

# **WATER NEXUS 2012**

Connecting the Dots: The water, food, energy, and climate nexus

## **Water, nutrition, health & poverty in sub-Saharan Africa**

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**Stanford University**

Monday, April 16, 2012 | Frances C. Arrillaga Alumni Center | 326 Galvez Street | Stanford University



# Sub-Saharan Africa



Photo: Brenna Henn



Photo: Eran Bendavid



Photo: Sara Marks



Photo: Anouk Zijlma



Photo: Makerere University

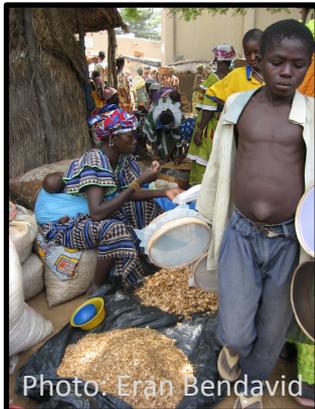


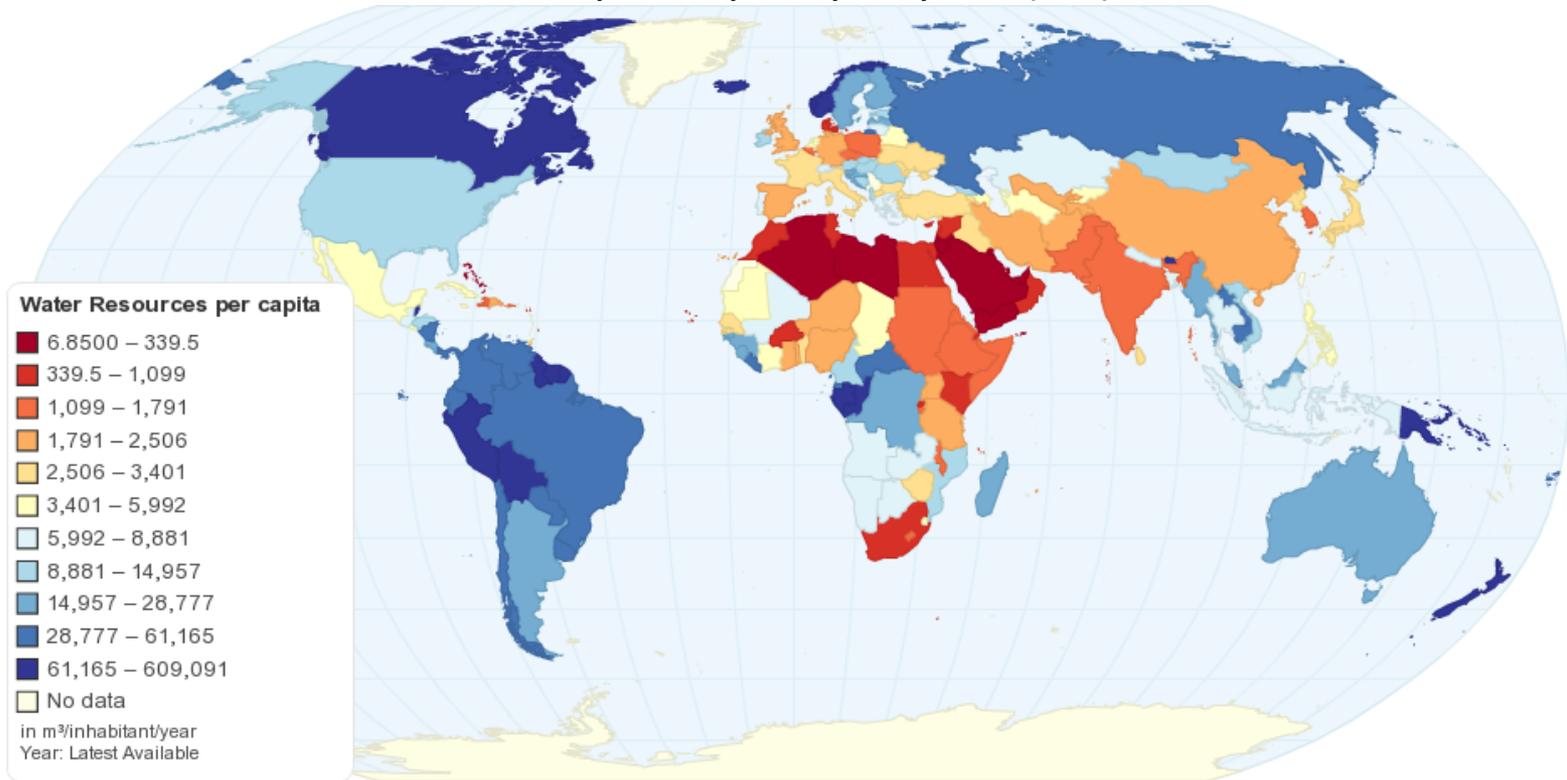
Photo: Eran Bendavid



Photo: Martin Vogl

# Freshwater resource availability

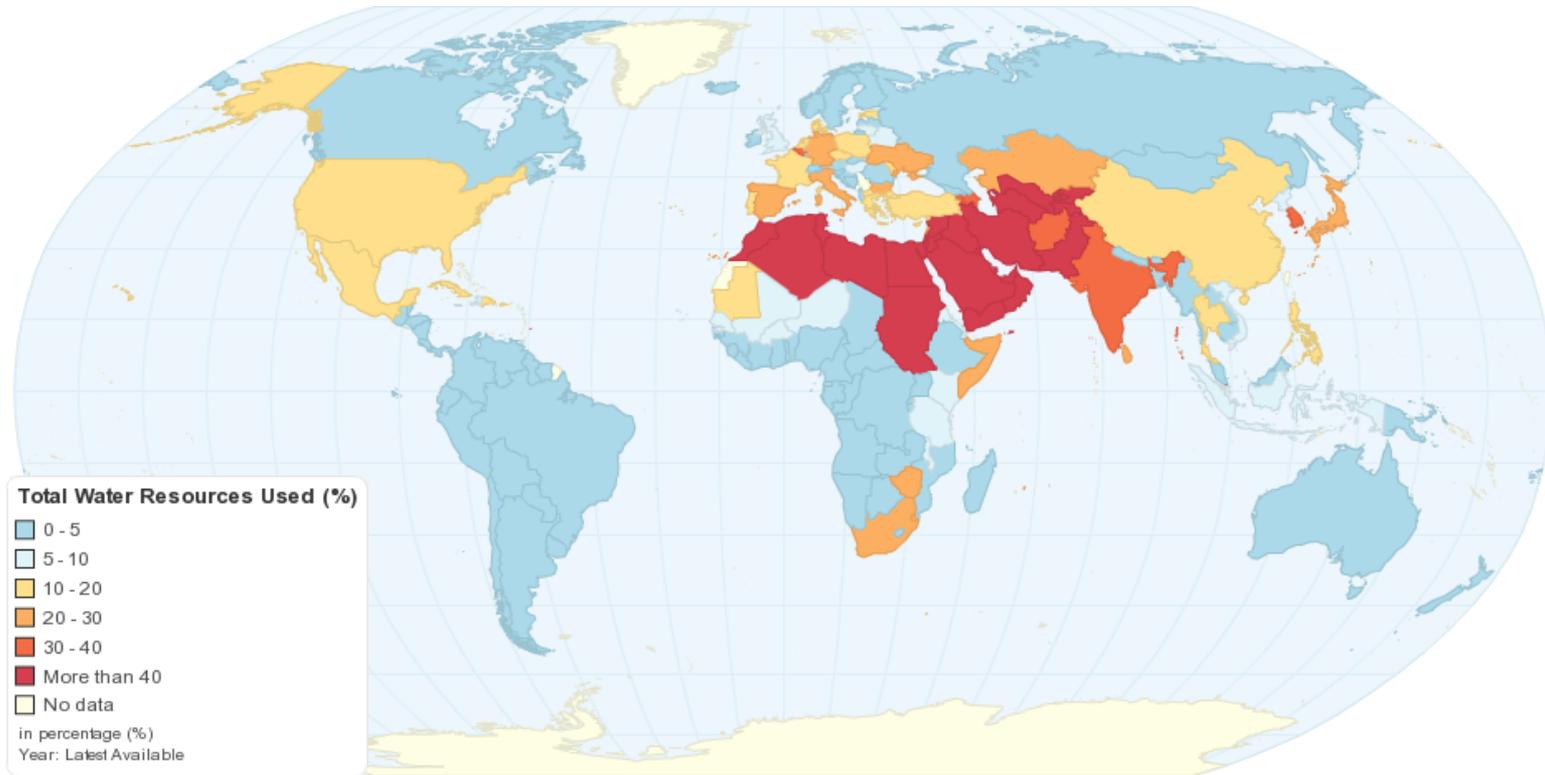
Water resources *per capita* per year (m<sup>3</sup>), 2005



Source: FAO, AQUASTAT

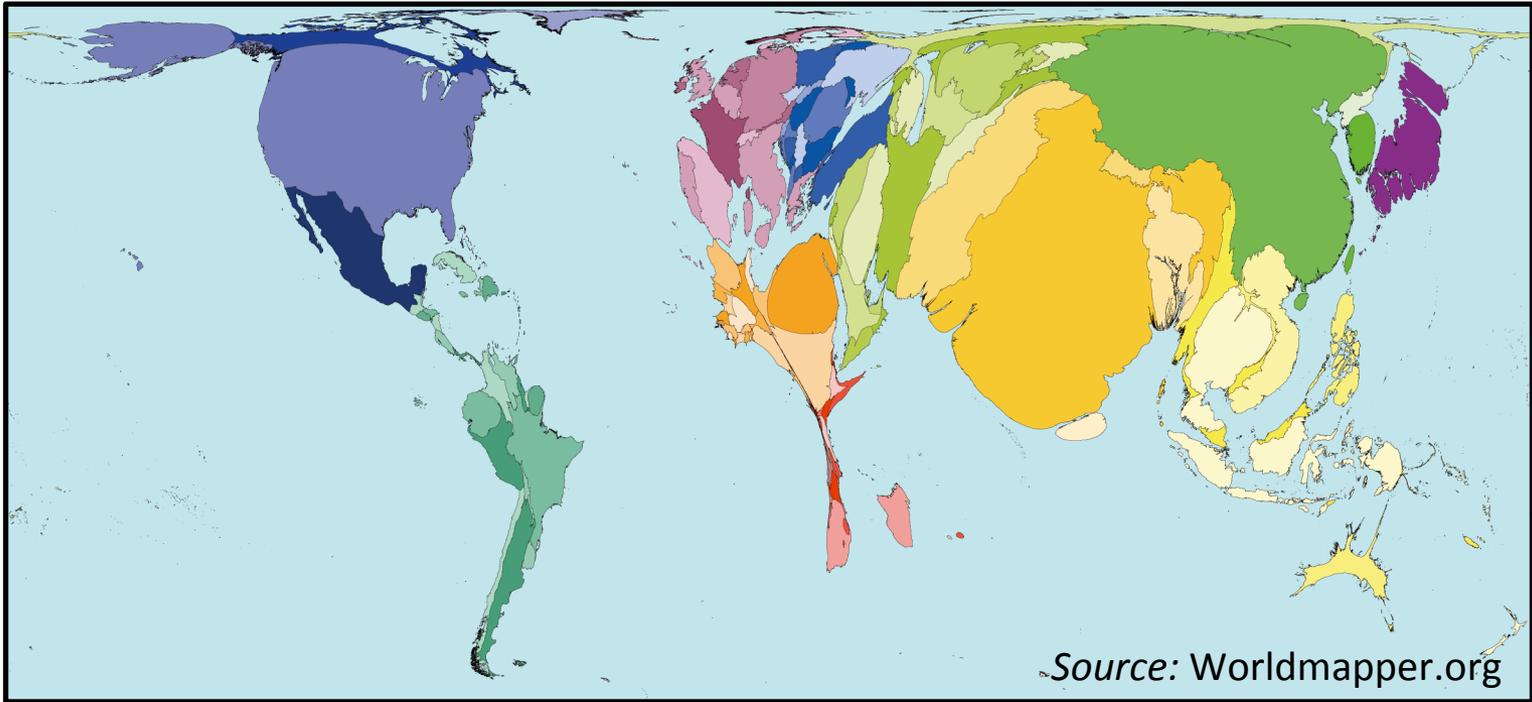
# Freshwater use

Percentage of renewable freshwater used, 2005



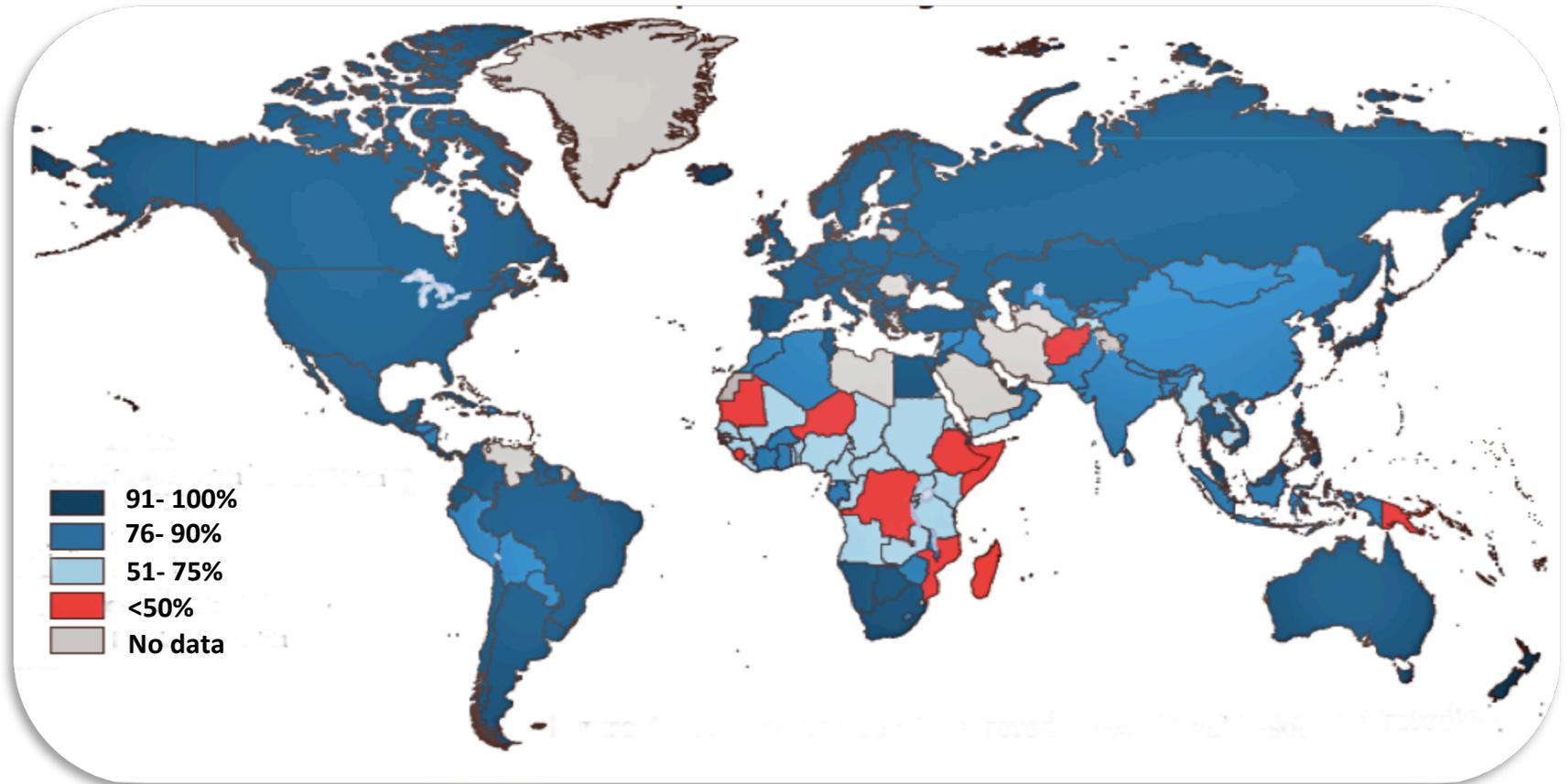
Source: FAO, AQUASTAT

# Water use *per capita*



*Per capita* freshwater use in sub-Saharan Africa is about 2% of that in North America.

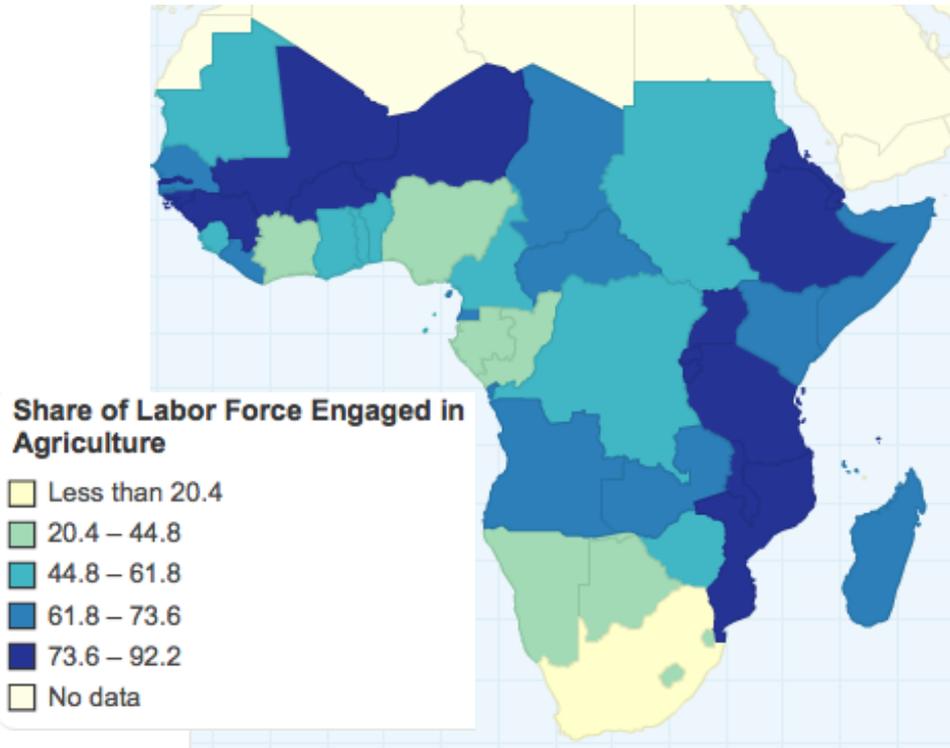
# Global access to improved water supply, 2010



Source: Joint Monitoring Program, 2010

# A region of farmers

## Share of labor force in agriculture, 2004



Sources: FAO, EarthTrends



Photo: Duncan Green, Oxfam

# A region of farmers

- Diversity of food crops
- Abundant arable land



Photo: Giacomo Pirozzi/Panos

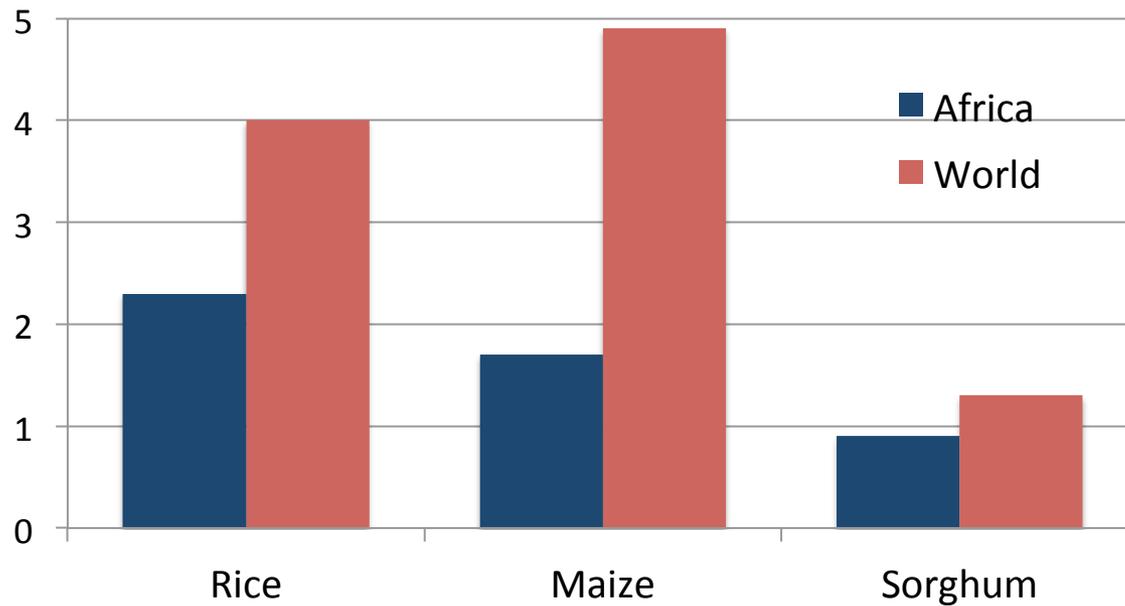


Photo: Susan Quinn/USAID

- Agriculture generates 25% of GDP and 20% of agribusiness
- Multiplier effect: 1.5-2.7

# Agricultural productivity

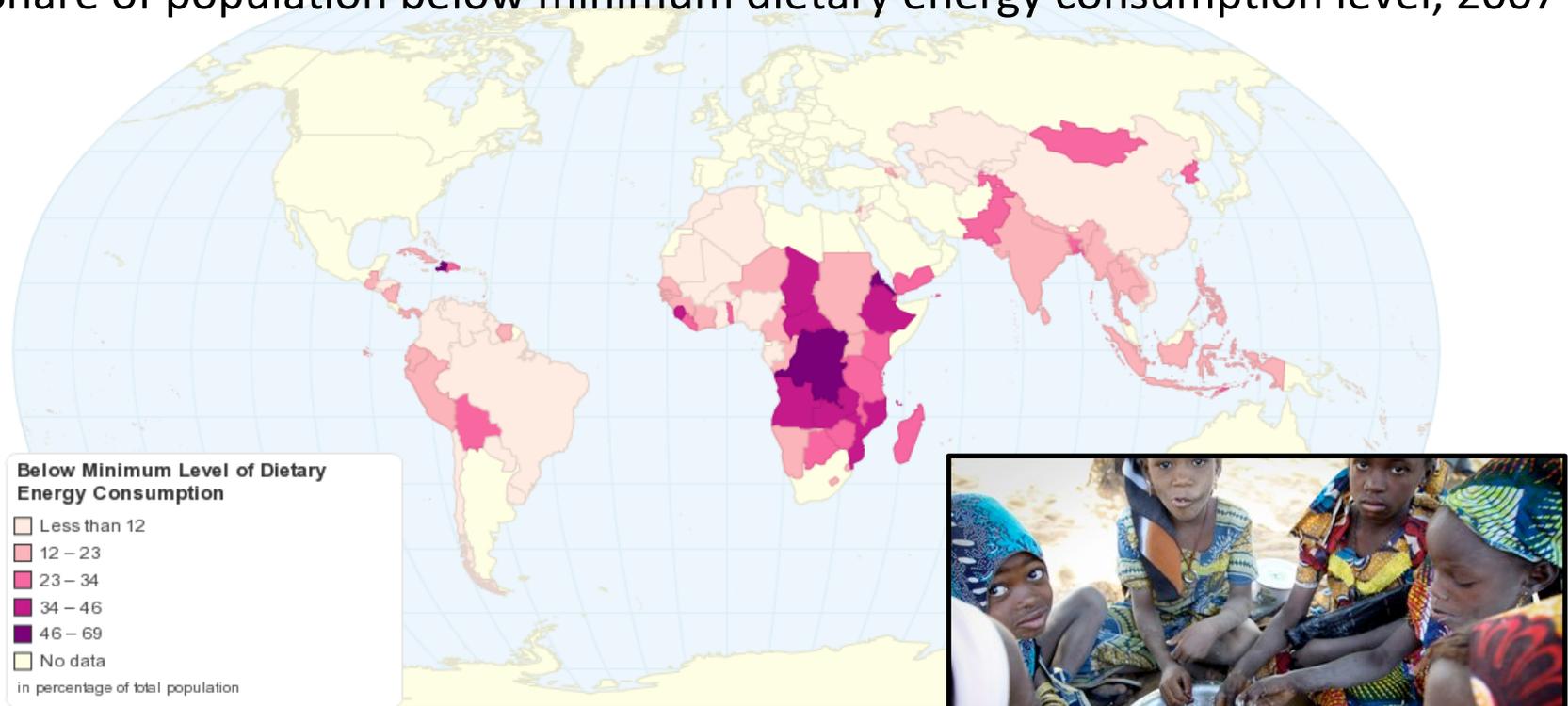
Cereal yields (Mt/hectare), Africa *versus* world (2005)



Source: FAO (2007)

# Persistent hunger challenges

Share of population below minimum dietary energy consumption level, 2007



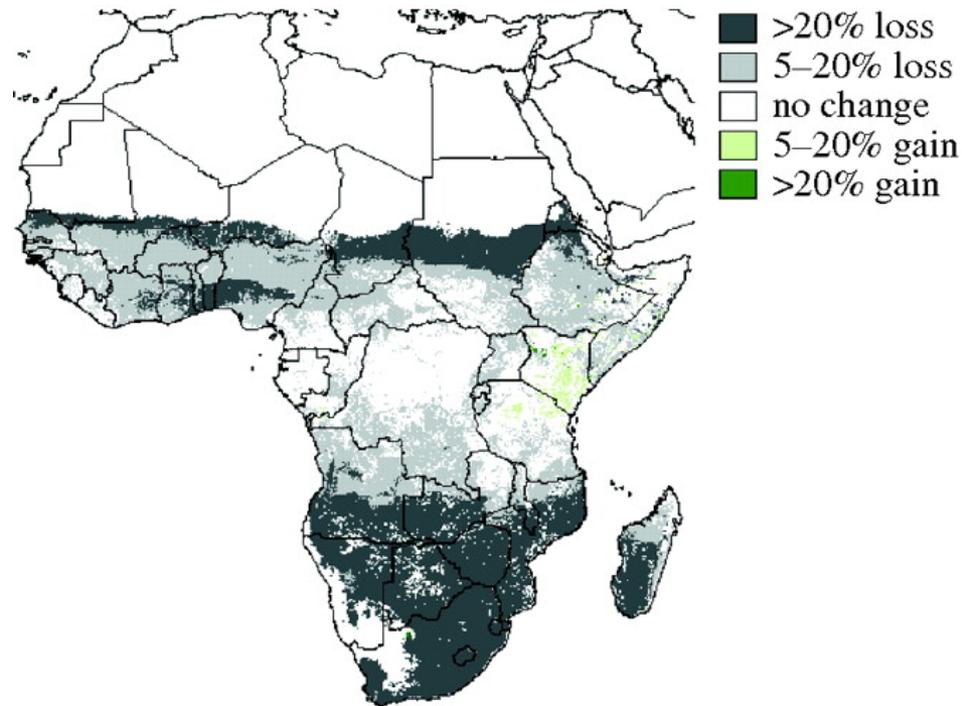
Sources: FAO, UN



Photo: Phil Behan, UN /  
World Food Programme

# Climate concerns

## Predicted change in length of growing period, present to the 2090s



Source: Thornton *et al.*, Phil. Trans. R. Soc. A (2011)

# Progress in public health

- Child mortality in SSA declined by 30% over past 20 years

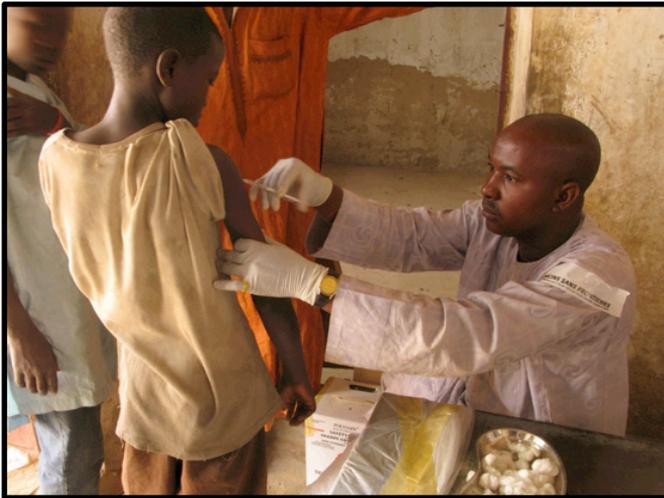
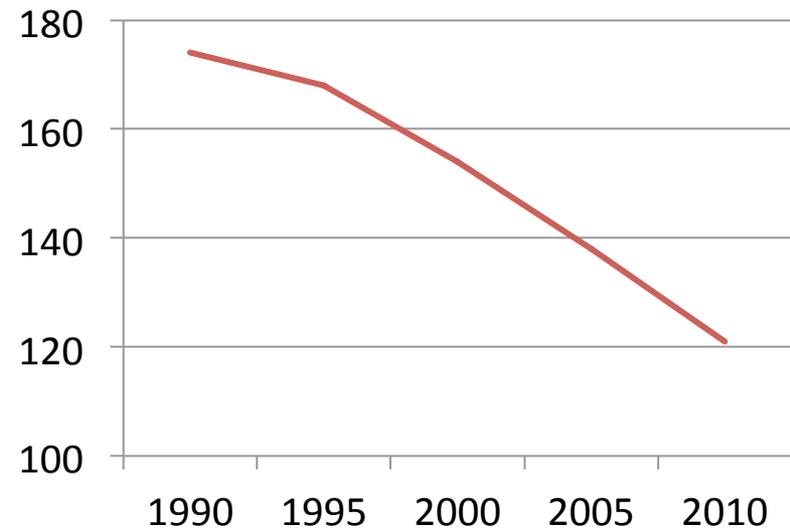


Photo: François Servranck/MSF

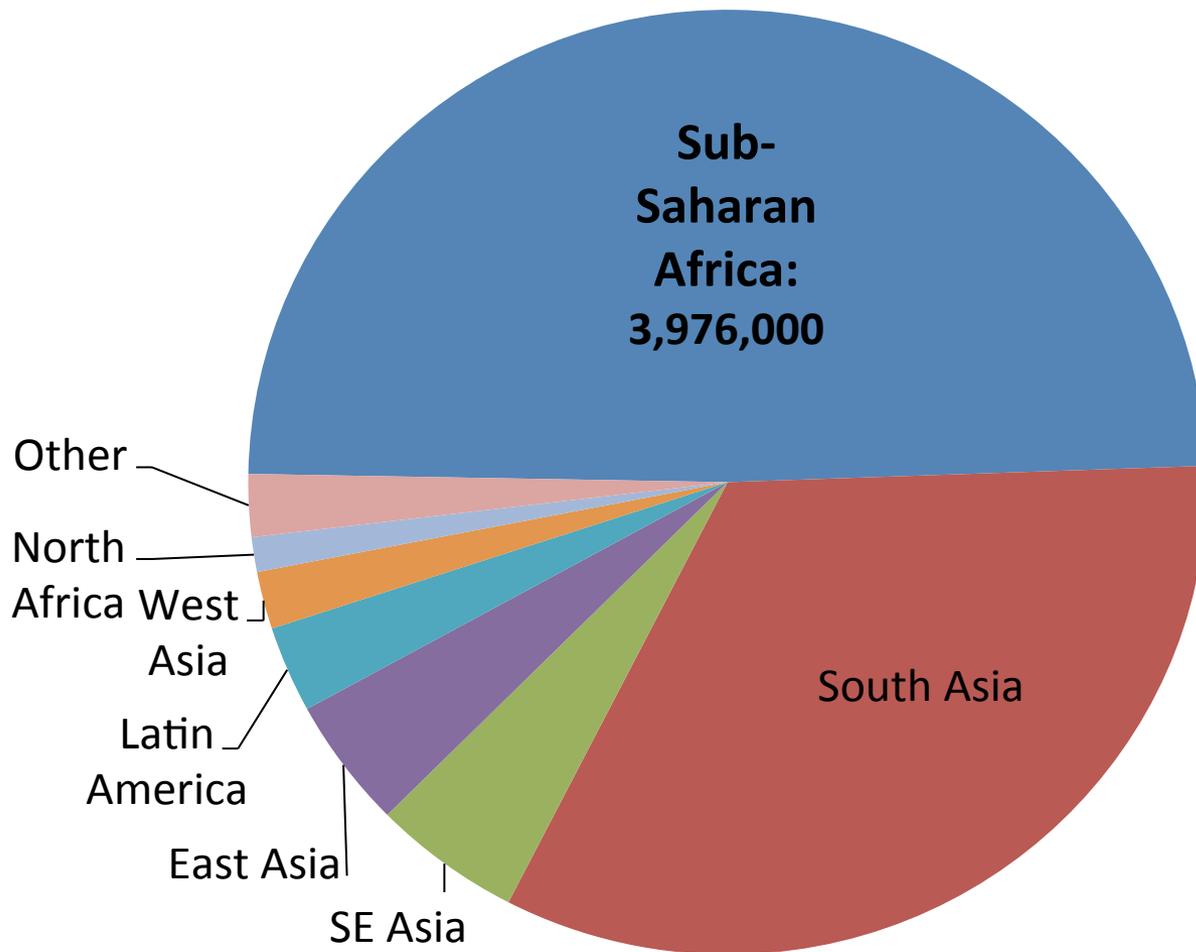
## Under-5 mortality rate, sub-Saharan Africa



Source: UNICEF, 2011

- Diseases like river blindness and sleeping sickness dramatically reduced or eliminated

# Global child mortality

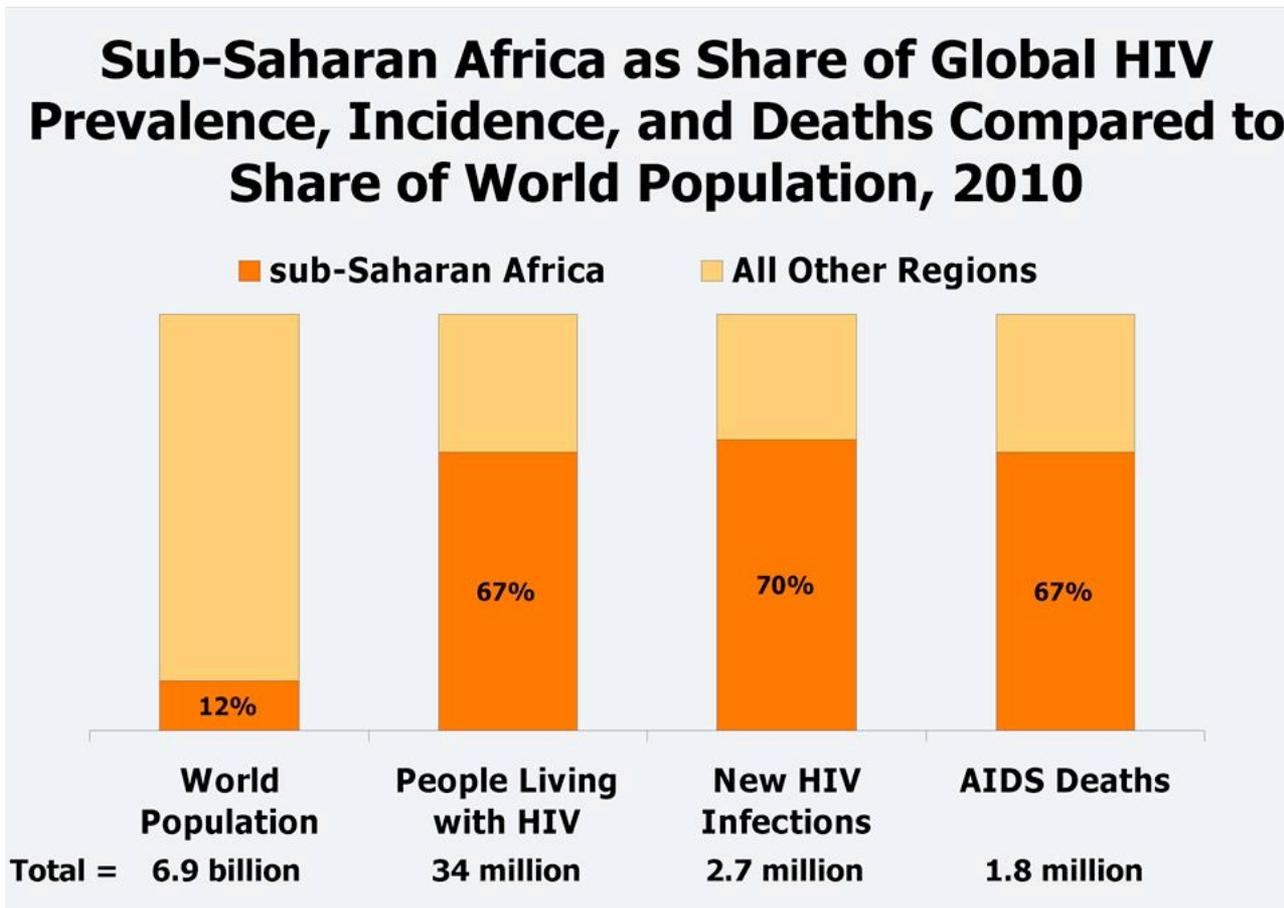


8.1 million children died before their 5<sup>th</sup> birthday in 2009

49% of deaths in Sub-Saharan Africa, compared to ~12% of global population

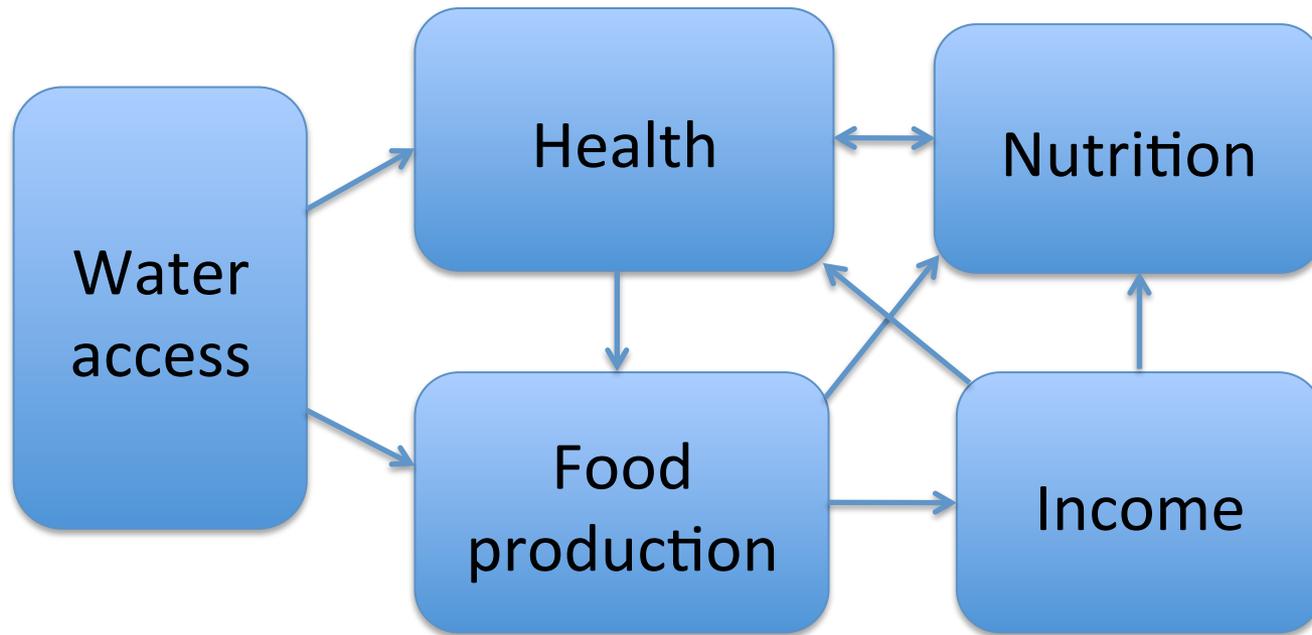
*Number of under five child deaths in 2009 by region, UNICEF*

# Distribution of HIV health burden



Sources: Kaiser Family Foundation, UNAIDS, Population Reference Bureau

# Connecting the dots



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# Thank You



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