

FINEPRINT

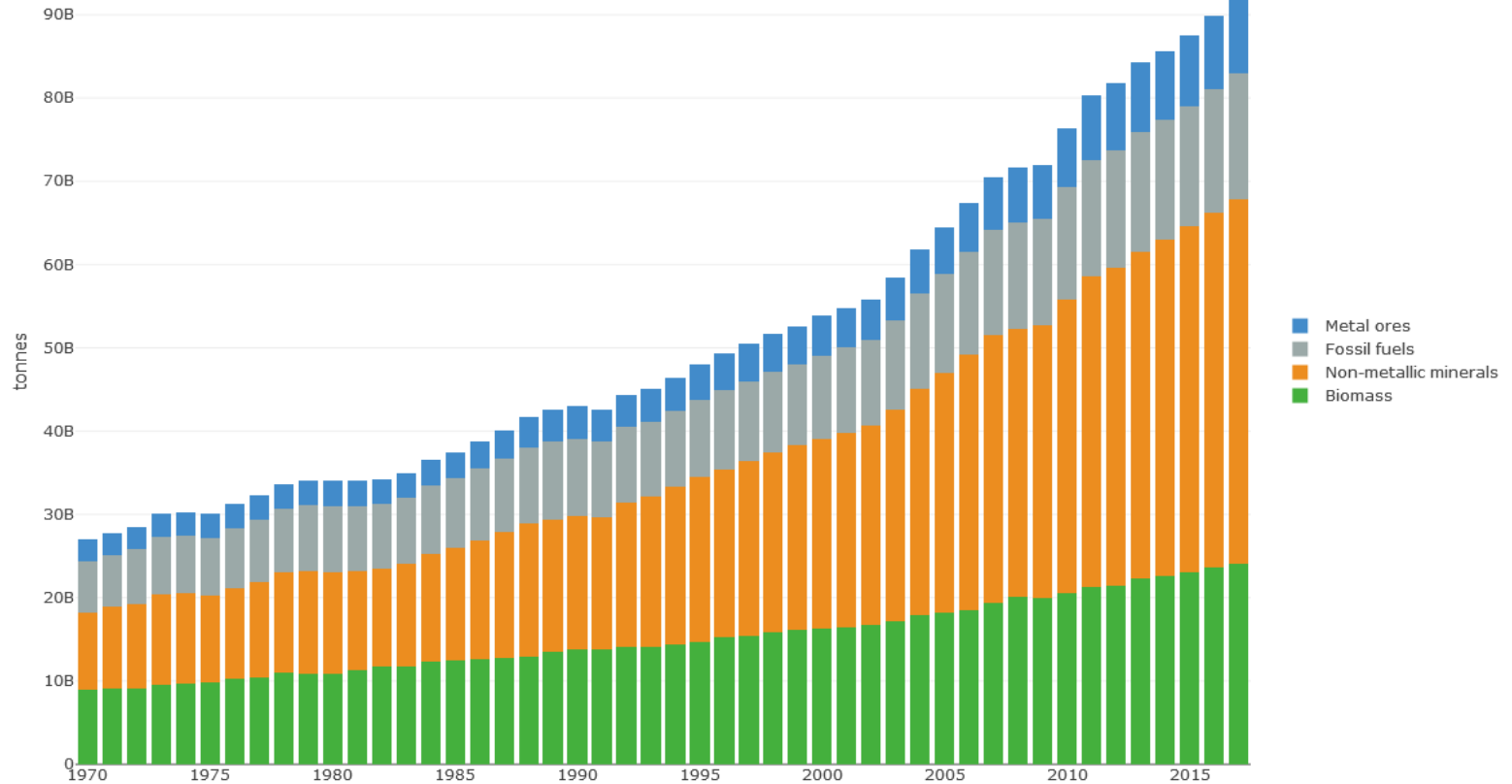
A spatially explicit physical trade framework to trace
environmental impacts of resource extraction along global
supply chains

Rapidly increasing global material consumption

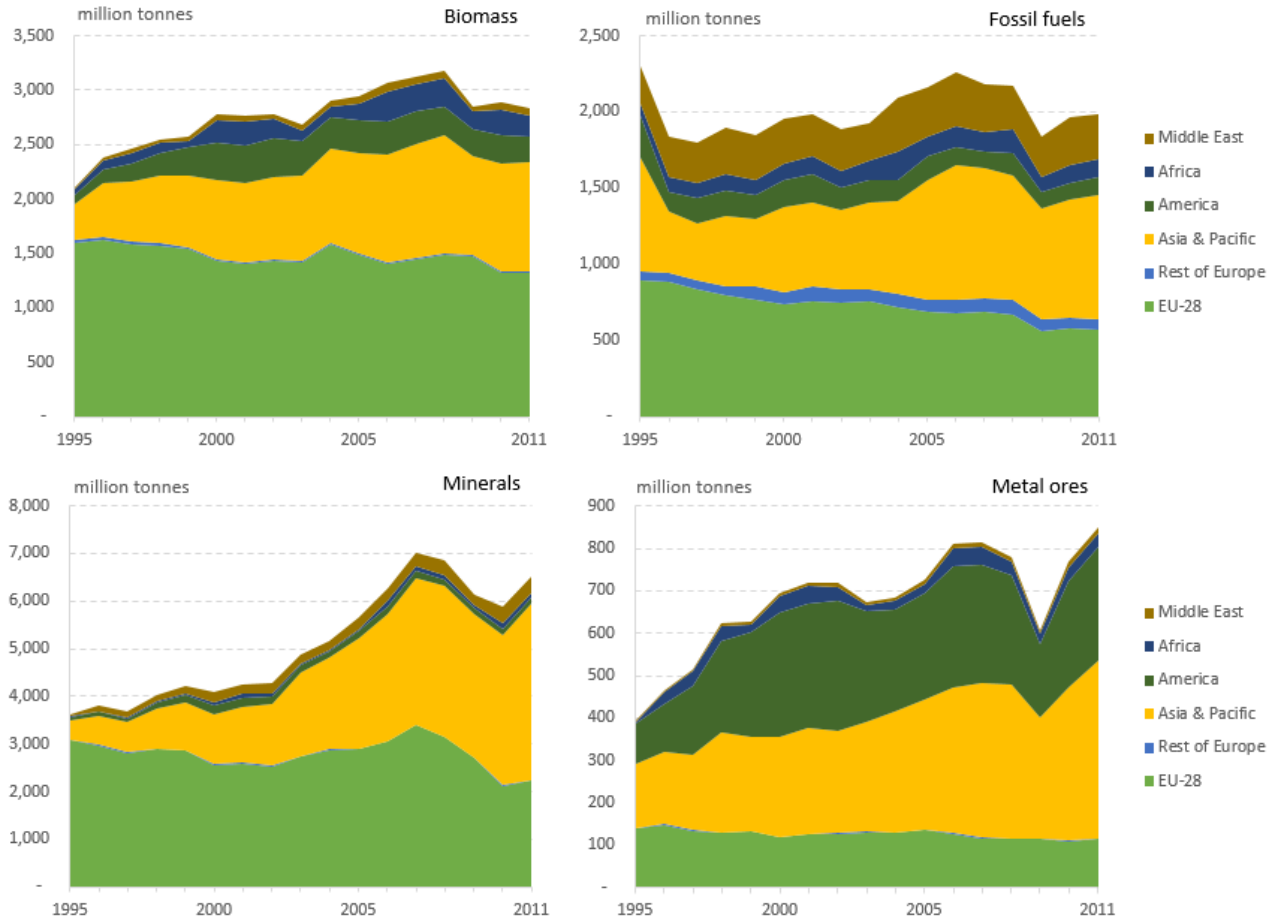


1970: 27 billion tonnes

2017: 92 billion tonnes



Geographical origin of EU-28 material footprint



Impacts depend on specific location

Chile: Copper mining



https://de.wikipedia.org/wiki/Chuquibambilla#/media/File:Chuquibambilla_Mine_Panorama.jpg



http://www.dw.com/image/0%2C%2C19318441_302%2C00.jpg

Brazil: Soybean production



<https://www.greenpeace.org/archive-international/en/news/features/amazon-destruction/>



https://es.wikipedia.org/wiki/Archivo:Sembrado_de_soja_en_argentina.jpg

ERC Consolidator Grant project

- Spatially explicit material footprints: fine-scale assessment of Europe's global environmental and social impacts
- July 2017 – June 2022
- Team of ~10 researchers
- Budget of 2 million Euro



- **Develop new method for assessing global material flows and related impacts using high spatial resolution**
- Link spatially-explicit data on raw material extraction and related impacts to models of global supply-chains
- Identify the – often geographically distant – socio-economic drivers of local changes in ecosystems and communities
- Derive recommendations for more sustainable supply chains

Implementation of FINEPRINT

WORK STREAM 1



Extraction

We investigate the spatial distribution of global raw material extraction on a high level of geographical detail and analyse its relations with environmental and social impacts, covering issues such as water scarcity, deforestation and mining conflicts.

WORK STREAM 2



Trade

We create a spatially explicit material flow model by tracking raw materials from the location of extraction via major transportation facilities such as ports to processing industries in importing countries, and further on to final demand in consuming countries.

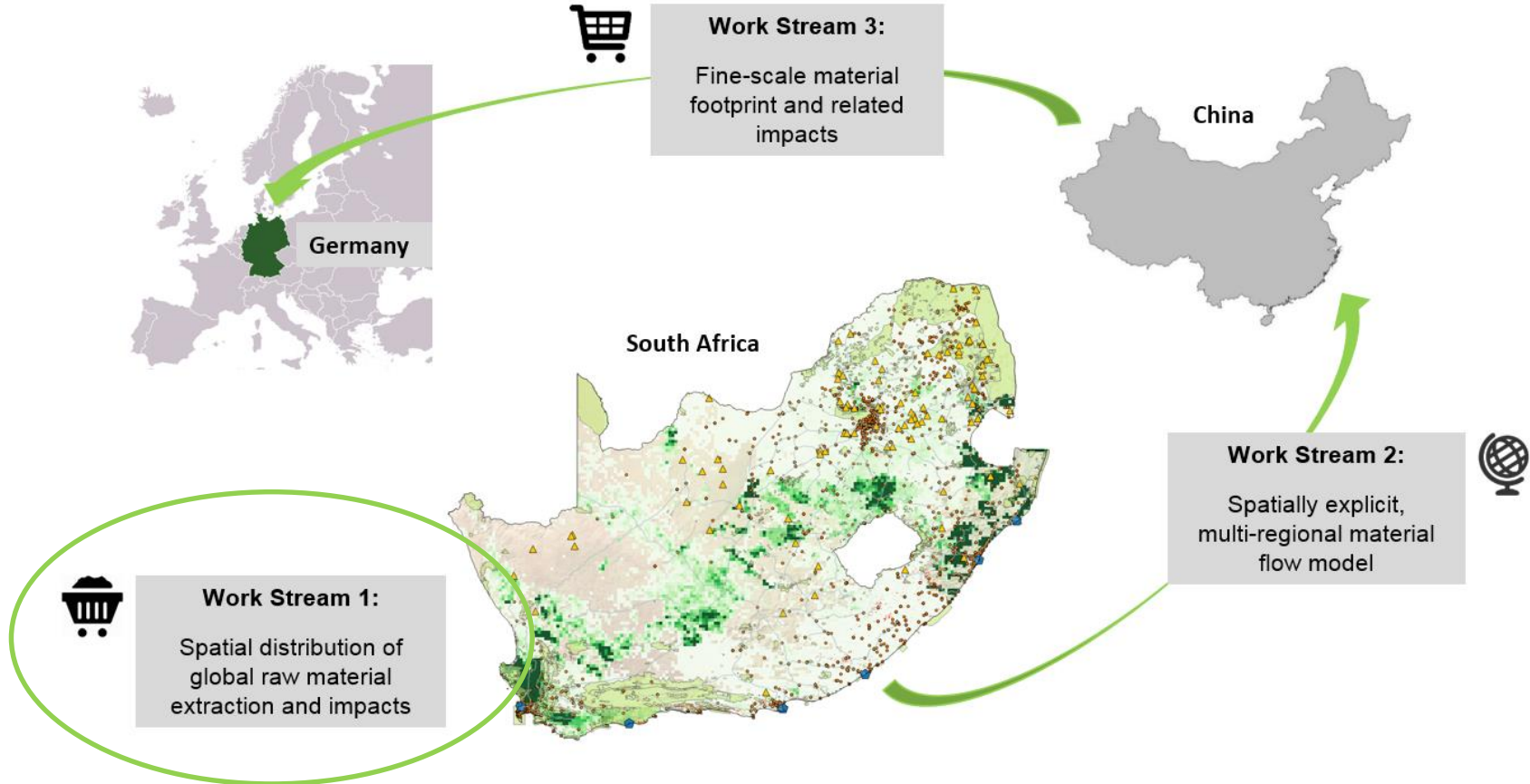
WORK STREAM 3



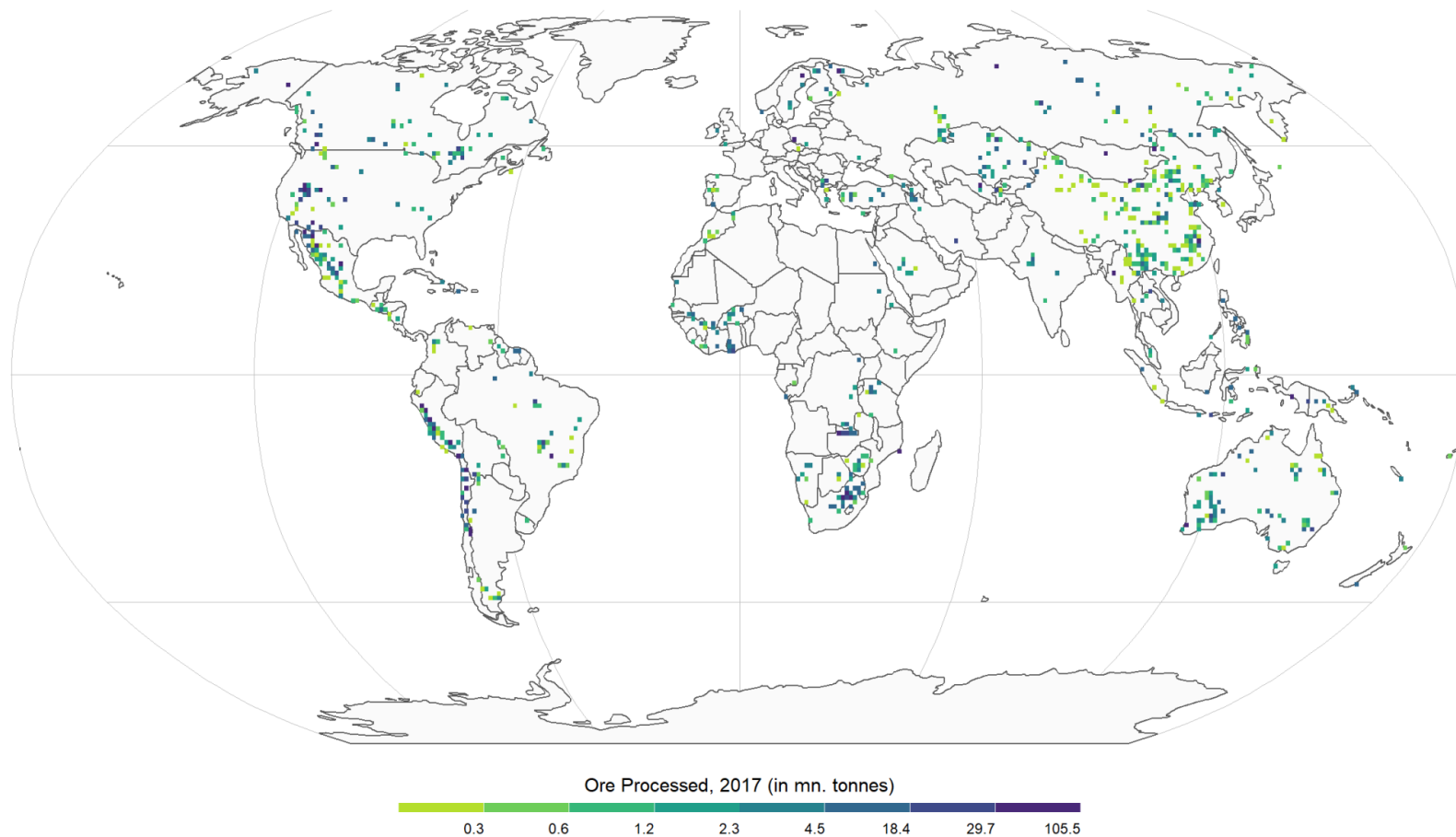
Consumption

We perform highly detailed assessments of global material flows and footprints and their environmental and social impacts, tracing raw materials required for all products and services to their local origin worldwide.

Implementation of FINEPRINT

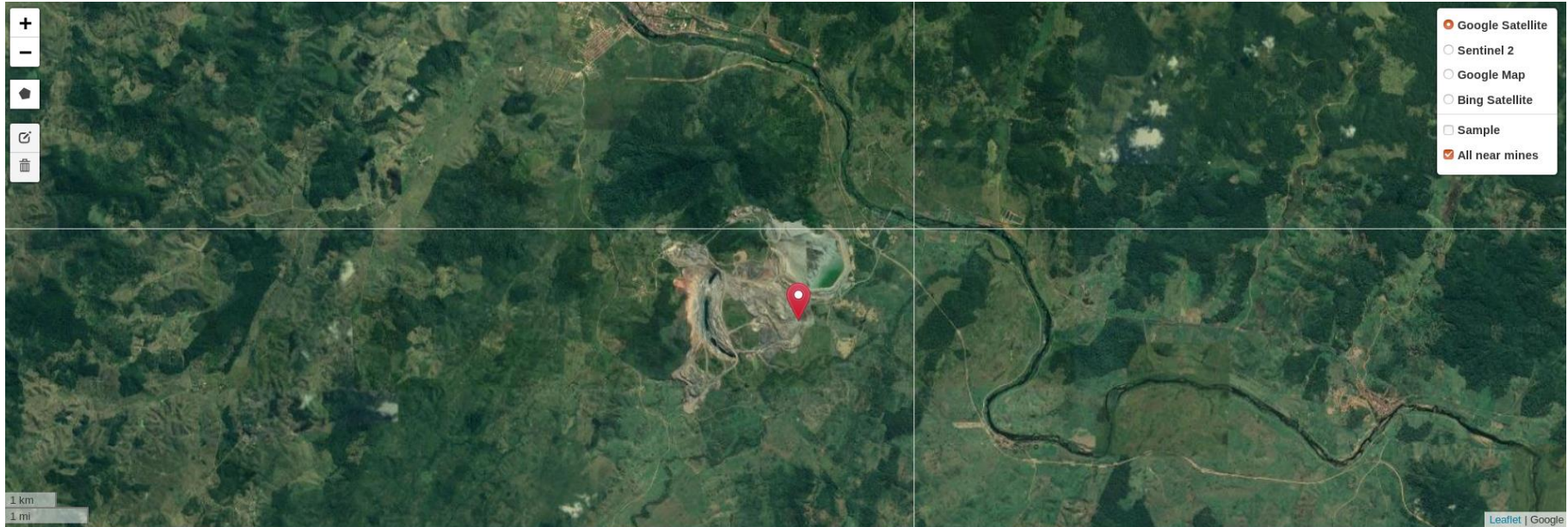


Global maps of metal mining




Source: Luckeneder et al., forthcoming

Impact example: direct land use of mining



Global Mining-Vectorisation Control Panel

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Note

Impact example: direct land use of mining

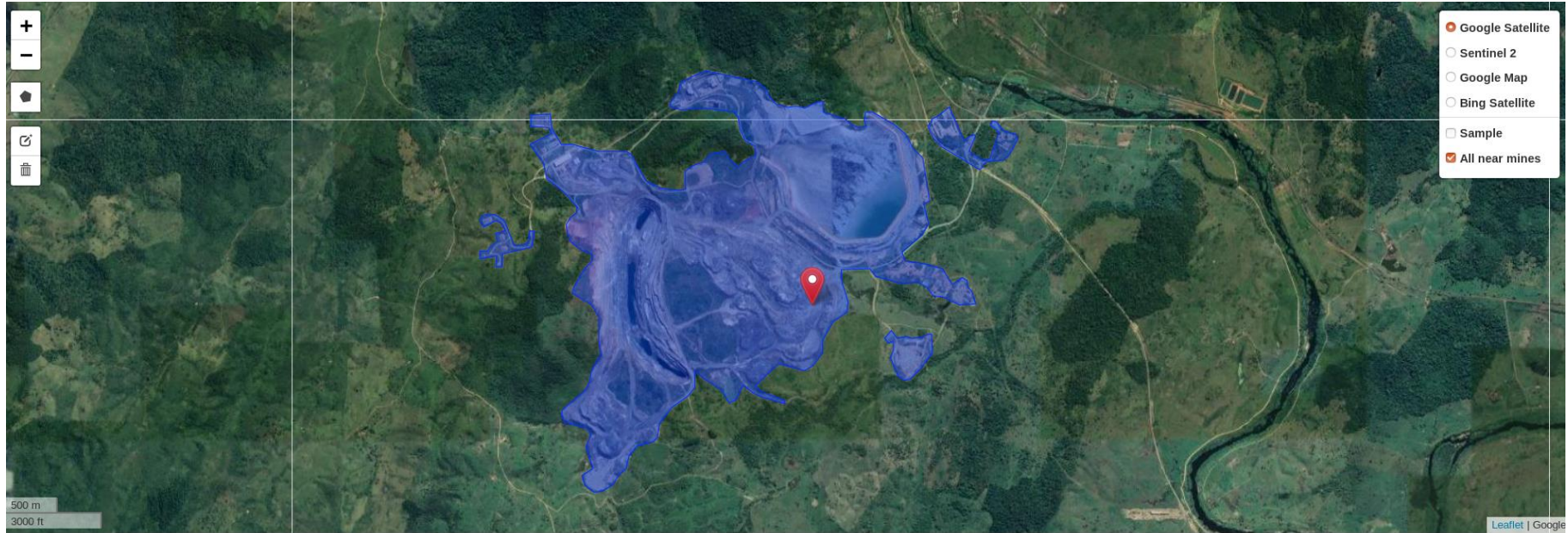


Global Mining-Vectorisation Control Panel

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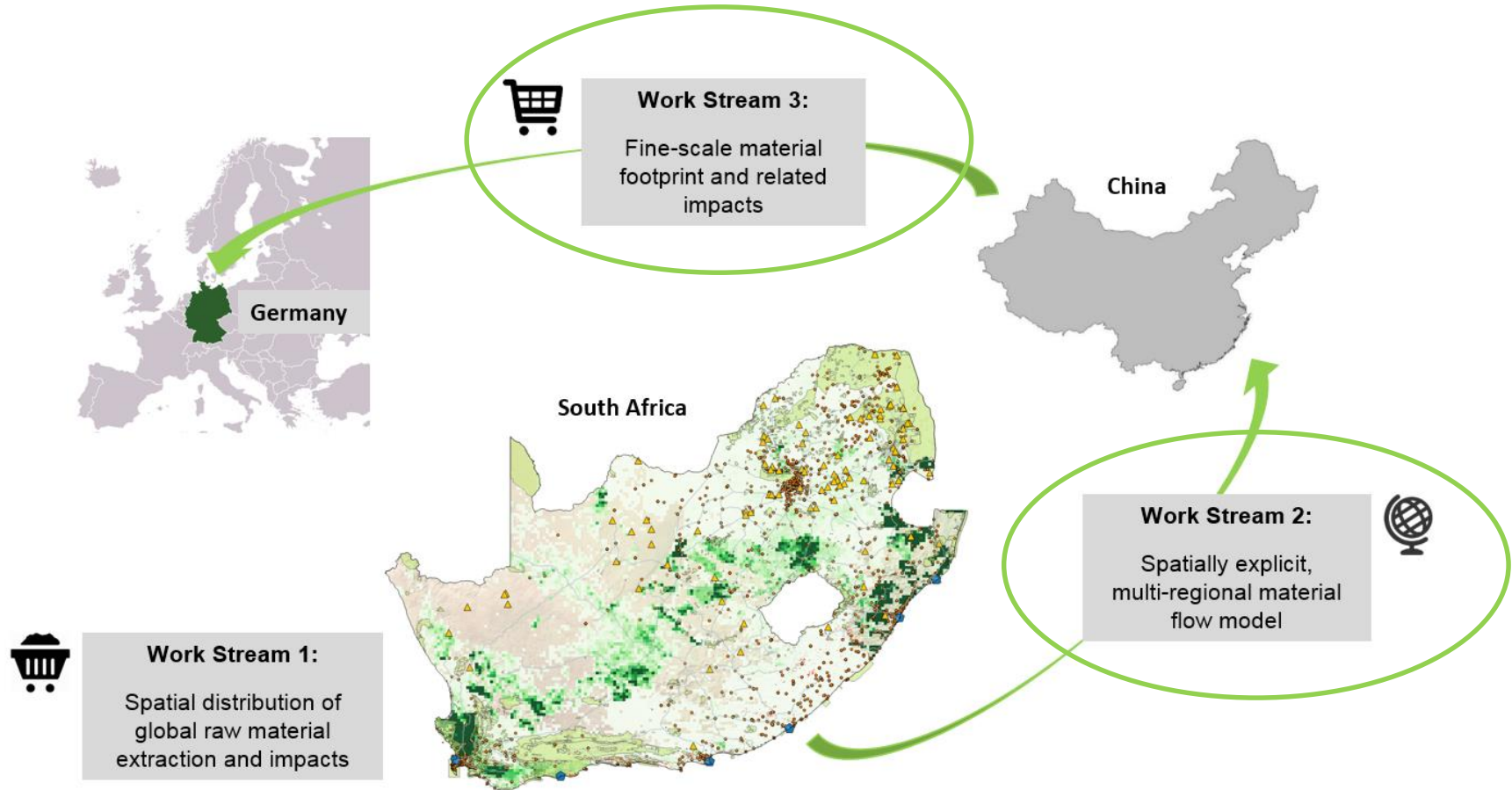
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Impact example: direct land use of mining

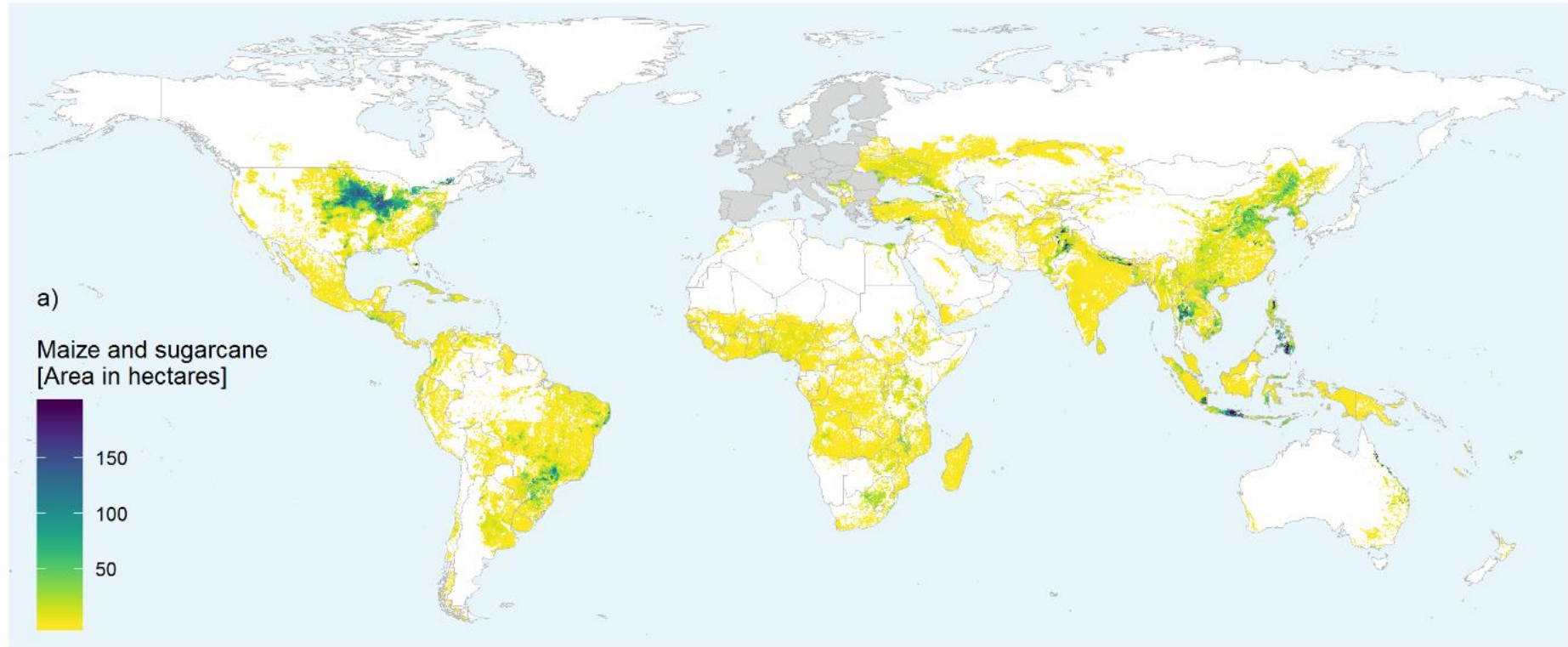


- 1,200 mines in the tropical biome vectorised
- Basis for investigating the direct and indirect deforestation related to mining activities in the tropics

Implementation of FINEPRINT



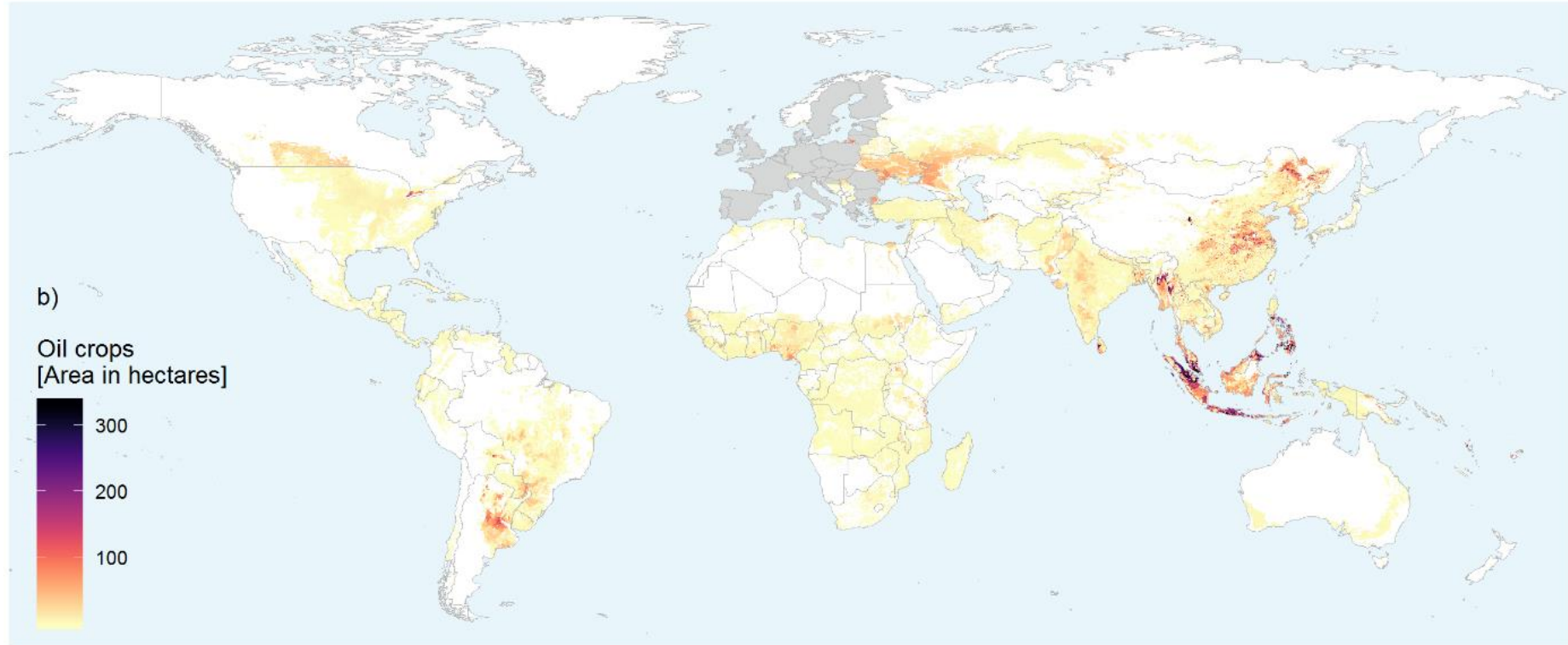
Land footprint of EU non-food bioeconomy



Food and Agriculture Biomass Input-Output Model (FABIO)

Source: Bruckner et al., 2019

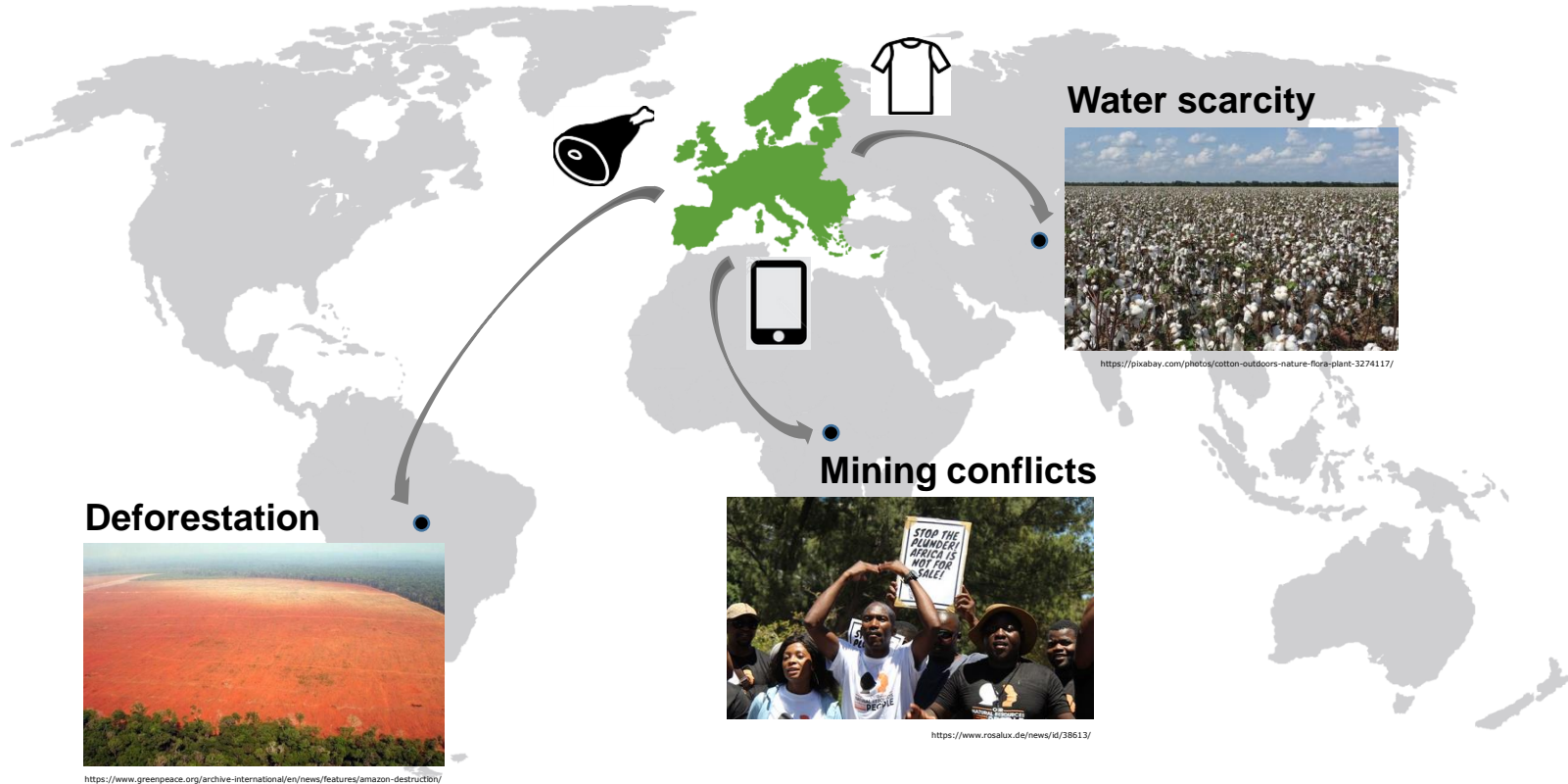
Land footprint of EU non-food bioeconomy



Food and Agriculture Biomass Input-Output Model (FABIO)

Source: Bruckner et al., 2019

Fine-scale footprints and related impacts



Potential use of FINEPRINT results

- **Academia:** relations between global drivers and local impacts in hot-spot extraction regions and supply chains; governance structures for more sustainable supply chains
- **Policy:** sustainable production and consumption policies; decoupling goals; trade-offs and leakage effects along supply chains resulting from domestic policy interventions
- **Business:** information about supply-chain wide pressures and impacts of (intermediate) products
- **Consumers:** awareness of global impacts of consumption; changes in behavior and lifestyles



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www.fineprint.global
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researchgate.net/project/FINEPRINT

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