Supplement of

A Comparative Analysis of China's Anthropogenic CO_2 Emissions (2000–2023): Insights from Six Bottom-Up Inventories and Uncertainty Assessment

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1   **Table S1.** Definition of sub-sectors included in the four main sectors (electricity and heat production, industries and construction, transport,
2   and residential and commercial) of the MEIC inventory.

Sector in MEIC-global-CO_2	Definition
Electricity and heat production	Power generation
	Heat (auto producer)
	Heat (public)
Industries and construction	Coal mines
	Oil and gas extraction
	Blast furnaces
	Gas works
	Gasification plants for biogases
	Coke ovens
	Patent fuel plants
	BKB/peat briquette plants
	Oil refineries
	Coal liquefaction plants
	Liquefaction (LNG) / regasification plants
	Gas-to-liquids (GTL) plants
	Own use in electricity, CHP and heat plants
	Charcoal production plants
	Non-specified transformation industries
	Iron and steel
	Non-ferrous metals
	Chemicals
	Pulp and paper
	Food and tobacco
	Cement
	Other non-metallic minerals
	Transport equipment
	Machinery
	Mining and quarrying
	Wood products

	Construction
	Textile and leather
	Other non-specified industries
	Process emissions in cement industry
Transport	International aviation[1]
	Domestic aviation
	Rail
	International navigation[1]
	Domestic navigation
	Pipeline transport
	Other non-specified transport
	Agriculture and forestry
	Fishing
	Cars
	Light duty trucks
	Buses
	Heavy duty trucks
	Motorcycles
	Other fleet totals
Residential and commercial	Commercial and institutional
	Residential (rural)
	Residential (urban)
	Non-specified sectors

5   **Table S2.** Definition of sub-sectors in the four main sectors of EDGAR, CAMS, CEADs and GEMS.

Emission inventory	Sector	Definition
EDGAR	Electricity and heat production	Main Activity Electricity and Heat Production
	Industries and construction	Petroleum Refining - Manufacture of Solid Fuels and Other Energy Industries
		Manufacturing Industries and Construction
		Solid Fuels
		Oil and Natural Gas
		Cement production
		Lime production
		Glass Production
		Other Process Uses of Carbonates
		Chemical Industry
		Metal Industry
		Non-Energy Products from Fuels and Solvent Use
		Liming
		Urea application
		Incineration and Open Burning of Waste
		Fossil fuel fires
	Transport	Civil Aviation
		Road Transportation no resuspension
		Railways
		Water-borne Navigation
		Other Transportation

	Residential and commercial	Residential and other sectors
		Non-Specified
CAMS	Electricity and heat production	Power generation
	Industries and construction	Fugitives
		Industrial process
		Refineries
		Solid waste and waste water
		Solvents
	Transport	Off Road transportation -China
		Road transportation
		Ships
	Residential and commercial	Commercial
		Residential
CEADs	Electricity and heat production	Production and Supply of Electric Power, Steam and Hot Water
	Industries and construction	Coal Mining and Dressing
		Petroleum and Natural Gas Extraction
		Ferrous Metals Mining and Dressing
		Nonferrous Metals Mining and Dressing
		Nonmetal Minerals Mining and Dressing
		Other Minerals Mining and Dressing
		Logging and Transport of Wood and Bamboo
		Food Processing
		Food Production

Beverage Production

Tobacco Processing

Textile Industry

Garments and Other Fiber Products

Leather, Furs, Down and Related Products

Timber Processing, Bamboo, Cane, Palm Fiber & Straw Products

Furniture Manufacturing

Papermaking and Paper Products

Printing and Record Medium Reproduction

Petroleum Processing and Coking

Raw Chemical Materials and Chemical Products

Medical and Pharmaceutical Products

Chemical Fiber

Rubber Products

Plastic Products

Nonmetal Mineral Products

Smelting and Pressing of Ferrous Metals

Smelting and Pressing of Nonferrous Metals

Metal Products

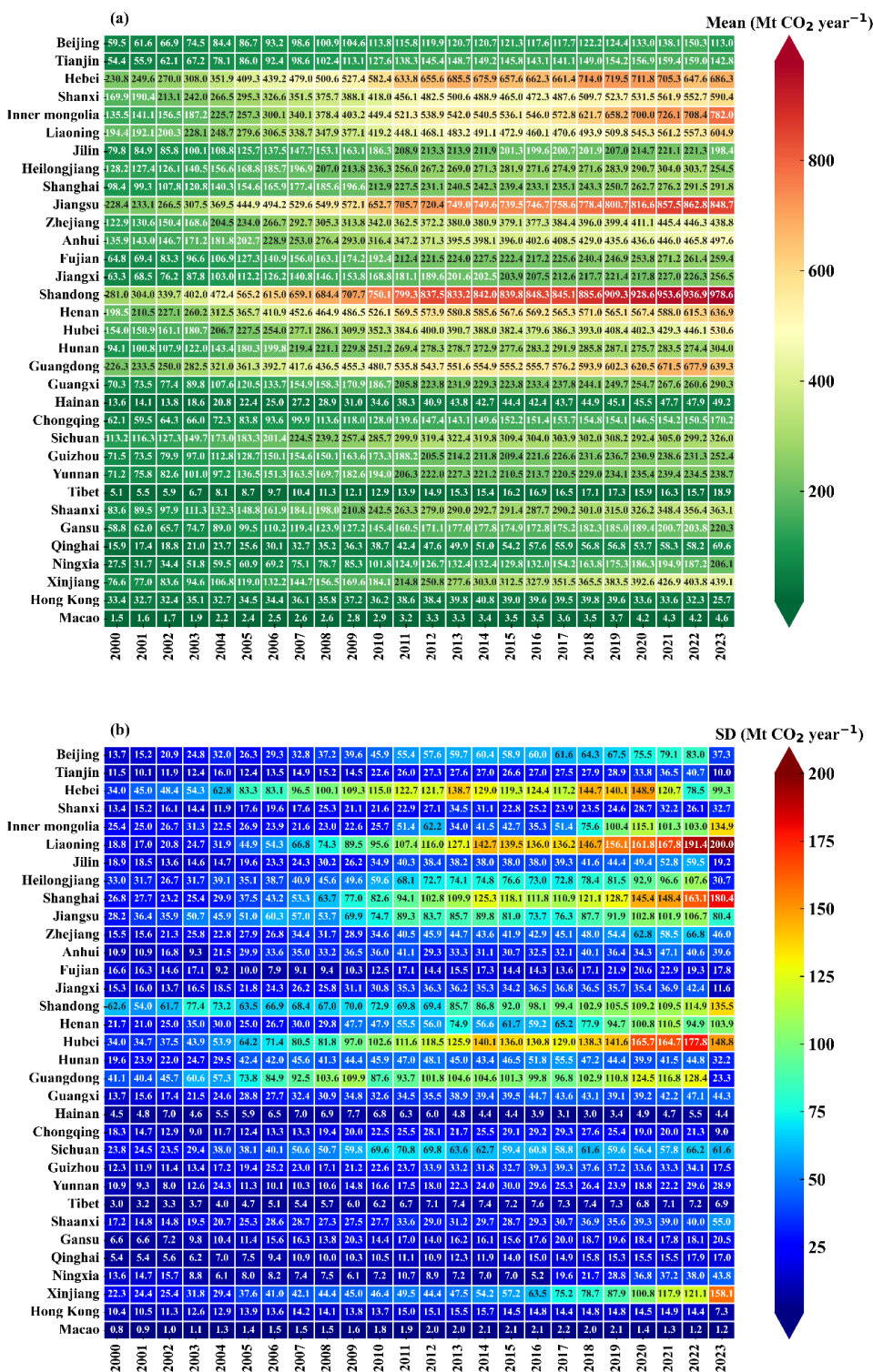
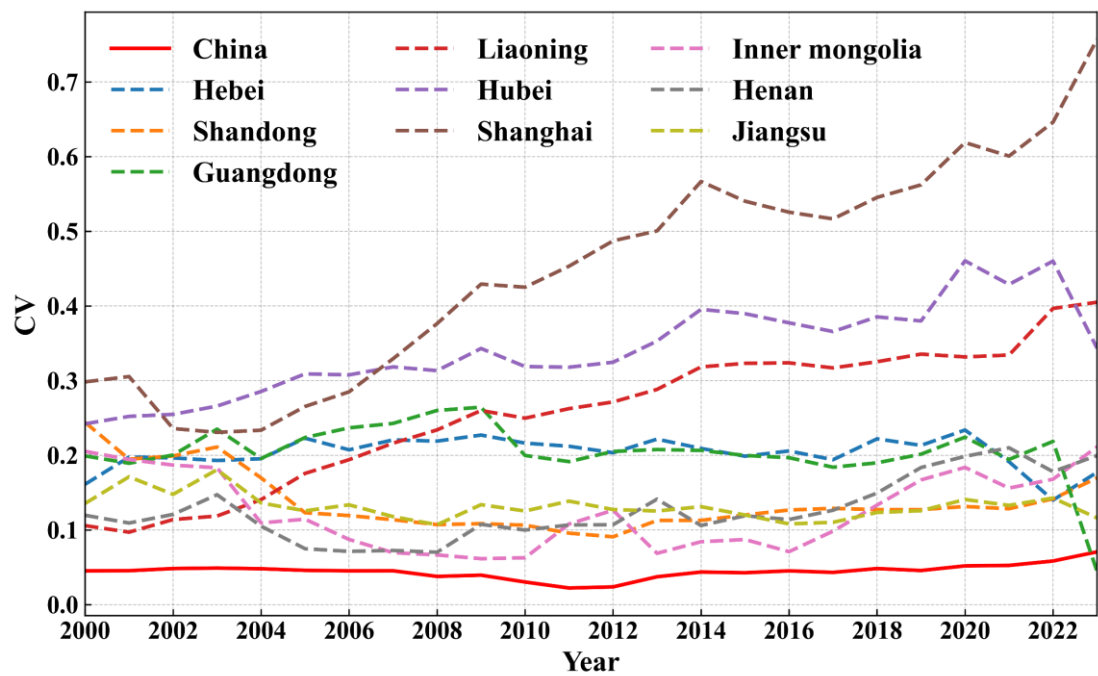
Ordinary Machinery

Equipment for Special Purposes

Transportation Equipment

Electric Equipment and Machinery

		Electronic and Telecommunications Equipment
		Instruments, Meters, Cultural and Office Machinery
		Other Manufacturing Industry
		Scrap and waste
		Production and Supply of Gas
		Production and Supply of Tap Water
		Construction
	Transport	Farming, Forestry, Animal Husbandry, Fishery and Water Conservancy
		Transportation, Storage, Post and Telecommunication Services
	Residential and commercial	Cultural, Educational and Sports Articles
		Wholesale, Retail Trade and Catering Services
		Others
		Urban
		Rural
GEMS	Electricity and heat production	Power Generation
	Industries and construction	Industrial Process
		Industrial Combustion
	Transport	Transportation
		Agriculture
	Residential and commercial	Commercial
		Residential Combustion

9 **Figure S1.** Heatmaps of provincial mean CO_2 emissions (a) and SD (b) of six emission inventories for the period 2000 to 2023.

13 **Figure S2.** Coefficient of variation (CV) of emissions at national level and for nine typical provinces.