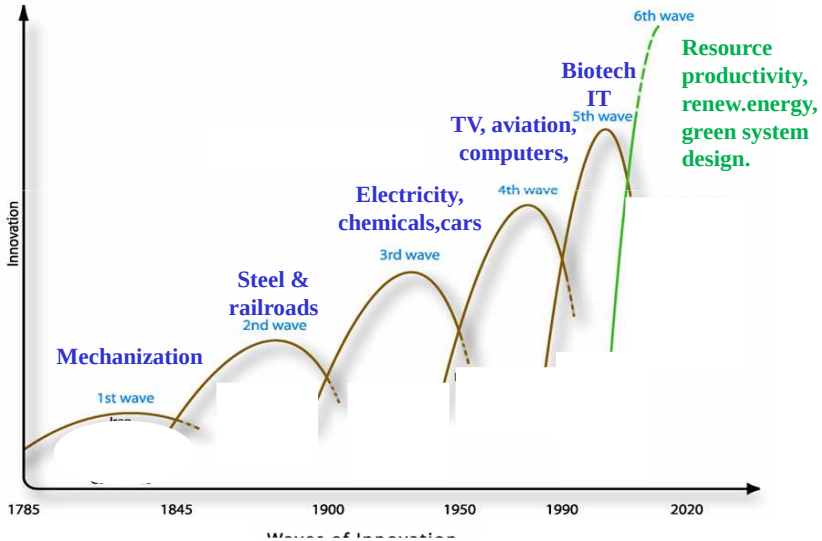
Inspiring Change Towards a Green Economy

Professor Ernst Ulrich von Weizsäcker, Co-Chair

International Panel
for Sustainable
Resource Management

The Green Economy could become the core of a new Kondratiev Cycle



Why?

Because in the absence of a revolutionary improvement of green technologies, little hope is left for Planet Earth

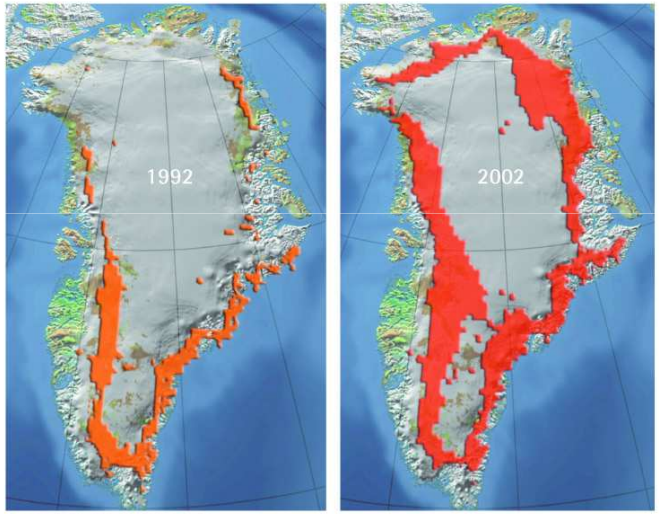
Climate disasters 2010

Pakistan: the disastrous flood

An iceberg of 260 sqkm broke off Greenland

Russia wildfires for weeks

Presently we are destabilizing Greenland!
(Freshwater coverage during Summers 1992 and 2002)

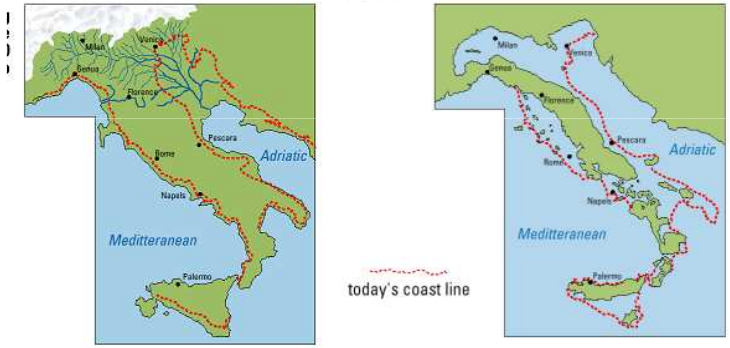


©2004, ACIA / Map ©Clifford Grabhorn

Sea levels can change the coast lines!

Italy during the last Ice Age (20 000 years ago)

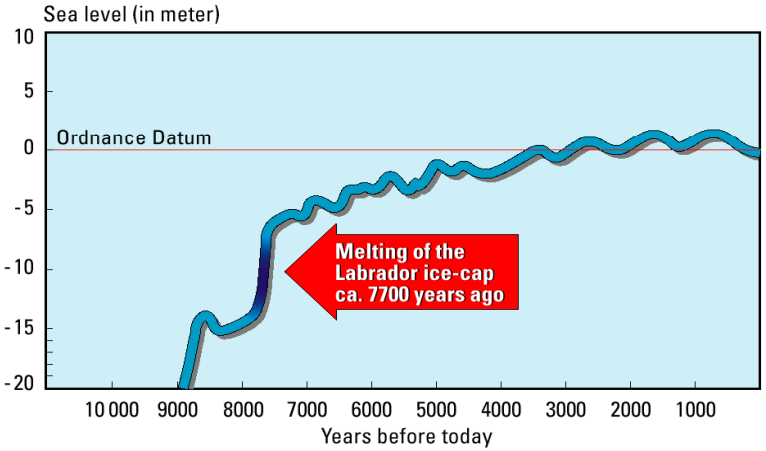
.... Coast lines during the last Hot Age (2 million years ago)



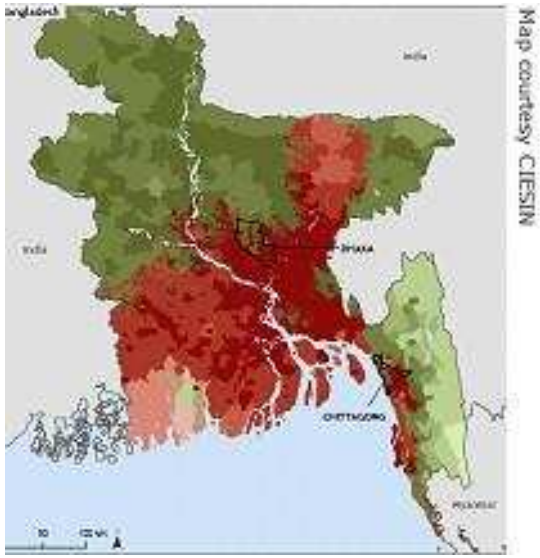
Source: Atlante Geografico Moderno. Mondadori 1996

Sea level rise can take catastrophic speed!

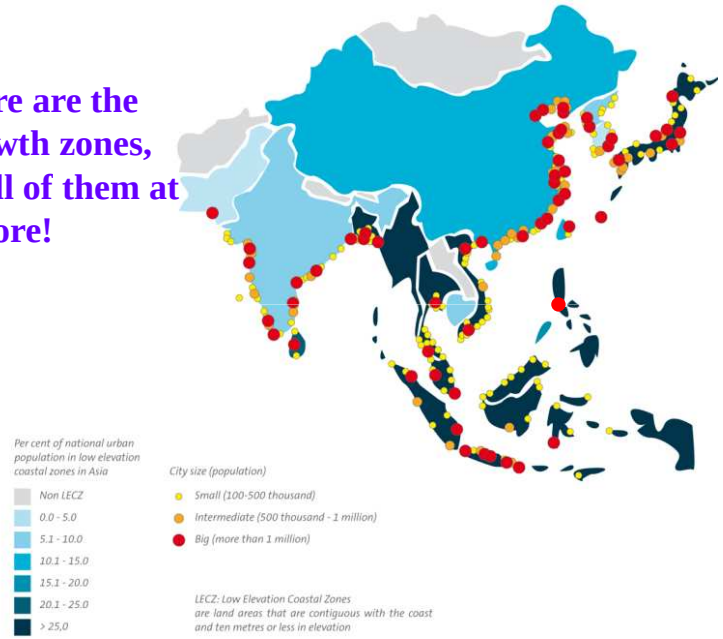
(after Michael Tooley. Global sea-levels: floodwaters mark sudden rise. Nature 342 (6245), p 20 - 21 1989)



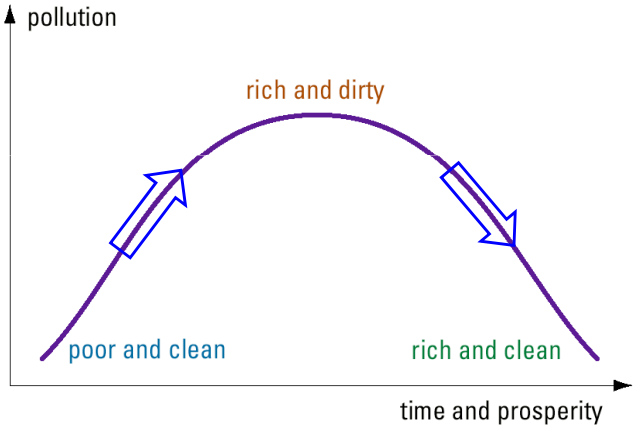
If the Greenland ice disappears, half of Bangladesh would be drowned



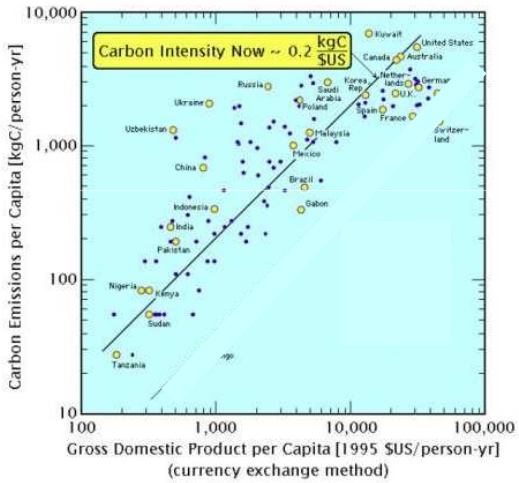
… and here are the Asian growth zones, - almost all of them at the sea shore!



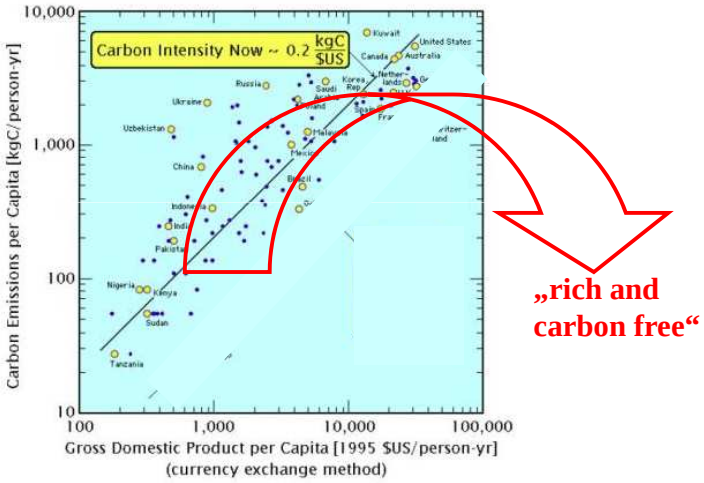
Despite such good news, developing countries hesitate to engage in climate and environmental policies. They go by the paradigm of the Kuznets curve of pollution



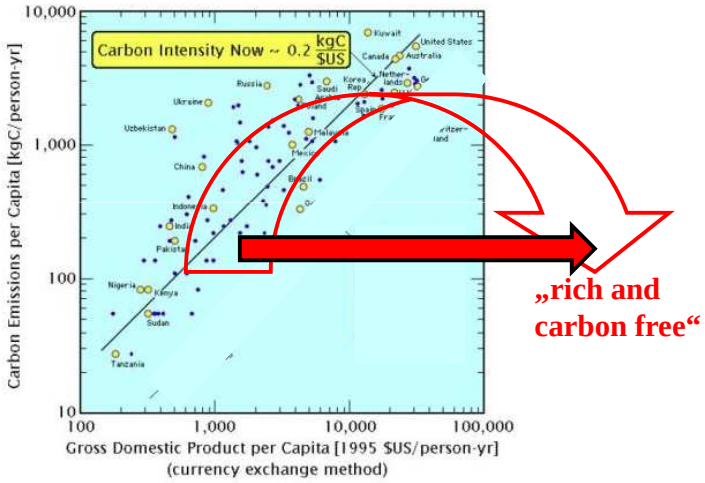
Moreover, CO_2 intensity and GDP go hand in hand! There isn‘t even a Kuznets Curve of decarbonization!



So one big task will be creating exactly that Kuznets Curve



… and then assist developing countries to „tunnel through that curve“, short-cutting the dirty hill!



Options to respond to the CO_2 challenge.

Three options exist:

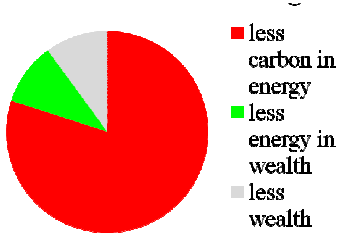
- **Reduce carbon intensity of energy**
- **Reduce energy intensity of wealth**
- **Reduce wealth**

The conventional answer looks like this:

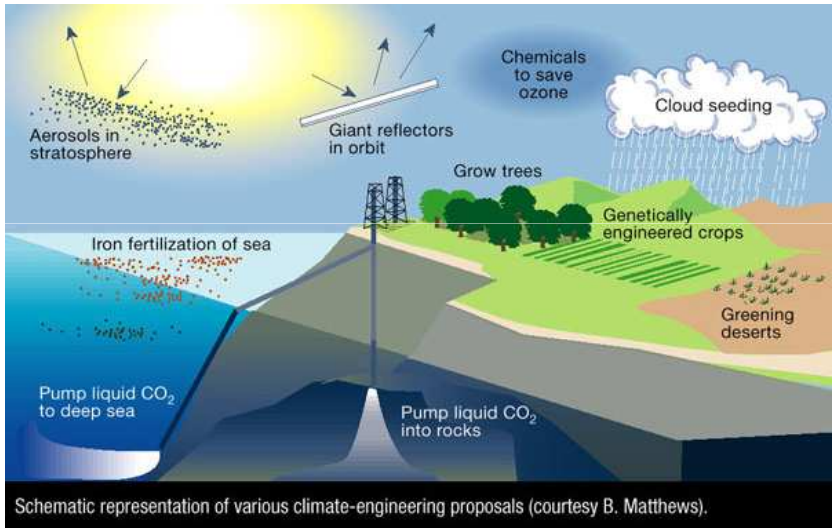
80% less carbon per unit of energy

10% less energy per GDP

10% less wealth.

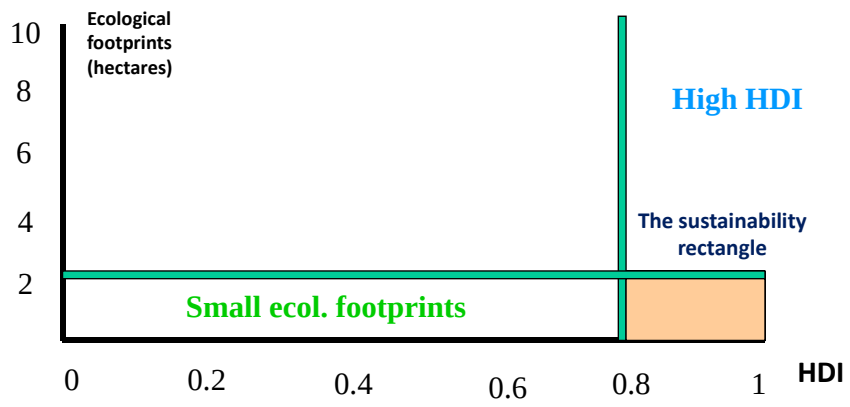


A fourth option, popular mostly in America: geoengineering

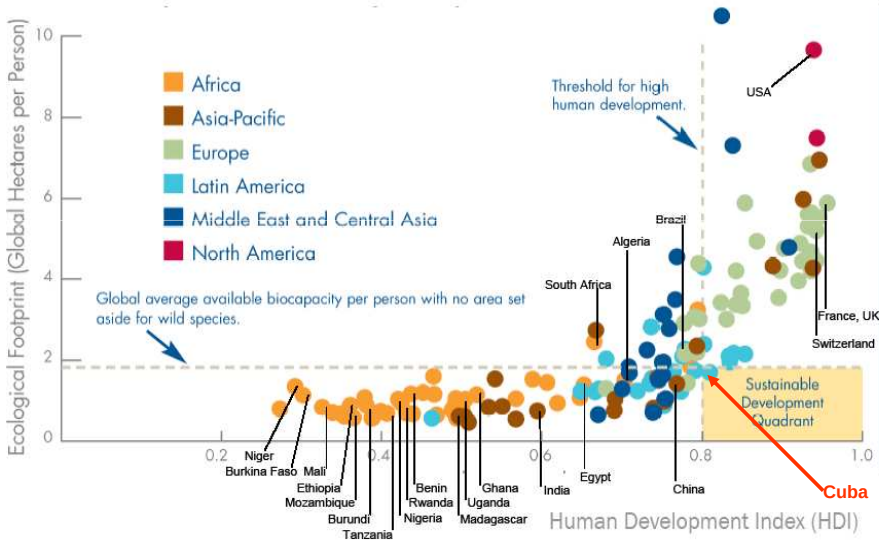


Stabilizing our climate is perhaps the biggest task of sustainable development.

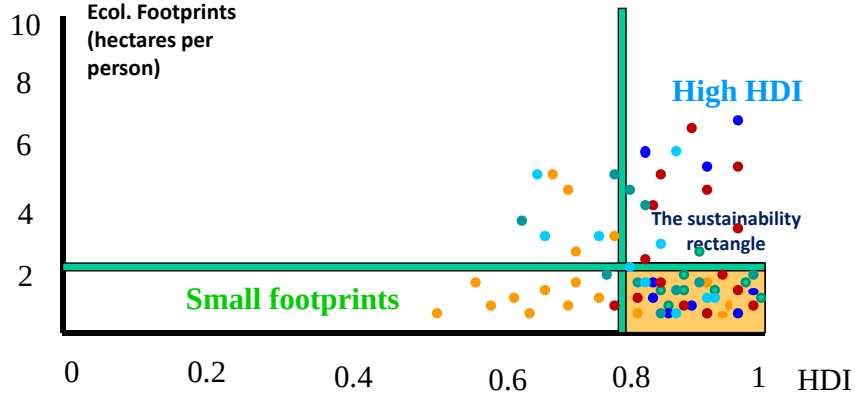
Sustainable development essentially means small ecological/carbon footprints and a high Human Development Index (HDI)

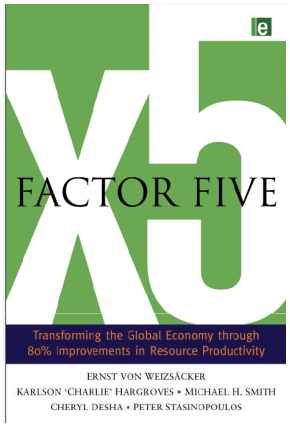


Alas, only one country currently populates the sustainability rectangle



A factor of five in the increase of resource productivity could pull or push most countries into sustainability





December, 2009

March, 2010

October, 2010

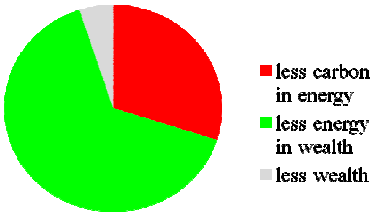
***Factor* of *Five* is a book documenting that technologies and policies are available for a five fold improvement!**

… leading also to a different carbon strategy

30% less carbon per unit of energy

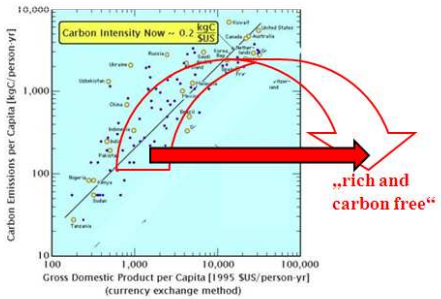
65% less energy per GDP

Perhaps
5% less GDP



I come back to it in a moment.

But what can we do for the short-cut for developing countries?



The only solution I can see is per capita equal CO_2 emission rights

It was proposed by the Indian PM Manmohan Singh. It means the North would have to go shopping for emission rights in the South.

German Chancellor Angela Merkel, in August, 2007, at the Nikkei Symposium in Tokyo, and later in New Delhi supported the idea!

This „carbon justice“ approach would mean the North would have to go shopping for emission rights in the South.

Instantaneously, that would make it profitable *in developing countries* to become very energy efficient and to turn to renewable energies.

Carbon capture by restoring soils, wetlands, forests would also become highly profitable.

Efficiency technology would rapidly migrate to the South. And hundreds of plans for new coal power plants could be scrapped.

Efficiency technology would rapidly migrate to the South.

This fact is answering one of the chief concerns of developing countries who keep asking for cost free technology transfer as the precondition of their joining the climate protection ballgame.

Back now to the technological task of decoupling prosperity from CO_2 emissions.

Let me suggest in line with „Factor Five“ to think bold about efficiency!

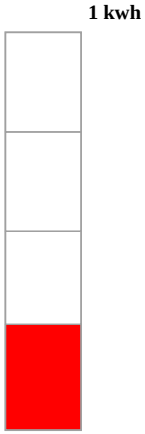
Imagine a bucket of water of 10 kg weight

How many Kilowatt-hours

do you need to lift it from sea level to the top of Mount Everest?

The answer is:
One quarter of a kilowatthour!

(knowing that one watt-second is one Joule or one Newton-meter; ¼ kwh is 900.000 watt-seconds)



Let me now run through some of the technologies representing a factor of five in resource productivity gains.

Amory Lovins' "Hypercar": 1,2 l/100km

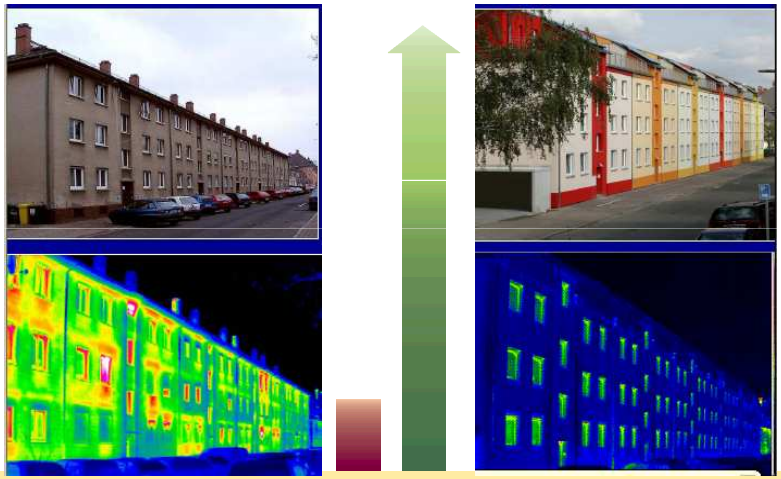
Today's fleet 6-12 l/100km

Fuel efficiency

"Passive houses": a factor of ten more heat efficient

Energy efficiency

Refurbishing existing buildings



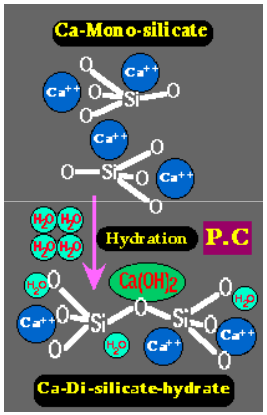
Upper row: Photographs
Lower: Thermograms

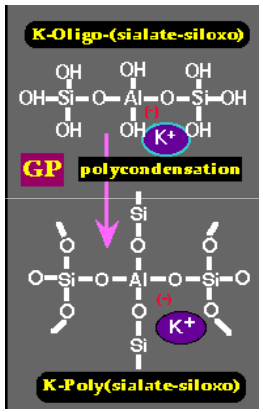
LED replacing incandescent bulbs: a factor of 10

Philips 7W Master LED

Energy efficiency

From Portland cement to geopolymer cement





Carbon efficiency

From urban sprawl to high density cities

Space and energy
efficiency

From rotten trains to high speed trains

Time and resource efficiency

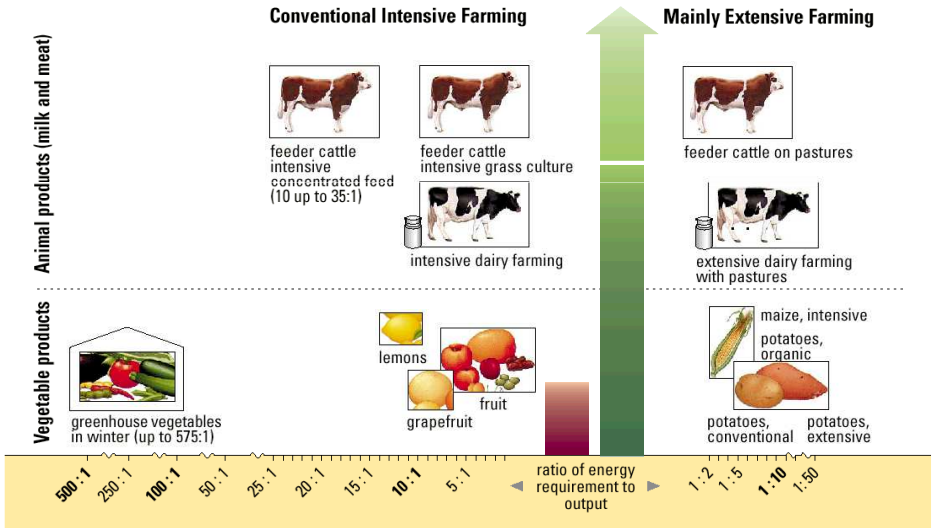
From 12 lane highways to bicycle centered cities

Atlanta

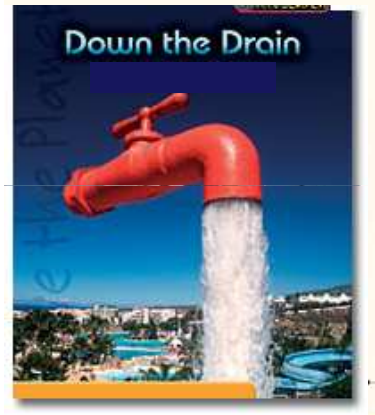
Copenhagen

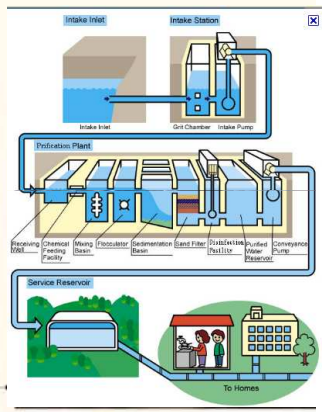
Space and energy efficiency

Seasonal diets, organic farming, a little less beef



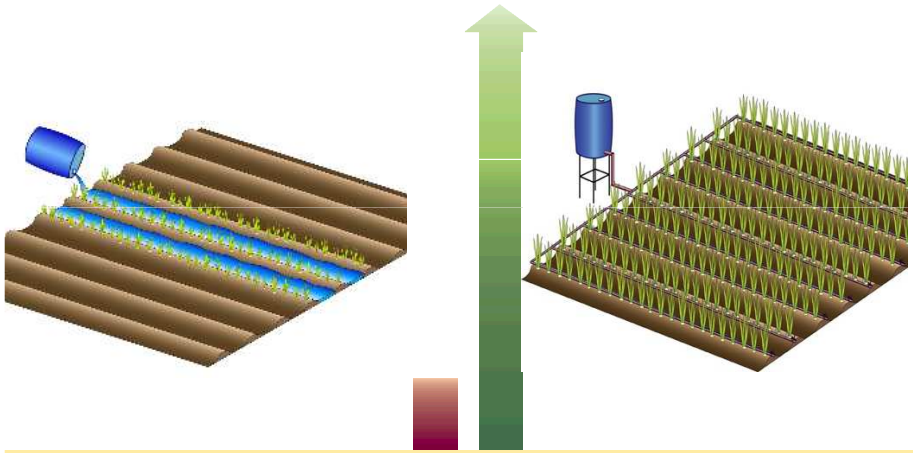
From using water once to purifying (recycling) it





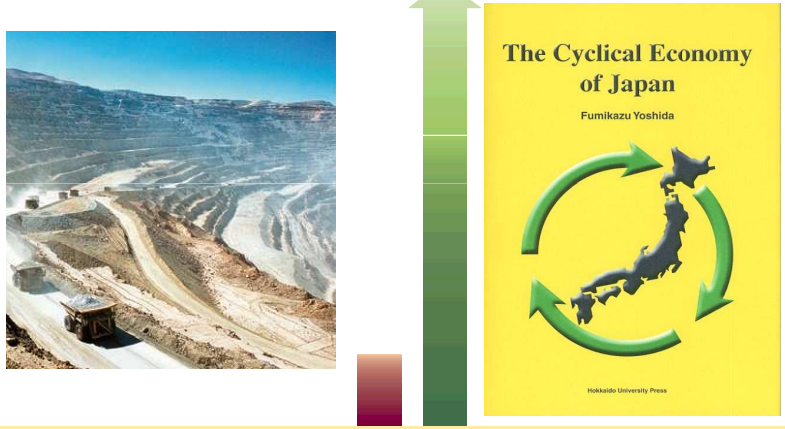
Water efficiency

From flood irrigation to advanced drip irrigation



Water efficiency
(Source: www.driptech.com)

From excessive mining to the “cyclical economy”



Minerals efficiency

That was just a little window opened into the „Factor Five“ world.

It may look as if everythings was fine as soon as we make efficient products.

Alas, this is not the case. There is another dragon looming, the Rebound Effect.

The rebound effect

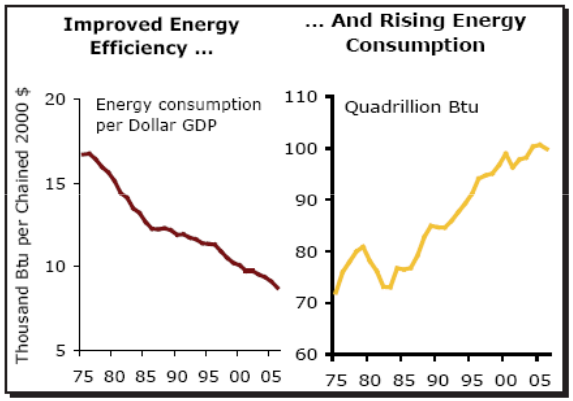
also called the “Jevons Paradox” after William Stanley Jevon’s 1865 book, the Coal Question. He observed that England's consumption of coal *soared* after James Watt introduced his coal-fired steam engine, which improved coal efficiency by a factor of four.

Rebound effect in the USA:

Energy intensity down, total energy consum-ption up.

SUV‘s, sprawl, electronics boom.

Americans Efficiently Consume
Ever-Increasing Amounts of Energy



Source: EIA

The 6th Kondratiev needs a new understanding of productivity

Old :

Increasing labour productivity

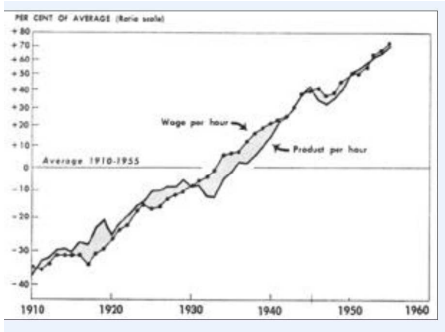
New :

Increasing resource productivity

Labour productivity has increased twentyfold since 1850. After learning about the Factor Five opportunities, we can‘t consider it utopian to think of resource productivity increasing fivefold in 50 years an perhaps tenfold in 100 years!

Labour productivity rose in parallel with labour costs

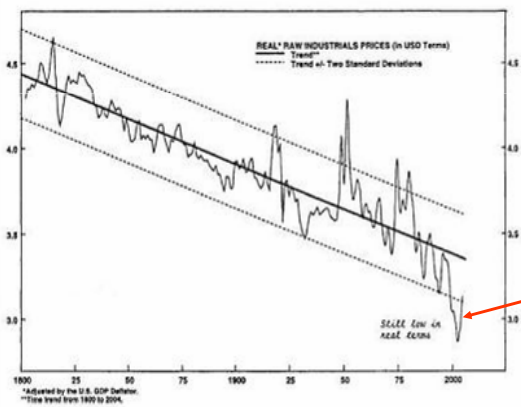
Labour productivity rose in parallel with labour costs



This suggests a strategy of actively elevating prices of energy & raw materials in parallel with productivity increases

However, for 200 years resource prices were falling. Recent price hikes just brought us back into the lower confidence interval!

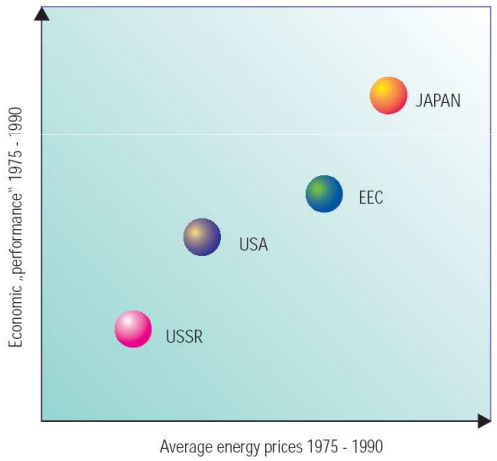
Prices of industrial commodities & energy, in constant dollars



2000-2004

Source: The Bank Credit Analyst

High energy prices need not hurt the economy. Japan blossomed during the 15 years of highest energy prices.



Who would win, who would lose? (1. inside countries)

Winning: green business including recycling, water purification, high tech; crafts; science; education; communication; railroads; consultants (not all!); culture.

Losing: (in the North) lorries, aircraft industry, heavy industry, development of urban sprawl. (In the South) wasteful consumers.

Who would win, who would lose?
(2. *among* countries)

Winning: Europe, Asia, developing countries poor in natural resources. (i.e. some 80% of the world population)

Losing: USA, Canada, Australia, Russia, some commodity exporting developing countries.

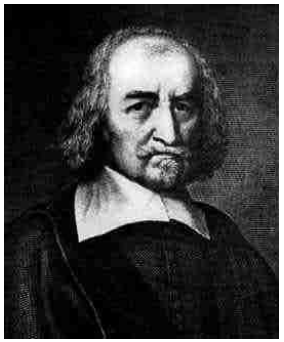
I foresee, at the horizon, an alliance between Europe and Asia, (plus Oceania, much of Africa and Latin America), on

- real climate policy;
- ecological price policies;
- developing the 21st century technologies & habits

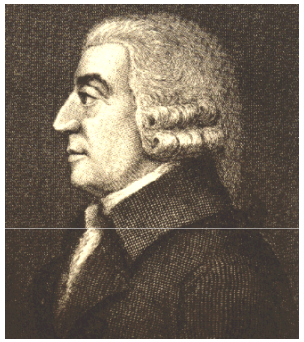
This Alliance has another good reason to overcome Anglo-American dominance.

The reason is the typical Anglo-American view of humans and of markets and the state.

Three key figures forming the Anglo-American view of humans and society.



Thomas Hobbes
1588-1679
Humans are selfish beasts. Hence an auth-oritarian state (Levia-than) must tame them.



Adam Smith
1723-1790
Fortunately for our freedom, markets can do the taming.

Herbert Spencer
1820 – 1903
The state should stay clear of supporting the weak. Evolution should weed them out.

And for the modern world,

Milton Friedman

1912-2006, Star of the Chicago School declared that markets are always more efficient than the state.

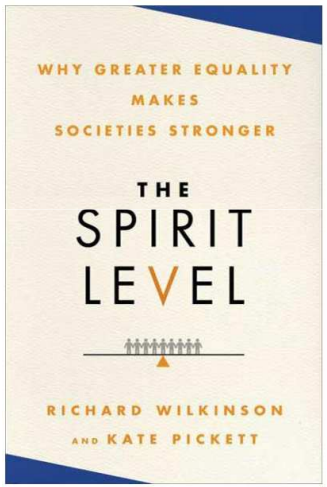
His ideas stood behind the „Washington Consensus“ and became victorious through „globalization“.

The past 30 years marked a total victory world-wide of the Anglo-American thinking.

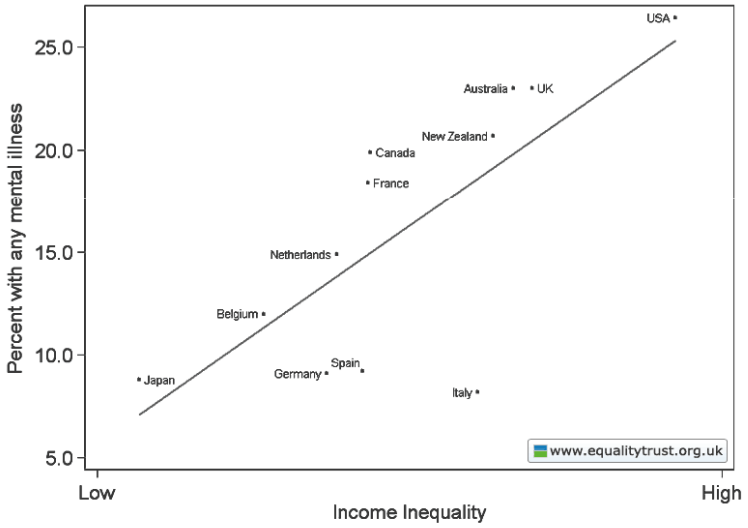
It surely had ist good sides: The Asian „tiger states“, and later China and India clearly benefitted from open markets, and prosperity grew even among the poor.

But the gaps are widening between rich and poor in nearly all countries, fostering greed, envy, and crime.

Inequality has lots of downsides



The book contains some 30 pictures like this, correlating inequality with other features such as school failures, crime rates, or mental illness (below).



Let me conclude:

Decoupling prosperity from carbon intensity is doable, both in the North and the South.

North-South „carbon justice“ is indispensible.

Prices should make the transition profitable.

Justice is needed world-wide and domestically.

Thank you!