Forestry Supply-Chain Mapping:
Enabling global brands and consumers to understand and address their impacts on forests.

Contact information
Philip Curtis
pcurtis@walton.uark.edu
814-470-7367
The Sustainability Consortium

Client information
Organization: The Sustainability Consortium
Website: http://www.sustainabilityconsortium.org/
Point of contact: Philip Curtis, pcurtis@walton.uark.edu

Objectives:
The goal of this project is to enable global companies to better understand and address the social and environmental impacts of wood-based consumer products. In particular, The Sustainability Consortium (TSC) wants to understand where companies are most likely sourcing their wood-pulp from and what specific impacts occur in these areas. This will allow TSC to more effectively guide industries towards reducing their impacts on forests and achieving zero net-deforestation goals.

Driving questions:
- Where are the global source regions for wood-pulp?
- What are the major environmental and social impacts in these regions?
- What regions of the world are most affected by specific wood-based product categories (i.e. tissue paper, copy paper, dimensional lumber etc.)?
- What organizations help to reduce the impacts of timber harvesting and where do they have operations?

Significance:
Over the past few years The Sustainability Consortium has gathered leading suppliers, manufacturers, and retailers together to address the social and environmental impacts of consumer products. During this time, TSC has scientifically identified the risks that occur within major industry sectors and the products produced within these sectors, including the Paper, Pulp, and Forestry sector. This body of work identifies industry and product category hotspots across the entire world and the actions that can be taken to address them. However, many individual impacts of the Paper, Pulp, and Forestry sector only occur in specific locations or regions, and the improvement opportunities or partner organizations available to address these issues are often geographically-specific as well. Understanding the spatial variation of hotspots within a specific forestry product category will enable companies to better identify and address the risks that are most prevalent in their individual supply chains, as well as enabling companies to prioritize their goals and resources. This will also greatly improve the communication of science to businesses by allowing complex data to be visualized through maps in addition to text and diagrams. If this project succeeds in providing a spatial component to TSC’s work on forestry products, the methodology can be expanded to include all industry sectors and all product categories within TSC (110 product categories within 9 sectors).
A spatially-explicit body of product-specific sustainability knowledge would be incredibly helpful to TSC and those that make decisions using its work. It would greatly increase TSC’s ability to communicate complex information to the most influential individuals within a business, while also increasing the likelihood that a company will understand and embrace sustainable practices. In addition, consumers will be able to use the information to better understand the footprint of their purchases, driving demand and pressure for sustainably-produced consumer goods.

Background:
This project is based out of TSC’s University of Arkansas office, located in Fayetteville, Arkansas. This project has evolved through repeated discussions with Consortium members over the years about the need for a spatial understanding of supply chains. In particular, this project is a forward-looking extension of TSC’s Commodity Mapping Project, which has focused on identifying source regions of agricultural commodities (crops) with an emphasis on water-related risks. To date, there are private consultant firms, certifications, and NGOs that trace forest products back to their source, but none with the large, industry-wide scope or product category specificity required of TSC. This work is intended to assist companies that are unable to directly trace their supply chains due to internal resources or supply chain complexity, as well as those that are in a position to make improvements but don’t know where to apply their efforts.

Available data:
The data required for this project will come from publically available sources, TSC’s research database, and possibly TSC members directly. This project will require the use of GIS to compile and manipulate spatial datasets. I (Philip Curtis) am happy to provide technical guidance if needed. TSC began an initial exploration into this project several months ago and would be happy to share the data sources that proved useful at the time. There are many sources of high resolution, publically available spatial data on forests. Forest cover, type, height, yield, fire, accessibility, and others are available online. Global Forest Watch is a great source of tree cover and tree cover loss data, as are NASA, USGS, the EU space agency, and many others. I am willing to provide a list of sources that we have identified already.

The group members would also be provided access to TSC’s database of sustainability research and citations, as well as our product-category documents. We have already conducted a deep review of the hotspots and improvement opportunities that are relevant to 110 product categories representing over individual products. What we don’t know is where these impacts and actions are applicable; (what is a hotspot for paper production in Thailand may not be a hotspot in Canada, etc.). Our existing literature review likely includes much of the needed information, but spatial relevance wasn’t a focus at the time it was collected and reviewed. All of these citations will be available as a starting point. We would be happy to reach out to member companies and civil society organizations as well to ask for additional information that may be helpful. Students may also make use of the Center for Applied Special Technology (CAST) at the University of Arkansas as another resource if needed.

Possible approaches:
If the aim is to link individual product categories to specific regions, the approach that was used in TSC’s Commodity Mapping Project would be useful here. This would require the creation of a production-intensity layer to use as a proxy for probably sourcing locations, with risk overlays used to calculate subsequent exposure to risk.

A forest production intensity dataset could be created by combining forest cover and forest loss data to identify clear-cuts by year (available from Global Forest Watch), masked using fire extent data to exclude forest fires (available from MODIS). Forest concession data could be used to identify land that is being selectively logged. The FAO provides national production totals that together can be used to calculate the productivity of forests in terms of wood available for pulp production. Alternatively, tree cover data, physical land accessibility estimations, and regional production statistics could be used to estimate the likelihood that a given location will be the source of timber for wood-pulp. FAO also
provides trade statistics between nations for forest products such as wood pulp. By linking the forest production information to trade data, the flows of pulp can be traced back to their most likely country of origin. This in turn can be associated with pulp-based products.

**Deliverables:**
- Concise, product-specific supply chain risk overview document(s) with maps highlighting likely hotspot regions and the corresponding issues, improvement opportunities, and/or potential NGO partnerships within each region.
  - Global wood-pulp sourcing-regions dataset.
  - Spatial impact and improvement opportunity datasets (derived from TSC research).
  - Spatial dataset of NGO areas of forest conservation operations (if possible).
  - Model to incorporate pulp trade data with wood-pulp production dataset - adapted from existing TSC agricultural commodity trade flow model (if needed).

These deliverables are asking for a lot, but any progress towards these goals is helpful, even if not all deliverables are produced. TSC hopes to gain an understanding of how its existing work can be expanded to include spatial relevance. If successful, TSC would like to use the methodology developed by Bren students to include all sectors and product categories in order to address issues such as conflict minerals, water scarcity, biodiversity loss, soil erosion, and others. Industries such as agriculture, ranching, fisheries, mining, and oil and gas extraction are likely candidates for future projects. Overall, TSC would like to use this project that focuses on forestry products and deforestation as a pilot project to explore ways to use spatial relevance to improve sustainability decision-making. The hope would be to receive recommendations on innovative ways to use spatial information to leverage our large body of sustainability knowledge to address issues in all sectors.

**Internships:** We are unable to promise an internship at this time (Jan ’15), but we are actively working out the details required to support a paid summer internship for a student working in the Fayetteville, AR office.
Dear Bren Group Project Review Committee,

The Sustainability Consortium (TSC) plans to serve as a client to the proposed Bren School Master’s Thesis Group Project entitled “Forestry Supply-Chain Mapping”. This project will attempt to locate the regions of the world that produce wood-pulp and identify the social and environmental issues that occur there during wood-pulp production, using TSC’s existing database of sustainability knowledge as a guide. If successful, the final deliverables will be incorporated into TSC’s Commodity Mapping Project and the methodology will be used to inform and expand TSC’s efforts to incorporate location and geography into its work.

Students will be provided relevant citations and data from TSC’s research database as well as guidance and contacts from within TSC’s staff and member organizations, as needed. As a client, TSC hopes to work closely with the students and the project as a whole, and is willing to provide active guidance and training on TSC-related material and methods if needed. TSC offers to provide information and data from relevant past projects if desired, so long as the sharing of this information does not violate an existing Nondisclosure Agreement. There will be no restrictions on the publication of the project report so long as there is sufficient oversight by TSC. It is asked that any data that TSC provides be used solely for the purpose of this project and that TSC maintains full ownership of any shared data and project deliverables so that upon completion the work can be incorporated fully into TSC’s operations with no strings attached. We do not seek any form of nondisclosure agreement and do not intend to limit the release and presentation of the project, but understand in good faith that participation in this Group Project will not hinder TSC’s ability to conduct its own work and that the data it shares will not be released in a manner beyond the traditional group project deliverables of a public presentation, report, and poster. If there seems to be a problem with any of these requests we are happy to discuss this further.

As a former Bren student myself, I feel that this is a great opportunity to allow graduate students first-hand experience in what I consider the cutting edge of corporate sustainability. This work will allow students to contribute in a very real and tangible way. I feel this project fits in perfectly with the mission of the Bren School and is a great opportunity for students to innovate and shake up how science is communicated to business in order to drive positive social and environmental action.

Thank you for your consideration!

Sincerely,

Philip Curtis
Senior Researcher
The Sustainability Consortium