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An aerial photograph of a large-scale open-pit iron mine. The mine's terraced levels are visible, along with a large, dark blue reservoir in the foreground. In the background, a large, light-colored reservoir is situated in a valley, surrounded by mountains under a clear sky.

Constructing Global Physical Input-Output Tables for Iron & Steel

HANSPETER WIELAND, Martin Bruckner, Stefan Giljum
ISIE Conference 2019, Beijing

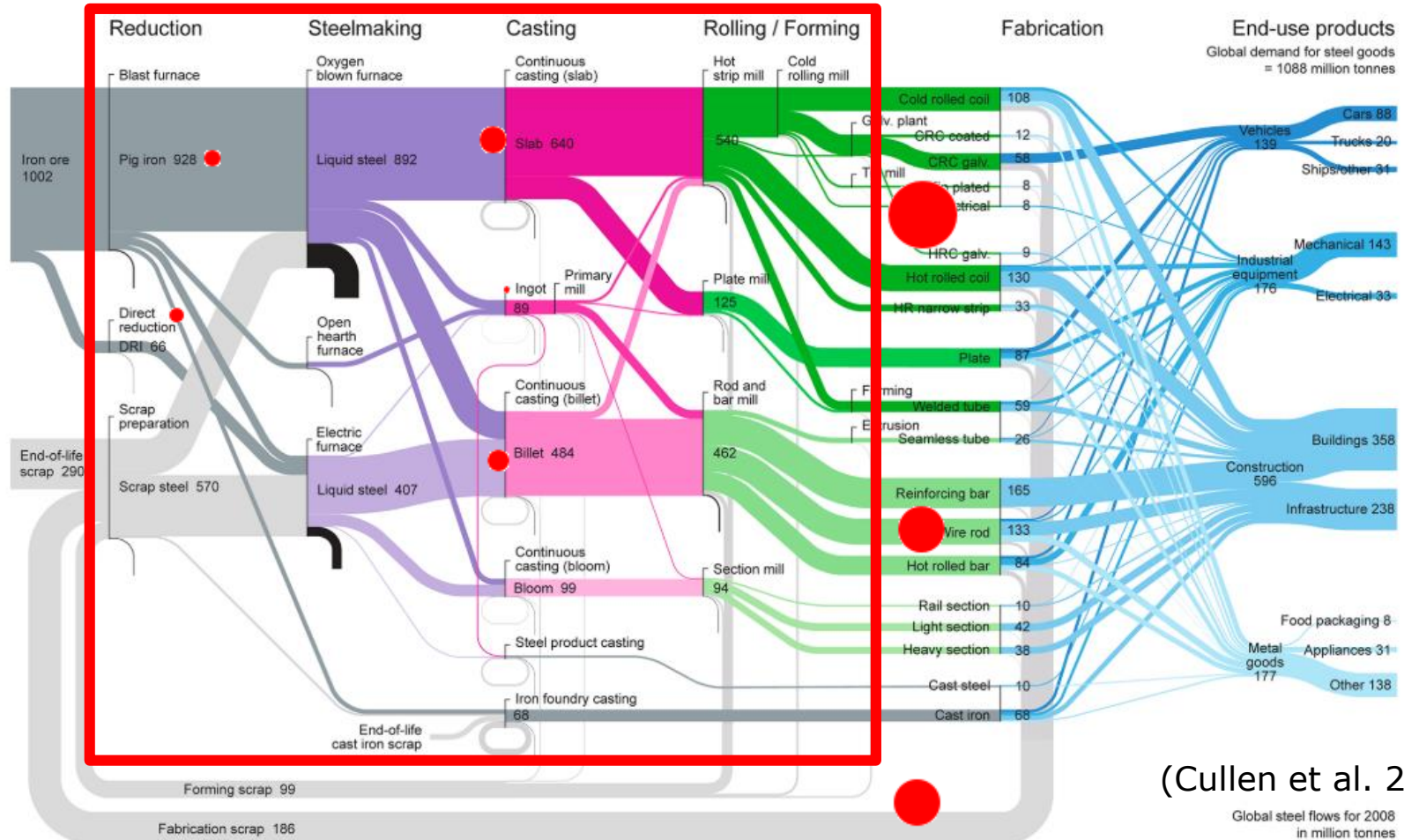
1. The FINEPRINT project
2. Modelling framework
3. Example results
4. Outlook

ERC Consolidator Grant project



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

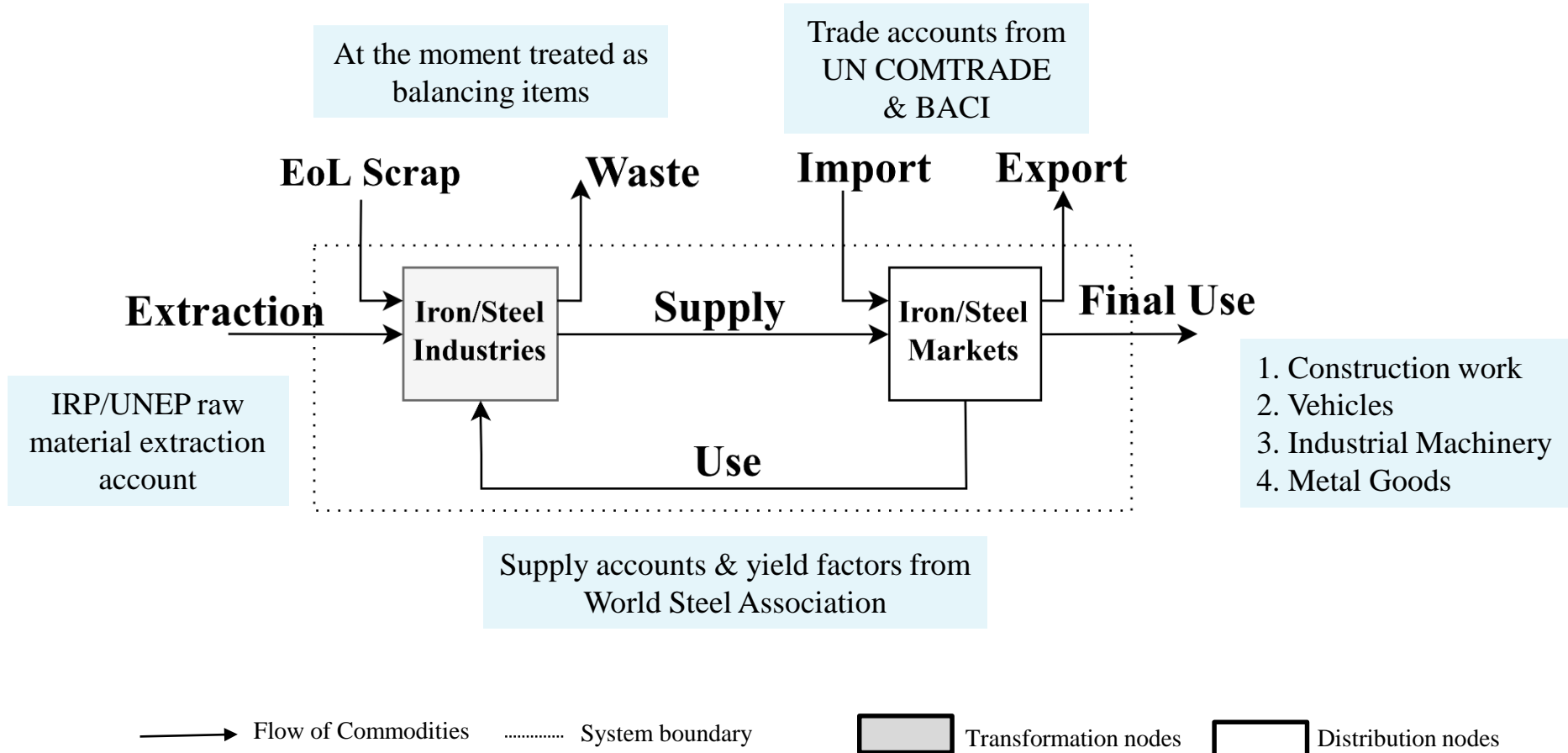
MFA model of the global steel sector



(Cullen et al. 2012)

Global steel flows for 2008
in million tonnes

Step 1: From Extraction to Fabrication

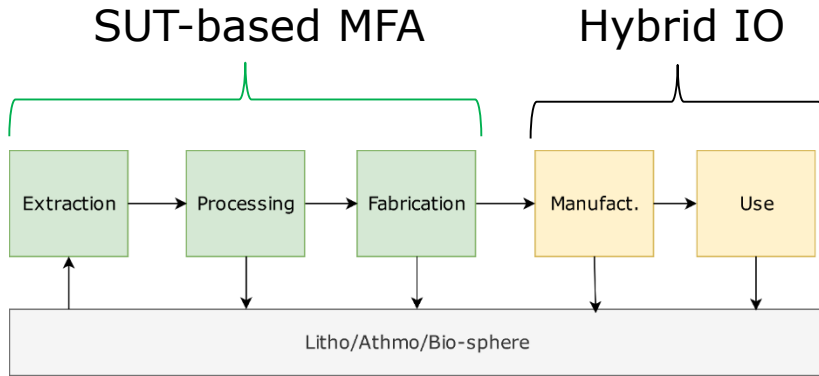


“Material-flow approach to Waste IO” with EXIOBASE MRIO

1. Filter matrix to remove non-physical inputs from A matrix.
 - Apply power-series if necessary (L)
 - Calculate new gross production vector (x)
 - Allocate output of steel sector to final products
2. Yield matrix to estimate scrap flows from manufacturing

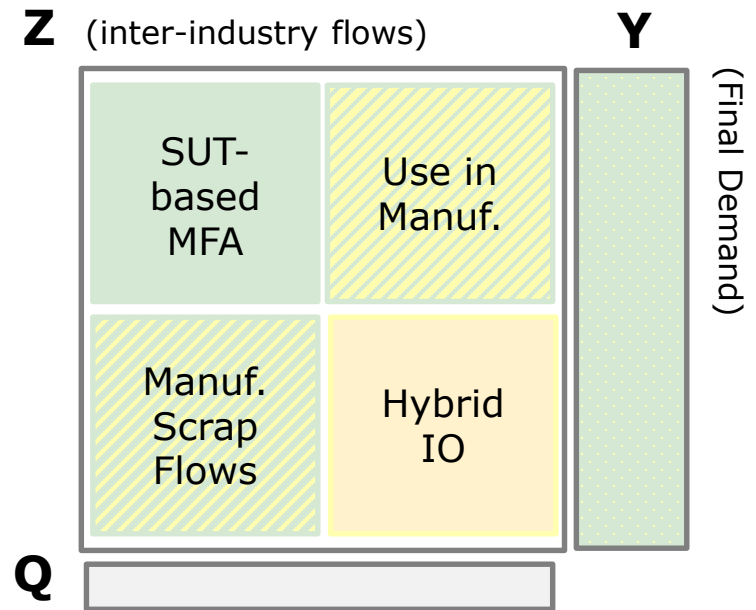
Step 3: Linking the two models

Graph View



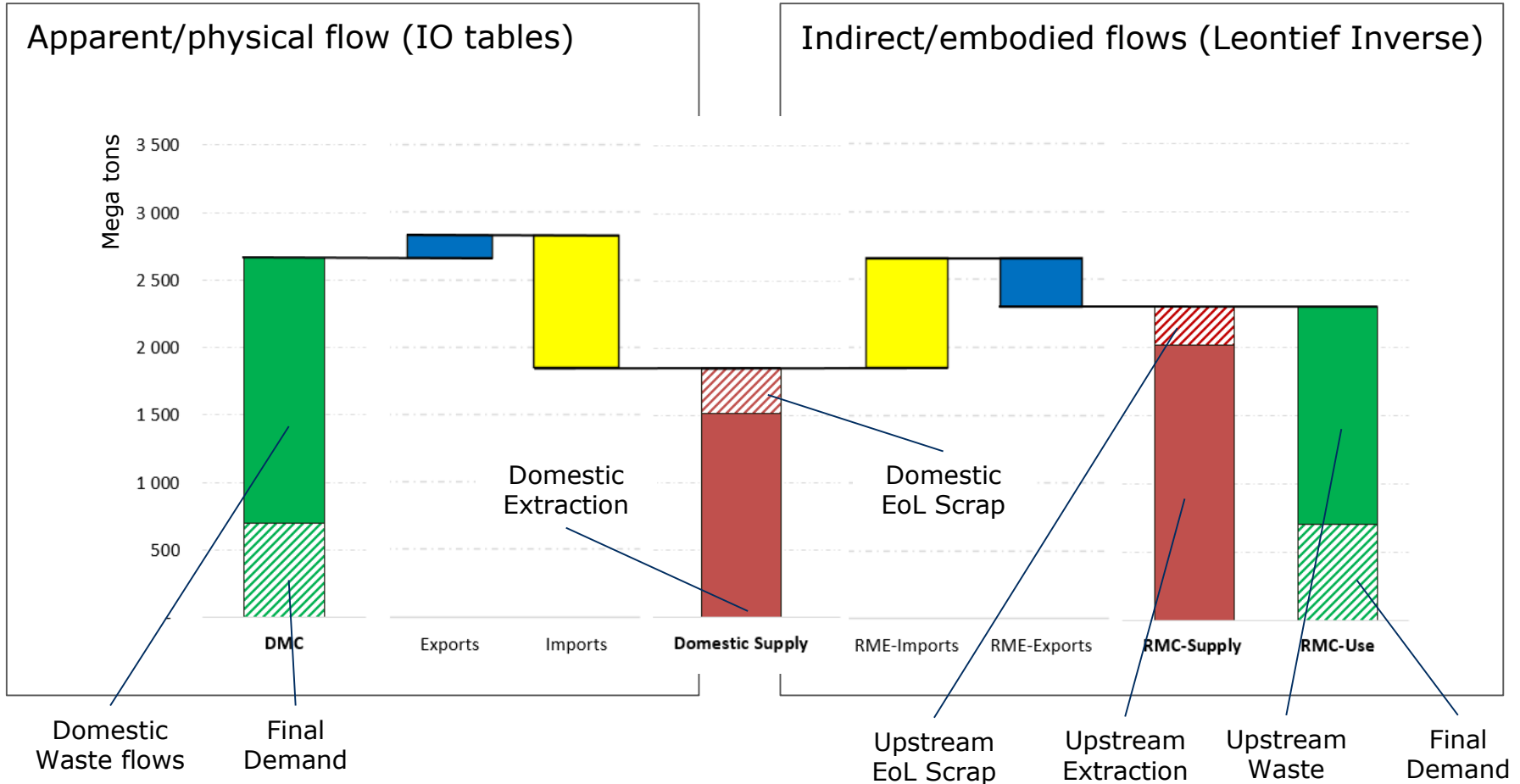
Status Quo: **34 countries + RoW,**
21 iron-containing products

Tabular View



(Extension i.e. Boundary Flows:
Natural inputs, EoL Scrap, Wastes)

Example results: China 2014



1. Reconciliation algorithm to balance table
 - At the moment: EoL Scrap & Wastes are balancing items
2. Differentiation of primary and secondary steel making route
3. Estimation model for national PSUTs for countries where no production data available
4. Disaggregate production accounts to better align it with trade data



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Contact: Hanspeter Wieland
hanspeter.wieland@wu.ac.at