Assessment of the French metals demand induced by national consumption and its associated environmental footprints

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CONTEXT

- Among the objectives of the French roadmap towards a circular economy:
  - GHG emissions & Resources consumption
  - How to simultaneously assess these elements in order to avoid burden shifting?
  - How to assess the impacts of a specific value chain?

STUDY OBJECTIVES

- Use of environmentally extended multi regional input output (EEMRIO) approaches to assess the footprints induced by French final demand
- Use of different EEMRIO databases to test the effects of their specific characteristics on the results

METHODS

- Calculations:
  - Total production: \( x = (I - A)^{-1} \cdot y \)
  - French final demand
  - Footprint expressed by element of the final demand: \( E = B \cdot x \)
  - Footprint expressed by element of the total production: \( E = B \cdot \frac{y}{x} \)

- For the metal carbon footprint:
  - In the B matrix, for the non-metal related sectors, GHG emissions are set to 0.

CONSIDERED DATABASES

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SOME RESULTS

- Elements of the final demand with the highest metal and metal carbon footprints are the same and are mainly due to their iron and steel content (assessment using EXIOBASE v2)
- 47% of the metal footprint
- 71% of the metal carbon footprint

- Evolution of the location of GHG emissions induced by metal production for the French final demand, between 1995 and 2009 (assessment using WIOD)
  - Metals represent 13% of French carbon footprint
  - Metals represent 11% of French material footprint
  - 30% → 20%
  - 6% → 16%

PERSPECTIVES AND CONCLUSION

- EEMRIO permits to understand in details the impacts linked to consumption and to take specific actions to limit them:
  - WHERE? WHAT PRODUCTION ACTIVITIES? WHICH PRODUCTS? TEMPORAL EVOLUTION?
- Limitations: age of the data in publicly available databases (2011 for EXIOBASE v3, 2015 for EUROSTAT) and transparency in EEMRIO development

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