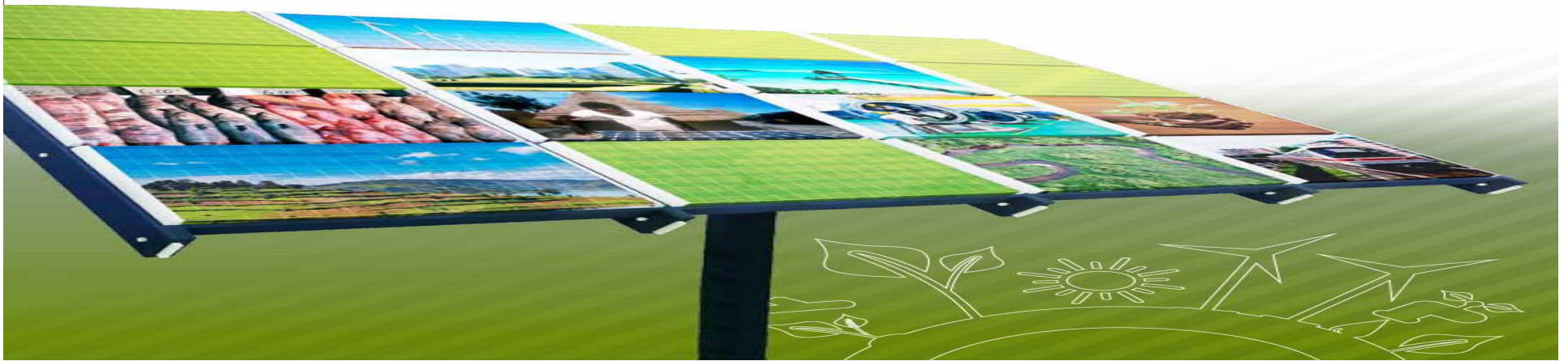




Towards a **GREEN** economy



INFORMAL SEMINAR FOR FAO PERMANENT REPRESENTATIONS **Green Economy and Agriculture**

Rome, 4 November 2011

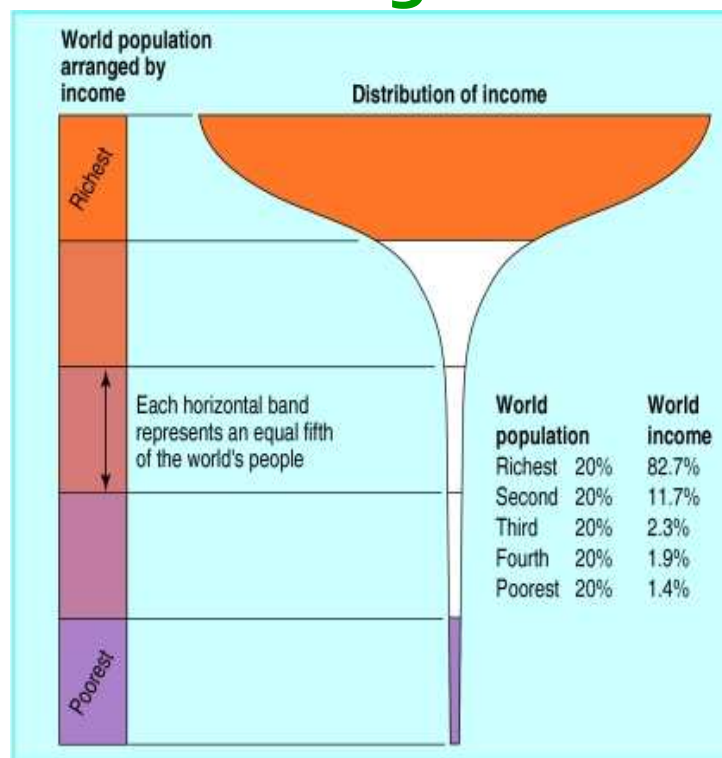
Asad Naqvi
UNEP-Green Economy Team



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Green Economy: The Need for Change

- In 2009, global GDP reached US\$58.22 trillion and yet, almost 80% of humanity continues to live on less than US\$ 10/day.
- The poorest 40 percent of the world's population produce only 5 percent of global income.

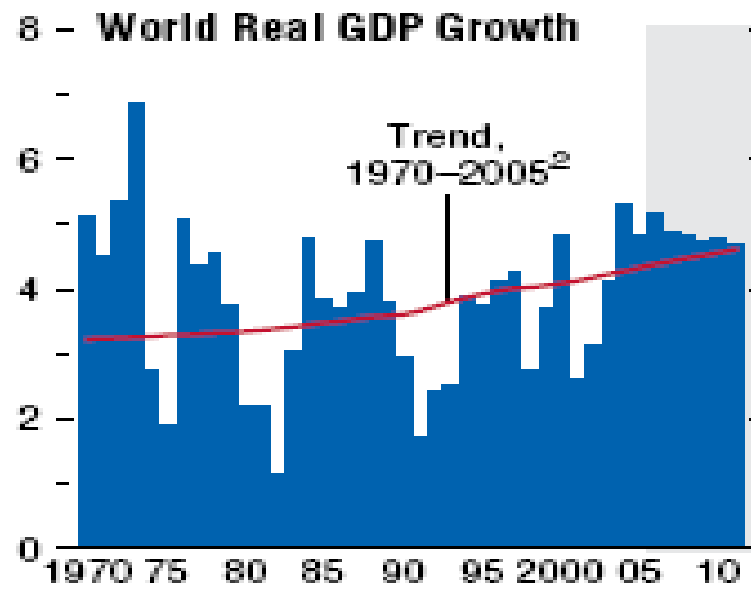
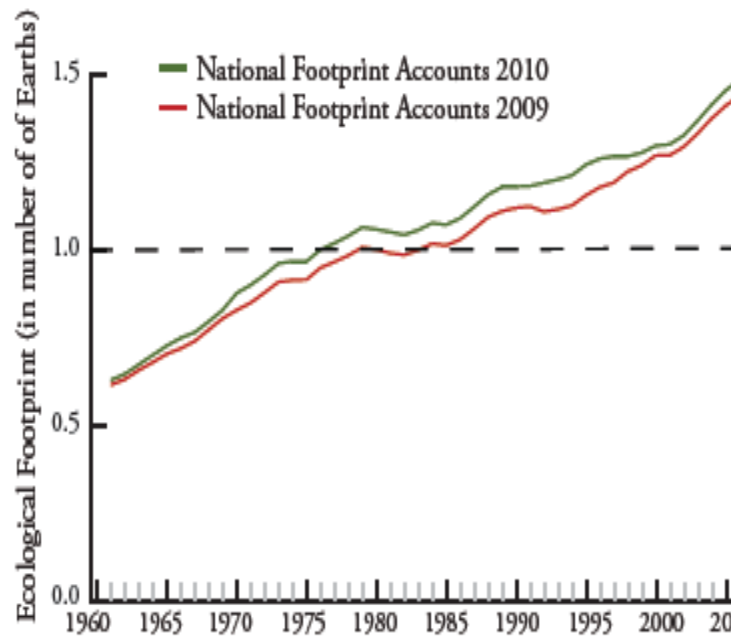


The threat to the planet and inequality
go hand in hand.



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Green Economy: The Need for Change





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What is a green economy?

- A **Green Economy** is one that results in increased **human well-being** and **social equity**, while significantly **reducing environmental risks** and **ecological scarcities**.





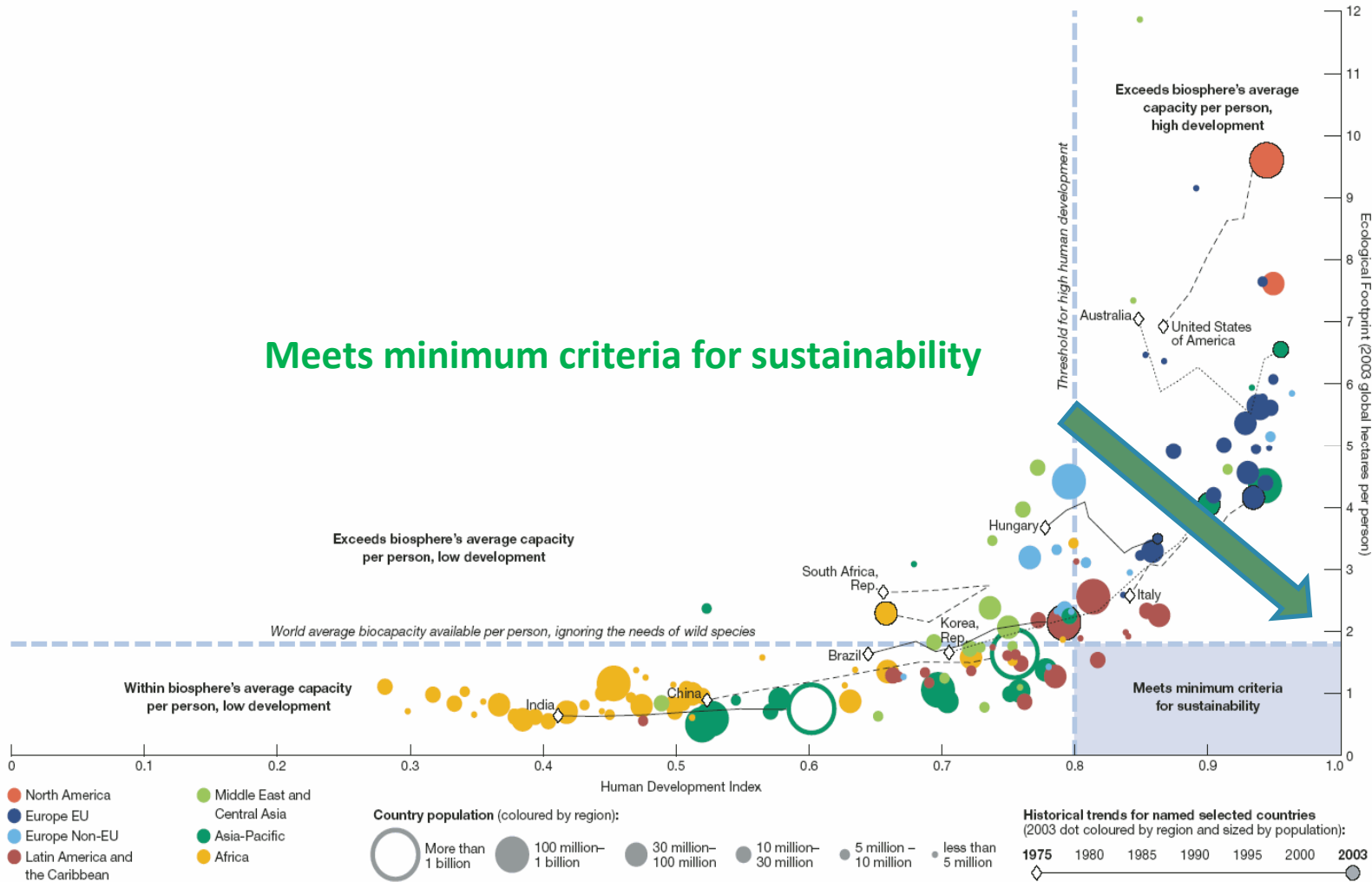
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Green Economy: The Need for Change

Meeting the dual goals of sustainability
– High human development and low ecological impact

Source: WWF Living Planet Report 2006





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Pathways to Sustainable Development
and Poverty Eradication

A Synthesis for Policy Makers



Agriculture
Building
Cities
Energy
Finance
Forest
Manufacturing
Tourism
Transport
Waste
Water

Modeling
Enabling Conditions

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Agri**culture** Investing in natural capital





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Two worlds of agriculture

One, generally

- Large scale
- Well supplied by nutrients, technological advances, innovation, Irrigation,
- Subsidized
- High productivity
- High emissions
- Damaging biodiv
- Small contribution to respective national economies

Two, generally

- Small scale
- Natural nutrients
- Cultivates about 60% of arable land by 525 mil farms
- lack access to tech, innovation, credit, capital
- feeding most of the hungry,
- Hosts majority of the poor
- Contributes to large part of economy and employment

Different realities, different solutions





Agriculture is facing a multitude of challenges

Demand side Challenge

- Food security
- Population growth
- Changing pattern of demand driven by increased income
- The growing pressure from bio-fuels.

Supply side challenges

- Limited availability of land
- Water
- Mineral inputs
- Rural labour
- Increasing vulnerability of agriculture to climate change
- Pre-harvest and post-harvest losses.





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Agriculture is producing more than needed

- Why ~ 1 Bil sleep hungry?

Poverty amid Plenty

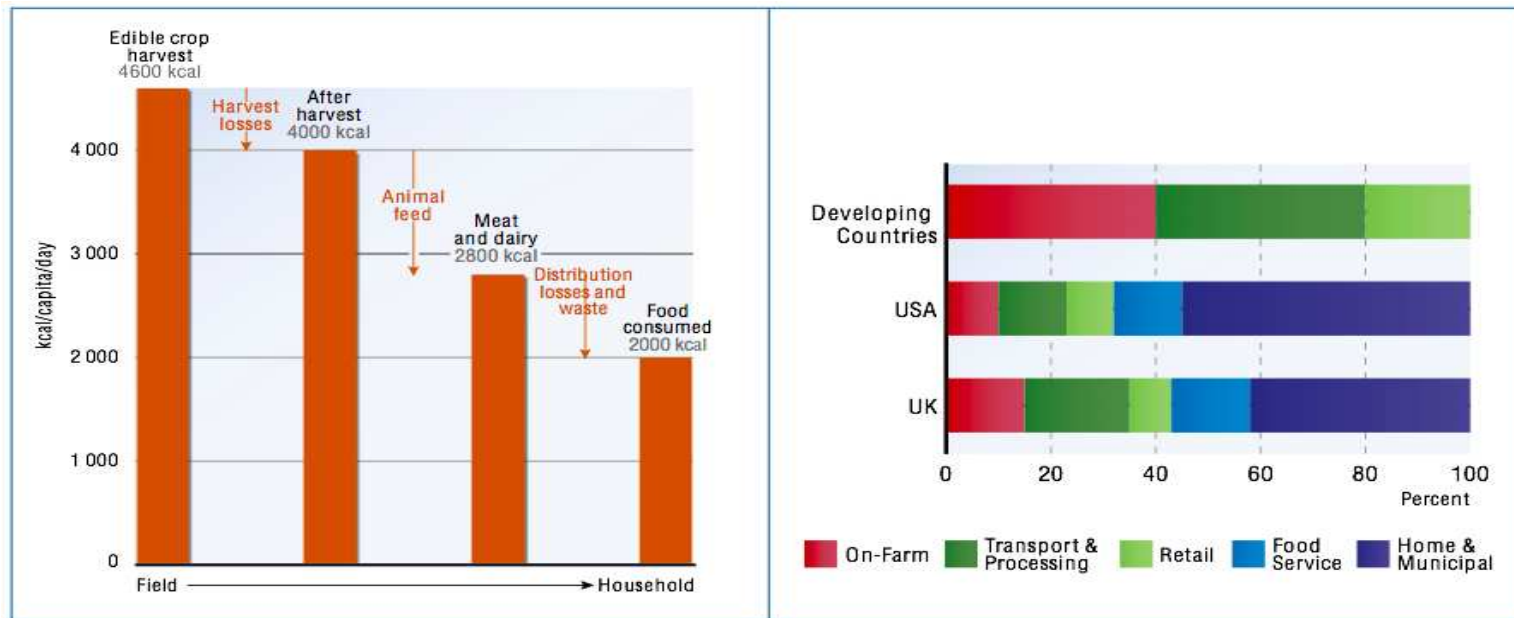


Figure 9a-b: The makeup of total food waste¹¹

Source: Lundqvist et al., Godfray





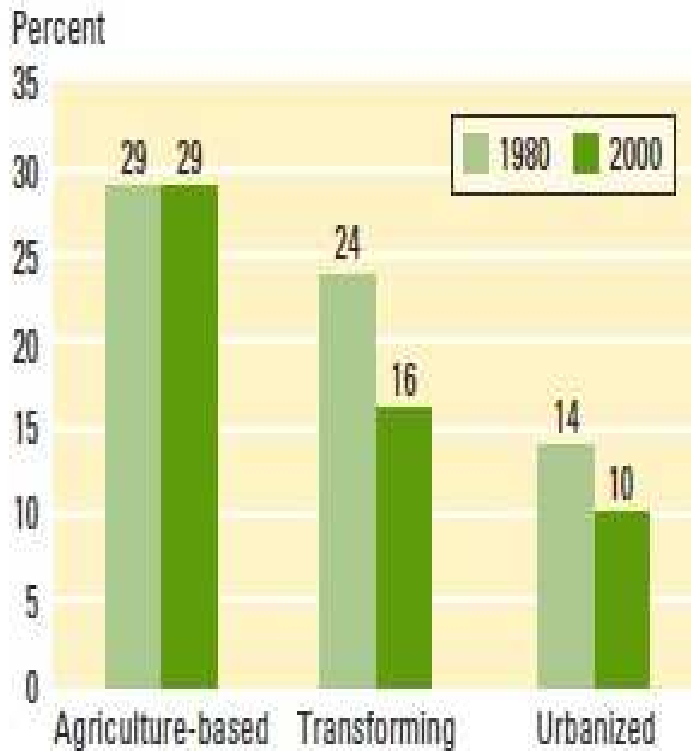
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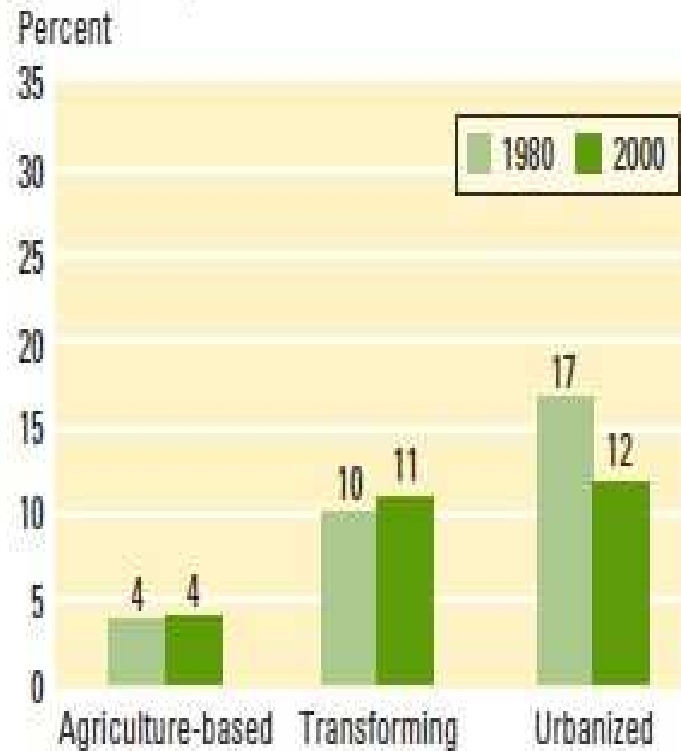
Why ~ 1 Bil sleep hungry?

- **MISMATCH** between
 - Contribution to GDP and investment in Ag

Agricultural GDP/GDP



Public spending on agriculture/agricultural GDP



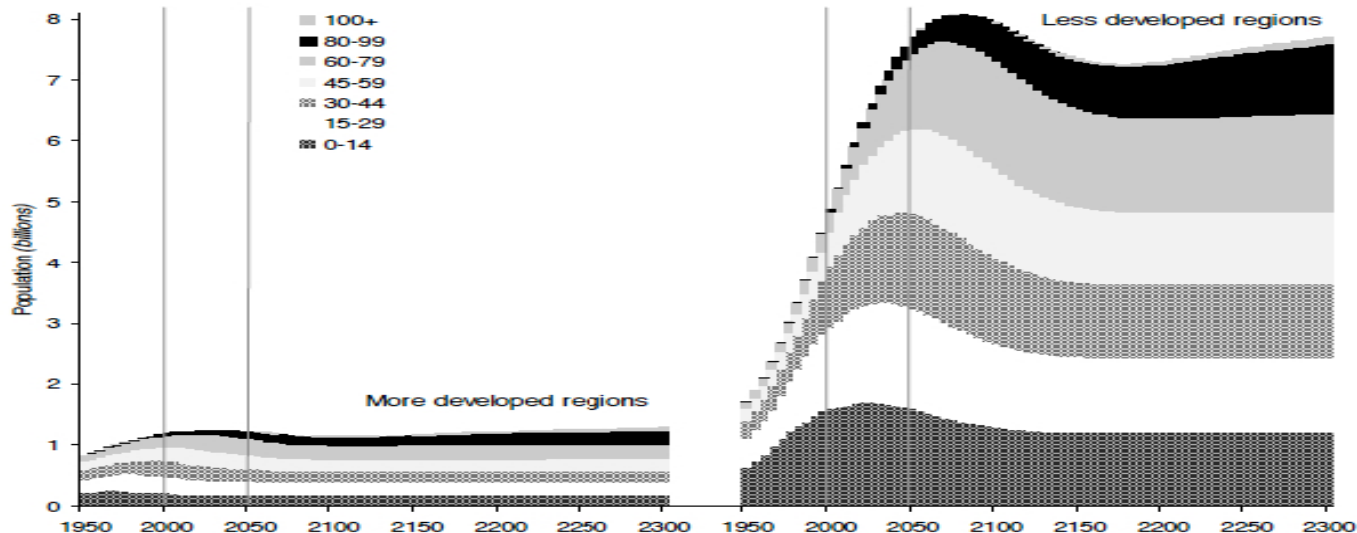


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Why ~ 1 Bil sleep hungry?

- **MISMATCH** between
 - Innovation and needs of the poor
 - Populations growth and production Growth
 - Expectations and reality (surplus production will trickle down to the hungry)
 - Labour productivity (**US\$23,081 in OECD, US\$327 in Africa** - 95 times higher).

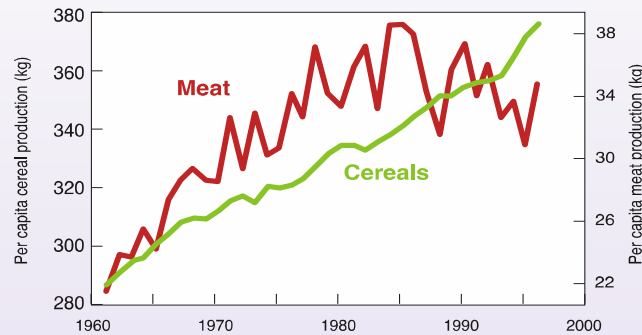




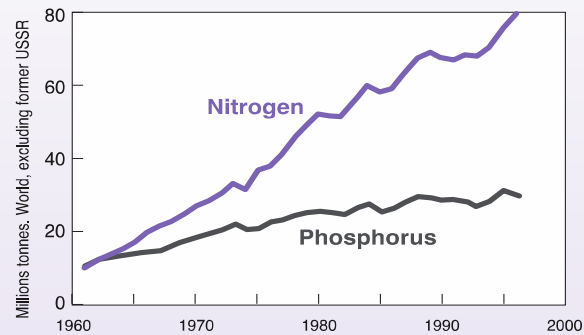
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Business as Usual is not an option The cost of current model – Losses are more than gains...

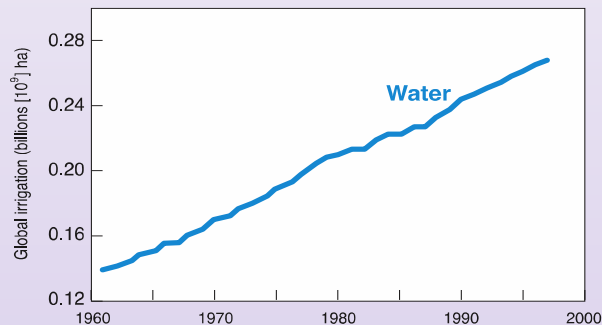
Global trends in cereal and meat production



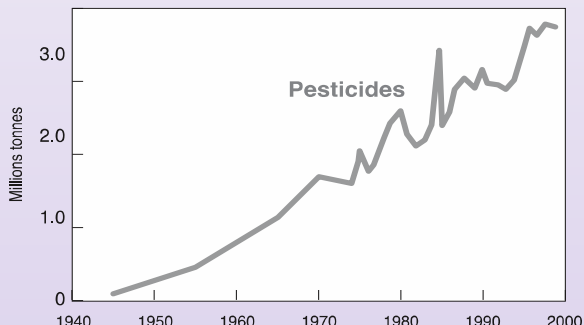
Global total use of nitrogen and phosphorus fertilizers.



Increased use of irrigation



Total global pesticides production



SOURCE: Tilman et al., 2002

IAASTD/Ketil Berger, UNEP/GRID-Arendal





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Business as Usual is not an option

Industrial agriculture **consumes on average 10** exosomatic energy calories **for every food endosomatic energy calorie** that is produced and delivered to the consumer.

Water consumption & pollution

bio-diversity losses

Extraction of soil nutrients on small farms

Loss of soil fertility

Slowing productivity growth

shrinking agricultural labour force

Shrinking profits despite increasing prices





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Business as Usual is not an option

Estimated **annual costs of agricultural externalities**

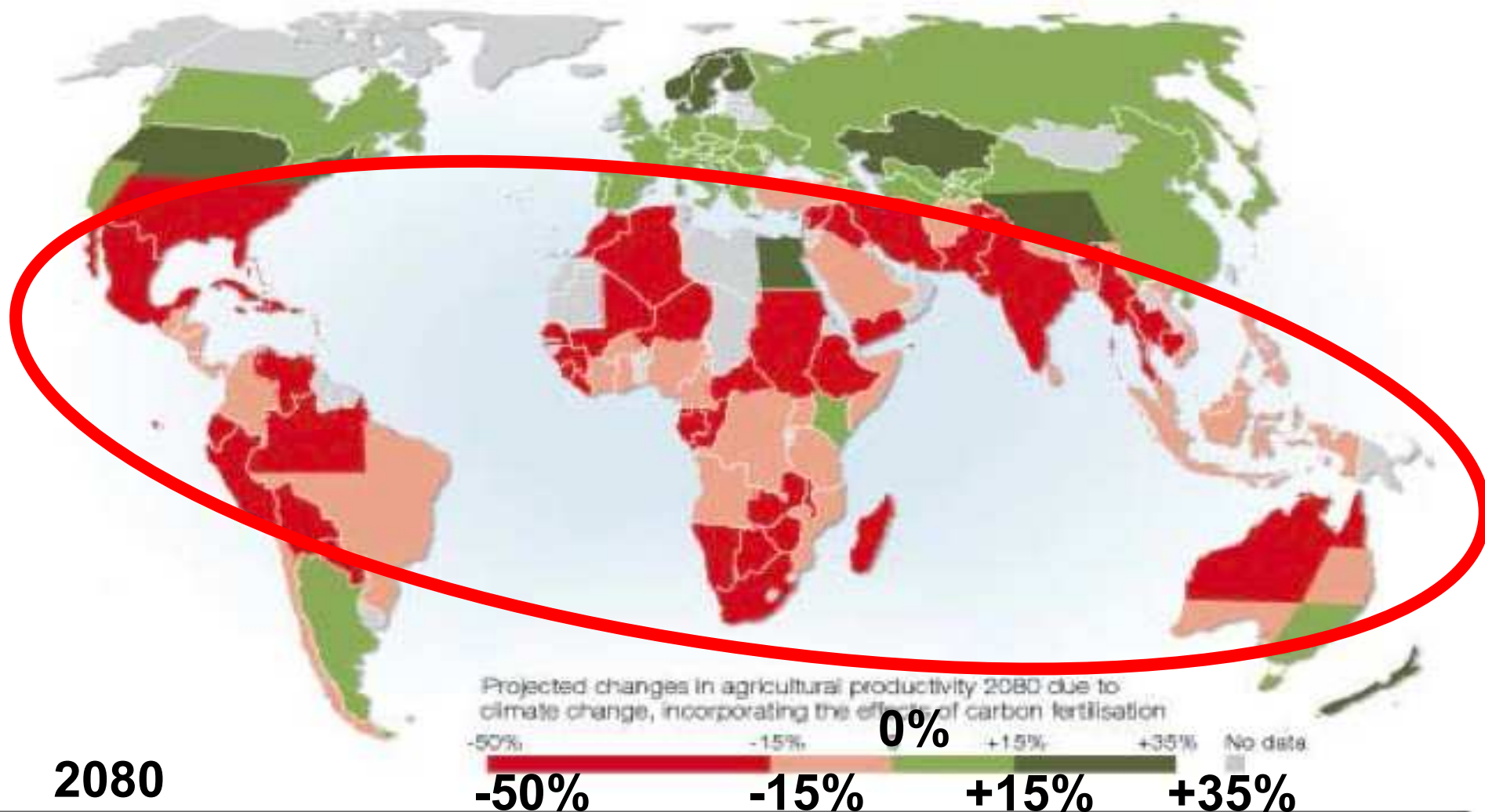
- UK: GBP £ 5.16 billion (a cost greater than annual net farm income)
- USA: USD 34.7 billion
- Germany: USD 2 billion
- China: US D 1.4 billion (only from pesticides for rice)
- In China agriculture is larger source of water pollution than industry.
- Flow of phosphorus to the oceans: approximately 10 million tonnes
- Millions of cases of pesticide poisoning, thousands of death





Business as Usual is not an option

Figure 8 Projected losses in food production due to climate change by 2080.



Source: *The environmental food crisis - the environment's role in averting future food crises. A UNEP rapid response assessment.* United Nations Environment Programme, February 2009, www.grida.no, page 46, quoting: Cline, W. R. (2007), *Global warming and agriculture: Impact estimates by country.*



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Greening of Ag is needed, possible and profitable

Greening agriculture.....what's that?

.....the implementation of farming practices, knowledge, science and technologies (innovations):

- maintain and increase farm productivity and profitability while ensuring the provision of food, and agricultural goods and services on a sustainable basis;
- reduce negative externalities and gradually lead to positive ones; and
- rebuild ecological resources (i.e. soil, water, air and biodiversity “natural capital” assets) by reducing pollution and using resources more efficiently.





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Greening of Ag - Investment priorities

- Investments in R&D
- Farm mechanization
- Investing in maintaining and building soil organic matter
- Crops and livestock diversification
- Improving water management





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Greening of Ag - Investment priorities

Scaling up adoption of green agriculture by partnering with leading agribusinesses

- Top 4 seed companies control more 50% the commercial seed market
- Top 10 corporations (four of them are among the top 10 seed companies) control 82% of the world pesticides business.
- Top 10 corporations control 28 per cent of the global market for food processing
- Top 15 supermarket chains represent more than 30 per cent of global food sales
- **Investment decisions of these approximately 40 companies have the power to determine, to a large extent, how the global agriculture sector could endorse and encourage green and sustainable farming practices.**





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Greening of Ag - Investment priorities

Reducing post-harvest storage

- Significant crop yields losses for small holders due to limited access to dry and sanitary storage and cold chain facilities
- Over 300% price gains (US\$13 vs 38/100 of maize) for those who invested US\$20 (for a 120 kg small-capacity unit) to US\$70-US\$100 (for an 1800 kg large-capacity) metal silo.

Reducing post-harvest losses could be quickly achieved but less than 5% agricultural research and extension funding targets this problem. (Household Metal Silos, FAO 2008).





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Greening of Ag - **Enabling conditions**

Governance

Regulations and taxes

Trade laws and ag subsidies

Ensuring equity in supply chains

Shifting the burden of proof to the polluter

Using “right” labels (XX KG or Liters of Pesticide was sprayed per hectare on this products).





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Benefits of Greening Agriculture

Profitability & productivity of green ag

“The overwhelming majority of cases (analyzed in the USA) show that **organic farms are more economically profitable.**” Nemes, 2009.

Published by FAO

Average **yield-increase of nearly 80%** as a result of farmers in 57 poor countries
The study covered 12.6 million farms, encompassing over 37 million hectares (3 per cent of the cultivated area in developing countries). Of projects with pesticide data, 77 resulted in a decline in **pesticide use by 71%**.





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Benefits of Greening Agriculture

Energy efficiency

Growing organic rice: **4 times more energy-efficient** than the conventional method (Mendoza 2002).

Energy consumption in organic farming systems is **reduced by 10 to 70 per cent in European countries** and by **28 to 32 per cent in the USA** compared with high-input systems, with the **exception of certain crops** including potatoes and apples, where energy-use is equal or even higher





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Benefits of Greening Agriculture

Macroeconomic benefits

Investments aimed at increasing the productivity of the agriculture sector have proved to be **more than twice as effective in reducing rural poverty** than investment in any other sector

10% increase in ag productivity is estimated to **reduce poverty by 5% in Asia** and **7% in Africa**. Green practices can increase productivity, on average, by 79% on small farms.





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Benefits of Greening Agriculture

Macroeconomic benefits

Green practices create **more employment** opportunities and provide higher return on labour inputs.

Greening agriculture can **relax the foreign-exchange constraint** by reducing the need for imported inputs and by increasing exports of sustainable agrifood products.





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Benefits of Greening Agriculture

Climate Benefits

German organic farms annually **sequester 402 kg carbon/hectare**, while conventional farms experience **losses of 637 kg** (Küstermann et al. 2008 and Niggli et al. 2009).





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Final words

- Return on investments under BAU will continue to decrease, mainly owing to the increasing costs of inputs (especially water and energy) and stagnated/decreased yields;
- The cost of the externalities associated with agriculture will continue to increase gradually, initially neutralizing and eventually exceeding the economic and development gains; and
- By greening agriculture and food distribution, more calories per person per day, more jobs and business opportunities especially in rural areas, and market-access opportunities, especially for developing countries, will be available.



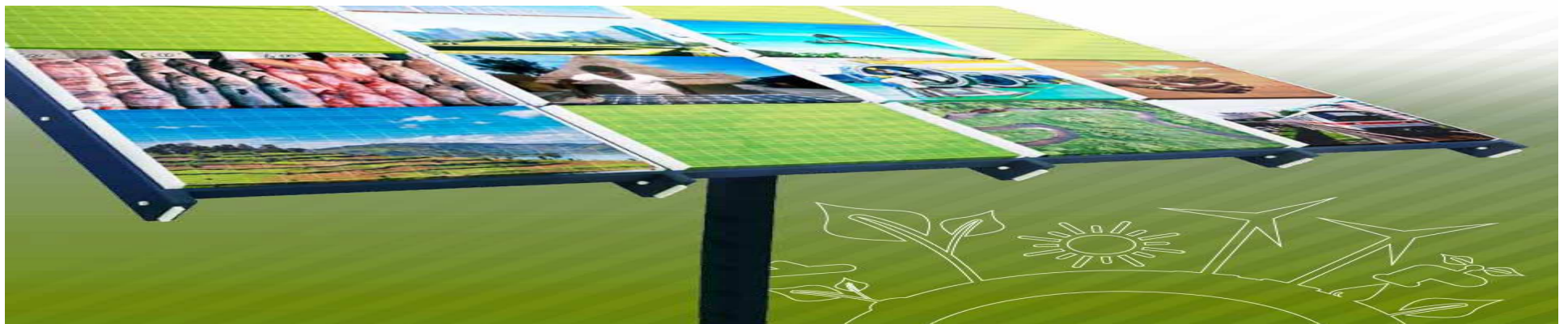
You cannot solve the problem with the same kind of thinking that created the problem. *Albert Einstein*

Thank You



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