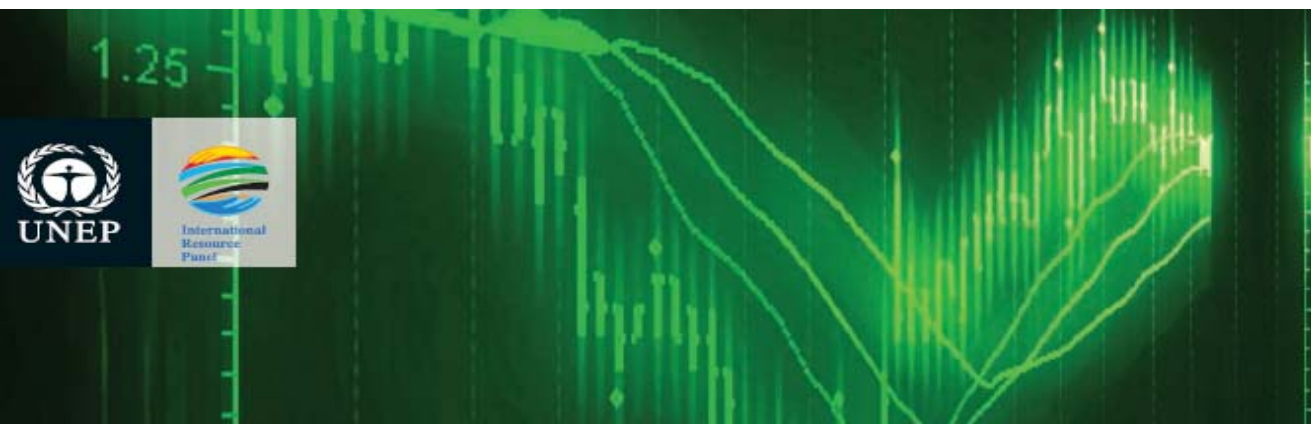


# International Resource Panel



## DECOUPLING

natural resource use and  
environmental impacts  
from economic growth



Lead co-authors:  
M. Fischer-Kowalski &  
M. Swilling



International  
Resource  
Panel



UNEP

# Four categories of primary raw materials

Fossil fuels



Construction minerals

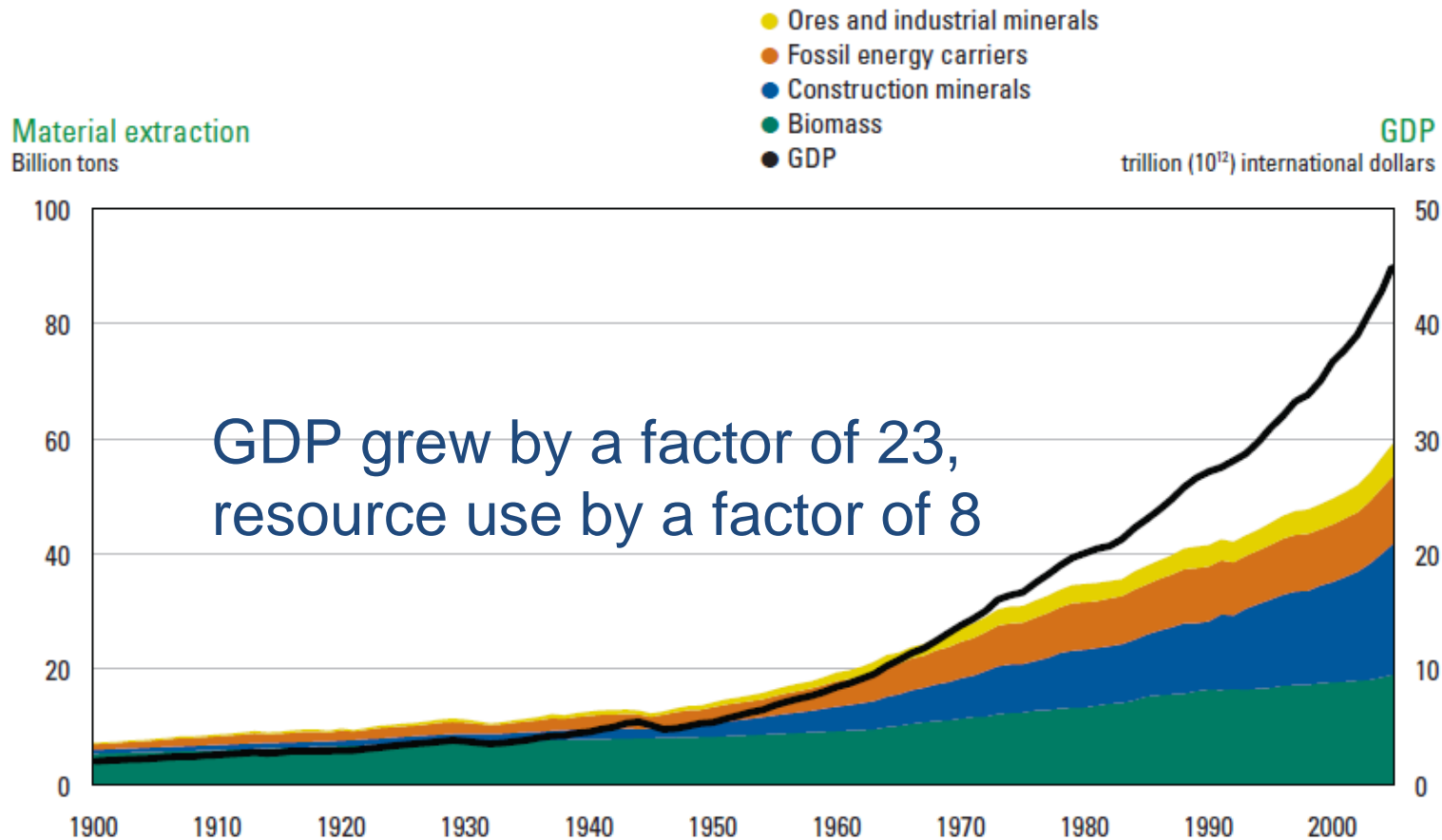


Metal Ores & industrial minerals

Biomass

# Resource Use: 1900 - 2005

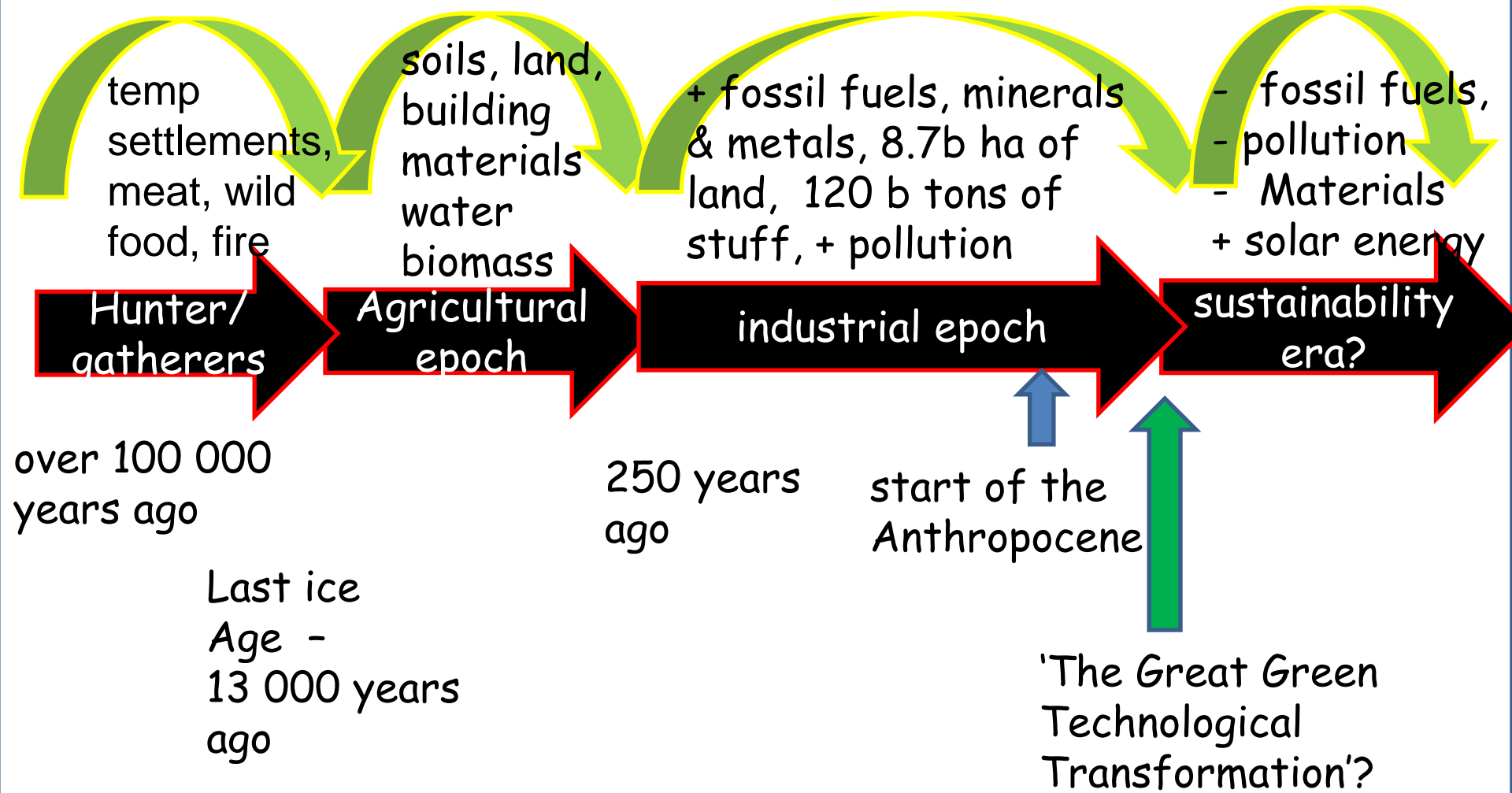
Figure 1. Global material extraction in billion tons, 1900–2005



Source: Krausmann *et al.*, 2009

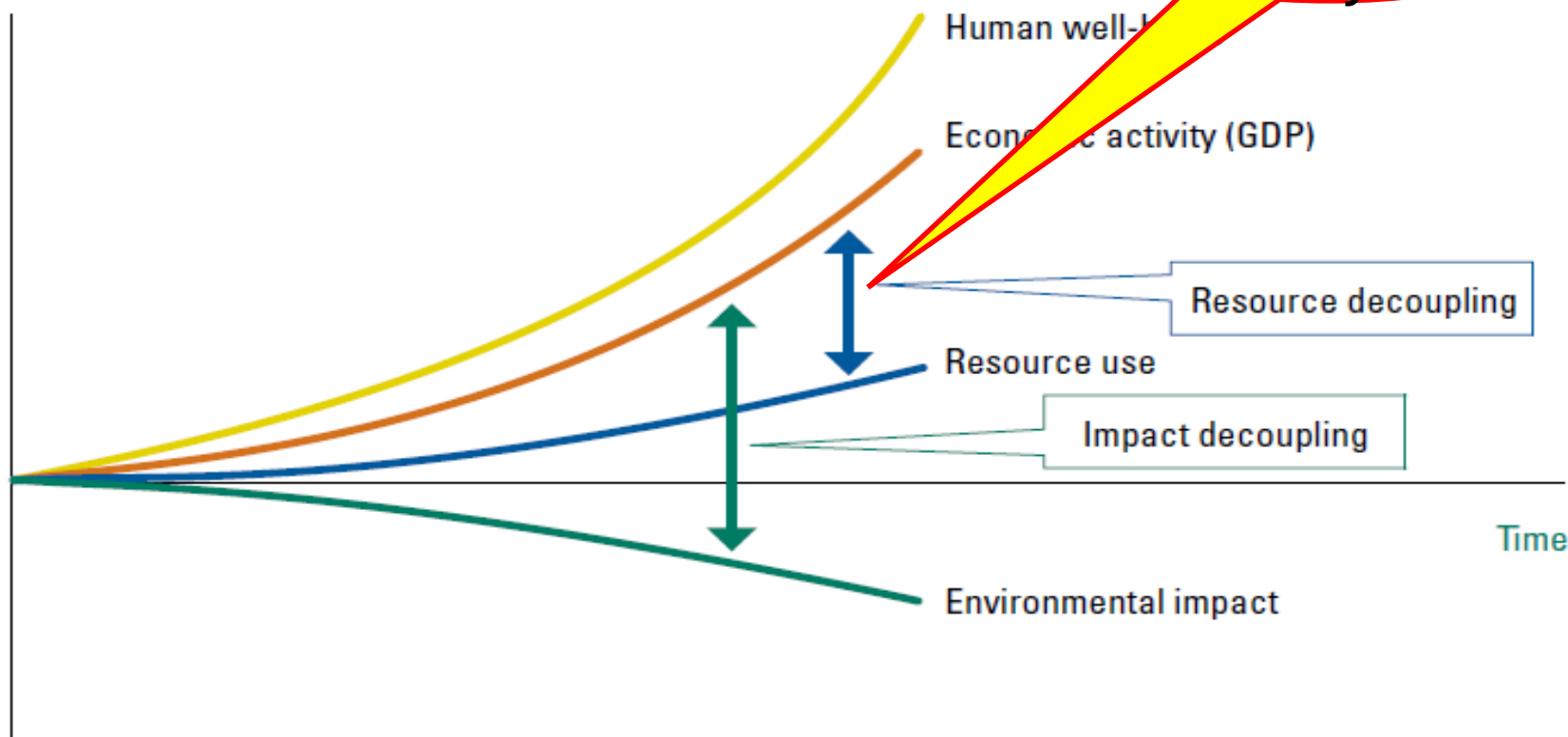


# epochal transitions - socio-metabolic transformations - Fischer-Kowalski et al



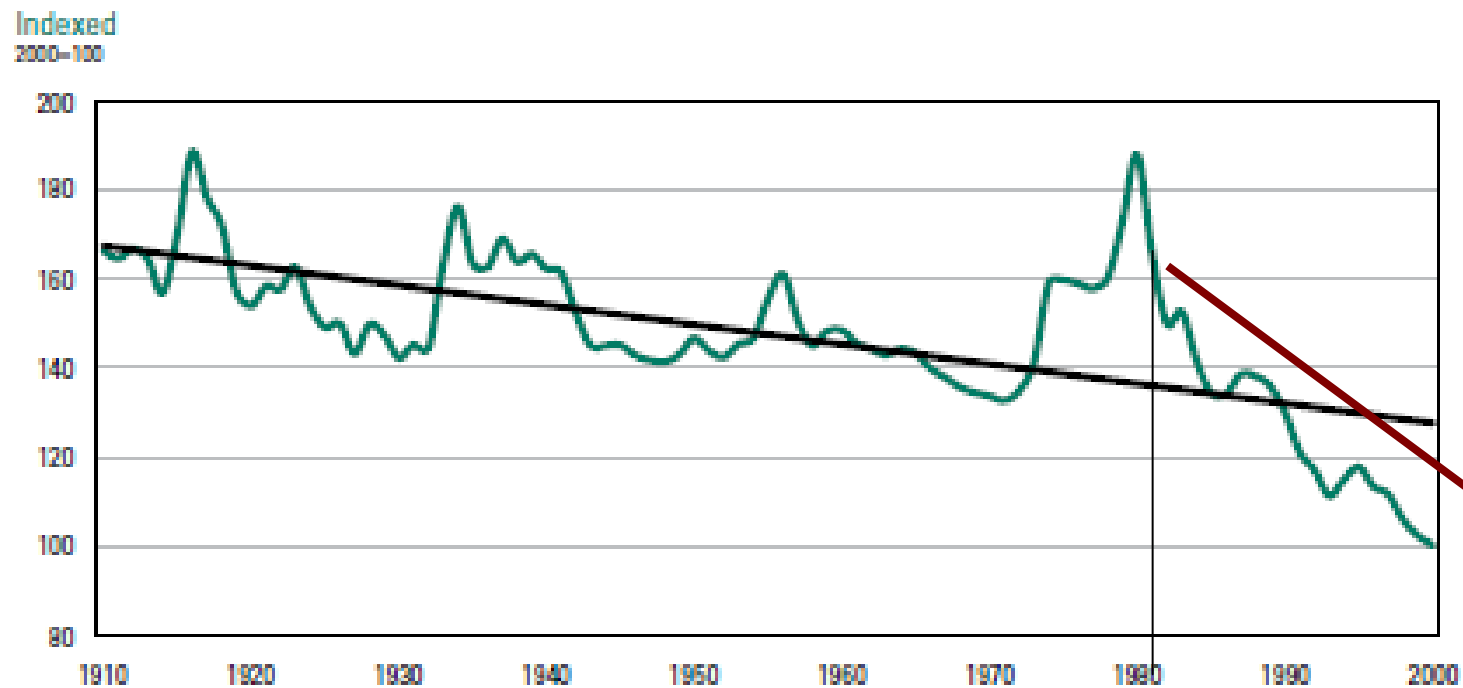
# The concept of decoupling

Figure 1. Two aspects of 'decoupling'



# A hundred years of decline of resource prices

Figure 2.4. Composite resource price index (at constant prices, 1900-2000)



Source: Wagner et al., 2002

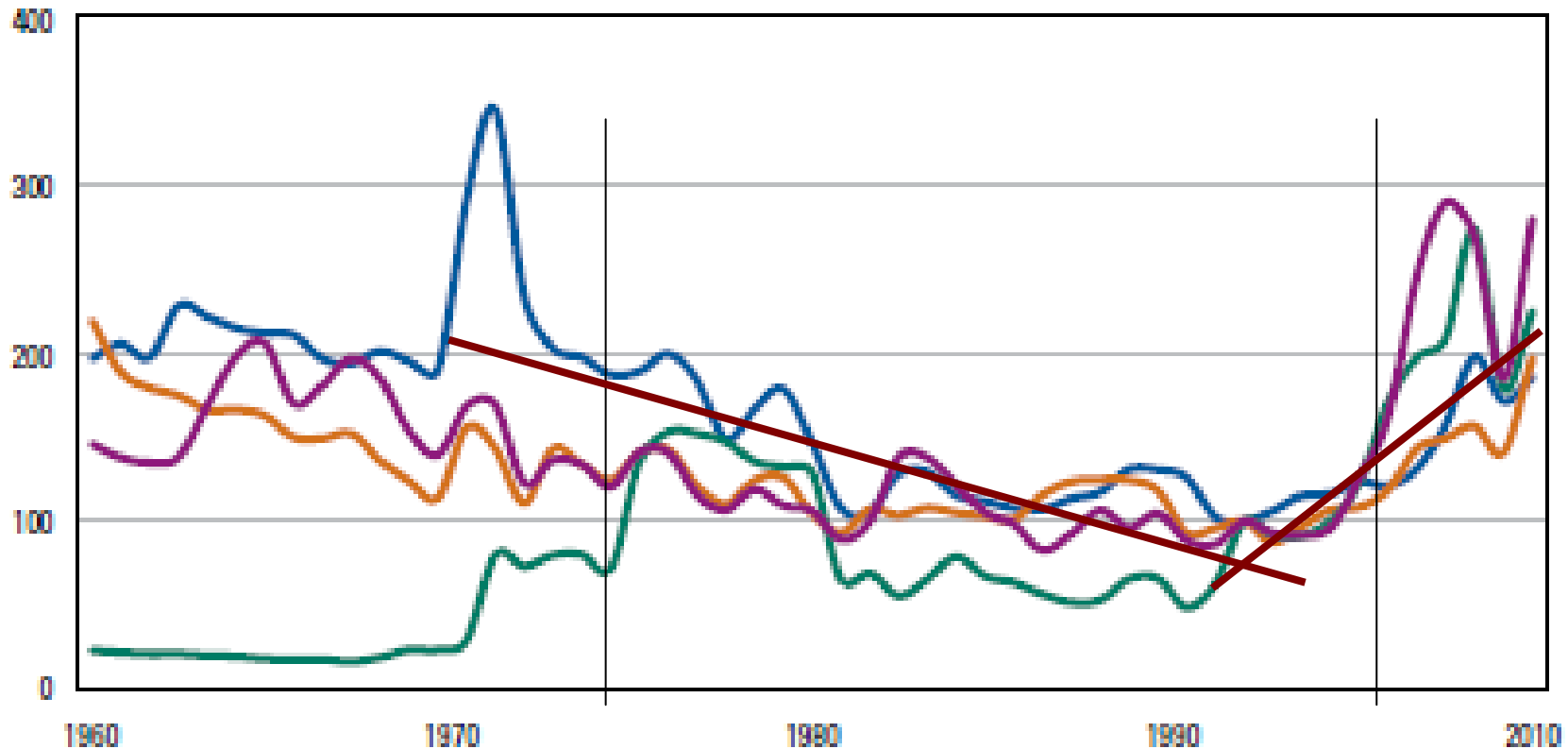


# Resource prices on the rise, recently

Figure 2.5. Commodity price indices

Price index (real year 2000 US\$)  
2000=100

- Food
- Raw materials
- Energy
- Metals and minerals (including Iron ore)



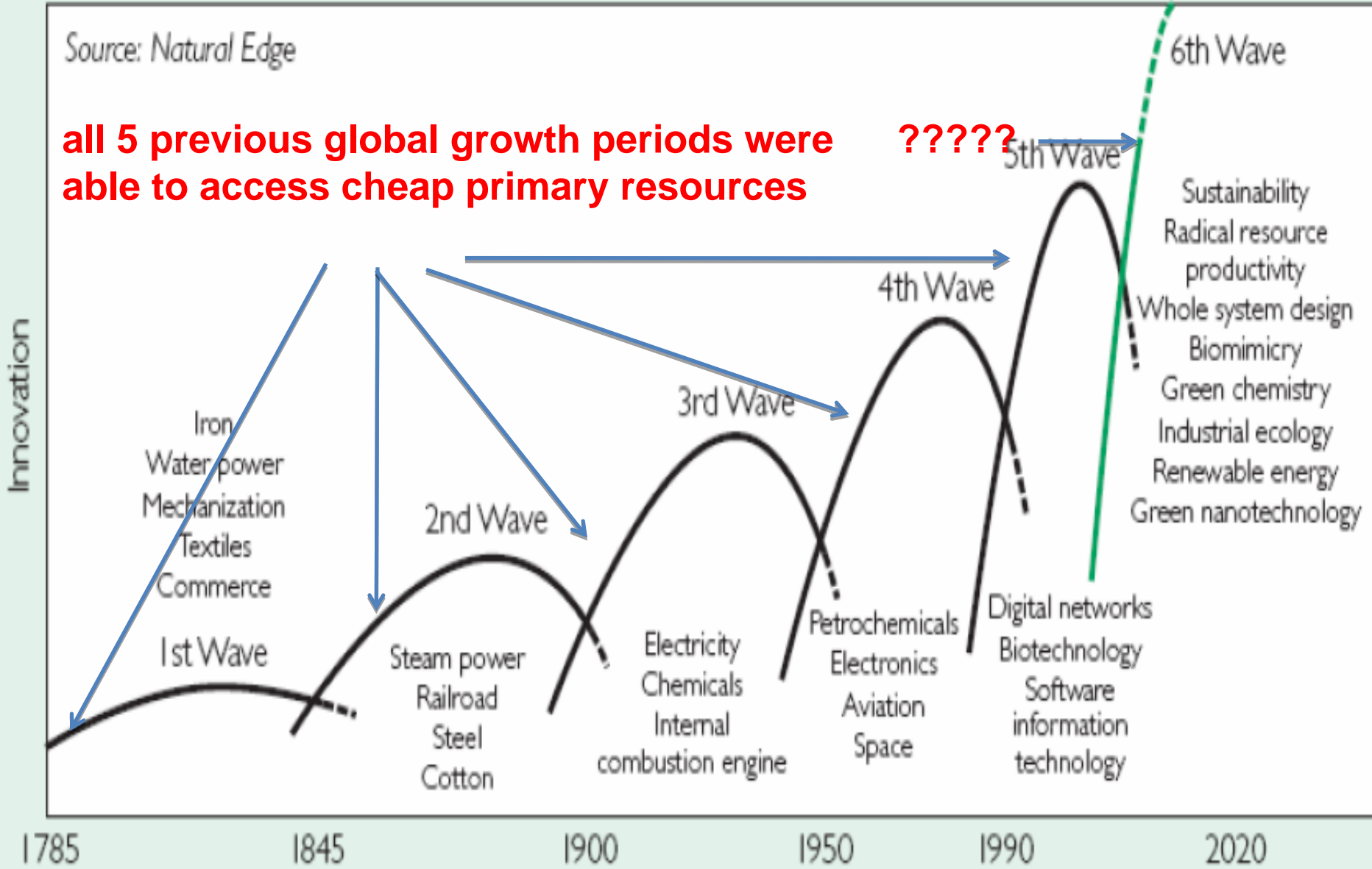
Source: World Bank Commodity Price Data (Pink Sheet), historical price data, available from <http://blogs.worldbank.org/prospects/global-commodity-watch-march-2011>



Source: *Natural Edge*

**all 5 previous global growth periods were able to access cheap primary resources**

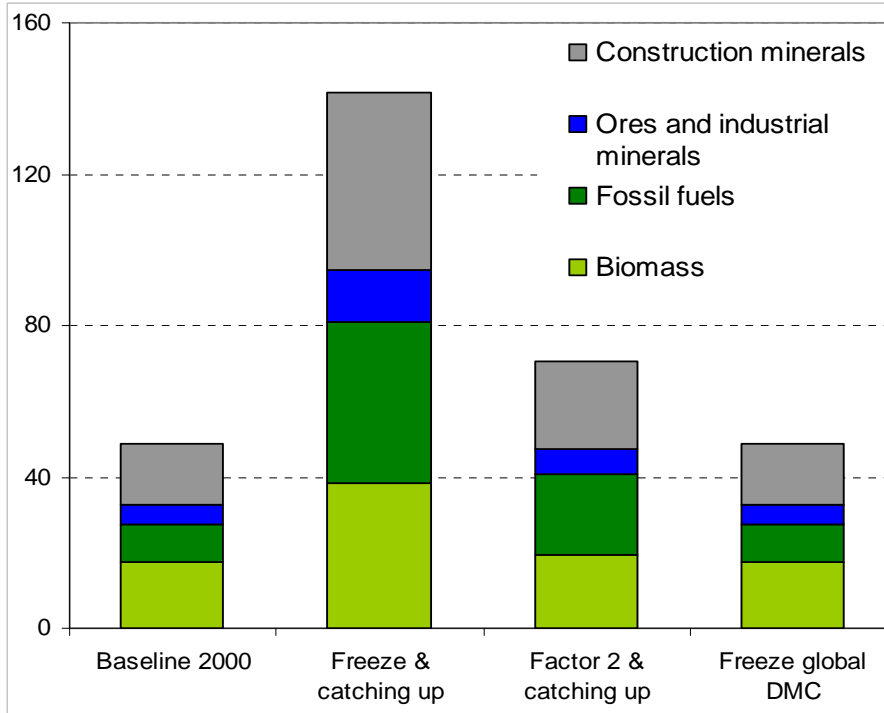
?????



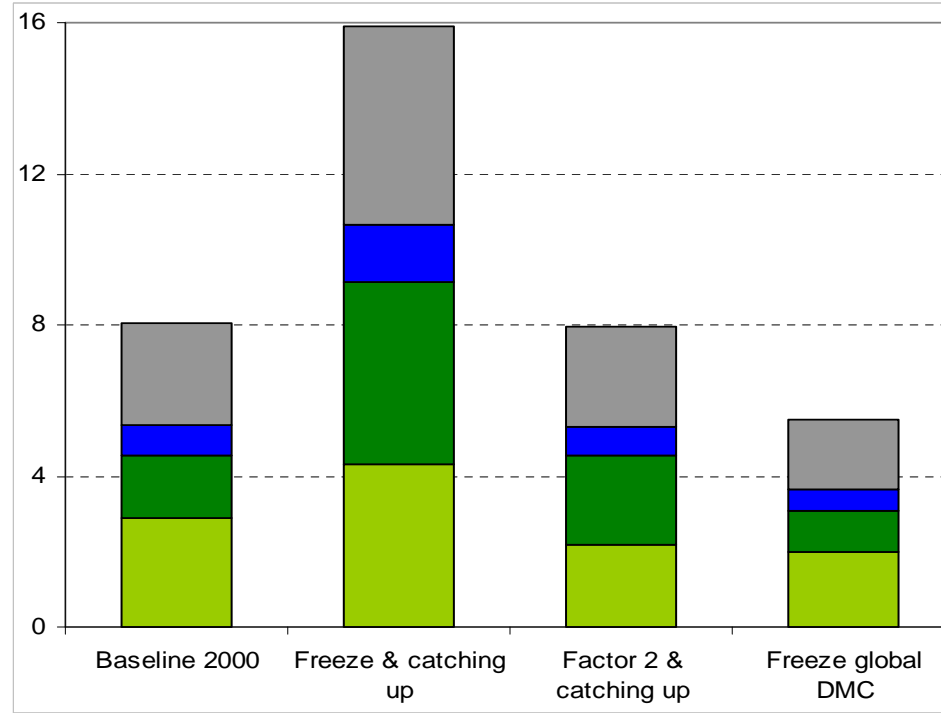


# Three forced future scenarios for 2050

Global metabolic scales in billion tonnes



Global metabolic rates in t/cap

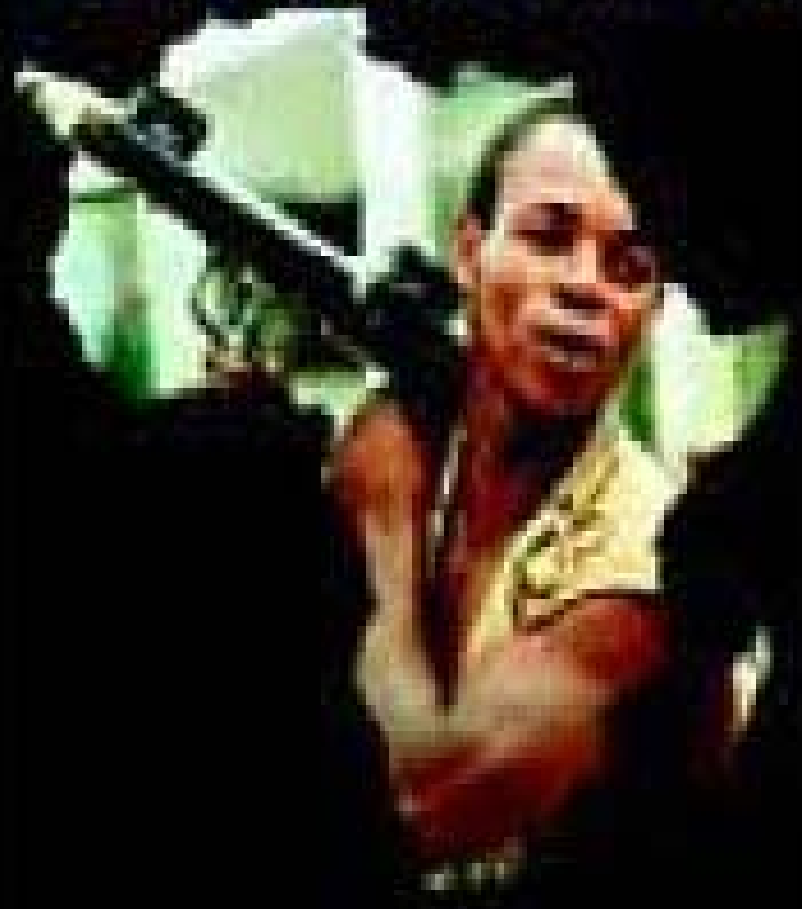


Assumptions: pop in 2050 is 9.5b; living stds in developed & developing world are the same. For BAU scenario: 'freeze' = resource use in developed world in 2050 same as in 2005.

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# The hopeless continent



INSIDE THIS WEEK: TECHNOLOGY QUARTERLY

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- President Obama? Brace yourself
- Britain's ending recession
- Why India needs Walmart
- France tries to buy AAA
- The return of ethical hedge funds

# Africa rising



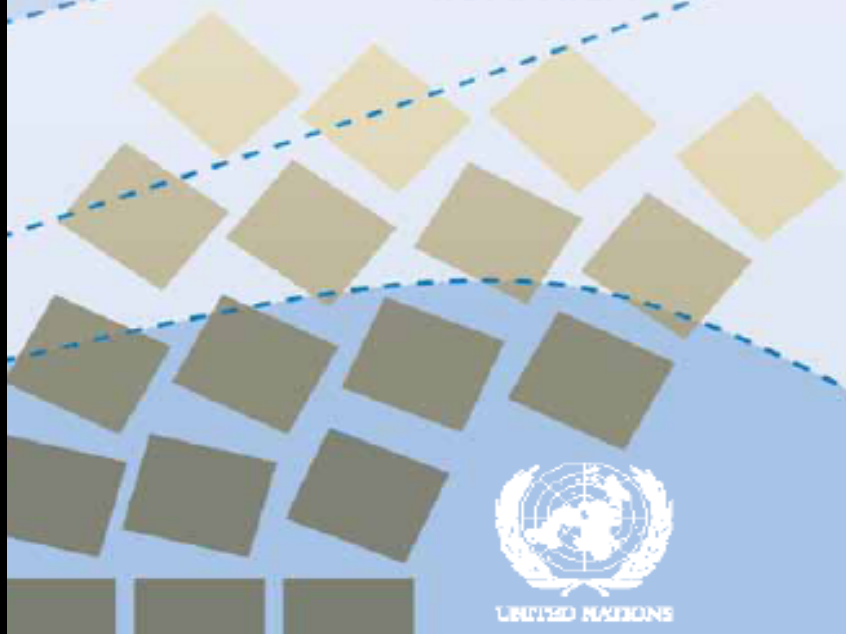


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15 June 2012, 17:00 hours GMT

**ECONOMIC  
DEVELOPMENT IN**

# AFRICA

**REPORT 2012 STRUCTURAL TRANSFORMATION  
AND SUSTAINABLE DEVELOPMENT  
IN AFRICA**



# Africa as net resource exporter

- Africa is a net exporter of non-renewable resources & net importer of biomass (renewables)
- Non-renewables: export 500 mt of fossil fuels, import 100 mt (mainly refined fuels)
- Biomass: export 14.5 mt, import 95.8mt (mainly cereals followed by biomass-products - mainly vegetable fats and oils, timber and sugar crops)



# Africa's challenges....

- New scramble for African resources – resource sector down to 24% of GDP, but still 80% of exports
- rise of resource wars, 20 of the top 30 failing states are in Africa
- 30% of all Africans are undernourished
- ecosystem degradation: 65% of agric soils degraded
- will suffer most from climate change having contributed least
- Urbanisation: 375m in 2010, 1.2 b by 2050



TECHNOLOGICALLY ACCELERATED  
RESOURCE USE

SUSTAINABLE  
RESOURCE USE

Materials:  
8t/c  
CO<sup>2</sup>: 4.5 t/cap

Materials:  
6t/c  
CO<sup>2</sup>: 2.2 t/cap

