup>1</sup>

FIGURE 13:  
UK IMPORTS OF NATURAL RUBBER PRODUCTS

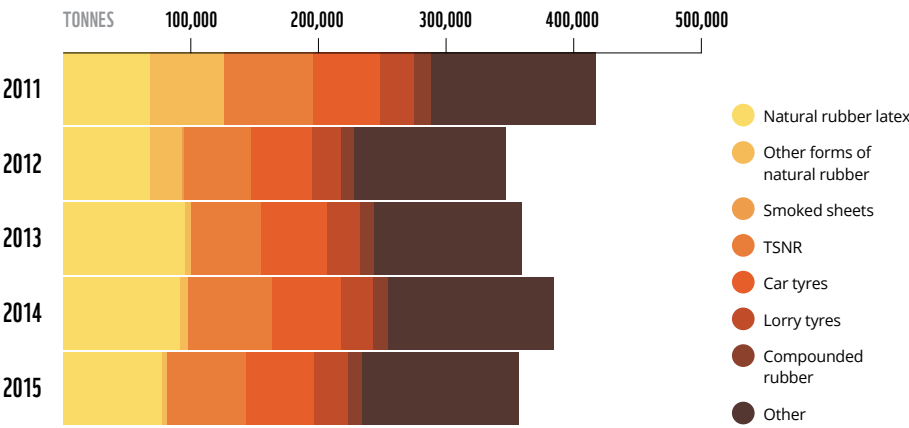
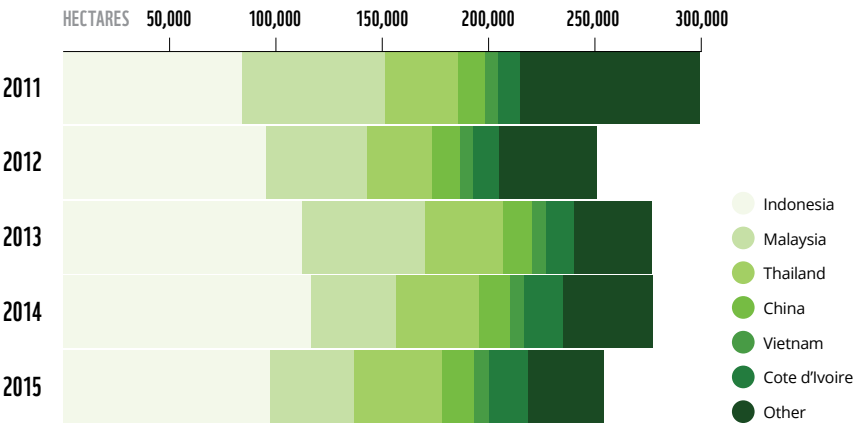
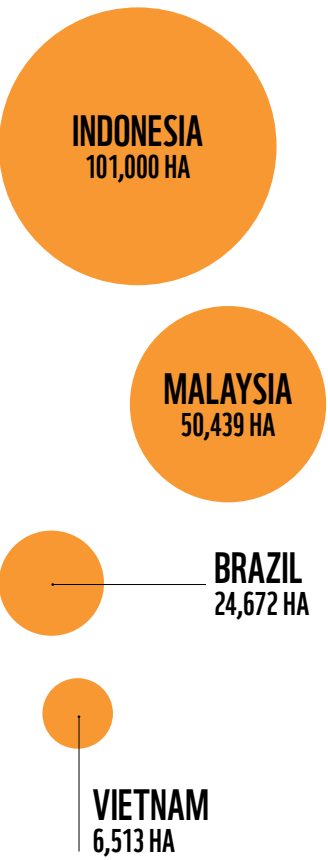


FIGURE 14:  
SOURCE OF UK NATURAL RUBBER IMPORTS



1 FAOSTAT.

## HIGH RISK FOOTPRINTS



## UK CONSUMPTION AND IMPORTS

Between 2011 and 2015 the UK imported an average of 370,000 tonnes of natural rubber per year. Of this, 43% was directly imported from Indonesia, Côte d'Ivoire, Thailand, Malaysia and Ghana. The remaining 57% is embedded within products – especially tyres. The UK imports tyres mainly from the EU (43%) and China (39%).

Between 2011 and 2015, the area of land required to supply the UK's demand for natural rubber was on average more than 270,000 hectares each year. In 2013, the global harvested area of natural rubber was 10.3 million hectares,<sup>1</sup> making the UK's footprint equivalent to 2.7% of the global harvested area.

The bulk of the natural rubber raw materials imported into the UK come from Indonesia, which accounts for 33-40% of annual imports into the UK. Imports from Côte d'Ivoire are increasing rapidly, from 4% in 2011 to 18% in 2015.

## IMPACTS AND RISKS

An estimated one million hectares of secondary forest and subsistence cropland in Cambodia, China, Laos, Myanmar, Thailand and Vietnam has been converted to rubber trees over the last few decades.<sup>2</sup> With increased demand, this is set to expand further.

Rubber has been closely linked with problems of land grabs in south-east Asia. A recent estimate<sup>3</sup> that "up to 8.5 million hectares of additional rubber plantations will be required to meet demand by 2024" points to the serious threat that this expansion is likely to have on biodiversity.<sup>4</sup> The same study found that since there are no market prohibitions or deterrents on growing rubber trees on deforested land, some growers are replacing oil palm with rubber on deforested land.

The US Department of Labour lists Cambodia, Indonesia, Liberia, Myanmar and the Philippines as using child labour in the production of rubber; it also lists Myanmar as using forced labour in the production of natural rubber.

There is currently no independent, third-party verification certification system specifically for natural rubber. The Sustainable Natural Rubber Initiative (SNR-i) has developed a set of voluntary guidelines and criteria for members that include indicators on productivity, quality, forest sustainability, water management, and human/labour rights. The lack of credible sustainability mechanisms suggest the need to raise awareness within the sector, and to catalyse a credible sectoral approach to sustainability. This is now getting initial recognition, and the first deforestation free supply chain commitments are being made by both automotive manufacturers, e.g. General Motors, and tyre manufacturers, e.g. Michelin.

1 FAOSTAT  
2 Li, Z. and Fox, J.M. (2012). Mapping rubber tree growth in mainland Southeast Asia using time-series MODIS 250 m NDVI and statistical data. Applied Geography, 32, 420–432.  
3 <https://www.uea.ac.uk/about/-/expanding-rubber-plantations-catastrophic-for-endangered-species-in-southeast-asia>  
4 This figure is based on the current level of productivity; there is general acceptance that there is not an additional 8.5 million hectares of appropriate land available, so measures will have to be taken to increase the level of productivity.



# LACK OF DATA MAKES IT DIFFICULT TO ASSESS THE EXTENT TO WHICH RISKS ARE BEING ADDRESSED

## CERTIFICATION AND RISK MITIGATION

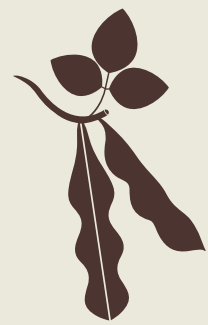
Throughout this report, we explore the status of multi-stakeholder certification initiatives for each commodity. We recognise that these don't represent the only solution, nor do they offer a complete solution to the risks of deforestation and social challenges. But we see them as an important mechanism to help manage risks within supply chains, and for companies to demonstrate their commitment to improving the sustainability of production.

Current efforts to explore certification standards at jurisdictional or landscape scale (for example in Sabah or Ecuador) are an encouraging next step to manage risks in an integrated, holistic way and move to sustainable production beyond individual farms.

There is marked variation in the progress and uptake of certification standards – some, such as FSC for timber and RSPO for palm oil, have achieved good market recognition and penetration in the UK. Other commodities such as beef, leather and natural rubber have no widely used sustainability certification scheme. Many commodities have multiple standards, with varying stringency or coverage of environmental and social factors; this is particularly the case for soy. In 2015 WWF published the Certification Assessment Tool to help analyse the strength of certification standards and systems.

This report initially set out to quantify the proportion of imports to the UK that were certified, as a way to explore the risk mitigation efforts in supply chains, particularly from high-risk countries. However, with the exception of palm oil (due to joint UK government and business action) this data is not available. This lack of data makes it difficult to assess the extent to which the risks associated with UK imports from countries with high deforestation rates and social challenges are being addressed.





The UK is highly dependent on soy imports, particularly due to meat consumption: **over 75%** of the soy we import is ingredients for animal feed, or soy embedded in imported meat products. The current UK footprint for soy is approximately **1.68 million hectares** per year. Demand continues to grow.

The UK sources from areas with high environmental and social risk – particularly Argentina, Brazil and Paraguay. So the UK risks being responsible for deforestation in areas of high conservation value and associated with corruption or weak labour standards.

There has been very limited progress on certification: despite efforts to establish credible schemes, market penetration has not exceeded **2%**. The supply chains leading to the UK and their associated impacts remain poorly understood or managed.

The government of Brazil's moratorium on converting land in the Amazon for soy production has had a major impact on reducing the deforestation risk.

# 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 vegetable/animal oils and fats consumption.<sup>1</sup> In the EU around 90% of soy is used to feed livestock.<sup>2</sup>

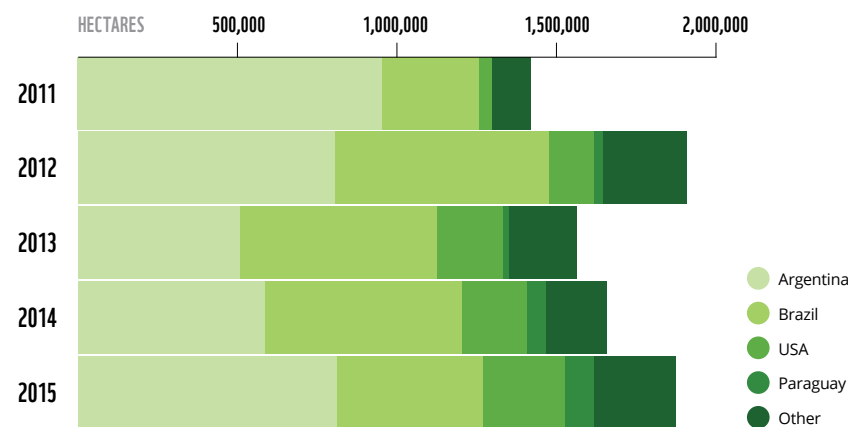
Soy production has increased eightfold since the 1960s and has doubled since 2000. This growth in production has been dominated by three countries: Argentina, Brazil and the US, which together account for more than 80% of global production. The rate of growth has been particularly rapid in South America, with more than half of Argentina's agricultural area now used for soy cultivation.<sup>3</sup>

## UK CONSUMPTION AND IMPORTS

Raw materials for animal feed (such as oil cake and other solid residues of soya) consistently account for more than half of UK soy imports. Soy is also imported in manufactured products, and embedded within animal products that have been fed soy and which are imported into the UK. This report includes imports that are likely to contain a significant proportion of the UK's imported embedded soy: poultry, eggs, pig meat, beef, dairy, soy sauce and biodiesel.

Combining the figures for raw materials and embedded soy gives the estimate of total UK soy imports. These have grown fairly steadily from 2.7 million tonnes in 2011 to 3.8 million tonnes in 2015.

FIGURE 15:  
LAND REQUIREMENT FOR UK SOY IMPORTS, BY PRODUCER COUNTRY

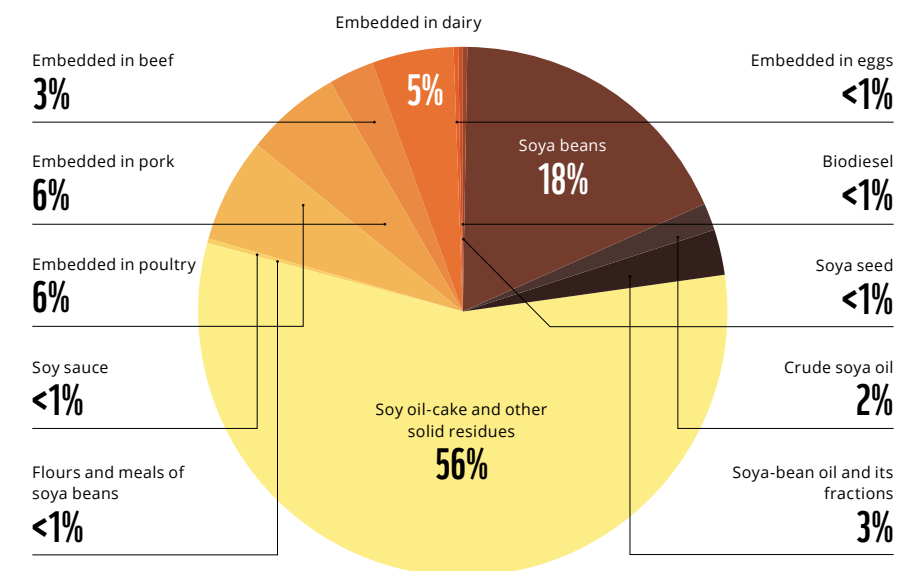


1 [http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1215457178567/Soybean\\_Profile.pdf](http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1215457178567/Soybean_Profile.pdf)

2 [http://www.bothends.org/uploaded\\_files/document/Soy\\_Barometer2014\\_ENG.pdf](http://www.bothends.org/uploaded_files/document/Soy_Barometer2014_ENG.pdf)

3 García-López, G.A. and Arizpe, N. (2010), 'Participatory processes in the soy conflicts in Paraguay and Argentina', *Ecological Economics*, 70(2), 196-206.

FIGURE 16:  
ESTIMATED PROPORTION OF  
SOY IMPORTED INTO THE UK BY  
PRODUCT, 2011-15



## HIGH RISK FOOTPRINTS



## IMPACTS AND RISKS

The expansion of soy production in South America has been strongly associated with deforestation and other natural habitat destruction.<sup>1</sup> One recent 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. 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<sup>2</sup> and Paraguay.<sup>3</sup> Excessive use of agrochemicals is a major environmental threat linked to soy production<sup>4</sup>, which could pose widespread health risks to people living near soy farms.<sup>5</sup>

The most prominent soy certification schemes are the Roundtable on Responsible Soy (RTRS) and ProTerra, but these currently account for around 2% of global soy production. There is no readily accessible data concerning the amount of RTRS certified soy entering the UK.

1 Nepstad, D.C., et al. (2006). Globalisation of the Amazon soy and beef industries: Opportunities for conservation. *Conservation Biology*, 20, 6.

2 <https://milieudefensie.nl/publicaties/factsheets/factsheet-2-dutch-soy-coalition-modern-slavery-in-brazil>

3 Hobbs, J. (2012). Paraguay's destructive soy boom. *The New York Times*, 2 July 2012. <http://www.nytimes.com/2012/07/03/opinion/paraguays-destructive-soy-boom.html>

4 EU (2013). Comprehensive analysis of the impact of EU consumption of imported food and non-food commodities and manufactured goods on deforestation. <http://ec.europa.eu/environment/forests/pdf/1.%20Report%20analysis%20of%20impact.pdf>

5 [http://www.bothends.org/uploaded\\_files/document/Soy\\_Barometer2014\\_ENG.pdf](http://www.bothends.org/uploaded_files/document/Soy_Barometer2014_ENG.pdf)





Timber has the second-largest footprint of the commodities we profile in this report. Much of the UK's imported timber comes from countries considered low risk for deforestation, weak governance or labour standards. But the UK still has a footprint of more than **750,000 hectares** in high-risk countries.

The UK has seen a marked increase in fuelwood imports from 2011-15, largely as a result of UK policy initiatives to provide incentives for using biomass for energy production.

Targeted policies (the EU Timber Regulation and the UK government Timber Procurement Policy) have helped to increase both corporate due diligence and transparency of timber imports, as well as create demand for products that are credibly certified as legal and/or sustainable. However, these regulations do not cover all imported timber products, and there is no reliable information on the levels of certified products on the market.

# TIMBER

Timber encompasses a wide range of products across six main sectors: fuelwood, furniture, particleboard, plywood, pulp and paper, and sawnwood. This section covers all except pulp and paper, which we deal with separately.

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 3.7 billion hectares in 2015. Around 31% of the world's forests (almost 1.2 billion hectares) are designated as production forest, with a further 28% designated as multiple use, i.e., serving multiple functions, including timber production. The area of planted forest is an estimated 291 million hectares of plantations.<sup>1</sup> Softwood species dominate global timber trade.

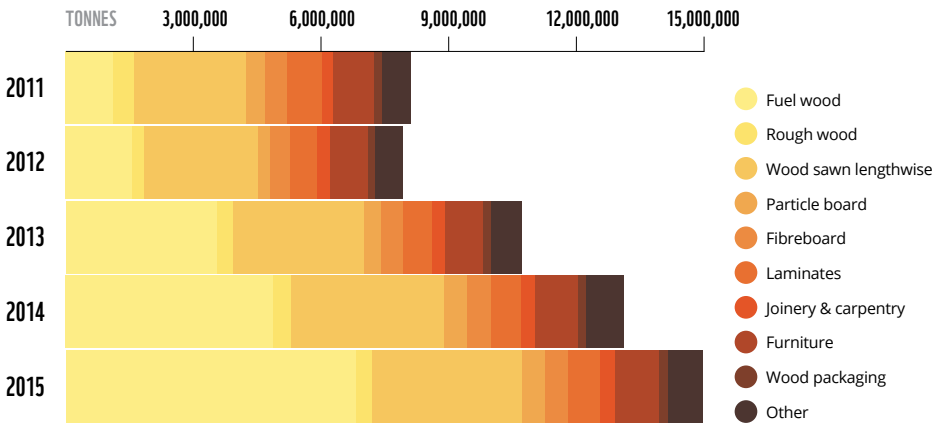
## UK CONSUMPTION AND IMPORTS

Imports accounted for 82% of the timber products consumed in the UK in 2015.<sup>2</sup> The UK imported timber products from 172 countries between 2011 and 2015. The top three trading partners (the US, Sweden and Canada) together accounted for 41% of the weight of imports over the period.

The data shows a dramatic increase in imported fuelwood – from 1.1 million tonnes in 2011 to 6.8 million tonnes in 2015. Fuelwood accounts for an average of 33% of the weight of imports over this period, and 46% in 2015 alone. This increase has largely been driven by UK/EU renewable energy policies.<sup>3</sup>

Given the diversity of timber species, forests and forest management systems, there is no straightforward 'yield' that can be used to estimate the land required to produce a given amount of timber.

FIGURE 17:  
UK IMPORTS OF TIMBER PRODUCTS

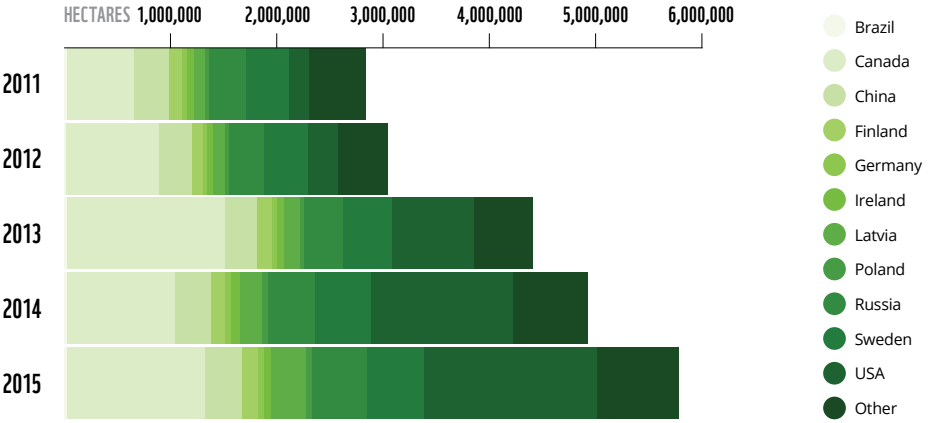


1 FAO (2016) Global Forest Resource Assessment 2015: How are the World's Forests Changing? Rome: Food and Agriculture Organization of the United Nations.  
2 Forestry Commission, 2016.  
3 For an exploration of sustainability issues relating to UK fuelwood imports see RSPB report 'Bioenergy: A Burning Issue' <https://www2.rspb.org.uk/globalassets/downloads/documents/positions/climate-change/bioenergy---a-burning-issue.pdf>

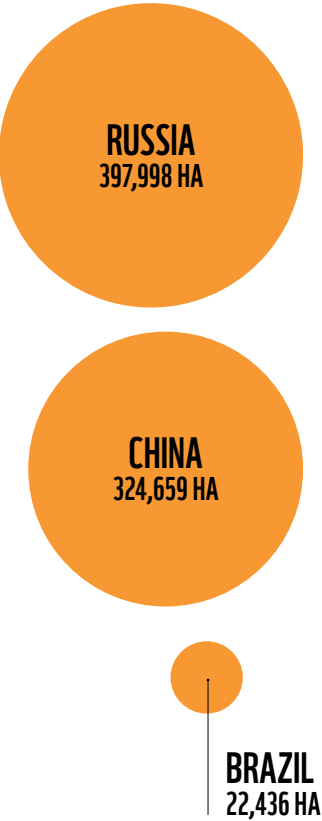
The approach used in the analysis was to convert imports to timber volumes and use the net annual increment.<sup>1</sup> This represents the land area to grow a given volume of timber, rather than the land area affected by timber harvesting in a given year.

This method provides an estimate that the land required to satisfy the UK's demand for imported timber products averaged 4.2 million hectares per year. The land footprint has more than doubled from around 2.8 million hectares in 2011 to 5.8 million hectares in 2015. Even though the majority of the UK's timber footprint is in low or medium-risk countries, the large volume of UK timber imports coupled with the large land area required to produce timber mean that the footprint within countries of high and very high risk categories is high (0.75 million hectares). This relates to timber imports from Brazil, China and Russia.

FIGURE 18:  
LAND AREA REQUIRED TO SUPPLY UK TIMBER PRODUCT IMPORTS



## HIGH RISK FOOTPRINTS



## IMPACTS AND RISKS

The trade in timber products has long been linked with deforestation and forest degradation.<sup>2</sup> This can be the result of clear-felling, resulting in significant impacts on biodiversity. In tropical forests, timber production is often highly selective and intended to be managed sustainably, limiting the impacts on the forest if managed effectively. However, accessing forest areas for harvesting may open up routes for illegal timber harvesting or land conversion. Other environmental impacts associated with timber production include pollution of watercourses, and soil compaction and degradation.

Within the forestry sector, there are two main certification schemes that certify timber and pulp and paper: the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). FSC and PEFC standards have similar models, but the FSC provides somewhat higher environmental and social safeguards, has a greater certified area in the tropics than PEFC, and is supported by leading environmental NGOs. By mid-2013, these initiatives had together certified 23% of managed forests globally.<sup>3</sup> The UK is among those EU countries that have seen the most rapid growth in the market penetration of certified timber.

1 Net Annual Increment (NAI) is defined as the average annual volume of gross increment over the given reference period, less that of natural losses on all trees, measured to minimum diameters as defined for 'growing stock'. FAO (2012). FRA 2015 Terms and Definitions. Rome: FAO.  
2 Dudley, N., Jeanrenaud, J.P., and Sullivan, F. (2014). Bad Harvest: The Timber Trade and the Degradation of Global Forests. Taylor & Francis.  
3 Jason Potts, Mathew Lynch, Ann Wilkings, Gabriel Huppé, Maxine Cunningham, Vivek Voora (2014). State of Sustainability Initiatives Review. IISD & IIED.



## UK FUELWOOD IMPORTS

1.1M TONNES IN 2011 TO

6.8M  
TONNES  
IN 2015

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## TRADE PATTERNS CAN SHIFT RAPIDLY, ALTERING RISK PROFILES AND FOOTPRINTS

For some of the commodities examined, trade patterns remained relatively stable during the five year period (2011-15), whereas in others rapid changes can be observed in only a few years.

### COCOA

The higher yields in Côte d'Ivoire compared to Ghana mean that despite increased import volumes, the overall land footprint decreased between 2013 and 2015. It's not clear what drove this switch in sourcing; however, the difference in yields highlights the importance of investment in improved agricultural practices to help reduce the land required to support demand. Lack of investment in land-use planning and sustainable production methods means that producers may be left impoverished with degraded land, and production may shift to deforest new areas.

### TIMBER

There was a substantial increase in import volumes, particularly fuelwood from the US, during this period. Total timber import volumes almost doubled, with fuelwood imports increasing from 1.1m tonnes in 2011 to 6.8m tonnes in 2015. We attribute this to the incentives for bioenergy under UK renewable energy policy. The risk analysis we have used identifies these imports as low risk, but it's important to note that the risk only considers deforestation at a national level, and is based on deforestation rates up to 2015. It isn't able to explore the localised impacts and trends, look at forest degradation and likely future deforestation risk, or identify the increased risk where deforestation rates are rising rapidly.

**These factors highlight the importance of understanding the potential impacts of UK policies (and future trade agreements) on consumption patterns in the UK, and possible risks overseas.**