

Globaler Wandel und Regionale Entwicklung - Herausforderungen für die Georessource Nahrung

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Arbeitsauftrag

- Interdisziplinäre Einsichten stellen die robuste Grundlage für Entscheidungen in Politik, Wirtschaft und Zivilgesellschaft dar
- Untersuchung wissenschaftlich und gesellschaftlich relevanter Fragestellungen in den Bereichen Globaler Wandel, Klimawirkung und Nachhaltige Entwicklung
- Wichtigste methodische Ansätze: System- und Szenarienanalyse, quantitative und qualitative Modellierung, Computersimulation und Datenintegration

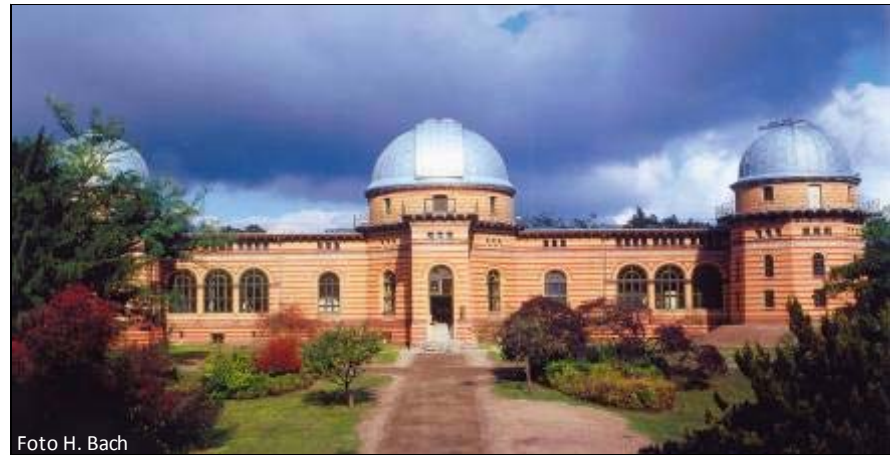
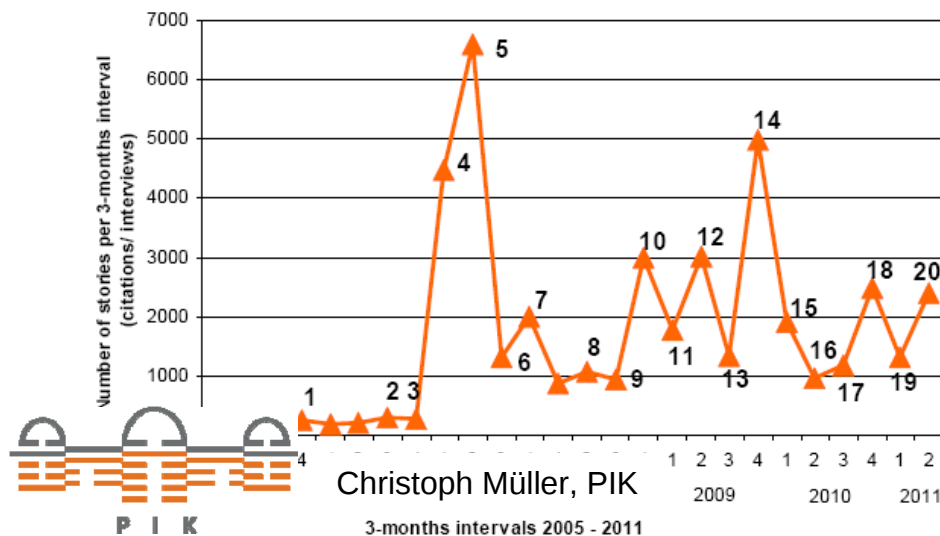


Foto H. Bach

Öffentlichkeitsarbeit



PIK-related print media coverage



Girls' Day
Mädchen-Zukunftstag



LANGE
NACHT
DER
WISSEN
SCHAFTEN 2009

PIK Eckdaten

Potsdam-Institut für Klimafolgenforschung

Gründung: 1992 - Mitglied der Leibniz-Gemeinschaft

Ressourcen: ~320 Mitarbeiter (ca. 210 Wissenschaftler, 45 Praktikanten/Hiwis/Masterarbeiten, 65 sonstige)

2011: 10,8 Mio. € institutionelle Förderung (Bund/Land paritätisch) und ca. 10,2 Mio. € Drittmittel, 0,2 Mio. € sonstige Zuwendungen

Computer: Hochleistungsrechner mit 30 TeraFlops (30 Billionen Rechenoperationen/Sekunde)

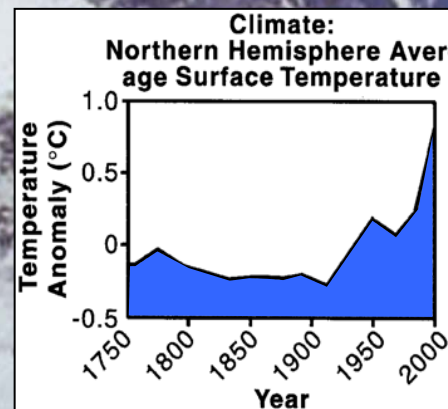
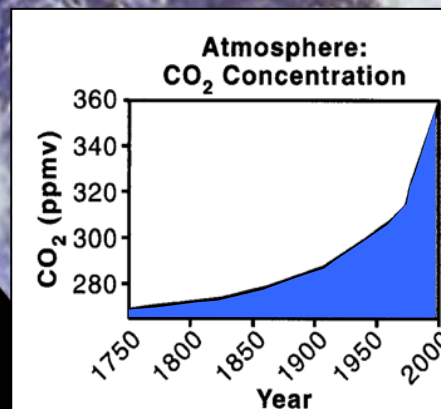
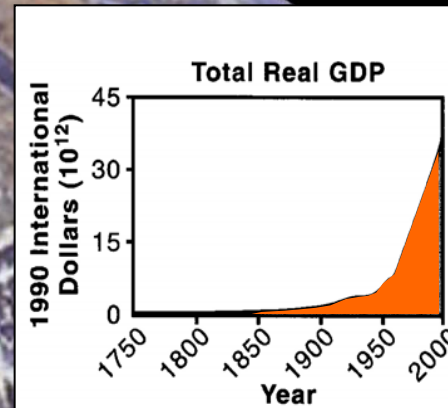
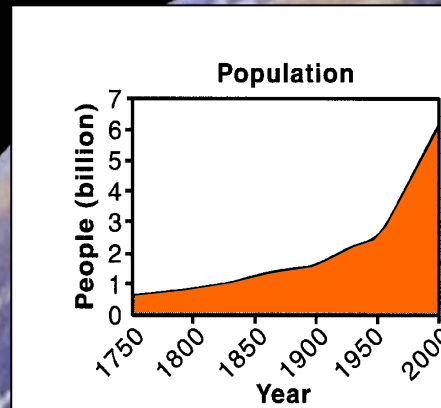


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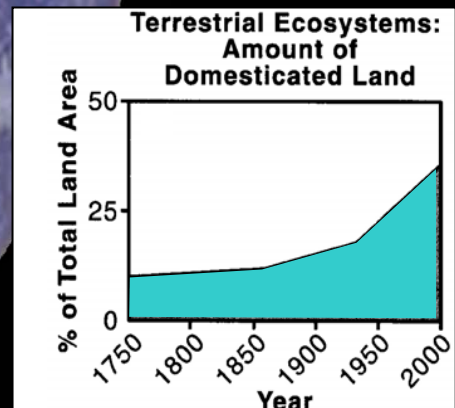
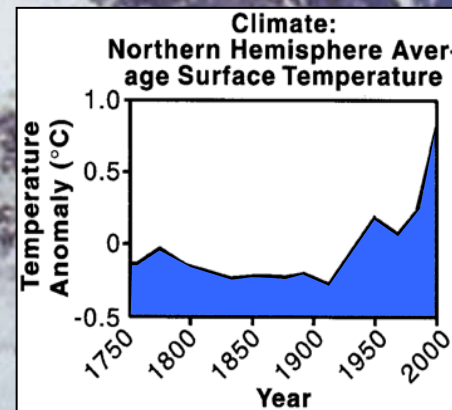
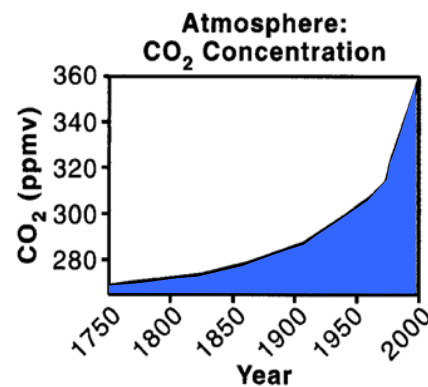
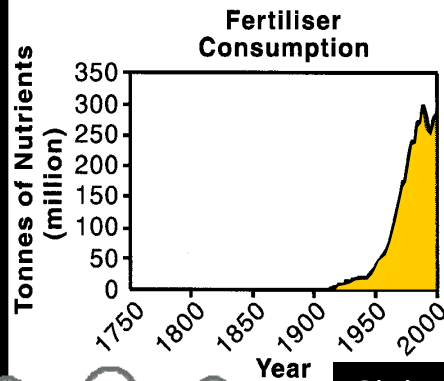
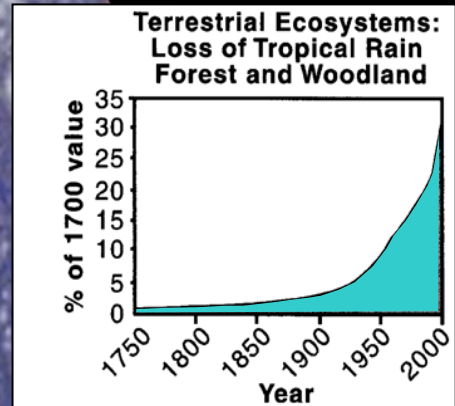
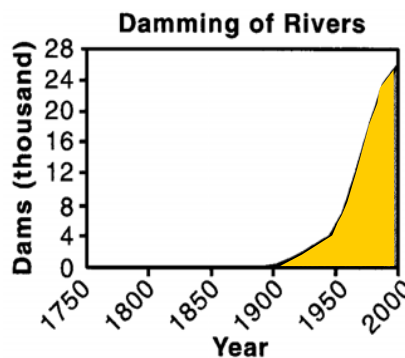
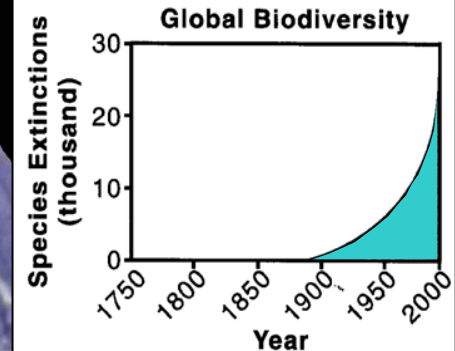
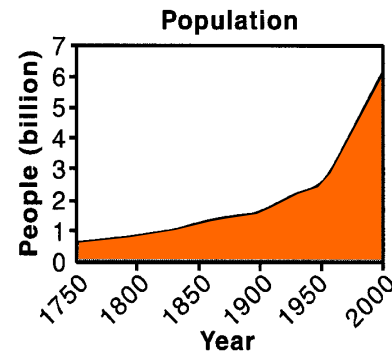
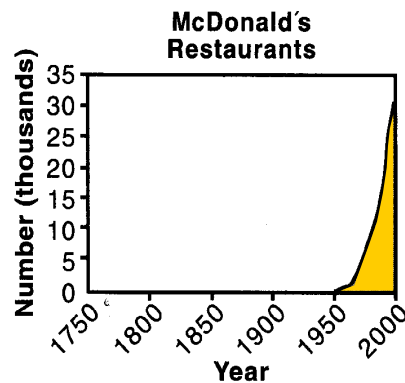
Arbeitsgruppe “MusiX”

- “Flagschiff” Projekt im Forschungsfeld 2
- Knappe Ressourcen: Wasser & Land
- Themenkomplexe:
 - Ressourcen-Allokation (Nahrungsmittel vs. Bioenergie vs. Naturschutz vs. ...)
 - Vermeidung von Klimawandel
 - Auswirkungen von Klimawandel
- Ökonomie & Biophysik
 - MAgPIE: Landnutzungsmodell
 - LPJmL: Dynamisches Vegetationsmodell mit Landwirtschaft

Klima- wandel



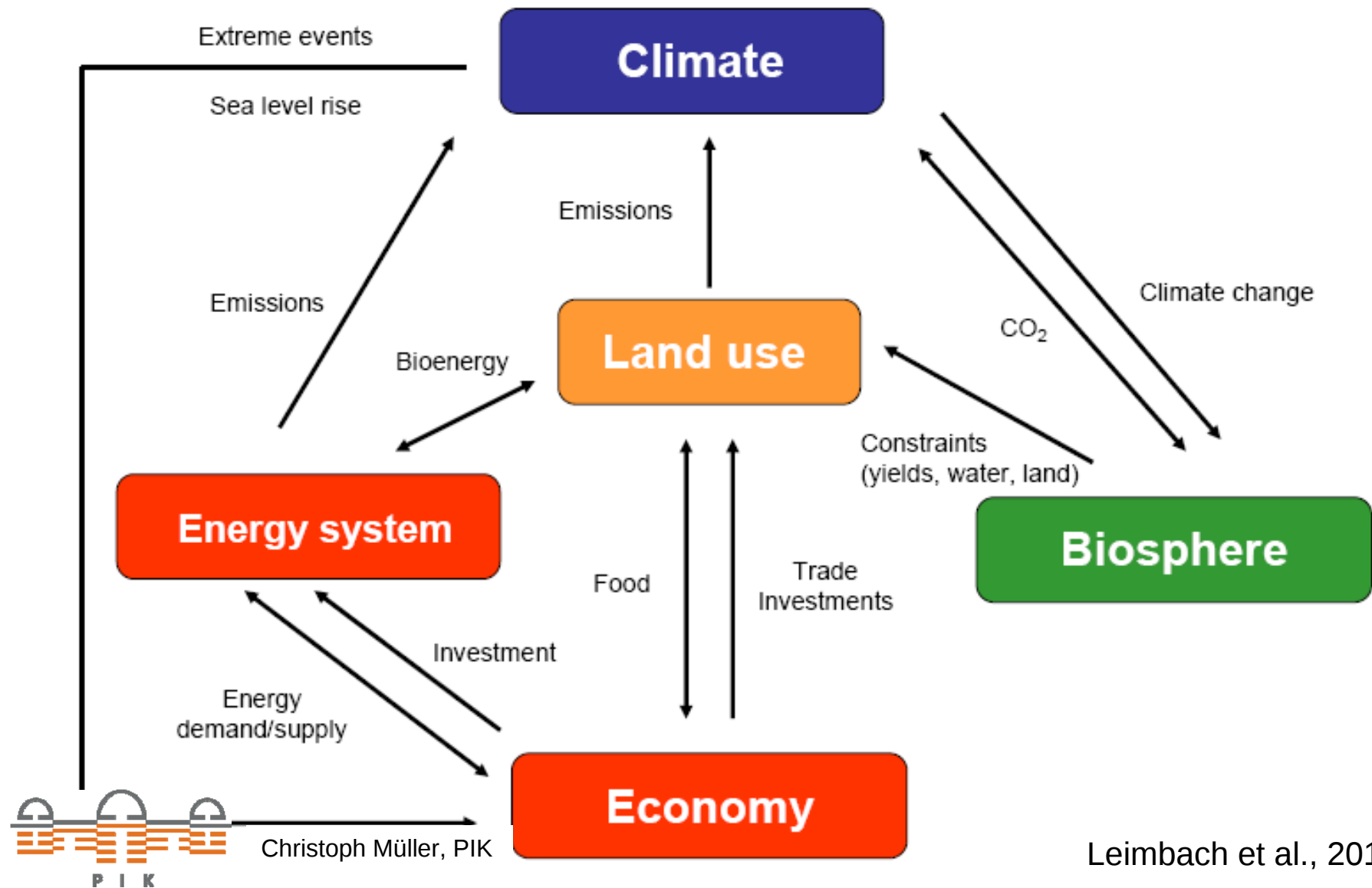
Globaler Wandel



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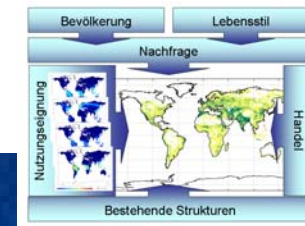
Steffen et al. 2004

Resource Land im Erdsystem

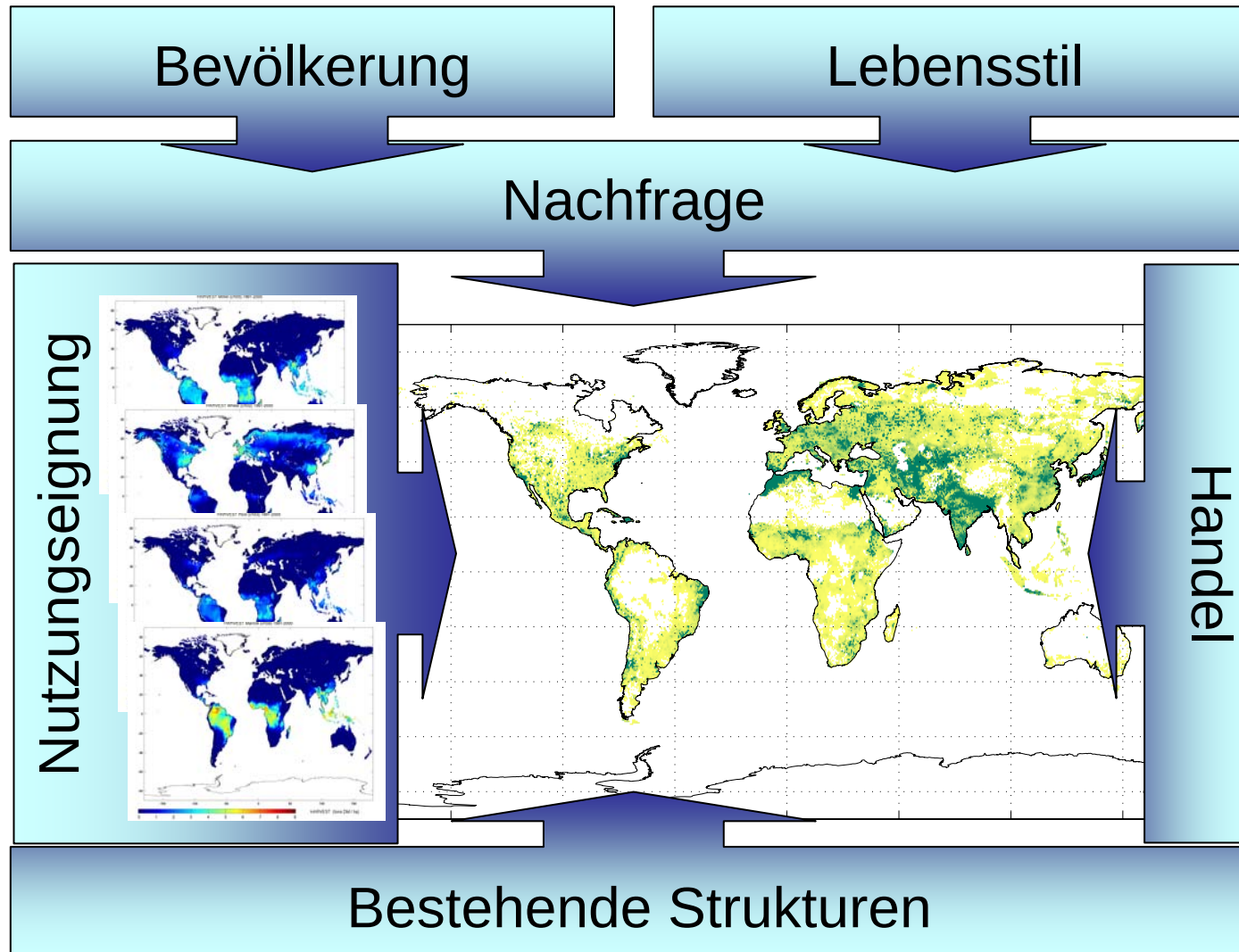


Leimbach et al., 2011

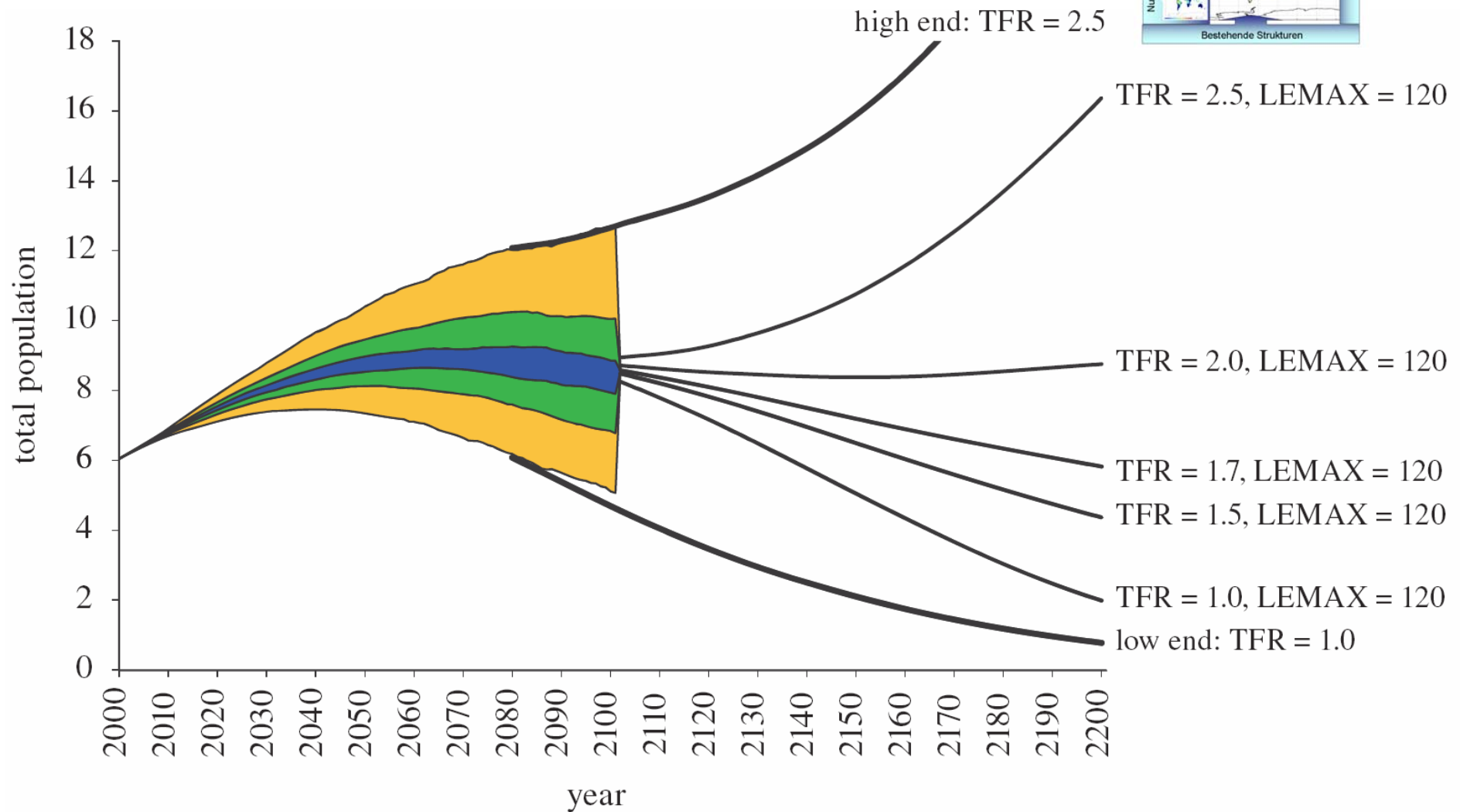
Wie viel Erde brauchen wir?



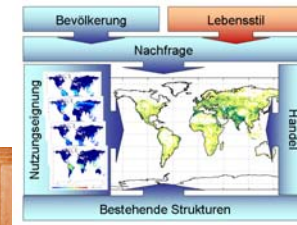
Ein konzeptionelles Modell



Bevölkerungswachstum



Lebensstile

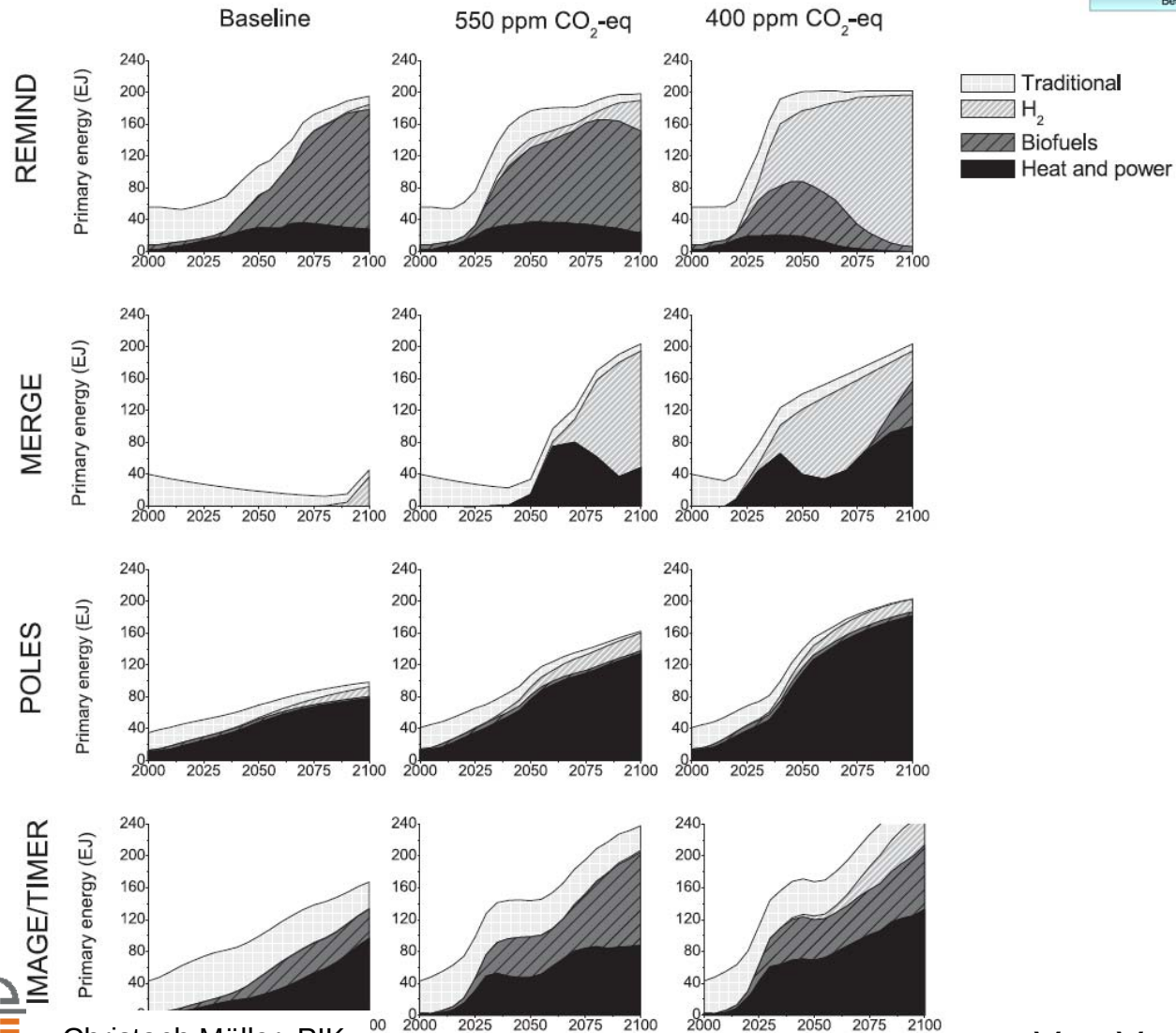


Christoph Müller, PIK

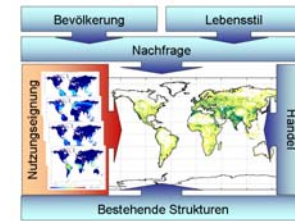


Menzel & D'Aluisio, 2007

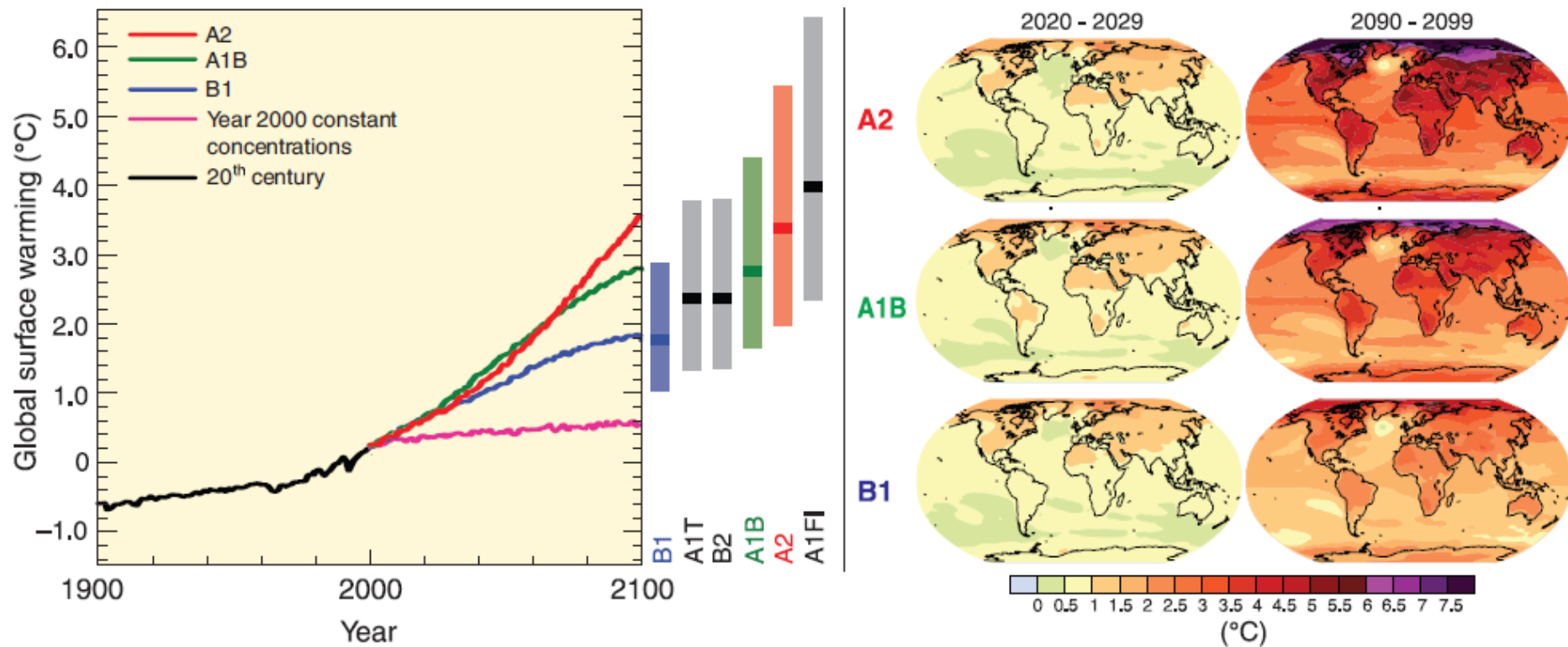
Bioenergie: Tendenz steigend



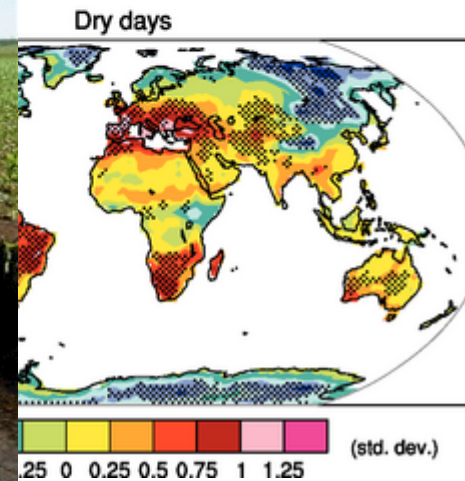
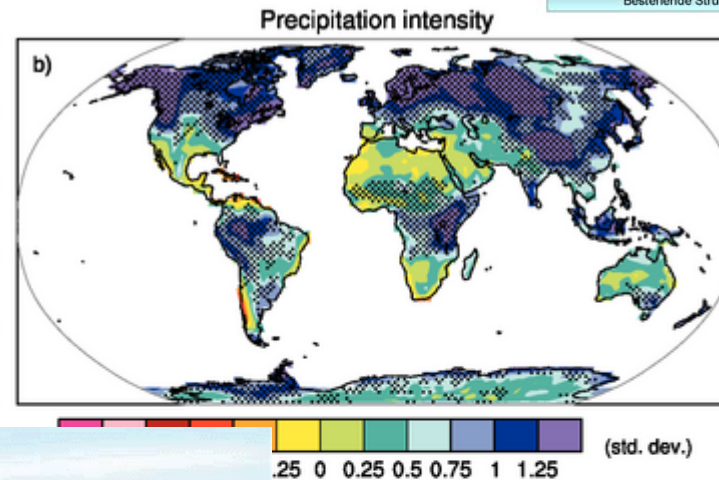
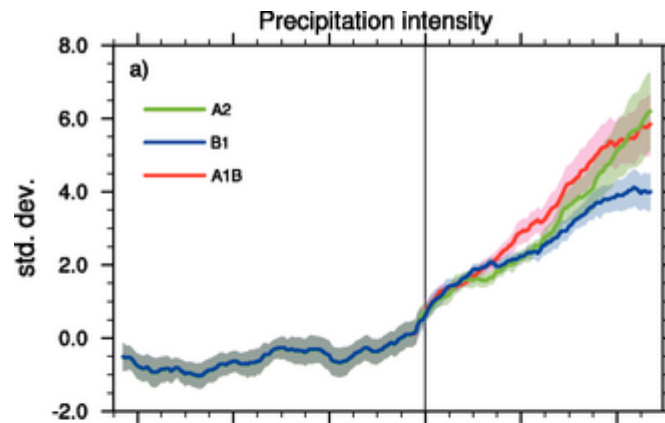
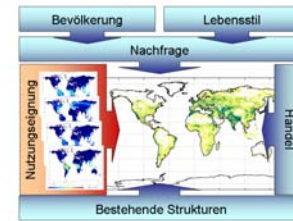
Klimawandel



Atmosphere-Ocean General Circulation Model projections of surface warming



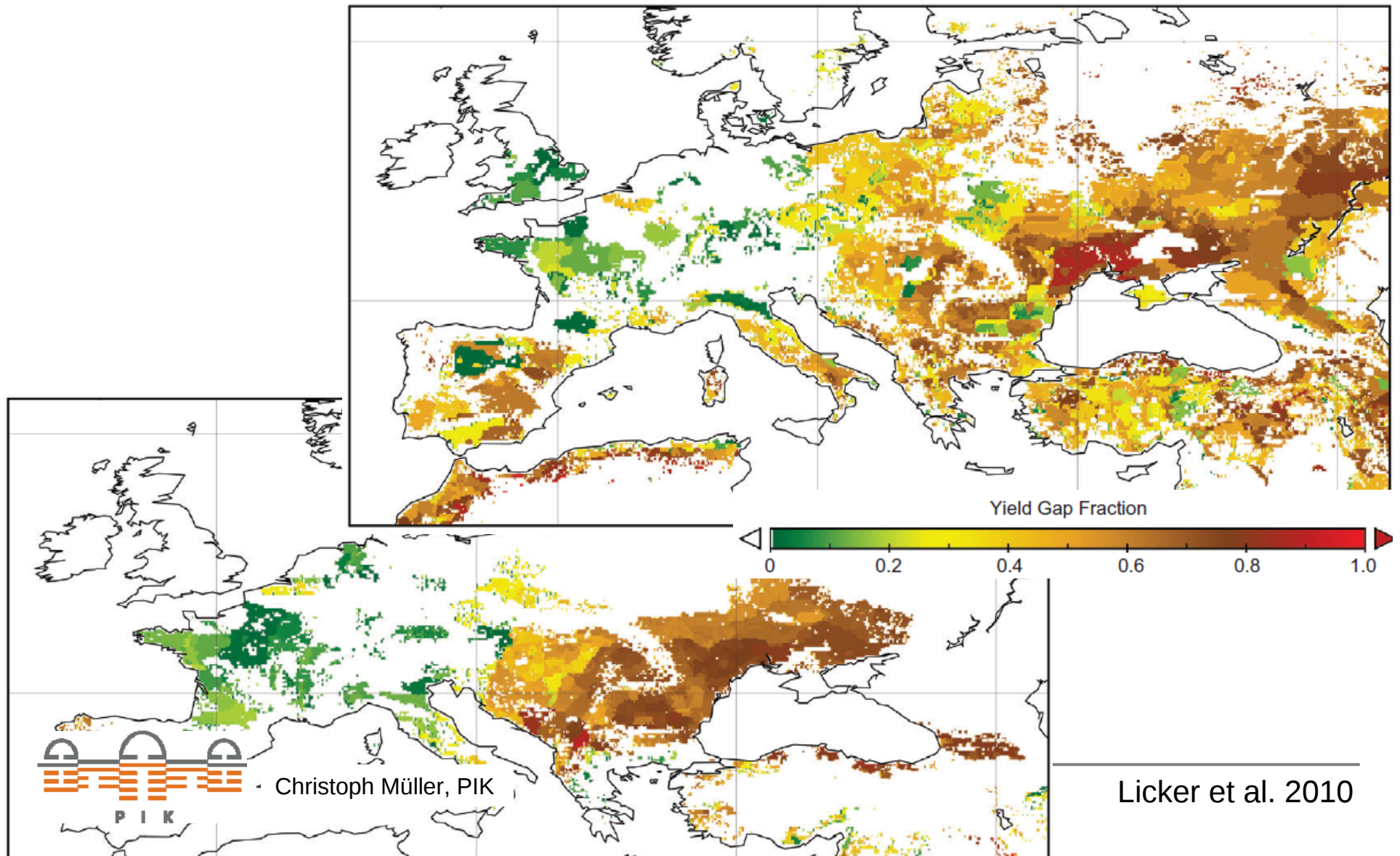
Klimaextreme



Christoph Müller, PIK

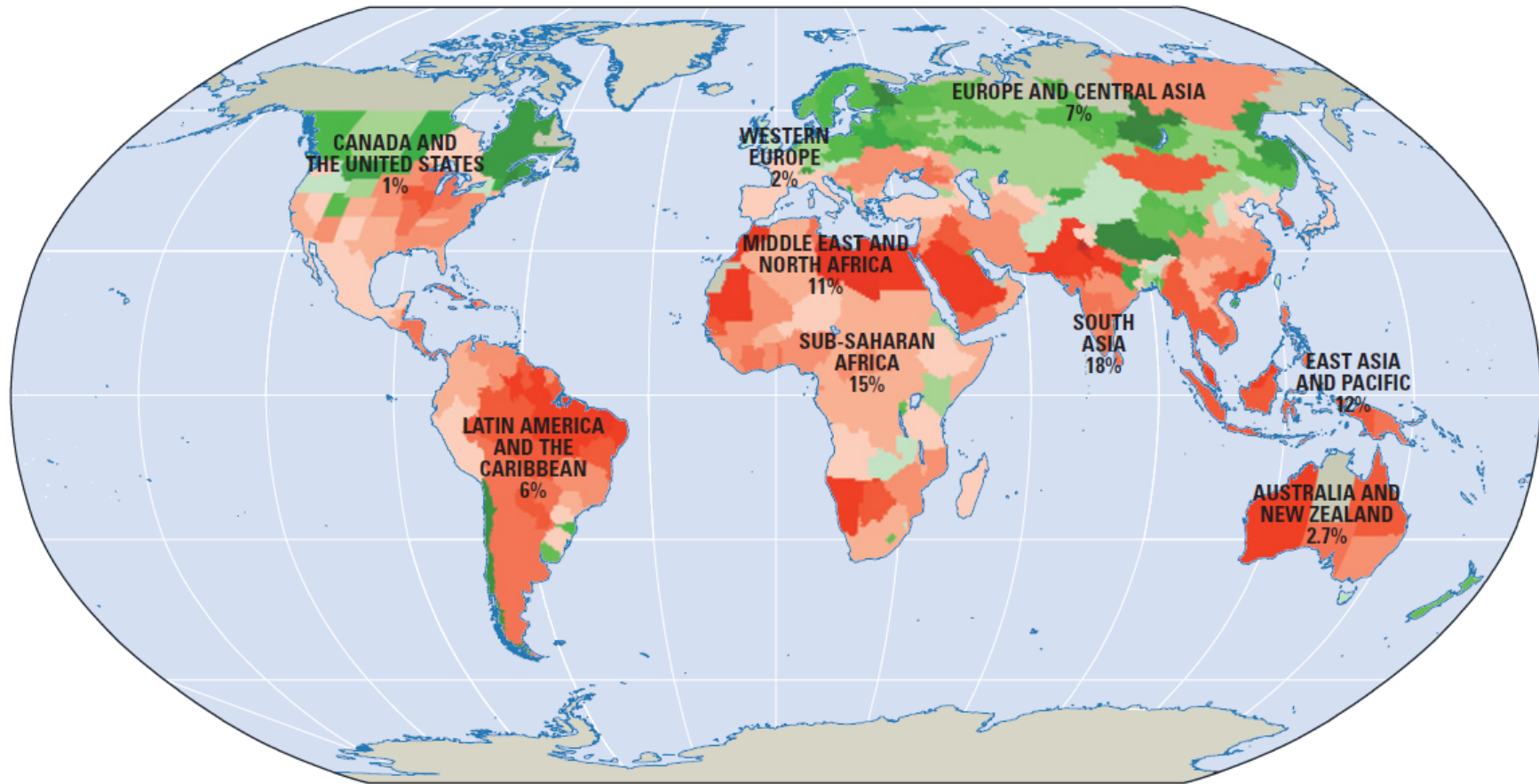
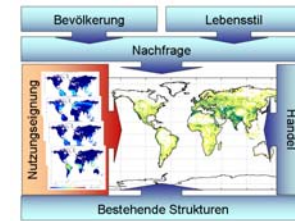
IPCC WG1 - 10 , 2007

Management

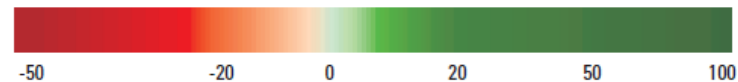


Licker et al. 2010

Klimawirkungen



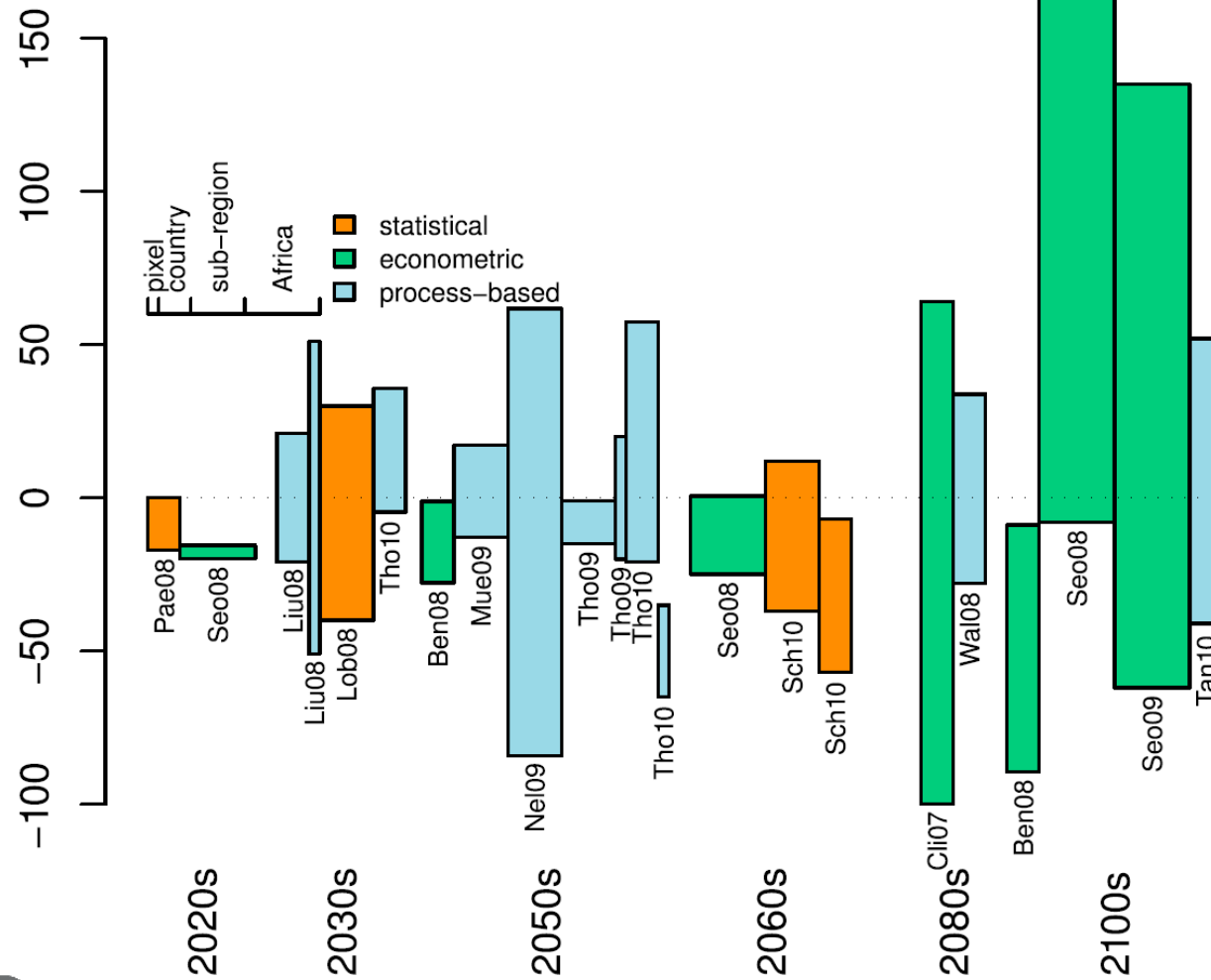
Percentage change in yields between present and 2050

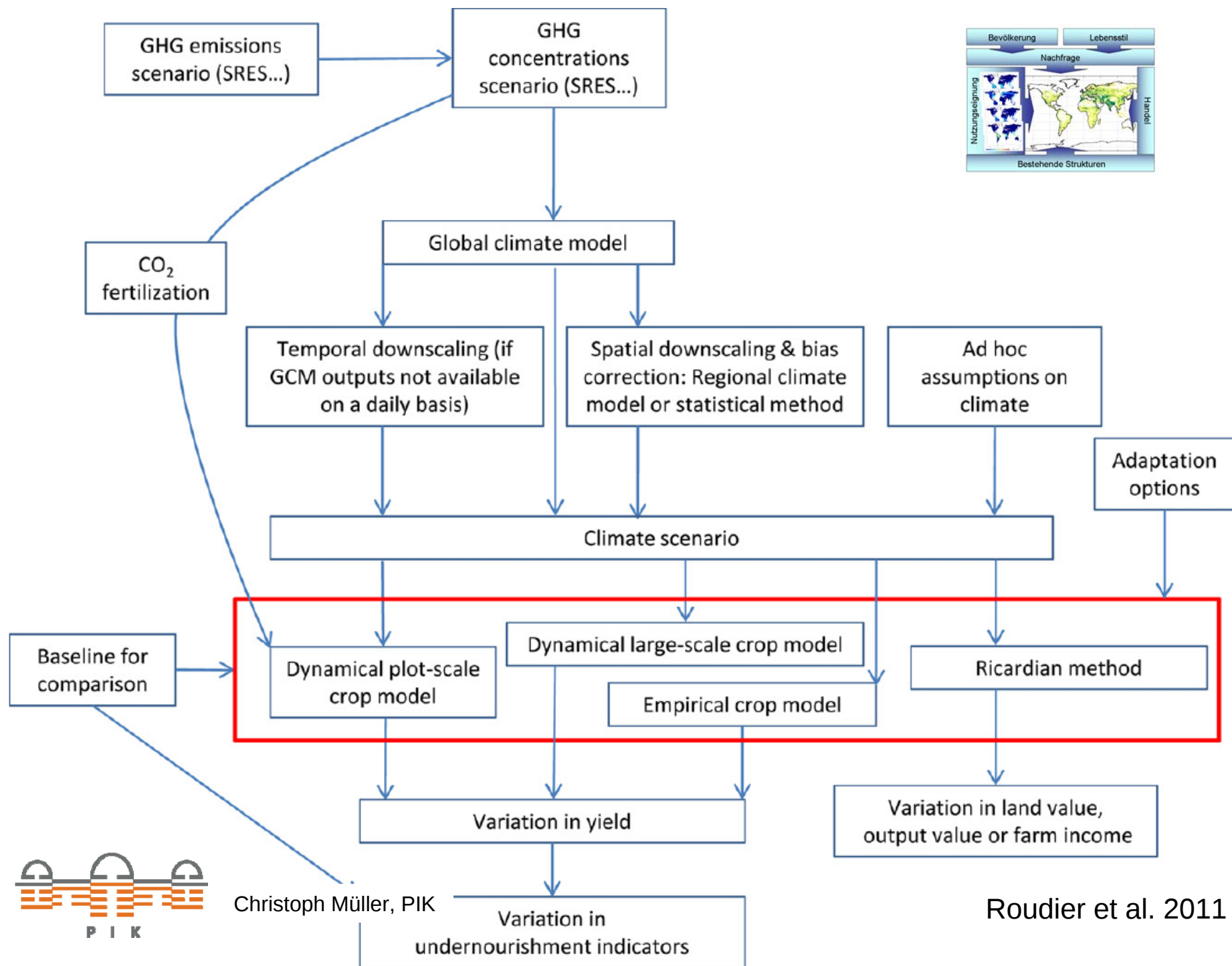


Christoph Müller, PIK

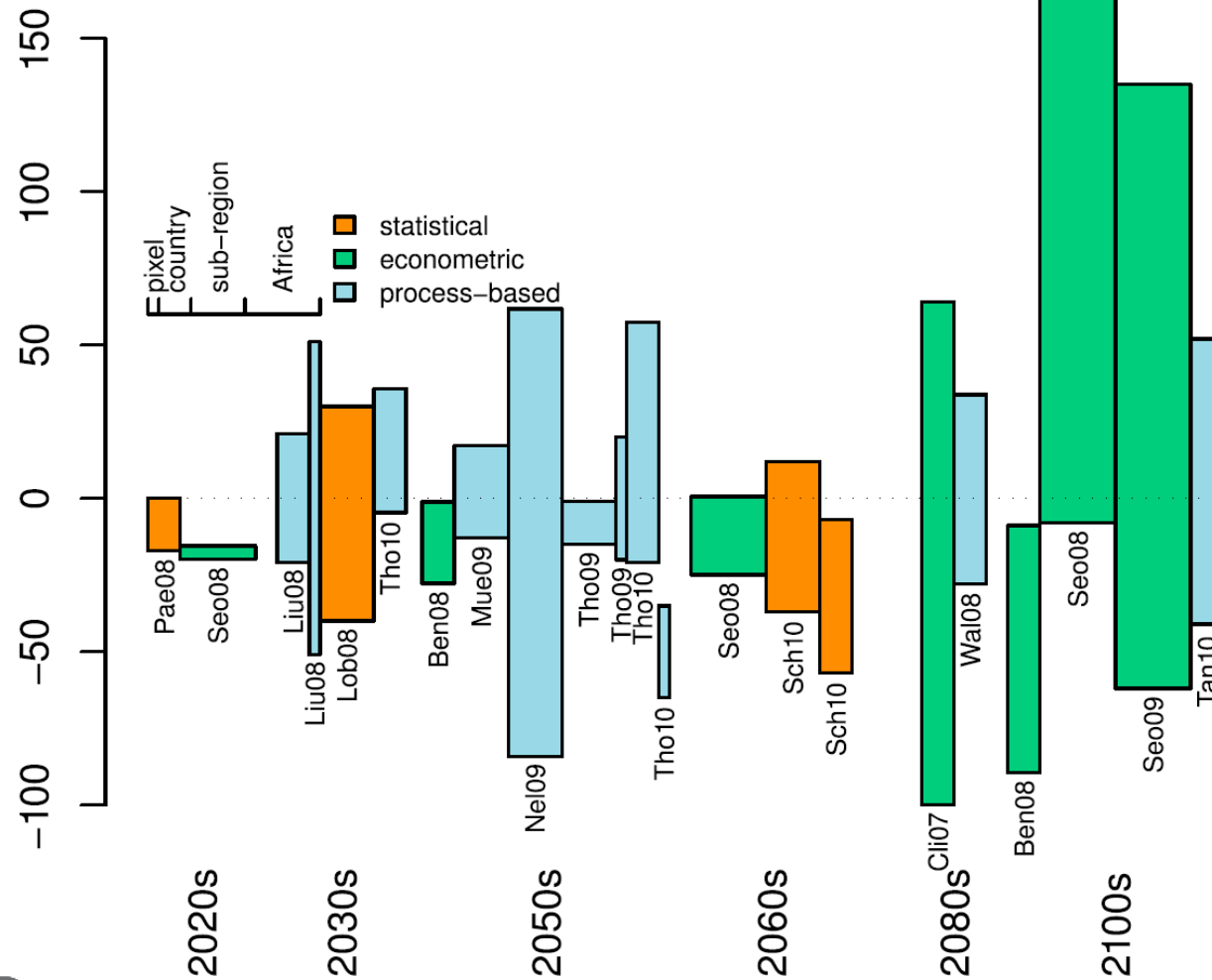
WDR 2010, Müller et al. 2009

Modelle als Entscheidungshilfe?

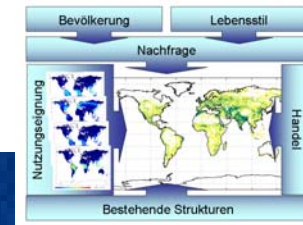




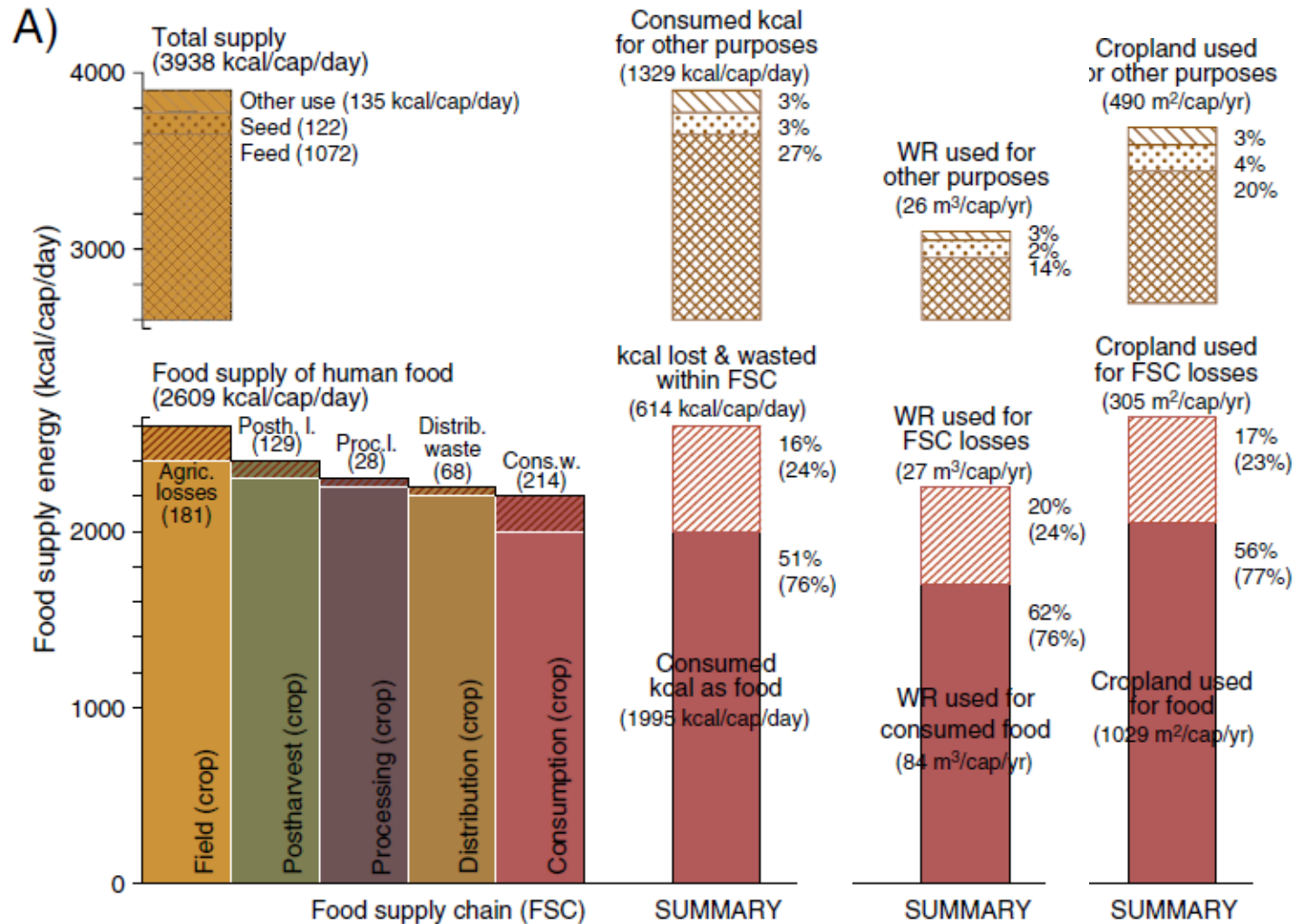
Modelle als Entscheidungshilfe!



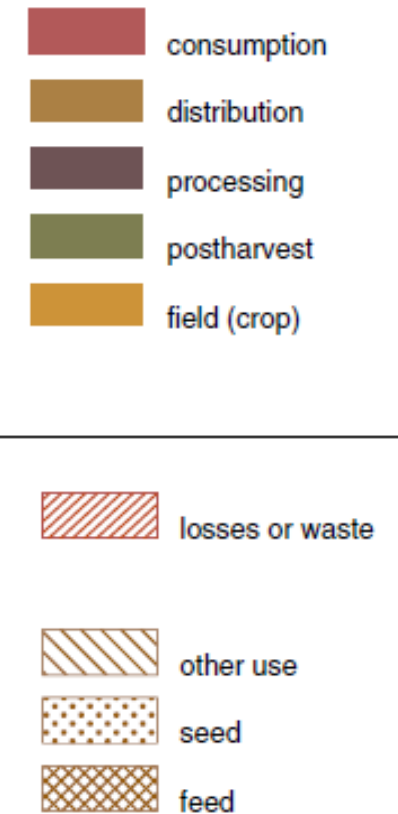
Wie viel Erde brauchen wir?



Verschwendung vermeiden



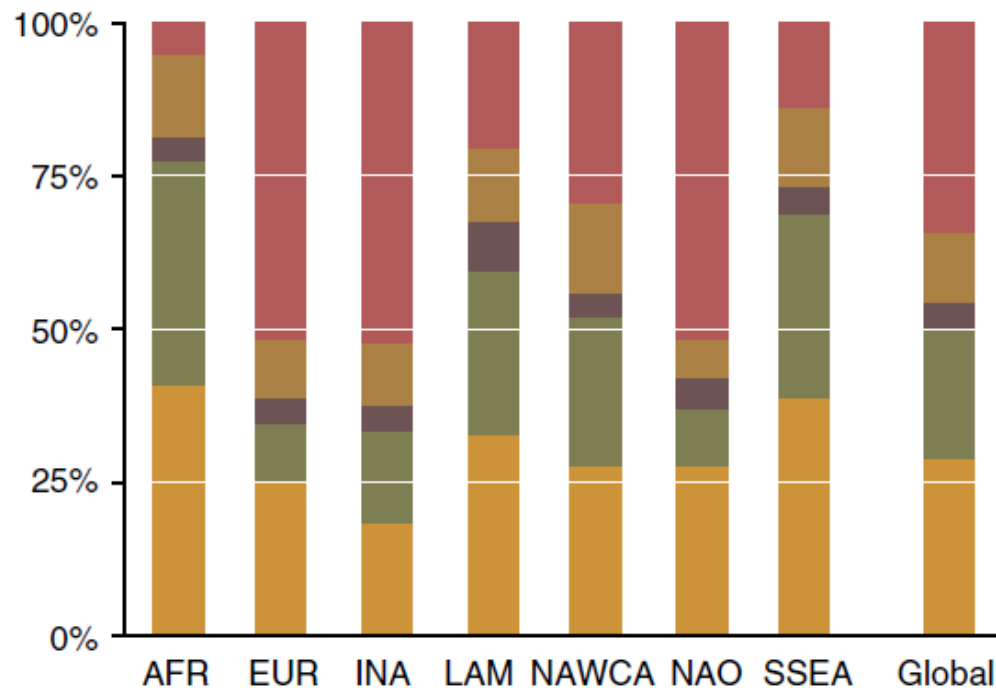
LEGEND



Verschwendung vermeiden



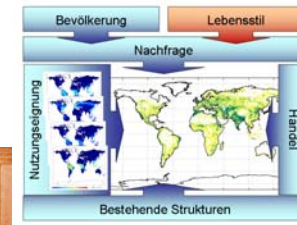
A) Relative food supply losses within FSC [%]



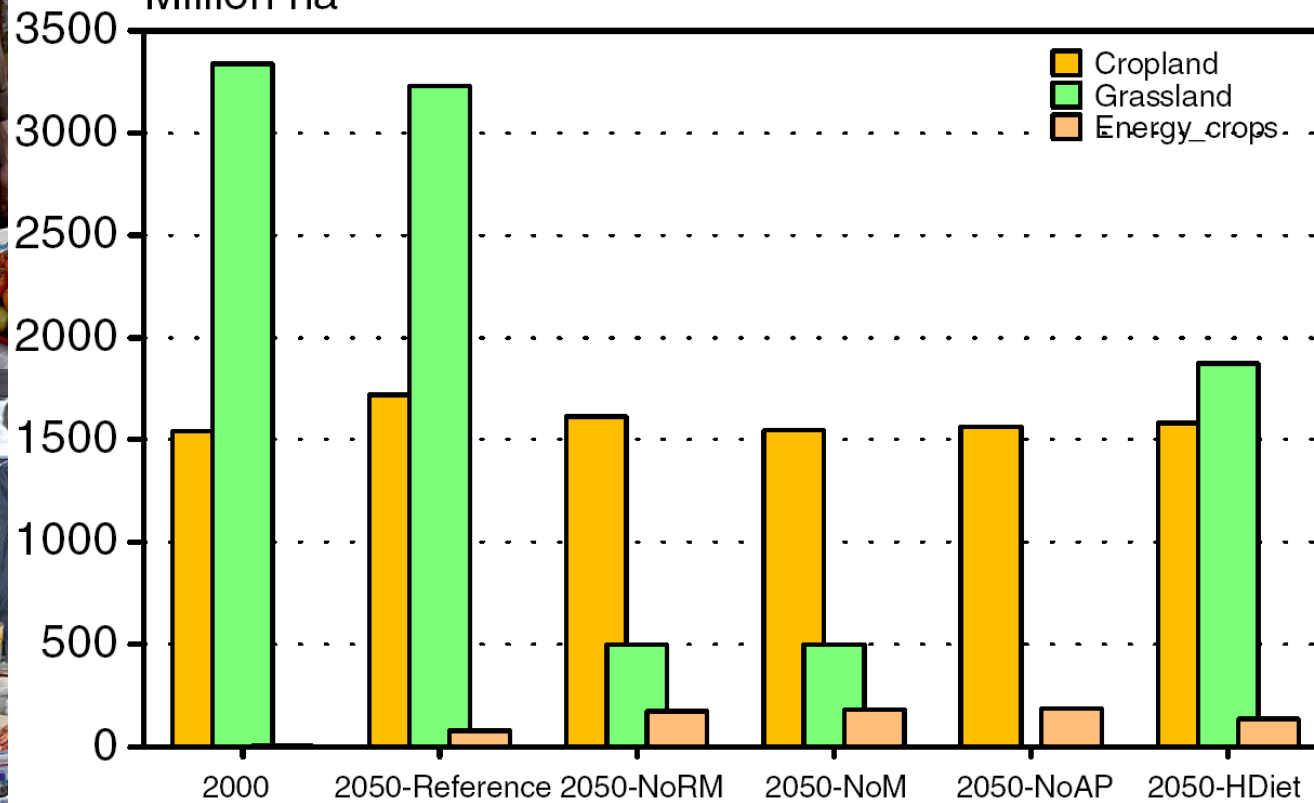
Used resources for:

- Consumption waste
- Distribution waste
- Processing losses
- Postharvest losses
- Agriculture losses

Ernährungsgewohnheiten



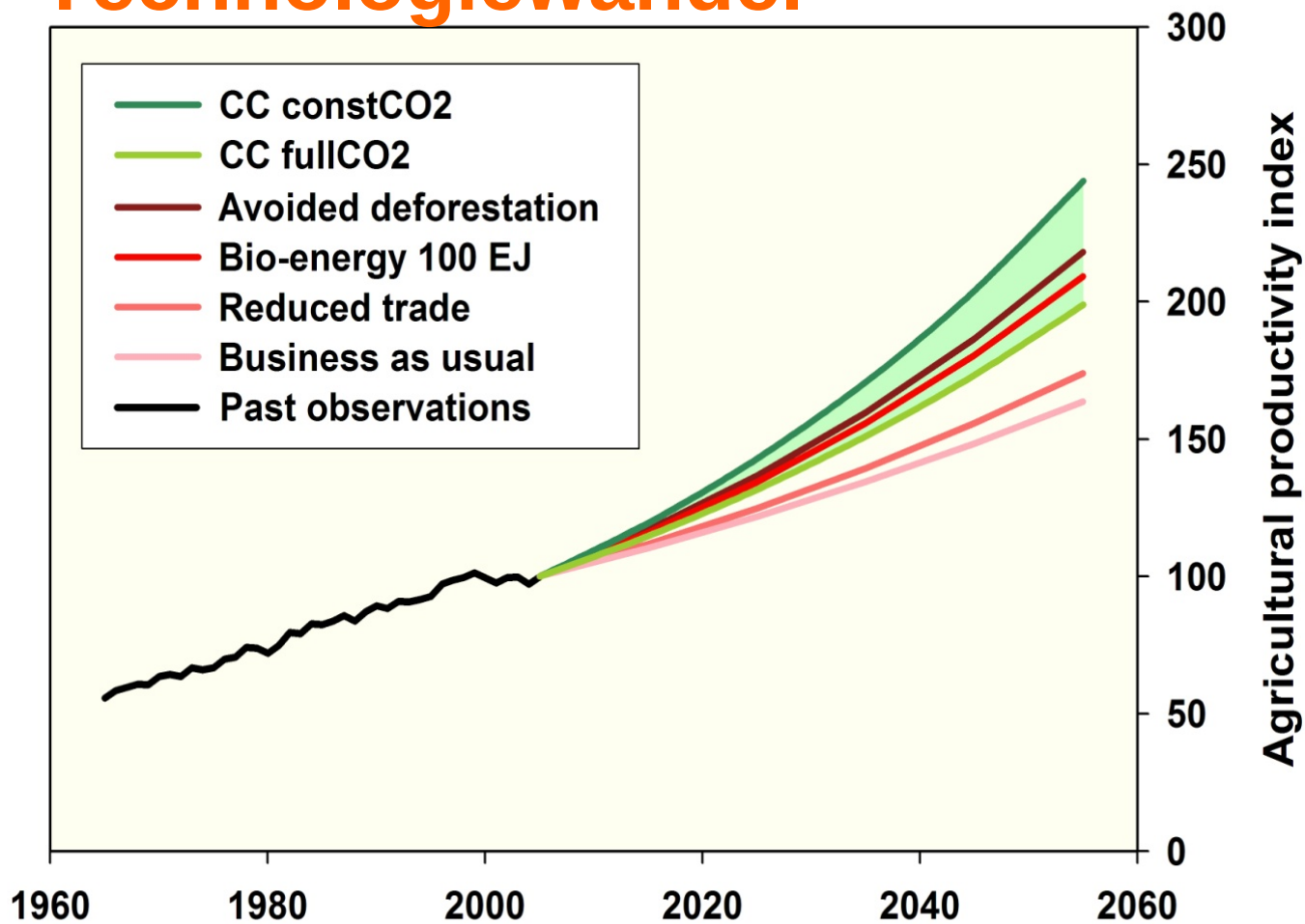
b Land use Million ha Stehfest et al., 2009



Christoph Müller, PIK

Menzel & D'Aluisio, 2007

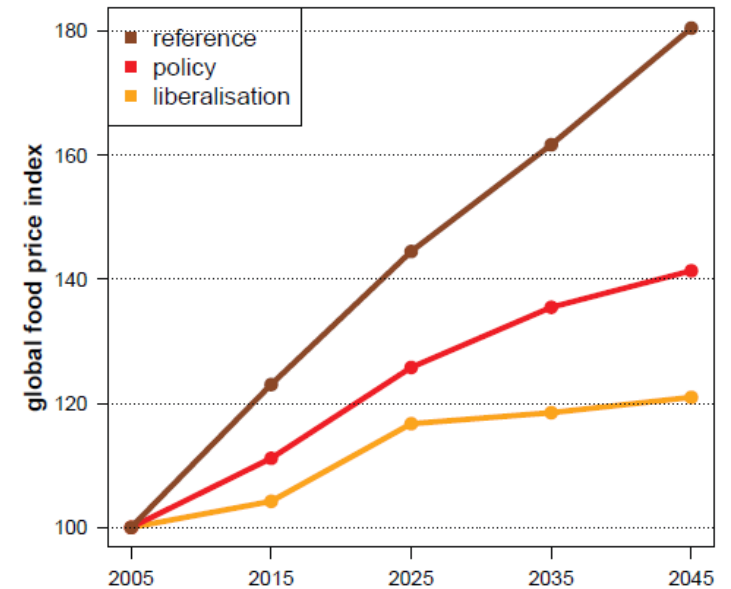
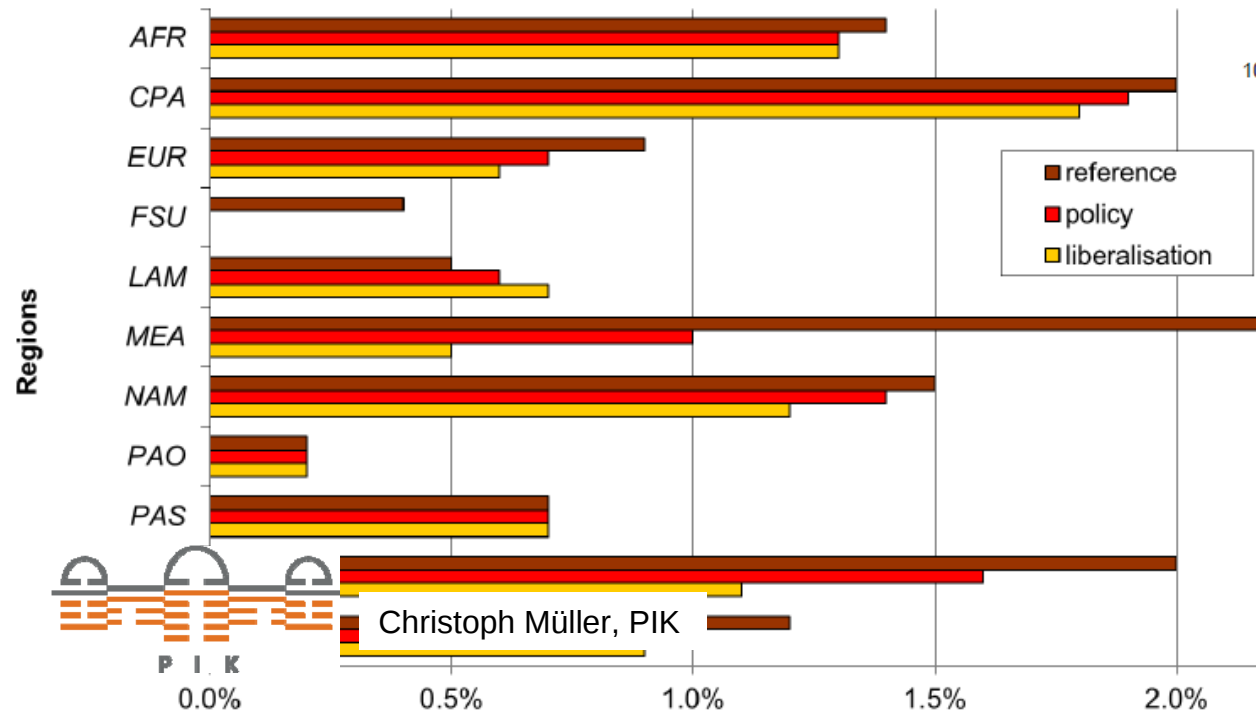
Technologiewandel



Business as usual: Years

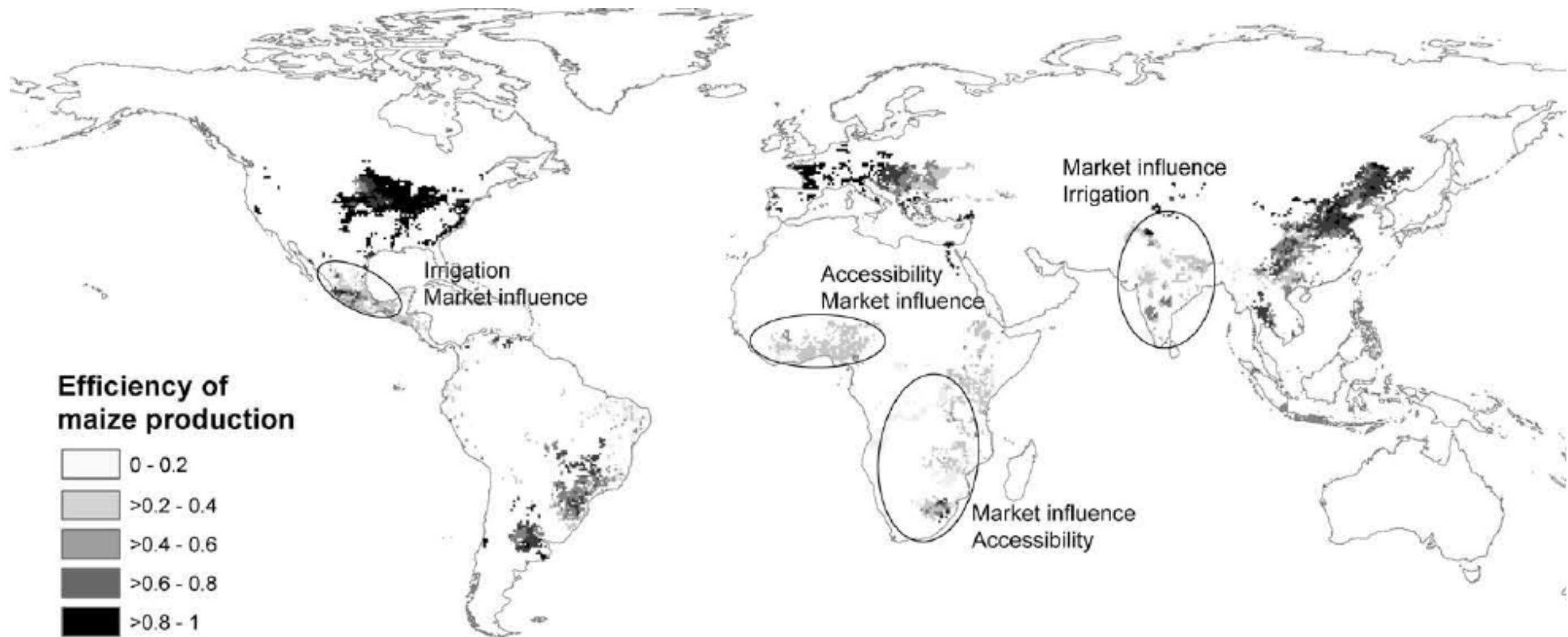
9 billion people in 2055, changing diets, no climate impacts, cropland expansion, increased globalization and trade

Handel erhöht Produktivität



Schmitz et al. 2012

Infrastrukturen, Märkte, Wasser



Prioritäten setzen



Biodiversität/Natur

Flächenverbrauch:
Klimaschutz oder Naturschutz?

Food security

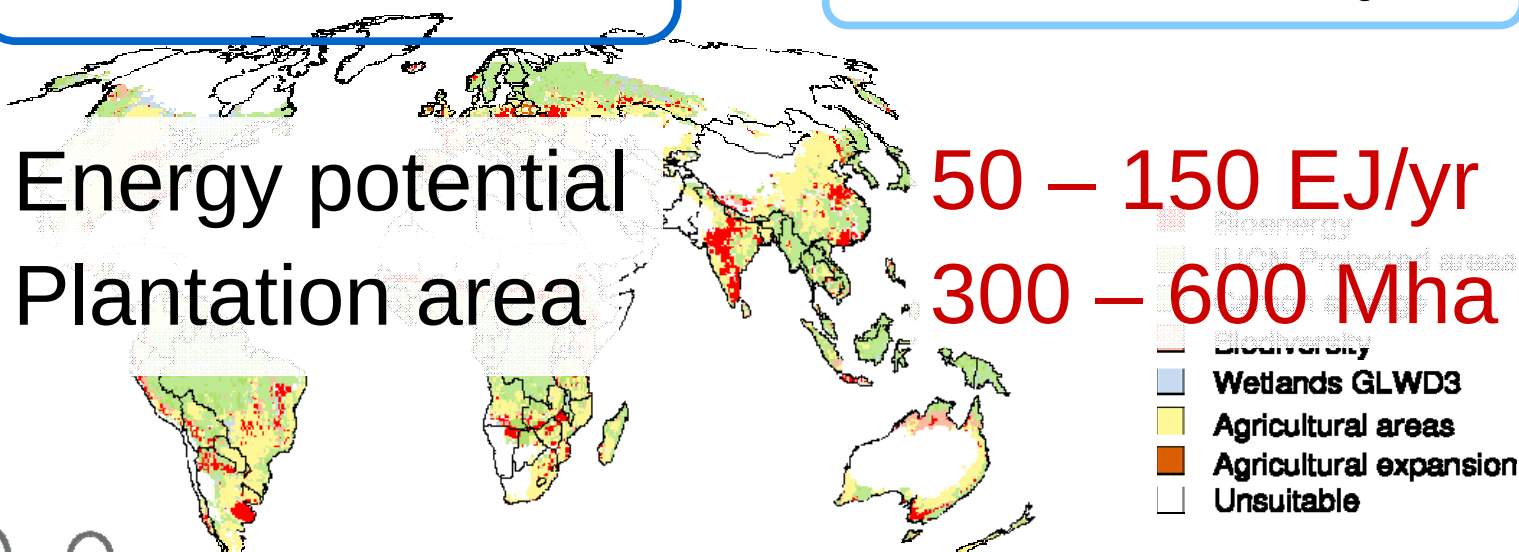
Prioritäten der Produktion:
„Essen für alle“ oder „Autofahren
für Reiche“?

Kohlenstoffspeicher

CO₂ Emissionen durch Abholzung
(Urbarmachung) von Wäldern

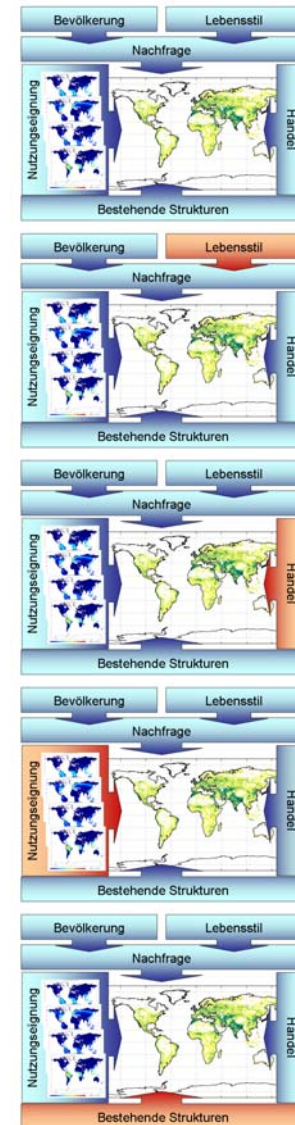
Frischwasser

Wer darf das Wasser nutzen?
Industrie? Haushalte?
Trinkwasser? Bewässerung?



Lösungsansätze

- Verschwendung reduzieren
- Ernährungsgewohnheiten ändern
- Handel ausbauen
- Management
- Technologie & Forschung
- Klimawandel vermeiden



Vielen Dank.

