

Alternatives for BALI : Developing Countries Participation

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Reasons for Continuity of UNFCCC

- Unprecedented consensus at Rio in 1992 at the highest level for UNFCCC
- **Continuity of what started 15 years ago**
- **Painstakingly created framework**
- **Commitments to this framework shown year after year –large COP meetings**
- **New international frameworks are hard to create with such consensus.**

15 Years Ago at RIO(1992)

- In 1992, World was divided in
Annex - I and
non-Annex – I countries
- **These groups implicitly based on per capita emissions:**
Netherlands was in Annex – I but not China
- **Some consideration on blocks:**
 - OECD** and soviet blocks were in
 - but **OPEC** block was out

New Moves are on the Way

- A move to bring large non -Annex 1 countries based on total emissions is on
- **This violates UNFCCC**
- And it will not even be effective
- **Let us examine this further**



What Happened in 15 Years ?

- **A closer look at non –Annex –I countries (NAC)**
 - **6** NAC in top 10 (on per capita basis)
 - **15** NAC in top 30
 - **21** NAC in top 50

Which are these countries?

Are their emissions significant?

Countries	Total (Mt)	Per capita
Saudi Arabia	320	13.83
Korea	449	9.3
South Africa	330	7.04
Iran	407	5.96
Malaysia	138	5.45
Venezuela	142	5.35

Table No 1 IEA 2005 data

Equity Principle Comparison

Total and per capita emissions of group A & B

Group-B	Total (Mt)	Per capita		Group-A	Total (Mt)	Per capita
Saudi Arabia	320	13.83		Italy	454	7.76
Korea	449	9.3		Spain	342	7.87
South Africa	330	7.04		France	388	6.19
Iran	407	5.96		Switzerland	45	6
Malaysia	138	5.45		Sweden	51	5.64
Venezuela	142	5.35		Portugal	63	5.97

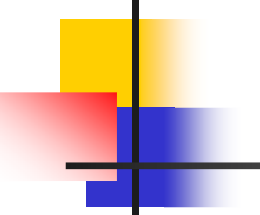
§ **Some NAC have higher total and higher or similar per capita emissions**

§ **Yet, these countries have no obligations!**

§ **Transition mechanism is needed**

Table No 2. IEA 2005 data

What criteria can be used to go further?

- 
-
- Per capita emissions – UNFCCC
 - Global per capita emissions average – IRADe
 - Total emissions + Sectoral approach
 - Carbon Intensity: Co₂/GDP and Co₂/GDP purchasing power parity.



A Three-Tier System: Beyond 2012

What Should be the Next Steps?

A three-tier system can provide smooth transition

Group 1 - Annex-I

Group 2 - Non Annex-I Above Global Average

Group 3 - Non Annex-I Below Global Average

To keep the momentum generated by Annex1 by the next group, Non annex1 is split into two blocks in a logical succession of UNFCCC

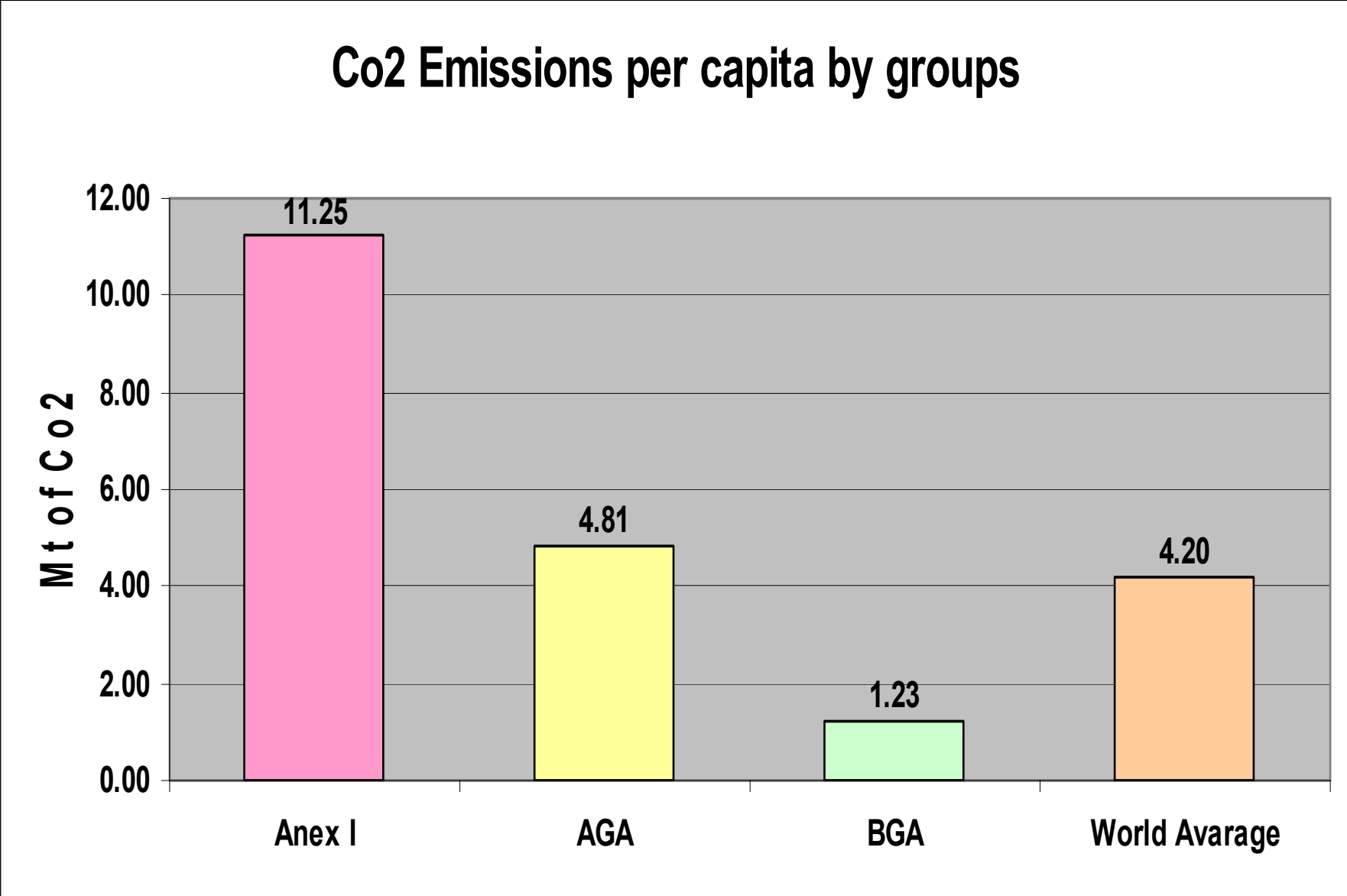


Figure No1. IEA 2005 data

Aggregated Picture

Per capita co₂ emissions of different groups of countries (2005)

Groups Co2 emissions	Total	Total Co2 emissions	Population	Per Capita
(Mt of Co2)				
Annex - I countries	38	14,183	1,261	11.25
Non-Annex – I countries	99	11,938	4,952	2.41
AGA	27	7,868	1,636	4.81
BGA	72	4,070	3,317	1.23
Global Average	137	26,121	6,213	4.20

Source: IEA, 2007. <http://data.iea.org/ieastore/statislisting.asp>

Table No 3

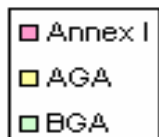
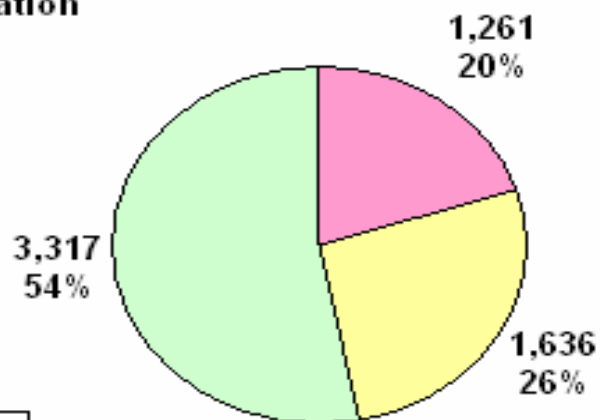


Three tier system is Consistent with Multilateral Initiatives

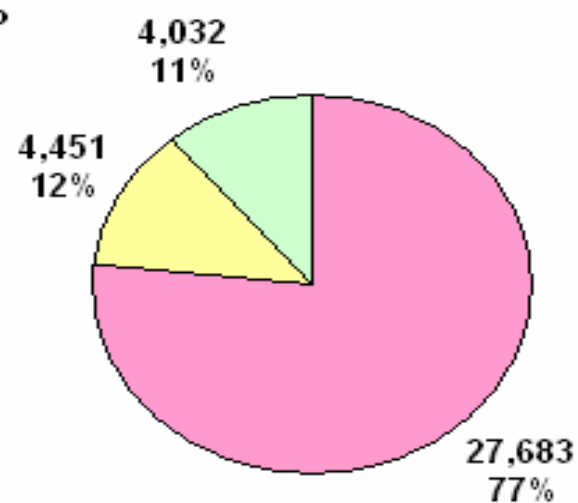
- Consistent with UNFCCC
- **Fairness principle of**
- **Equity among the equal emitters**
- **Consistent with concerns for losing competitive edge among blocks**

Indicators comparison between Annex1, AGA and BGA in 2005

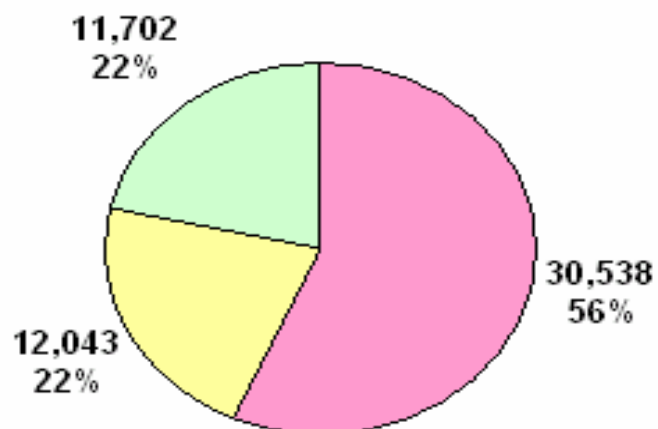
Population



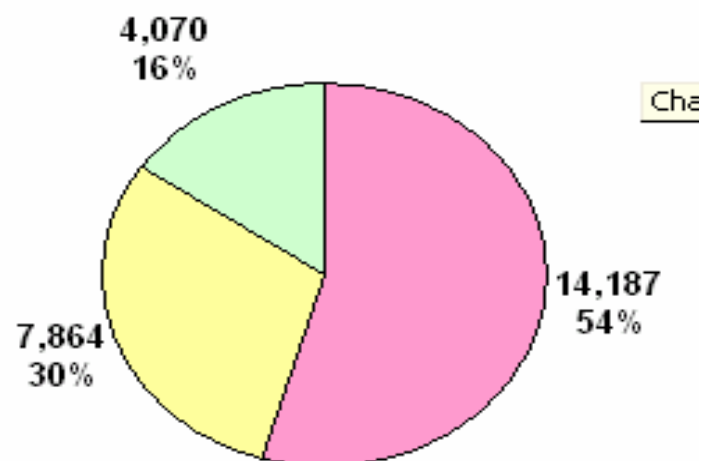
GDP



GDP ppp



CO2



Cha

Which are AGA countries?

Region/ Country	Population (million)	GDP (billion 2000\$)	GDP (PPP) (billion 2000\$)	CO2 Emissions(b) (Mt of CO2)	CO2/ Pop (t CO2/ capita)	CO2/ GDP (kg CO2/ 2000\$)	CO2/ GDP (PPP) (kg CO2/ 2000\$ PPP)
Bahrain	1	11	14	18	25.10	1.73	1.32
Brunei Darussalam	0	5	8	5	13.76	1.05	0.63
Chinese Taipei	23	356	572	261	11.41	0.73	0.46
Cyprus	1	11	15	7	9.26	0.66	0.46
Gibraltar	0	1	1	0	15.00	0.73	0.69
Hong Kong	7	208	215	41	5.87	0.20	0.19
Islamic Rep. of Iran	68	133	484	407	5.96	3.07	0.84
Israel	7	127	159	60	8.65	0.47	0.38
Kazakhstan	15	30	106	155	10.81	5.95	1.58
Korea	48	638	958	449	9.30	0.70	0.47
Kuwait	3	52	59	75	29.38	1.43	1.26
Lebanon	4	20	18	16	4.42	0.78	0.89
Libya	6	44	41	45	7.76	1.03	1.10
Malaysia	25	112	245	138	5.45	1.23	0.56
Malta	0	4	7	3	6.58	0.68	0.38
Oman	3	23	36	27	10.50	1.18	0.76
P.R. China	1,305	1,890	7,842	5,060	3.88	2.68	0.65
Qatar	1	24	31	36	44.90	1.54	1.16
Saudi Arabia	23	229	323	320	13.83	1.40	0.99
Serbia and Montenegro	8	11	23	50	6.25	4.63	2.15
Singapore	4	112	115	43	9.93	0.38	0.38
South Africa	47	160	463	330	7.04	2.07	0.71
Trinidad and Tobago	1	11	17	23	17.77	2.09	1.38
Turkmenistan	5	6	30	41	8.59	7.50	1.39
United Arab Emirates	5	104	103	110	24.37	1.06	1.07
Venezuela	27	131	157	142	5.35	1.09	0.91
Netherlands Antilles	0	2	3	4	21.33	1.68	1.5
Total	1,636	4,453	12,045	7,868	4.81	1.77	0.65



Salient points of Three-Tier System

- Does not say why should join Annex I but then they are in a separate Tier with a separate programme.
- It has a future in that gradually
 - **Global average may go down (in 20 years or early)**
- We need to think in three levels, where the participation of middle level can be different instead of two.
- The last tier should know what awaits them and **when. More countries will join –say Argentina, Mexico- who are currently at 3.5 t/cap**

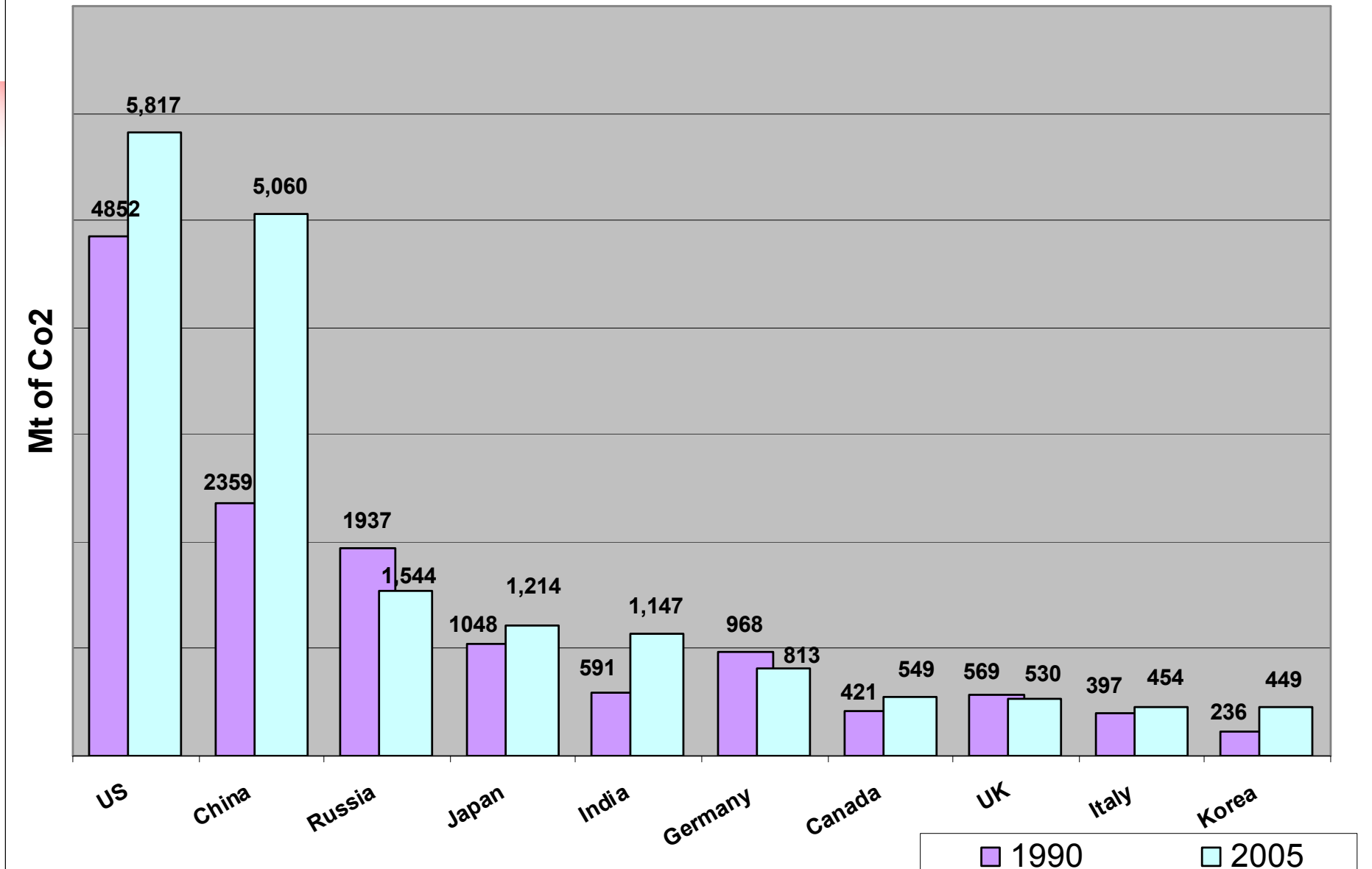


Alternatives beyond 2012

- Annex1 - \Rightarrow Reduction beyond 1990 level
- **AGA block** \Rightarrow
Remain 2012 level or
revert by 2020 to 2012 level
or reduce Co2/ GDP which is high for AGA .
- High BGA (Latin America+ India+ old Soviet block countries) \Rightarrow --Reduce CO2 growth rate (not growth) - improve CO2 (GDP intensity)

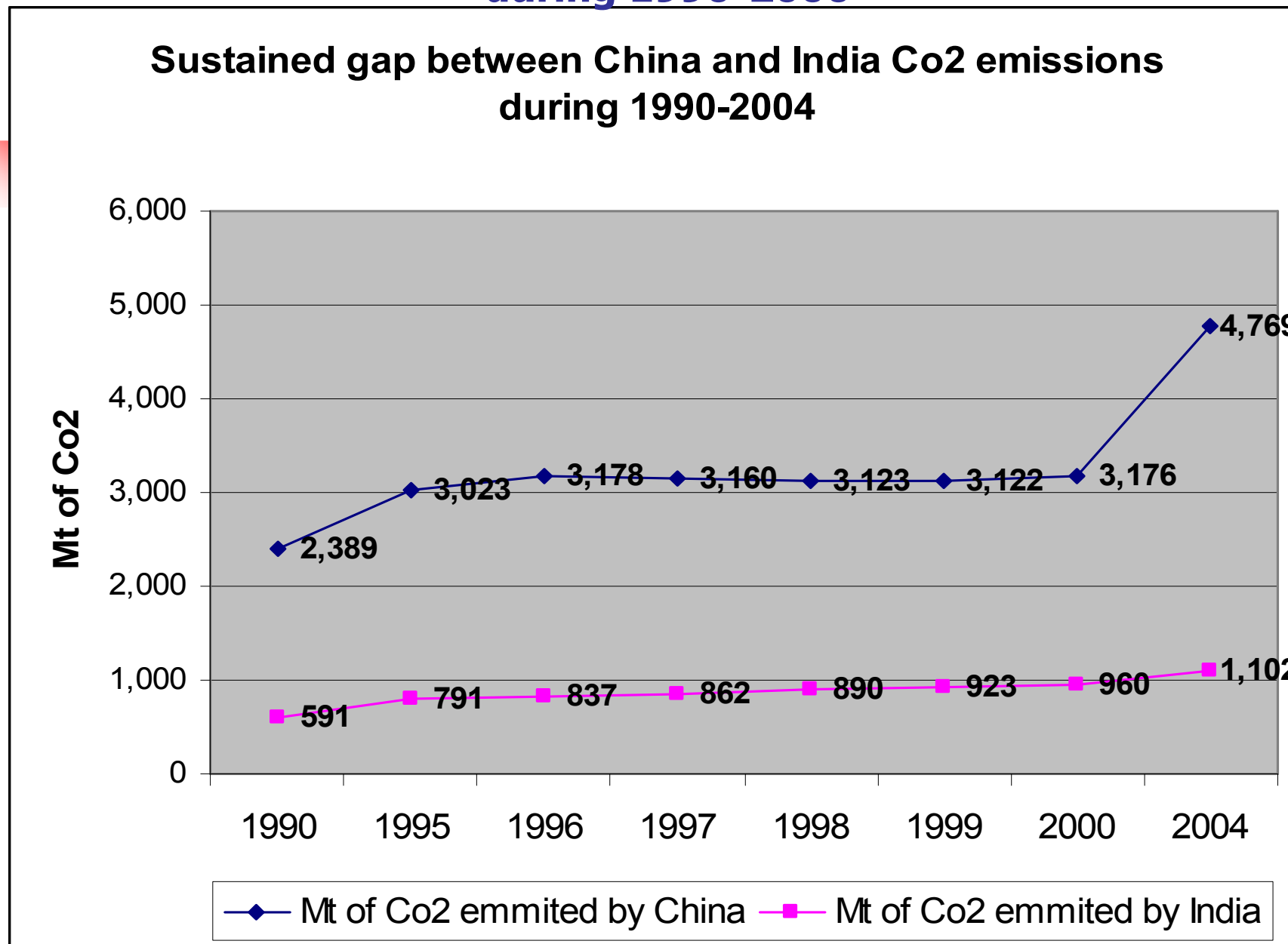
Note : Erst while soviet block is distributed in all 3 groups .

CO2 Total emissions 1990-2005



Source: IEA. Key world energy statistics. And Co2 emissions from fuel combustion 1971-2000

Sustained gap between China and India Total Co2 emissions during 1990-2000



Source: IEA. 2002. Co2 Emissions from Fuel Combustion. 1971-2000. p. II 187 and II. 253

Main Indicators for Australia

Population (million)	20
GDP (billion 2000\$)	470
GDP (PPP billion 2000\$)	617
CO₂ Emissions (Mt of Co2)	377
CO₂/ Pop (t CO₂/ capita)	18.41
CO₂/ GDP (kg CO₂/ 2000\$)	0.80
CO₂/ GDP (PPP) (kg CO₂/ 2000\$ PPP)	0.61



Which Sectors?

A. Production sectors with large energy consumption:

Steel, aluminium, fertilizers, cement only a few economies in the world

B. Energy sectors themselves:

Coal, power, renewable, energy efficiency.



C. Consumption sectors:

Transport, building –including households-
All countries, big and small have these
consumption.

Can be addressed by:

- Energy efficiency means
- Manufacturing
- Standards, labels, and building codes.

All signatories to UNFCCC should be involved in
this



Sectoral Approaches: some features

- **Addresses large sectors**
 - Steel, cement, fertilizers, aluminum
 - Coal, power, renewable, energy efficiency
- **Technology up gradation**
 - Best Available Technology (BAT) or
 - Best Practices (BP)
- **Based on International Technology co-operation Incentives for carbon savings**



What kind of countries are suitable?

- Typically large countries with complex economies
- Large total economies, only a few countries
Asia Pacific Partnership: USA, Australia, Japan, India, China, South Korea, No financial incentives.
- IEA with carbon market incentives
- Transport, construction part of each economy
generic changes at the manufacturer's level

Asia Pacific Partnership on Clean Development and Climate



- Who are they?
 - Australia, China, India, Korea, United States, Japan
- The Partners have approved eight public-private sector task forces covering:
 - Aluminium
 - Buildings and appliances
 - Cement
 - Cleaner Use of Fossil Energy
 - Coal Mining
 - Power Generation and Transmission
 - Renewable Energy and Distributed Generation
 - Steel

Asia Pacific Partnership on Clean Development and Climate



By building on the foundation of existing bilateral and multilateral initiatives, the Partners will enhance cooperation to meet both our increased energy needs and associated challenges, including those related to air pollution, energy security, and greenhouse gas intensities, in accordance with national circumstances.



COAL

- **6,100 million tons World total Coal Consumption**
- **The USA consumed 18% of World Total Coal production in 2004, 1107 tons.**
- **Europe 17%**
- **A variety of clean coal technologies in power sector**



CCS: Carbon Capture Storage

- **Advantages:**

- Mitigating CO₂

- **Disadvantages:**

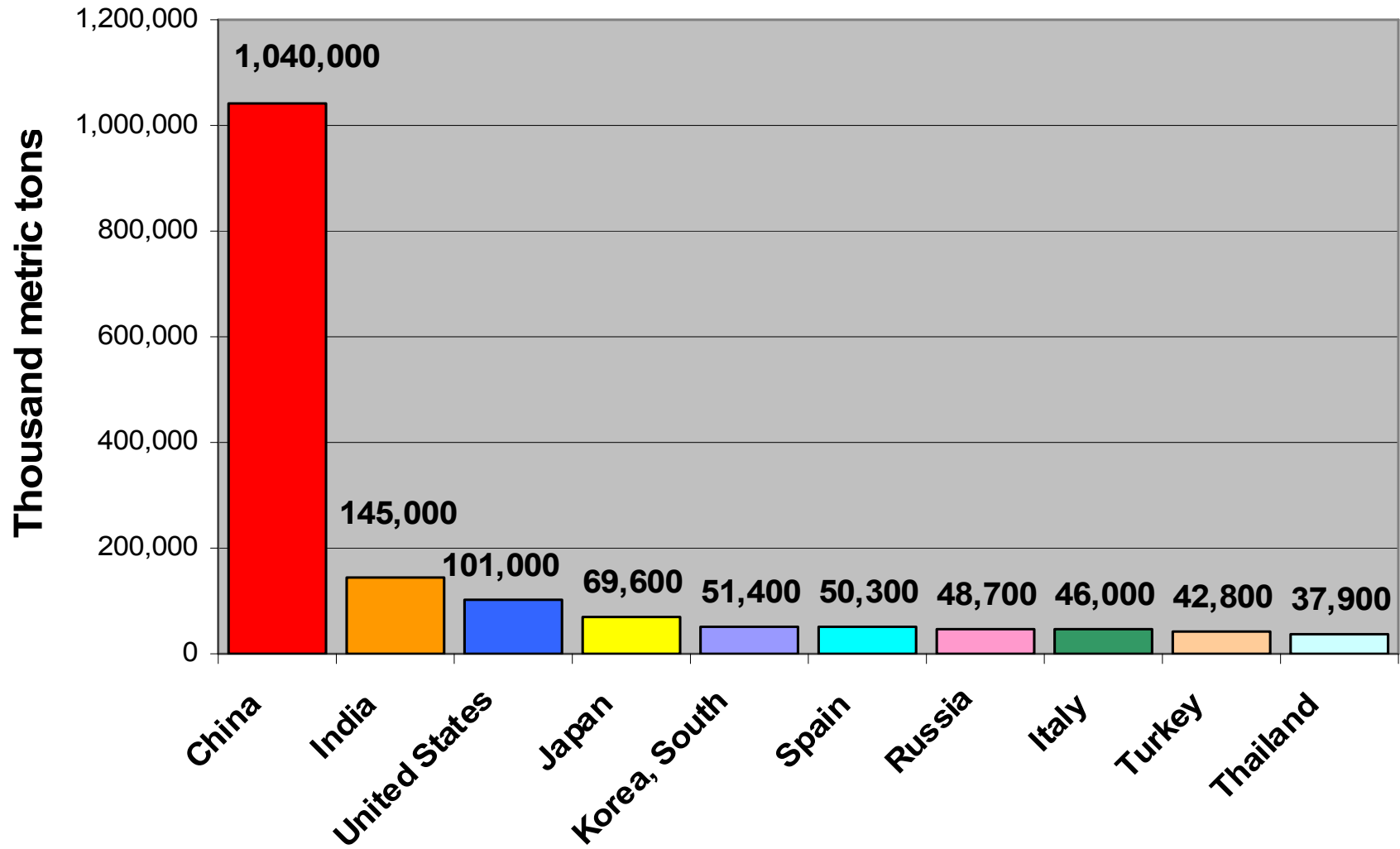
- Permanence of CO₂ uncertain,
- No-Co benefit other than mitigation CO₂,
- Storage capacity is uncertain and costs are unknown



Cement

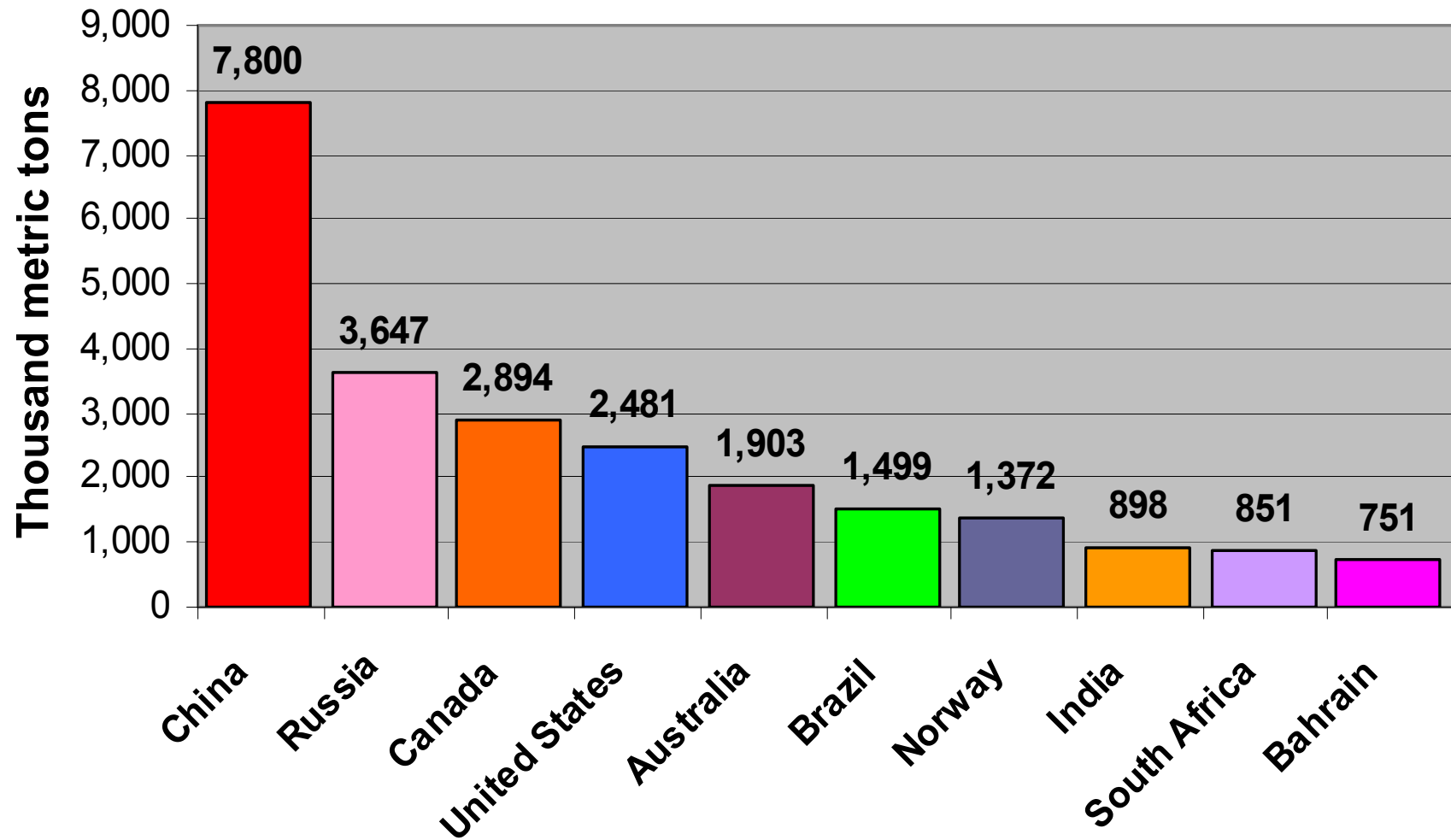
- Represents 5% of total CO₂ emissions
- 1288 mt of CO₂

Top ten cement producers in 2005



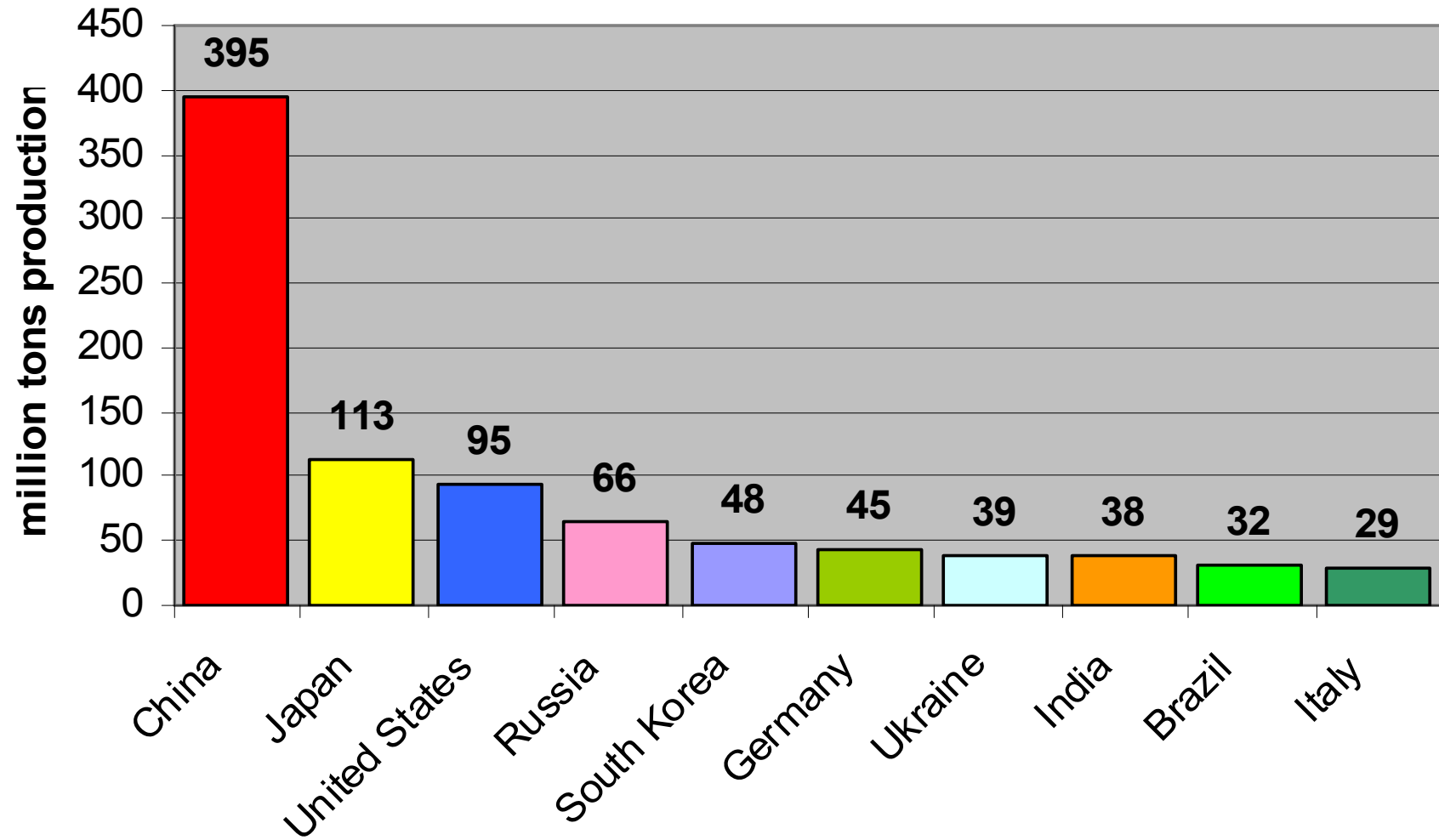
Source: U.S. Geological Survey. Annual publications 2007

Top ten aluminium producers in 2005



Source: United States Geological Survey Mineral Resources Program

Top ten Steel producers in 2005



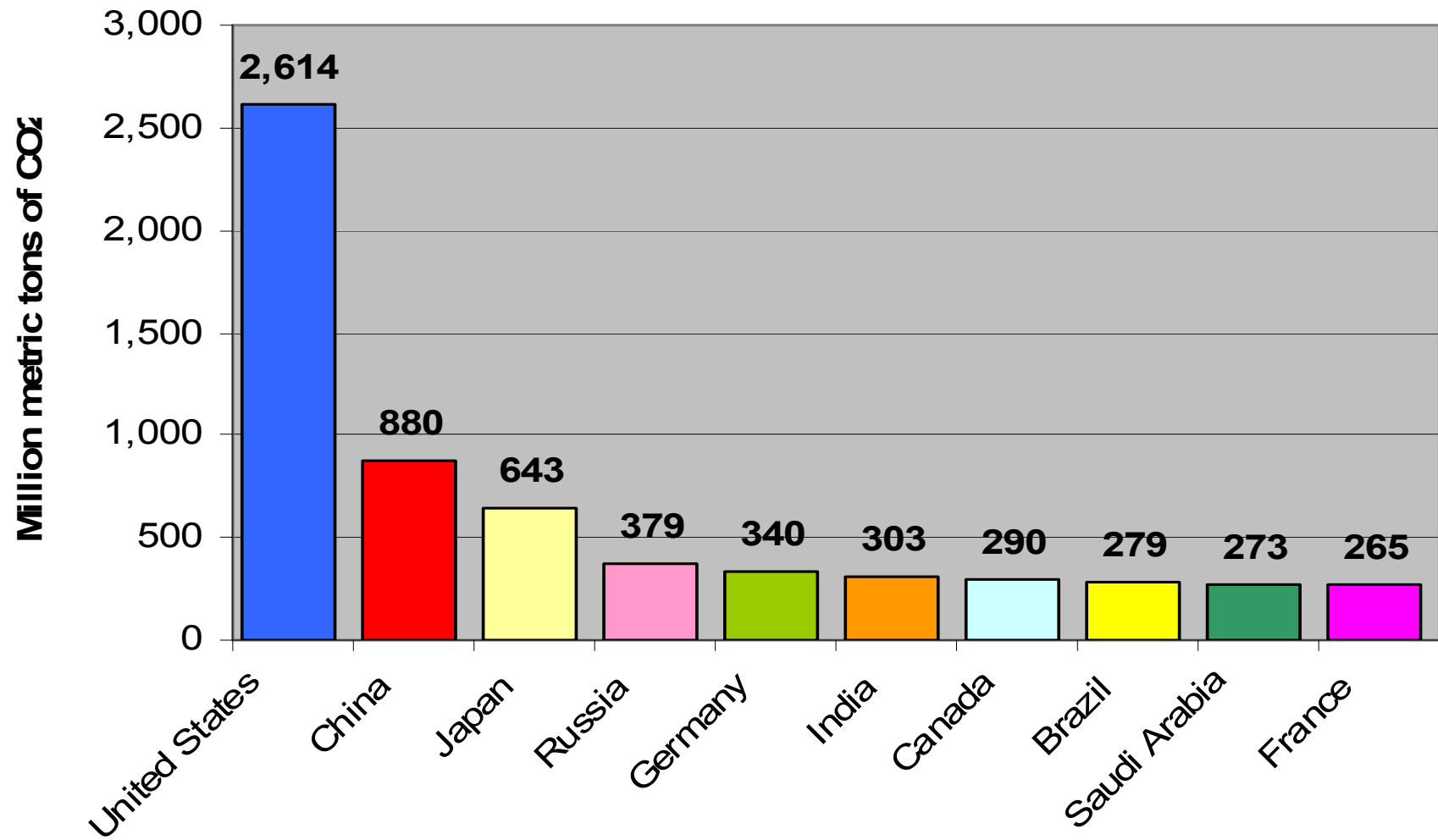
International Iron and Steel Institute's 2006 publication



Steel

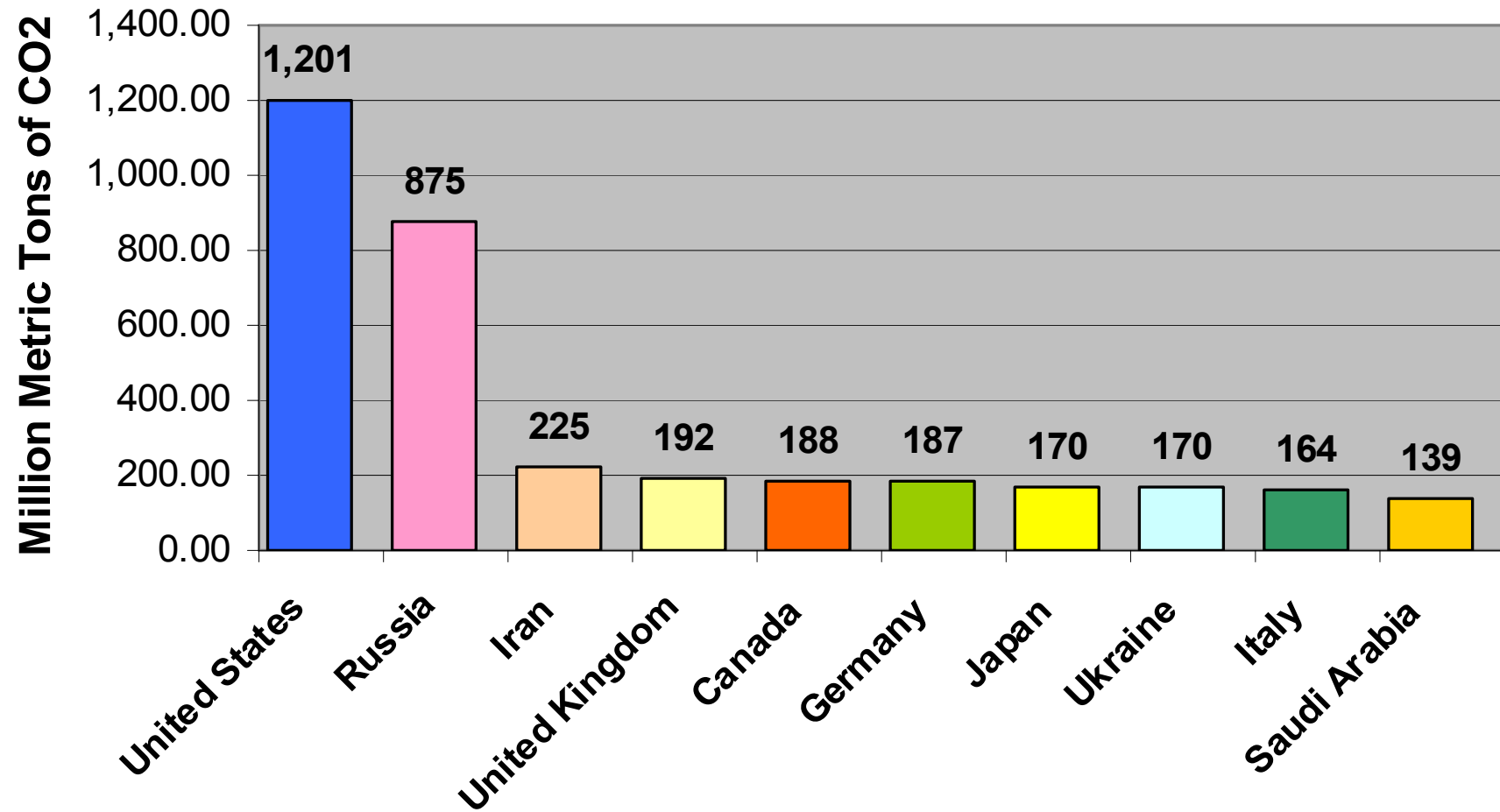
- Indian consumption of steel has risen 14% in the last 15 years in the country, while global consumption only 6%
- India is the seventh largest producer of steel in the world, in 2006 produced 44 mt.
- In 2005, United Arab Emirates had the highest per capita steel consumption at around 1,314 kg, followed by Chinese Taipei -1,044 kg and Japan -649. USA was 382, while India's was 38 kg. Global Average per capita is 189 kg.
- One tone of steel releases around 2.7 tone green house gases
- In India, steel industry contributes 15 per cent of the total GHG emissions.

Top 10 CO2 Emitters from consumption of petroleum in 2005

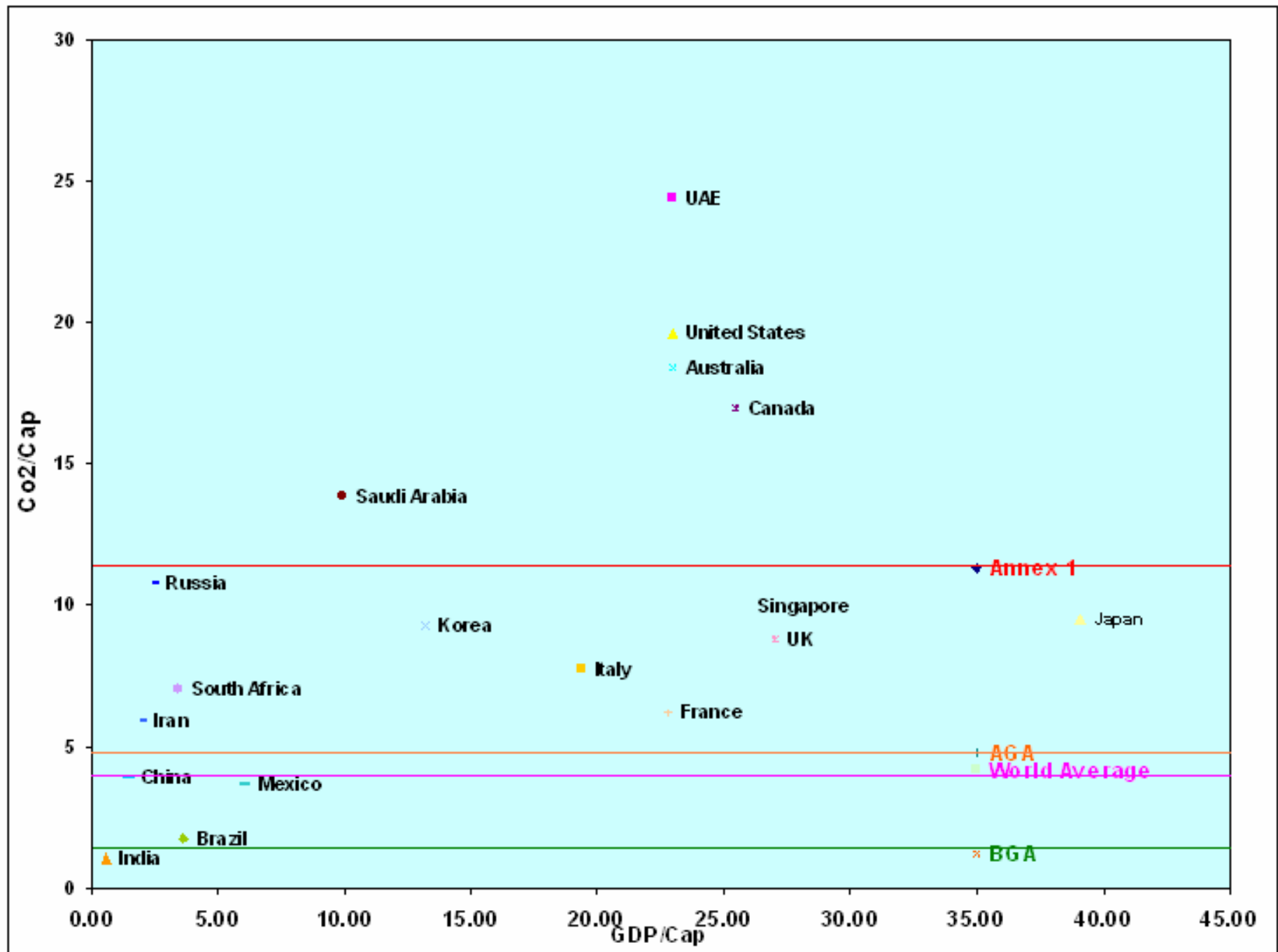


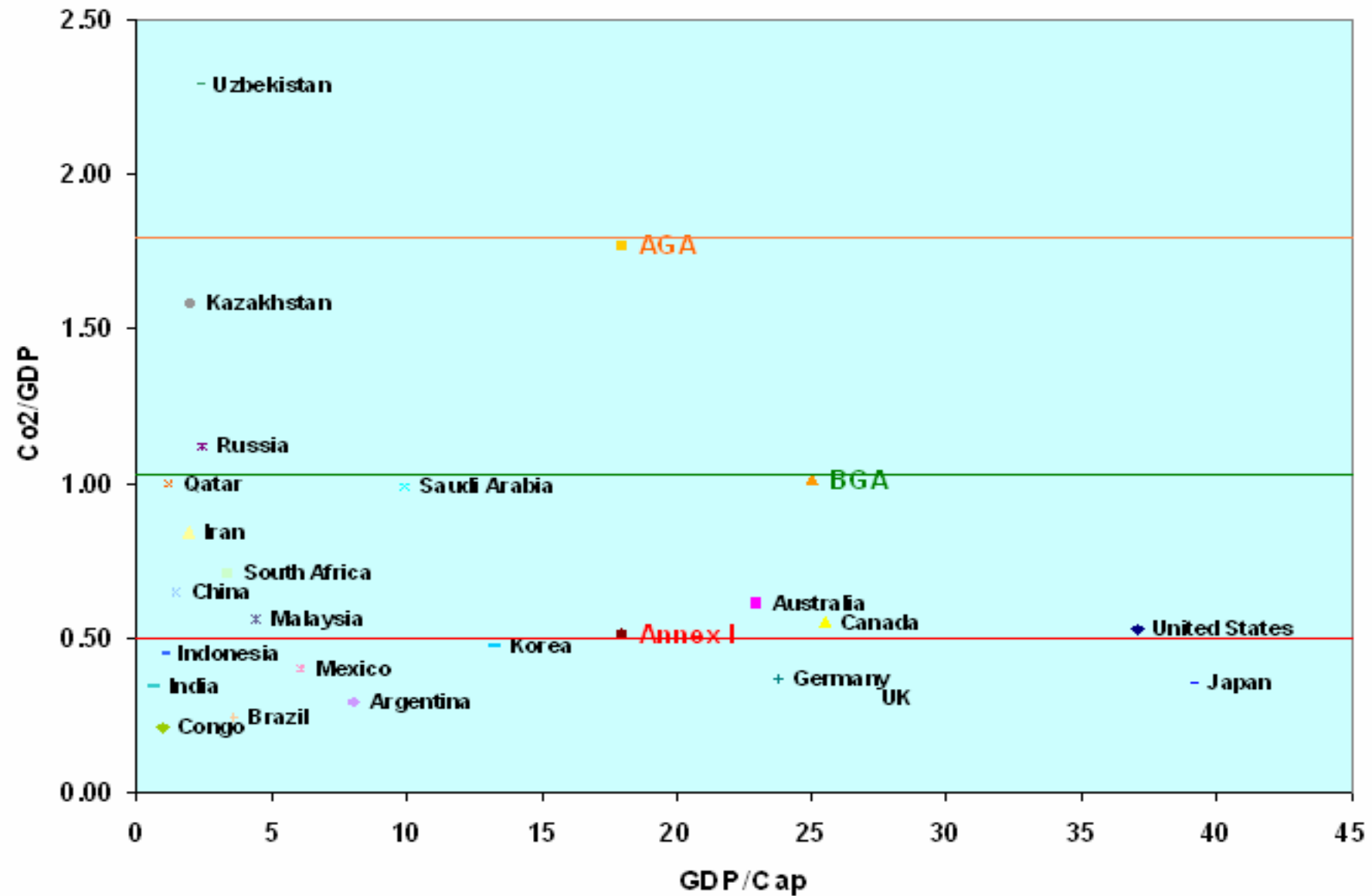
Source: International Energy Annual 2006

Top 10 CO2 emitters from the consumption and flaring of Natural Gas in 2005

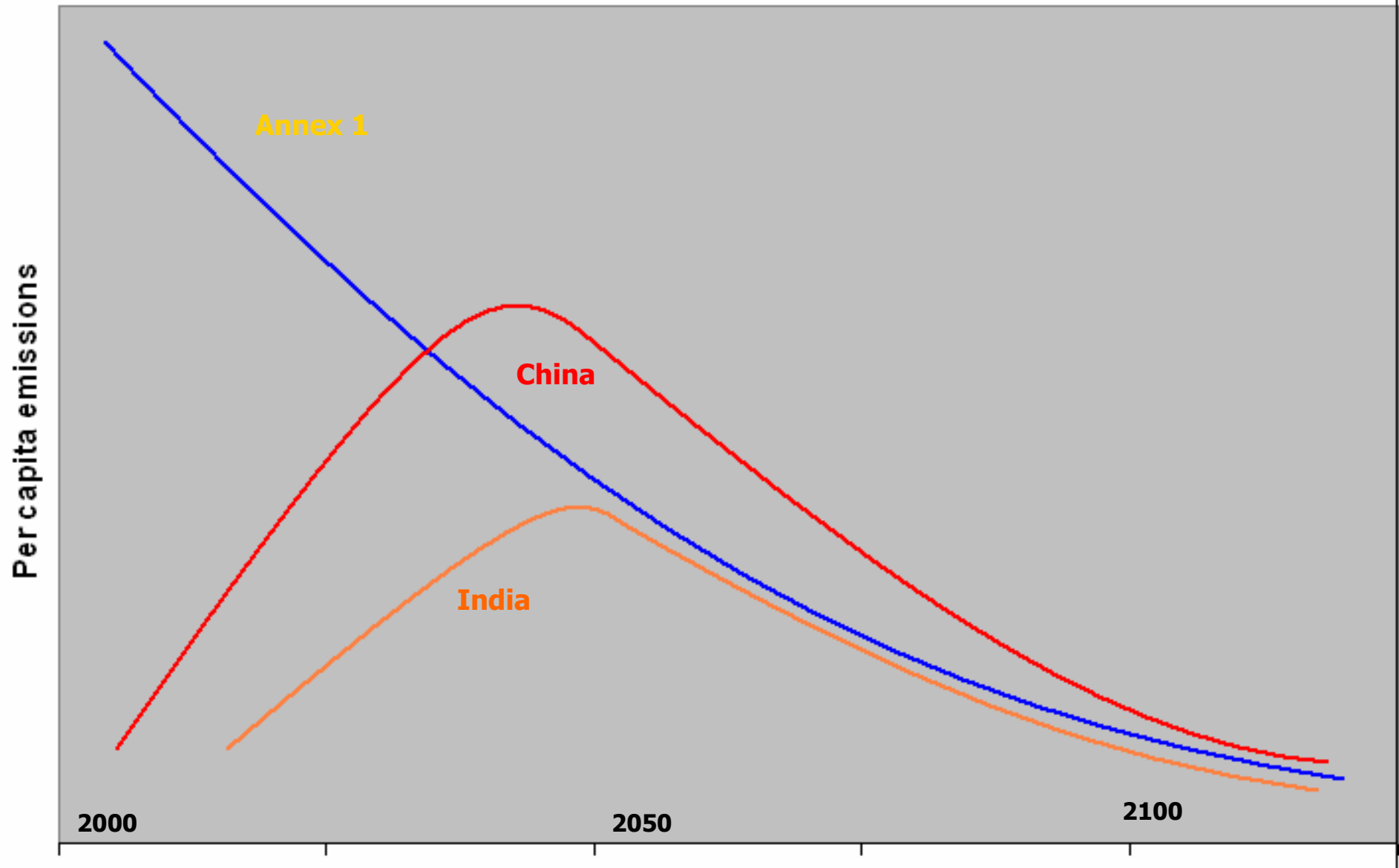


Source: International Energy Annual 2006





Contraction and Convergence scheme per capita emissions 1997

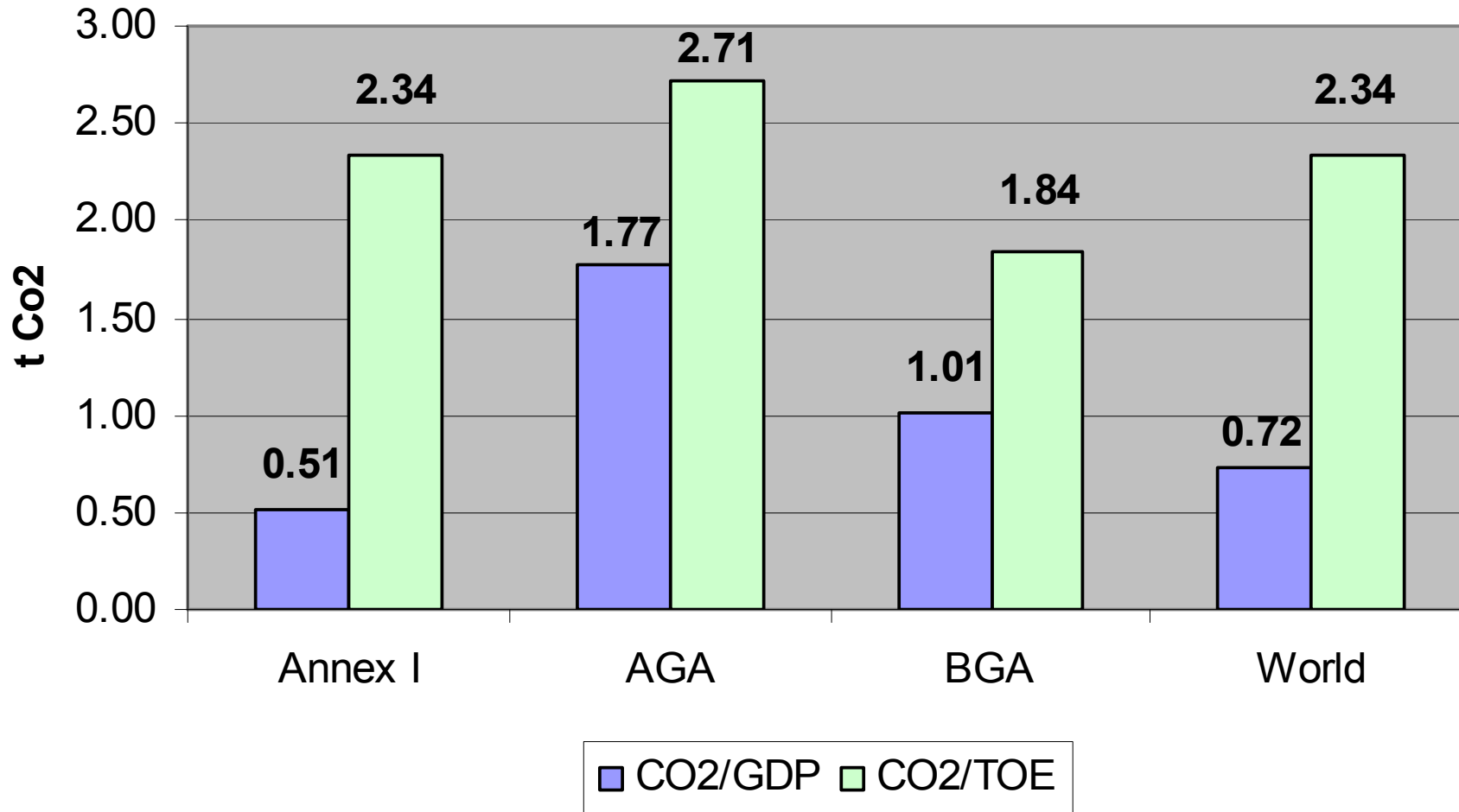


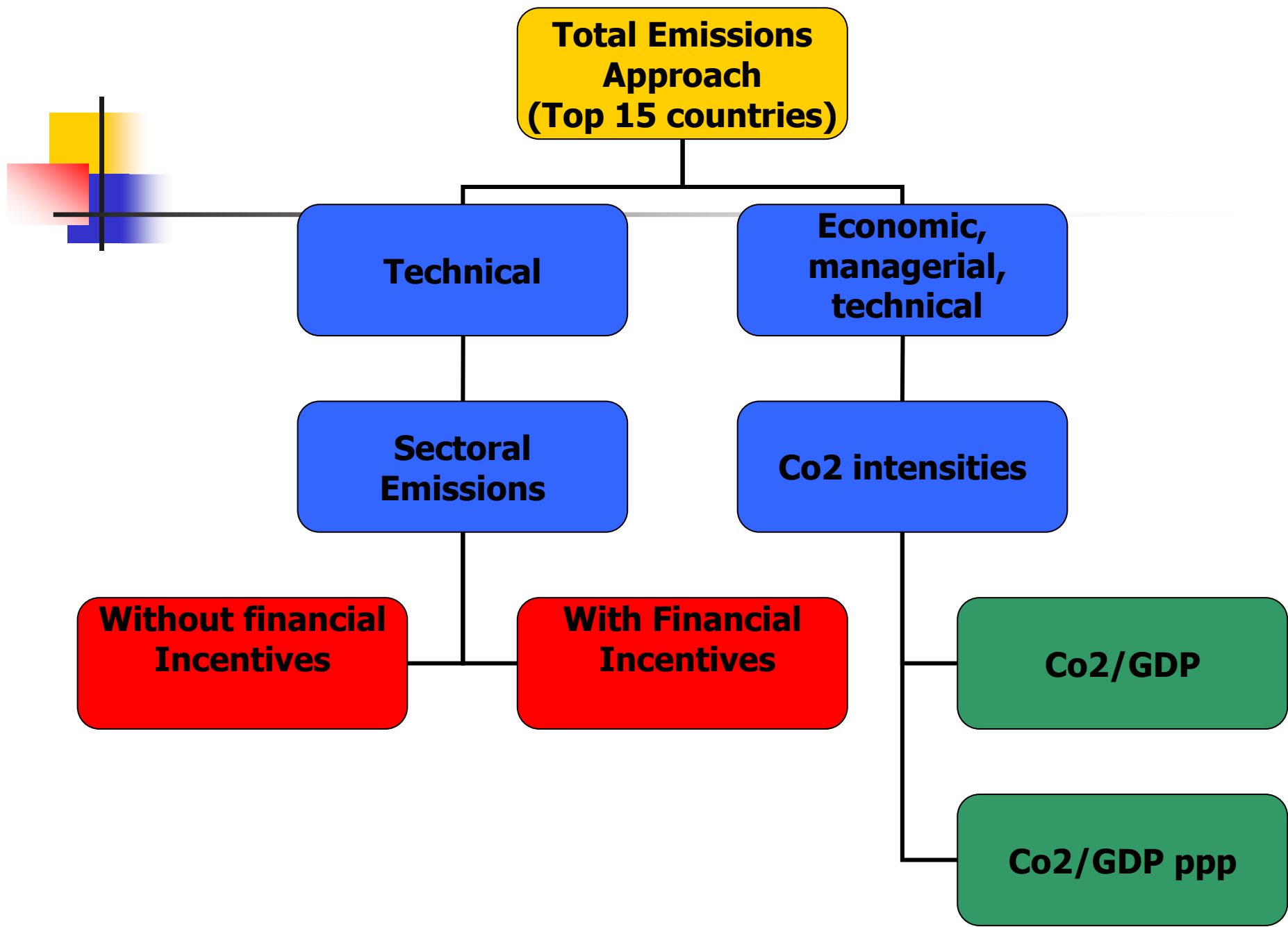
Source: GCI, UK

Region/ Country	Population (million)	TPES (Mtoe)	CO2/ TPES (t CO2/ toe)	CO2/ Pop (t CO2/ capita)	CO2/ GDP (kg CO2/ 2000\$)	CO2/ GDP (PPP) (kg CO2/ 2000\$ PPP)
United States	297	2,340	2.49	19.61	0.53	0.53
People's Rep. of China	1,305	1,717	2.95	3.88	2.68	0.65
Russia	143	647	2.39	10.79	4.41	1.12
Japan	128	530	2.29	9.50	0.24	0.35
India	1,095	537	2.14	1.05	1.78	0.34
Germany	82	345	2.36	9.87	0.41	0.37
Canada	32	272	2.02	17.00	0.67	0.55
United Kingdom	60	234	2.27	8.80	0.33	0.31
Italy	59	185	2.45	7.76	0.40	0.30
Korea	48	214	2.10	9.30	0.70	0.47
Top ten total	3,248	7,021	2.50	5.41	0.51	0.51

IEA 2005 data

Co2/GDP comparison with Co2/TOE by Annex I, AGA, BGA and world





Conclusion

Simultaneous Approaches Needed



Per capita emissions

- UNFCCC
- GDP/Cap Living Standards
- Blocks of countries



keep all countries on Board



One not at the expense of the others

Top 10 Countries approach

- Technological by improving energy efficiencies and new technologies
- Economic and managerial Improving prices and structures of the economy