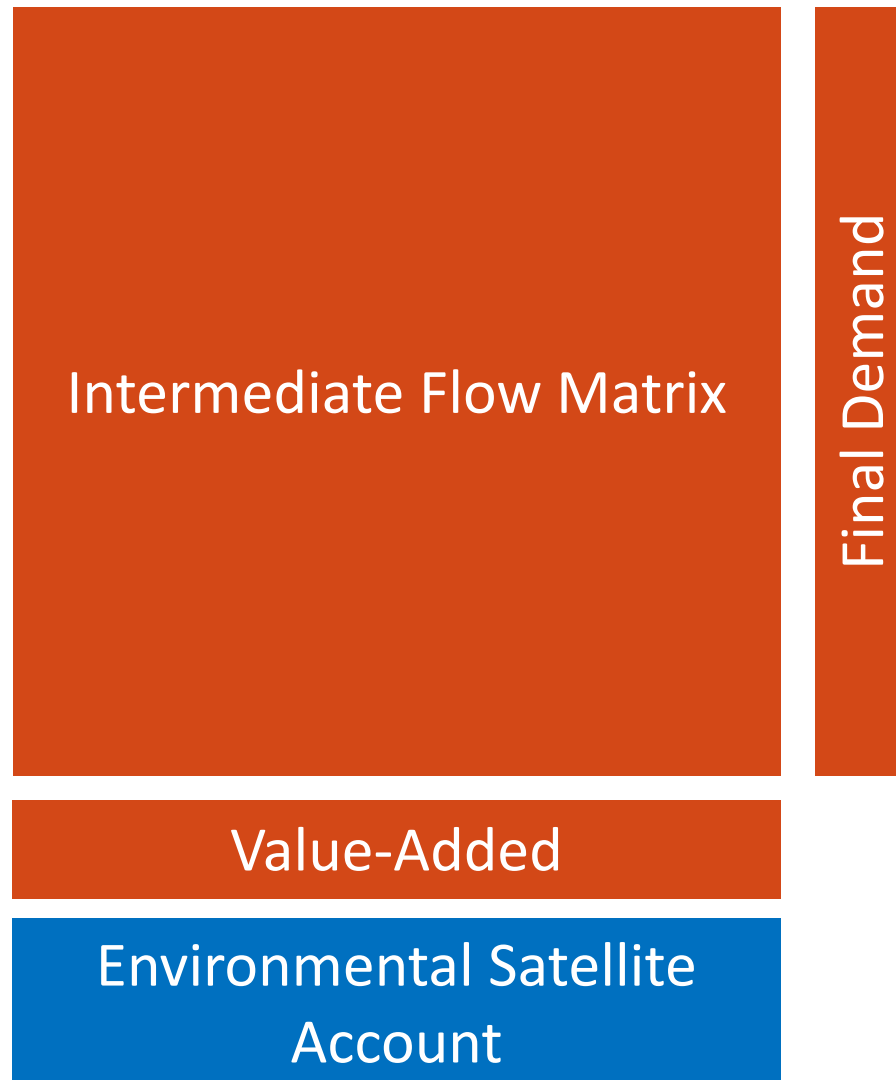


An Open Access Environmentally Extended Input-Output Database for China

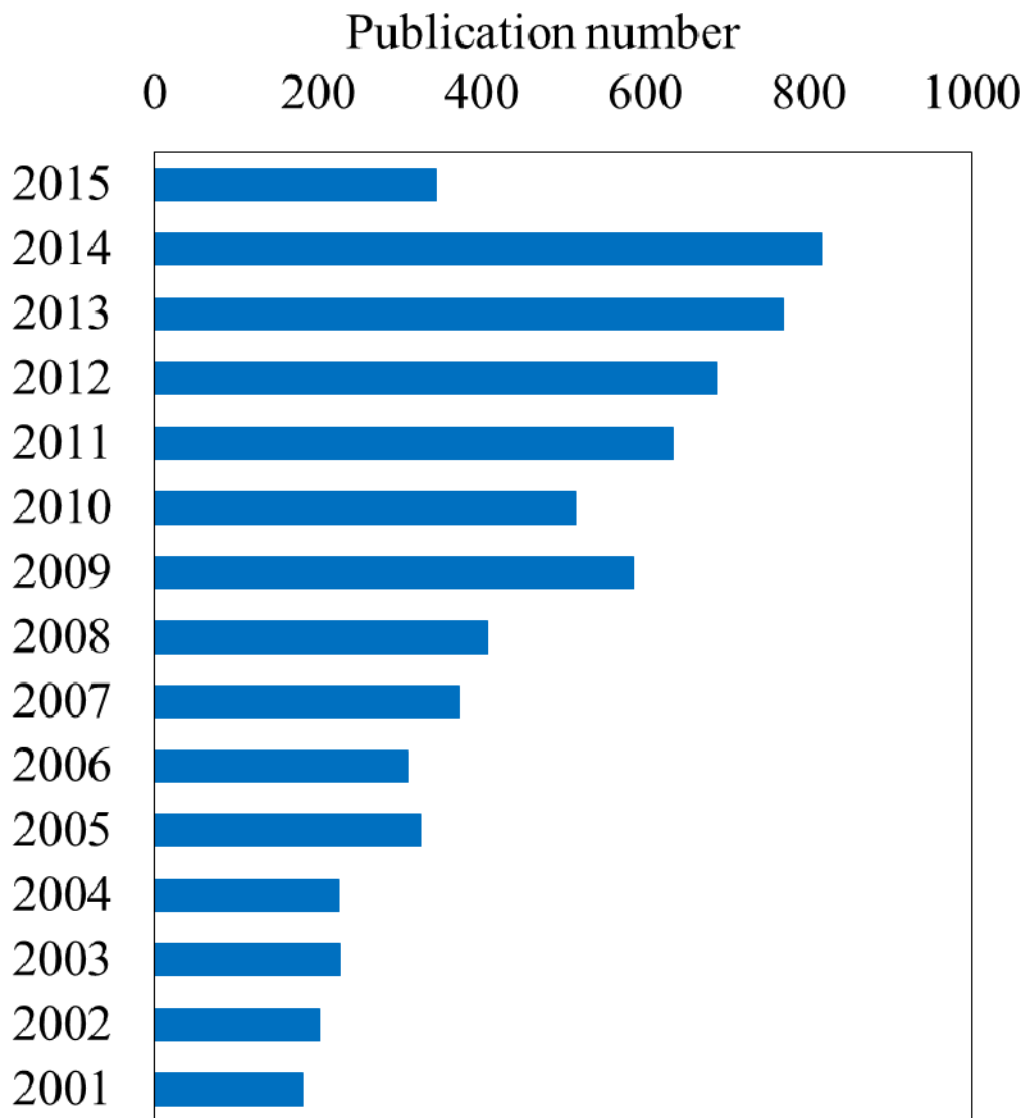
Sai Liang¹, Tiantian Feng^{1,2}, Ming Xu^{1,3}

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Environmentally extended input-output (EEIO) database



EEIO is increasingly popular



Web of Science

Topics:

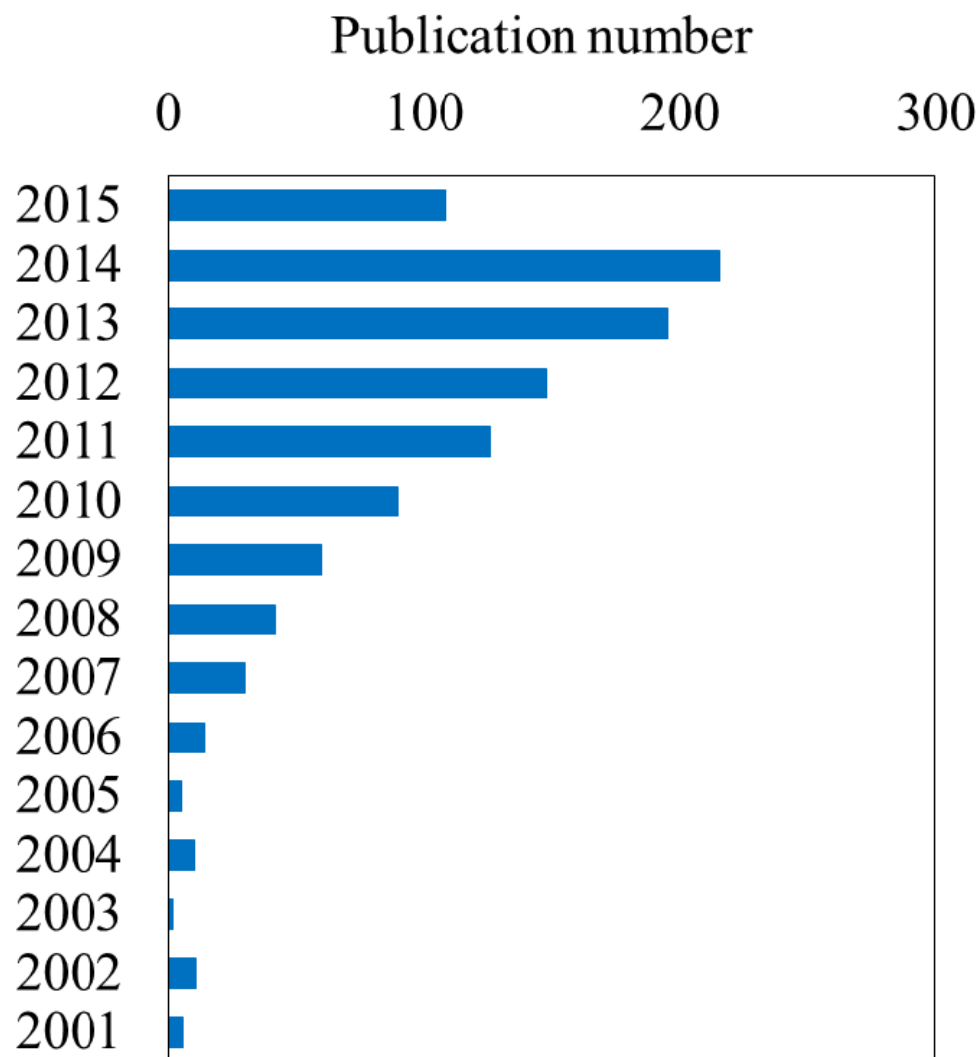
“Input-output”

AND

“environment or environmental or emissions or energy or water”

- Environmental footprints
- Embodied energy/emissions
- Hybrid life cycle assessment
-

EEIO for China is also increasingly popular



Web of Science

Topics:

“China”

AND

“Input-output”

AND

“environment or environmental or emissions or energy or water”

The problems with EEIO databases for China in existing studies

- Not publicly available → repeated efforts
- Inconsistent, using different data sources and approaches → preventing continuous, consistent updating
- Lacking transparency
- Limited environmental satellite accounts

Needs for an EEIO database for China:

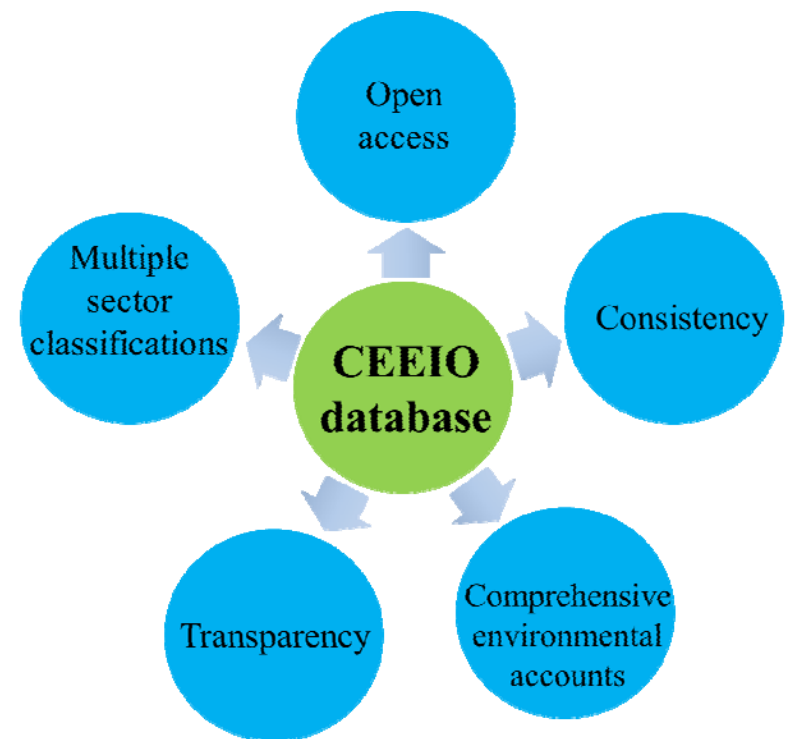
- Open access
- Using publicly available data sources to allow continuous, consistent updating
- Transparent with detailed documentation
- Comprehensive coverage of environmental satellite accounts

To develop a Chinese EEIO (CEEIO) database

- Use publically available data
 - IO tables: Benchmark IO tables by China's National Bureau of Statistics (1992, 1997, 2002, and 2007)
 - Environmental satellite accounts: Government statistics
- Use commonly used approaches in literature to match environmental data to sectors at multiple classifications
 - Straightforward approaches, commonly used in literature, nothing fancy
- Document to ensure transparency

The CEEIO database

- 1992, 1997, 2002, and 2007 when benchmark IO tables are available
- Multiple sector classifications
 - Original sector classifications (100+);
 - a 45-sector classification commonly used in China's environmental statistics;
 - a 91-sector classification with maximized sector resolution ensuring temporal consistence
- 256 types of resources and 31 types of pollutants



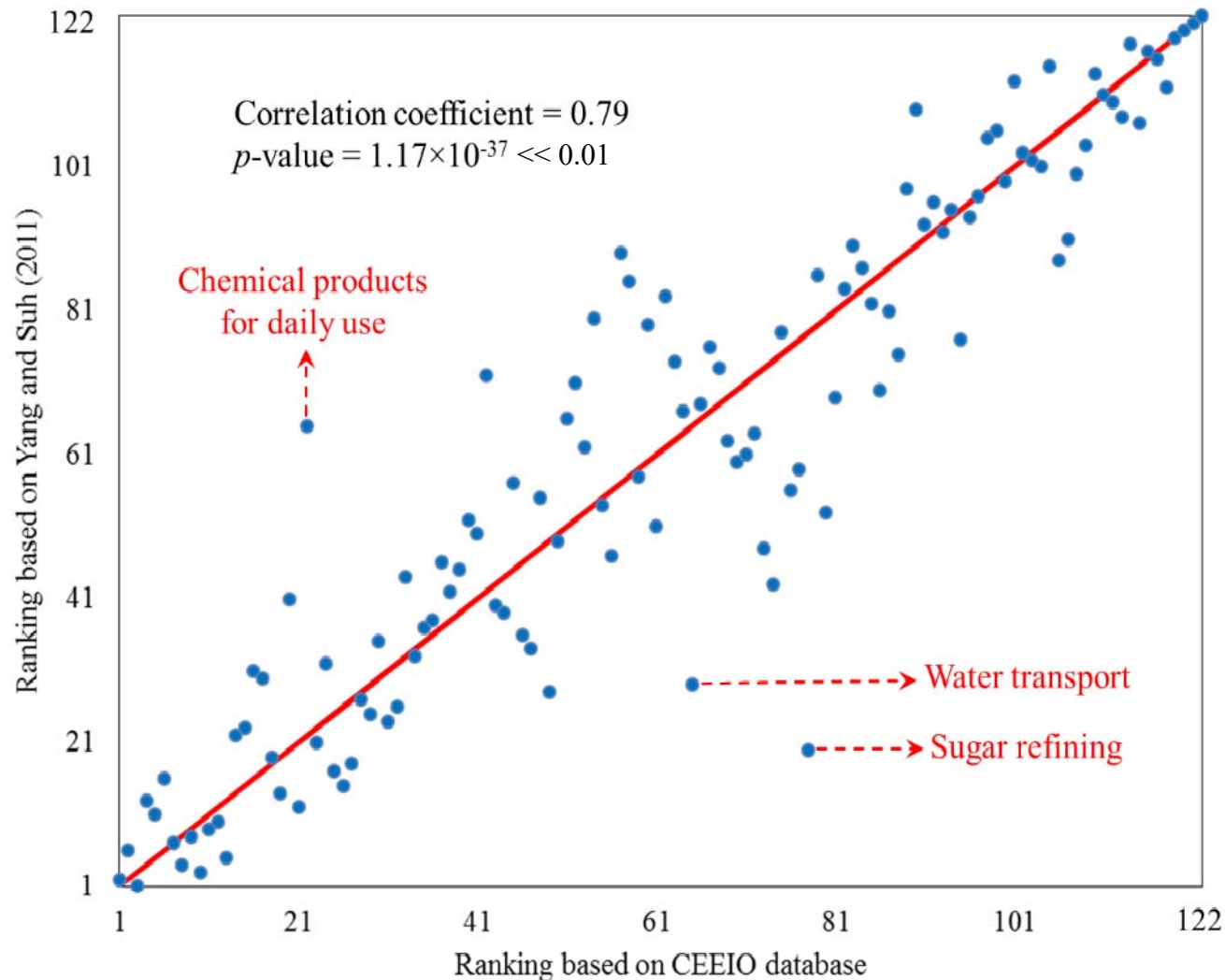
Comparison with Yang and Suh (2011): total intensity of CO₂ in 2002

Rank	CEEIO		Yang and Suh (2011)	
	Sectors	Total intensity (g CO ₂ /US Dollars)	Sectors	Total intensity (g CO ₂ /US Dollars)
1	Electricity and heat	21,356	Cement	23,007
2	Non-metallic products	14,426	Electricity and heat	20,987
3	Cement	14,314	Iron smelting	16,656
4	Glass and glass products	13,635	Steel smelting	9,919
5	Fireproof products	13,628	Chemical fertilizers	9,448
6	Ceramic products	13,270	Non-metallic products	7,112
7	Steel processing	13,151	Steel processing	6,867
8	Steel smelting	12,122	Iron alloy smelting	6,571
9	Iron alloy smelting	11,944	Raw chemical materials	6,362
10	Iron smelting	11,098	Coking	5,738

Difference mainly caused by

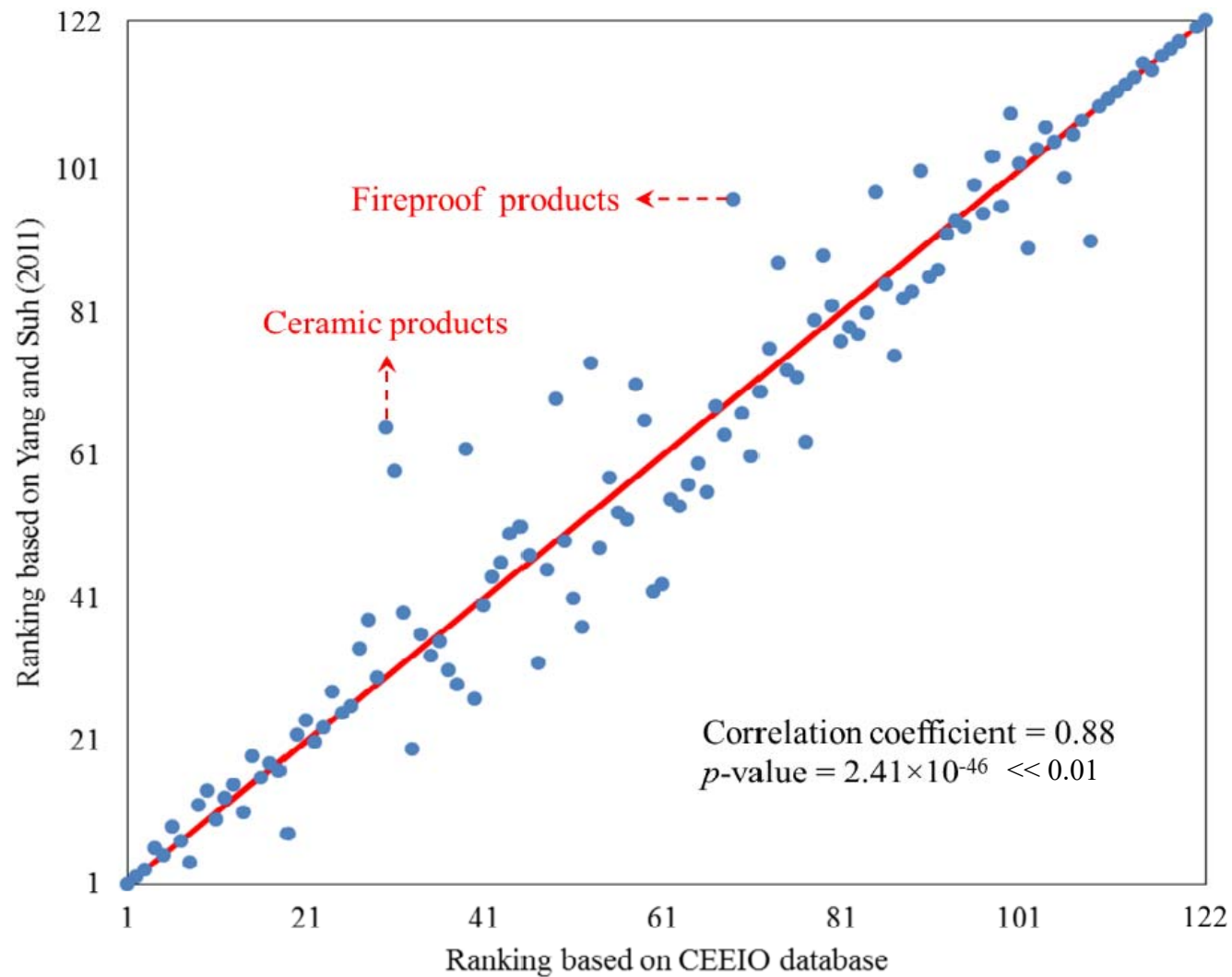
- Emission factors used
 - IPCC guidelines 2006 in CEEIO vs 1996 (Yang and Suh, 2011)
- Emission-generating chemical processes covered
 - 11 in this study vs 2 (Yang and Suh, 2011) chemical processes

Kendall rank correlation of sector rankings by the two studies



Total intensity of CO₂ emissions in 2002

Kendall rank correlation of sector rankings by the two studies



Consumption-based CO₂ emissions in 2002

Where to get it?

- Email me: mingxu@umich.edu (for now)
- Web-based interface (work-in-progress)
 - Access will be provided at <http://ComplexSustainability.snre.umich.edu>

or

just Google “Ming Xu Umich”

Thank you!

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