Prioritising the processes beyond the water sector that will secure water for society - farmers in political, economic, and social contexts

Tony Allan

KCL & SOAS London

Re-thinking paradigms: water and food security

4th Marcelino Botin Water Workshop - Rethinking water and food security. Santander - 21-23 September 2009

Sub-themes

Communication and impact

Doing the right thing a little badly is better than doing the wrong thing extremely well

Wicked problems – uncertainty linked to urgency

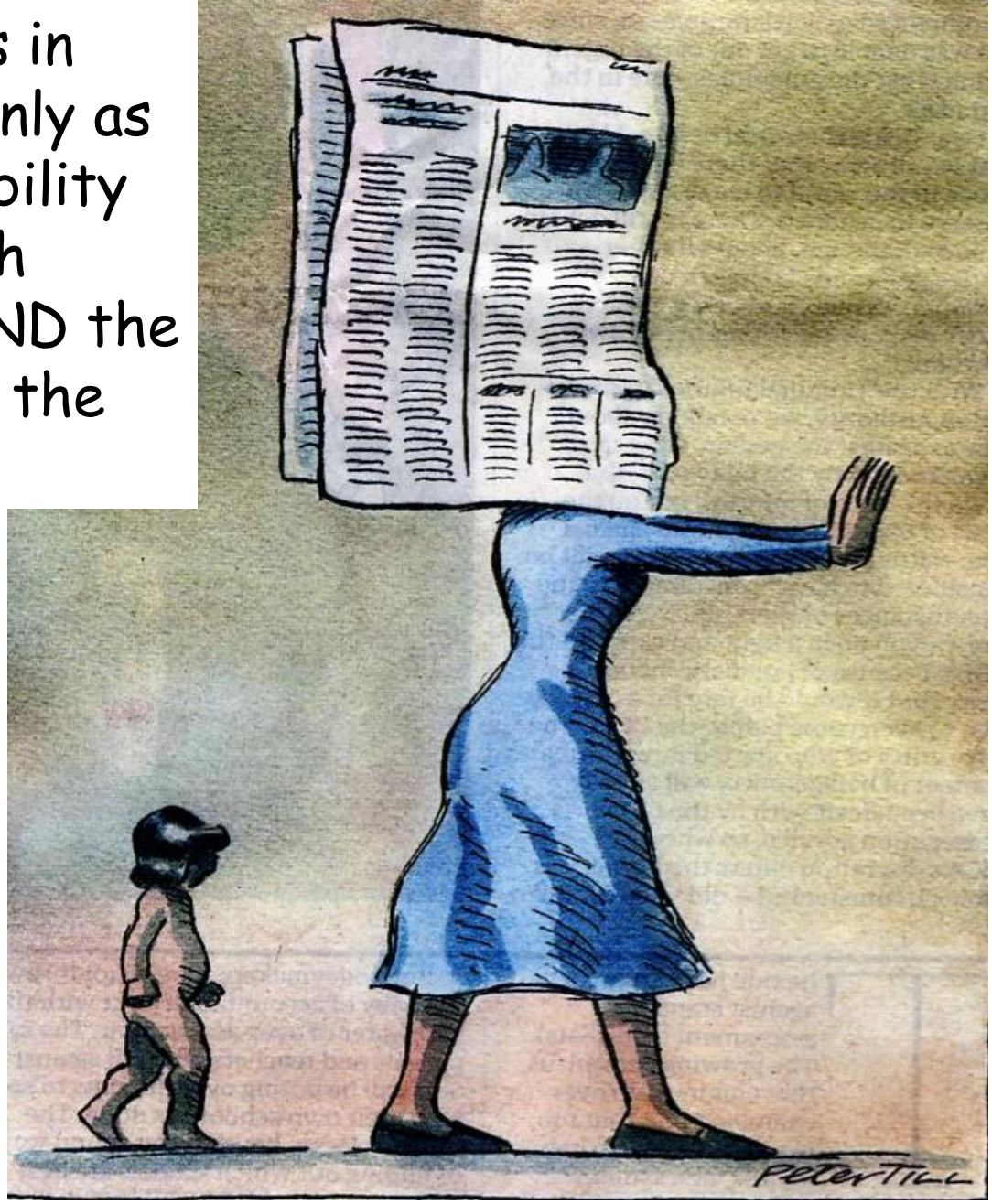
Risk >>>> Probability v Uncertainty >>>> Ambiguity

Sub-themes

Communication and impact

Guardian 20080813

What appears in the press is only as good as our ability to engage with journalists AND the prejudices of the media owners



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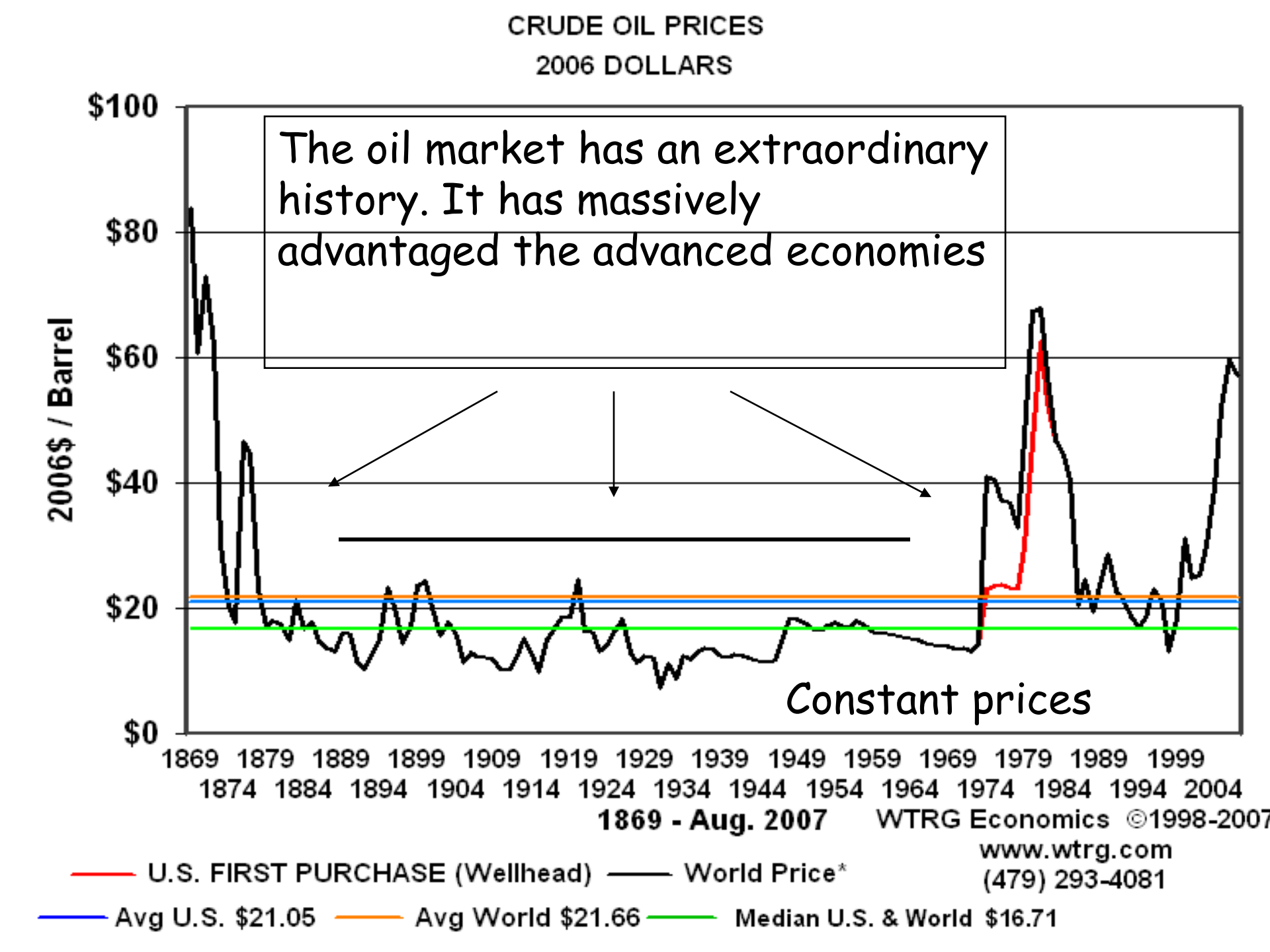
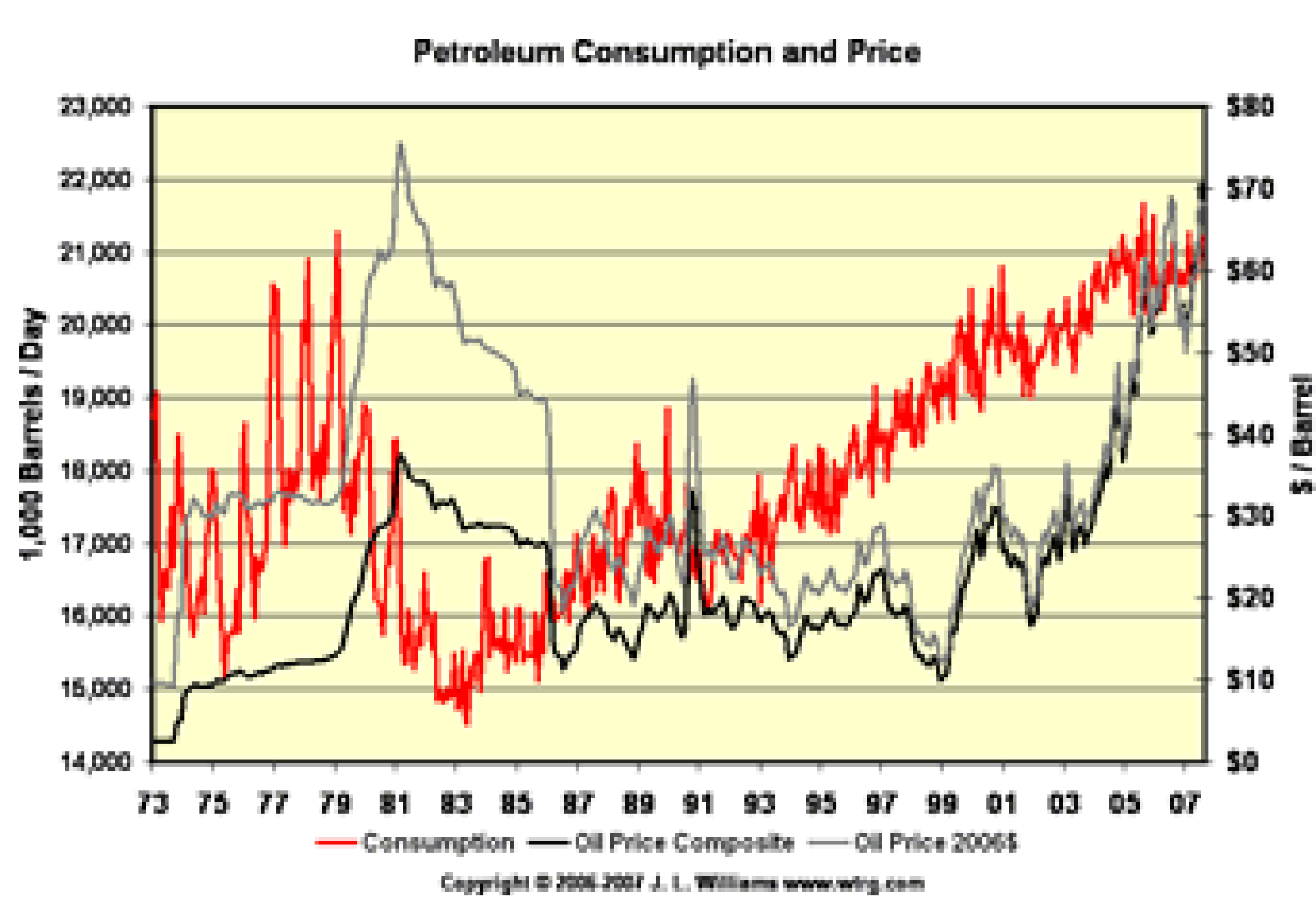

CRUDE OIL PRICES
2006 DOLLARS
The oil market has an extraordinary history. It has massively advantaged the advanced economies
Constant prices
2006$ / Barrel
$100
$80
$60
$40
$20
$0
1869 1879 1889 1899 1909 1919 1929 1939 1949 1959 1969 1979 1989 1999
1874 1884 1894 1904 1914 1924 1934 1944 1954 1964 1974 1984 1994 2004
1869 - Aug. 2007
WTRG Economics ©1998-2007
www.wtrg.com
(479) 293-4081
U.S. FIRST PURCHASE (Wellhead)
World Price*
Avg U.S. $21.05
Avg World $21.66
Median U.S. & World $16.71


Petroleum Consumption and Price
1,000 Barrels / Day
$ / Barrel
23,000
22,000
21,000
20,000
19,000
18,000
17,000
16,000
15,000
14,000
$80
$70
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$50
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$20
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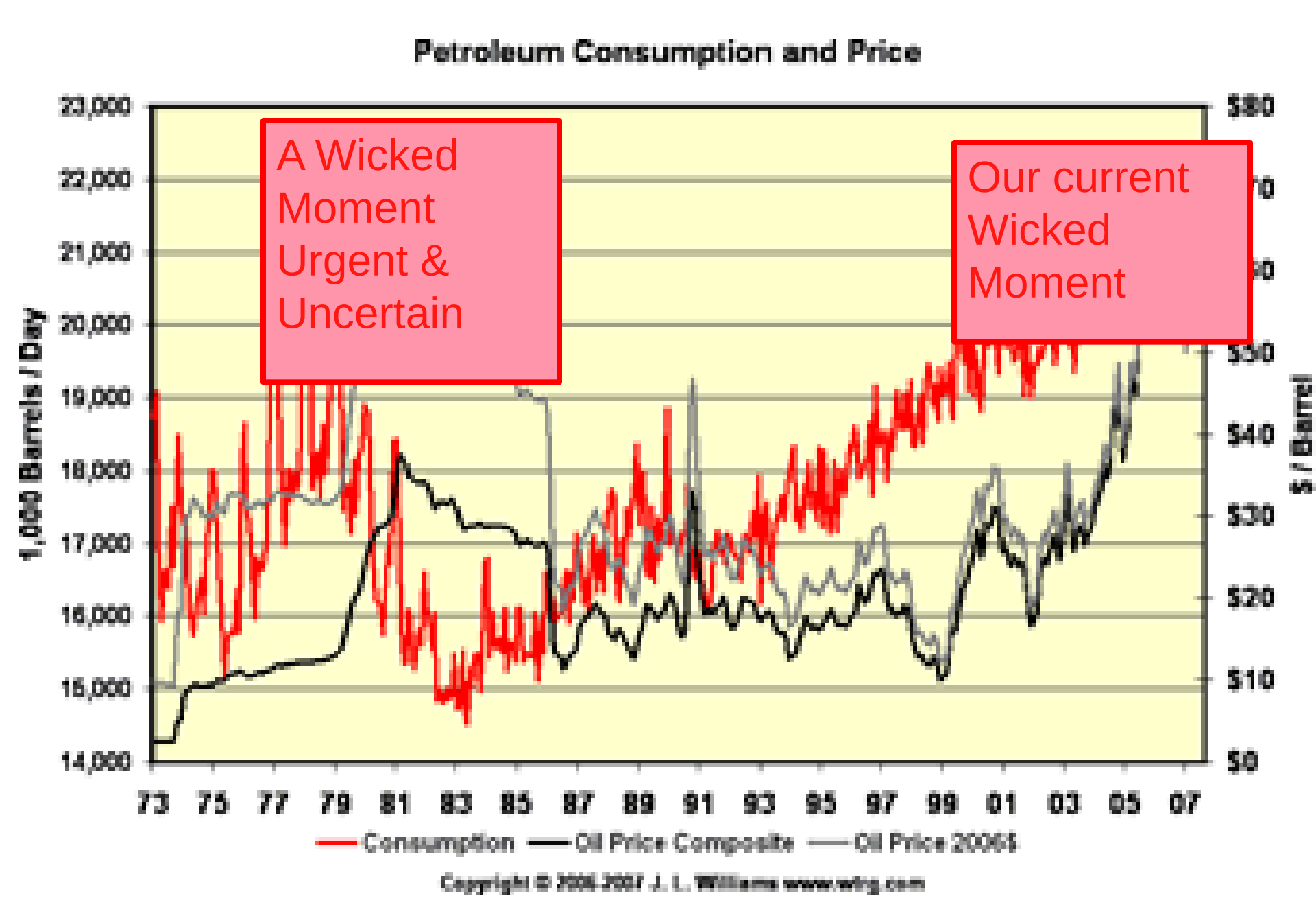
73 75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07
Consumption
Oil Price Composite
Oil Price 2006$
Copyright © 2006-2007 J. L. Williams www.wtrg.com


Petroleum Consumption and Price
A Wicked Moment Urgent & Uncertain
Our current Wicked Moment
1,000 Barrels / Day
$ / Barrel
23,000
22,000
21,000
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Consumption
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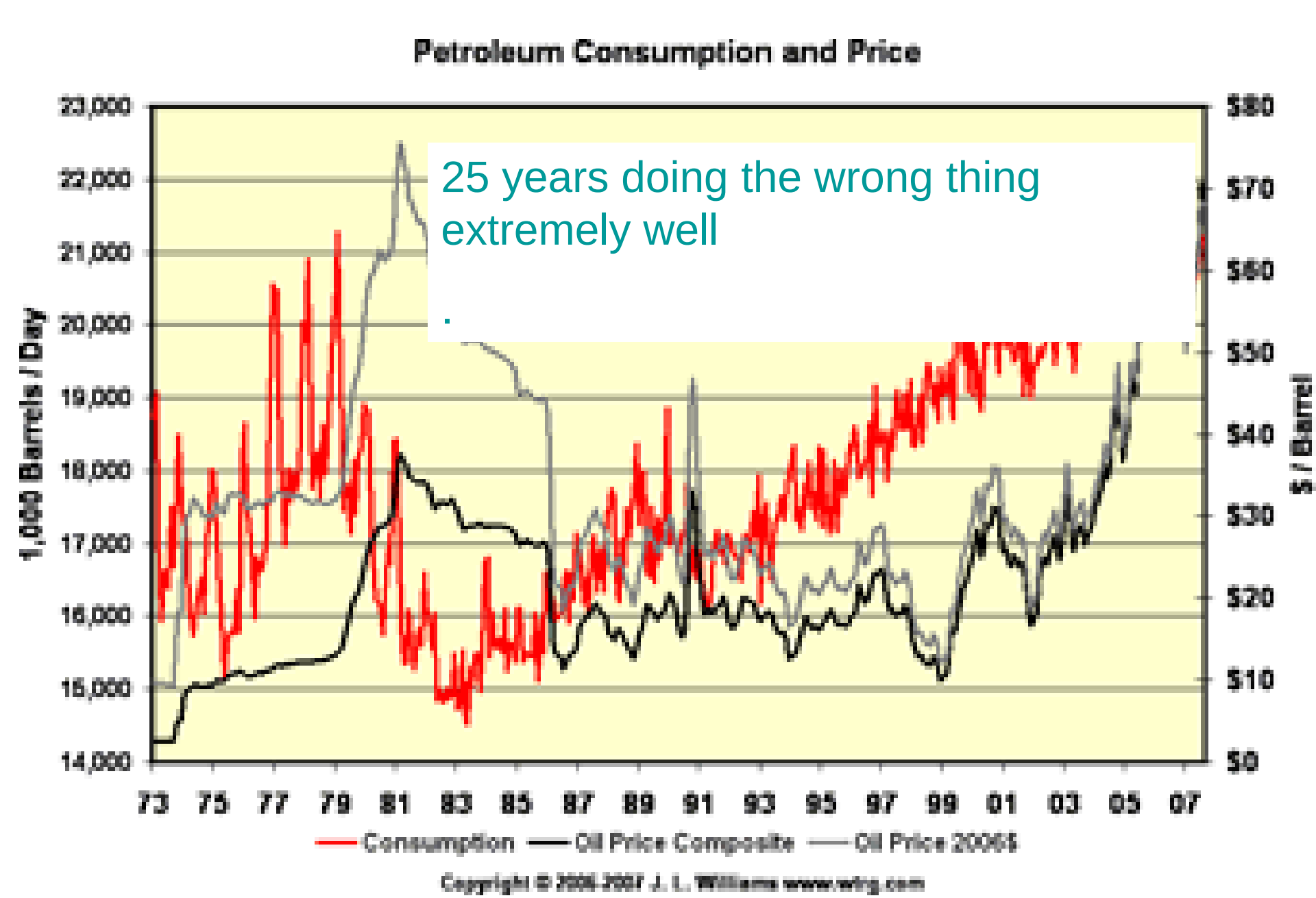
Petroleum Consumption and Price
25 years doing the wrong thing extremely well
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$ / Barrel
23,000
22,000
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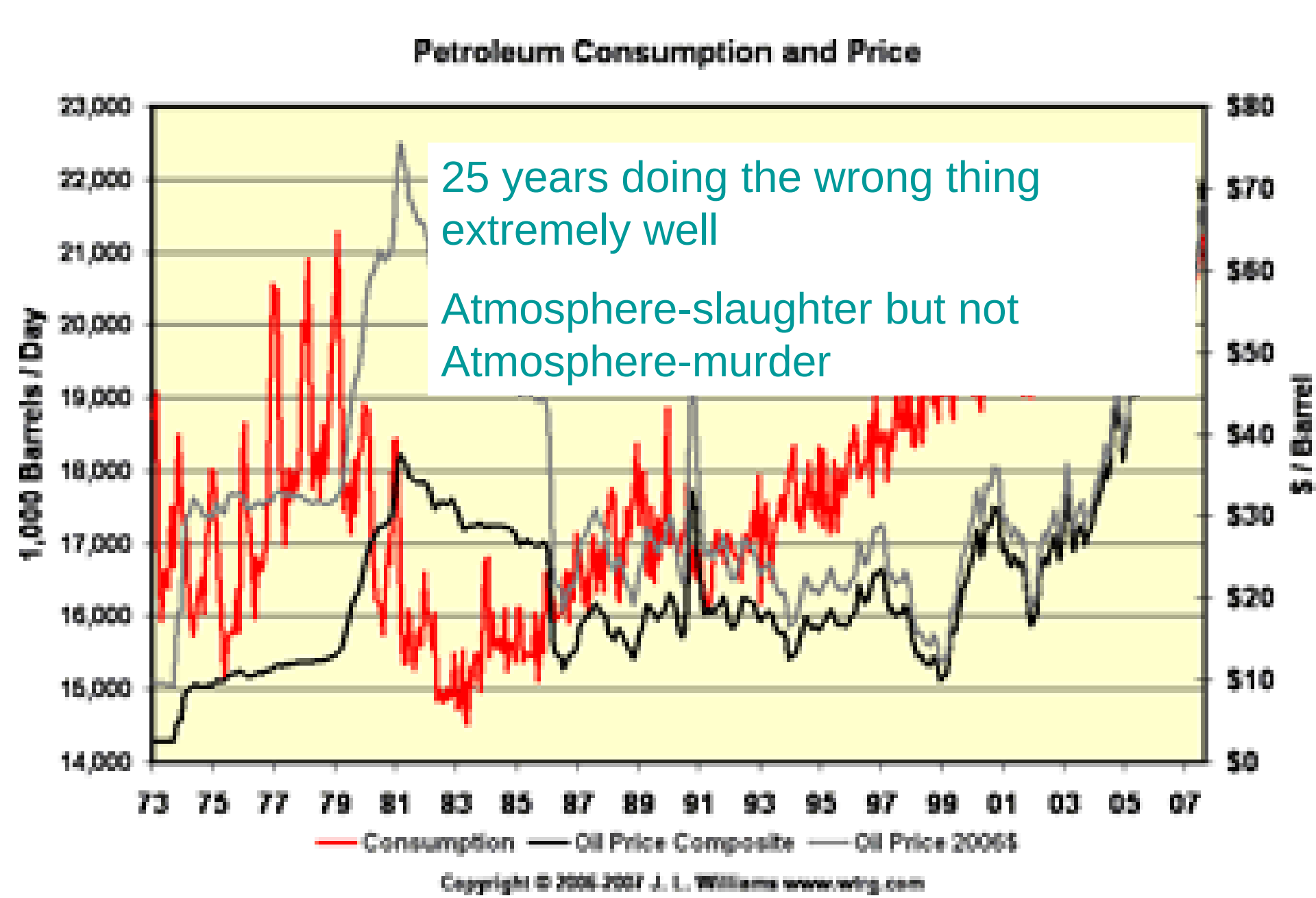
Petroleum Consumption and Price
25 years doing the wrong thing extremely well
Atmosphere-slaughter but not Atmosphere-murder
1,000 Barrels / Day
$ / Barrel
23,000
22,000
21,000
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73 75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07
Consumption
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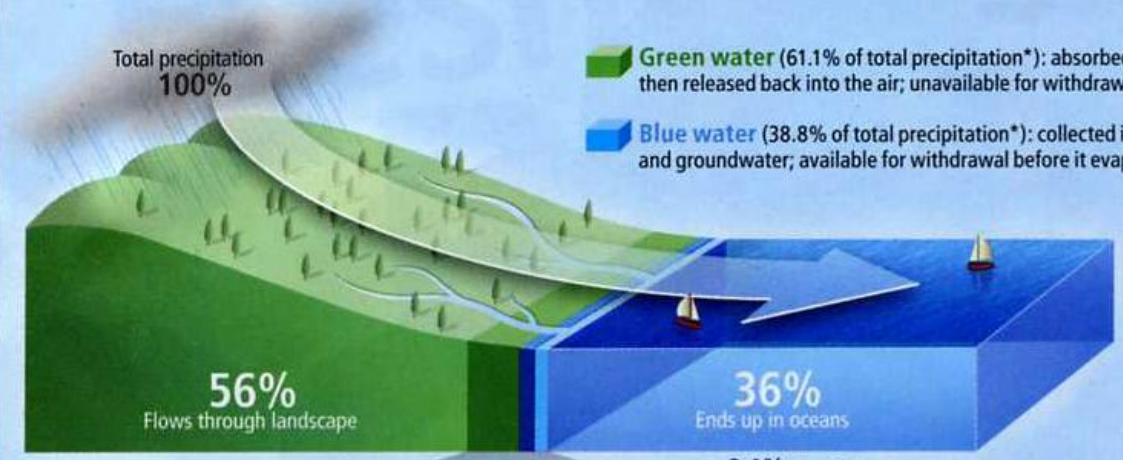
[THE CURRENT SITUATION]

Lots of Water, but Not Always Where It Is Needed

One hundred and ten thousand cubic kilometers of precipitation, nearly 10 times the volume of Lake Supe
land surface every year. This huge quantity would be enough to easily fulfill the requirements of everyone
and when people needed it. But much of it cannot be captured (*top*), and the rest is distributed unevenly (*bottom*).



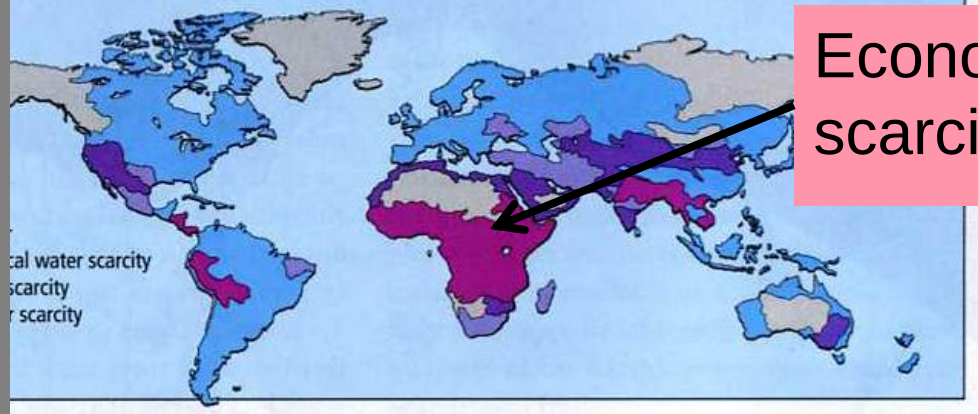
Green water (61.1% of total precipitation*): absorbed by soil and plants, then released back into the air; unavailable for withdrawal.

Blue water (38.8% of total precipitation*): collected in rivers, lakes, wetlands and groundwater; available for withdrawal before it evaporates or reaches the ocean.

*Figures may not add up to 100% because of rounding.

WHERE DOES THE RAIN GO?

More than half of the precipitation that falls on land is never available for capture or storage because it evaporates from the ground or transpires from plants; this fraction is called green water. The remainder channels into so-called blue-water sources—rivers, lakes, wetlands and aquifers—that people can tap directly. Farm irrigation from these free-flowing bodies is the biggest single human use of freshwater. Cities and industries consume only tiny amounts of total freshwater resources, but the intense local demand they create often drains the surroundings of ready supplies.



Two types of water of water availability

Two types of water of water by volume of demand – water for food is ten times all other uses

Economic scarcity

p30

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3The importance of food commodity prices for farmers – and other determining contexts

4International food commodity trade – successes and failures

First, farming communities manage the big water used and consumed by society.

They manage about 80 per cent of the water used in our economies - about 70 per cent by volume of this water is green water and 30 per cent is blue water.

Unless society reduces its food consumption we shall have to rely on farmers worldwide to raise the productivity of green and blue water to meet the food consumption needs of a future global population of about nine billions.

Secondly, farmers compete on our behalf with the environment for water and tend to impair the water services of the environment.

A joint effort is needed - both via:

1 increases in water productivity on the farms

2 changed patterns of food consumption by society.

The latter will both *enhance human* and *environmental* health and reduce the consumptive use of water.

The *third* element of a more secure water managing scenario is one where the prices of food commodities and other incentives and other messages send signals to farmers that they should produce crops with less water and with practices that do not impair the services of the water environment.

Farmers have achieved spectacular increases in returns to water even in our own lifetimes. Price incentives work when they are reliable and long term and not a misguided solution to wicked problems.

e.g. NW Europe, India & China, Vietnam

The *fourth* element of fundamental importance is international *trade*.

International food commodity trade has been spectacularly successful in meeting the needs of at least 150 economies that have run out of water.

But global trade is not fair. International trade in agricultural commodities has been severely distorted for decades.

Its terms punish the weak economies of for example Africa. Food production is the major livelihood of most of the peoples of Africa. But the water productivity of African farmers is the lowest worldwide.

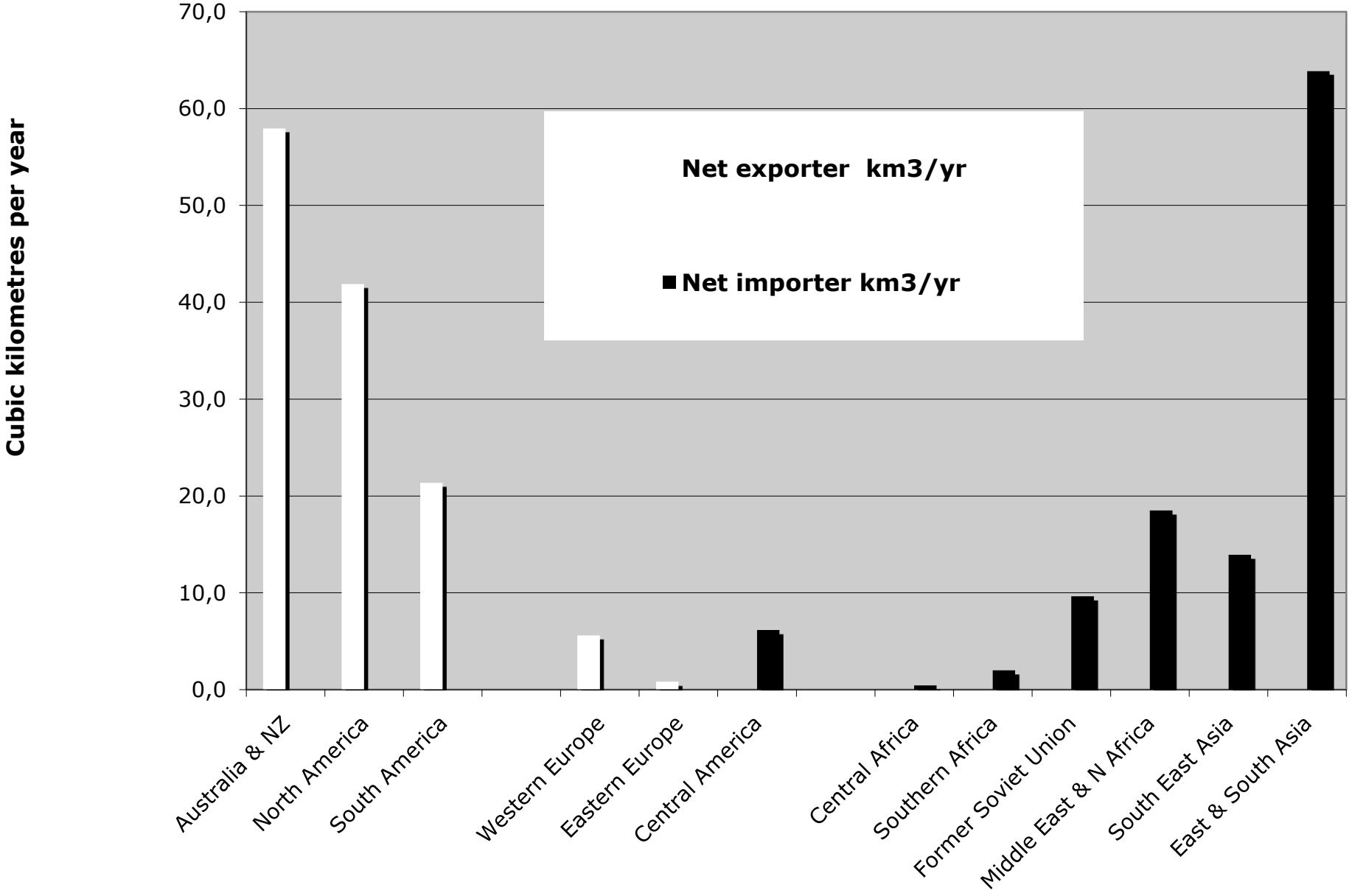
Millions of African farming families are repeatedly driven back into poverty by the level of international food prices kept low by the governments and food producing interests in Europe and the United States.

Farmers everywhere must be nurtured and encouraged to prosper by increasing - in some cases doubling or more their water productivity.

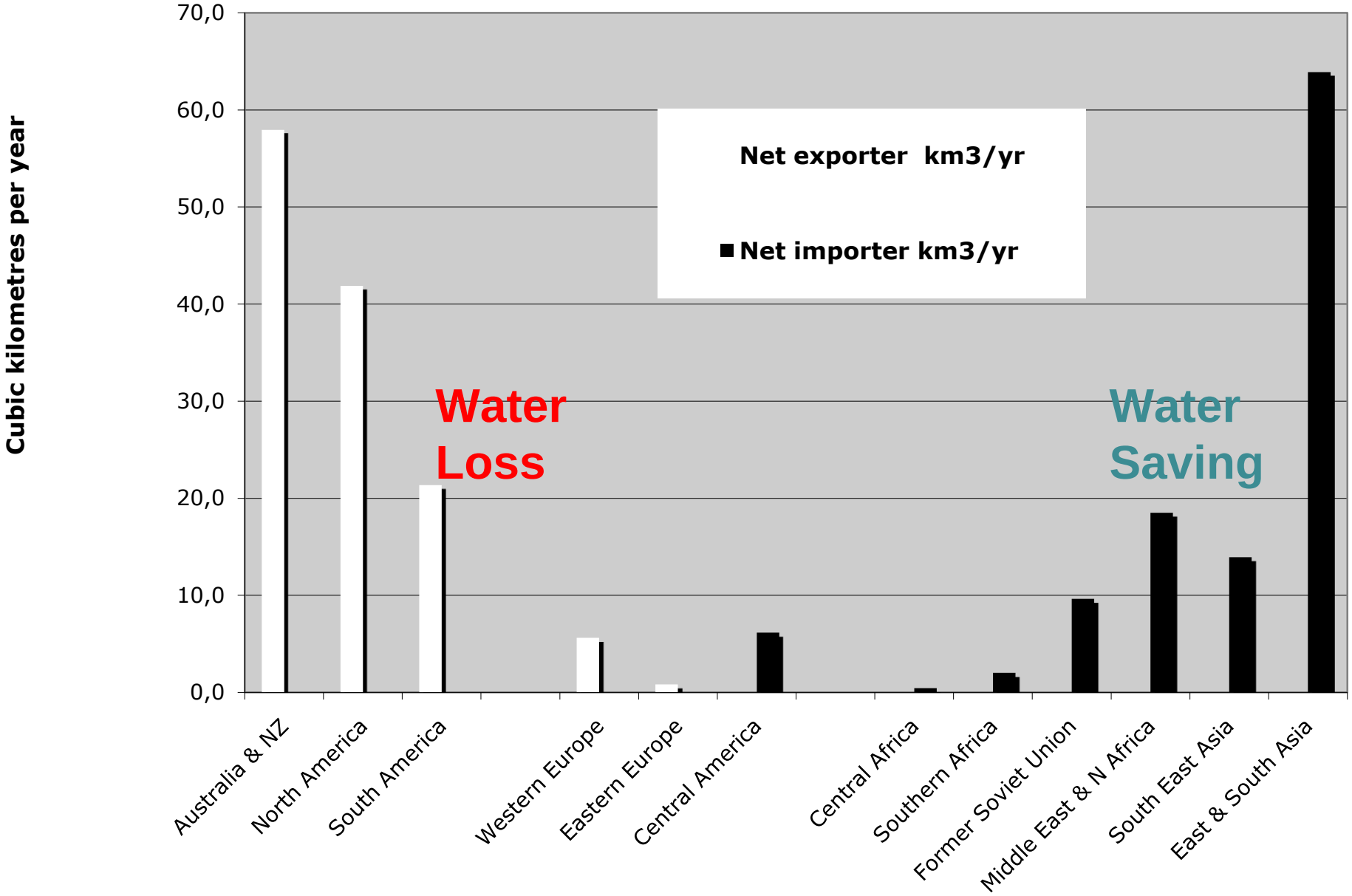
Doubled rainfed water productivity in Africa would be of global significance with respect to future global water security. [Absence of FAO]

Not everyone trades

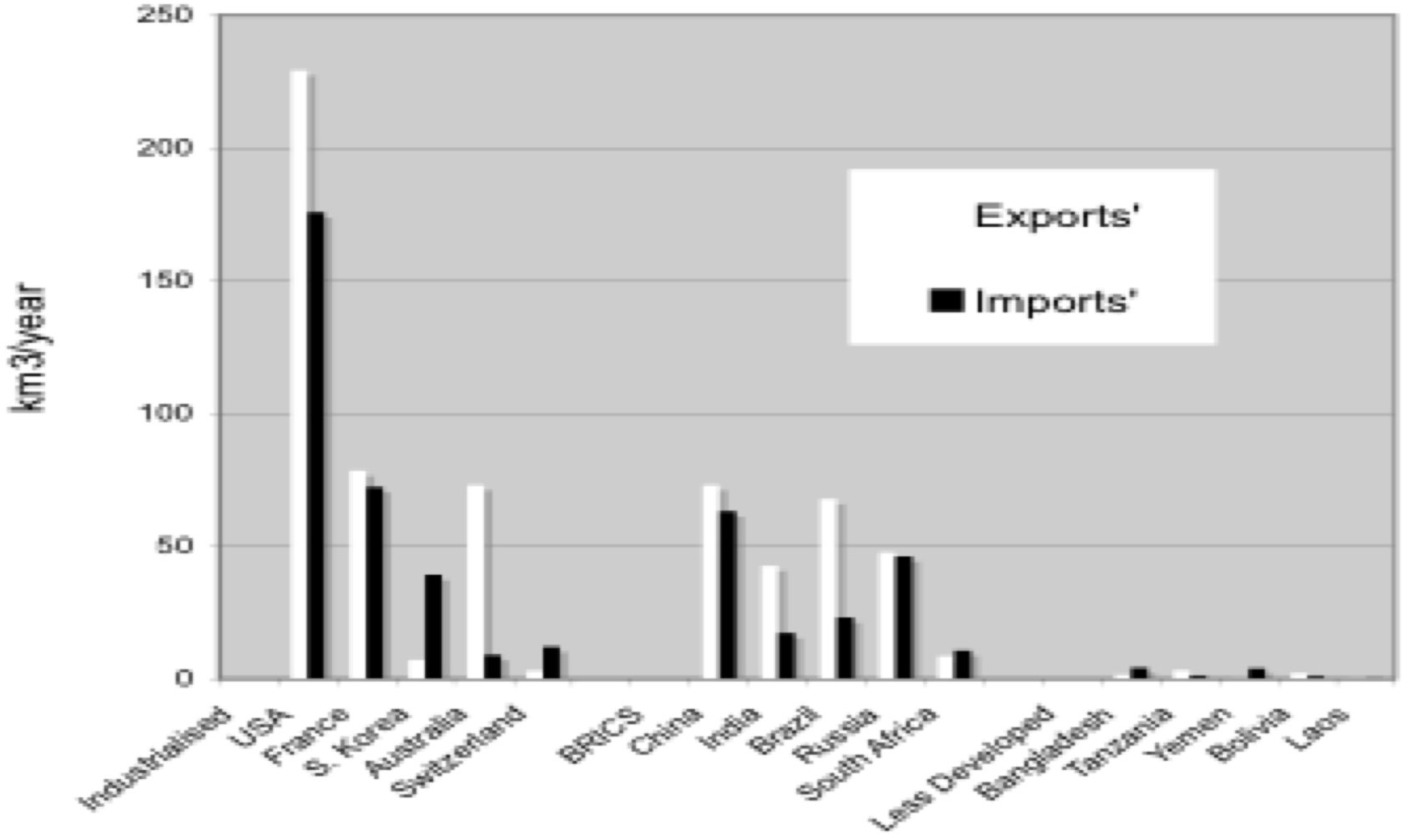
Inter-regional trade – net exporters and importers

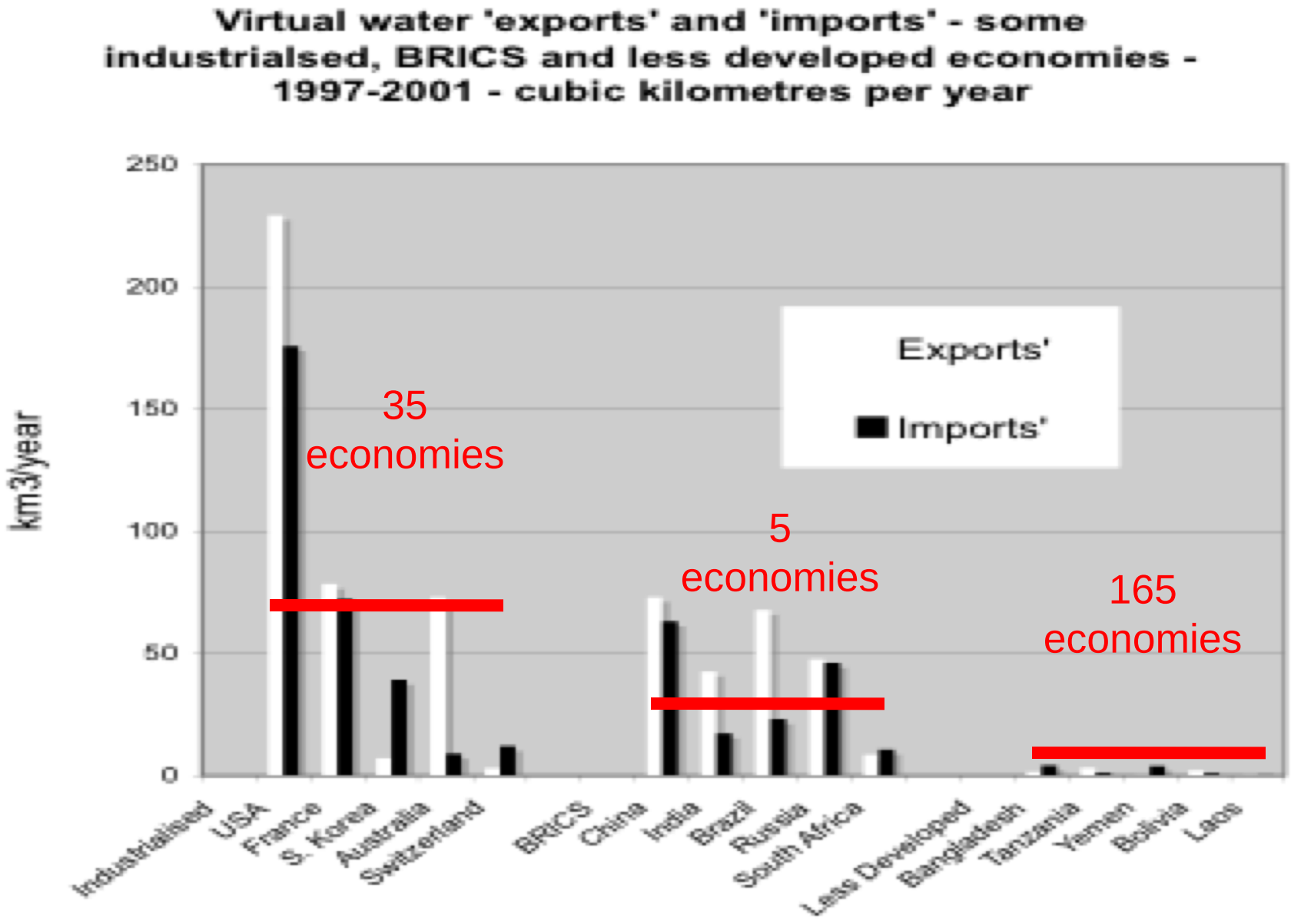


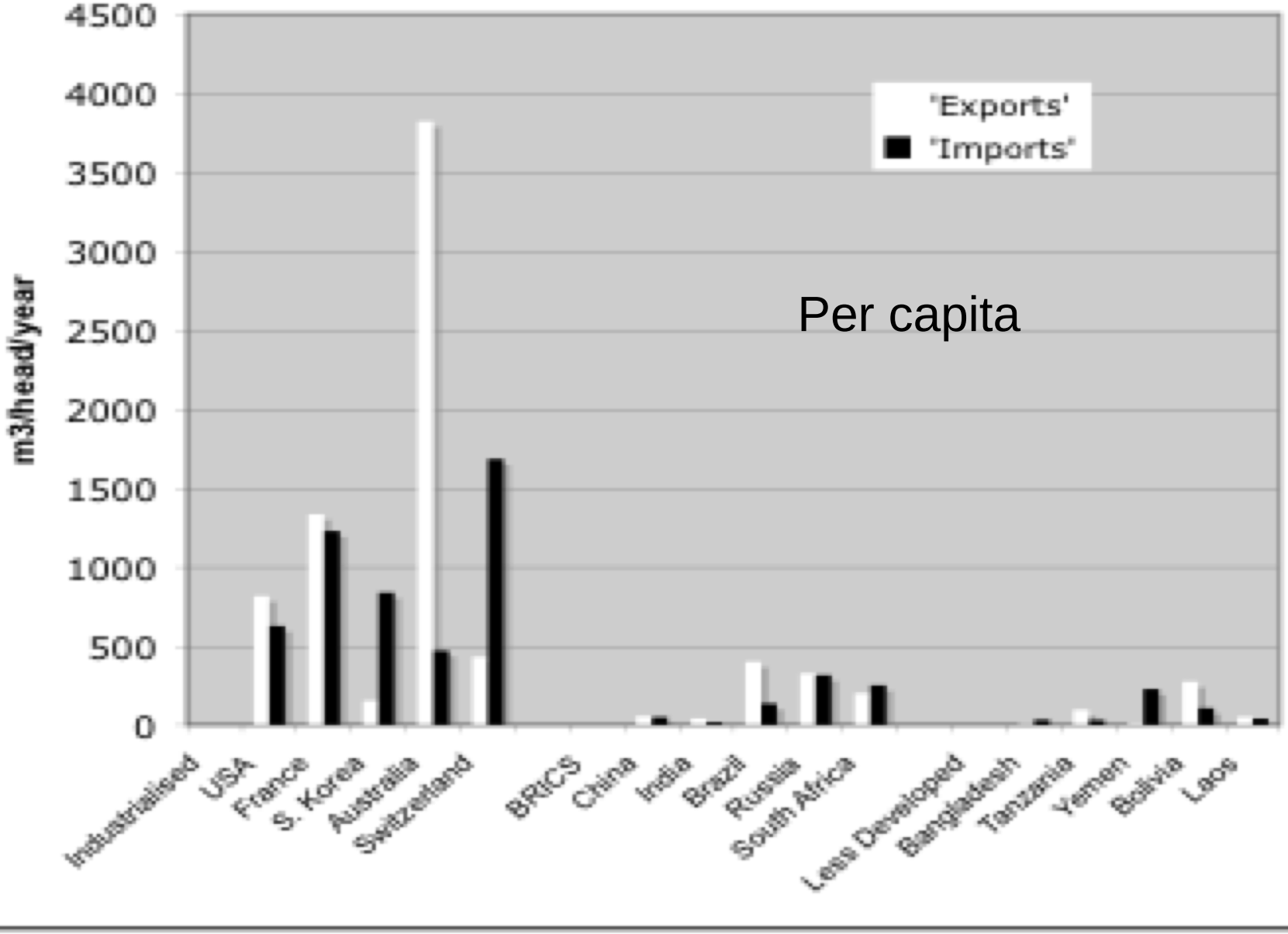
Inter-regional trade – net exporters and importers

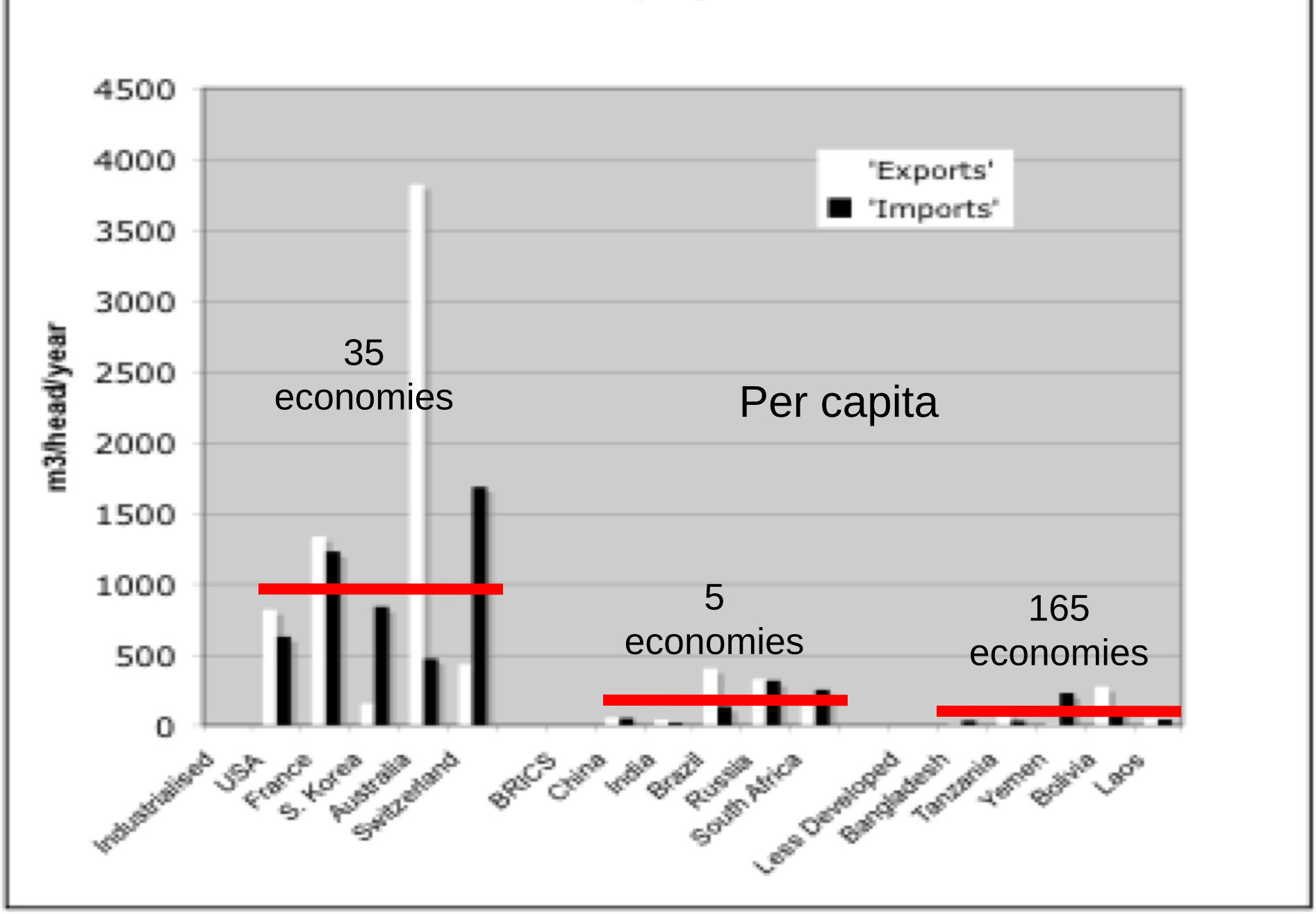


Virtual water 'exports' and 'imports' - some industrialsed, BRICS and less developed economies - 1997-2001 - cubic kilometres per year




Virtual water 'exports' and 'imports' - some industrialsed, BRICS and less developed economies - 1997-2001 - cubic kilometres per year
km3/year
250
200
150
100
50
0
Exports'
Imports'
35 economies
5 economies
165 economies
Industrialised
USA
France
S. Korea
Australia
Switzerland
BRICS
China
India
Brazil
Russia
South Africa
Less Developed
Bangladesh
Tanzania
Yemen
Bolivia
Laos


4500
4000
3500
3000
2500
2000
1500
1000
500
0
m3/head/year
'Exports'
'Imports'
Per capita
Industrialised
USA
France
S. Korea
Australia
Switzerland
BRICS
China
India
Brazil
Russia
South Africa
Less Developed
Bangladesh
Tanzania
Yemen
Bolivia
Laos


4500
4000
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3000
2500
2000
1500
1000
500
0
m3/head/year
'Exports'
'Imports'
35
economies
Per capita
5
economies
165
economies
Industrialised
USA
France
S. Korea
Australia
Switzerland
BRICS
China
India
Brazil
Russia
South Africa
Less Developed
Bangladesh
Tanzania
Yemen
Bolivia
Laos

Water security is an elusive concept.

The volume of water is important

but

what we do with water is more important.

Farmers do more with water than any other agent and societies need to nurture farmers and incentivise them to gain even higher returns from green and blue water than they have. They can achieve higher returns, in some cases much higher returns, in conditions that protect them from environmental and especially market uncertainties.

.

In addition society itself has the solution in its own hands as it can modify its demands for water resources by reducing waste, modifying diet and levelling-off the rate of population increase either as a consequence of socio-economic advancement or demographic policy.

As usual

We need to look beyond the water sector
to achieve water security.

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As usual

We need to look beyond the water sector
to achieve water security.

Thank you

ta1@soas.ac.uk

Other ways of considering water saving

Through raising crops in places that achieve high returns to water

1Global system savings thro' trade in:

Grains 222 km3 Oil crops 68 km3 Total 352 km3/yr

Chapagain & Fraiture make similar estimates

2National water savings – for example Egypt

Total saving thro' vw 'trade' 3.2 km3/yr

Chapagain