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The European Alliance
on Agricultural Knowledge for Development

Challenges for research and development in times of multiple crisis

by Didier Pillot

Seeking opportunities in times of crisis Boku, 14.10.2009



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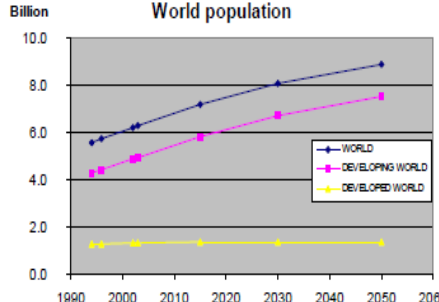
Food production

16-10 World food day


Global availability : World population from 6 to 9 billions between 2005 and 2050

Change of diet : more meat, more needs

Nutrition – Access to diversified food is a key factor for human health and labour capacities



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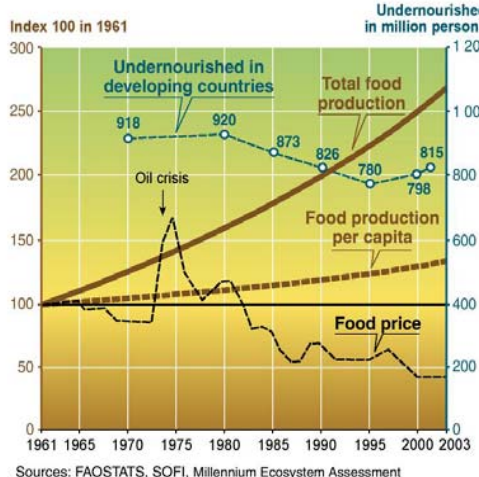


Food Production

Food production more than doubled since 1960


Food production per capita has grown

Food prices have fallen (with exceptions)



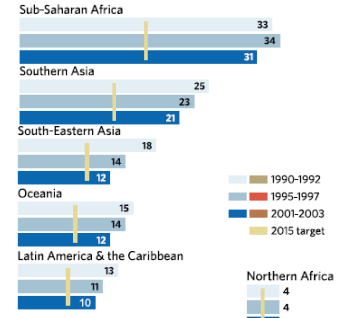
Sources: FAOSTATS, SOFI, Millennium Ecosystem Assessment

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Food access and hunger (MDG 1)

Proportion of people living with insufficient food 1990-1992, 1995-1997 and 2001-2003 (Percentage)



TARGET MDG1
Halve, between 1990 and 2015, the proportion of people who suffer from hunger

- Will not be achieved
- Diversity of results
- Results are less when the problem is higher

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Food production : quantity is not the only issue!


Quality diets : national health priority (cf obesity extension)

Demand for quality : more meat, more needs

Demand for diversity – Eat diversified!

Demand for diversity – Eat local! Information about the origins, food miles reduction, ecological impact of the food

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Food production : Increase capacity is intimately tied to the **Natural Resources**

Water : Crops are the largest users of freshwater in the world (globally 70% - about 90% in developing countries)

Forests are critical in the climatic regulation and in effecting groundwater flows

Biodiversity – Agriculture plays a critical role in either destroying or maintaining biodiversity -- ecological services are critical for sustainable development

Climate change: Agriculture can be a major GHG producer or a C sink



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Water

In the past, priority given to increase the water availability to agriculture



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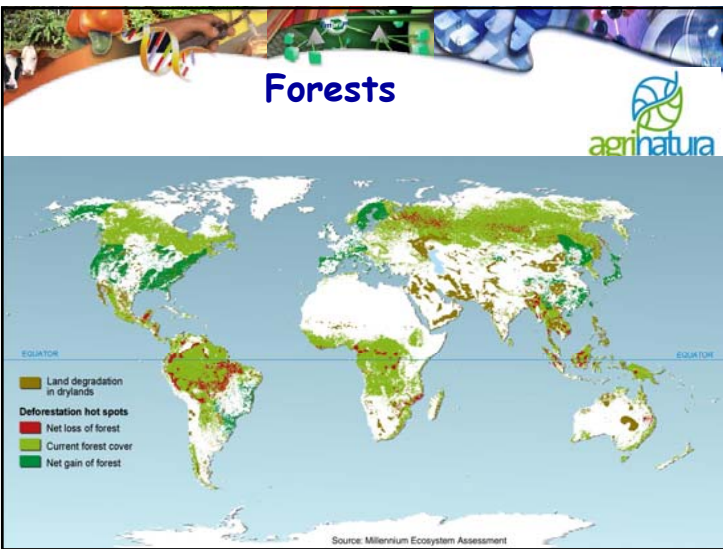
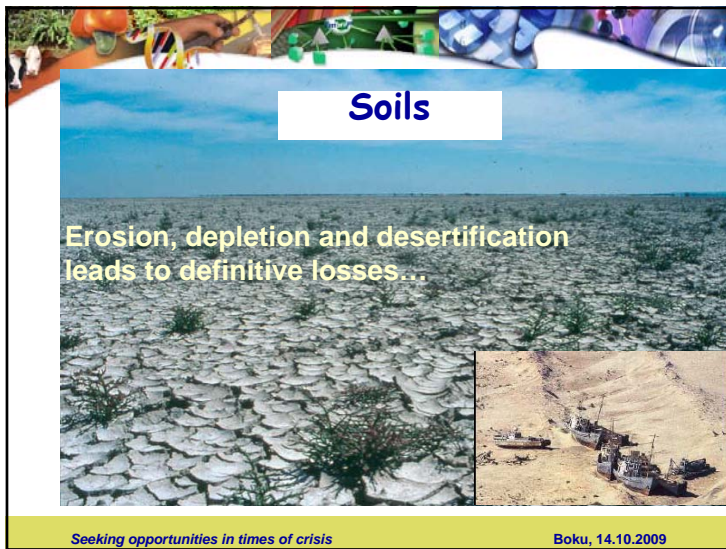
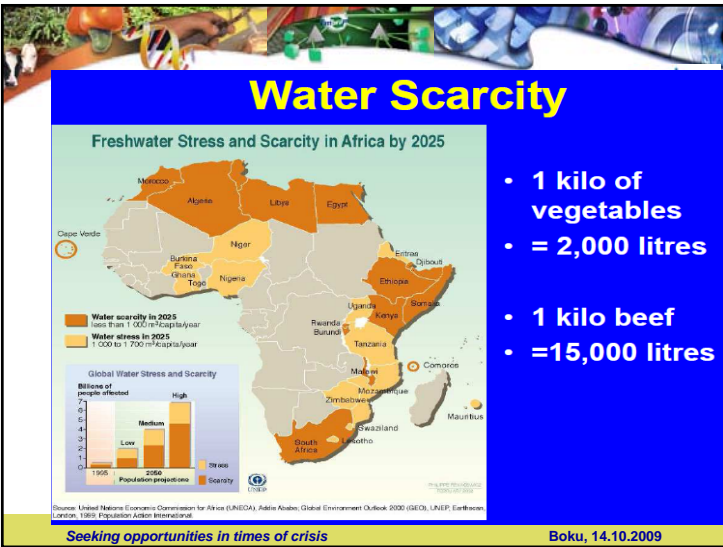
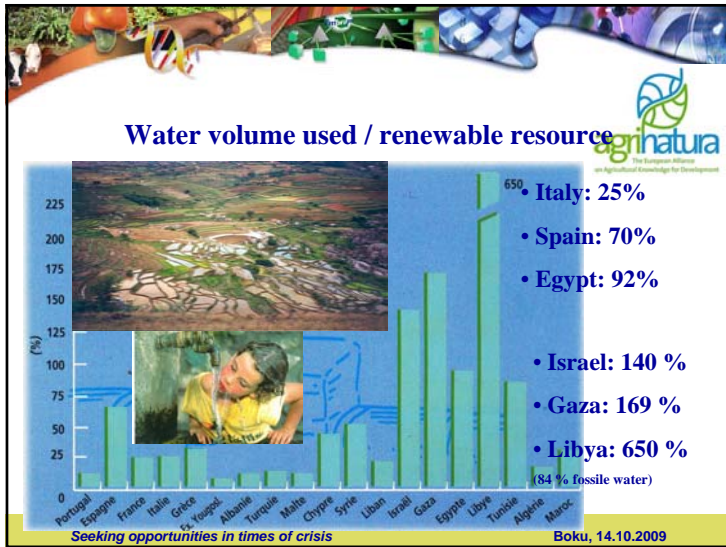


Most of the progresses done where it was possible to store/bring more water


Eaten the white fresh bread first!






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Biodiversity



- Humans have increased the species extinction rate by as much as 1,000 times over background rates typical over the planet's history (medium certainty)

- 10–30% of mammal, bird, and amphibian species are currently threatened with extinction (medium to high certainty)

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Biodiversity




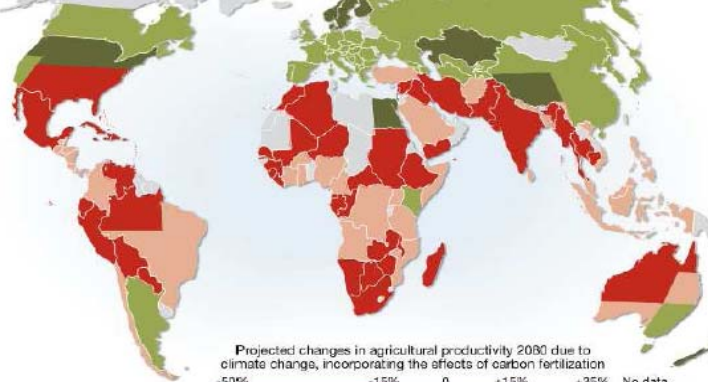
Most threatening impact is the loss of cultivated biodiversity...






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Climate change : a long term issue



Projected changes in agricultural productivity 2050 due to climate change, incorporating the effects of carbon fertilization

-50% -15% 0 +15% +35% No data

Doubling again the production is mandatory...



How can we do that?

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Threats!



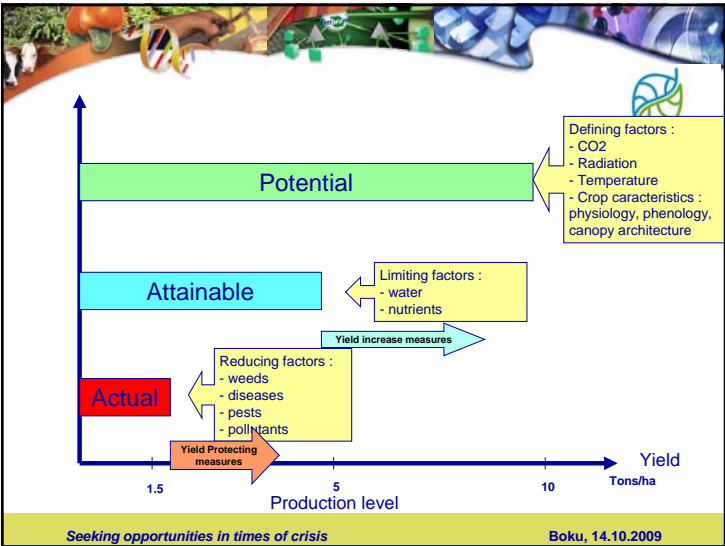
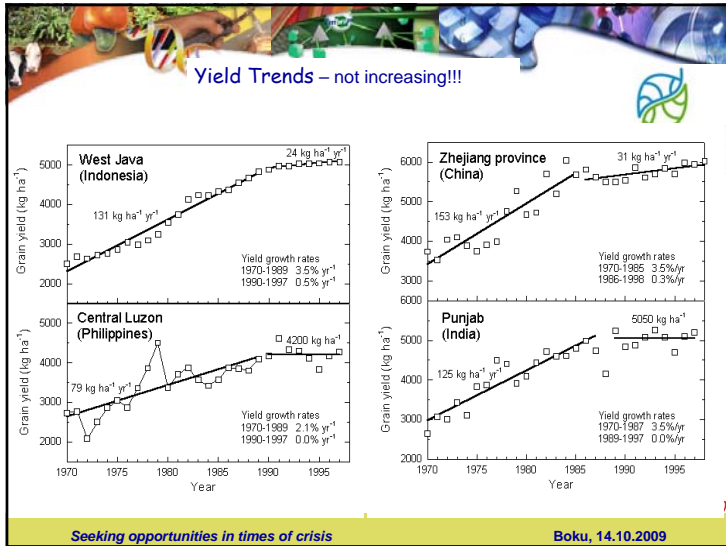
- With less land** : land losses, urbanisation
- With less water** : due to competition with non agricultural uses, cities, industries
- With less chemicals** : environmental impact
- With less labour** : HIV Aids, non agricultural sector growth
- With less genetic diversity**
- Under a changing climate**


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- **Yield potential and yield gap**
- **Management / Mitigation of current climatic risks is important**
- **Institutional and political conditions are key**


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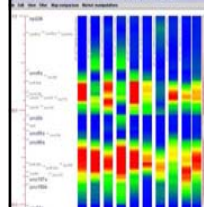







Opportunities!

Crop bio-technology breakthroughs



- > Hopes of accelerating new possibilities, new potentials
- > Locating and tagging the genes for drought tolerance, resistances to pests
- > Serious concerns over the environmental and human health implications of transgenic crops
- > Growing IPR concerns

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Opportunities!





- Longer chains organisation** : more options for adding value along the chain
- Multifunctionality**
- Exchanges facilitated (globalisation)**
- Growing role of information technology in agriculture**

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Assist farmers to cope with
current climatic risks

- **Improving collection and dissemination of weather related information**
- **Risk management research-application of weather info/forecasts**
- **Establishing an early warning system of climatic risks/disasters**
- **Promoting insurance for climatic risk management**
- **Strengthening pest surveillance and forecasting mechanisms**
- **Public-private partnerships for weather data collection and for weather derivatives**

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What innovations are needed?


- **New Technologies**
 - For the whole agri-chain and environment
- **Institutions**
 - regulations, laws, customs, beliefs, norms and organizations, incl. in education, research, extension
- **Governance**
 - Public policies for strategic directions change, incentives, and facilitation of institutional & technological innovations

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Higher education should contribute to this challenging task

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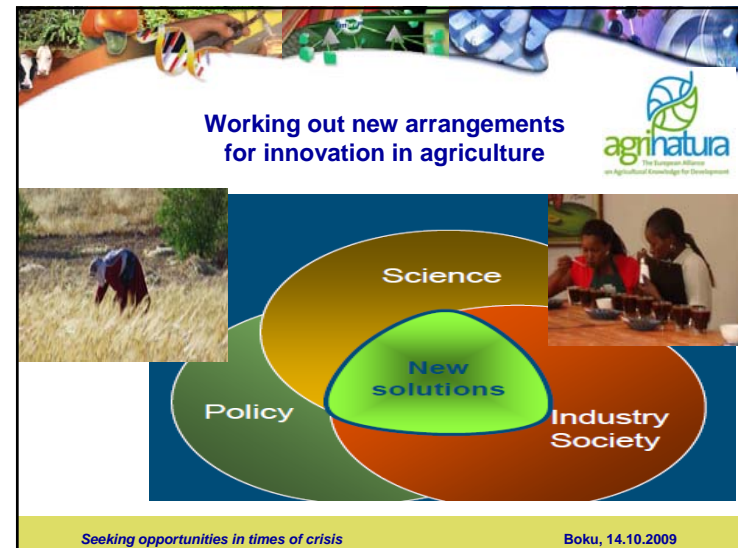
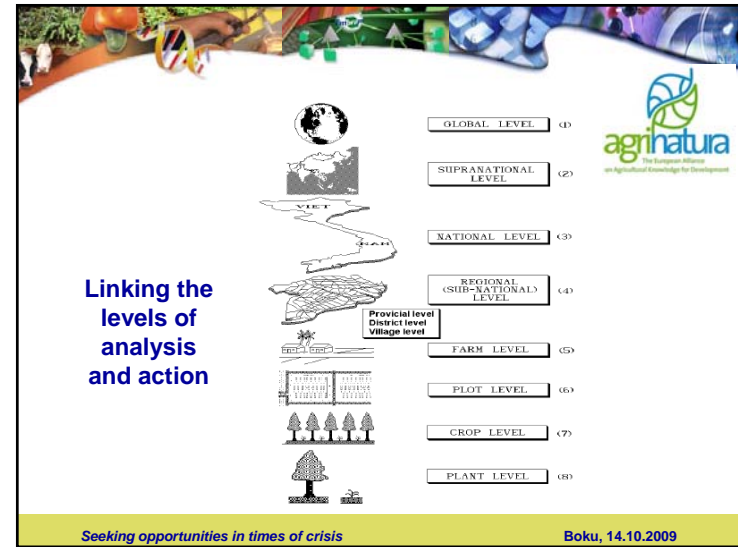


Generalist

Specialist

- Knowledge (methodology and subject matter)
- Attitude (academic)
- Skills (scientific research)

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Thank you for your attention