



Snapshots **Turning challenges into opportunities for sustainable development**

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Lisa Aigelsperger, Georg Gratzner (BOKU | Austria)

It's science.



Knowledge that makes a difference



Snapshots No 1 **Fisheries and aquaculture - a crucial protein source for a growing population**

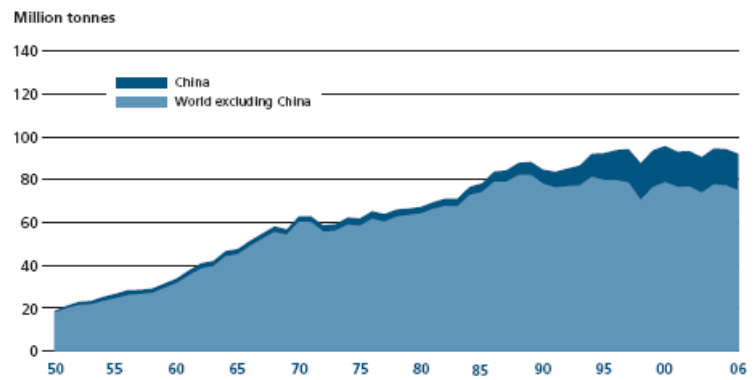
Werner Zollitsch

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Knowledge that makes a difference

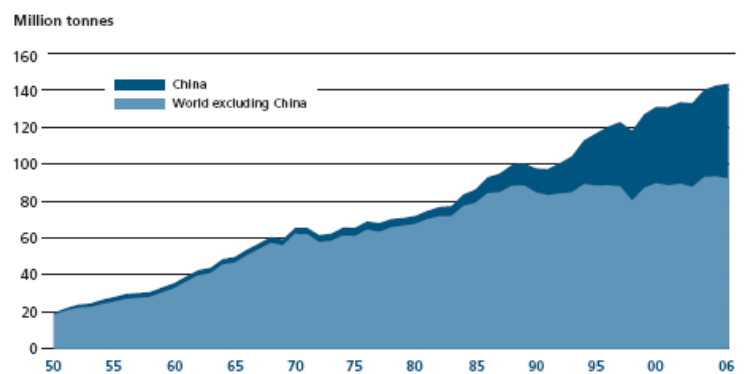
World capture fisheries production



Source: FAO 2008



World capture & aquaculture production



Source: FAO 2008





Learning from highly productive systems

External inputs?

Limiting factors?

Technology
adaptation?

Risk factors?



Productivity?

Marketing?

Acceptability?

Benefits?

Food security

Poverty alleviation

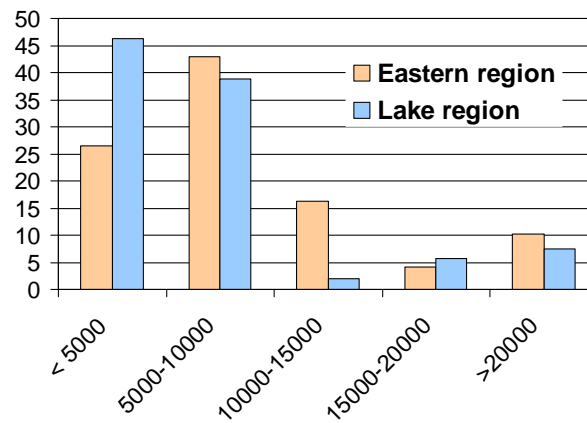


Adapting systems to potentials and needs





Characteristics of fish consumers: Monthly income (Muhia & Kyalo 2009)



Snapshots No 2 **Water Scarcity and River Basin Development: Trajectories and Implications.** Chi-Mun River Basin, Northeast Thailand

Willibald Loiskandl

It's science.



Knowledge that makes a difference

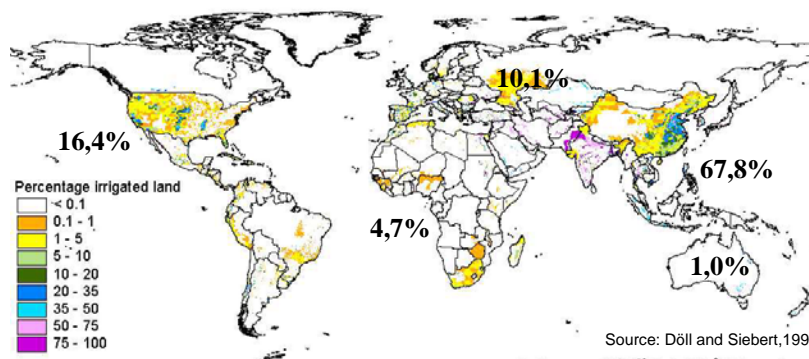
River Basin Trajectories and Water Accounting



- IWMI
 - Sara MARJANI ZADEH (Karkheh River Basin Management, Developing a "Best Case Scenario" 2025)
 - Philippe Floch, working on the development of the Chi-Mun Basin in Northeast Thailand

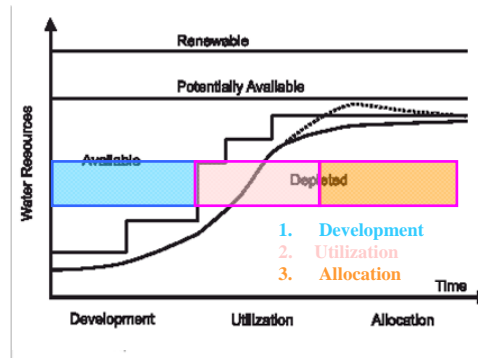


- ~ 70% of the global water withdrawal are for irrigation
- FAO: irrigated agriculture produces 40% of the world's food
- Global irrigated area 1995: 2 571.753 km². 1998: 2 711.000 km². 2006: 2 788.000 km²
(~ 2% of total geographical area of the world or 18% of the arable and permanent cropping area.)



Water Scarcity & River Basin Development

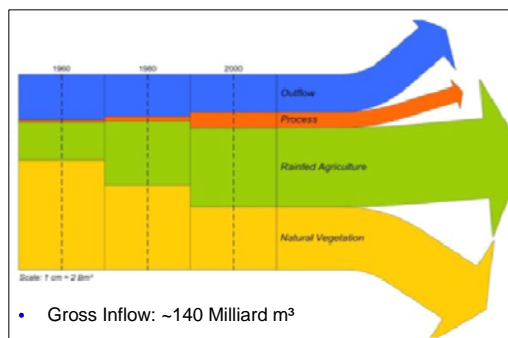
- tools to capture river basin development
→ **river basin trajectories**
- „closed basins“ = water resources are fully committed to existing uses.
- In closed basins,
 - all users and uses are interconnected (hydrological cycle)
 - **further supply augmentation is no longer possible** without impacting existing uses.



Source: Molle (2003)



Water Accounting: The Chi-Mun Basin



- Gross Inflow: ~140 Milliard m³
- Water use fractions (1960 → 2000)
 - Rainfed Agriculture: **20% → 40%**
 - Forest: **56% → 32%**
 - Process Depletion: **0.6% → 5%**
- Total Depleted Fraction increased only slightly from **77,6% to 79,4%**





Snapshots No 3

Growing cities, growing demand for food: multiple effects of bio-waste management

Roland Linzner

It's science.

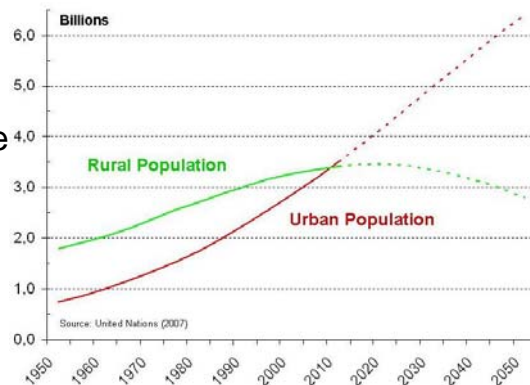


Knowledge that makes a difference

How to feed mega-cities in future?



- In the next decades rural-urban migration will lead to an increase of the urban population.
- Currently 50% live in cities; 2050: > 70%
- Rapid urbanisation leads to growing pressure on
 - public infrastructure,
 - living conditions,
 - labour, **food**, and also
 - to **environmental** and **sanitary problems**.



How to feed mega-cities in future?



- Liquid and **solid waste** contribute to environmental **pollution** and **sanitary problems**.
- As a reaction to food scarcity people in urban centres carry out **urban agriculture**. This requires plant nutrients => often mineral fertilisers



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Closing the nutrient cycle



- The Institute of Waste Management carried out projects in the field of **recirculating organic nutrients**...
- ...by producing **compost** out of **organic waste** and residues...
- ...and applying compost in urban agriculture in West Africa.



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All fotos: © ABF-BOKU



Biowaste management contributes to...



- ...**increasing yields** in urban agriculture...
- ...improved **food security**...
- ...generation of an **additional income** of **farmers**...
- ...support of female-cooperatives in urban agriculture...
- ...provision of a **local available fertiliser**...
- ...**reducing organic waste** in city centres and **improving sanitary situation**.



Snapshots No 4

Growing food for home, growing food for markets. How community action matters

Lisa Aigelsperger

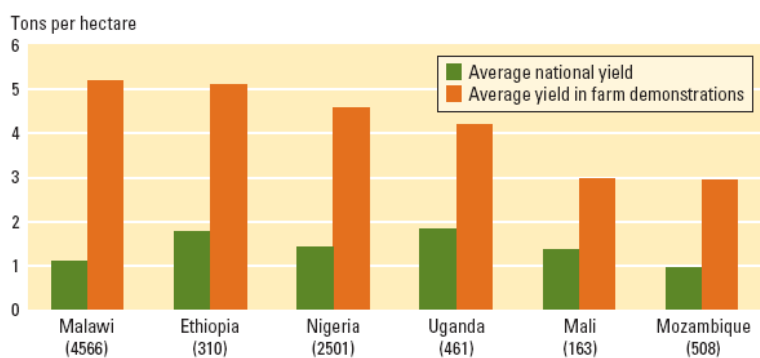
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Knowledge that makes a difference



Exploitable yield gaps are high in Africa (maize)



Source: Sasakawa Africa, personal communication.

Notes: Number of plots in parentheses. Open pollinated improved varieties in all cases except Nigeria, which uses hybrids. Data for 2001 for Ethiopia, Mozambique, Nigeria, and Uganda; 2002 for Malawi; and an average of 2001, 2002, and 2004 for Mali.







Snapshots No 5
**Why research partnerships matter:
The example of FORED in Bhutan**

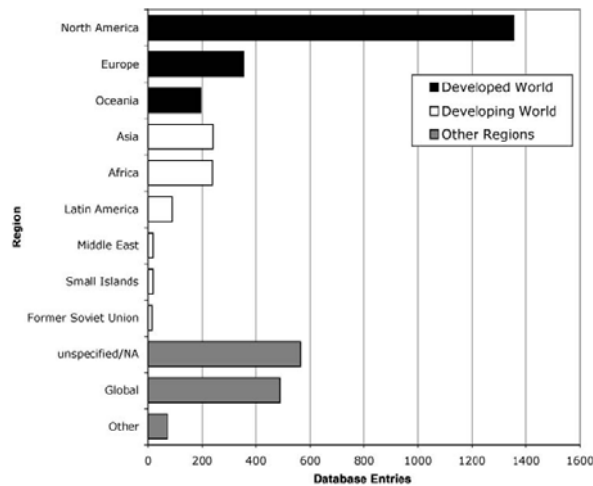
Georg Gratzner

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Knowledge that makes a difference

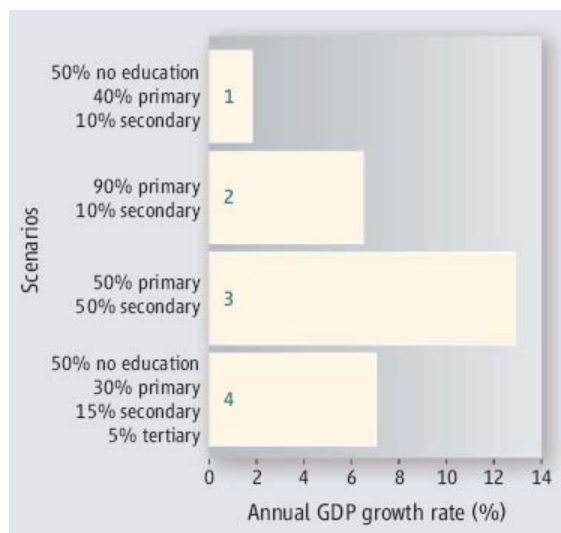
Knowledge in times of crisis – the example of research on climate change



Kiparsky et al. 2006



**Education
Makes
a difference**



Lutz, W. Crespo Cuaresma, J. and Sanderson W. 2008: The Demography of Educational Attainment and Economic Growth. *Science* 319: 1047-1048.



The FORED partnership



Project objectives



Empowerment and human capacity building



In-country courses



On-the-job training

M.Sc. in Mountain Forestry and doctoral studies (OEAD grants)



Training abroad



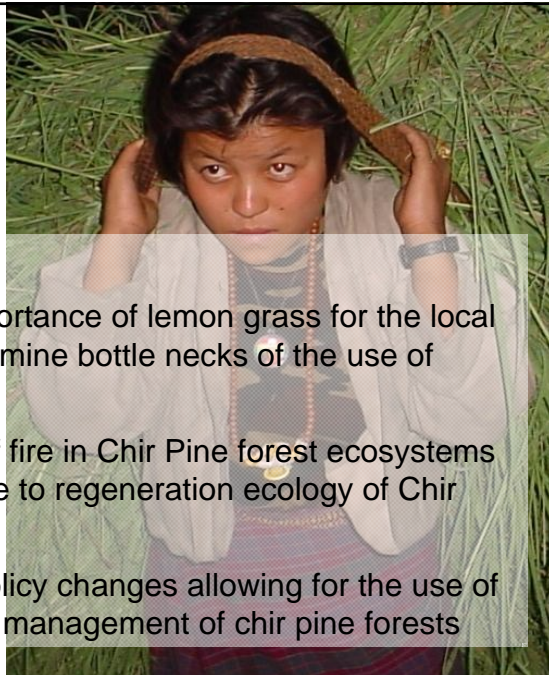
Fire in Chir pine forest with lemon grass - Curse or cure



Objectives:

- ✓ Characterise the importance of lemon grass for the local economies and determine bottle necks of the use of lemon grass
- ✓ Explore the effects of fire in Chir Pine forest ecosystems with special reference to regeneration ecology of Chir Pine

Provide a rational for policy changes allowing for the use of prescribe burning for management of chir pine forests





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more than 20 partners at
BOKU who

work in partnership

on scientific solutions for
improving the livelihood
of people in developing
countries



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