

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

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CONTEXT

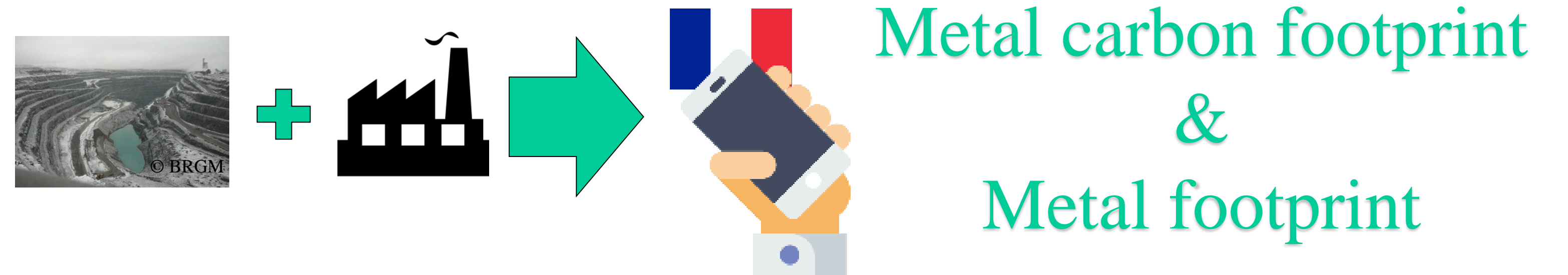
- Among the objectives of the French roadmap towards a circular economy:



- How to simultaneously assess these elements in order to avoid burden shifting?
- How to assess the impacts of a specific value chain?

STUDY OBJECTIVES

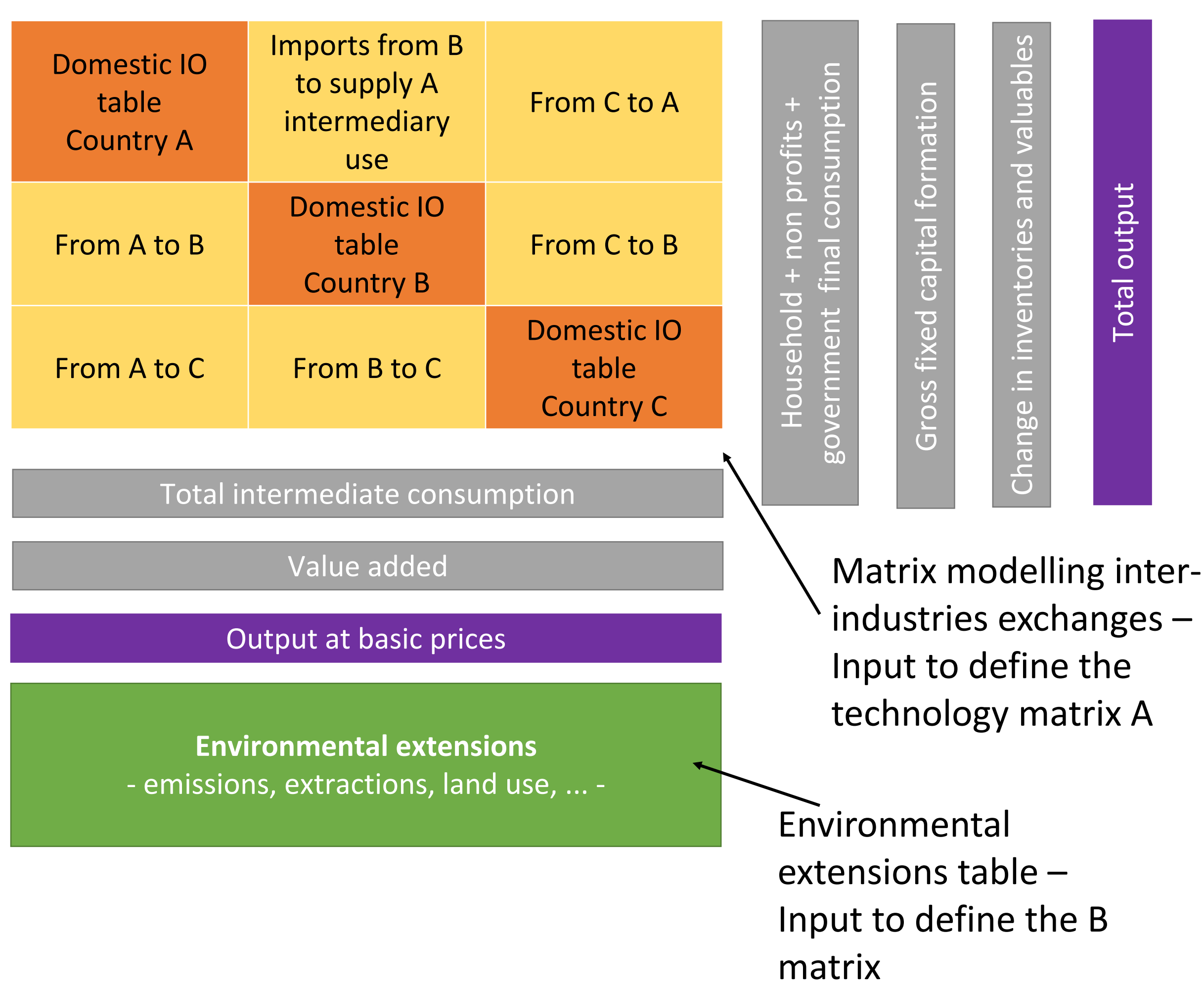
- Use of environmentally extended multi regional input output (EEMRIO) approaches to assess the footprints induced by French final demand



- Use of different EEMRIO databases to test the effects of their specific characteristics on the results



METHODS



CALCULATIONS

Total production: $x = (I-A)^{-1} \cdot y$ y : French final demand

Total footprint: $E = B \cdot x$

Footprint expressed by element of the final demand: $E = B \cdot (I-A)^{-1} \cdot \hat{y}$

Footprint expressed by element of the total production: $E = B \cdot \hat{x}$

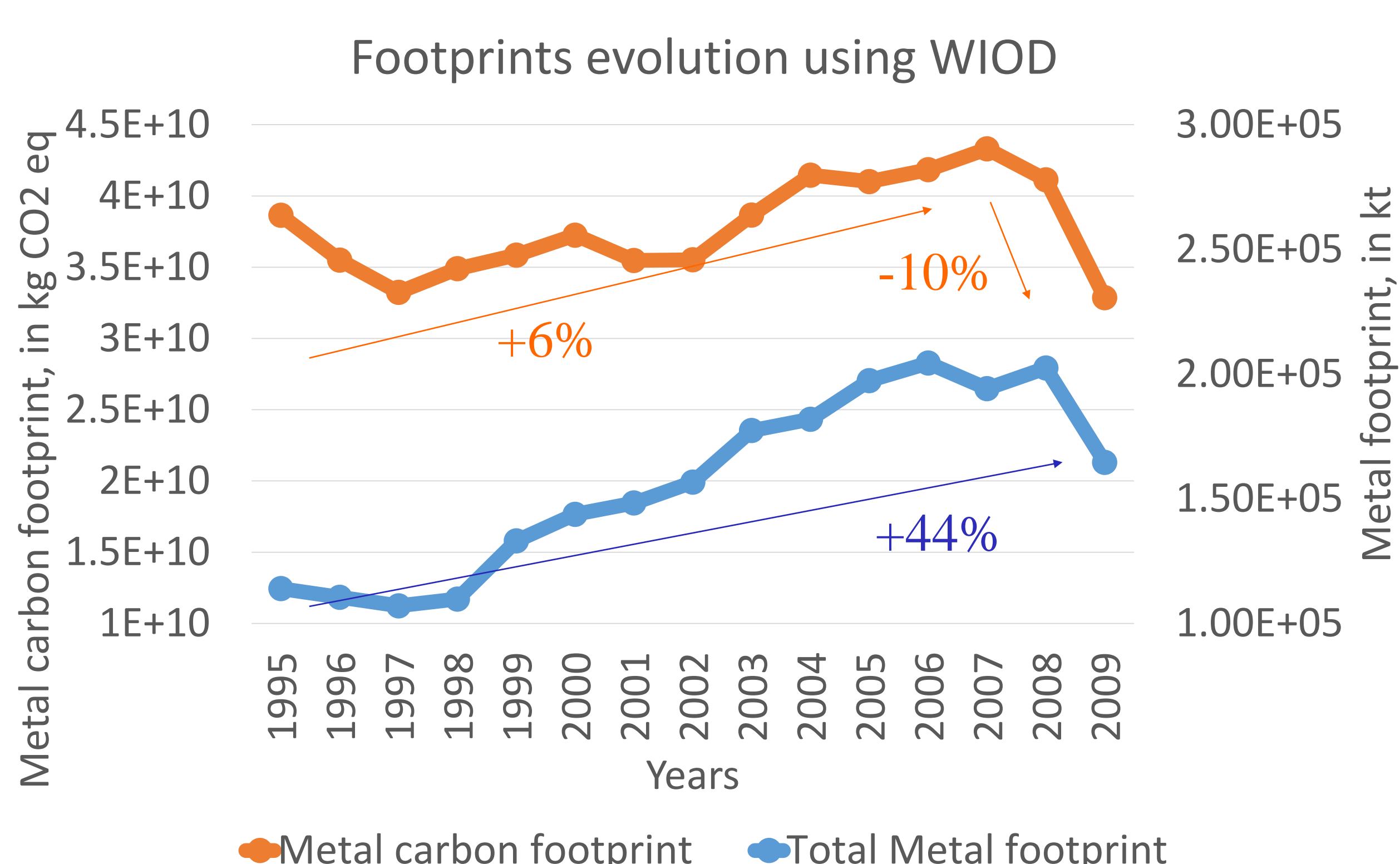
For the metal carbon footprint:

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

CONSIDERED DATABASES

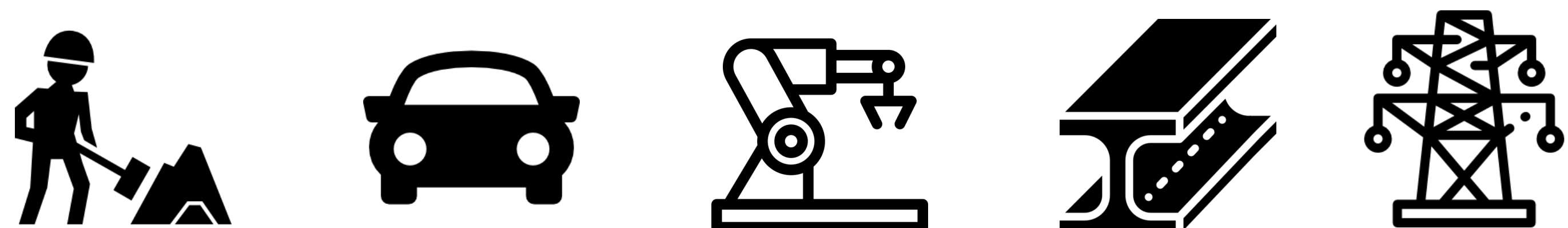
	WIOD2013	EXIOBASE V2
Temporal coverage	1995 - 2009	2007
Geographical coverage	40 countries + 1 ROW	43 countries + 5 ROW
Technological coverage	35 activities (1 metal sepecific)	163 activities (22 metal specific)
Metal extraction	1: Minerals metals	10

SOME RESULTS



- Metals represent **13%** of French carbon footprint
- Metals represent **11%** of French material footprint

- 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)

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