

# Regional Co-operation on Mineral Resources, China and the Rest of the World

**YUAN Guohua**

*Senior Fellow in Mineral and Environmental Economics*

**KeyLab of Carrying Capacity Assessment for Resource  
and Environment, MLR**

**Chinese Academy of Land and Resource Economics**

**Presented to 10th Biennial Pacific Rim Conference**

*Session 71 ISSUES IN RESOURCE MANAGEMENT AND*

*INTERNATIONAL COOPERATION March 14-17, 2013*

# TOPICS

- **China and Emerging Markets Leads Mineral Resources Consumption**
  - - China as the World Manufacturer
  - - China as Global Minerals Provider
  - - China's consumption of Mineral Resources
- **Resource-Rich Countries' Development Relies on Mineral Resources Exploitation**
  - - Australia and Canada
  - - Africa and other countries
- **Building A Cooperation Mechanism on Global Mineral Resources**

# China and Emerging Markets Leads Mineral Resources Consumption

- - China as the World Manufacturer
- - China's consumption of Mineral Resources
- - The supply of global minerals

# China as the World Manufacturer

- Largest producer of iron and steel, coal, cement and REE and other raw materials.
- Largest producer of computers, BD and DVD producers, micro wavers and large variety of consumer goods!
- China's contribution to global GDP was 4.6% in 2003, and 14.5% in 2009 (WordBank). China's accumulative GDP contribution to global GDP from 2000-2009 was more than 20%, surpassed USA.
- As one of the main providers of goods and services, China has to and must use global resources.

# China as Global Materials Provider

- From REE to Cadmium, China has been providing 20% to 99% of world production!
- Meets domestic demand and contributes to global economy.

# China as Global Materials Provider

Commodity	World rank	Percent of total world production	Commodity	World rank	Percent of total world production
Rare earth minerals	1	99	Steel (crude)	1	38
Antimony (mine)	1	90	Bismuth	1	37
Graphite	1	85	Iron ore	1	37
Magnesium metal (primary)	1	83	Lead (refined)	1	37
Strontium minerals	1	80	Mica	1	36
Tungsten (mine)	1	75	Molybdenum (mine)	1	35
Magnesite	1	57	Manganese ore	1	34
Arsenic	1	56	Zinc (slab)	1	34
Mercury	1	55	Aluminium (primary)	1	33
Wollastonite	1	55	Cobalt (metal)	1	33
Fluorspar	1	54	Phosphate rock	1	31
Barytes	1	51	Alumina	1	28
Pig iron	1	47	Zinc (mine)	1	27
Tin (mine)	1	45	Talc	1	26
Coal	1	40	Gypsum	1	25
Lead (mine)	1	39	Cadmium	1	23
Tin (smelter)	1	39			

From: *BGS World Mineral Statistics*

Chinese Academy of Land and Resource  
Economics | 010-61595824 | ghyuan@126.com

# China as Global Materials Provider

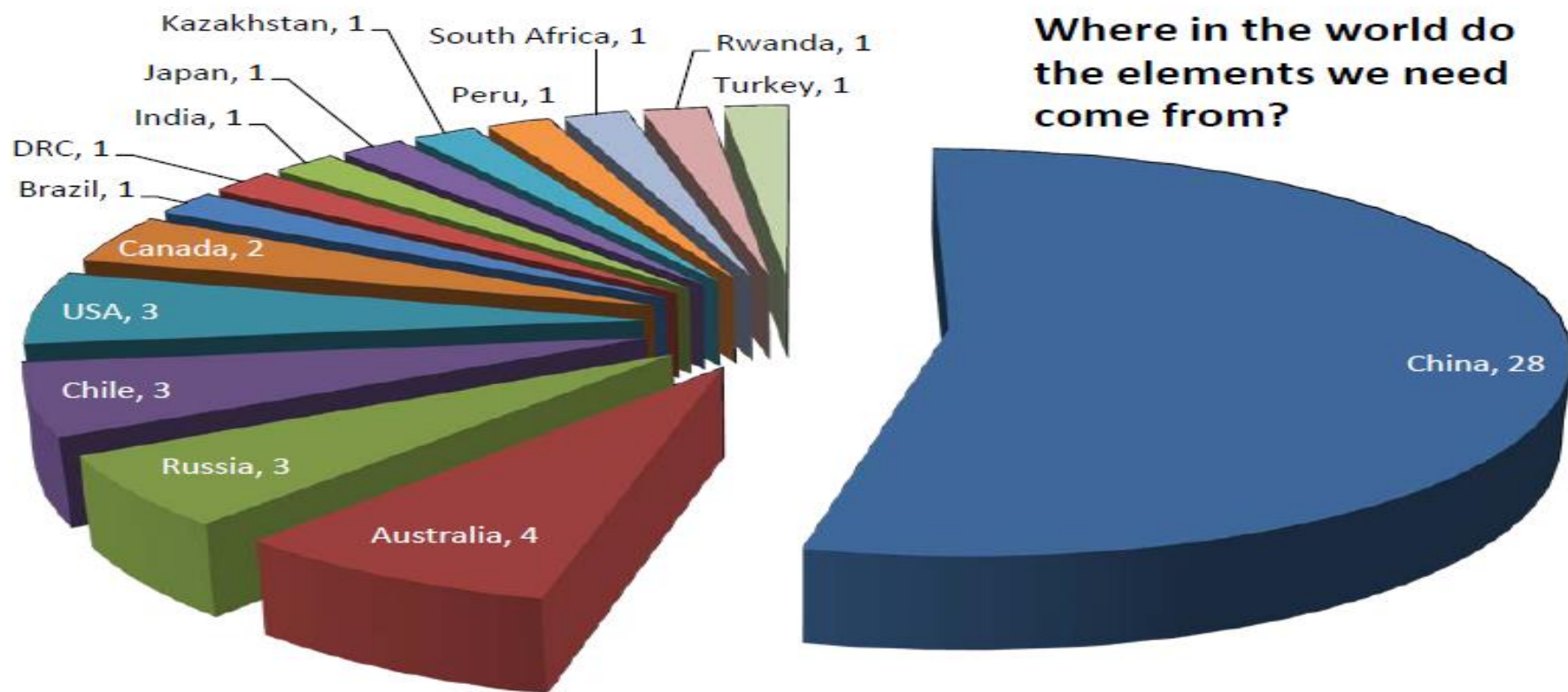


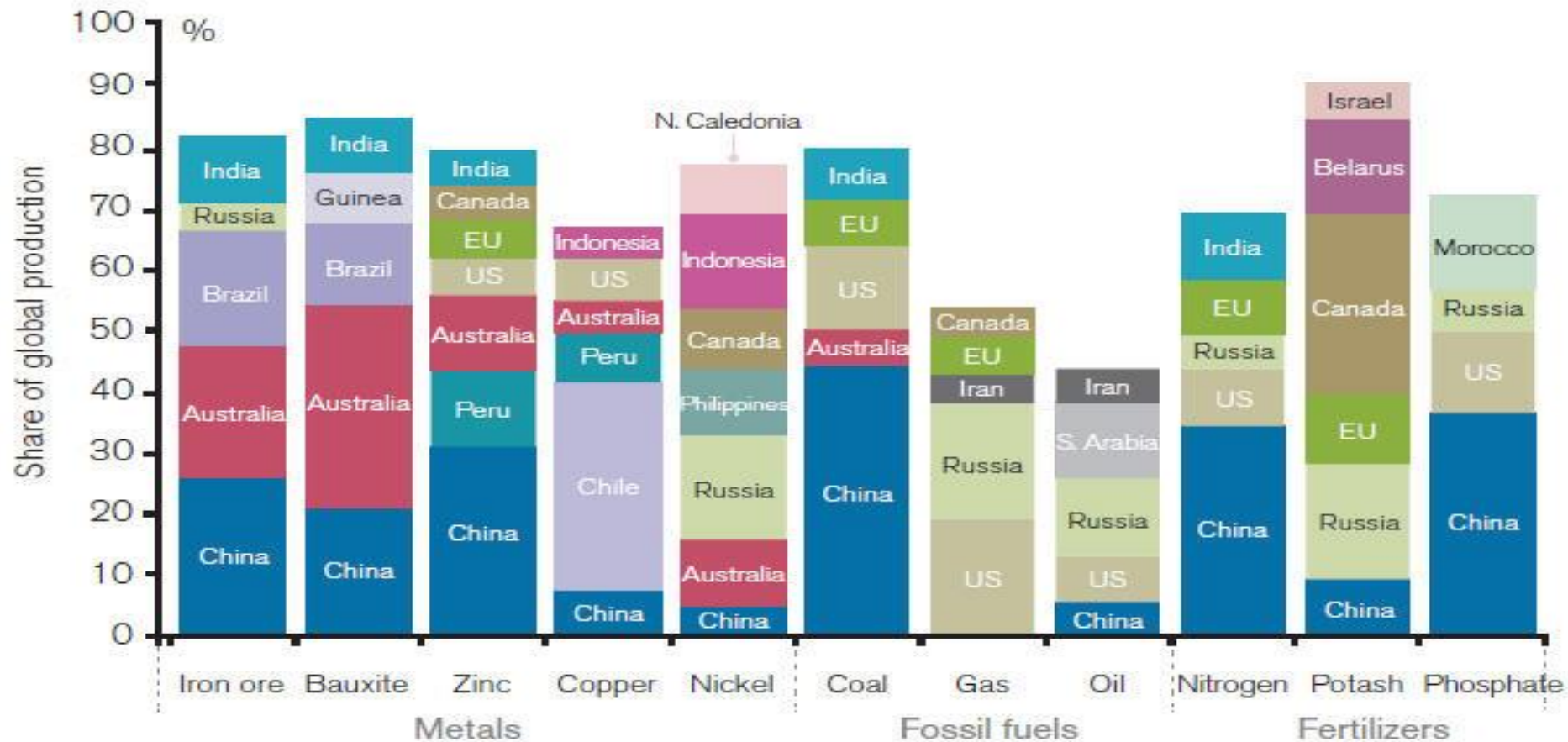
Figure 1. Chart indicates the number of times a country is the leading global producer of an element or element group of economic value.

Source: BGS World Mineral Statistics



# Suppliers of Global Minerals

Major resource producers (>5% of global total in 2010)

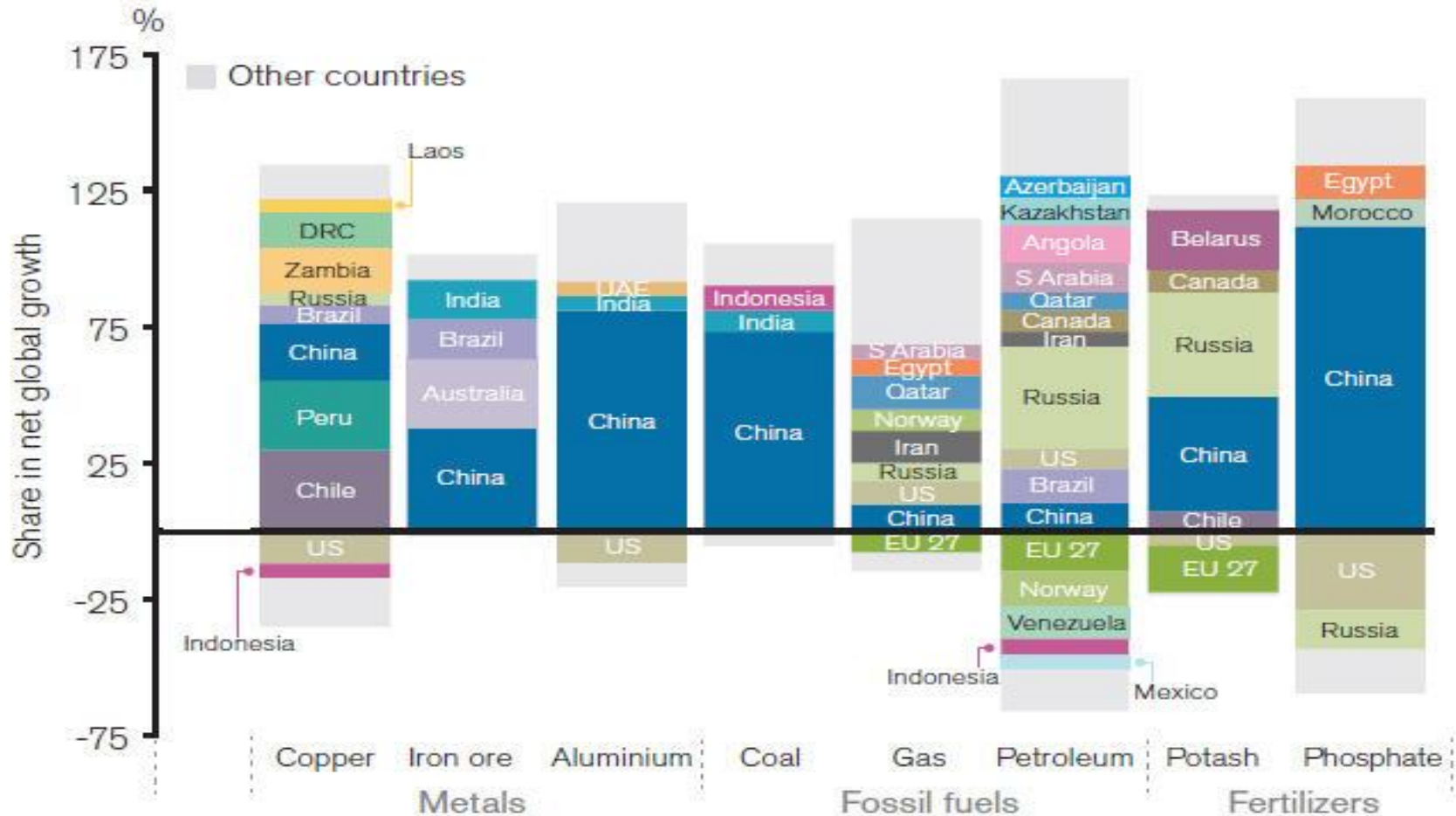


Source: Chatham House analysis of data from FAOSTAT, EIA, IFA and the USGS.



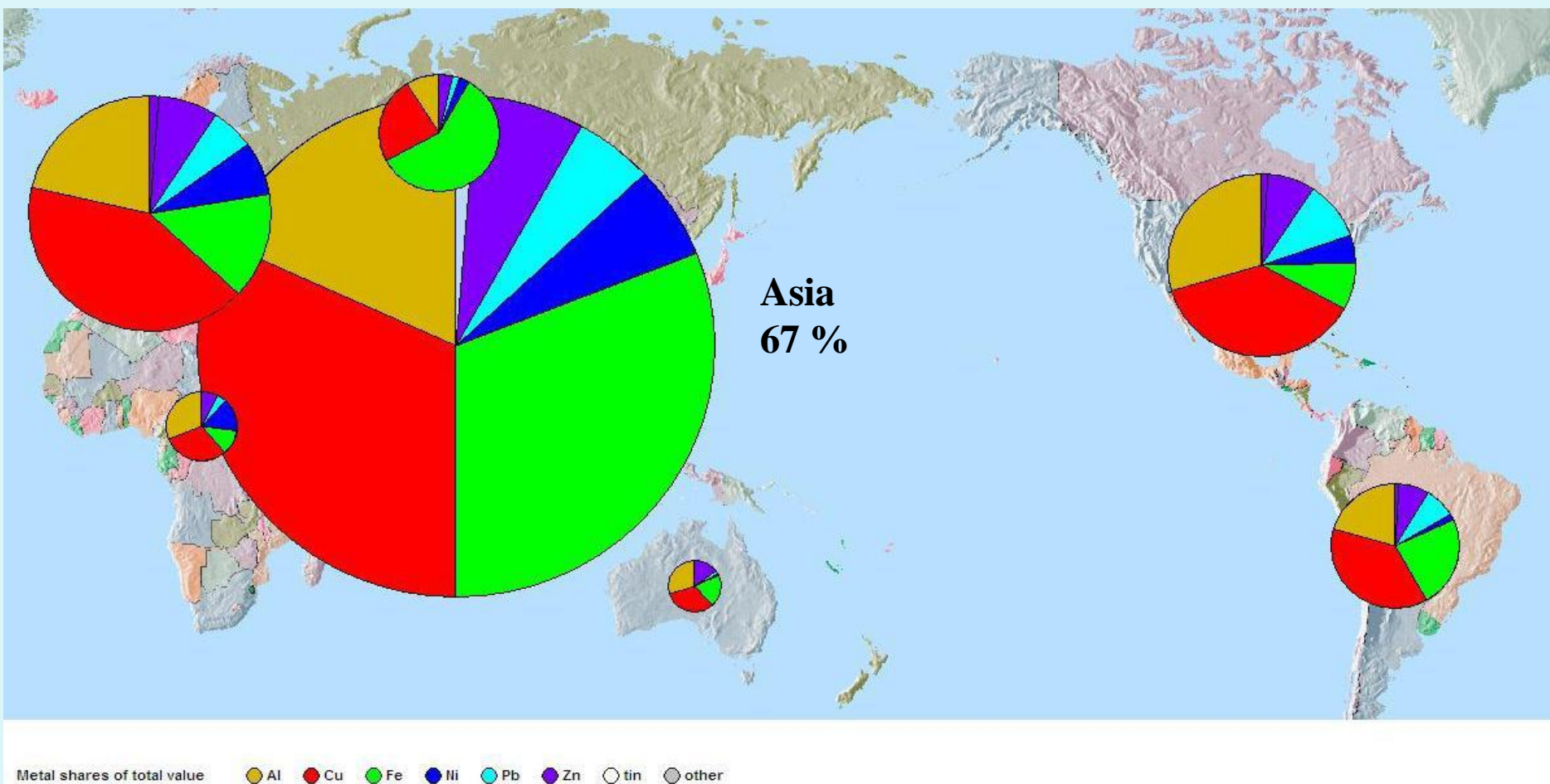
# Suppliers of Global Minerals

Major contributors to global resource production growth, 2000–10



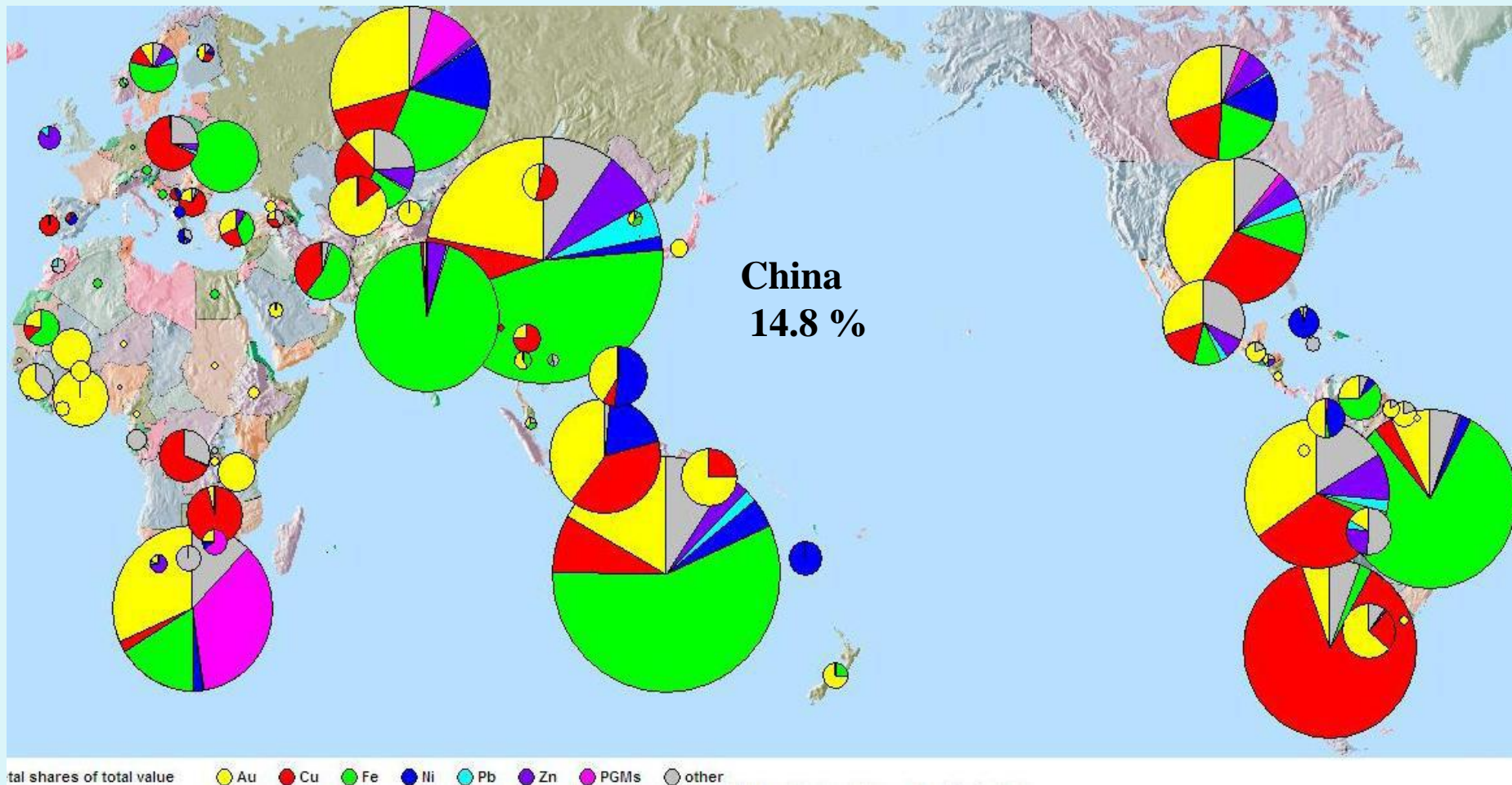
Source: Chatham House analysis of FAO, EIA, IFA and World Steel Association data.

# China's (Asia) Consumption of Metals



Source: Raw Materials Group, Stockholm 2011

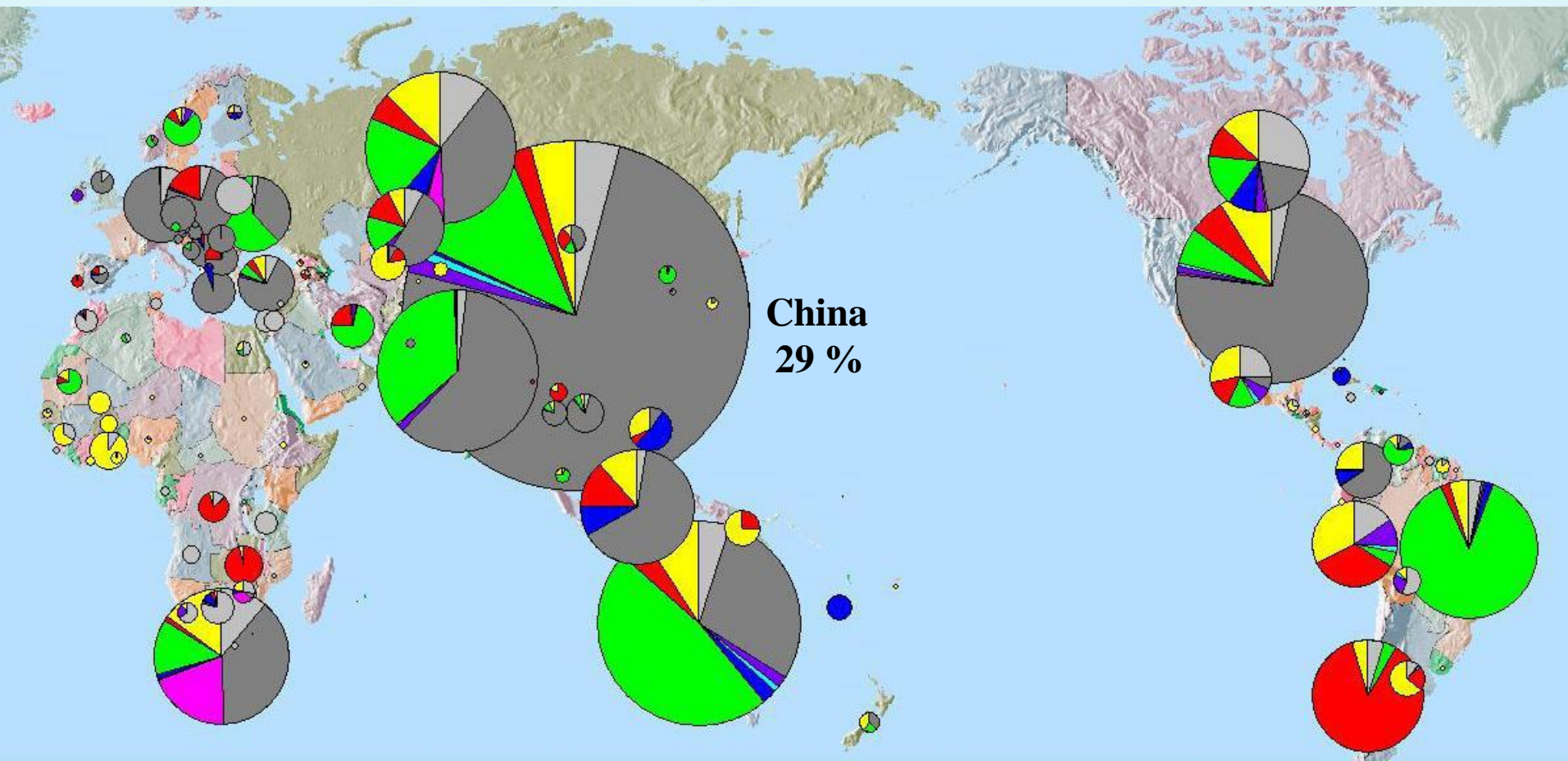
# China's Consumption of Metals



Source: Raw Materials Group, Stockholm 2011



# China's Consumption of Metals and Coal



China  
29 %

Metal shares of total value    Au   Cu   Fe   Ni   Pb   Zn   PGMs   coal   other

Source: Raw Materials Group, Stockholm 2011

# Russia

Commodity	World rank	Percent of total world production
Asbestos	1	46
Vanadium	1	40
Diamond	1	22
Natural gas	1	21
Nickel (smelter/refinery)	1	19
Nickel (mine)	1	18
Platinum group metals	2	28
Potash	2	18
Petroleum (crude)	2	12
Aluminium (primary)	2	11
Magnesite	2	11
Tungsten (mine)	2	6
Phosphate rock	4	6

原油、天然气、  
 钻石、铂族金属  
 石棉、钒矿  
 镍矿、钾盐  
 镁矿砂

From: BGS World Mineral Statistics

# India

Commodity	World rank	Percent of total world production
Wollastonite	2	18
Barytes	2	17
Chromium ores & concentrates	2	16
Graphite	2	6
Talc	3	11
Coal	3	8
Salt	3	7
Pig iron	3	5
Bentonite	4	21
Iron ore	4	10
Sillimanite minerals	4	9
Copper (smelter)	4	5

膨润土、硅灰石、  
重晶石、  
滑石、铬铁矿、  
铁矿石

From: BGS World Mineral Statistics



# Brazil

Commodity	World rank	Percent of total world production
Niobium	1	95
Tantalum	2	19
Iron ore	2	17
Bauxite	2	13
Rare earth minerals	2	1
Asbestos	3	13
Alumina	3	10
Graphite	3	4
Kaolin	4	10
Cobalt (mine)	4	7
Manganese ore	5	8
Tin (mine)	5	5
Vermiculite	5	4

铌矿、钽矿

铁矿石、铝土矿

石棉、高岭土

From: *BGS World Mineral Statistics*

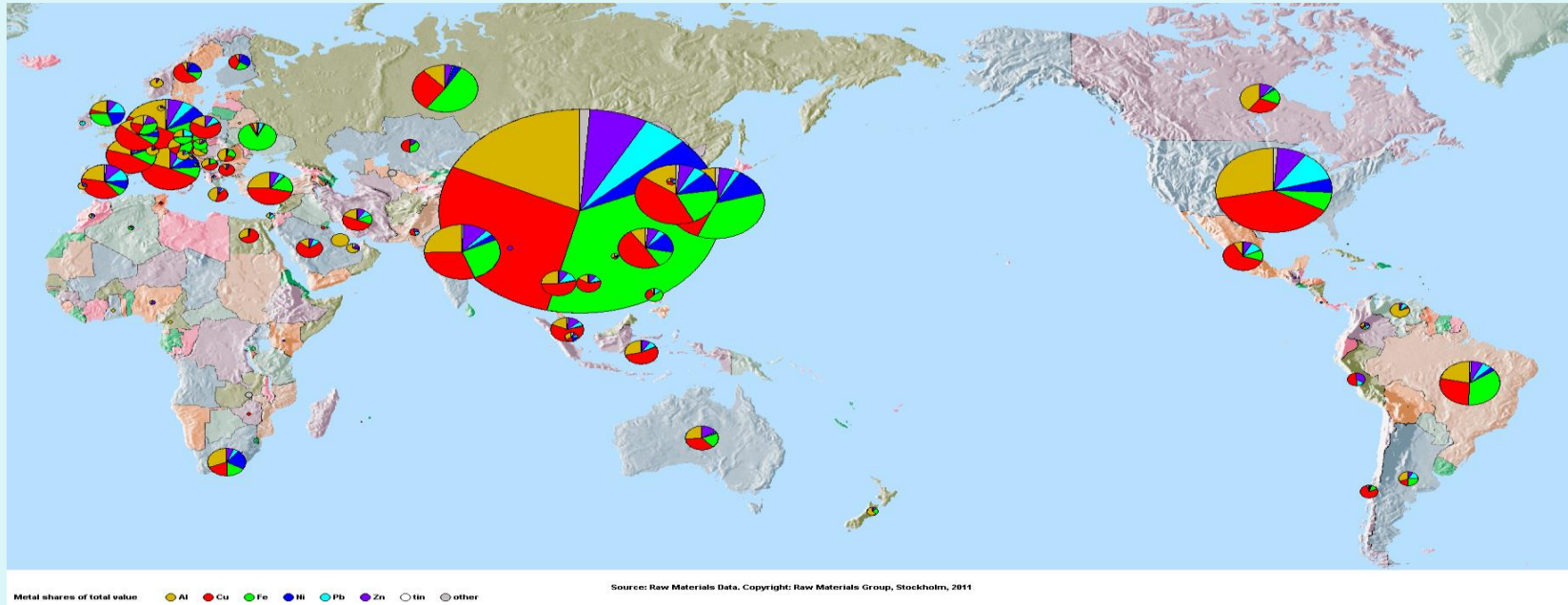
Chinese Academy of Land and Resource  
Economics | 010-61595824 | ghyuan@126.com

# Resource-Rich Countries' Development Relies on Mineral Resources Exploitation

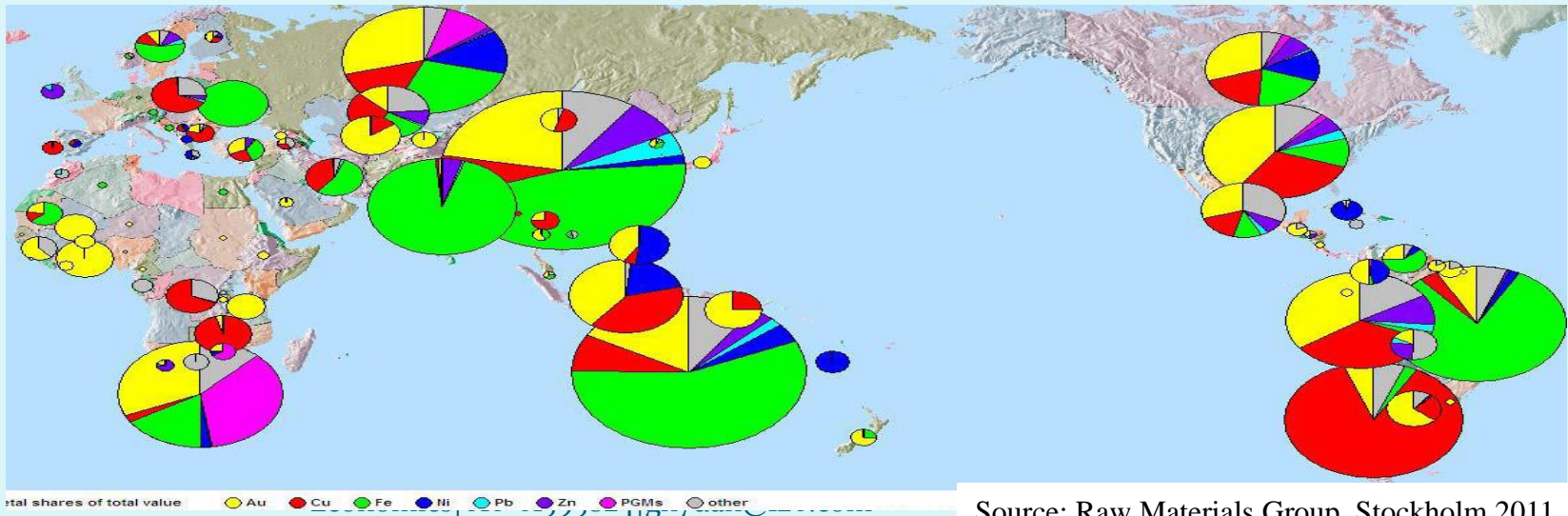
- Mineral resources exploitation provides:
  - - **Job opportunities**
  - - **Taxes revenue**
  - - **Export revenue: gold and dollars**
  - - **Facility to industrialization**

# Global Reliance on Minerals

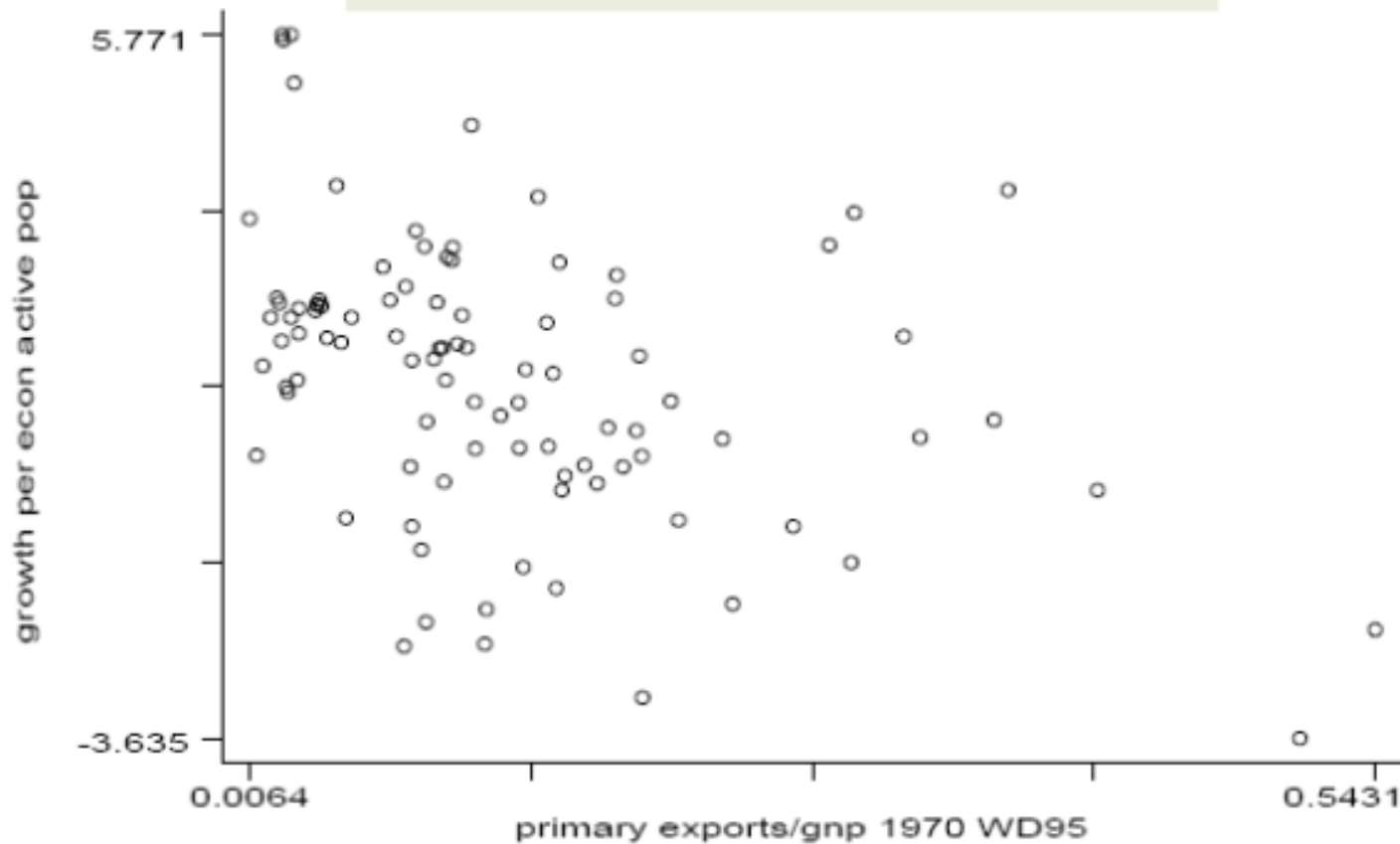
Global Mineral Demand



Global Mineral Extract



# Resources and Growth



Natural Resource Dependence and Economic Growth. *Source: Sachs and Warner (1995)*

# US Relies on Minerals

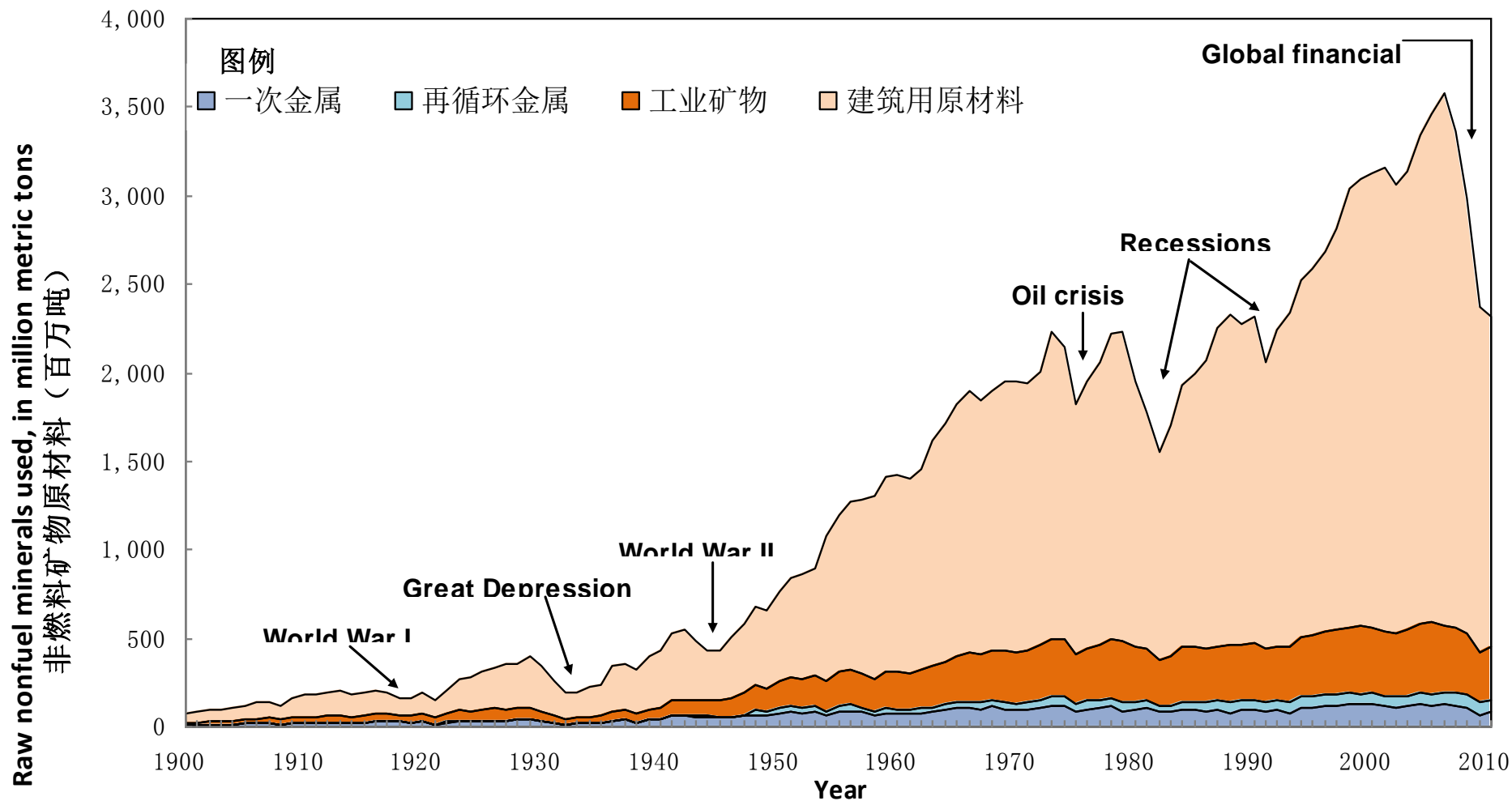
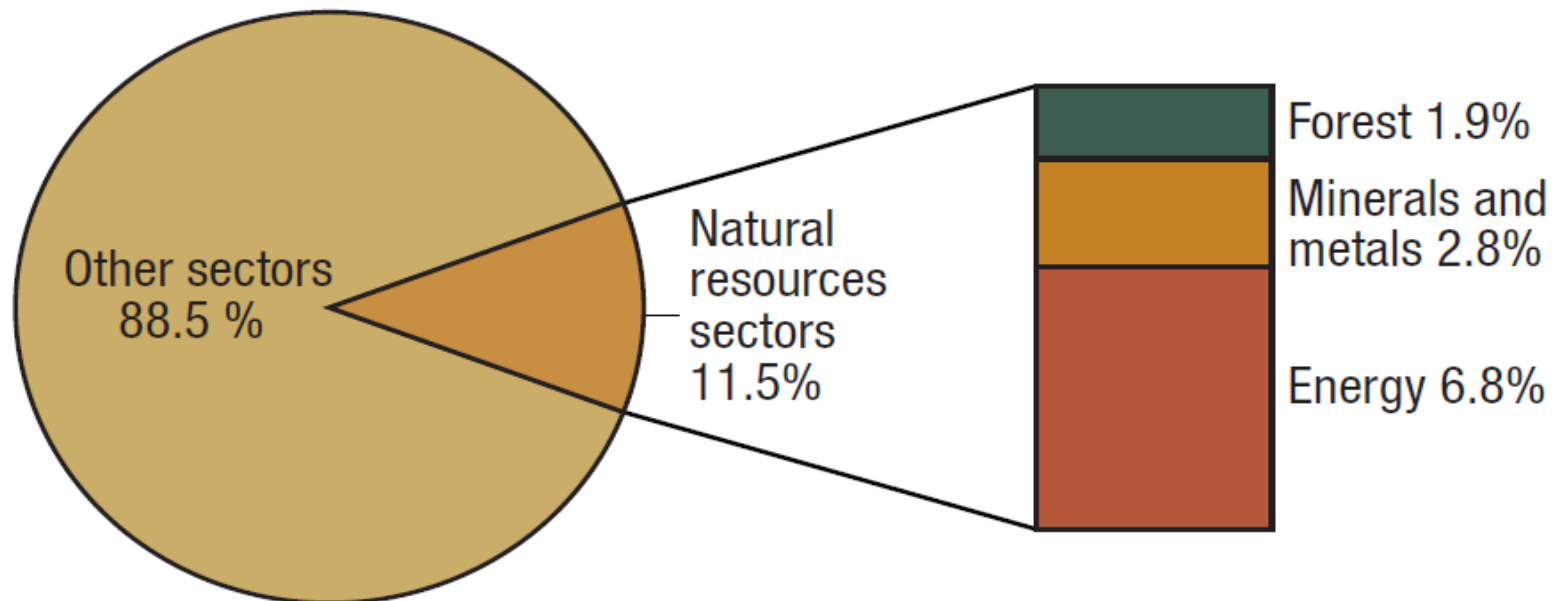


Figure 3. U.S. raw nonfuel minerals put into use annually from 1900 through 2010. Minerals embedded in imported goods are not included. [In million metric tons]

# Canada Relies on Minerals and Energy

**Figure 1.** Natural resources sectors and Canada's gross domestic product in 2010



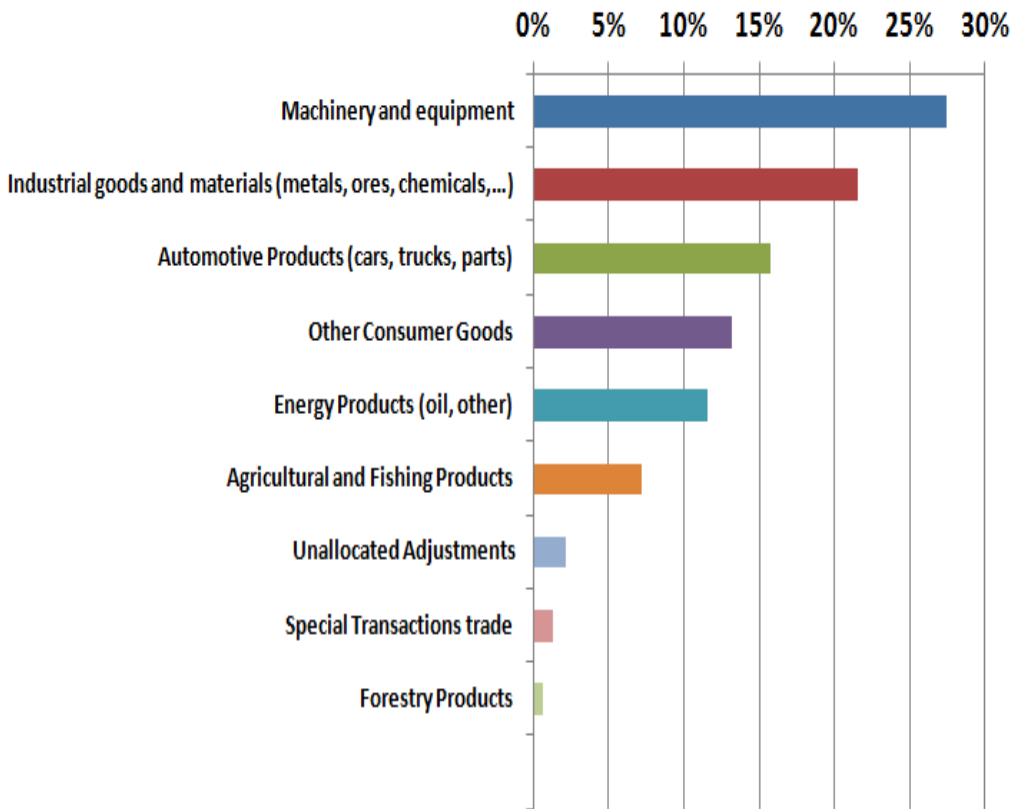
Canada's total GDP was \$1,194.2 billion.

**Note:** Numbers may not add up due to rounding.

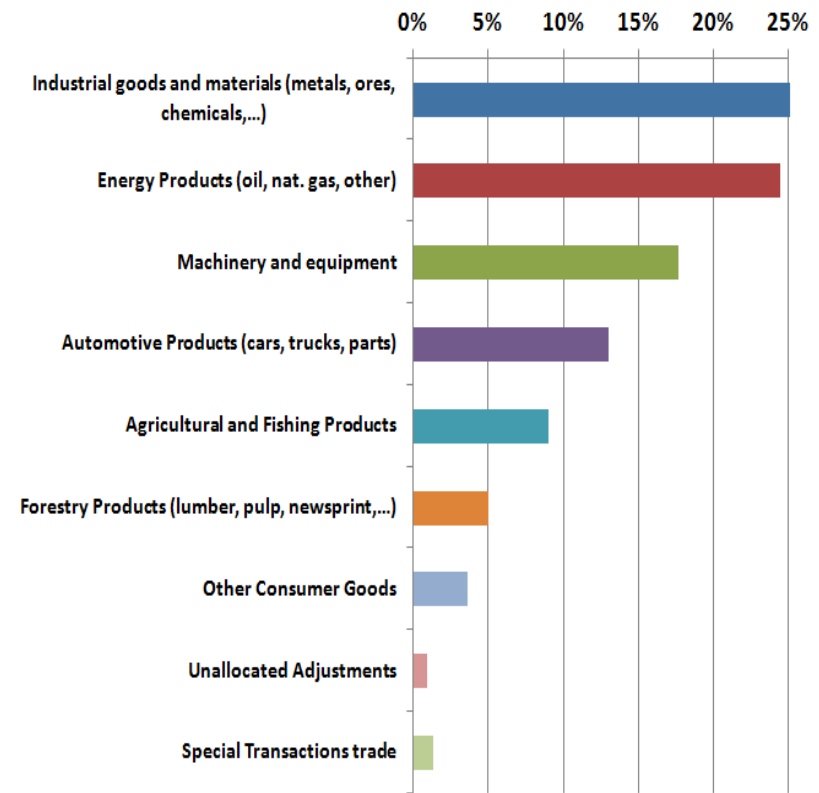


# Canada Relies on Minerals

Canadian 2011 Import Segments %



Canadian 2011 Export Segments %



Data Source, Statistics Canada

# Australian Reliance on Minerals

Percentage contributions by industry, 2010-11

IVA

Investment

Exports

Employment



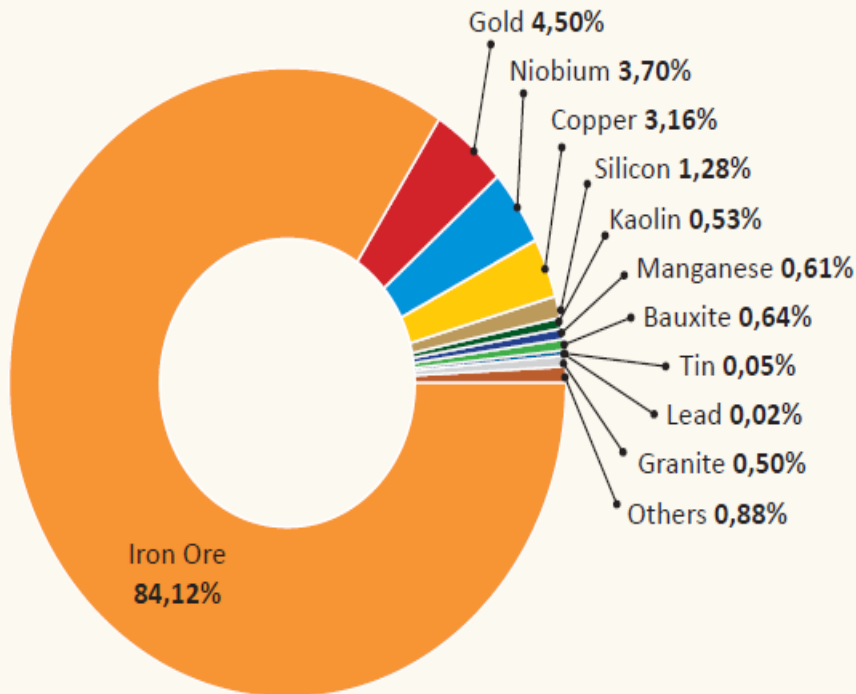
■ Services ■ Manufacturing ■ Mining ■ Agriculture

Sources: ABS; a – industry gross value added (IVA).

# Brazil

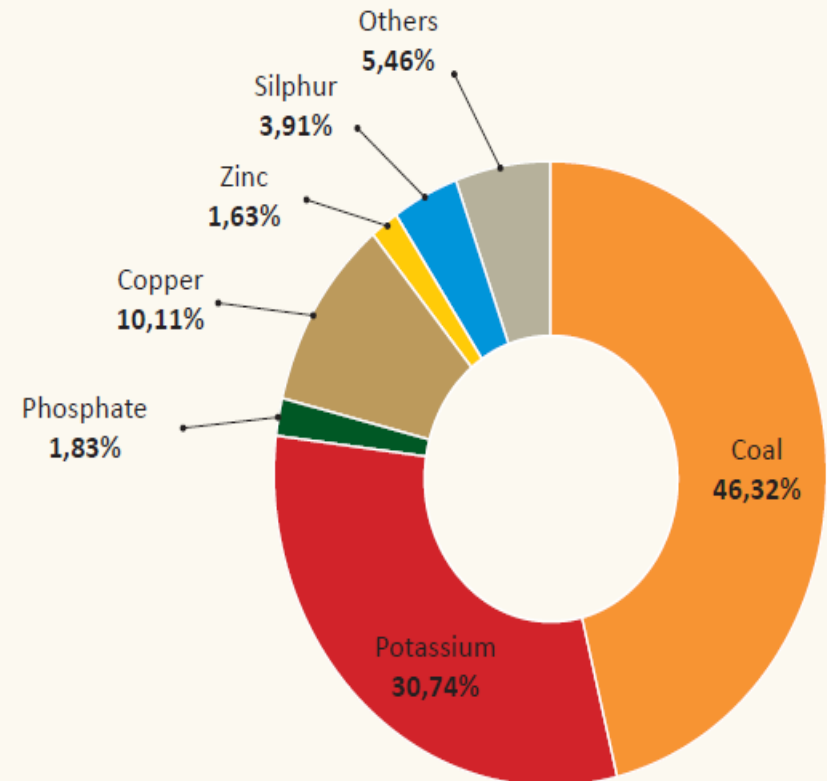
## Brazil mineral exports and imports

**EXPORTS 2011**  
% of value exported in US\$



Source: MDIC/Aliceweb

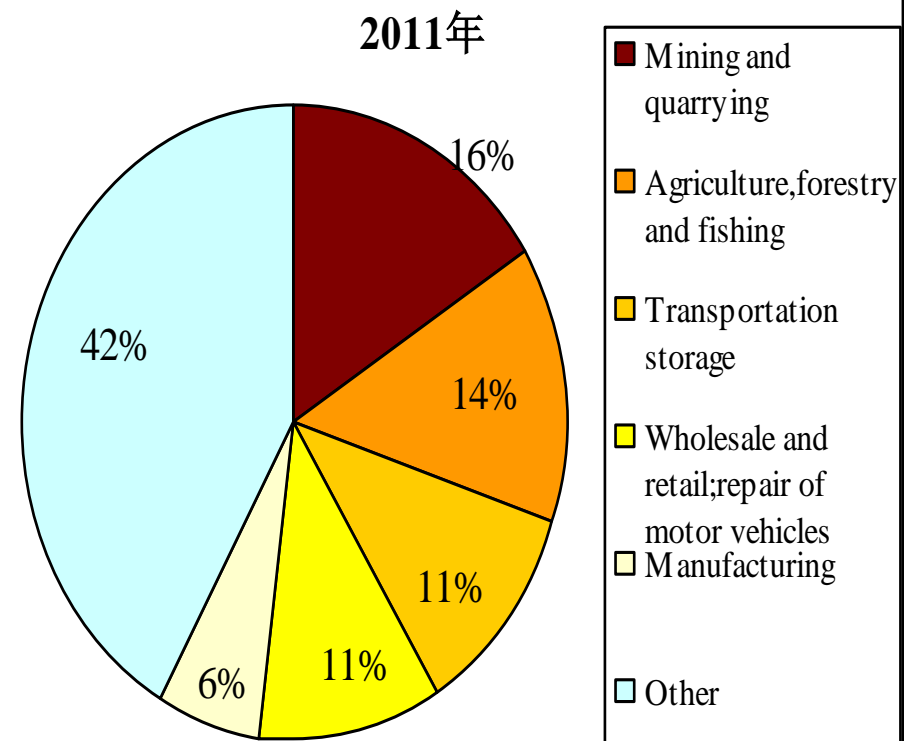
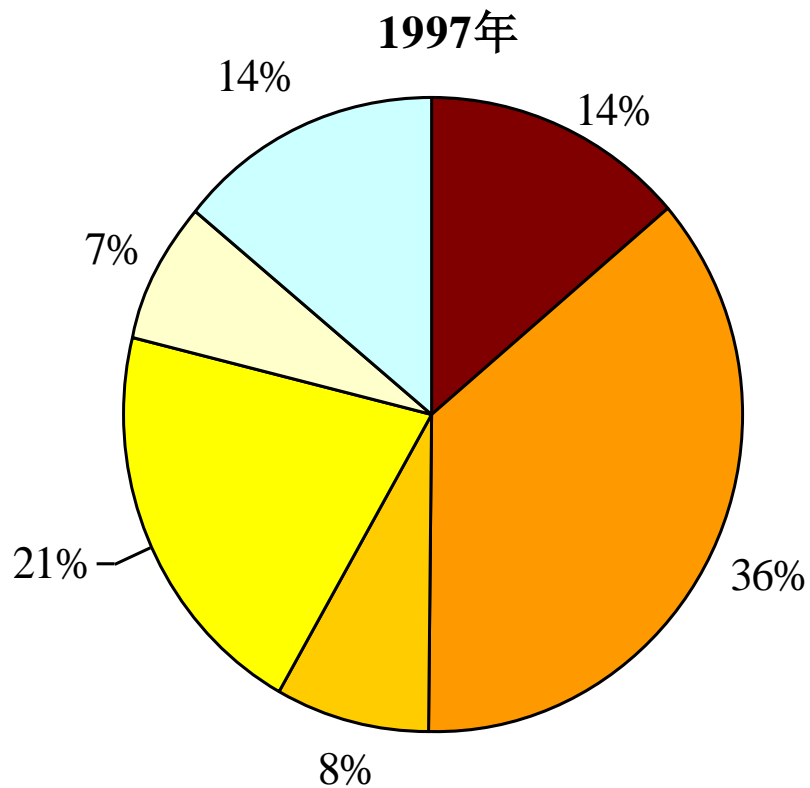
**IMPORTS 2011**  
% of value imported in US\$



Source: MDIC/Aliceweb

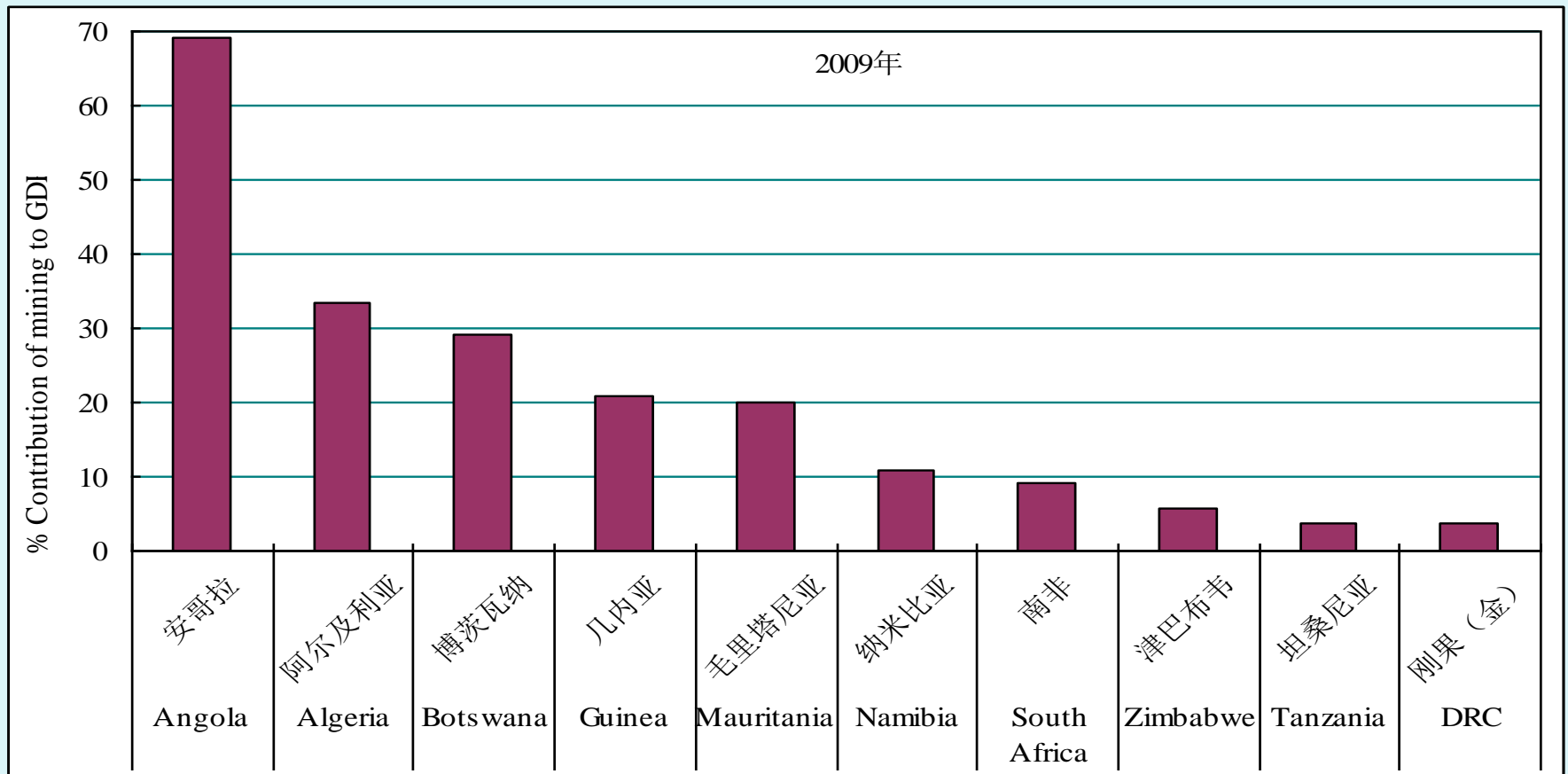
# Mongolia

## The Role of Mining Sector in Mongolia Economy



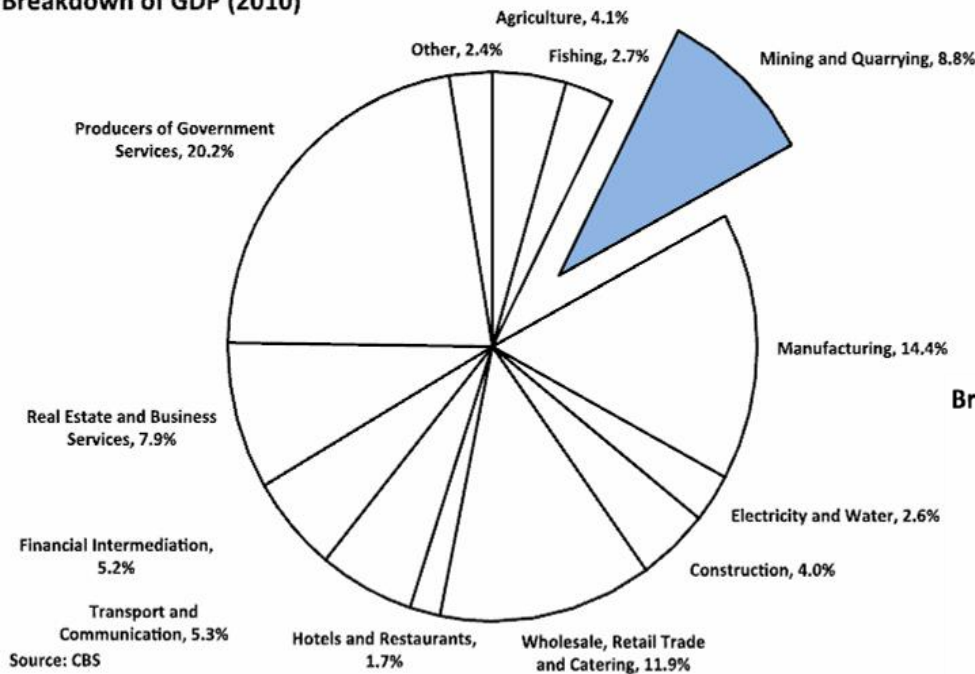
# Africa

- Mining contributes percentage to the GDP

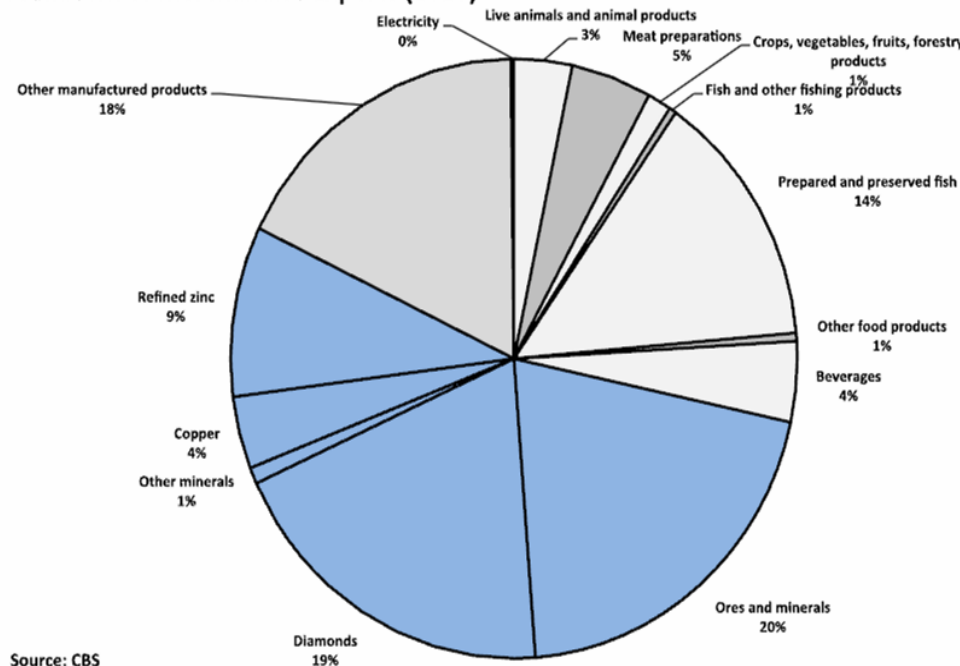


# Namibia

Breakdown of GDP (2010)



Breakdown of Merchandise Exports (2010)





# Mining Contribution to Locals

**Table 2.1: Examples of Royalty/Tax Redistribution in Mining Areas**

Royalty/tax	Percentage Allocated to Decentralized Authorities by Law
Madagascar royalty	42 percent to communes of extraction; 21 percent to region; 7 percent to province
Peru royalty	20 percent to the district of exploitation; 20 percent to the province; 40 percent to other districts and provinces in the region; 20 percent to the region, including 5 percent to universities
Indonesia state receipts from natural resources, including mining	80 percent to the region (split as 64 percent to the regencies and 16 percent to the provincial government)

Elizabeth Wall, Remi Pelon, *Sharing Mining Benefits in Developing Countries*, 2011

# Building A Cooperation Mechanism on Global Mineral Resources

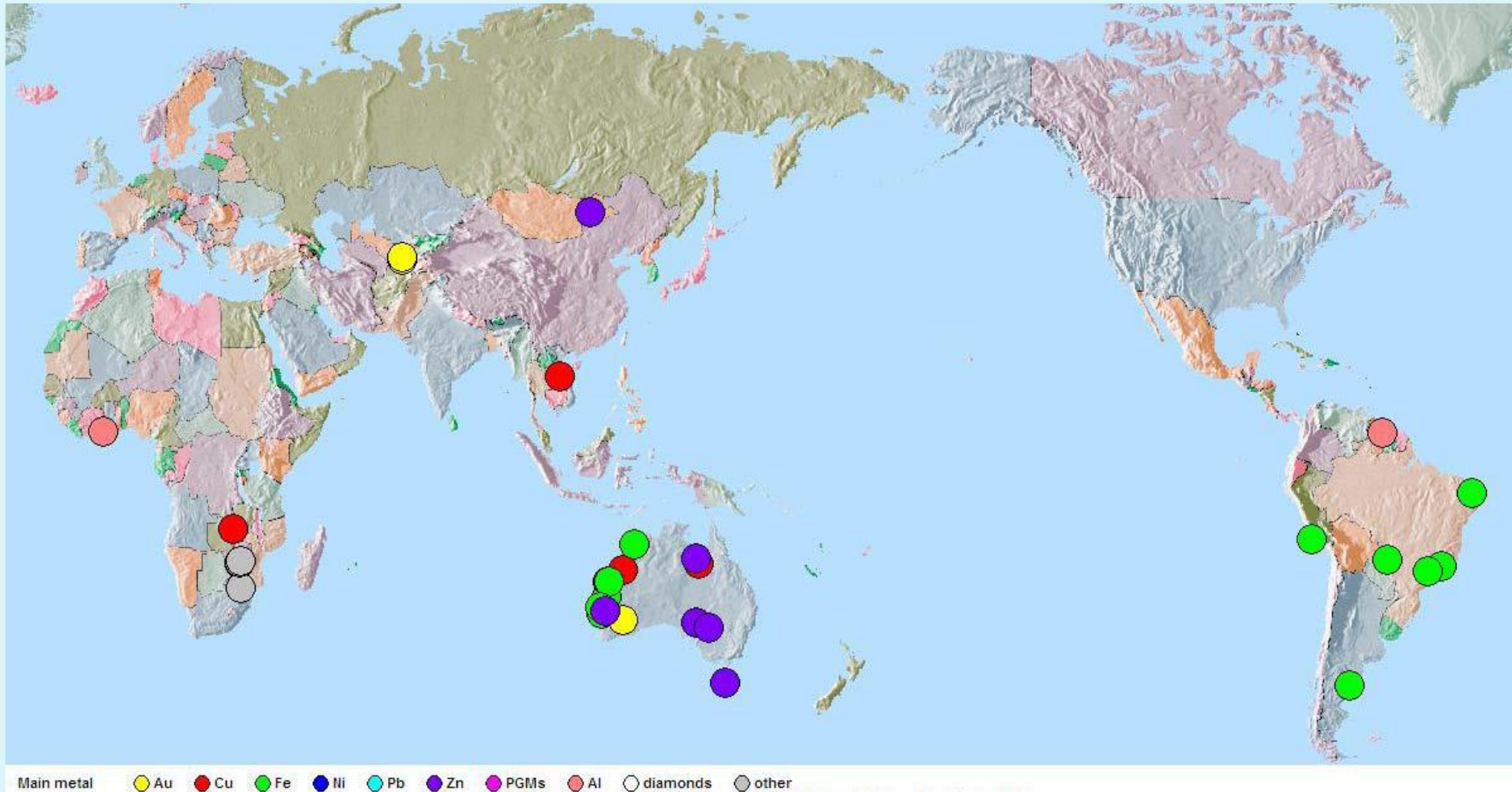
- Coordinating and cooperation in global mineral and energy development!

# China and the Rest of the World

## ● China and Africa

- ✓ Trade value: 200 b\$ (2012). China's ODI to Africa: 14.7 b\$ (2011).
- ✓ China aid to African mineral and energy development, by using its economical, technological power and expertise.
- ✓ Helping African industrialization, by bi-lateral and multi-lateral arrangements.

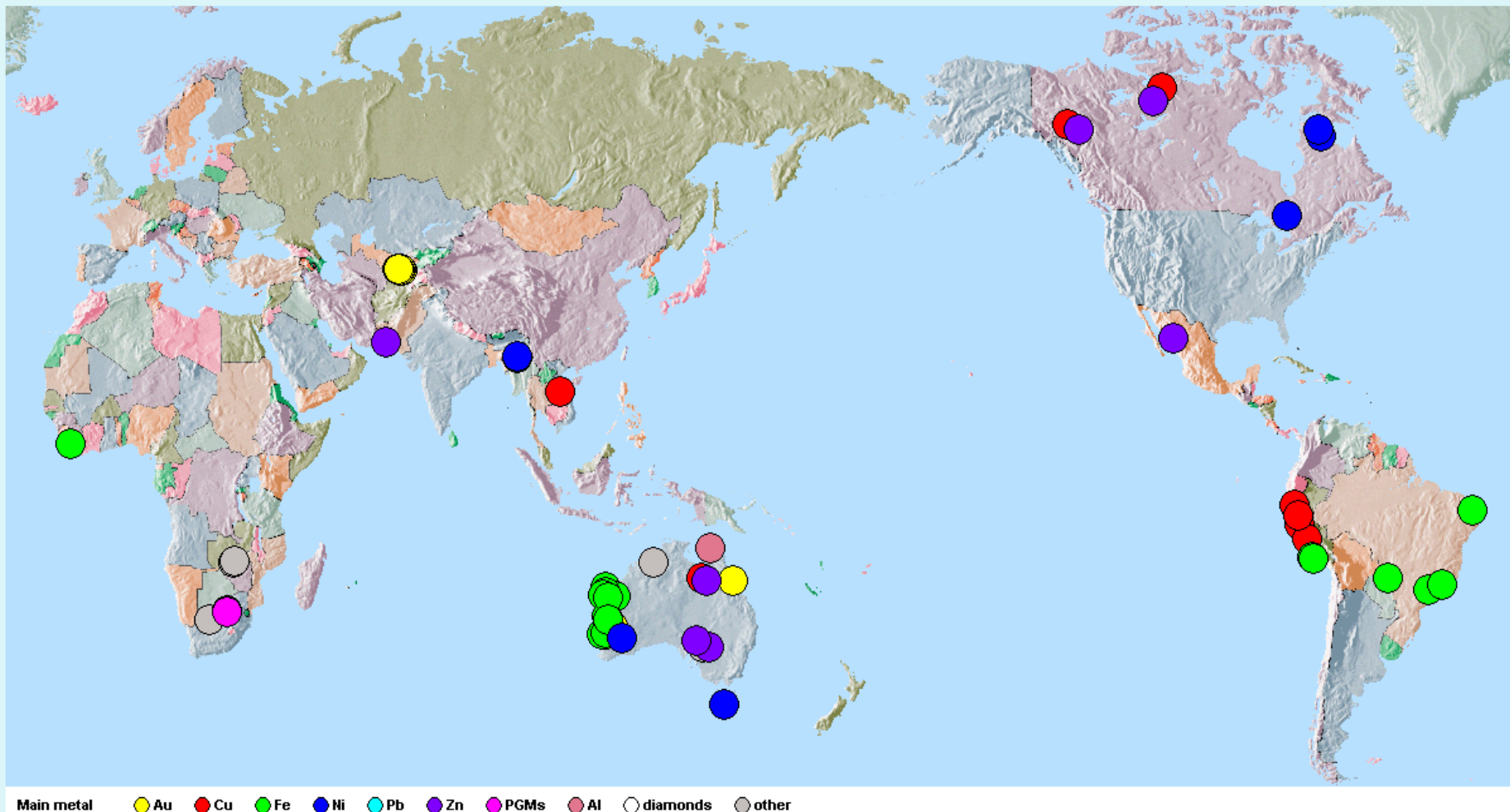
# China Outbound Invested Mines



Source: Raw Materials Group, Stockholm 2011



# China's Involvement in Mining Projects



Source: Raw Materials Group, Stockholm 2011

# China and the Rest of the World

- **China and Rest of the Brics**
- ✓ Coordinating in mining and energy financial system.
- ✓ Cooperation in mutual and global mineral development.
- ✓ Stabilizing mineral availability and pricing mechanism.



# China and the Rest of the World

- **China and Australia and Canada**
- ✓ Mutual investment in mining and energy industry.
- ✓ Long-term availability of mineral and energy resources.
- ✓ Stabilizing and improvement of mineral and energy pricing mechanism.

# China and the Rest of the World

- **China and Japan, South Korean**
- ✓ Discuss global supply of minerals and energy by using the China-Japan-Korea Premier meeting mechanism.
- ✓ Coordinating in global mineral and energy pricing.
- ✓ Cooperation in global mineral and energy acquisition.

# Thank you!

Contacting Mr. YUAN Guohua  
**ghyuan@126.com**