

**Institute for Advanced Sustainability Studies
IASS in Potsdam**

GLOBALE LANDNUTZUNG

**Alexander Müller
06. Dezember 2013**

WORLD SOIL RESOURCES

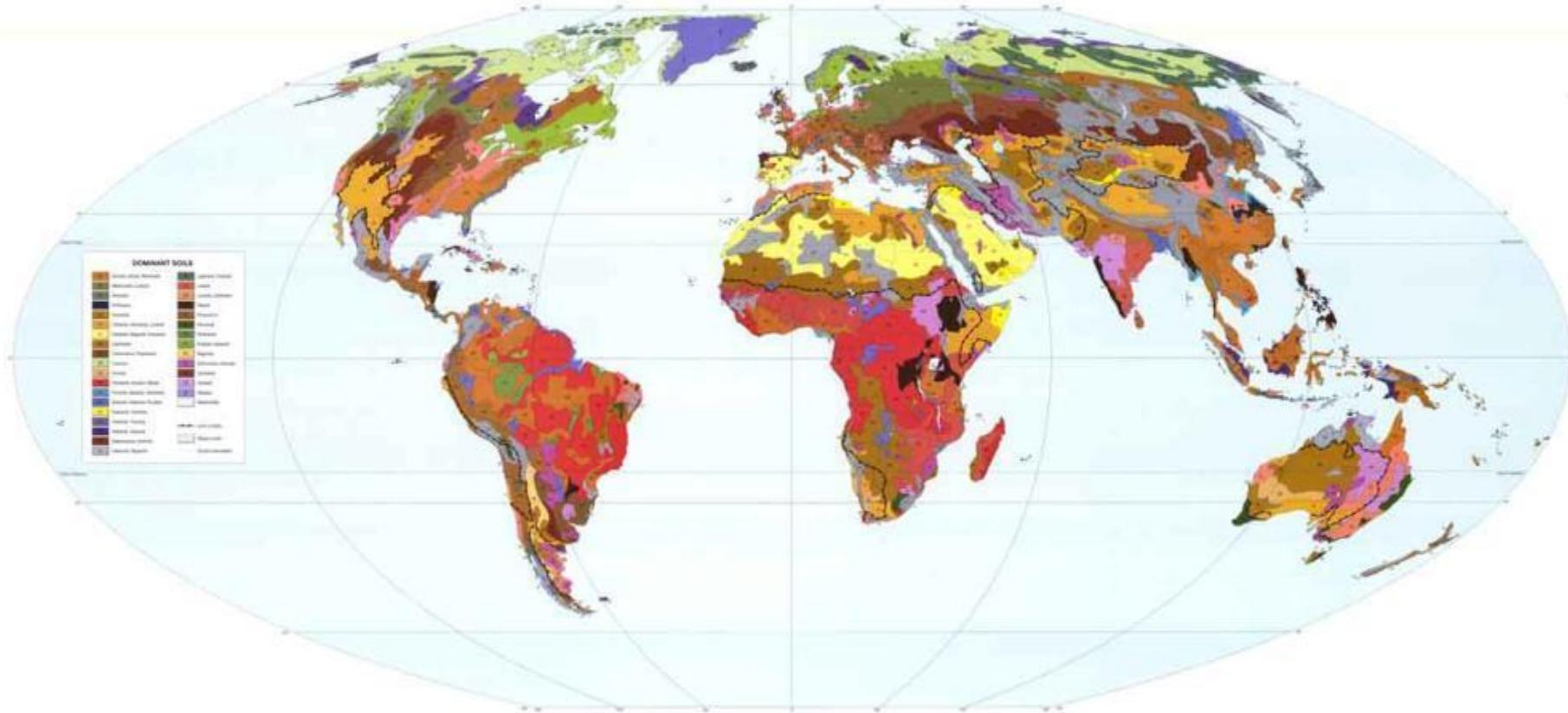
Food and Agriculture Organisation of the United Nations
European Commission - Joint Research Centre
International Soil Reference and Information Centre



EUROPEAN COMMISSION
Joint Research Centre



The Minister is invited to the presentation of the annual financial statement of the Ministry of Agriculture, Fisheries and Food, and the Annual Report of the Ministry of Agriculture, Fisheries and Food.



WORLD REFERENCE BASE (WRB) - REFERENCE GROUPS (FAO/ERIC/1998)

WORLD SOIL RESOURCES

Food and Agriculture Organization of the United Nations
European Commission - Joint Research Centre
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EUROPEAN COMMISSION
KIOSK RESEARCH CENTRE

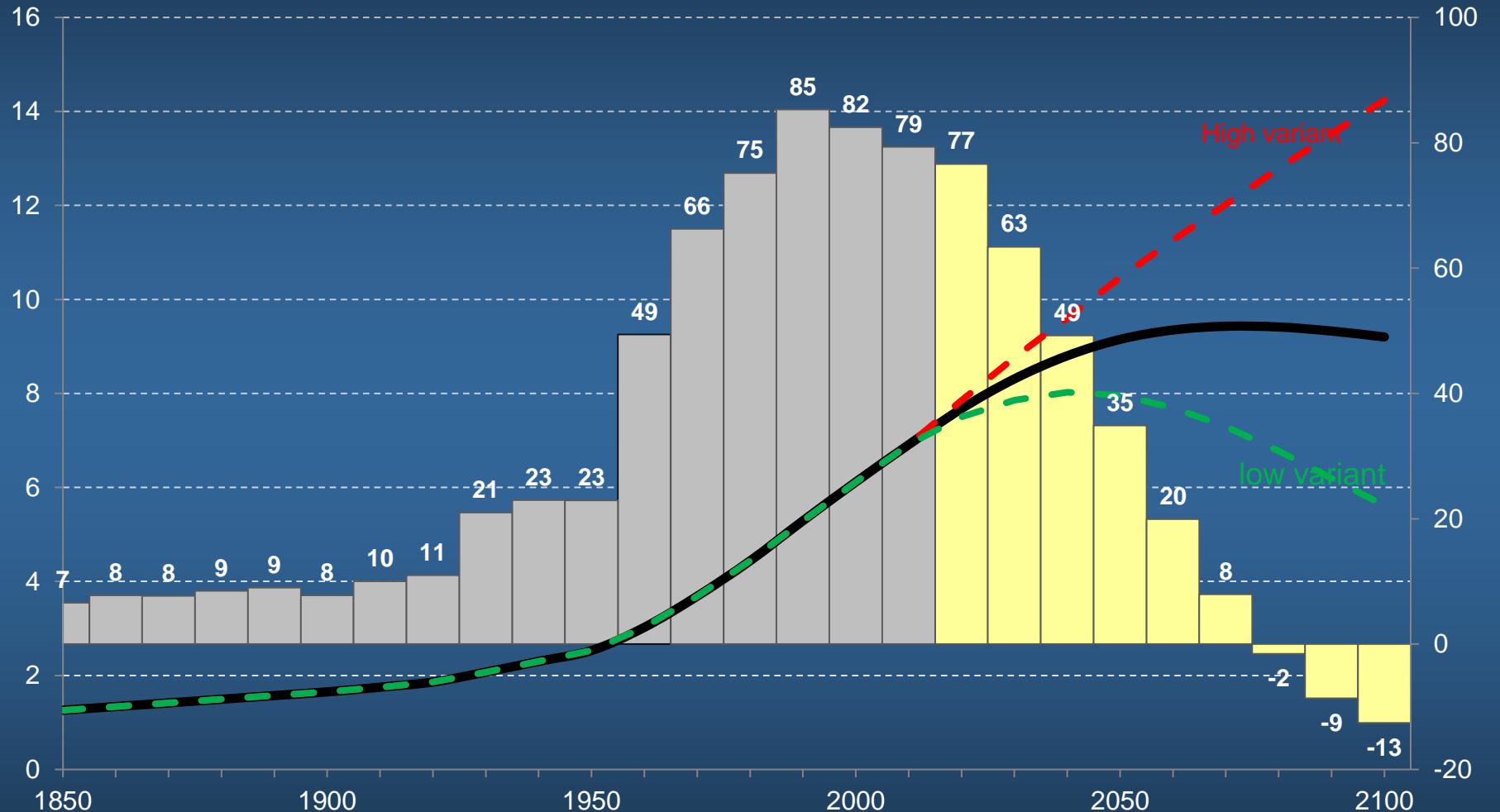


WORLD REFERENCE BASE (WRB) - REFERENCE GROUPS (FAO/ISRIC/ISSS, 1998)														
ACROSOLS Soils with a high concentration of salts and/or gypsum.	ALBISOLISOLS Soils with a high concentration of salts and/or gypsum.	ALFISOLS Soils with a high concentration of salts and/or gypsum.	ALFISOLISOLS Soils with a high concentration of salts and/or gypsum.	ANTHROSOLS Soils with a high concentration of salts and/or gypsum.	APENISOLS Soils with a high concentration of salts and/or gypsum.	CALCISOLS Soils with a high concentration of salts and/or gypsum.	CAMBISOLS Soils with a high concentration of salts and/or gypsum.	CHROMOSPHE Soils with a high concentration of salts and/or gypsum.	CRYOSOLE Soils with a high concentration of salts and/or gypsum.	DURISOLS Soils with a high concentration of salts and/or gypsum.	FERRALSOLS Soils with a high concentration of salts and/or gypsum.	FLUVISOLS Soils with a high concentration of salts and/or gypsum.	GLEYISOLS Soils with a high concentration of salts and/or gypsum.	GYPSISOLS Soils with a high concentration of salts and/or gypsum.
HISTOSOLS Soils with a high concentration of organic matter.	KASTANISOLS Soils with a high concentration of organic matter.	LEPTOSOLS Soils with a high concentration of organic matter.	LUXISOLS Soils with a high concentration of organic matter.	METASOLS Soils with a high concentration of organic matter.	PHANOSOLS Soils with a high concentration of organic matter.	PLANOSOLS Soils with a high concentration of organic matter.	PLINTHOSOLS Soils with a high concentration of organic matter.	POZOSOLS Soils with a high concentration of organic matter.	RESOSOLS Soils with a high concentration of organic matter.	SOILONCHES Soils with a high concentration of organic matter.	SOILONETS Soils with a high concentration of organic matter.	UMBRISOLS Soils with a high concentration of organic matter.	VERTISOLS Soils with a high concentration of organic matter.	
LUDOSOLS Soils with a high concentration of organic matter.	MORISOLS Soils with a high concentration of organic matter.	PLATISOLS Soils with a high concentration of organic matter.	PLATOSOLS Soils with a high concentration of organic matter.	PLATOSOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	PLATOSOLISOLISOLISOLISOLISOLISOLISOLS Soils with a high concentration of organic matter.	
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Population growth to continue, but at a slower pace

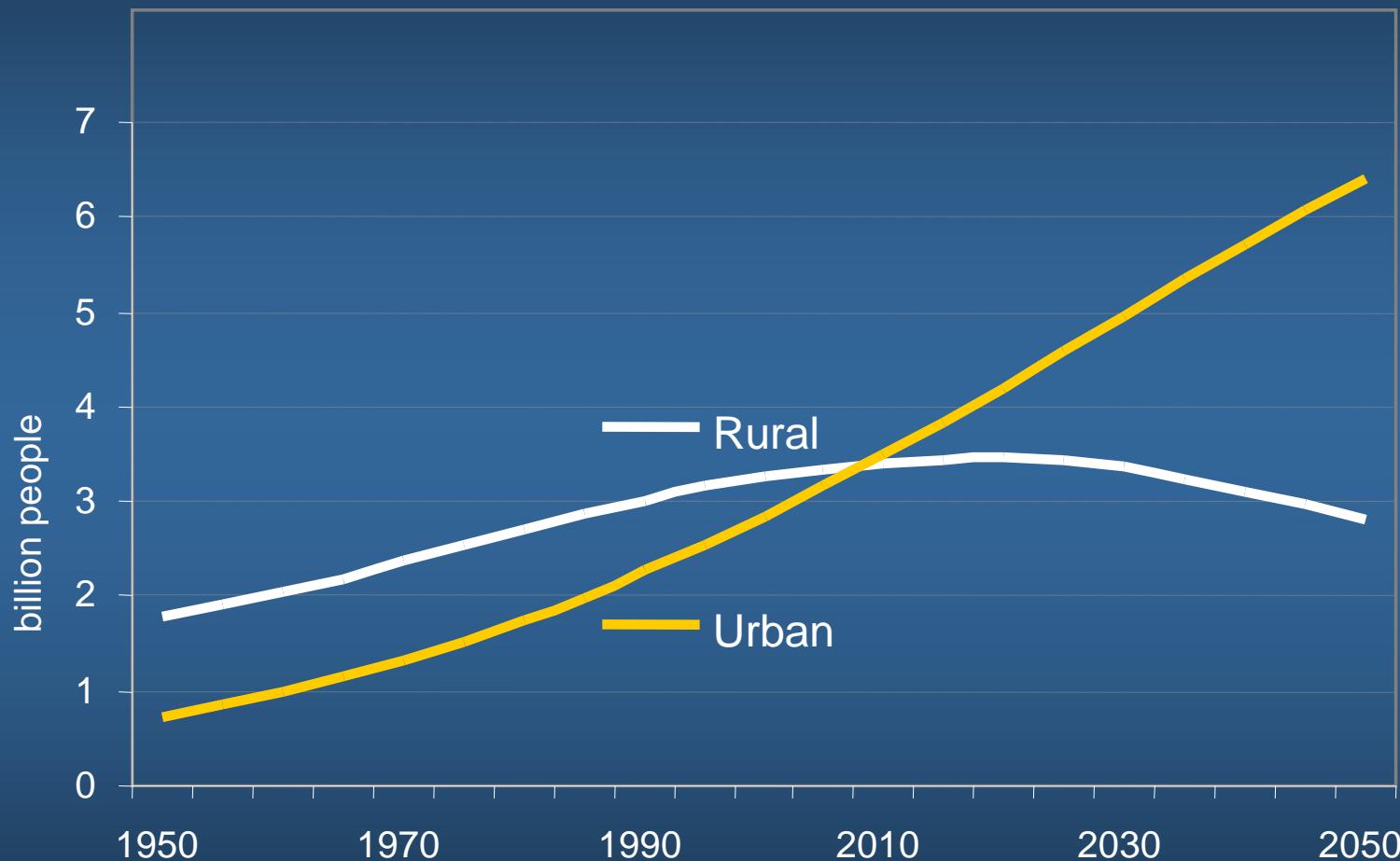
Total population
(billions)

Annual increments
(millions)

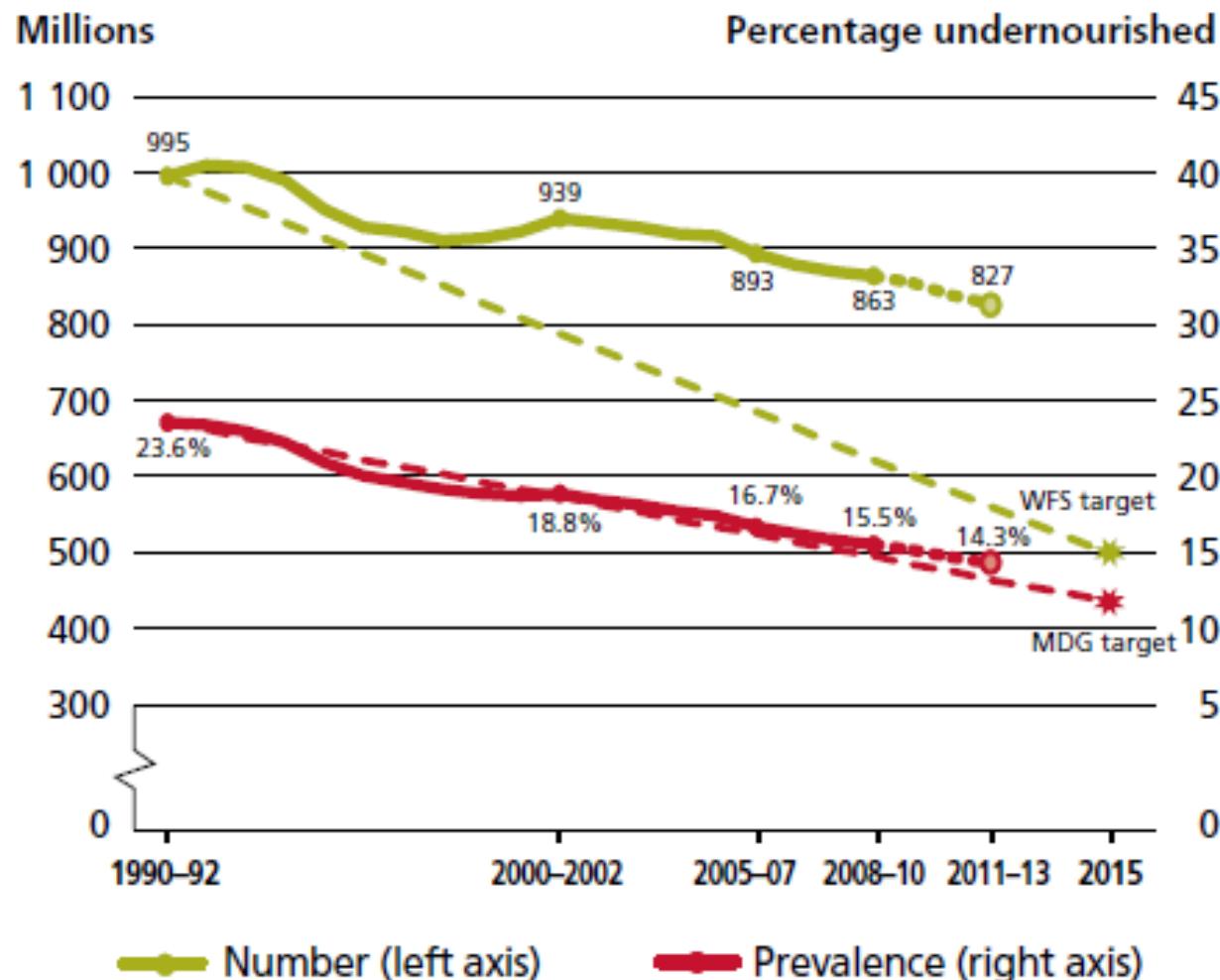


Source: UNPD, 2008

Urbanization to accelerate



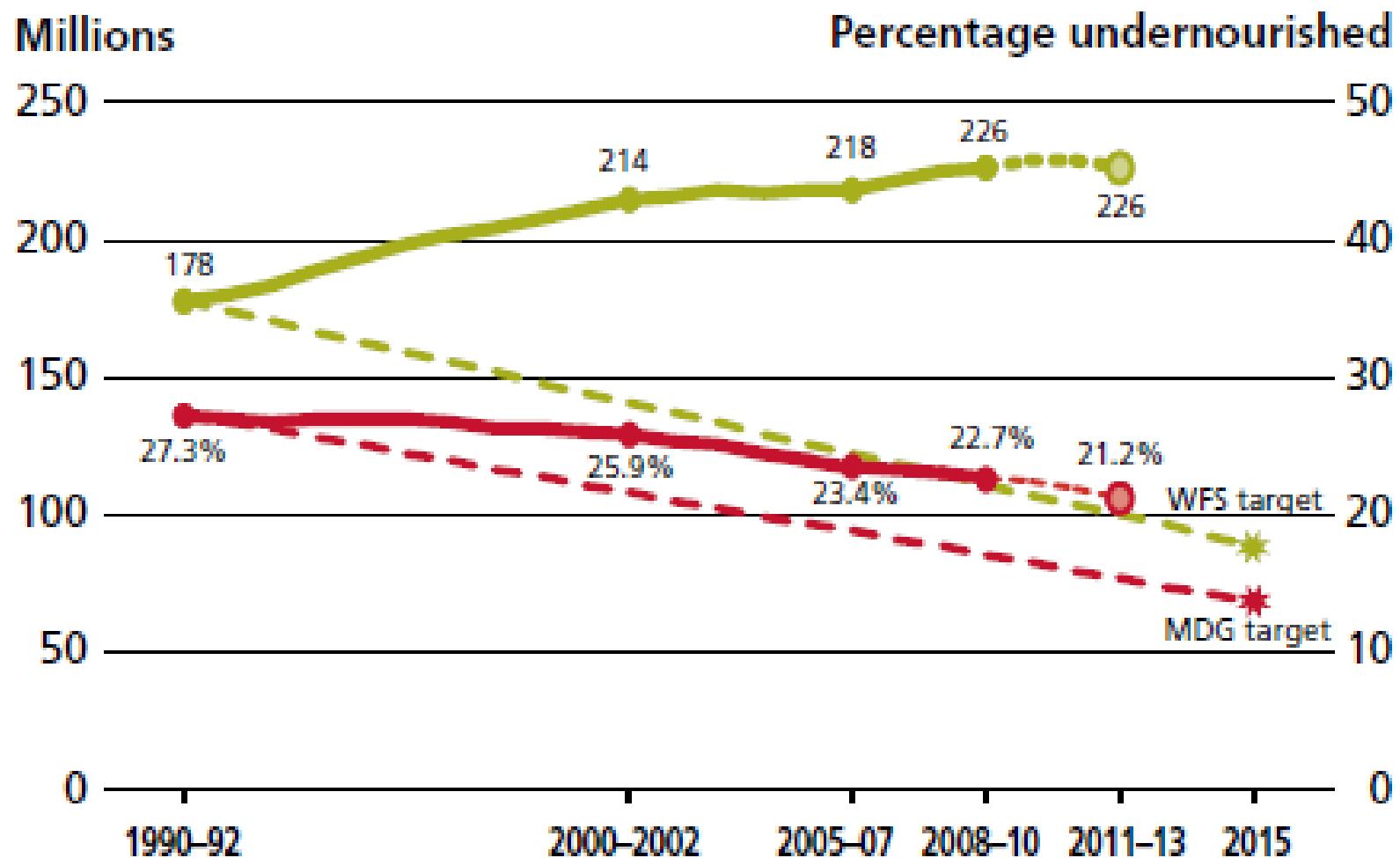
Undernourishment in the developing regions: actual progress and target achievement trajectories towards the MDG and WFS targets



Note: Data for 2011-13 in all graphics refer to provisional estimates.

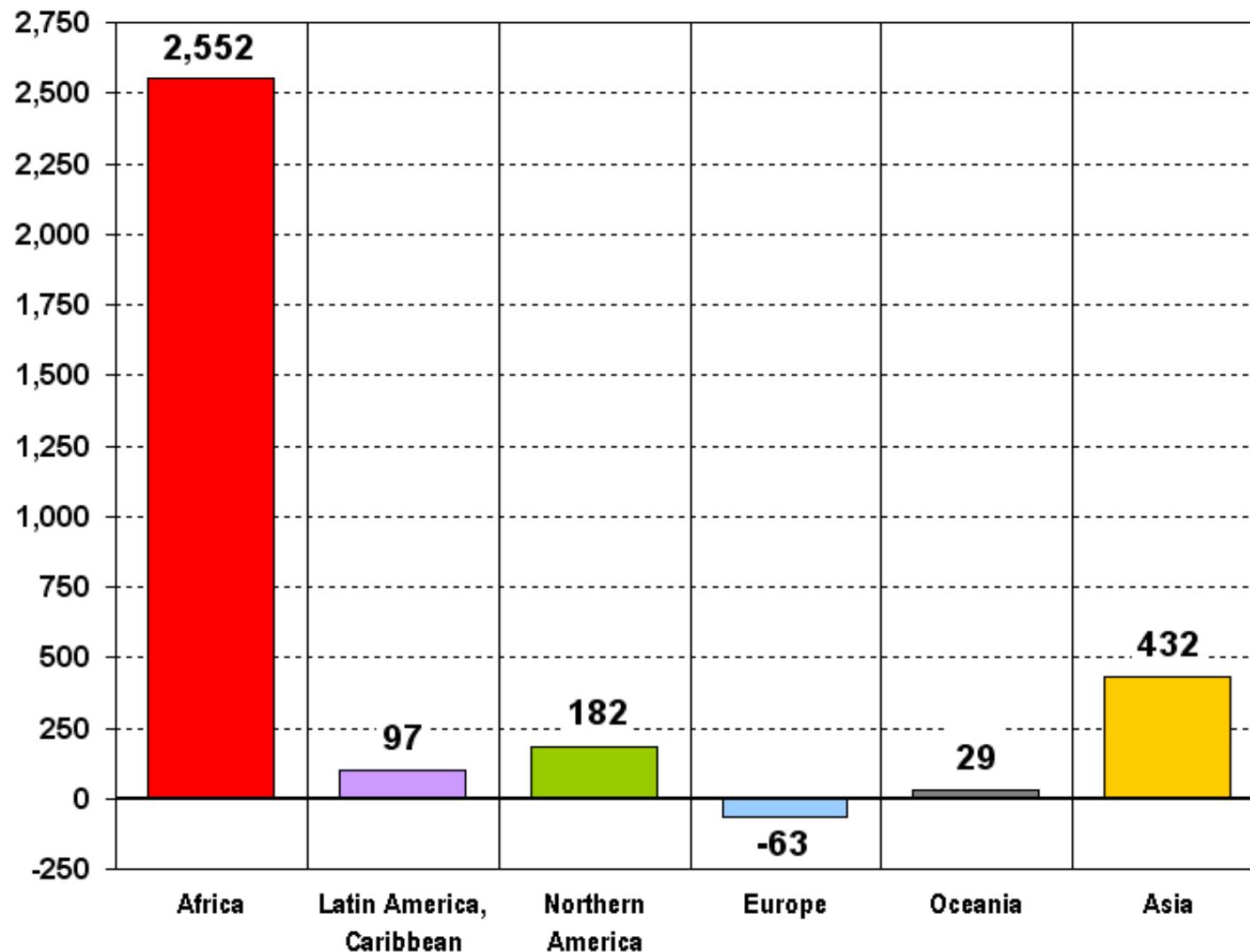
Source: FAO.

Africa

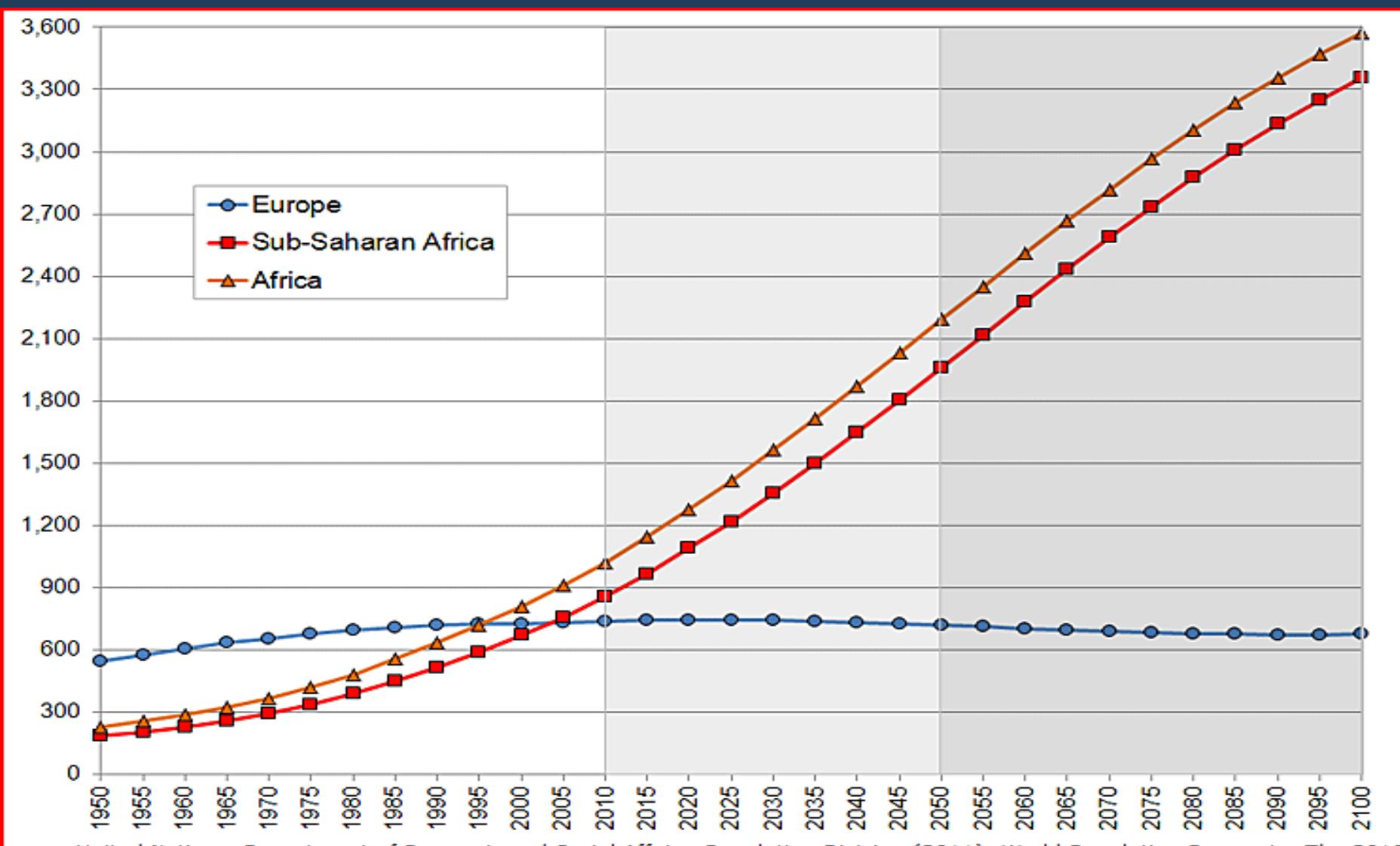


Source FAO, SOFI 2013

World Population Prospects – Change between 2010 and 2100 (millions)



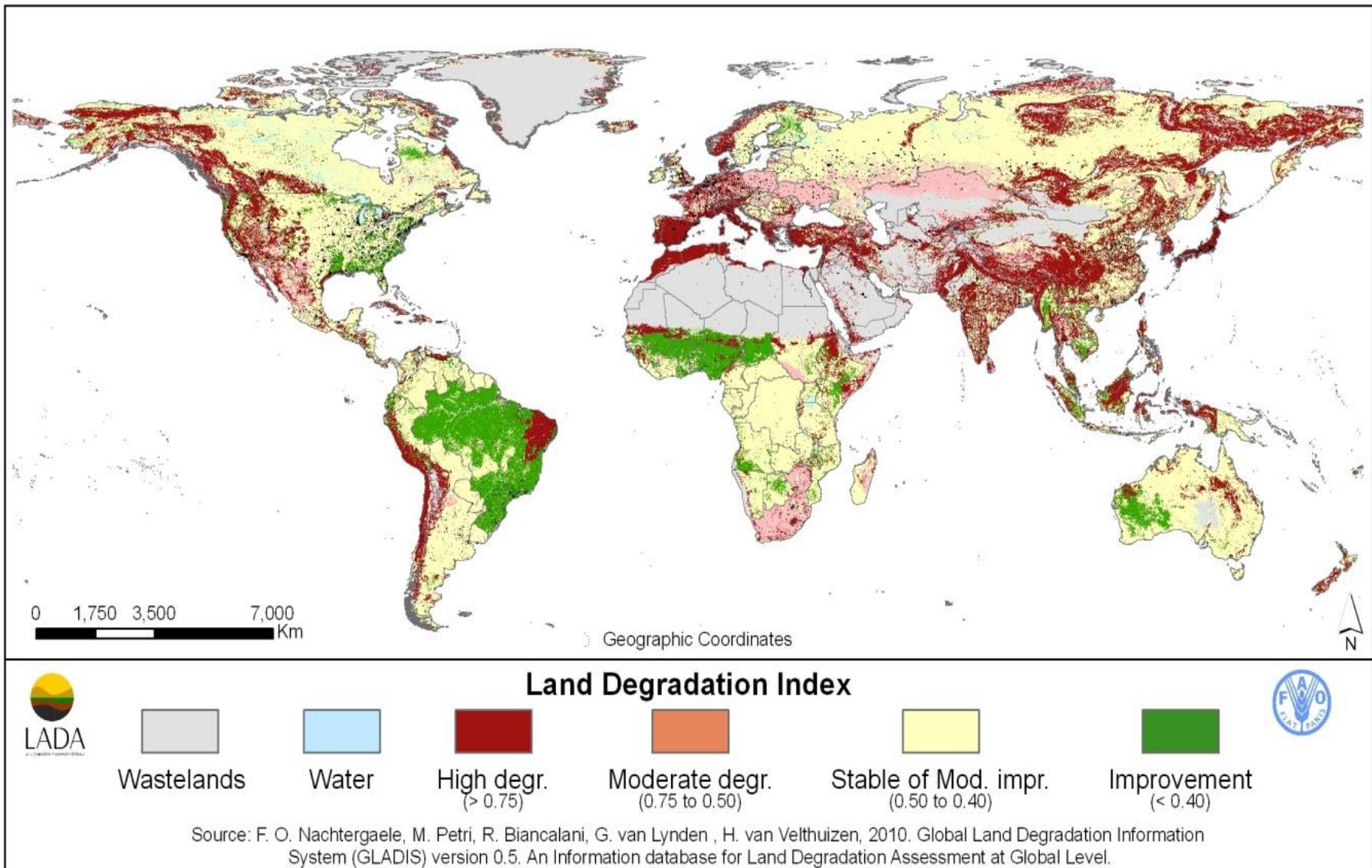
Population Prospect for Europe, Africa and SS Africa



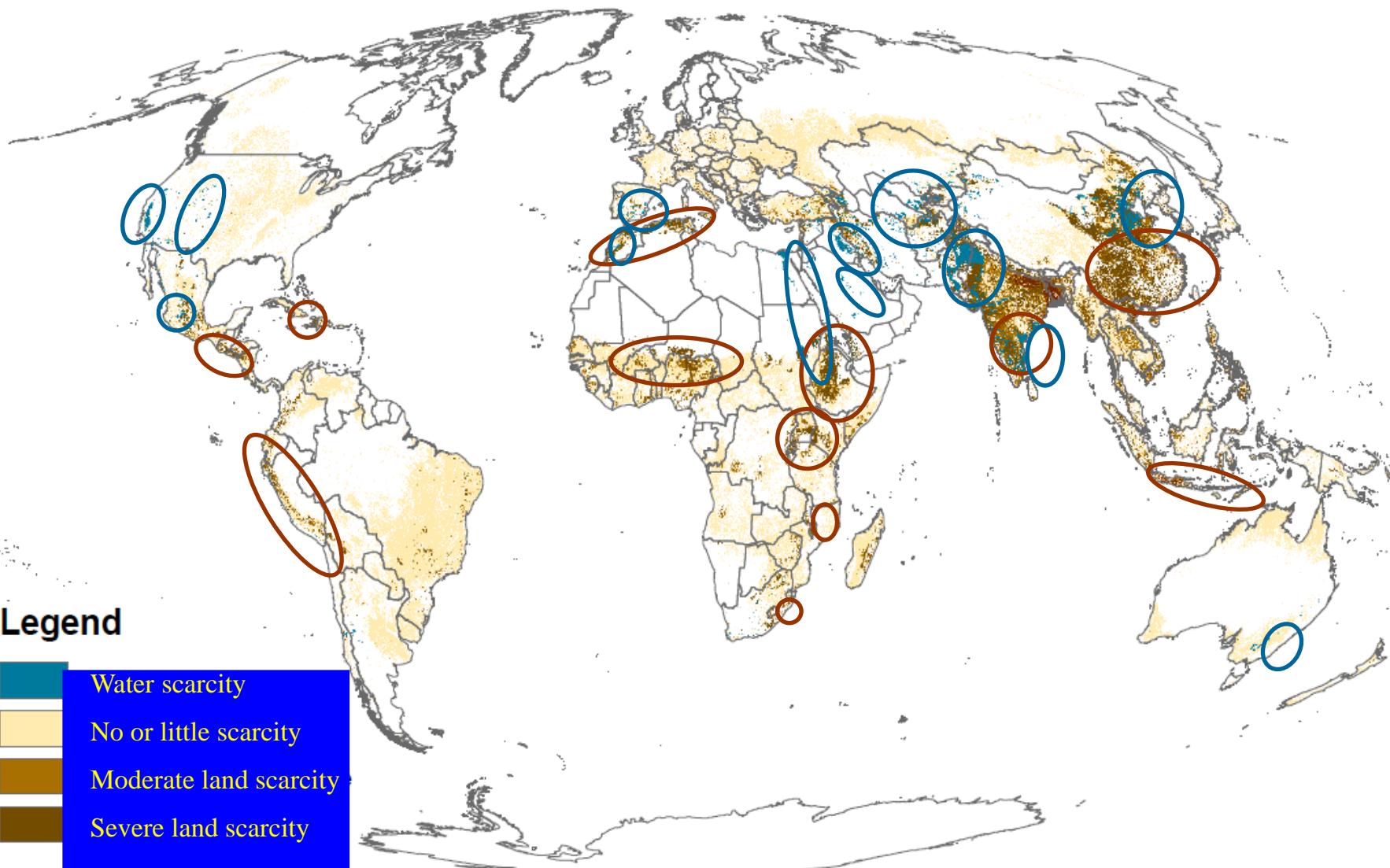
Source: United Nations, Department of Economic and Social Affairs, Population Division (2011): World Population Prospects: The 2010 Revision. New York

Note: In our definition, Europe has 48 countries, including the Russian Federation.
(Updated: 19 October 2011)

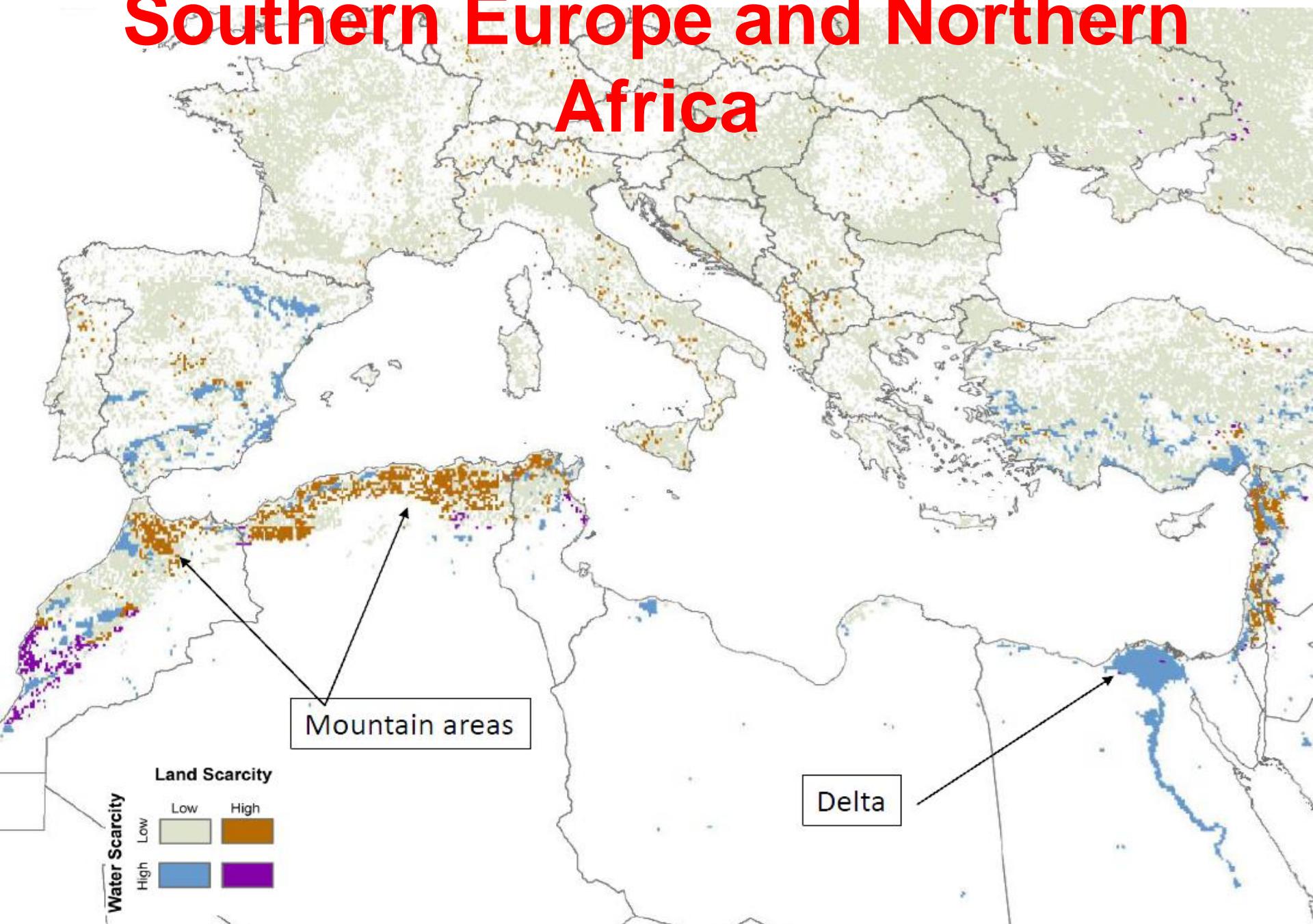
Land Degradation Index (changes in ecosystems services 1990-2005)



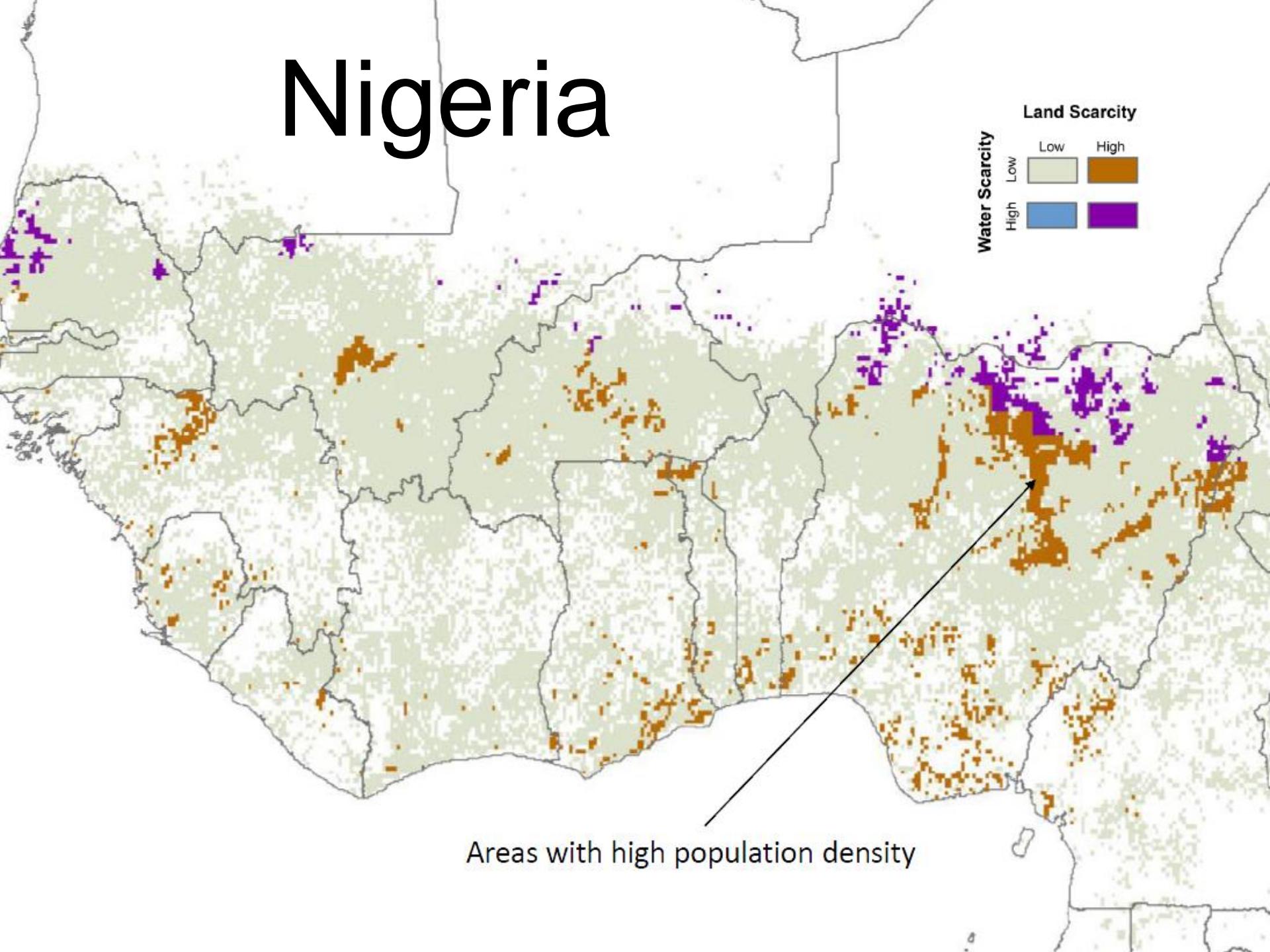
Agricultural systems at risk (Source FAO, SOLAW report)



Southern Europe and Northern Africa

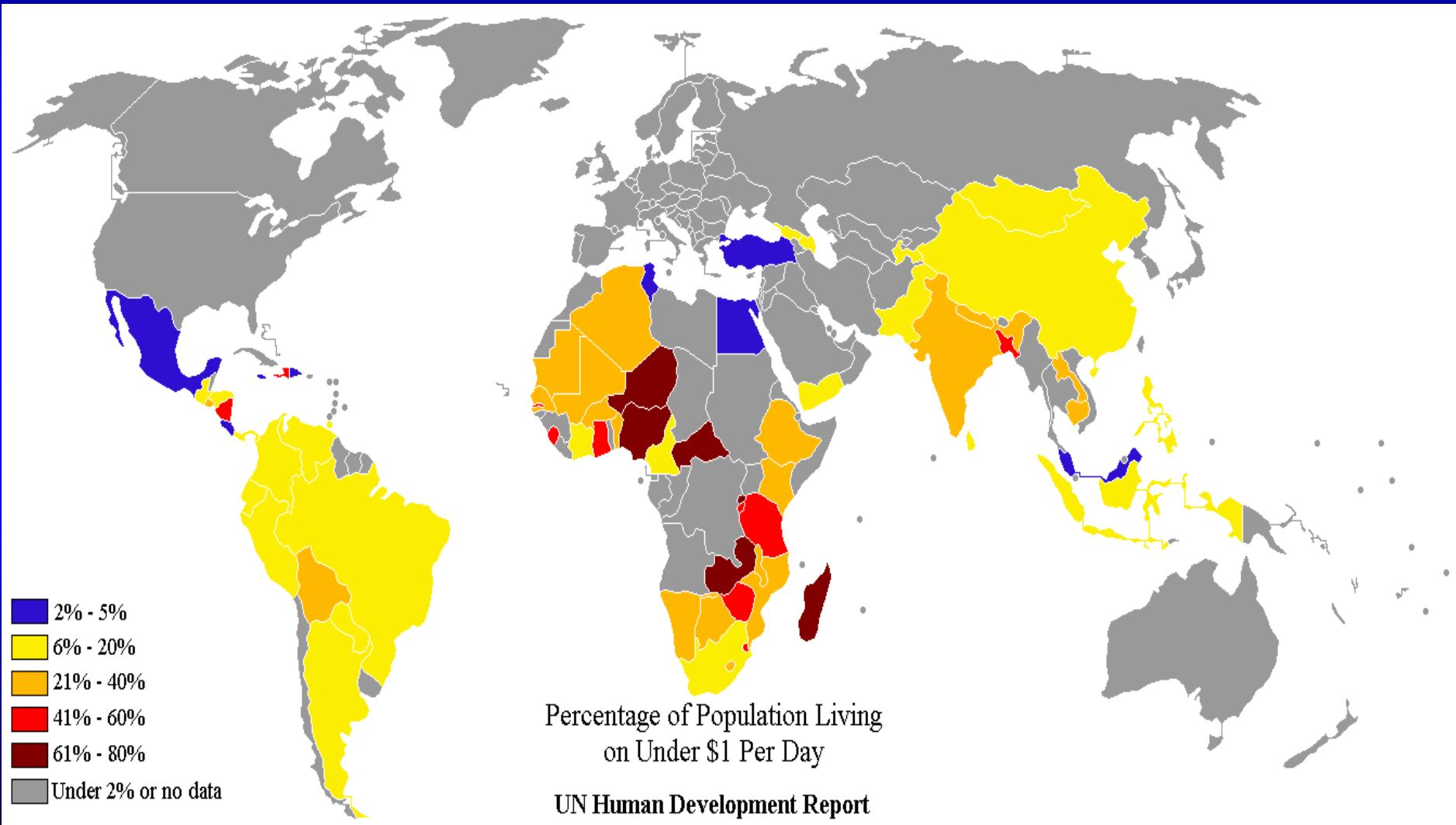


Nigeria

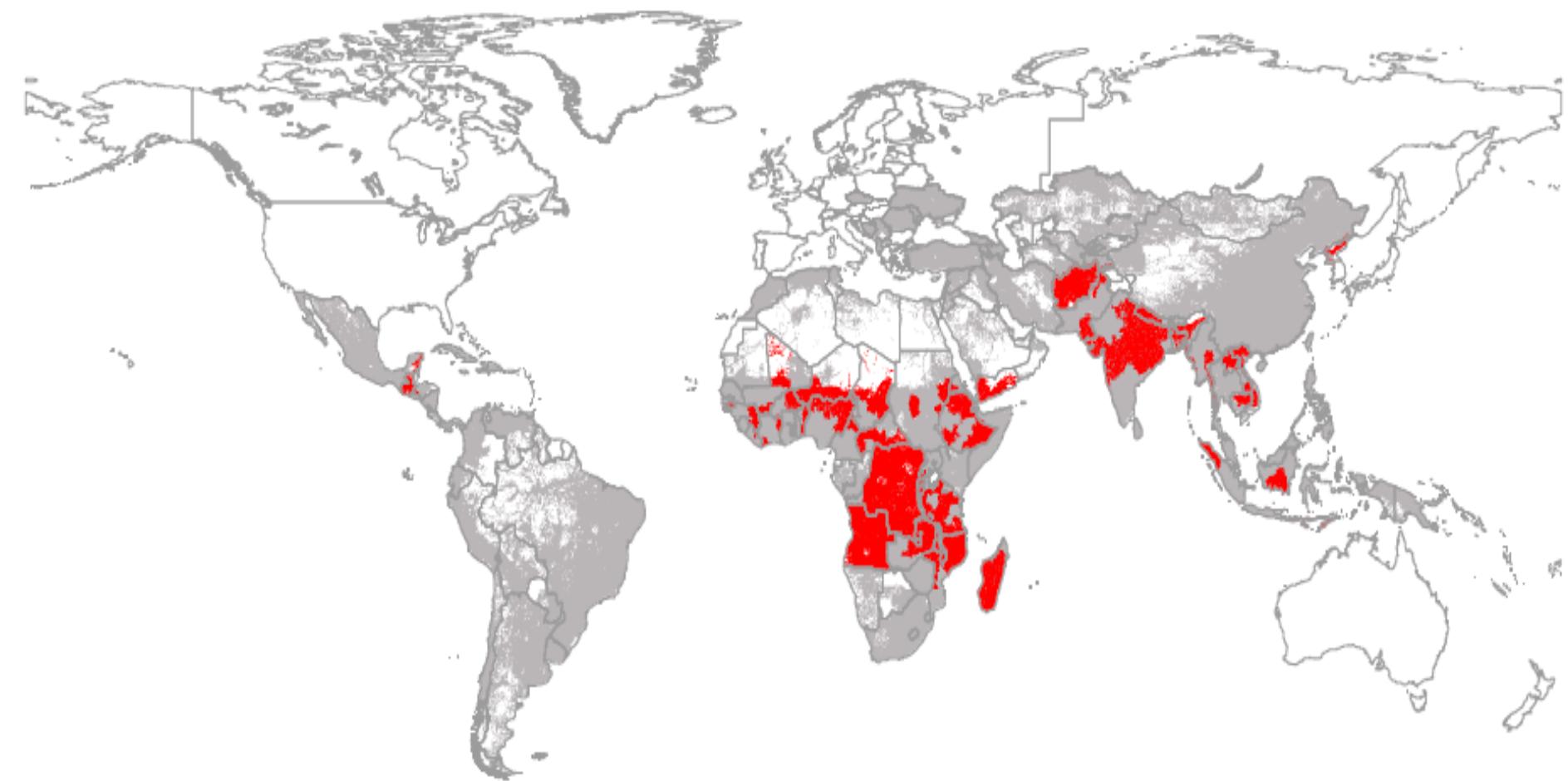


Areas with high population density

Percentage of Population living in absolute poverty

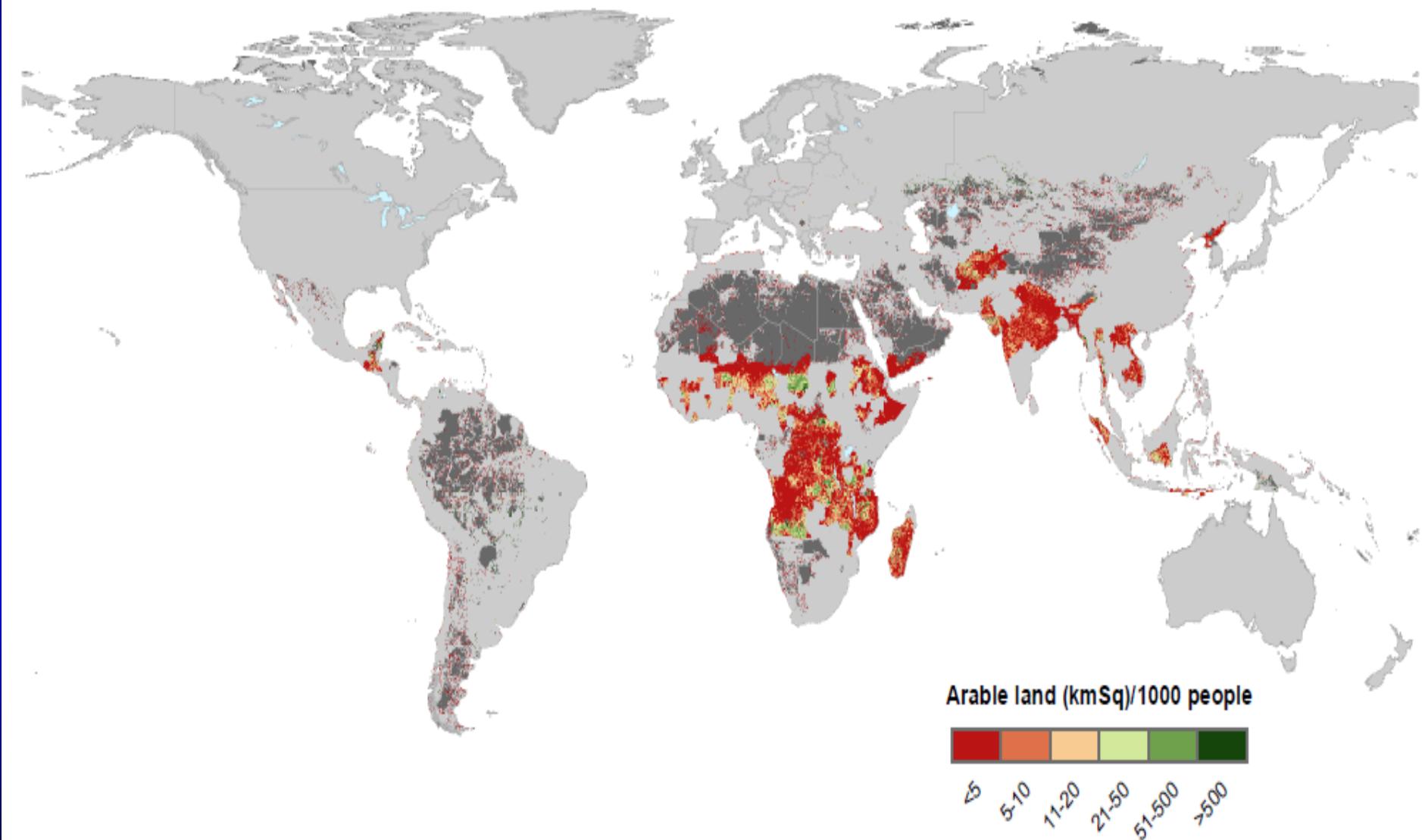


Where the rural poor are concentrated



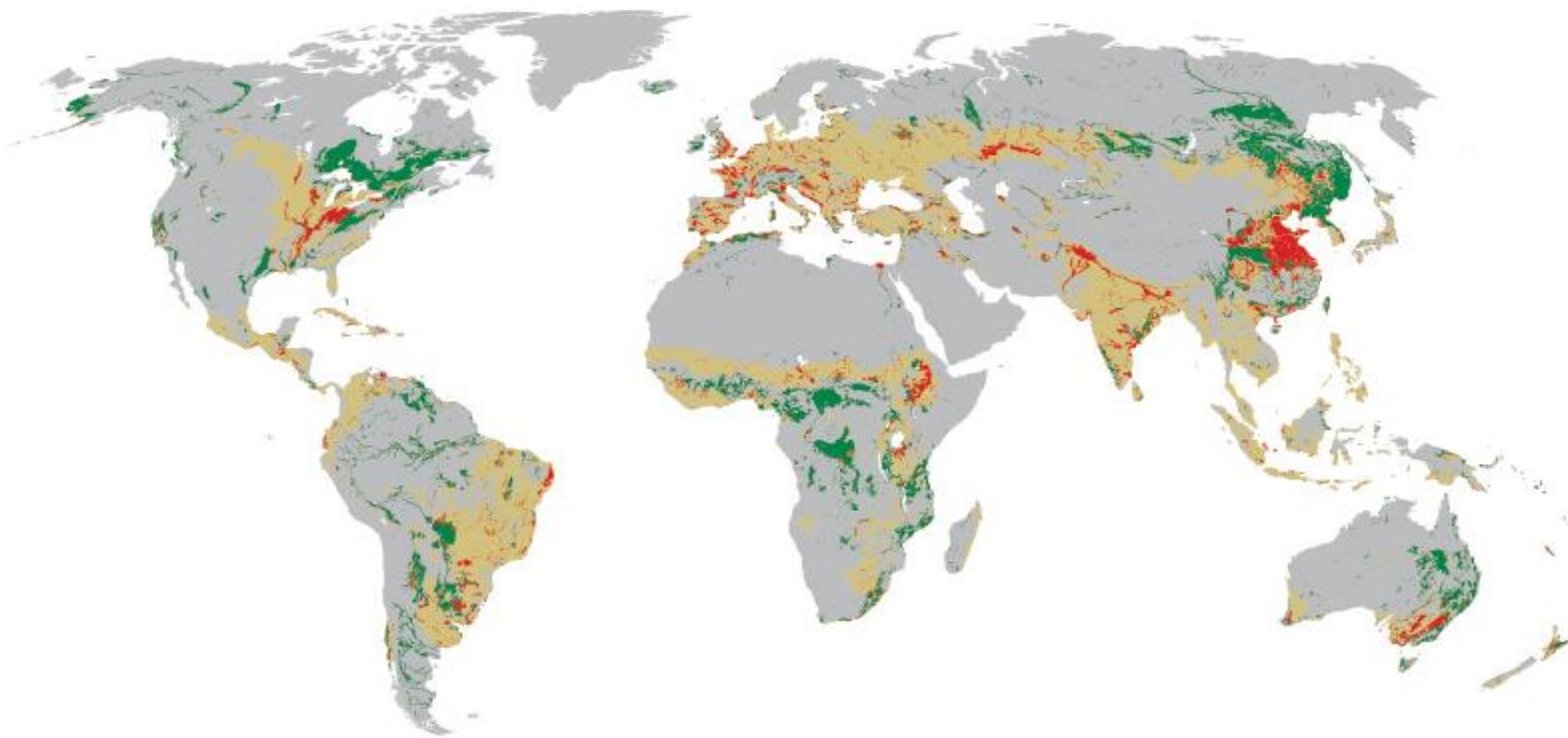
Per capita share of arable land in poor areas

(Source FAO)



MAP 2

Potential to sequester additional carbon in soils on croplands



■ Croplands with soil carbon gap

■ Other croplands

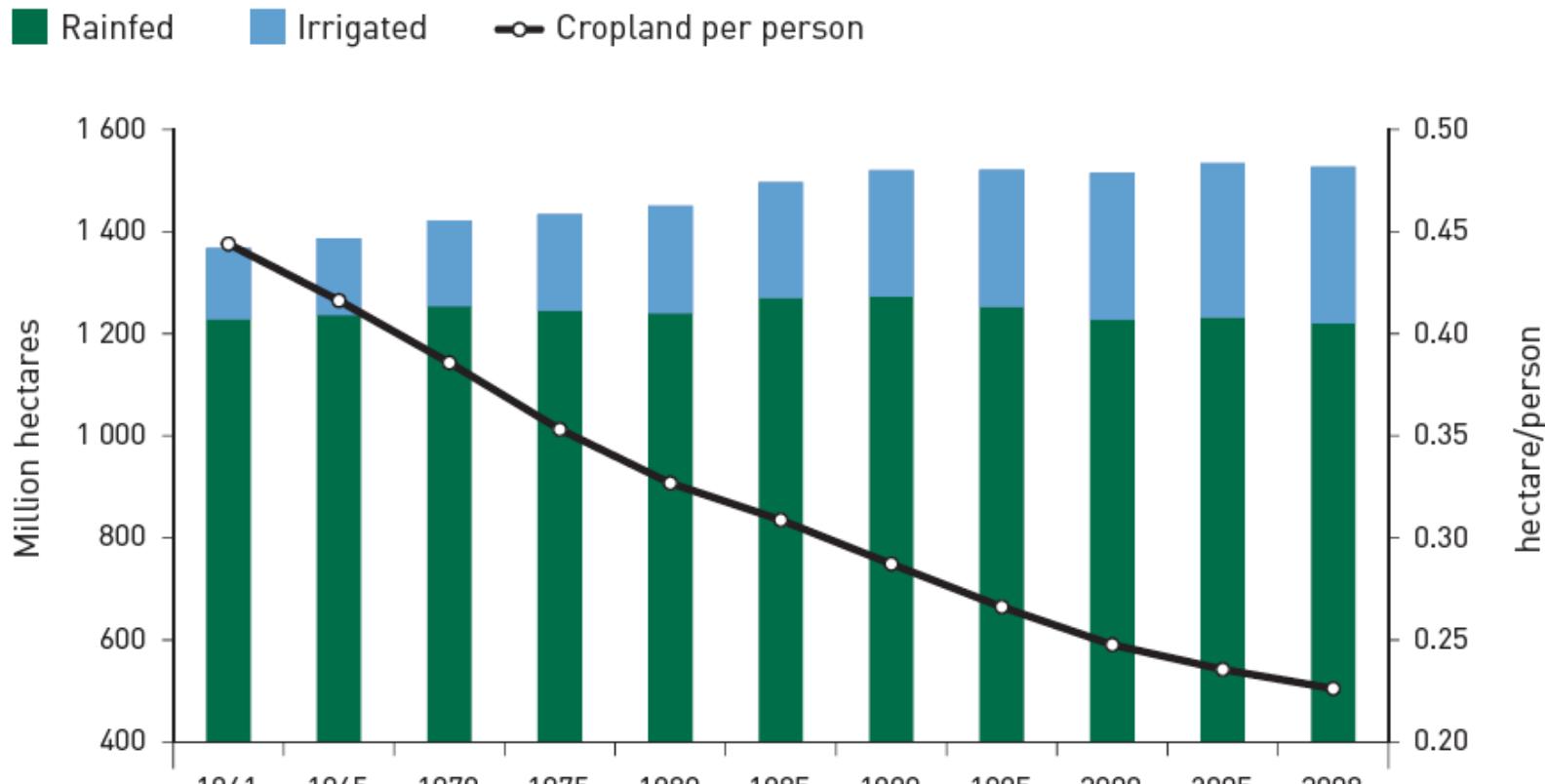
■ Other land with soil carbon gap

Note: available at

http://www.fao.org/geonetwork/srv/en/google.kml?id=31152&layers=potential_sequester_carbon_cropland

Source: FAO.

Soils – An Increasingly Scarce Resource



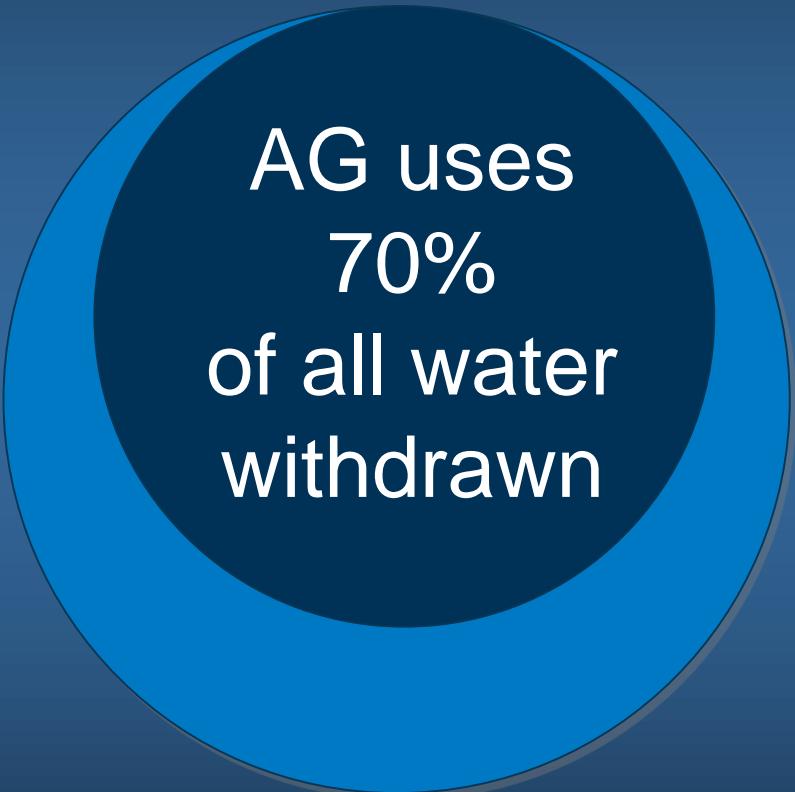
FAO 2012

The use of resources by agriculture



12% used for
crop production

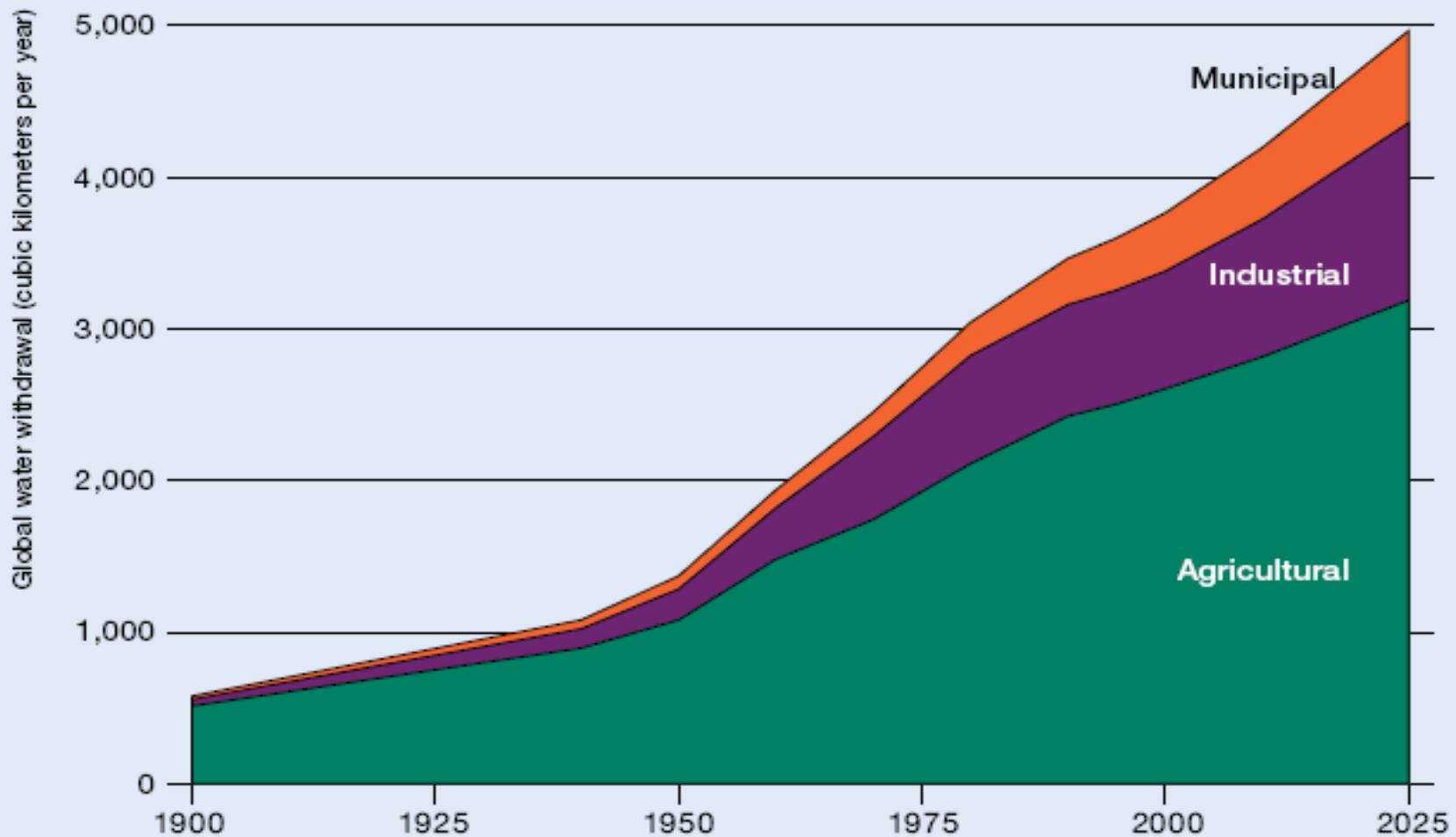
world's land surface



AG uses
70%
of all water
withdrawn

total world's water uses

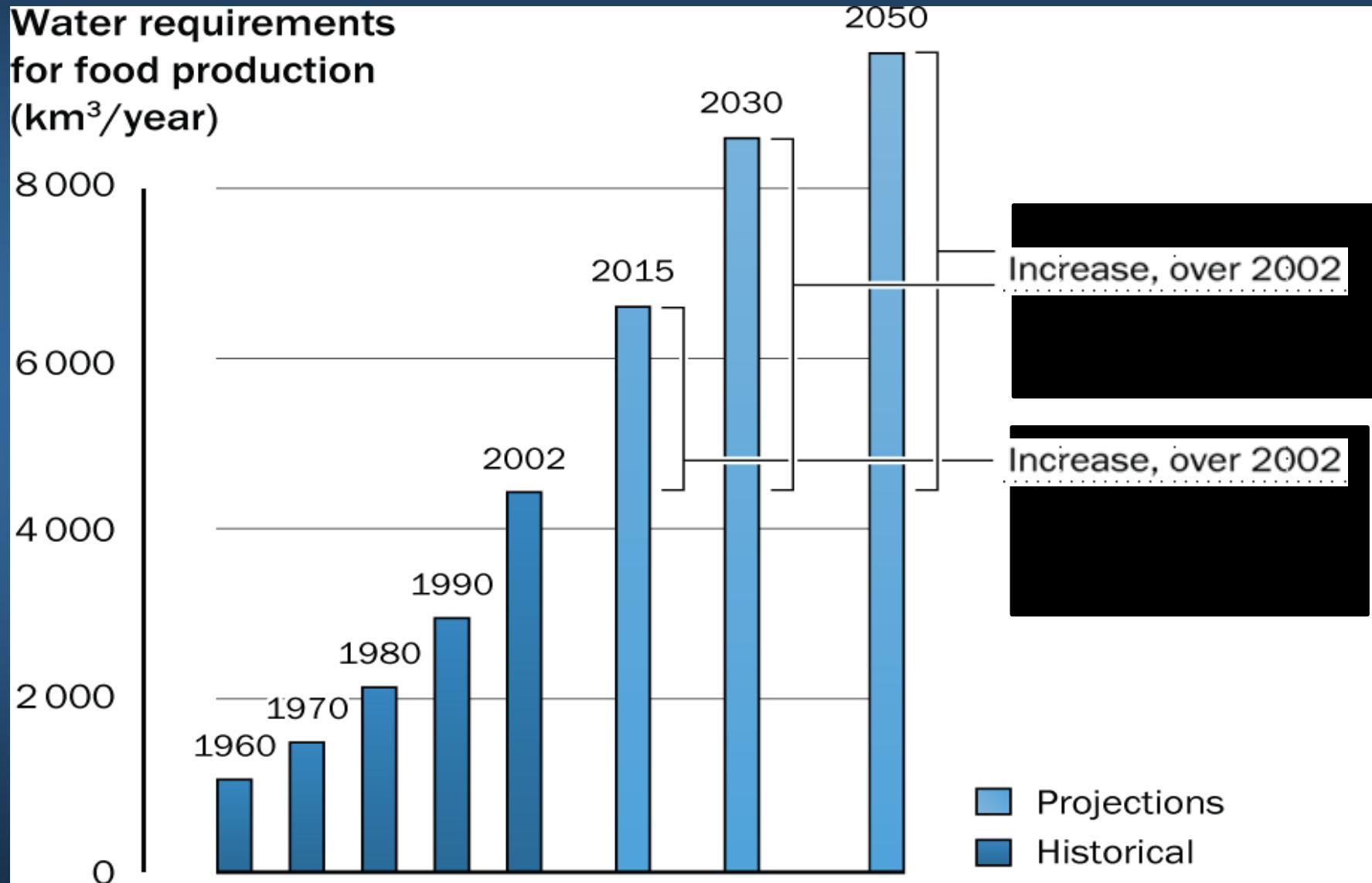
Increased water withdrawal



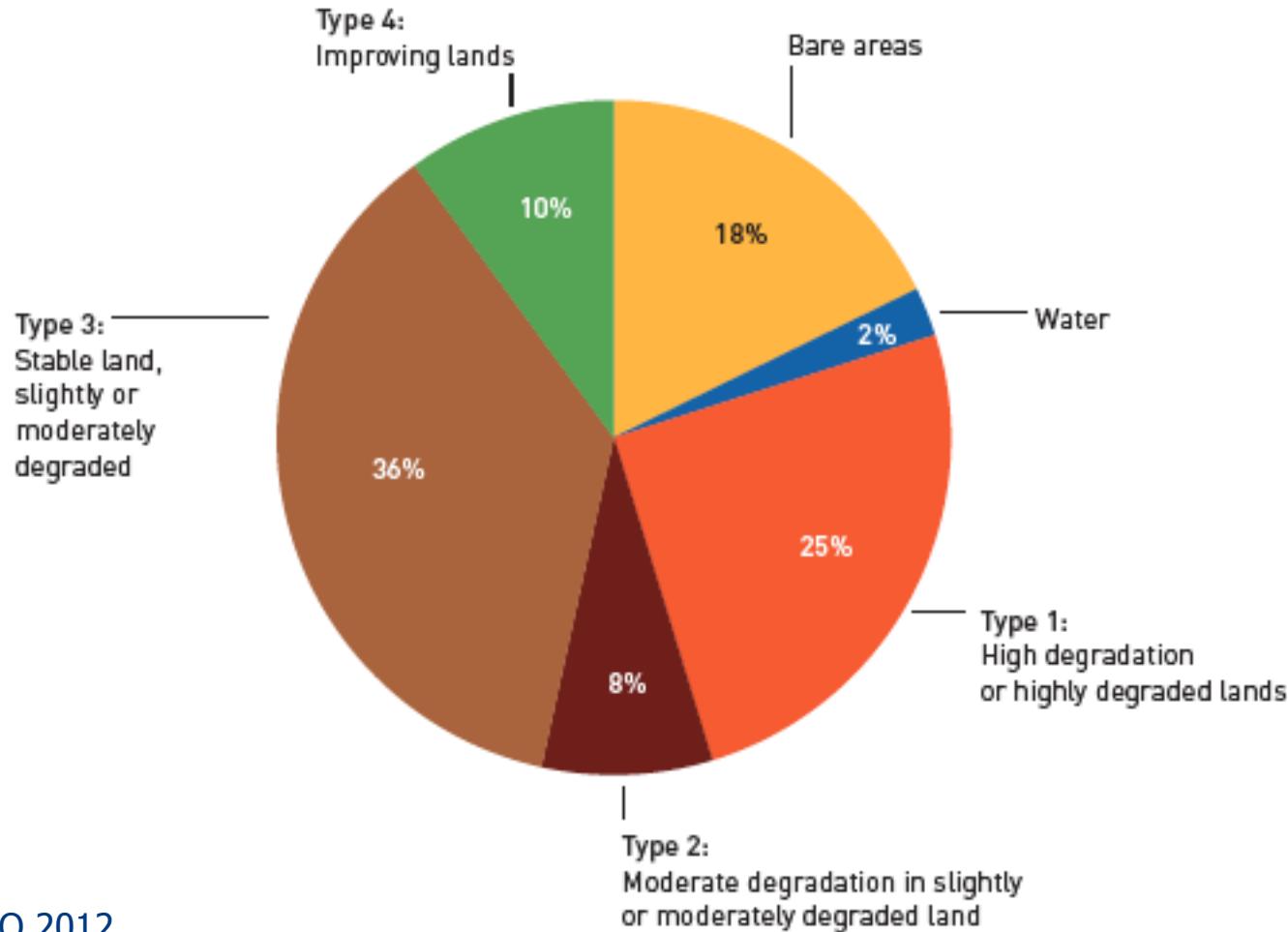
Source: Shiklomanov 2000.

Water Requirements in 2050: +5.500 Km³ y⁻¹

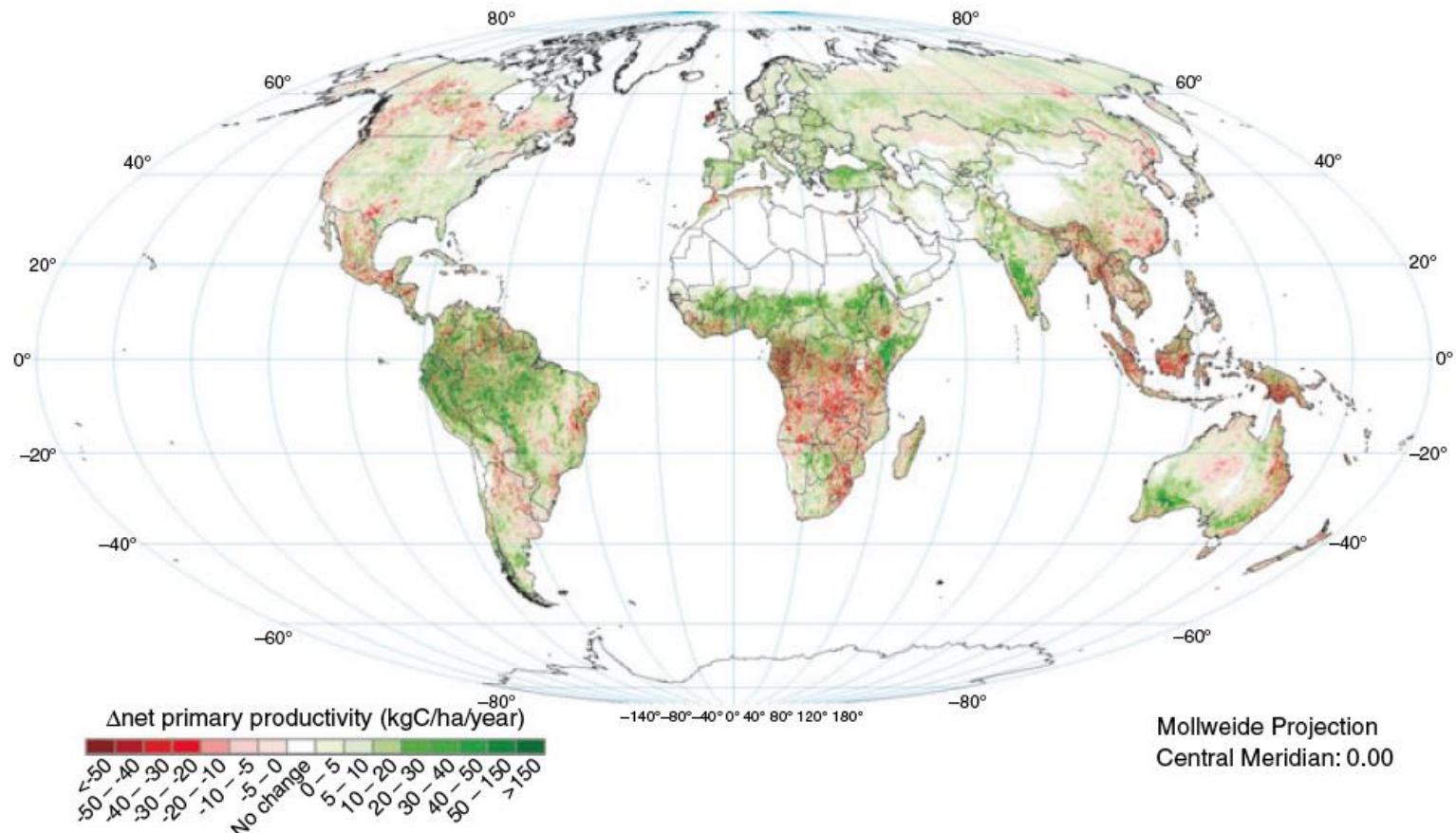
~ the capacity of 55 Aswan Dams **every year** (source FAO)



Soils – A Degraded Resource



Global Distribution of Land Degradation (as measured by changes in NPP)

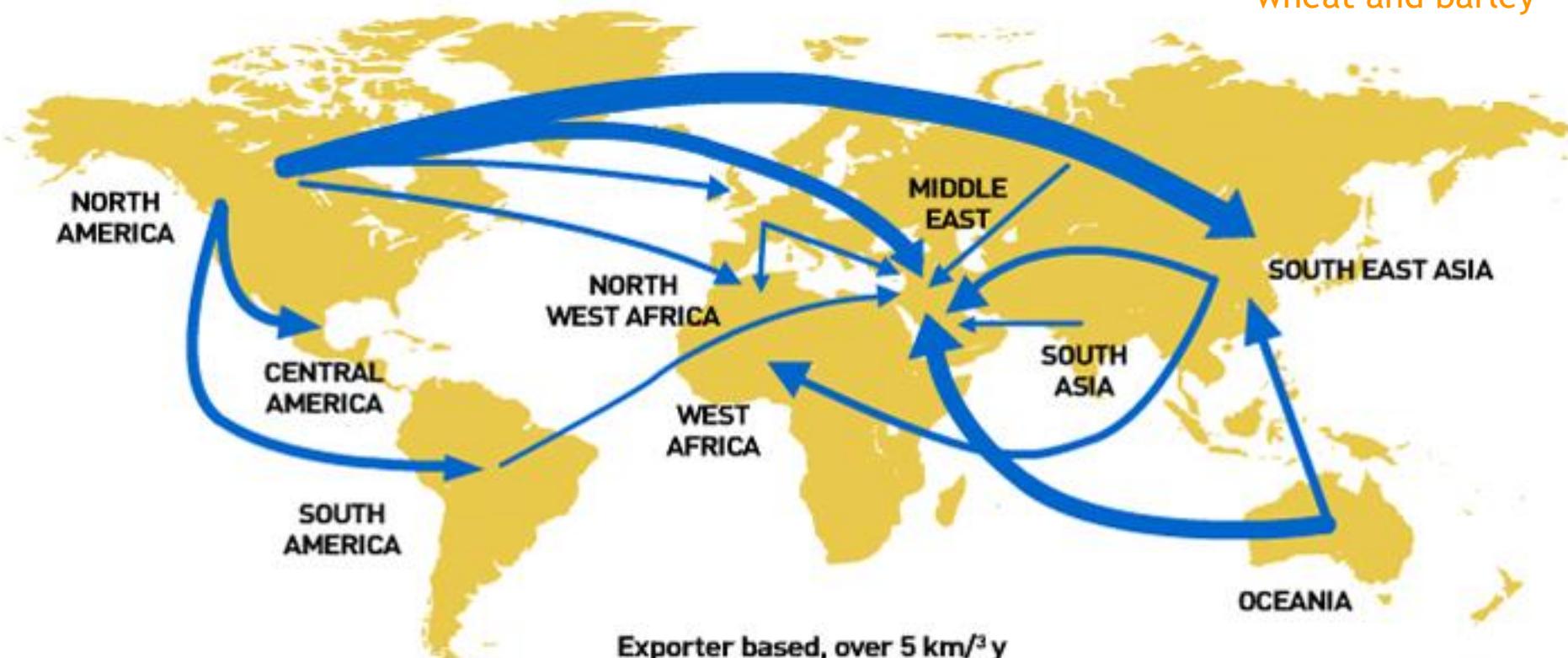


Bai et al 2008: 226

Trade & “Virtual water”

“Real” Required Water Trade between Regions in 2000 (Cereals)

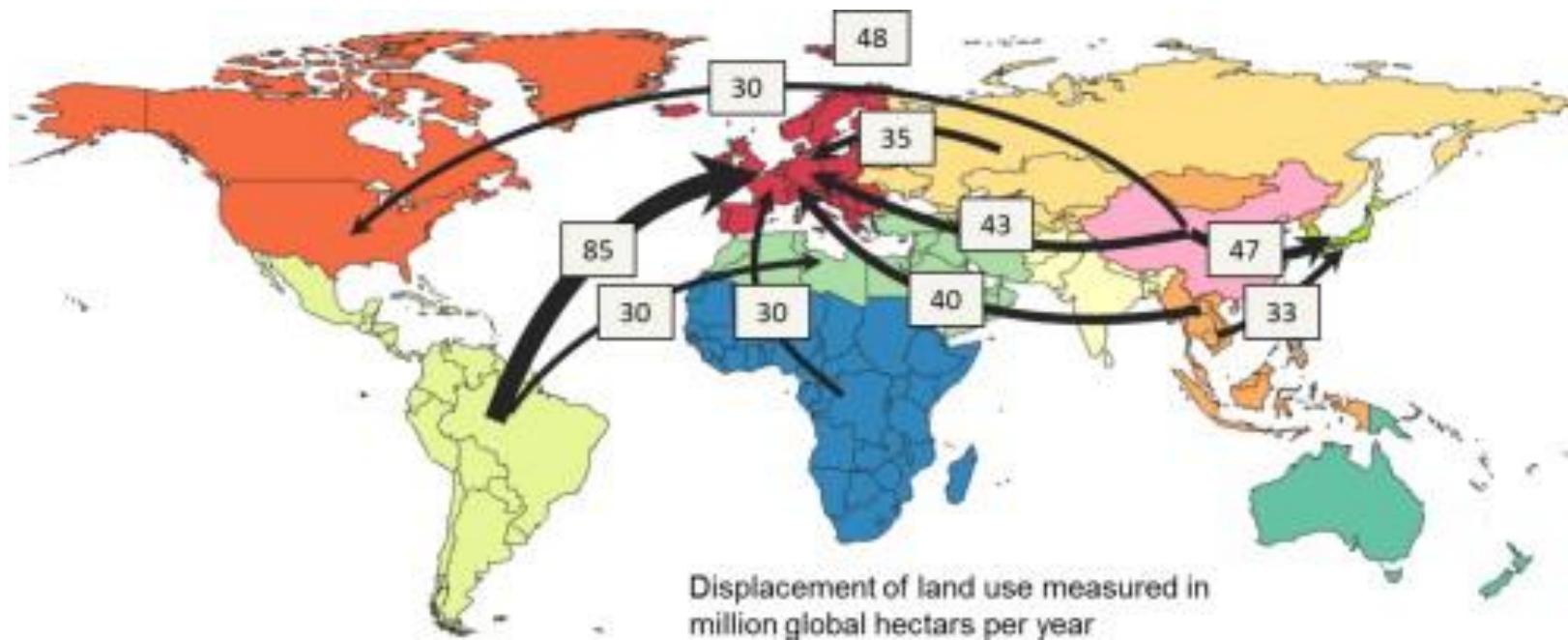
Maize, rice, wheat and barley



Oki et al., 2003

Based on FAO Statistics (2000)

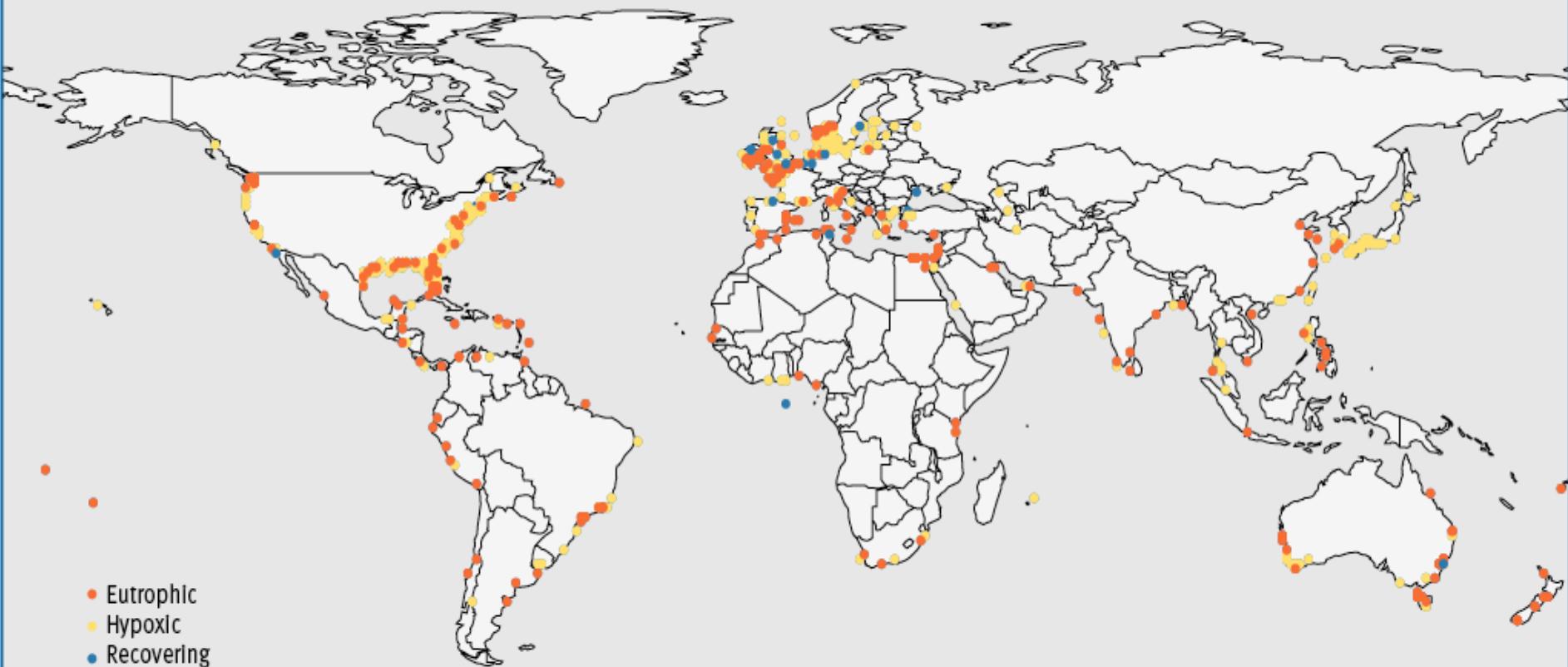
Global Interdependencies land



Weinzettel 2013 (online first)

Nutrient Excess Availability

Figure 4.12 World hypoxic and eutrophic coastal areas, 2010



Source: Diaz et al. 2010