



Global  
Food Security   
Sustainable, healthy food for all

## Climate change in the Fertile Crescent and implications of the recent Syrian drought

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Before the Syrian uprising that began in 2011, the greater Fertile Crescent experienced the most severe drought in the instrumental record for sustainability (30). Syria's water security by exploiting irrigated land and water resources without regard for sustainability (30).

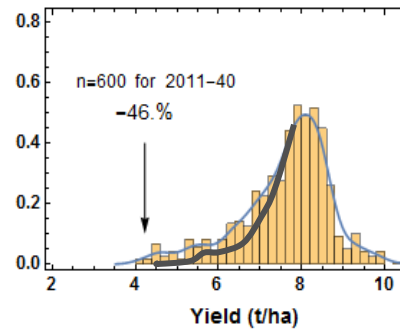
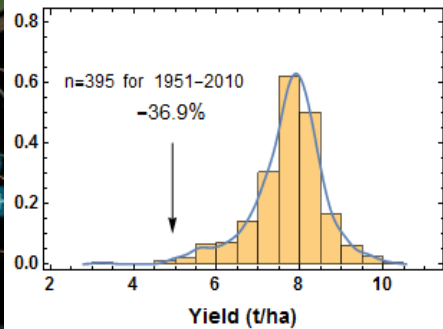
# Climate, extreme weather and food system resilience: it matters to us all

**Tim Benton**

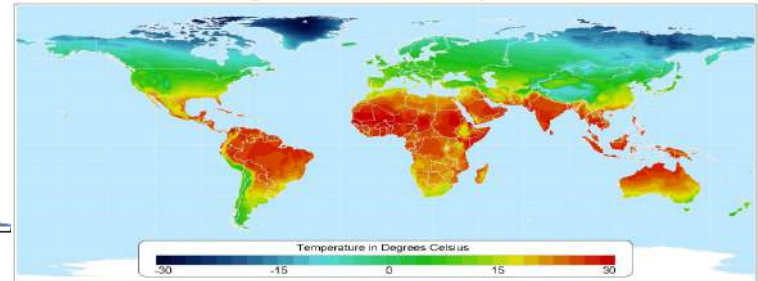
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## Average Annual Temperature



Source: data from: GFDL U.S. Degree Dataset (Peters, et al.)

Atlas of the Biosphere  
Center for Sustainability and the Global Environment  
University of Wisconsin - Madison

The Amazon Forest

Agriculture

Water availability

Sea

Navigation bar with icons and labels for various environmental and social indicators:

- Great Fire
- Crops
- Water Availability
- Sea Level Rise
- Marine
- Drought
- Permafrost
- Tropical Cyclones
- Extreme Temperatures
- Health

Temperature scales:

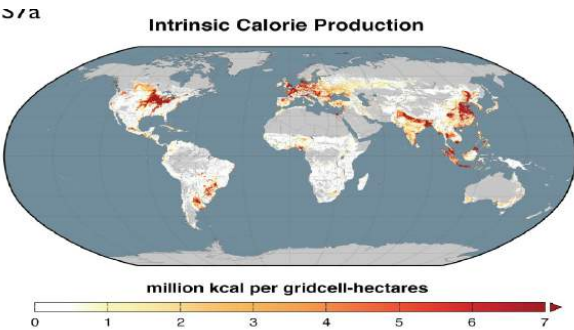
- + °Celsius
- + °Fahrenheit

City populations:

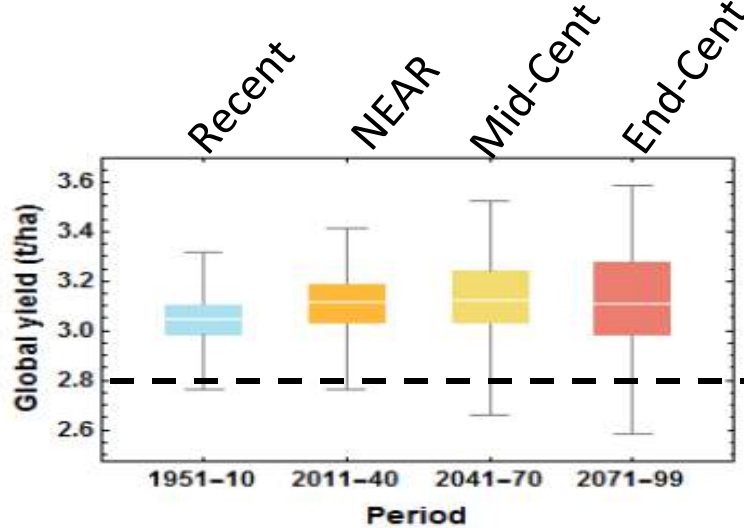
- 5-10 Million (yellow circle)
- 10-20 Million (grey circle)

Source: UN Statistics Division: Demographic Yearbook 2007

# Production shocks from weather

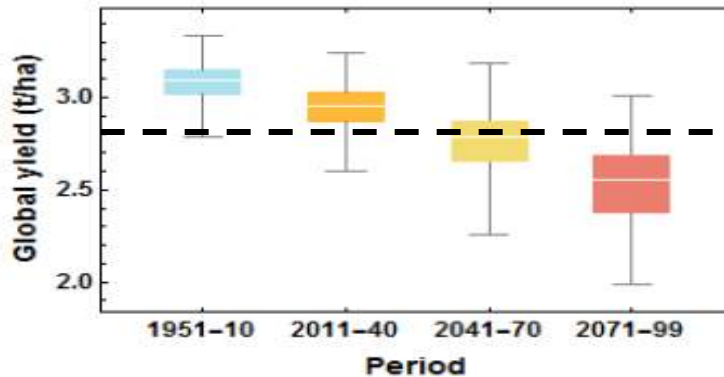


Foley et al 2011



CO<sub>2</sub> fertilisation

*Yields maintained; nutritional quality may decline*



No CO<sub>2</sub> fertilisation

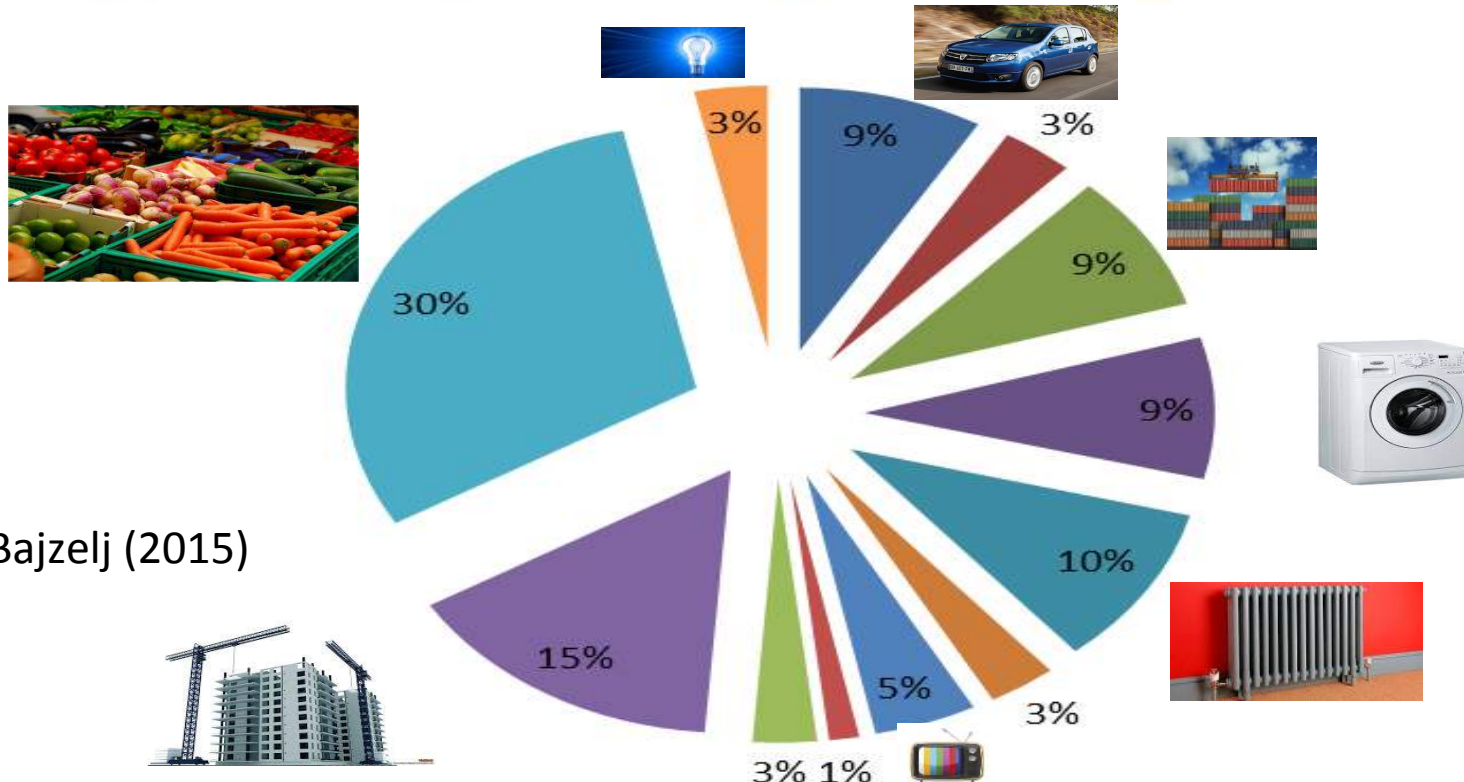
*Yields impacted more*

*Model-based distributions of global calorie-weighted yield of maize, soy, wheat, and rice for the historical (1951-2010) and future with (top row) and without (bottom row) the effects of fertilization from increasing atmospheric CO<sub>2</sub> included. The estimated magnitude of a current 1-in-200 year event is indicated by the horizontal line*



# GHG emissions by service (50.6 Gt CO2e total)

- personal travel   ■ commuting   ■ freight   ■ washing
- thermal comfort   ■ lighting   ■ communications   ■ textiles
- industrial equip.   ■ construction   ■ agri-food   ■ waste



Bojana Bajzelj (2015)