Transparency for Sustainable Economies (Trase).
An innovative data-driven approach to mapping commodity supply chains: applications for LCA

Javier Godar, Stockholm Environment Institute

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✓ TRASE is an **online information and decision support** supply chain transparency platform offering:

➤ **Publically available information** mapping and monitoring global supply chains and embedded environmental and social risks of c. 70% global trade of key agricultural commodities linked to deforestation in (sub)tropical countries.

➤ Trase is inherently **spatially-explicit**, at the finest sub-national scale possible with the available data (5500 munic. in Brazil), **accounting for 100% of the traded flows** of a given commodity

➤ **Decision support capabilities and communications** to support enhanced supply chain governance, management and monitoring of both territorial and supply chain risks

Addressing the missing link for supply chain transparency:
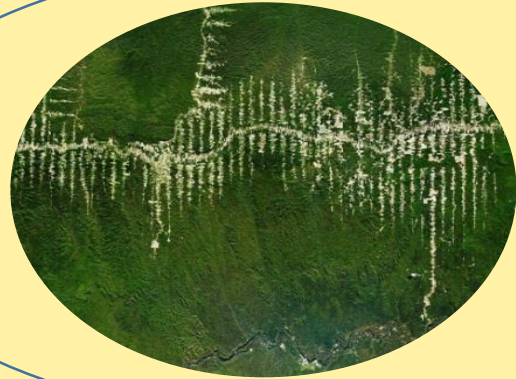Linking actors to places at scale:

IMPACTS   PLACES   ACTORS

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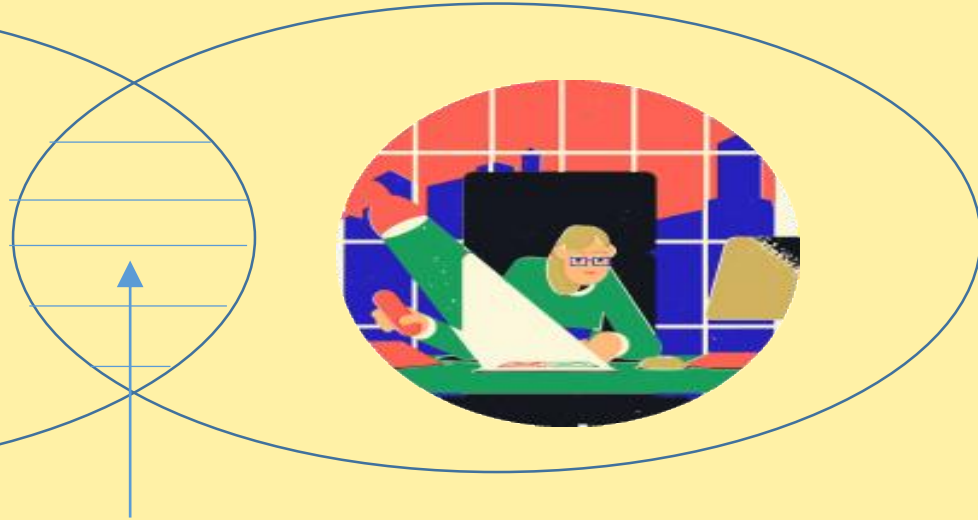**The knowledge gap:** Connecting actors to places to impacts

Assessing territorial performance

Assessing actor performance
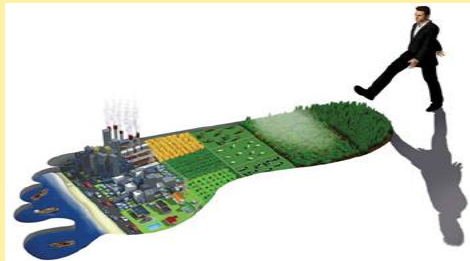
But still very limited overlap

Balancing detail and scale to assess the sustainability of commodity supply chains

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Assessing territorial performance

Assessing actor performance

Footprint indices

Bespoke traceability systems

Open Palm

Environmental Research Letters

LETTER

Balancing detail and scale in assessing transparency to improve the governance of agricultural commodity supply chains

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Abstract

To date, assessments of the sustainability of agricultural commodity supply chains have largely relied on some combination of macro-scale footprint accounts, detailed life-cycle analyses and fine-scale traceability systems. Yet these approaches are limited in their ability to support the sustainability governance of agricultural supply chains, whether because they are intended for coarser-grained analyses, do not identify individual actors, or are too costly to be implemented in a consistent manner

Implications of SEI-PCS

- *"Current methods linking production impacts to international demand typically trace the origin of products back to the country level, lacking fine-scale spatial resolution. This hampers accurate calculation of trade and consumption footprints, masking and distorting the causal links between consumers' choices and their environmental impacts, especially in countries with large spatial variability in socio-environmental conditions and production impacts"*

Environmental Research Letters

Towards more spatially explicit assessments of virtual water flows: linking local water use and scarcity to global demand of Brazilian farming commodities

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Figure 1. Blue virtual water flow in 2011 at the municipal level, for (a) Brazilian sugarcane consumed in China, (b) Brazilian sugarcane consumed in the EU, (c) Brazilian soy consumed in China, and (d) Brazilian soy consumed in the EU, in Mm³ of water.
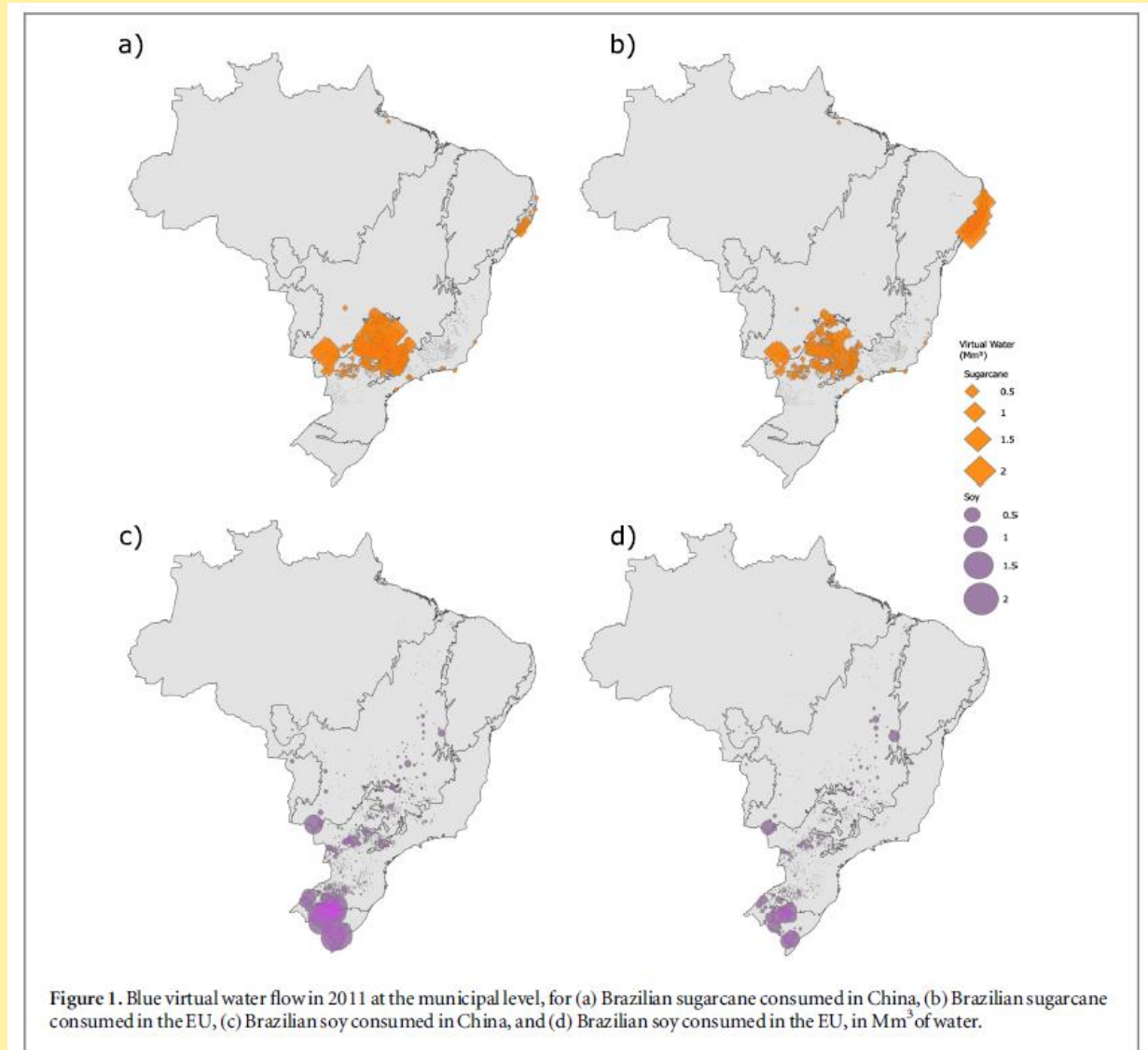
The SEI-PCS approach (Spatially-Explicit Information on Production to Consumption Systems)

- Godar et al. 2014, Ecological Economics
- SEI-PCS manual
  http://resources.trase.earth/documents/Trase_supply_chain_mapping_manual.pdf

Datasets for supply chain map:

      1) Trade data: per shipment customs declarations and bills of lading

      2) Tax ID records at asset level

      3) Sub-national production data

      4) Optional datasets: sanitary registries, inspections, self-declarations, logistic data

TRASE: BRAZILIAN SOY

	2010	2011	2012	2013	2014	2015
Individual trade flows	48,982	53,410	52,051	50,173	61,785	59,563
Production (million Tn)	68.90	74.82	65.98	81.75	86.84	97.48
Exports(million Tn)	43.34	48.16	47.77	56.42	59.18	69.93
Value exports (billion USD)	16.92	23.84	25.68	30.81	31.59	27.93
Municipalities of production	1801	1832	1866	1964	2035	2081
Exporting companies	292	310	312	343	328	343
Importing countries	72	81	69	74	81	81
Volume of trade flows with unknown municipal origin	7.3%	5.3%	6.7%	9.1%	9.0%	8.6%

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Formosa do Rio preto ostenta o triste título de campeã em desmatamento. População promove evento para cobrar preservação ambiental

13 de setembro de 2015 ⋮ Oeste Baiano ⋮ Nenhum comentário

No Dia Nacional do Cerrado, comemorado na última sexta-feira (11), moradores da cidade de Formosa do Rio Preto, na região Oeste da Bahia, realizaram uma caminhada a fim de chamar a atenção das autoridades para o problema da degradação do bioma e da bacia hidrográfica da cidade. O ato foi batizado de "Grito das Águas do Rio Preto".

A caminhada foi organizada pela Agência 10envolvimento, em parceria com Sindicato dos Trabalhadores Rurais, Pastoral da Juventude, Associação Pró-Cultura, além de outros seguimentos da sociedade e comunidade em geral.

De acordo com levantamento realizado pelo Ministério do Meio Ambiente, o município ocupa o primeira em desmatamento em todo o país, seguidos de São Desidério e Correntina, também no Oeste baiano.

Application to LCA:

EMISSIONS STAGE	DESCRIPTION	OUTPUT
1) Emissions from land conversion for soybean production	Aboveground and belowground biomass, inc. soil organic carbon	kg CO_2/ kg soybean
2) Emissions from agricultural production	Production of agricultural inputs and application, inc. on site emissions from machinery use, fertilizers, pesticides.	kg CO_2/ kg soybean
3) Emissions from domestic transport of soybean	Emissions from domestic transport of soybean (or soybean-based commodities, i.e. oil, cake): from the point of production to exporting port, depending on the distance and the transportation modality.	kg CO_2/ kg soybean
4) international shipping emissions	Soybean export from the port to importing country, by vessel	kg CO_2/ kg soybean
5) Industrial emissions from crushing at soybean mill	Industrial emissions from crushing at soybean mill, for producing cake, oil and biodiesel (transesterification)	kg CO_2/ kg soybean
6) Emissions from consumption by the livestock sector	GLEAM: Emissions from soybean processing in the livestock sector (dairy, poultry, pork).	kg CO_2-eq./kg soybean-eq. input

Zooming in on shipping emissions
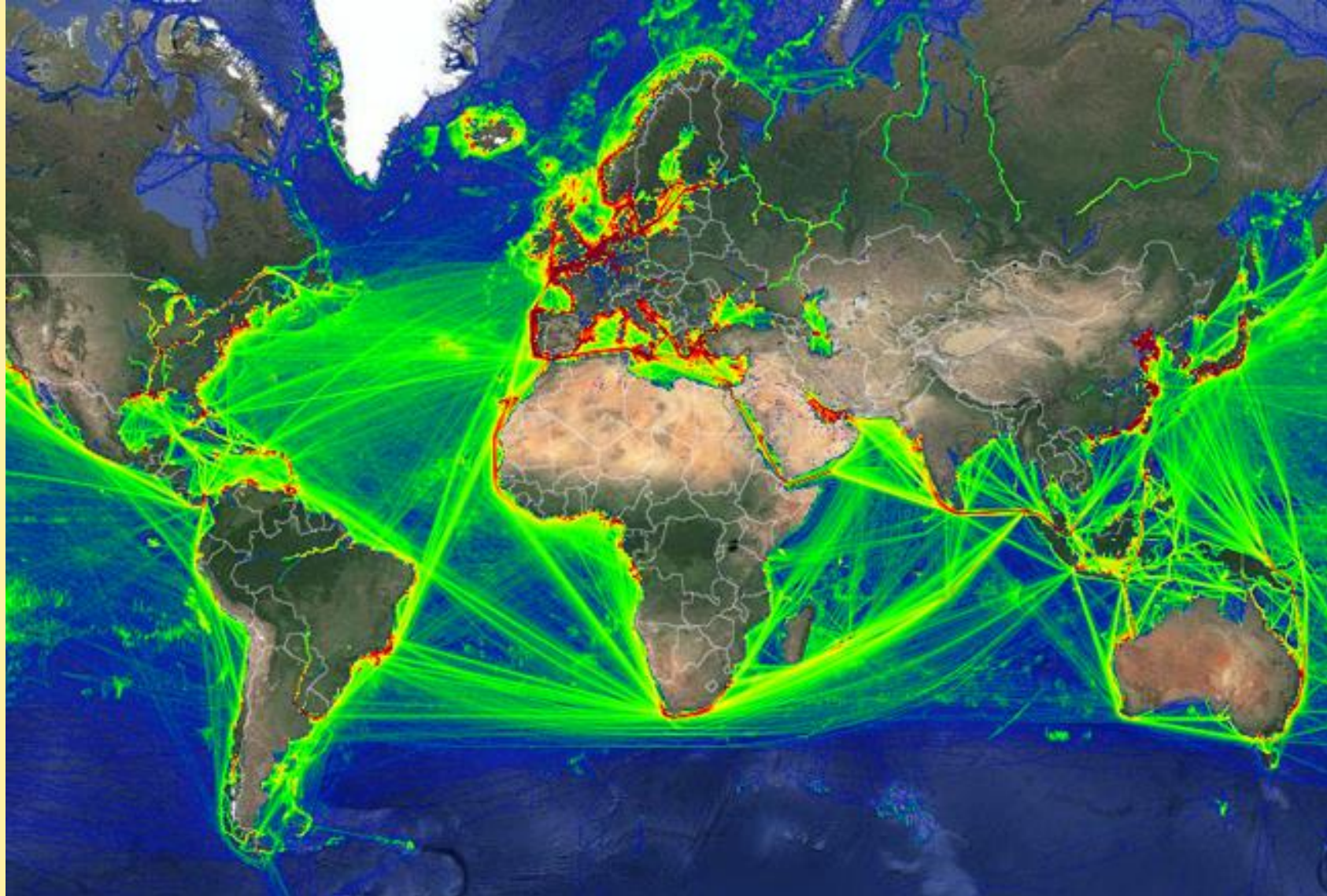
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Thank you!

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