

TRANSFORMATION OF THE FOREST SECTOR



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Global Issues in Governance of Natural Resources

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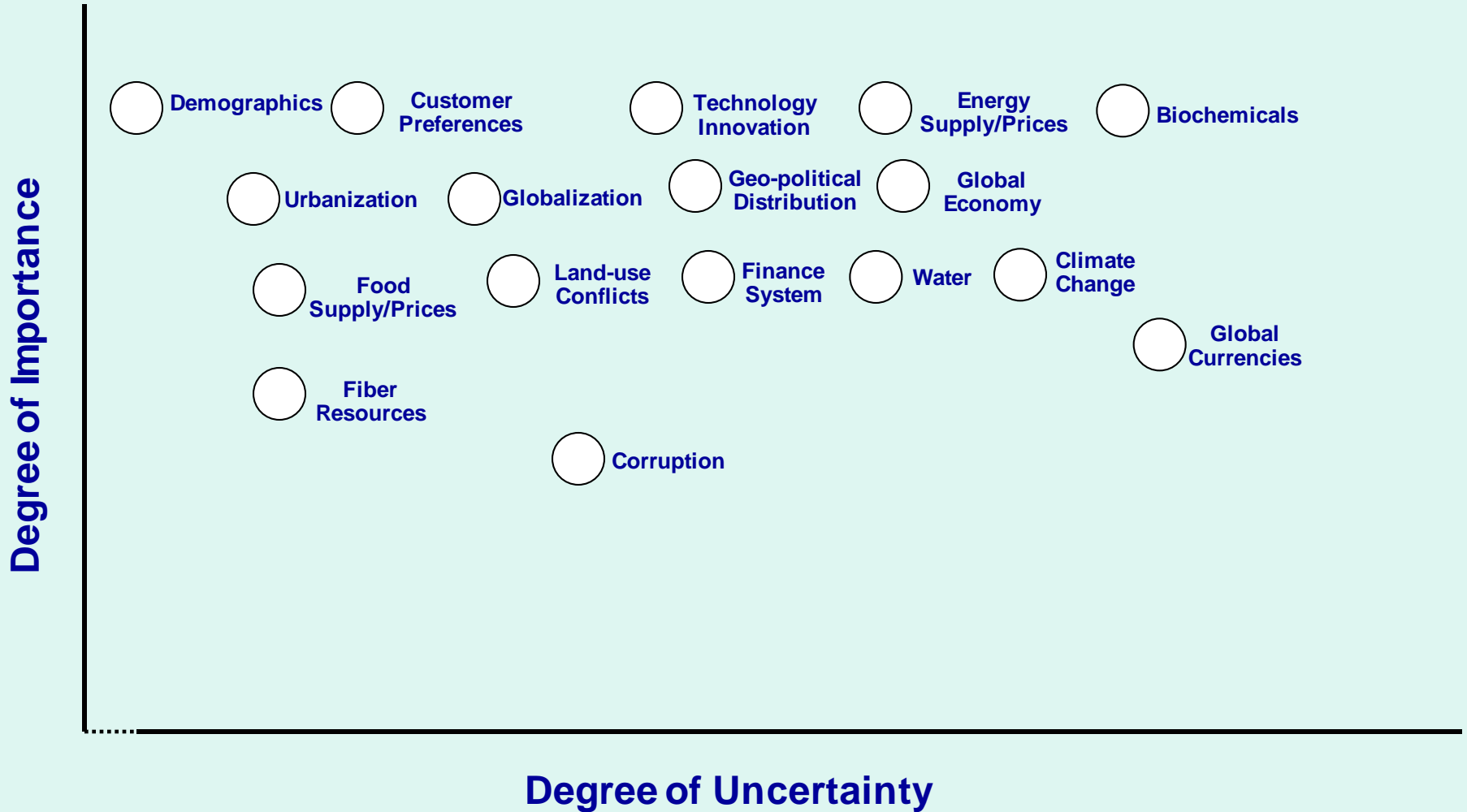


Courtesy: Carl Folke

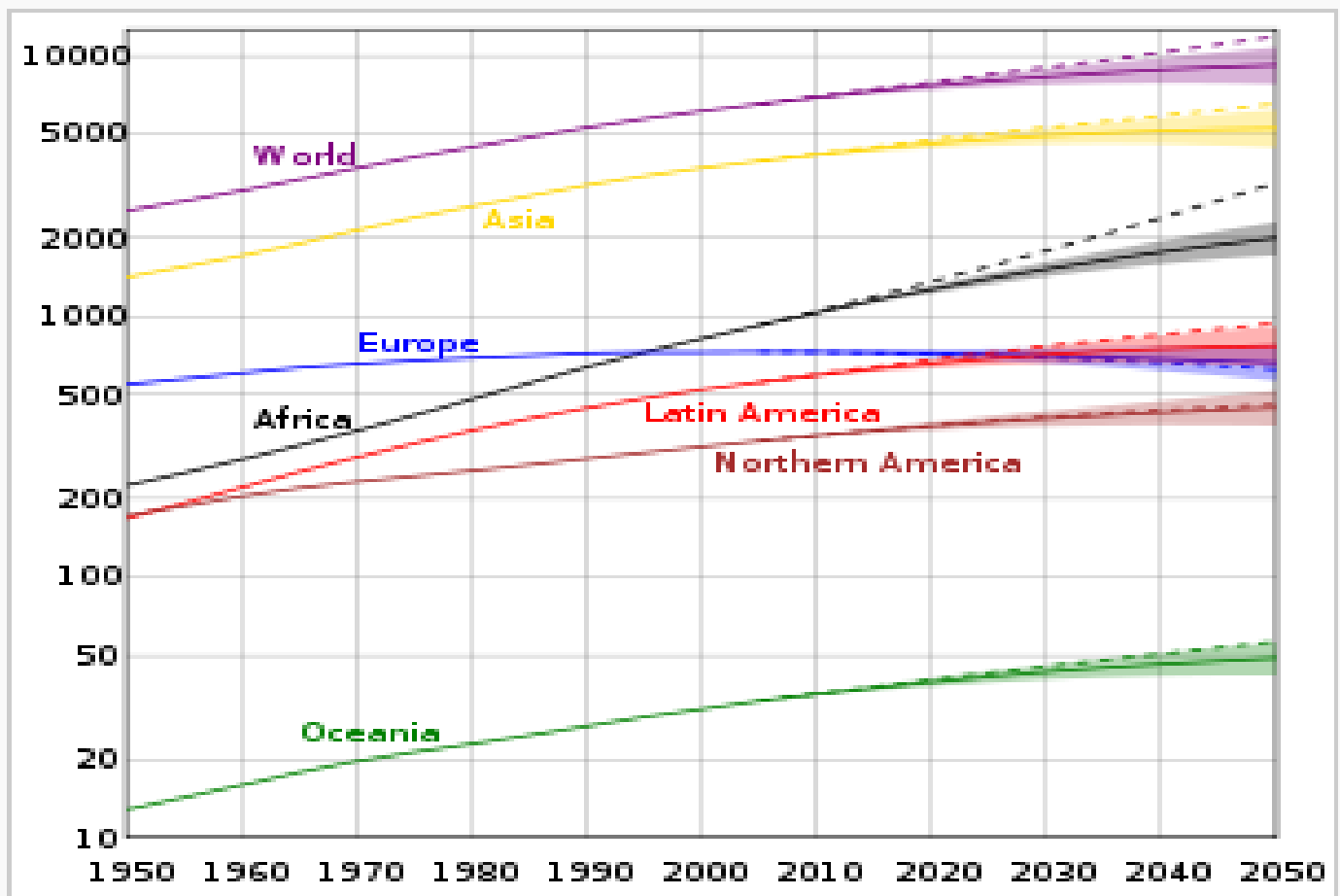


Courtesy: Carl Folke

Some Key Driving Forces of the Future

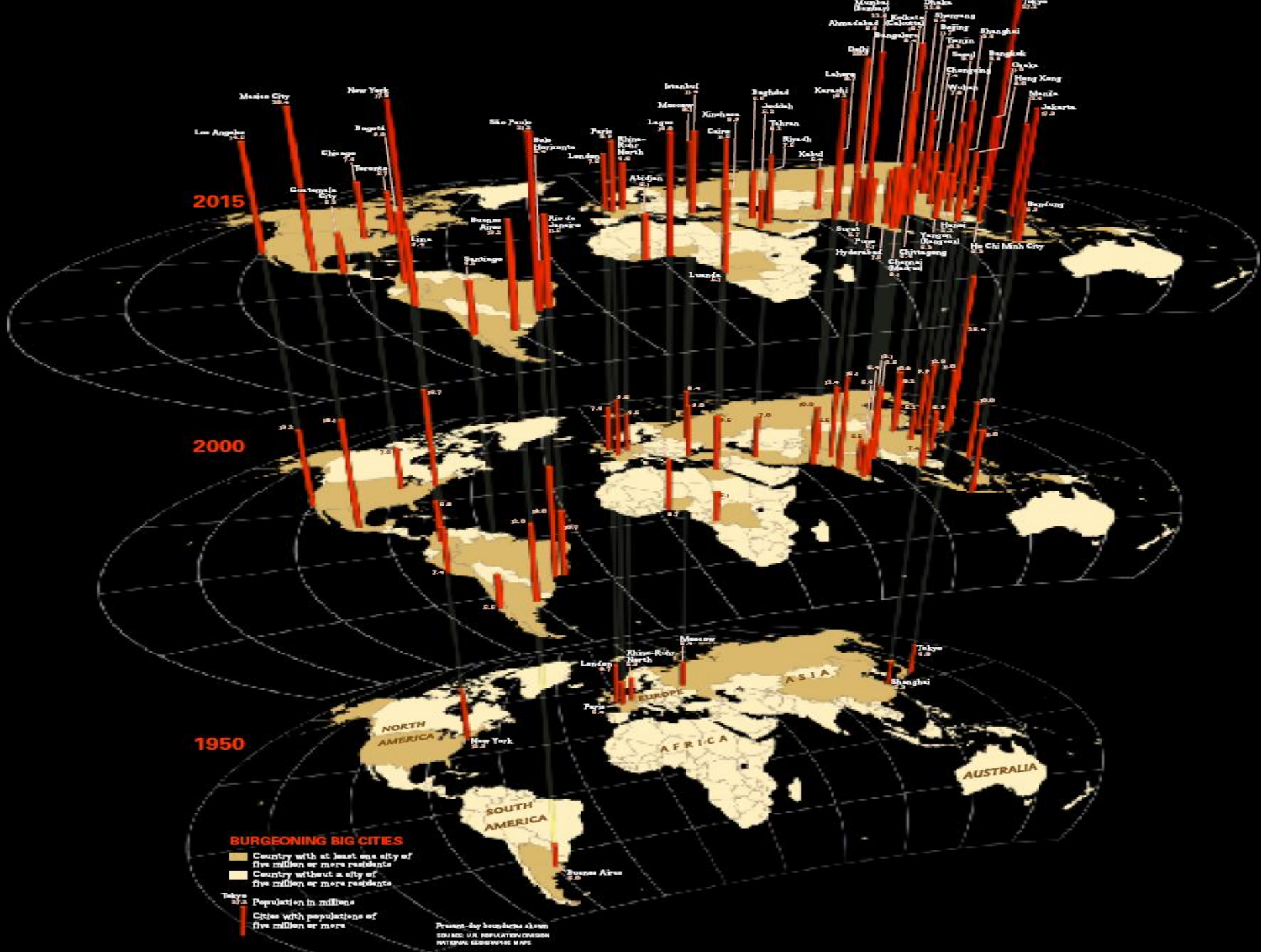


Population Development



Population evolution in different **continents**. The vertical axis is **logarithmic** and is millions of people.

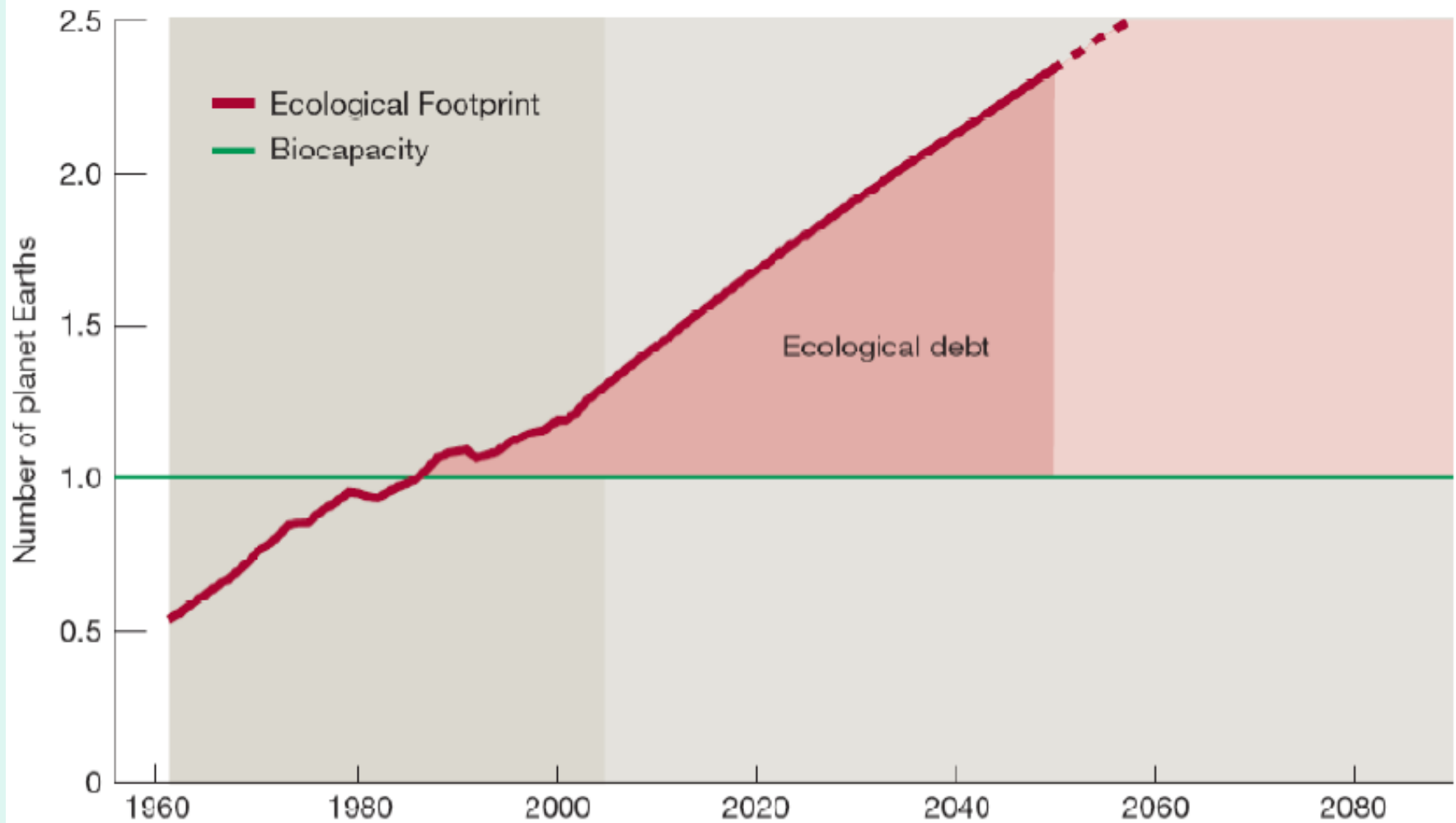




Composition of the global middle class in 2000 and 2030 (%)

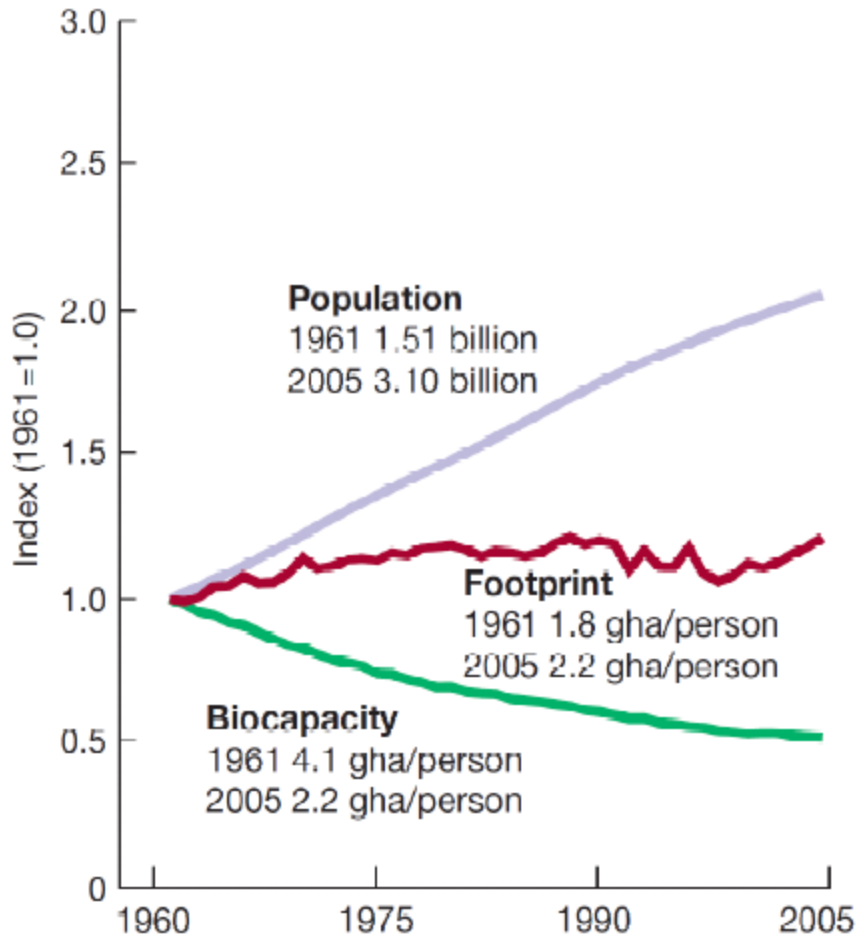
	2000		2030	
	Population	Income	Population	Income
Poor (per capita income below average of Brazil)	81.5	28.7	61.4	15.8
Middle class (per capita income between Brazil and Italy)	7.9	14.1	16.4	14.3
Rich (per capita income at or above average of Italy)	10.6	57.2	22.2	69.9

UN's Most Moderate Scenario and Ecological Debt

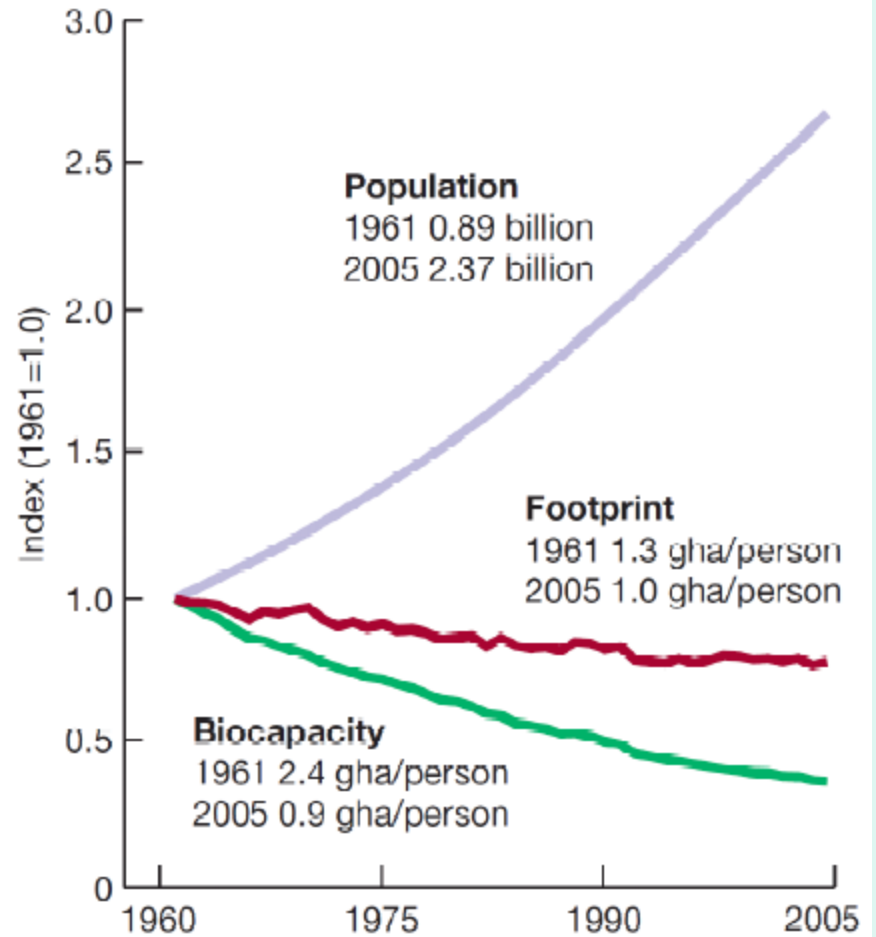


ECOLOGICAL FOOTPRINT AND INCOME

Middle-income countries

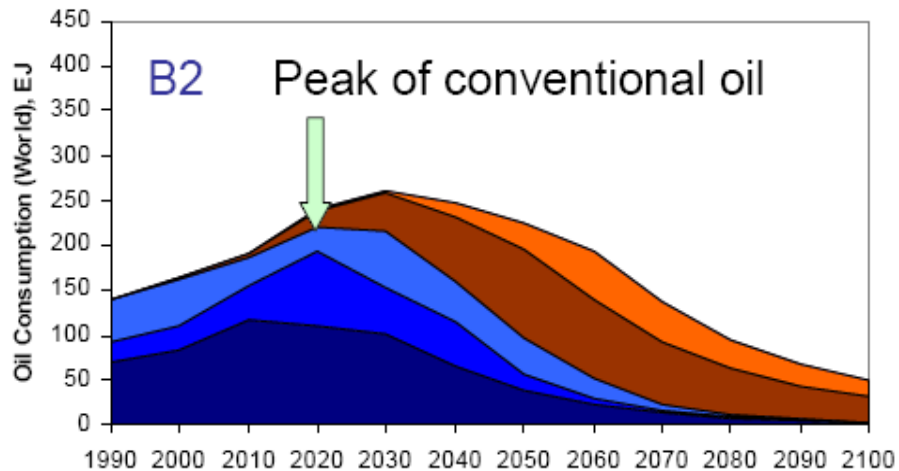
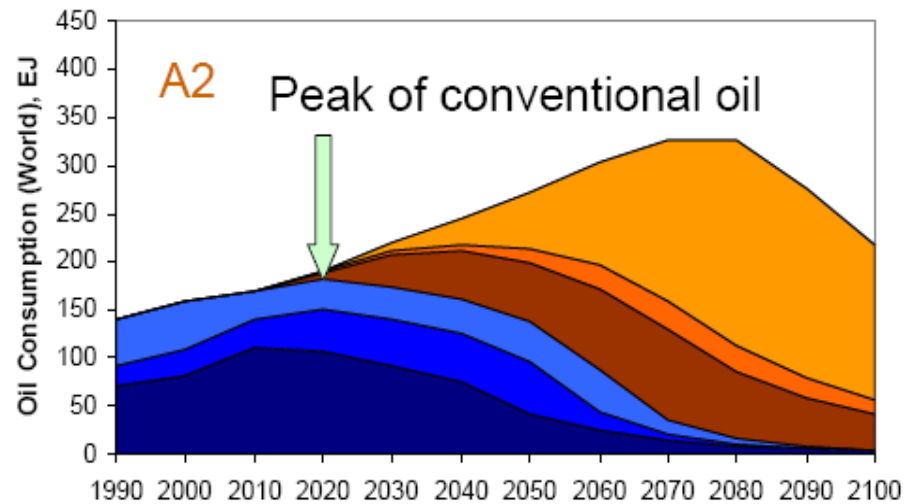
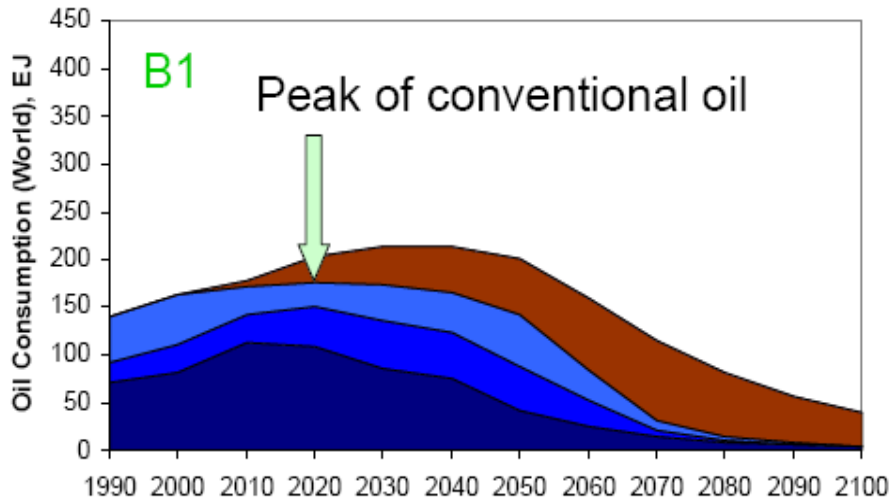


Low-income countries



Global Oil Consumption

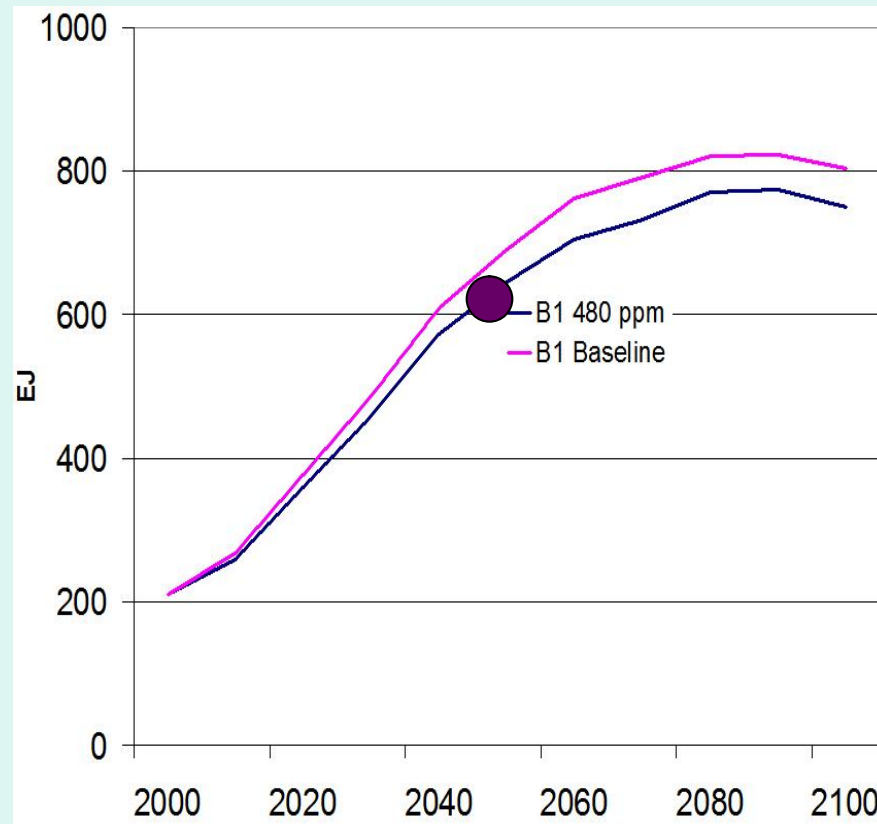
(conventional and unconventional reserves and resources)



■ Unconventional Oil

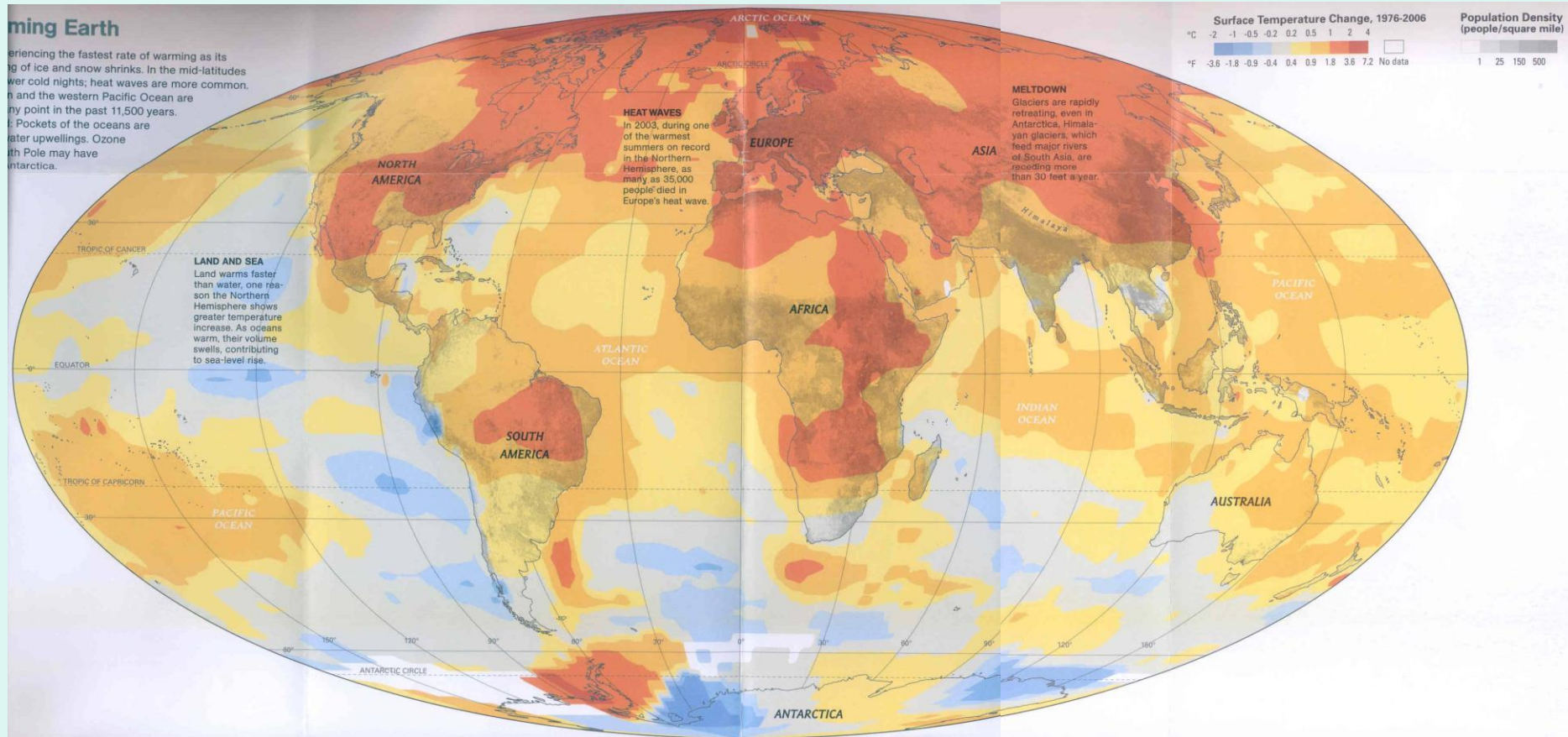
■ Conventional Oil

Total Energy Demand



3-time increase by 2050

Recent Climate Change (1976–2006)



Towards a Sustainable Energy Future

Targets for 2050:

- Reduce GHG emissions by 50–85% of current levels
- Increase the share of carbon-free energy from 20% to 50–80%
- Double the overall energy efficiency from 10 to 20%
- Increase the price of carbon from 0 to \$200–300/ton CO₂
- Increase the annual investments for public and private energy to \$1 trillion

Food Demand

2000

2030

2050

Total Calorie Intake (FAO, 2006)

100%

145%

165%

Cereal Demand (IIASA, WFS, 2007)

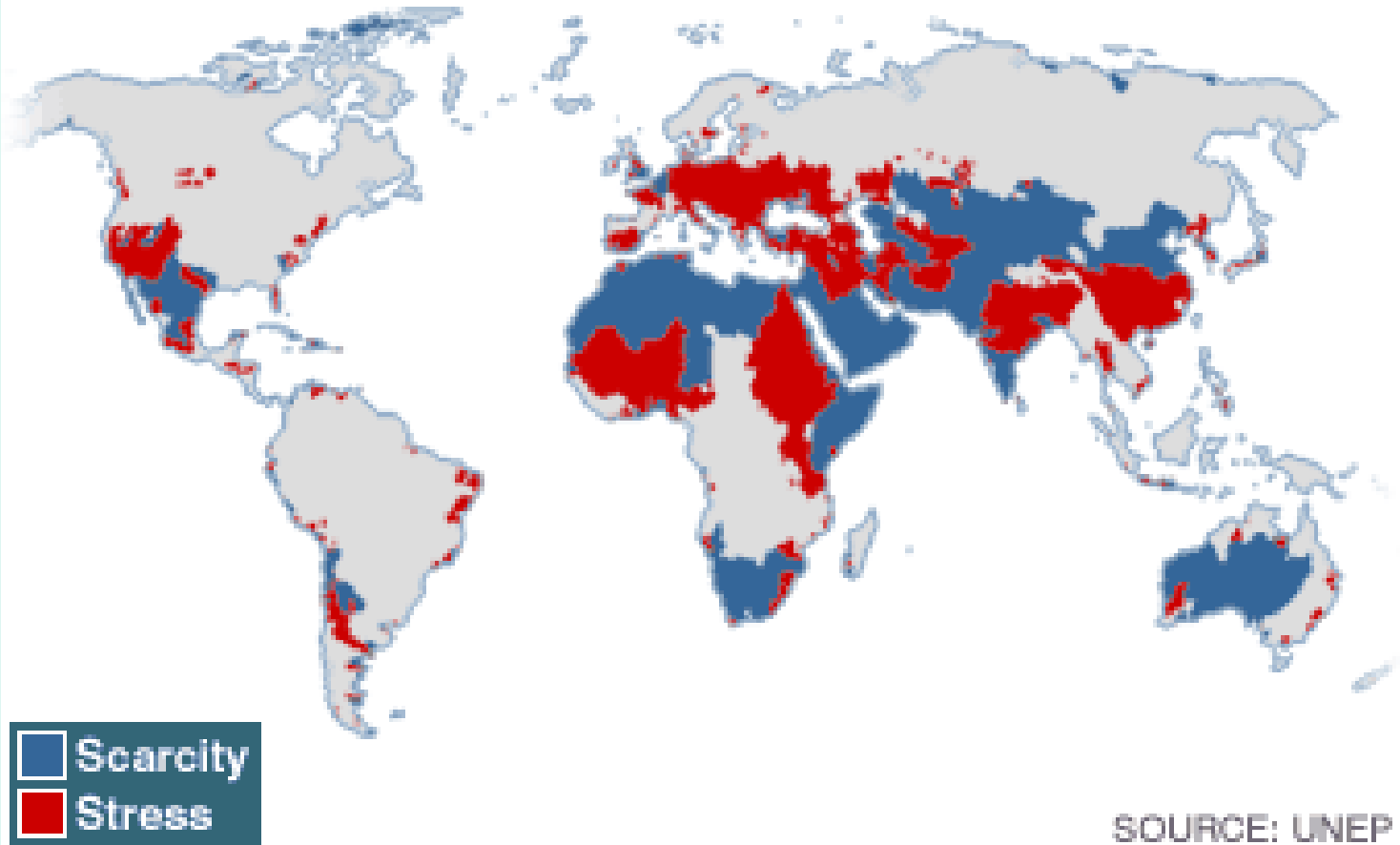
100%

142%

167%

Water Conflicts

Predicted water scarcity and stress in 2025



Total world water demands are predicted to increase by over 30% by 2030 (IFRPI)

Where Will the Land Come From in 2030? How Can We Balance the Demand?

Availability
250—300 million ha

Industrial Forestry
25 million ha

**Agriculture
Demand**
200 million ha

Bioenergy
290 million ha

**Chemical
Industry**
?

Technologies

- **1 billion internet users today**
- **4–5 billion internet users tomorrow through mobile phones**
- **This will lead to completely changed lifestyles**
- **Our existence is decided by the number of hits on Google**

Geo-politics

- **US has lost two wars and will not likely become involved in another**
- **Asian countries on world-wide land and commodity grabbing (third wave out-sourcing)**
- **Arab states investing in western industries**
- **High risk that Europe will lose vital positions, both economically and politically**

Beijing and Its Bubble — 1

- **Economic measure during recessions in the Western world are used all year round to keep social stability and national unity in China**
- **China is force-feeding subsidized credits into the system — \$1 trillion so far in 2009 — with a under-developed tax system and interest rates below inflation. Much speculation investments**
- **Profits of China's large state-owned companies are entirely a product of subsidized financing by state banks (Hong Kong Monetary Authority, 2009)**
- **The Chinese economy is a mixture of family, social, banking and political ties concerned about cash flows and not profit**

Global Economy — 1

- **The world will not be the same after, as before, the current economic crisis**
- **All of earlier financial crises have changed society with respect to innovations, institutions, and attitudes/values (Grattin, 2008)**
- **Financial/banking sector will be smaller and less profitable**
- **Increased taxes; less economic growth**
- **Destruction of markets**
- **Less improvement of living standards**
- **Different economic sectors will find themselves too large and must restructure**
- **Protectionism will increase**
- **The state will play a more important role than before**
- **The US\$ will lose its role as the world's leading currency**

Industrial Response

- **70% of major industrial companies' executives claim global trends have been important, and are becoming even more so**
- **But very few have successfully addressed the trends**
- **Reasons for not acting: other priorities, lack of skills, lack of resources, cannot decide**



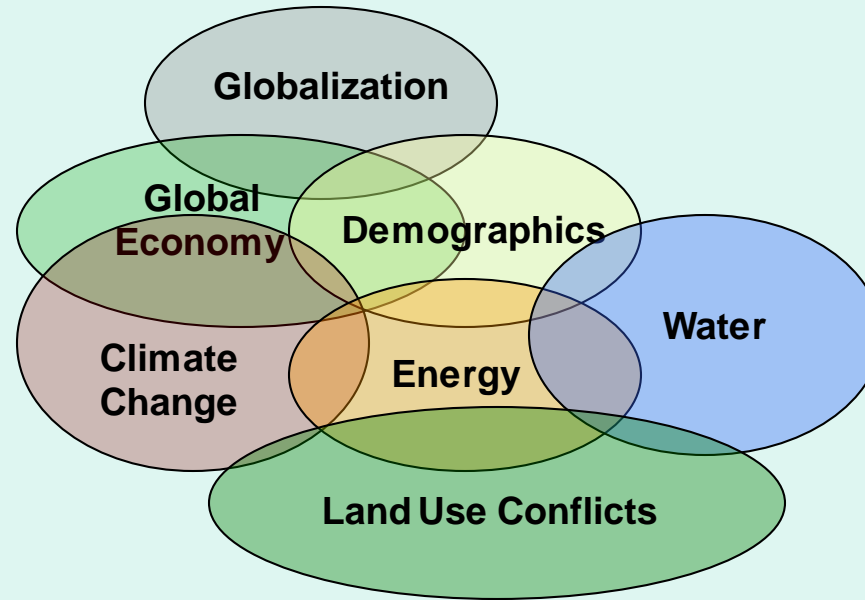
Resilience Challenge

- Turning crises into opportunities for sustainability requires social-ecological resilience
- Lack of resilience may lead to traps and deepened vulnerability

Features of Resilience

- ***Persistence***: the existence of tipping points will cause shocks and regime shifts which will require persistence to withstand them
- ***Adaptability***: the capacity of social/economical/ecological systems to deal with these changes, uncertainties, transformations and surprises
- ***Transformability***: the capacity of social/economical/ecological systems to create new systems and new opportunities when the conditions make the existing system untenable
- **The forest sector lacks a resilience concept**

The Interconnections are the Rubber Hitting the Road



- **Peak of fossil fuels**
- **Peak of copper**
- **Peak of water**
- **Peak of productive land**
- **Peak of biomass**

Two Crises in One in the Forest Sector

- **The current economic crisis**
- **The structural crisis**

When (USA) Bulls Chase Their Tails

- **Some 70% of US GDP is consumer spending**
- **The average household debt is 130% of disposable income**
- **The USA has shed jobs during 20 consecutive months; it will take 5–6 years to recover a solid labor market**
- **29% of all home owners want to put their houses on the market (Zillow, 11 August 2009)**
- **25–45% of all house owners owe more on mortgage than the house is worth (Deutsche Bank, 2009)**
- **The off-balance sheet obligations associated with social security and Medicare cause a \$56 trillion financial hole corresponding to \$483 thousand per household which is ten times higher than average household income (GAO, September 2009)**
- **The cumulative debt is \$11.7 trillion in a \$14 trillion economy**

The Alphabet

“L”

**Long
recession
and no
stimuli**

“V”

**Unleashed
pent-up
demand
with
vigorous
recovery**

“U”

**Slow and
flat
recovery
before
rapid return**

“W”

**Growth
returns for
some
period
before
dipping
again**



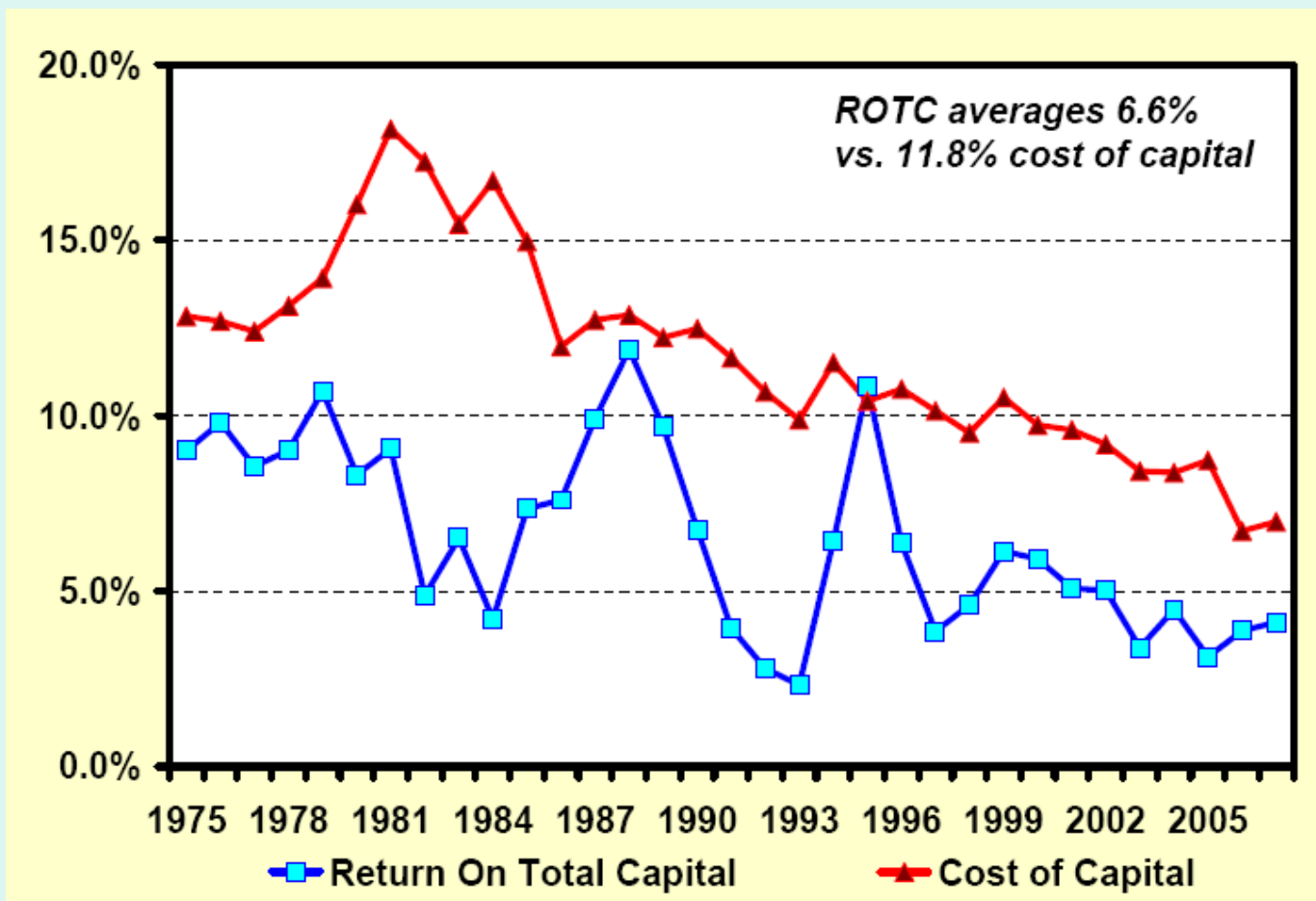
Structural Crisis

Regional ROCE %

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
USA	4.0	6.8	7.4	4.2	4.5	4.3	6.3	5.7	5.2	5.2	2.9
CANADA	2.4	5.9	7.8	3.1	3.0	4.0	4.6	4.5	2.4	-1.3	-5.9
SWEDEN	6.5	4.7	14.4	8.0	6.8	6.2	5.3	3.0	6.8	8.7	2.7
FINLAND	6.5	9.0	8.8	6.5	4.5	2.5	4.9	2.0	4.2	2.4	0.8
UK	7.0	7.3	7.0	8.6	3.9	7.6	5.2	4.7	6.7	4.6	6.0
EUROPE (REST)	6.5	6.7	9.1	6.7	5.4	3.9	4.7	3.5	4.6	5.0	2.9
JAPAN	1.8	0.5	2.4	3.2	1.6	1.9	3.0	3.6	3.6	2.5	2.1
OCEANIA	3.3	3.4	5.0	4.5	2.9	7.0	5.4	5.5	4.9	5.0	3.0
INDIA	6.6	7.8	8.4	11.5	7.3	8.3	8.7	9.6	10.7	9.7	8.6
OTHER ASIA	5.0	8.2	5.7	4.1	6.9	7.1	7.5	7.0	8.0	8.0	6.6
SOUTH AMERICA	3.4	6.2	12.0	6.6	7.2	8.3	9.7	8.7	9.3	9.0	3.0
SOUTH AFRICA	6.2	4.6	10.5	9.1	7.6	6.3	4.2	1.5	5.5	5.8	4.6

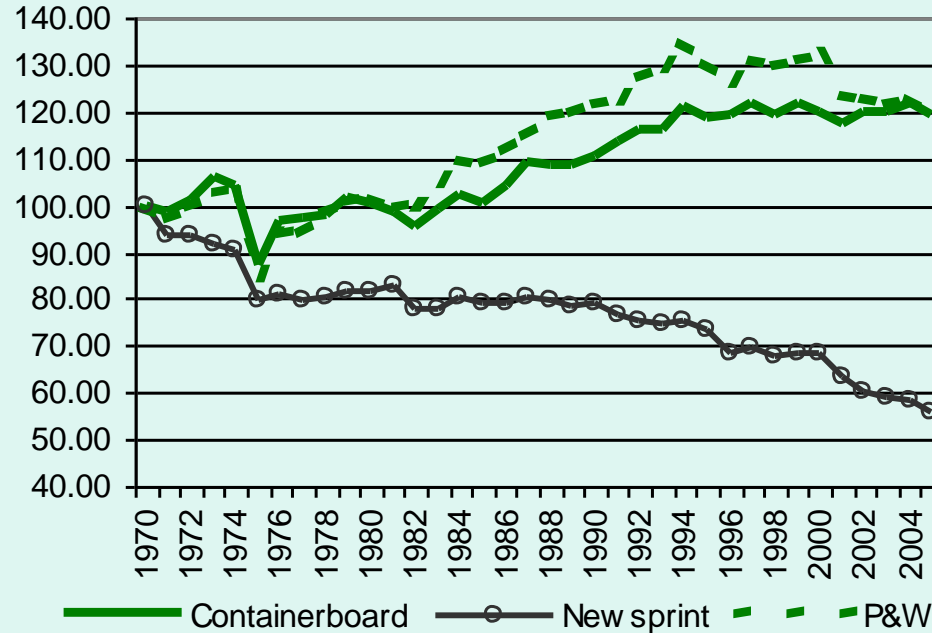
Financial Performance

Returns on Book Value of Total Capital — *Covers Debt* but Remains Below Cost of Capital



Destruction of Markets

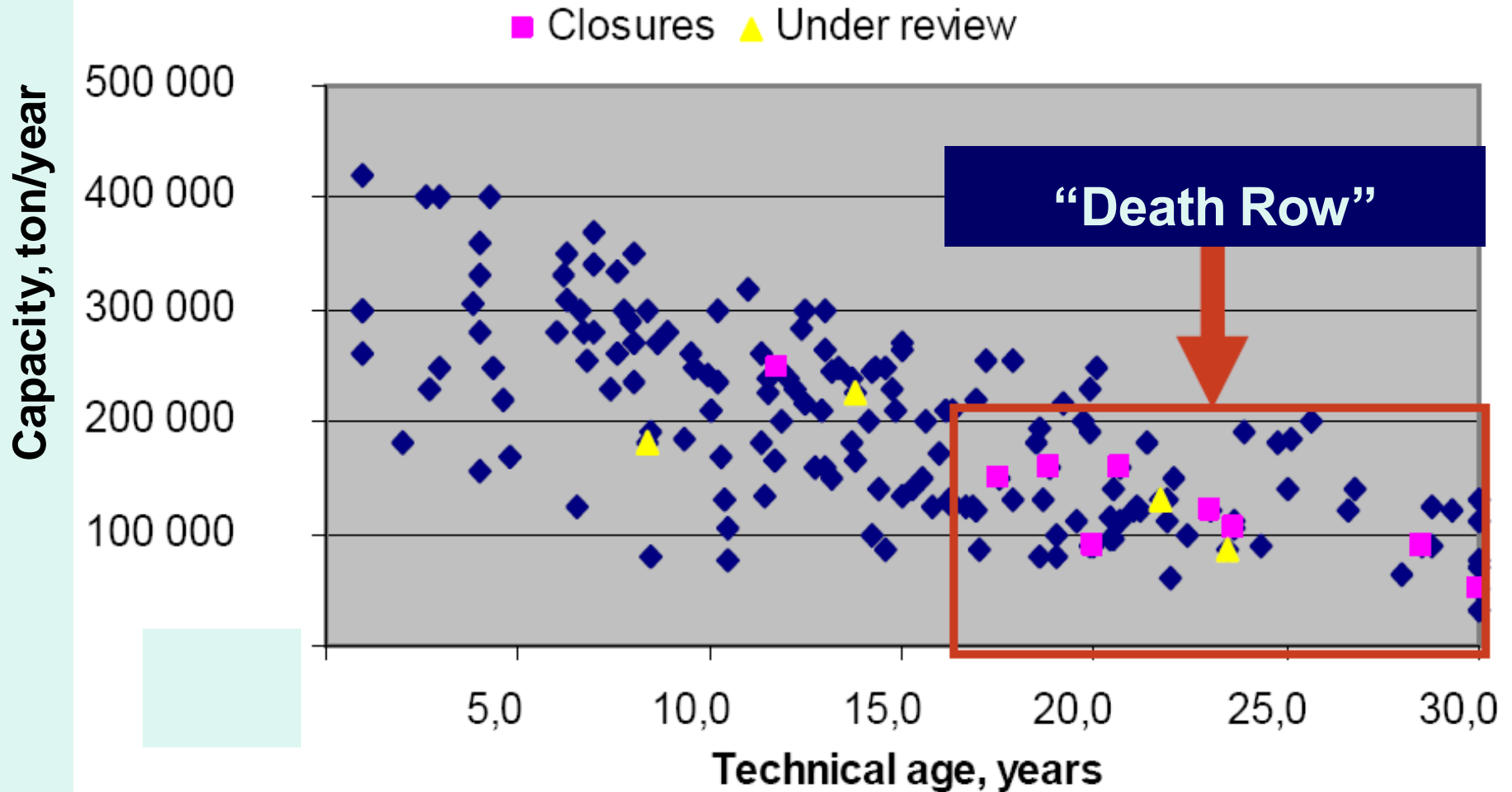
Global Consumption Per Unit of Real GDP



- **Electronic communication is having a meaningful impact on the consumption of paper**
- **At the global level, the “intensity of consumption” in the economy has been declining for newsprint since 1970, and started to decline for printing and writing papers in 2000**
- **Packaging is more associated with overall economic activity, and is “holding its own”**

Dead Wood and Overcapacity

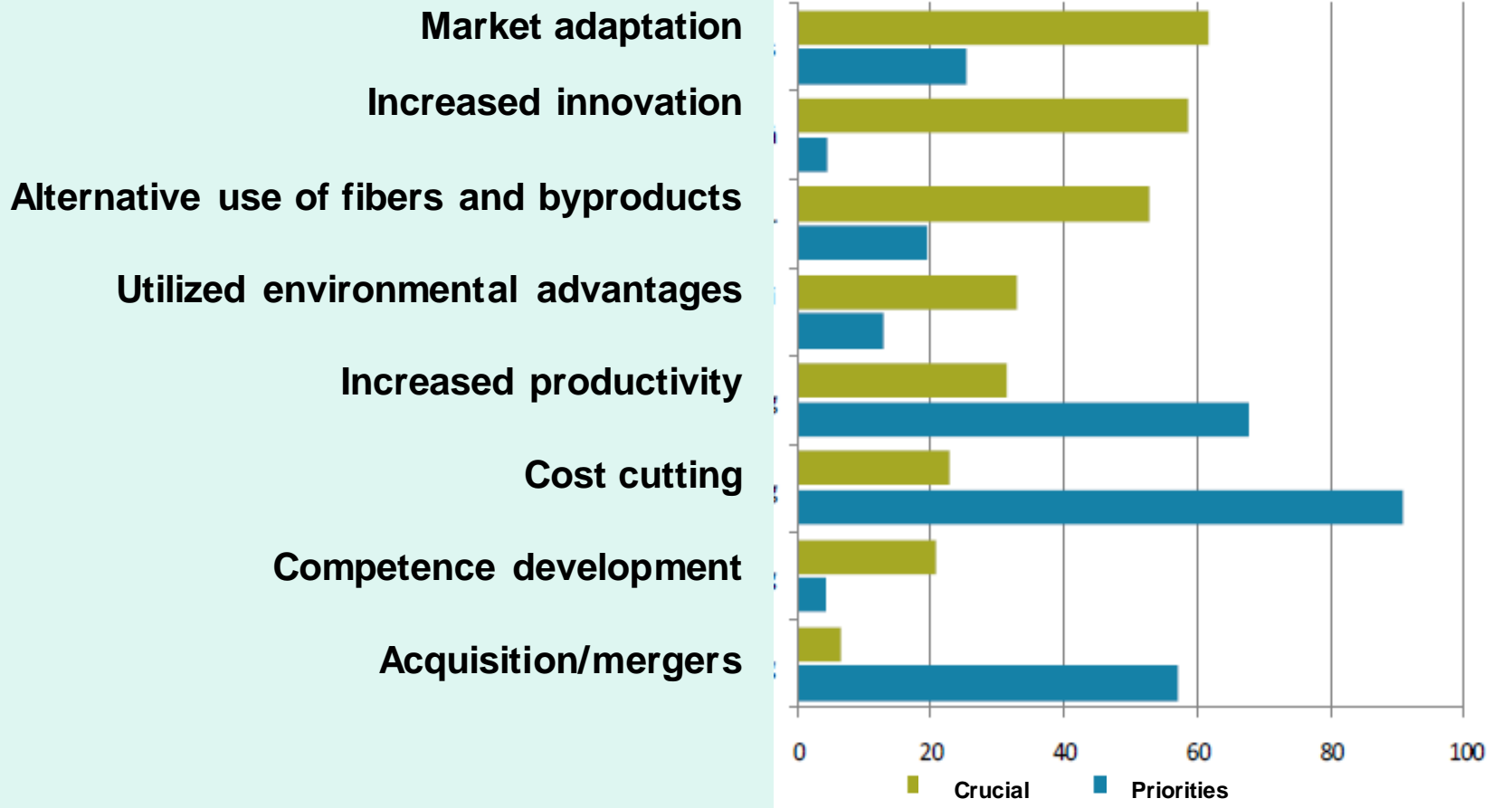
Printing/Writing Machines in Europe



Jack-Knifing

- **Be competitive by cutting costs**
- **The business concept seems, to a large extent, to have been cost-cutting**
- **Good for the stock market, but bad for the companies**
- **Cost cutting alone will not generate any long-term growth**

Futures Study — Sweden



Lack of Visions in the Forestry Industry

- **Rantala (2008): Finnish industry has lacked clear visions for years**
- **Nilsson (1996): Corporate Amnesia? *Swedish Paper Magazine* 9:8**
- **Nilsson (1996): The Forest Sector Lacks Visions, *The Forest*, No. 8**
- **With lack of visions and strategies in the companies, you end up with jack-knifing**
- **Clear visions and strategies dealing with important long-term issues are a must to maneuver through crises. Compare President Obama**

Today is Similar to Yesterday

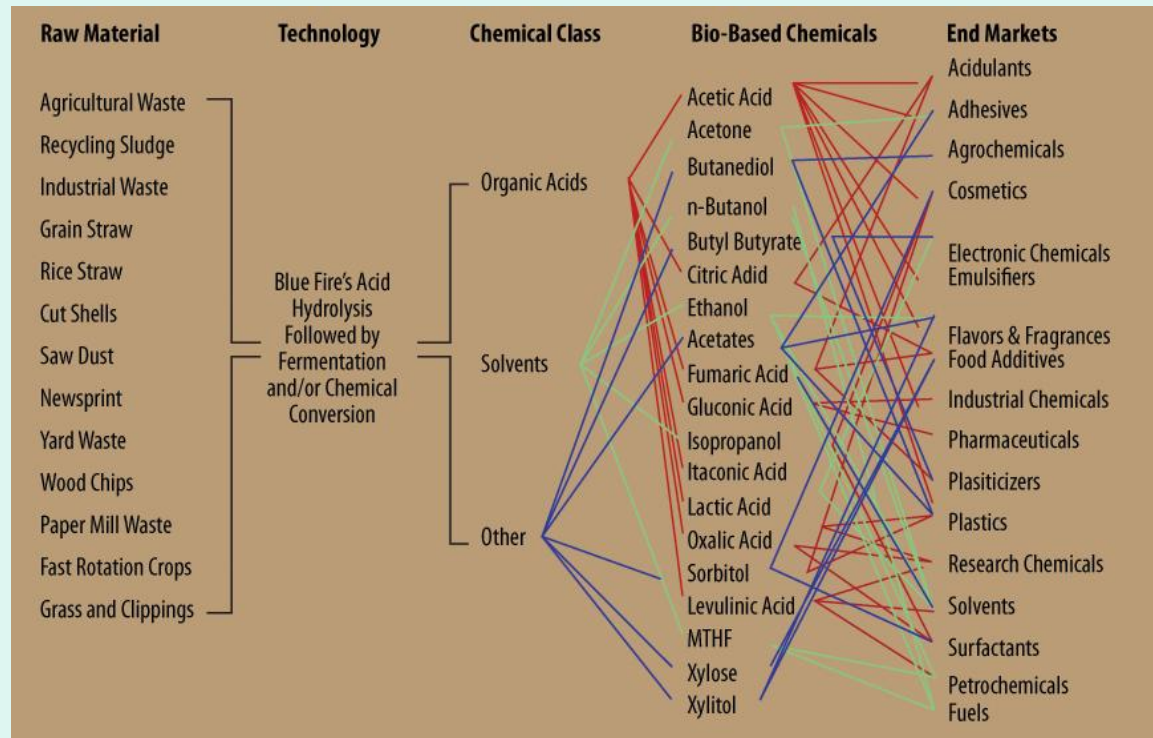
- **Unsatisfactory financial performance**
- **Over-supply and over-capacity**
- **Low rate demand growth prospects**
- **Financing problems**
- **Fluctuating exchange rates cause risks**
- **To survive be cost-competitive**
(Source: Jaakko Pöyry, 1986)
- **What would have happened if Dr. Pöyry had stated that to survive you have to come up with a new business concept?**

But More is Needed

- **Ecosystem Services**
- **Ecotourism**
- **Bioenergy**
- **Biofuels**
- **Biorefineries**

Biotech and Biochemicals — 1

- Glesinger (1949) outlined in “Coming Age of Wood” that the biochemicals and biorefineries are the big challenges for the future of the forest sector
- Goldstein (1978) demonstrated at the 1978 World Forestry Congress in “Chemicals from Wood” that wood has the potential to meet all our chemical needs in place of petro-chemicals



The Conventional Forest Industry will not be So in the Future

- **Without a pro-active understanding of the global transformations and their resilience there will not be much left of a conventional forest-based industry**
- **Under all conditions, the conventional sector will be slimmed down**
- **Much more is needed to have a viable forest sector:**
 - possibly one portion carbon trading
 - one portion bioenergy
 - one portion biotech and biochemical production
 - one portion performance fibers for high-value, advanced technical applications
 - one portion light materials with high technical features
 - one portion of today's conventional forest industry
- **Large population numbers will not drive the market but a huge number of micro-markets**
- **Thus, there is a need for different price models in the future**



Courtesy: Carl Folke



What To Do?

- 1) **Most global transformations are outside core forestry**
- 2) **Establish partnerships with outside “forestry” institutions to get an understanding of the global transformations and their impact on the forest sector**
- 3) **Study the interconnections/linkages of the transformations/ trends and their impacts on the forest sector**
- 4) **Study the complete system**
- 5) **Develop resilient strategies**
- 6) **Work on wood fibers for high quality biotech and biochemistry products**
- 7) **Work on light products with high quality characteristics**
- 8) **Design the future forest industrial mills**
- 9) **Elaborate on future diverse strategies for the forest sector**
- 10) **Constantly address the question: “Are we asking the right questions?”**