

6 th European Conference of GMO-Free Regions, 16 th to 18 th September 2010



Farmers research and innovation

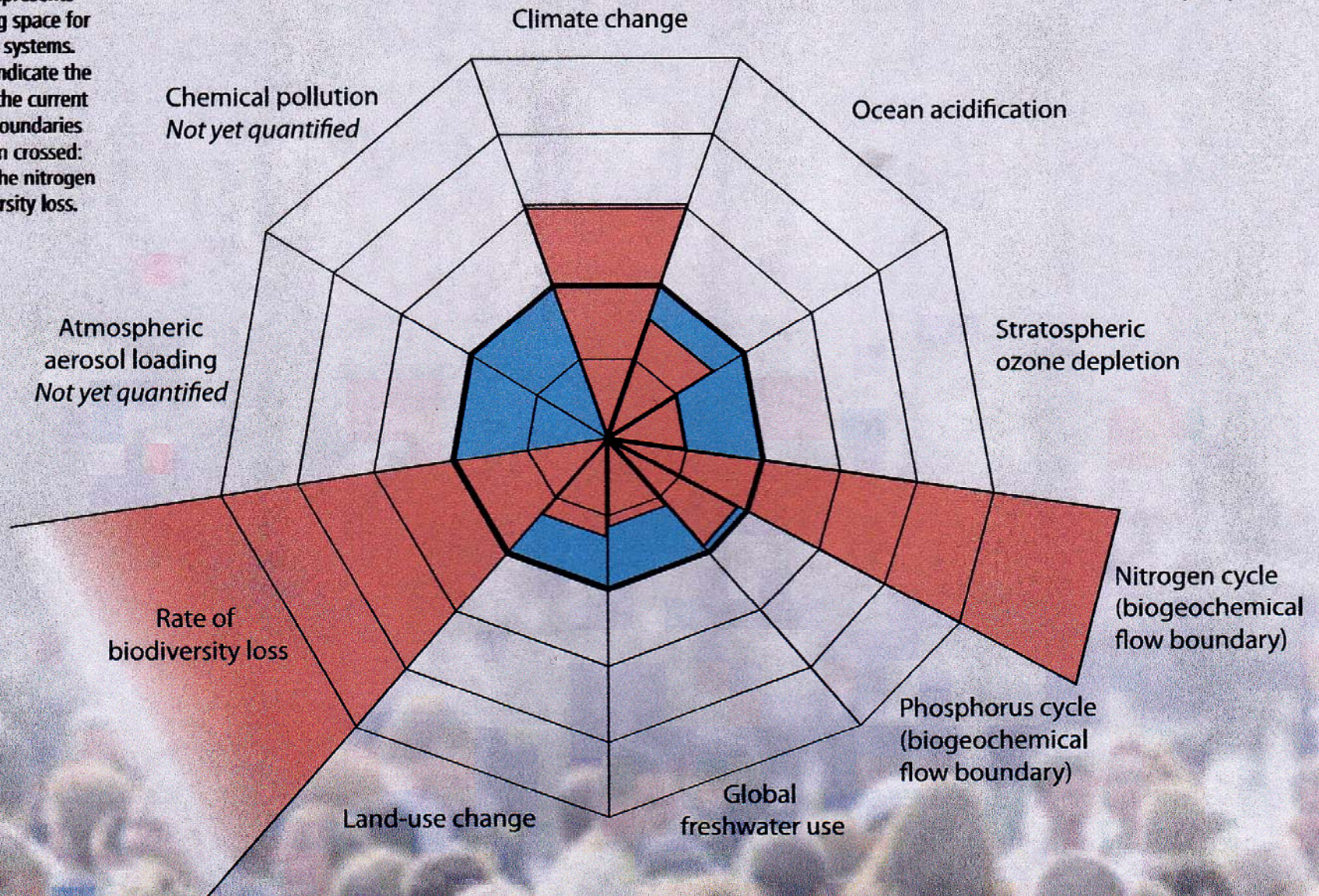
Christoph Fischer
Dr. Haiko Pieplow

Ghent, 17 th September 2010

Resilience of the planet

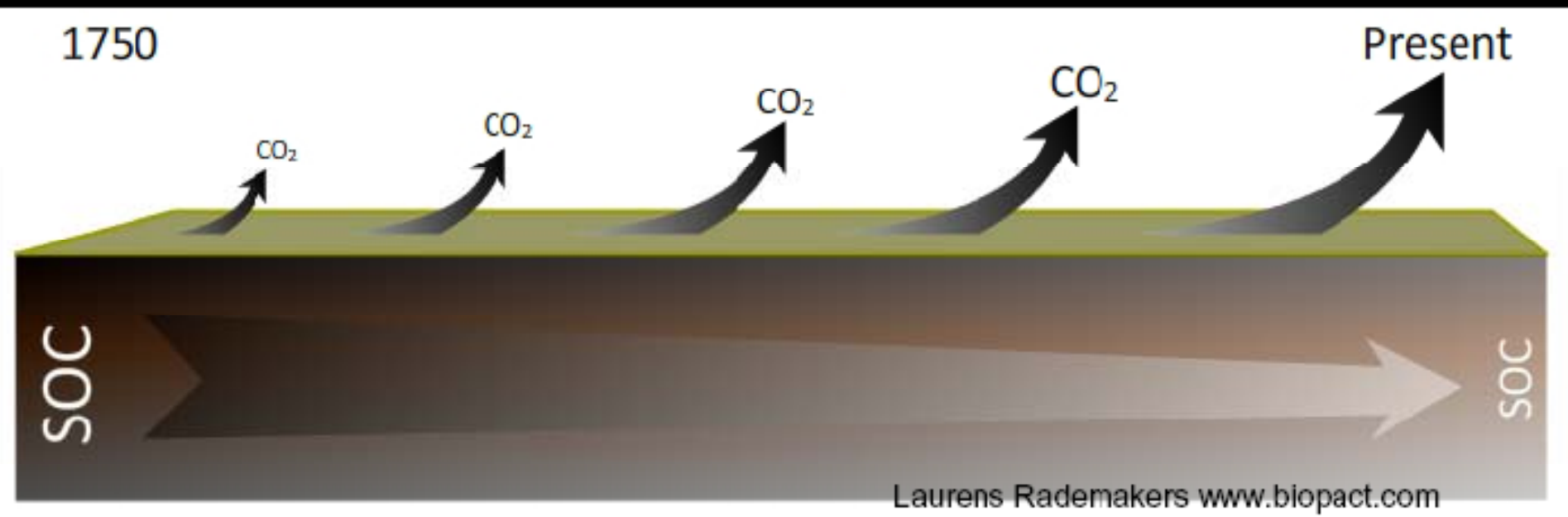
Rockström et al. (2009) *Nature*

The inner circle represents the safe operating space for the key planetary systems. The red wedges indicate the best estimate of the current situation. Three boundaries have already been crossed: climate change, the nitrogen cycle and biodiversity loss.



Soil degradation

mineral fertilizers – further decline in SOC

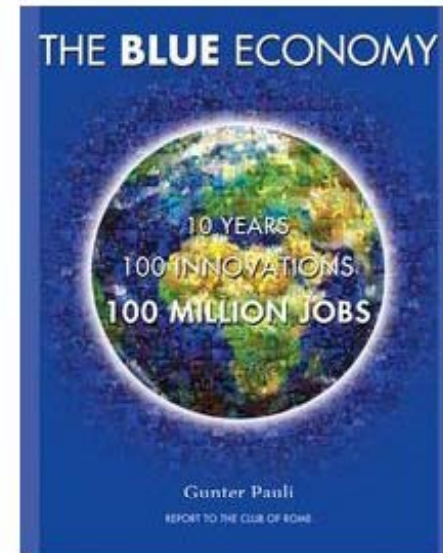


Most agricultural soils have lost 60 to >75% (20 – 80 Mg ha⁻¹) of their original SOC (Lal, 2004, Science)

From 1750 the emissions from land use change contributed about 30% to global warming, from which more than half of it is estimated from depletion of SOC (Lal, 2003).



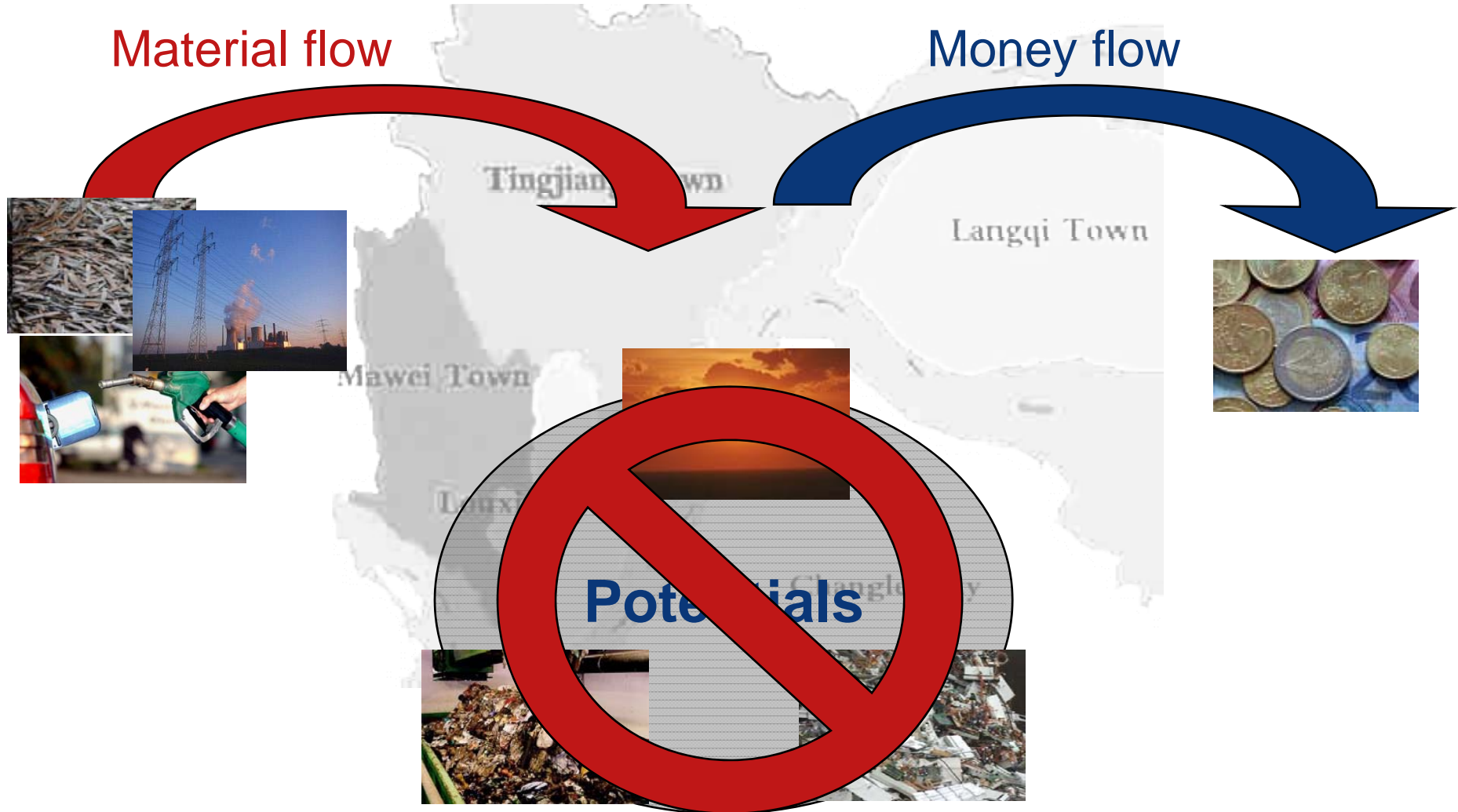
Don't waste natural and human resources



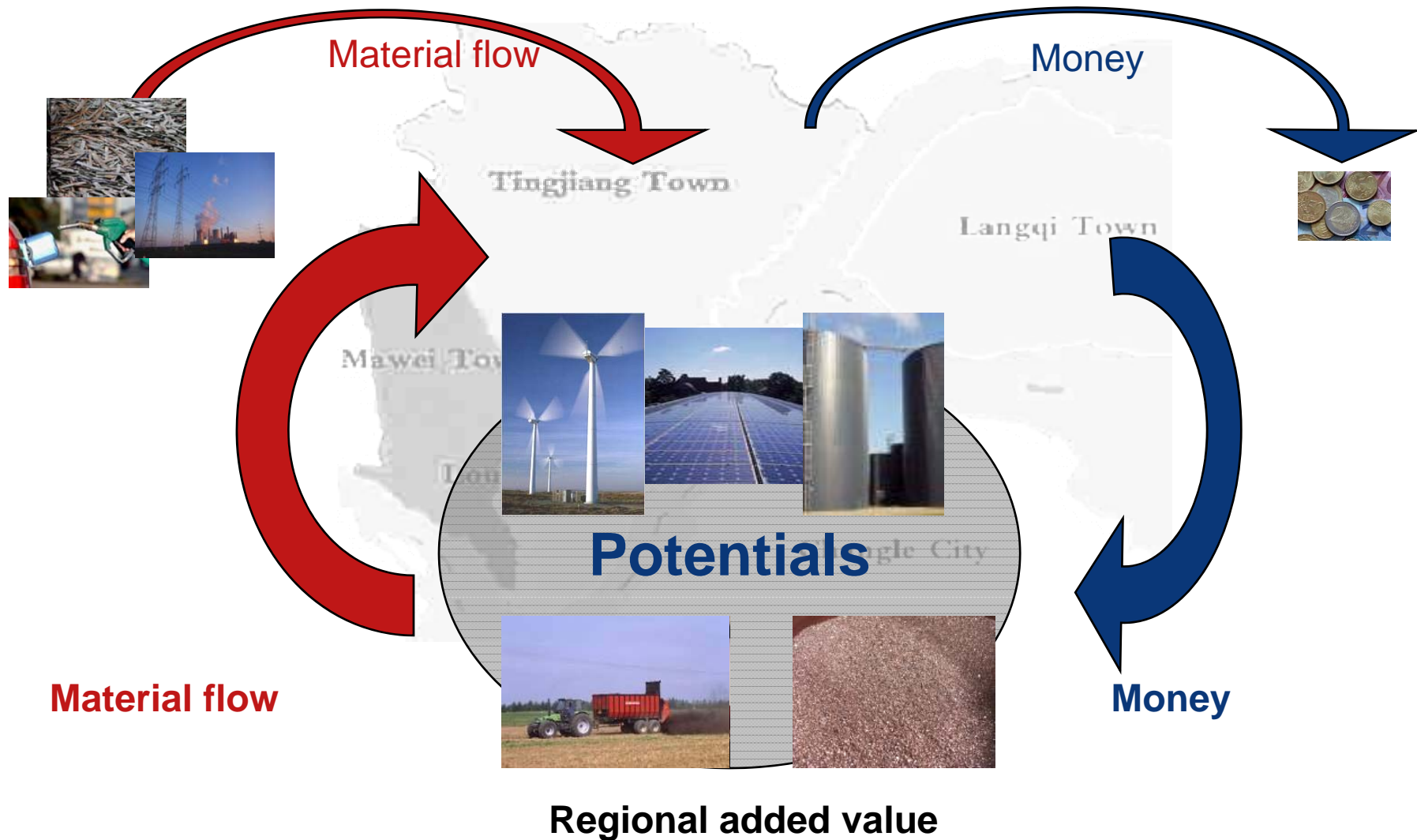
blue = earth



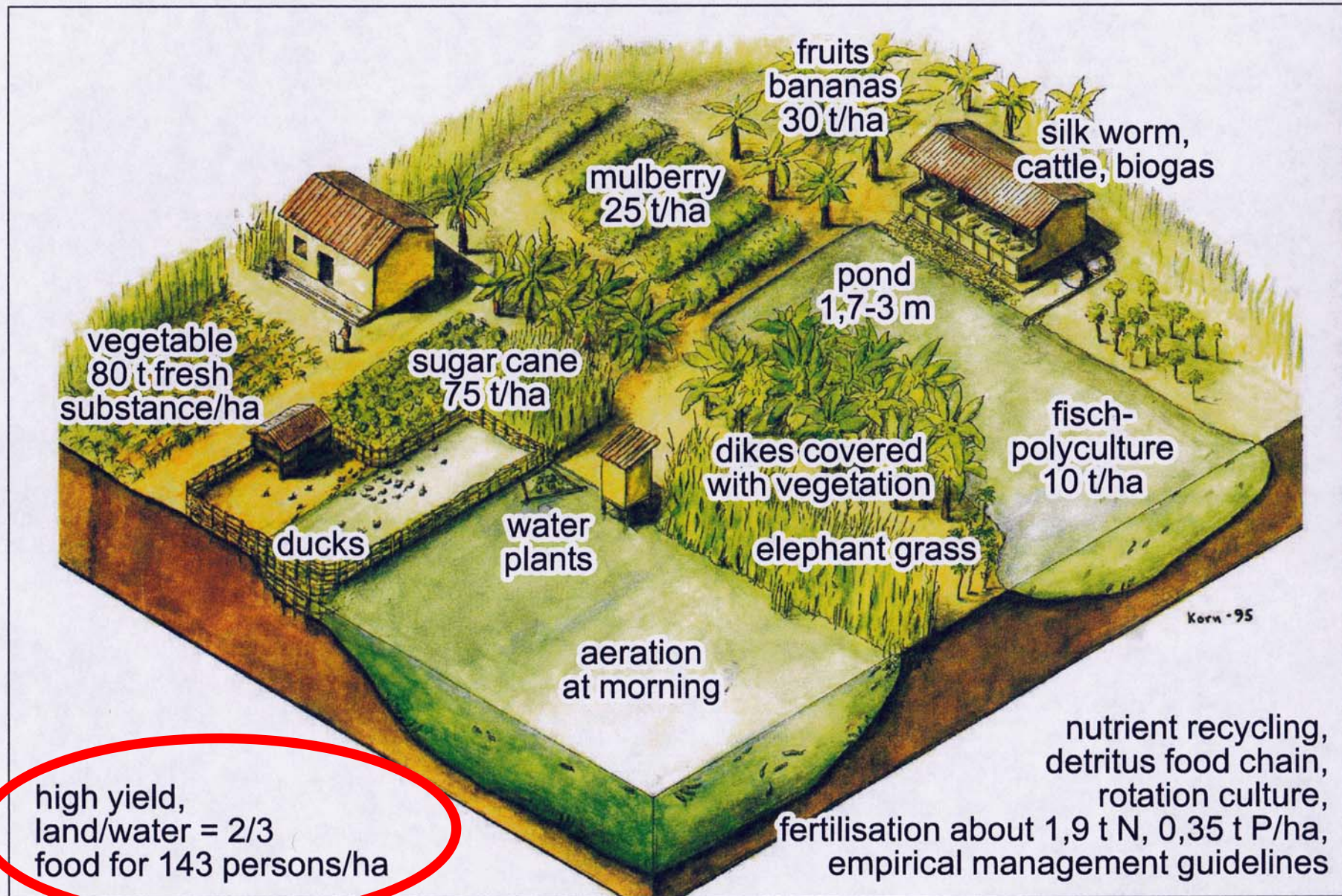
Sector based view on Material Systems



Holistic Regional Material Flow Management – Zero Emissions Strategy



"The dike-pond concept" Integrated land and pond management in China



Source: Korn (1990), Ambio 25(1): 9, verändert

K.-D. Wolter, TU Berlin - Limnologie, Systeminstitut Aqua Terra
Modul: Dike-pond_concept.cdr, 11.07.2003



David did not ask Goliath to change the rules

Spinning a silken tale:

Historical Systems Design in China:
planting mulberry trees on poor soils



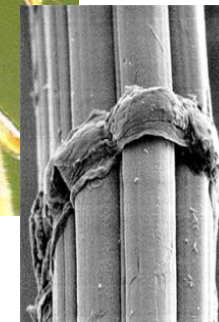
mulberry tree
morus alba



Carbon-Sequestration:
one acre produce each year:
2 tons silk
18 tons excrements



Bombyx mori
silk worm



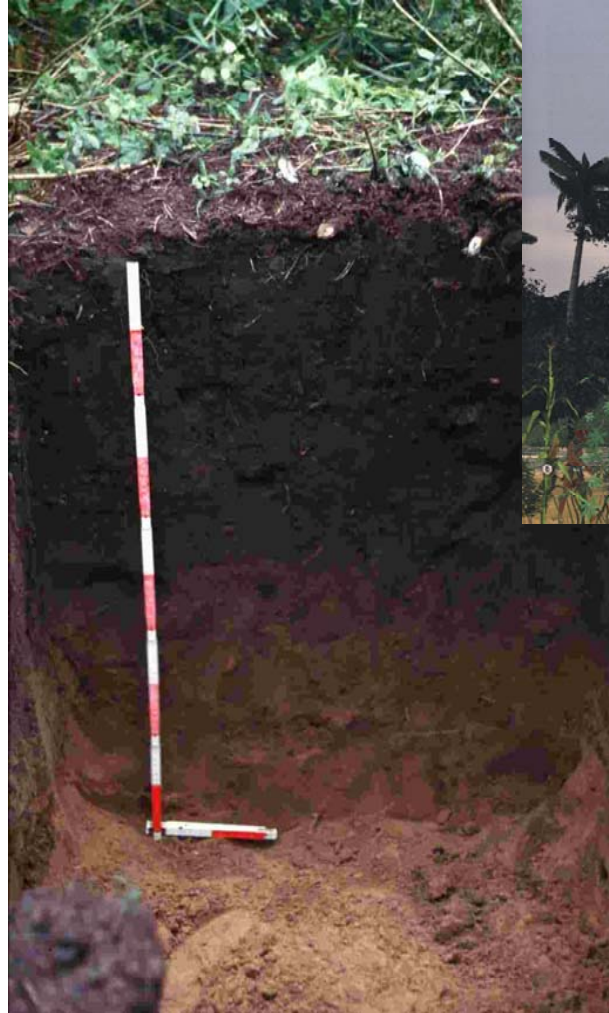
like a spider:
silk can substitute
steel and titanium

Anthropogenic dark earth

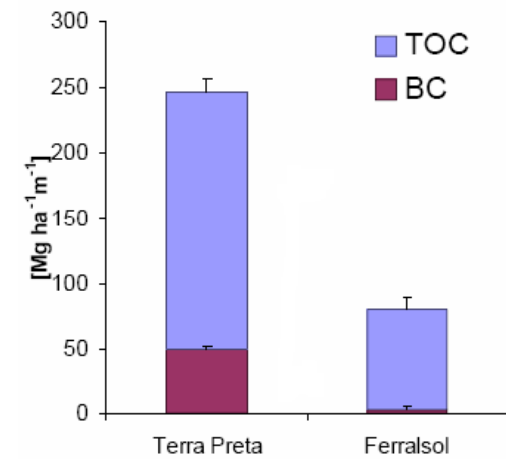
Terra Preta: result of an 2000 years old successful sustainable soil and waste management



Ferralsol



Terra Preta do Indio



Secret of Terra Preta do Indio:

- 2000 – 500 years old
- 16. century millions of people,
today 350.000
- layers up to 2 meters
- fertile without adding artificial fertilizer
- multiple high yields

Composition:

around 10 % charcoal (biochar),
kitchen-, biowaste and excrements,
bones and
broken earthenware,
(lactofermentation and vermicomposting)



Farmers research and innovation

Chiemgauer Schwarzerde-Projekt



Fam. Hennes
Langenspacher Hof,
4.6.2009

www.chiemgauer-freilandeier.de

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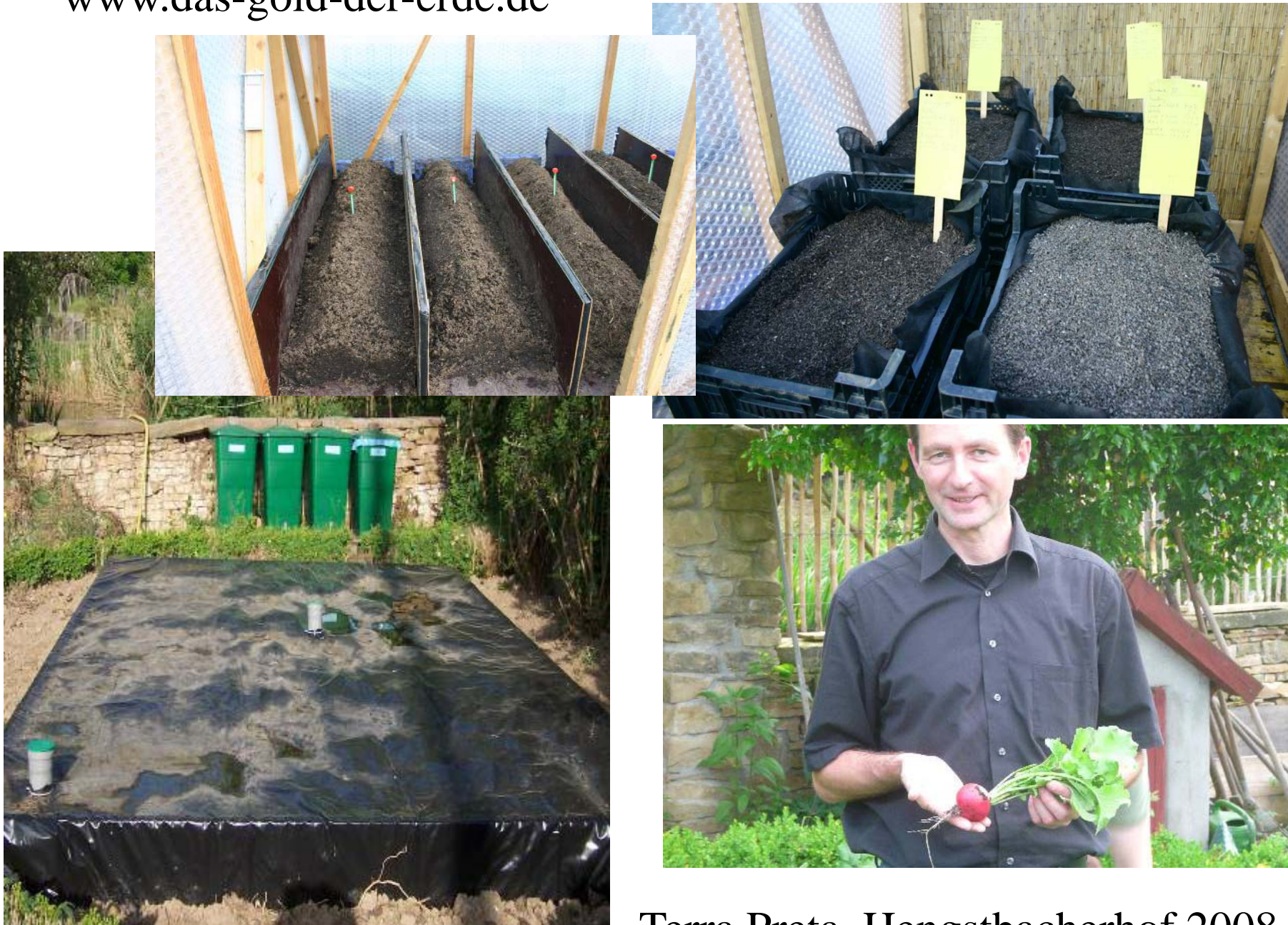


Terra preta products 2010



www.em-chiemgau.de
www.chiemgauer-freilandeier.de

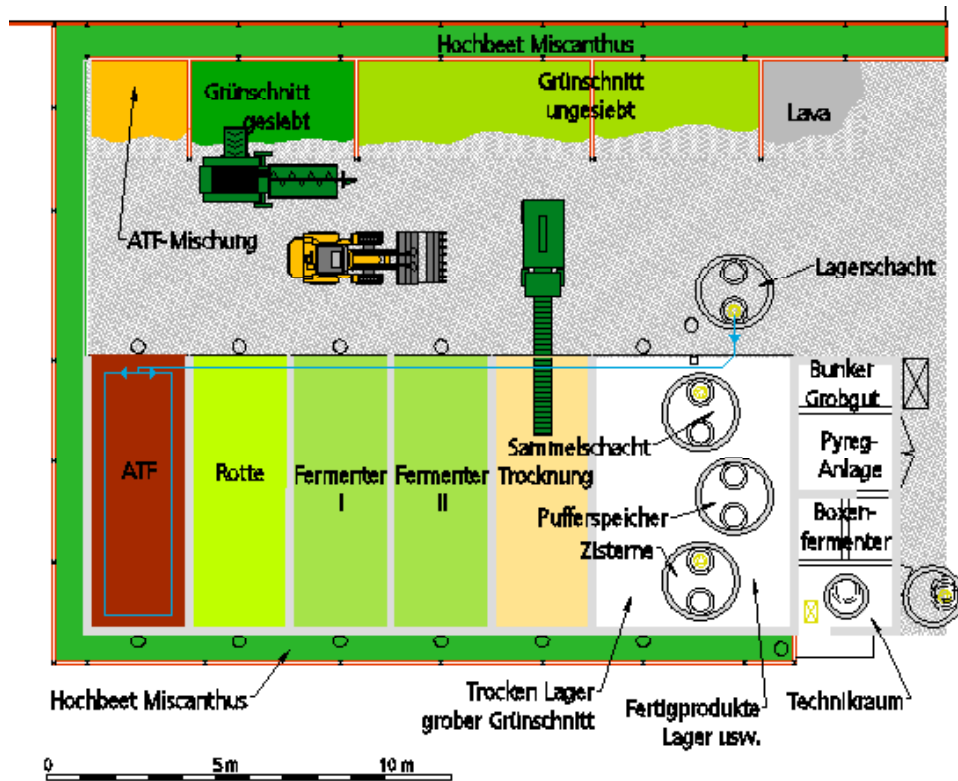
www.das-gold-der-erde.de



Terra Preta, Hengstbacherhof 2008

Terra Preta Plant in Hengstbacherhof opens 10.09.2010

1500 t/year



www.das-gold-der-erde.de

By 2050 the world's population will reach 9 billion, 34 percent higher than today.

How to feed the world?

Do we need

- artificial fertilizers?
- pesticides?
- genetically modified organism?

Don't Panic It goes Organic!

- we must understand and optimize the carbon cycle
- increase humus (carbon) content in soils



Thank you