A new long-term demand forecasting model

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Overview

Intro: Ongoing work on steel demand model

- Policy relevance of the model
- Scope
- An intuition about how the model works

Preliminary findings

- Insights from ICIO series of steel use demand by sector
- 10-year steel demand estimates in Chinese construction
- Forecast of regional distribution of steel demand

Takeaways + Next steps

A modelling tool to inform policies

Structural and **policy-related challenges** can be reflected in model**:**

- **Quantify** their long-term effects on steel markets; and
- **Understand** the policy reforms/actions needed for greater market stability

For example:

- **Subsidy intensities** have grown -> capacity expansions -> legacy effects -> persistent supply imbalances in markets
- Strengthening the tools to fight **trade circumvention** -> less non-market excess capacity -> greater market stability
- Shows the need for **stronger subsidy disciplines** and benefit of international **co-operation to address circumvention**

Concrete examples of policy scenarios

1. Transnational **subsidies** to build capacity in Southeast Asia
   - Increases in production and exports of steel
2. More effective tools to identify and address **circumvention**
   - Lower exports (of unfairly trade steel)
3. Excess capacity moving down the **value chain** through subsidies
   - Impacts on output and exports of steel-using downstream industries
4. Availability of **raw materials** and other inputs
   - Effects on production of steel across economies

Results can inform the policy debate, e.g. stronger subsidy disciplines, international co-operation to address circumvention, policies for security of supply of raw materials…

Ongoing work on steel demand model

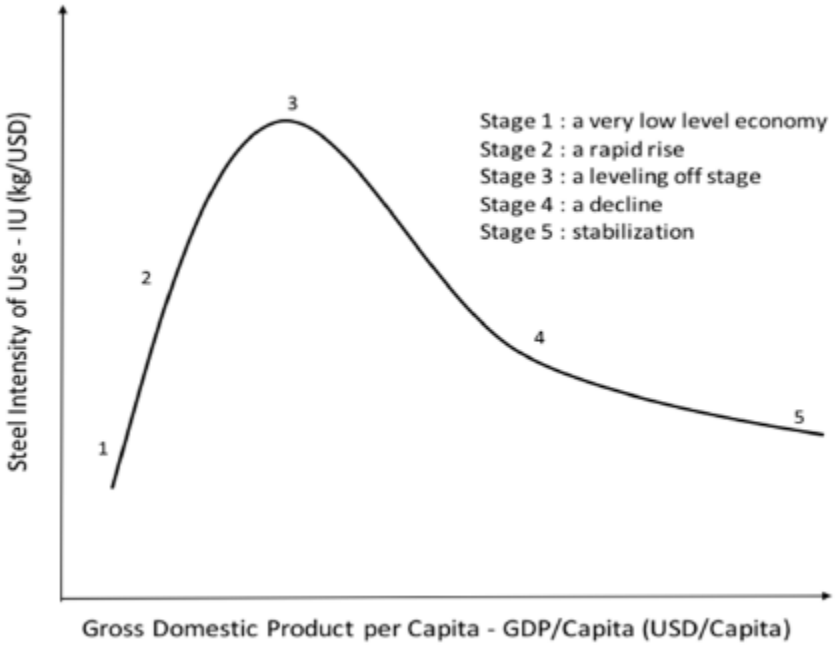
Scope

1. **Long-term.** Key factors and trends shaping the industry's future growth
   - Estimates of steel demand up until 2060, with a breakdown by country and main industries
   - Capturing global industry linkages through OECD-ICIO tables
   - Model structural changes and identify key challenges and emerging opportunities in the steel market.

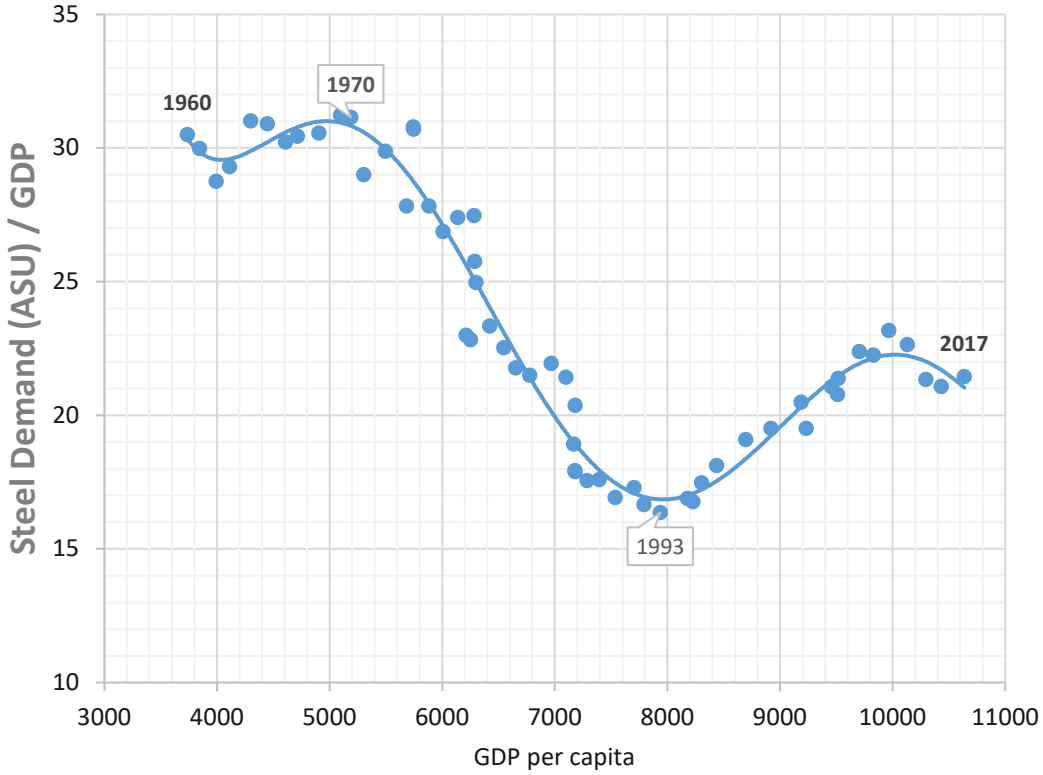
2. **Short/Medium term.** Market outcomes and scenarios for inclusion in the Global Steel Market Outlook publication for release beginning in 2025
   - Demand-supply short-term dynamics and evaluation of the impact of shocks
   - New indicators for improving ST monitoring: indirect steel trade, true steel demand, steel use by sector, etc.

The intuition behind the model approach: steel intensity curve

Steel intensity and economic development



What do we observe in data?
World steel intensity (1960-2017)

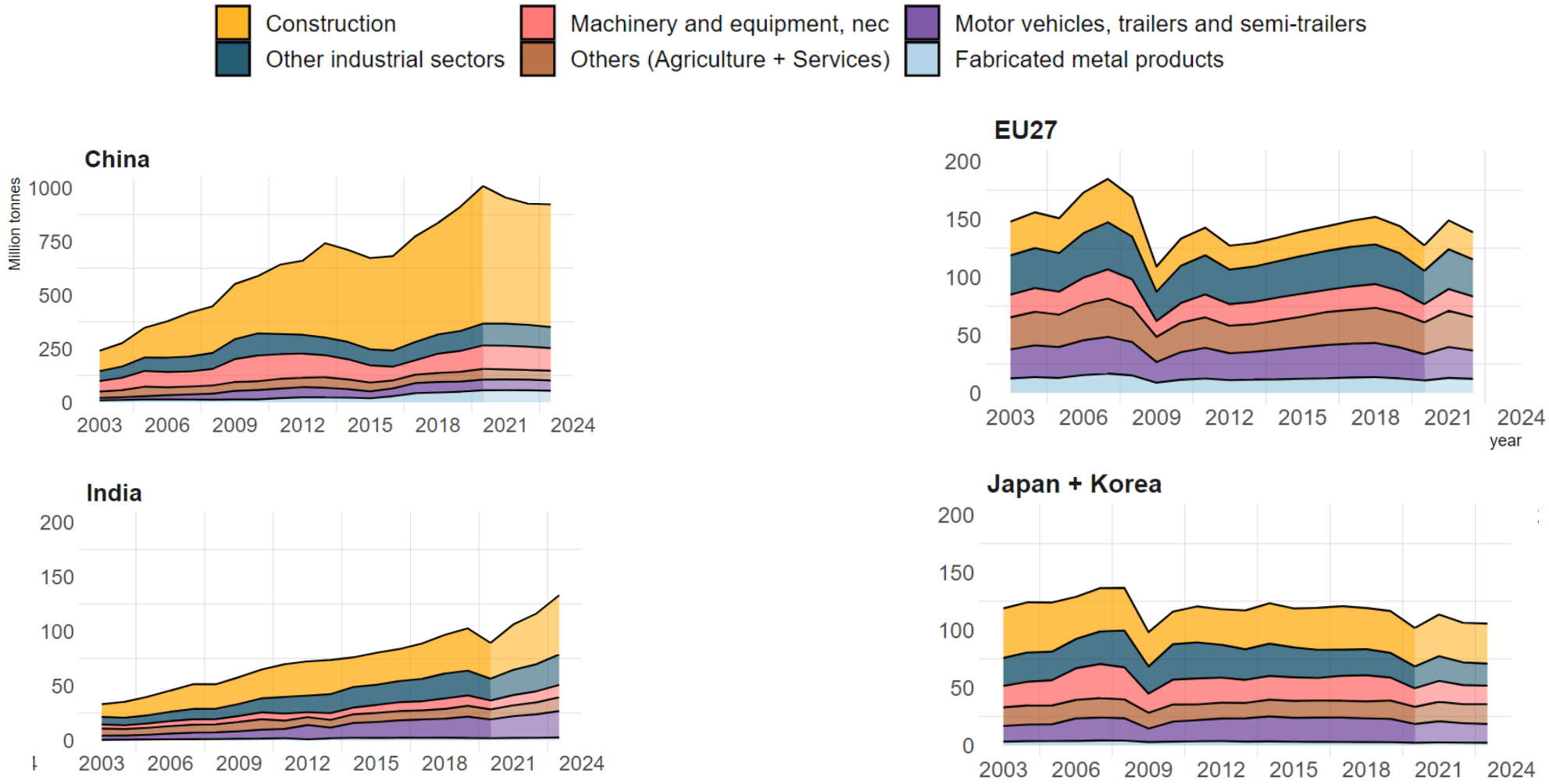


Source: Wandebori, H.; Murtyastanto. The Implication of Steel-Intensity-of-Use on Economic Development. Sustainability 2023, 15, 12297. https://doi.org/10.3390/su151612297

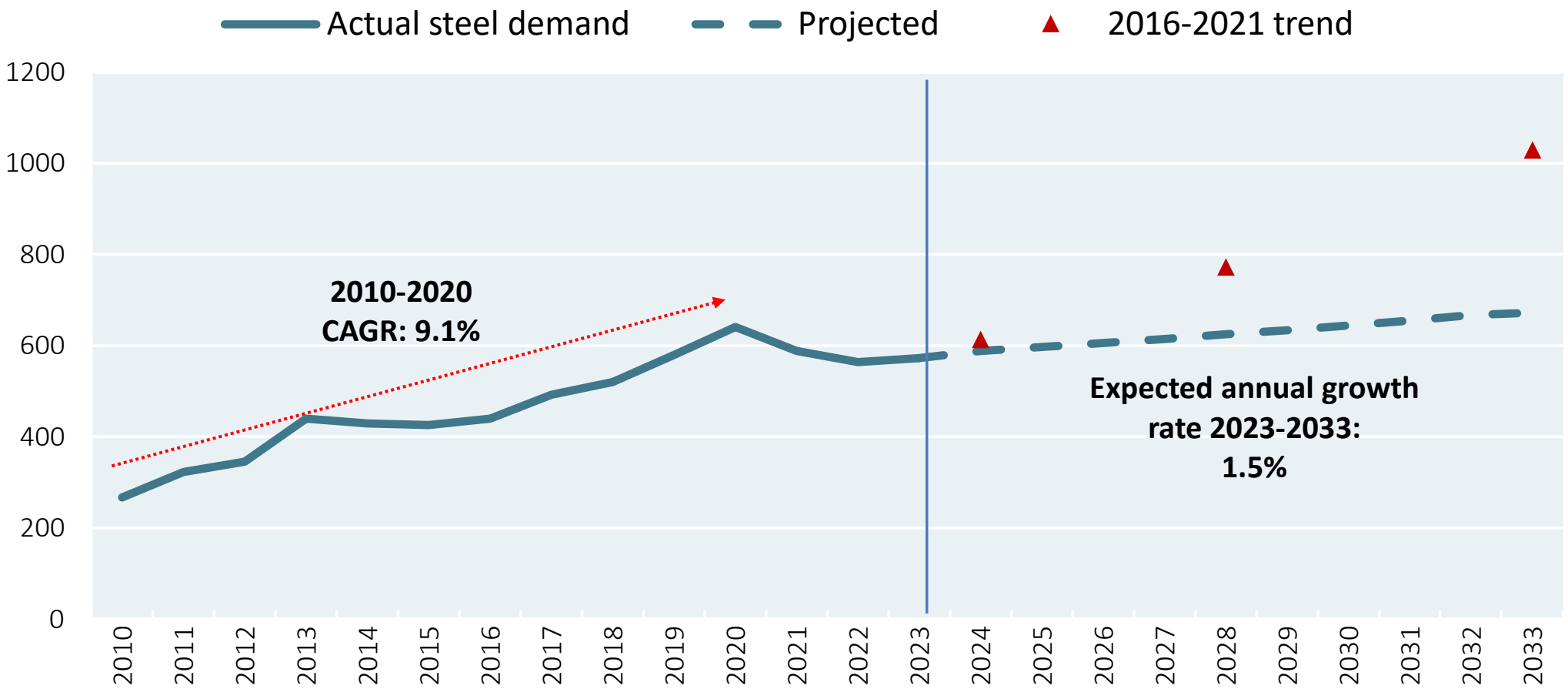
Preliminary findings

Differences in steel consumption across countries

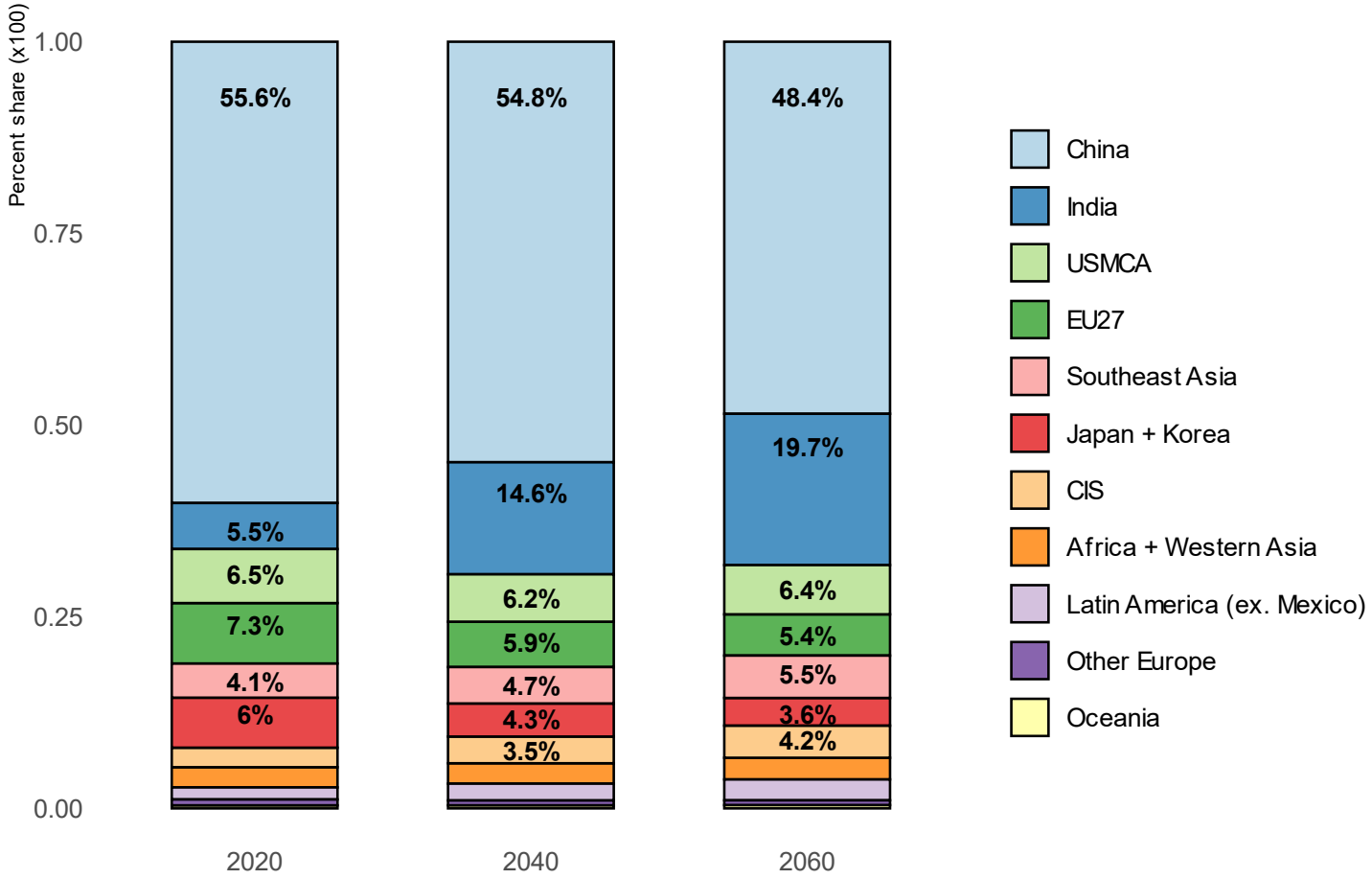
Fast growing vs stagnant steel demand



Steel demand in the Chinese construction sector



Preliminary estimates: regional trends



- China will gradually reduce its per capita steel consumption, giving room to other emerging economies (in Asia, Africa and Latin America)
- India will increase its steel demand at a rapid pace, becoming the second largest source of steel consumption in the world in 2060.

Main takeaways + Next steps

Main takeaways

- Comprehensive approach to forecasting steel demand that accounts for sectoral and cross-country linkages through ICIO database and models structural changes in downstream industries.

- Ongoing work will also support and enrich the analysis of monitoring reports that are regularly provided to the member countries of the Steel Committee.

Next steps

- Compilation of a granular dataset to complement estimates → model technological change and updates of ICIO tables
- Collaborative efforts within STI to strengthen the ICIO database concerning the iron and steel sector (breakdown of basic metals into iron and steel and non-ferrous)
- Forecasts + Working paper (December 2024)

THANK YOU

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ANNEX

Data

- Inter-Country Input-Output Tables **1995-2020 (45 industries + 76 countries)**
- Economic growth projections (OECD)
- Demographics and urbanisation trends (UNDESA)

Others

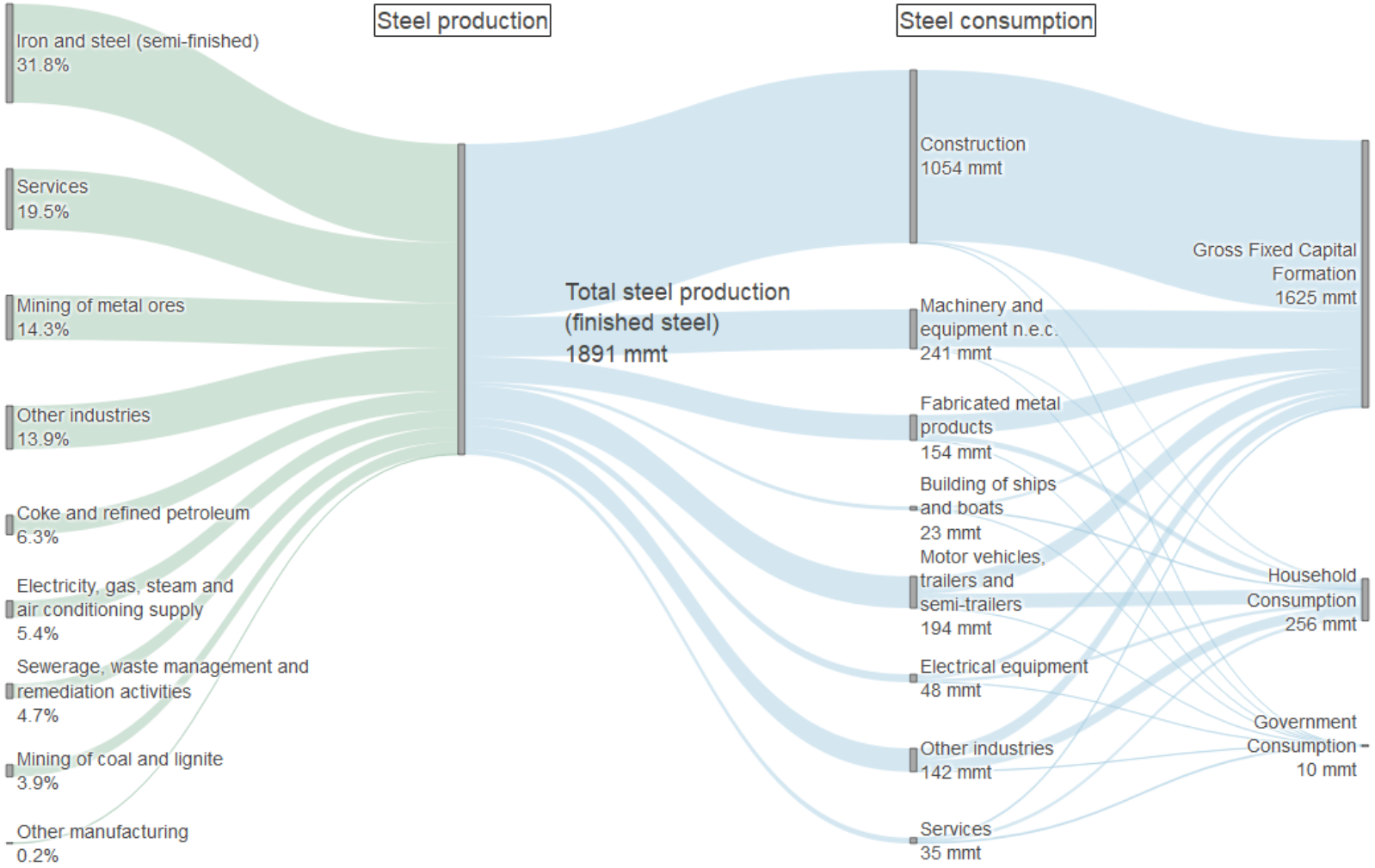
- Energy and emissions forecasts (IEA)
- International trade steel flows
- Steel production and apparent steel use (Worldsteel Association)
- Steelmaking capacity. (OECD Steelmaking Capacity Database)
- Steel prices (Platts)

Modeling approach

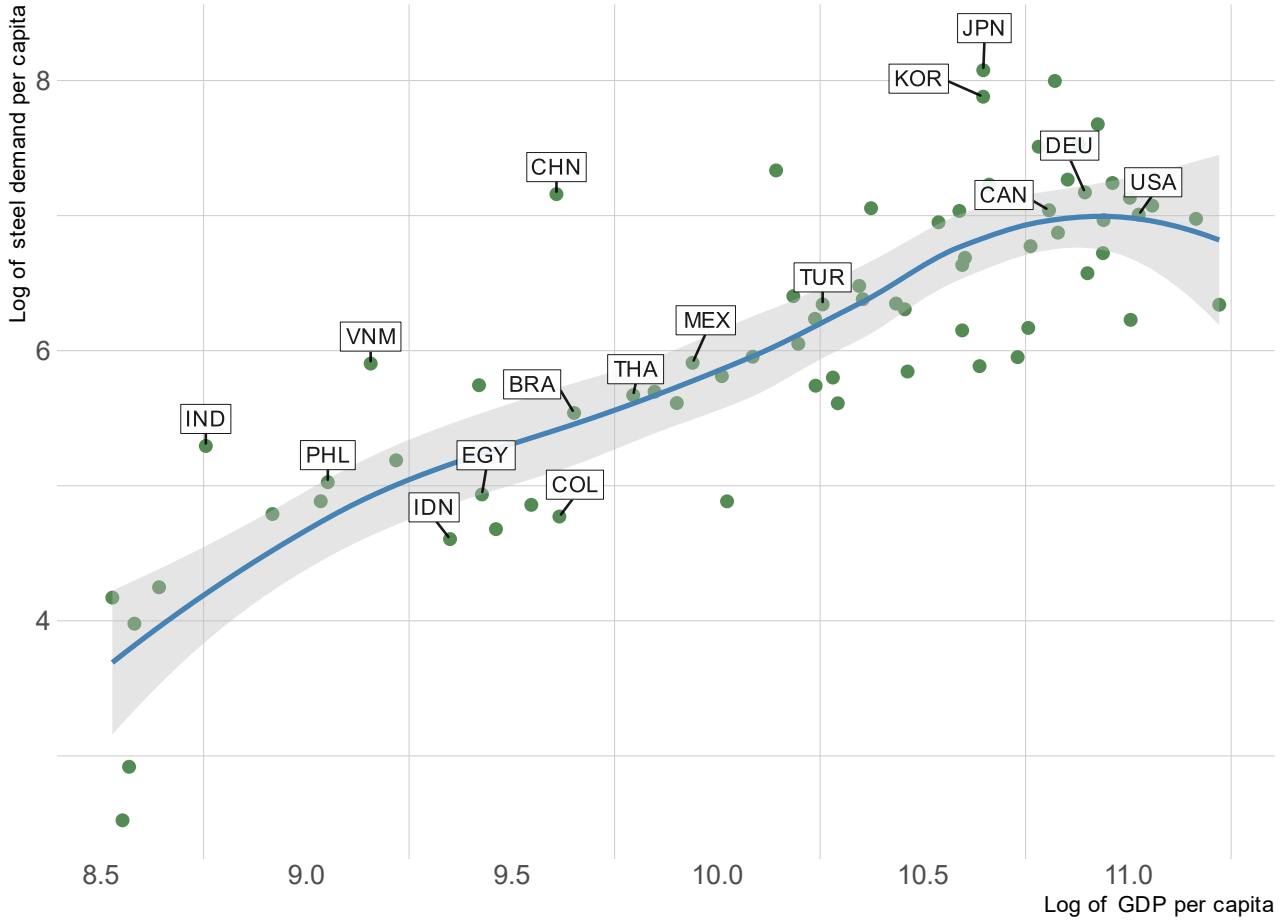
1. Selection of base year of the inter-industry matrix from OECD-ICIO tables
2. Projection of final expenditure (investment and consumption) in downstream industries and update of ICIO coefficients
3. Computation of resulting steel requirements (steel production and trade flows)
4. Estimation of apparent and true steel demand in USD and metric tonnes

Global steel flows

From inputs to steel output and final demand

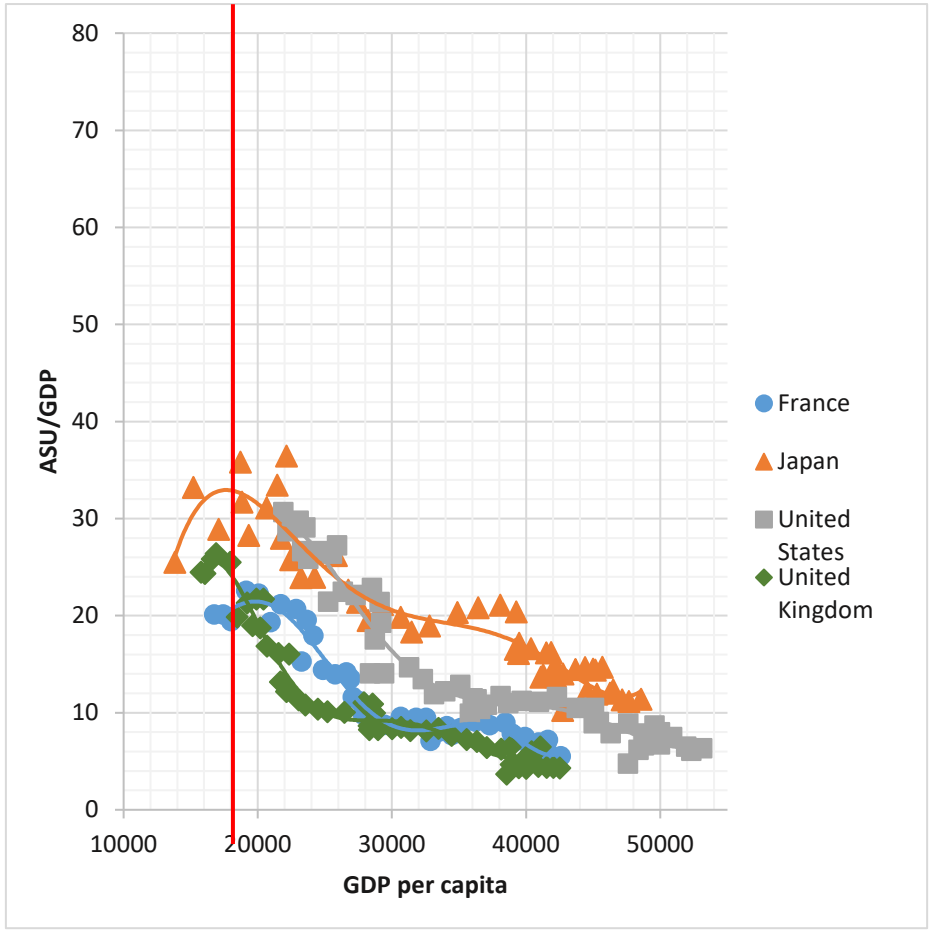


Steel intensity and GDP per capita



Steel intensity and economic development

OECD higher per capita income



OECD lower per capita income