



Supply Chain Measurement Tools

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As global economic development continues over the next few decades, nearly 2.5 billion people are expected to join the “consuming class.”

60%

GREENHOUSE GAS EMISSIONS

Consumer goods account for more than 60 percent of global emissions.



THE SUSTAINABILITY PRICE TAG

80%

WATER WITHDRAWALS

More than 80 percent of water withdrawals linked to consumer goods.



75%

FORCED AND CHILD LABOR

More than 75% of forced and child labor is embedded in consumer goods supply chains.



2.2 BILLION TONS SOLID WASTE

2.2 billion tons of municipal solid waste is expected per year by 2025.



20% INDUSTRIAL WATER POLLUTION

Nearly 20% of industrial water pollution comes from textile dyeing and treatment.



2/3 DEFORESTATION

Nearly two-thirds of tropical forest loss is due to agriculture.



The Sustainability Consortium (TSC)

Sustainable Products for a Sustainable Planet

A multi-stakeholder non-profit organization that translates scientific information into business practice

Mission: to design and implement credible, transparent and scalable, science-based measurement and reporting systems accessible for all producers, retailers, and users of consumer products

A global organization, with offices in the United States, Europe and China

More than 100 Members and 1000s of users worldwide



TSC has a multi-stakeholder approach that allows for pre-competitive collaboration



TSC Board of Directors represent all stakeholder groups across several industries...



COMPLEXITY IN CONSUMER GOODS SUPPLY CHAINS

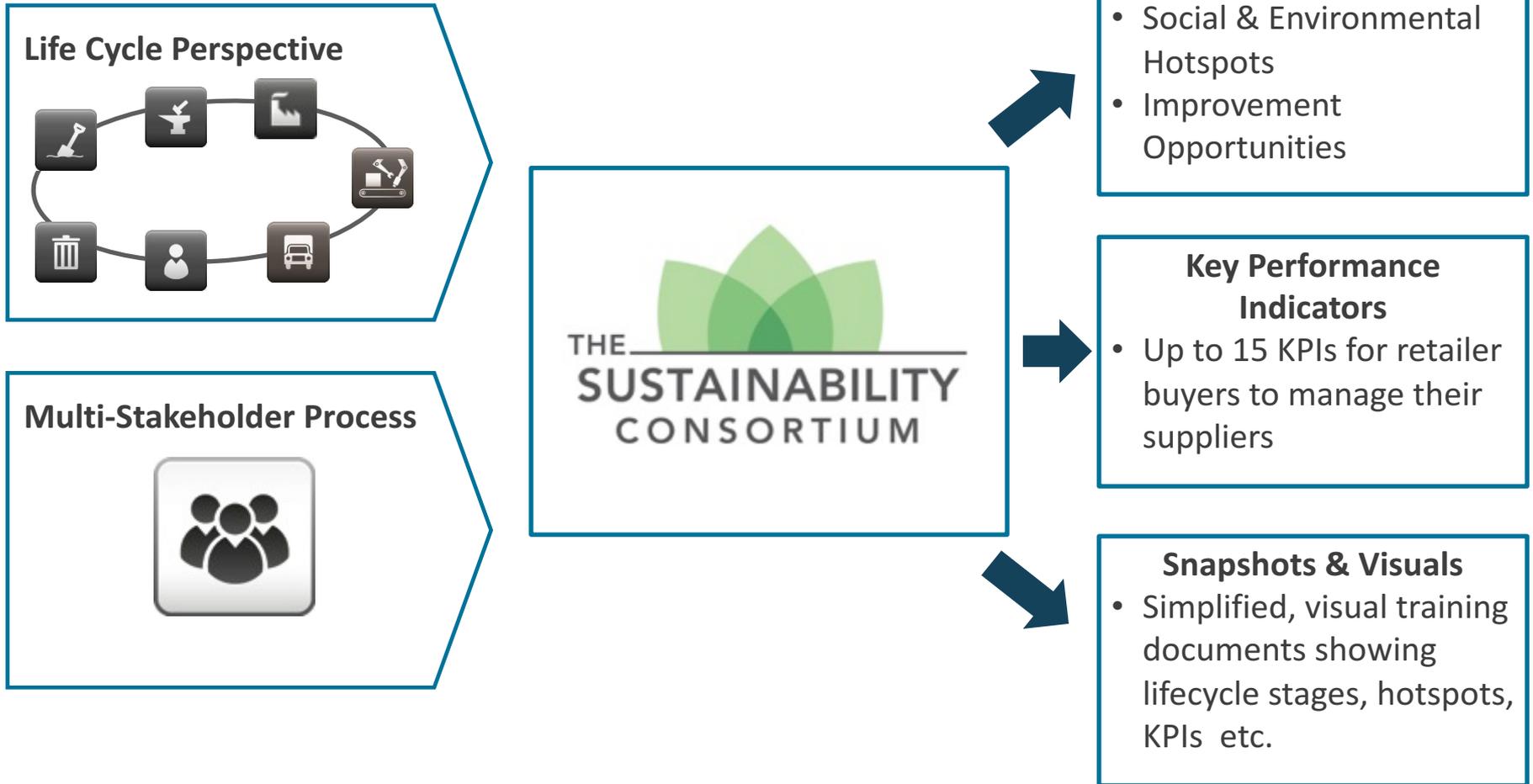


COMPLEXITY RESOLVED



What does TSC do?

TSC translates complex sustainability tools into simple tools to allow buyers and other business users to embed sustainability in everyday business



TSC has tools in 117 product categories, covering 80-90% of sustainability impacts in all of consumer goods

Cross Sector	Clothing, Footwear & Textiles 8 categories, including:	Electronics 10 categories, including:	Food, Beverage & Agriculture 48 categories, including:	General Merchandise 21 categories, including:	Home & Personal Care 13 categories, including:	Paper, Pulp & Forestry 10 categories, including:	Toys 5 categories, including:
 Packaging	 Cotton Polyester Blend Textiles	 Computers	 Apples	 Metal and Plastic Products	 Diapers	 Books and Magazines	 Board Games
 Transportation	 Nylon Textiles	 Mobile Devices	 Beef	 Paint	 Laundry Detergent	 Copy Paper	 Metal Toys
	 Rayon Textiles	 Printer Ink	 Wild-Caught Fish	 Small Appliances	 Pharmaceutical Drugs	 Dimensional Lumber	 Plush Toys

GREENING GLOBAL SUPPLY CHAINS



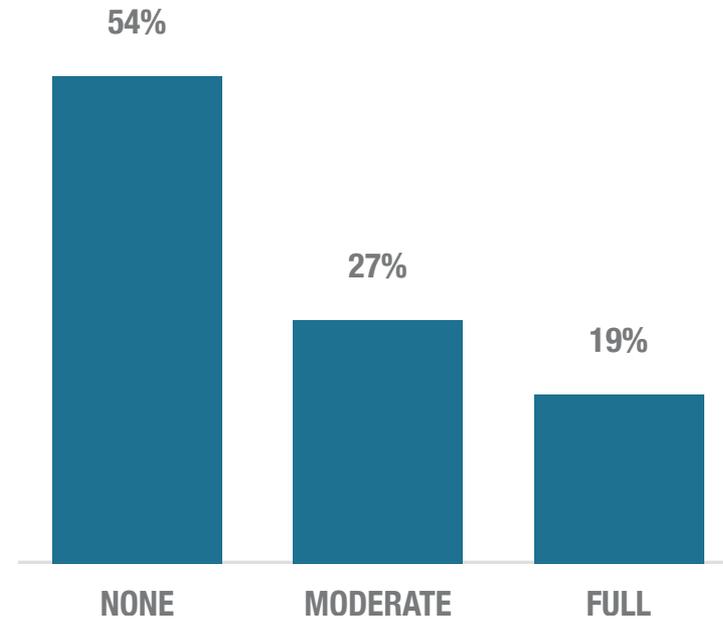
From Blind Spots
To Hotspots To Action

2016 IMPACT REPORT

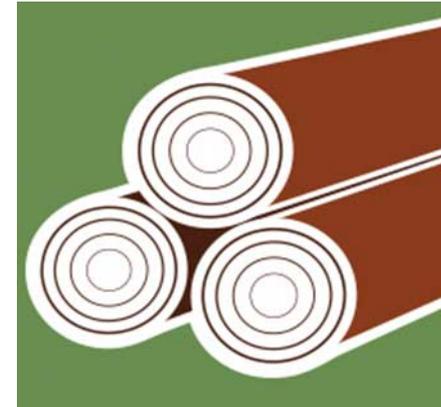




LOW VISIBILITY WHERE THE IMPACT MATTERS MOST



Global commitments to end deforestation



Deforestation Resolution

-signatories will have no net deforestation by 2020

Pulp, Paper, and Packaging Guidelines

Sustainable Palm Oil Sourcing Guidelines

Sustainable Soy Sourcing Guidelines

New York Declaration on Forests

-signatories will eliminate deforestation from soy, beef, paper, and palm oil supply chains by 2020





COPY PAPER

SUPPLY CHAIN HOTSPOTS



START



HOTSPOTS

- 1** **Community rights – Forestry operations:** Local communities can be negatively affected by forestry operations due to loss of land use, timber rights, and cultural heritage.
- 2** **Illegal logging – Forestry operations:** Harvesting timber illegally may lead to biodiversity loss and impact land rights of local communities.
- 3** **Labor rights – Wood sourcing:** Forestry operations may use child labor, as well as violate other labor rights.
- 4** **Land conversion and deforestation – Forestry operations:** Ineffective forest management can lead to environmental impacts and climate change from deforestation.
- 5** **Pesticide application – Wood sourcing:** Improper pesticide use can impact biodiversity, water quality, and human health.
- 6** **Worker health and safety – Forestry operations:** Workers can develop serious health problems from poor working and living conditions in addition to physical injury from other occupational hazards.
- 7** **Chemical use – Pulp production:** Chemicals used for pulping and bleaching can pollute the environment.
- 8** **Energy consumption – Pulp and paper production:** Energy generated to power manufacturing processes can cause climate change, damage the environment, deplete resources, and impact human health.
- 9** **Water use – Pulp production:** Water use during pulp and paper manufacture can deplete freshwater resources.
- 10** **Worker health and safety – Pulp and paper production:** Workers can develop serious health problems from exposure to the chemicals used to make pulp and paper and physical injury from other occupational hazards.
- 11** **Transportation to retailers:** Fuel combustion for transportation of the final product can cause climate change, deplete resources, and impact human health.

Summary of Paper Results from Retailers

- Paper and Wood Products scored similarly to other products with complex supply chains.
 - More transparency downstream at processing and less in upstream activities
- Questions about activities that occur at processing/manufacturing scored highest.



Imagine the scenario of a stationery company

- You purchase paper and convert it into your final product
- Your customers (big retailers) want to know about your sustainability performance
- You have a goal to source 50% SFI certified paper
- Your suppliers don't know where the wood fiber in your paper originates
- You want to assure your customers that you have a deforestation-free supply chain and signed the Consumer Goods Forum and NYDF commitments to have zero deforestation by 2020

What do you do?

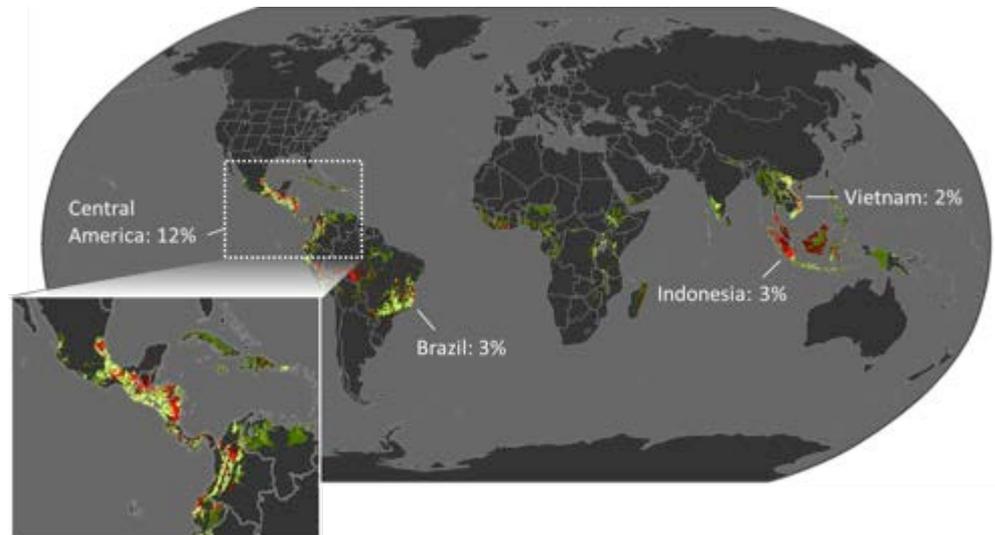


Why is Commodity Mapping Needed?

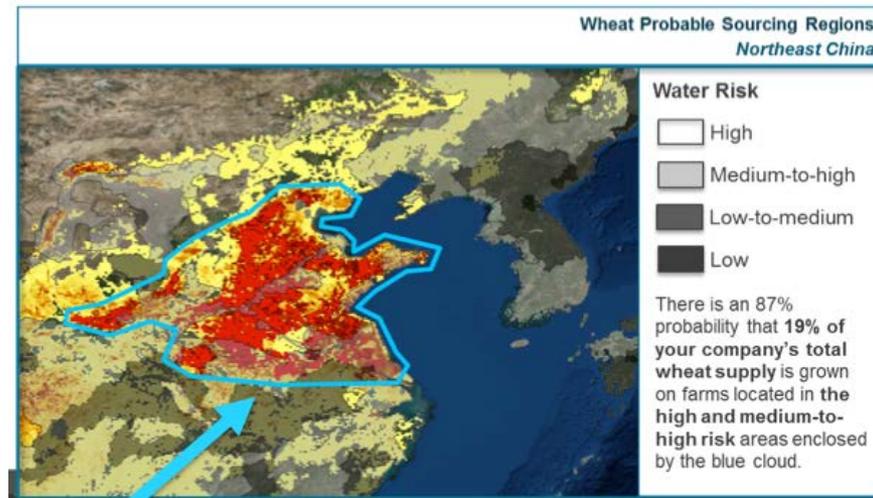
Transparency from forest to retail is lacking

Driving sustainability into supply chains is dependent on transparency

- Need for easy reporting of farm data
- Need for feedback loops from retail to suppliers about performance and expectations

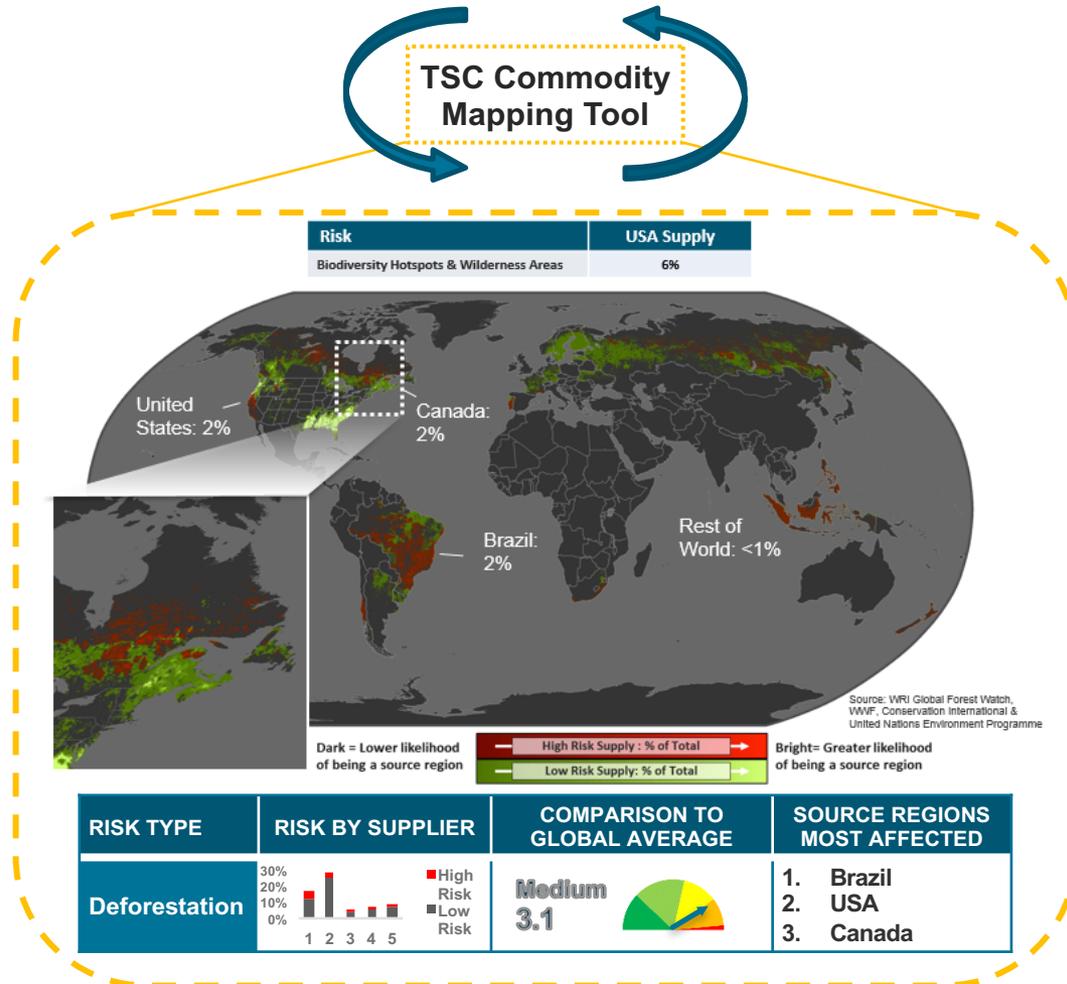
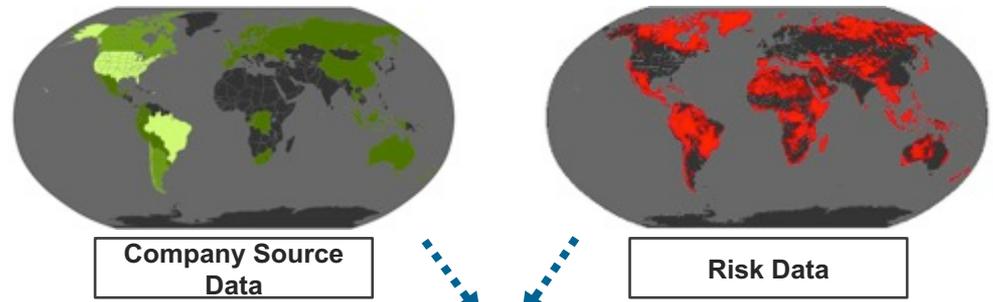


Who uses TSC'Commodity Mapping?

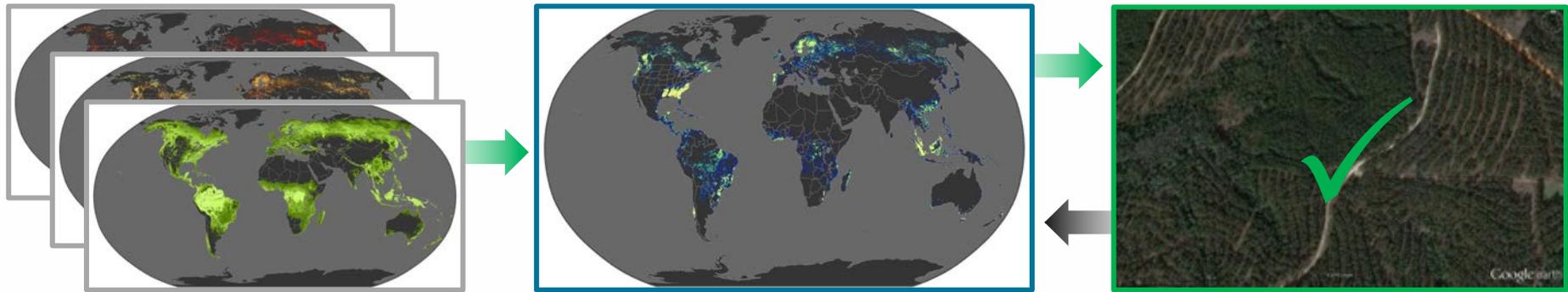


TSC Commodity Mapping

Forests and Crops



TSC Commodity Mapping Methods



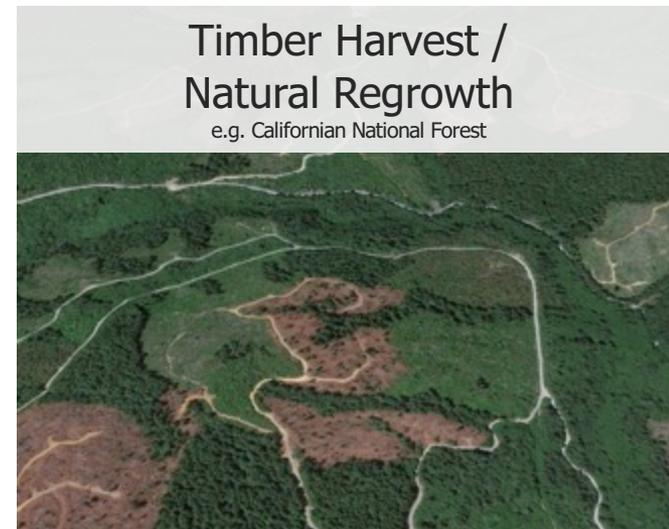
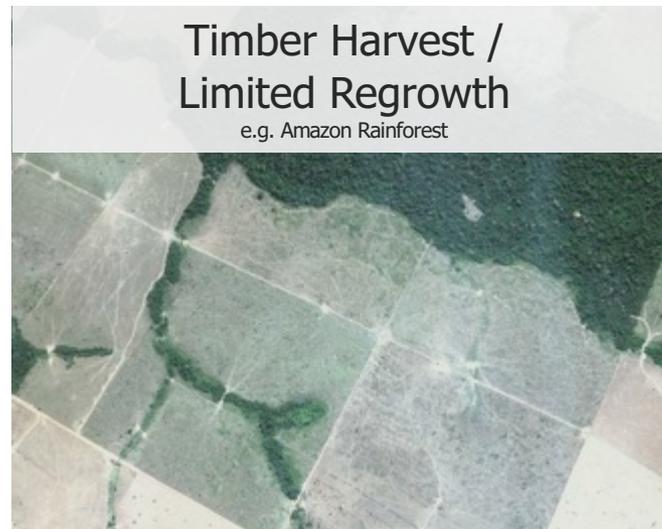
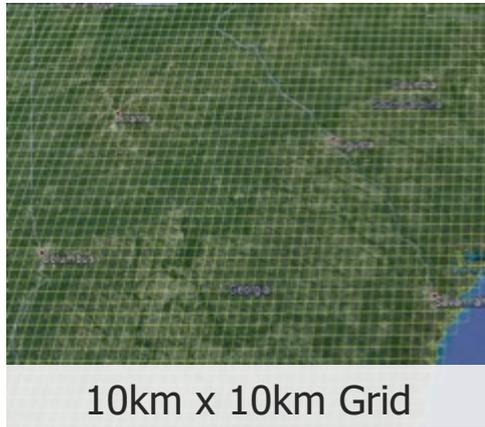
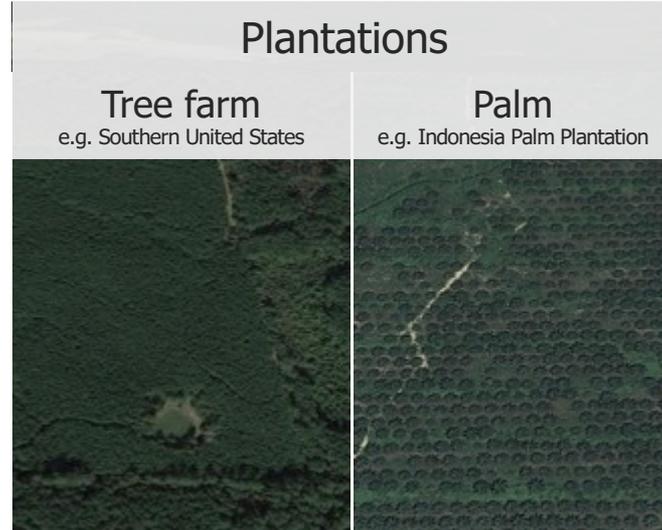
Analyze existing global datasets
on tree cover loss and gain, & fire.

Develop a model to
characterize wood sourcing areas.

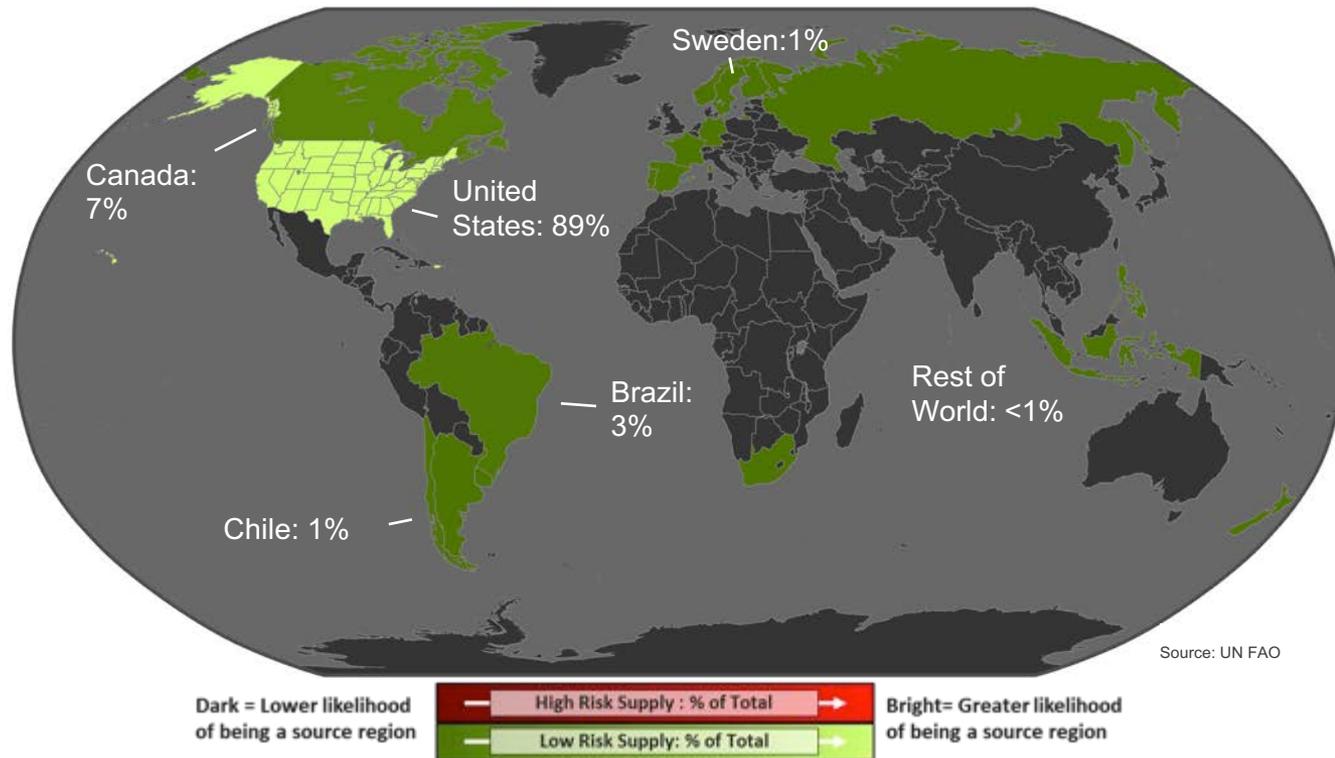
Verify model findings with
high-resolution satellite imagery.

Identifying important patterns on the landscape

Model identifies likely tree farm locations



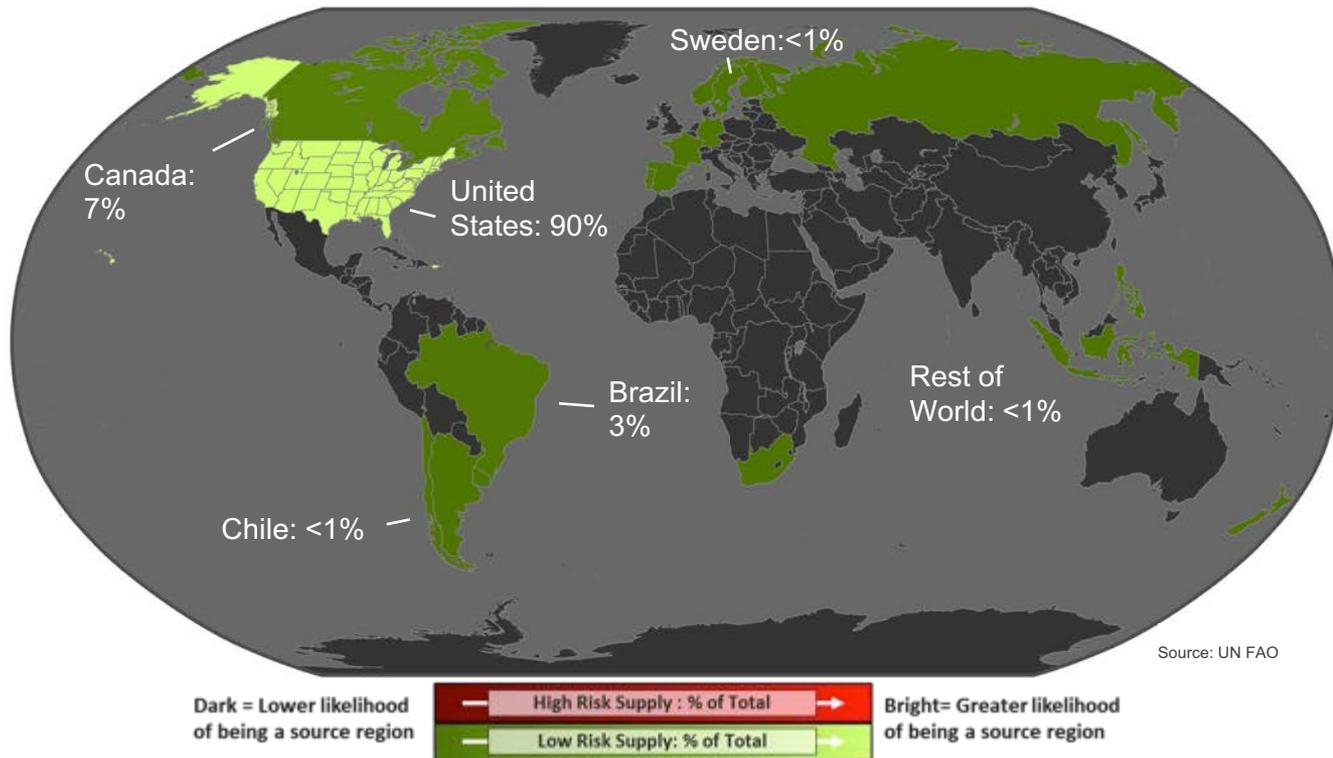
Step 1. Trace the company's pulp supply to it's country of origin



Note: This is an example based on total US Chemical Wood Pulp supply. Source: FAO



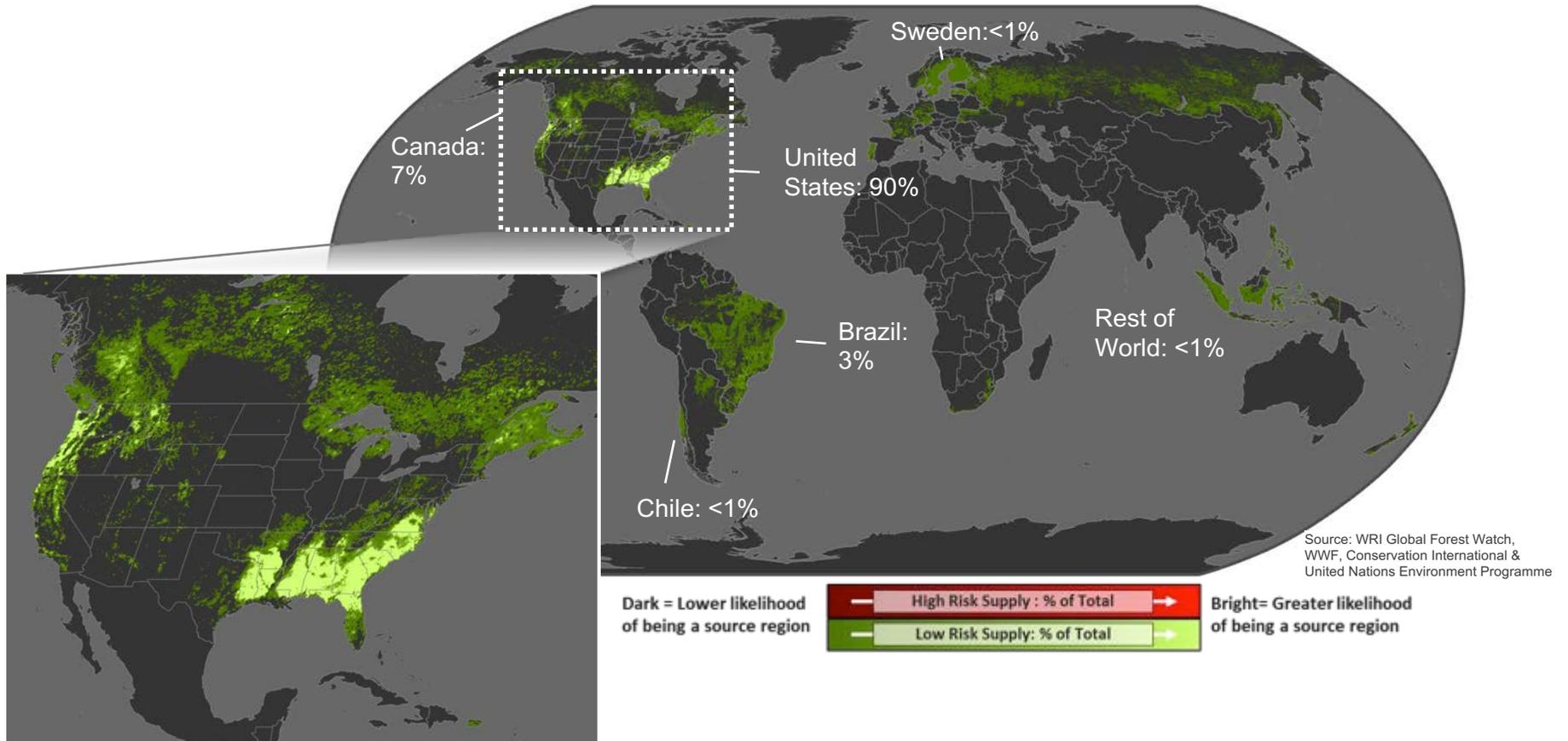
Step 2. Connect pulp to it's wood sourcing countries



Note: This is an example based on total US Chemical Wood Pulp supply. Source: FAO



Step 3. Connect wood to it's source forest regions

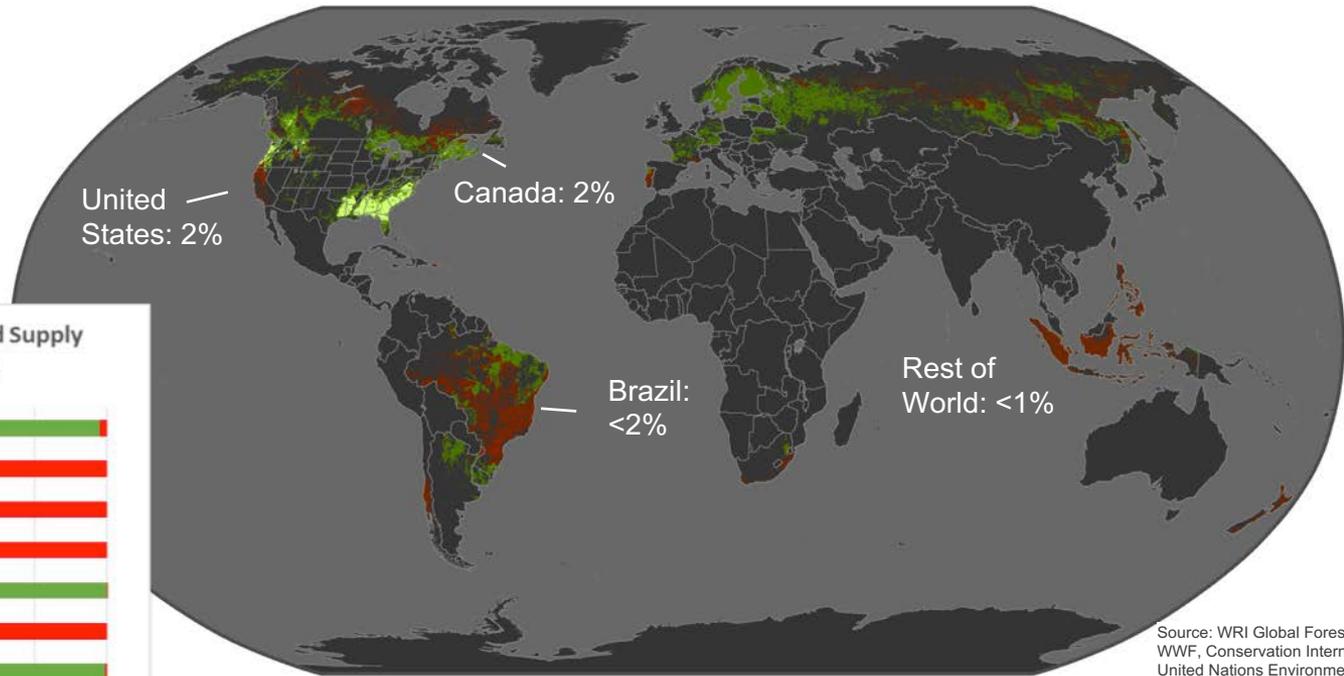


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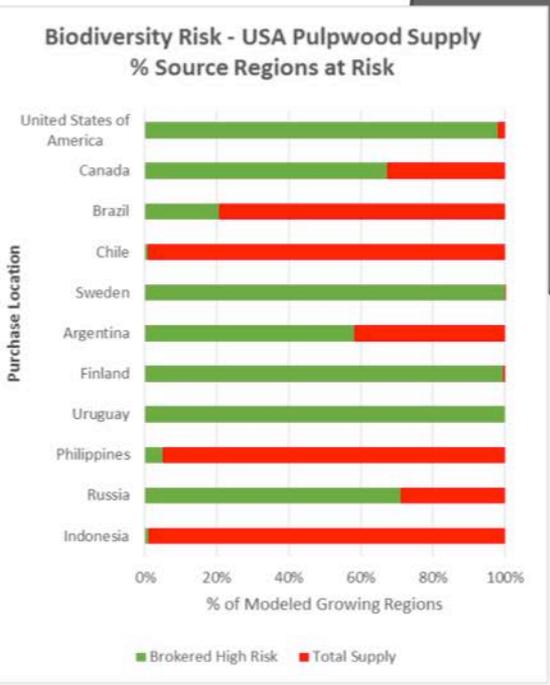


Step 4. Assess High Risk Areas – Wood Production within Biodiversity Hotspots & Wilderness Areas

Risk	USA Supply
Biodiversity Hotspots & Wilderness Areas	6%



Source: WRI Global Forest Watch, WWF, Conservation International & United Nations Environment Programme

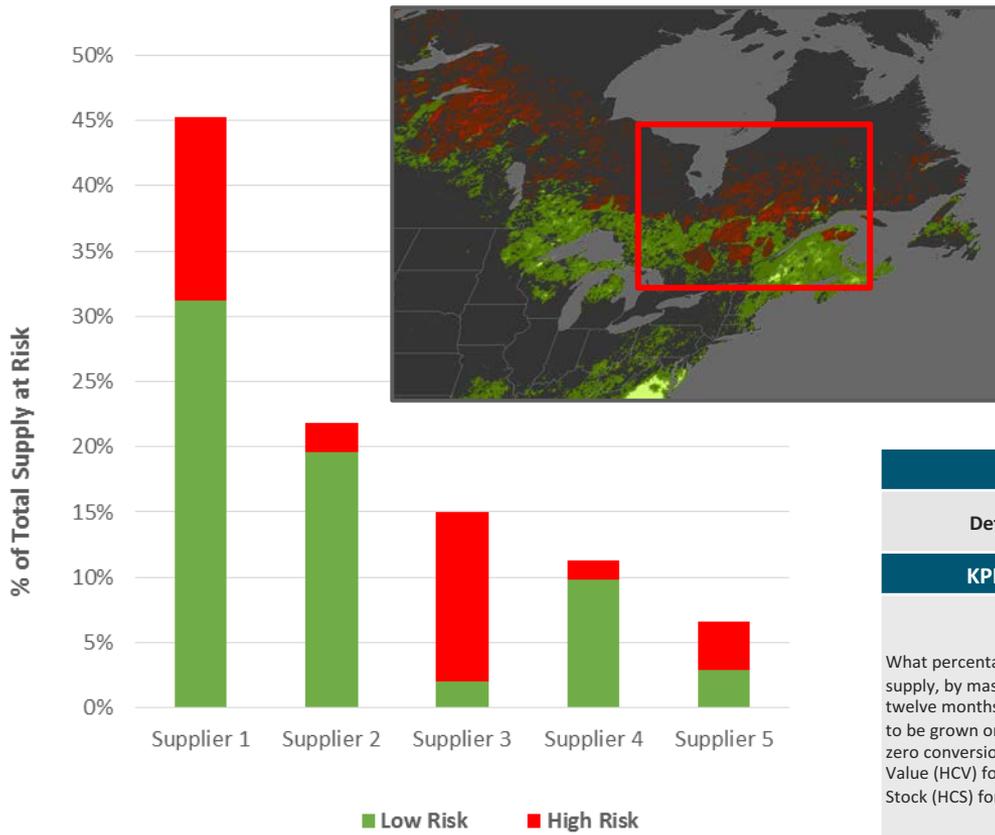


Note: This is an example based on total US supply



Step 5. Utilize maps and survey suppliers

Supplier Comparison



Assess Vendor Sustainability Performance with TSC questions

Risk	KPI Title
Deforestation	Deforestation and Land Conversion - On-farm
KPI Question	KPI Responses
What percentage of your cocoa supply, by mass purchased in the last twelve months, has been determined to be grown on farms that have had zero conversion of High Conservation Value (HCV) forests or High Carbon Stock (HCS) forests since 2010?	<p>A. We are unable to determine at this time.</p> <p>B. The following percentage of our cocoa supply, by mass purchased in the last twelve months, has been determined to be grown on farms that have had zero conversion of HCV forests or HCS forests since 2010:</p> <p>B1. _____% of our cocoa supply has been determined to be grown on farms that have had zero conversion of HCV forests since 2010.</p> <p>B2. _____% of our cocoa supply has been determined to be grown on farms that have had zero conversion of HCS forests since 2010.</p>

Dark = Lower likelihood of being a source region



Light = Greater likelihood of being a source region

Note: This is an example based on dummy data



What are the outcomes?

- Allow companies to track and report on deforestation commitments
- Gain important insight into geographic areas in complex forest-based supply chains
- Identify and prioritize high risk areas for further investigation with suppliers
- Take action in the supply chain to end deforestation and ensure responsible sourcing





THE
SUSTAINABILITY
CONSORTIUM™

The Sustainability Consortium® is jointly administered by Arizona State University and University of Arkansas with additional operations at Wageningen UR in the Netherlands and Tianjin, China.

