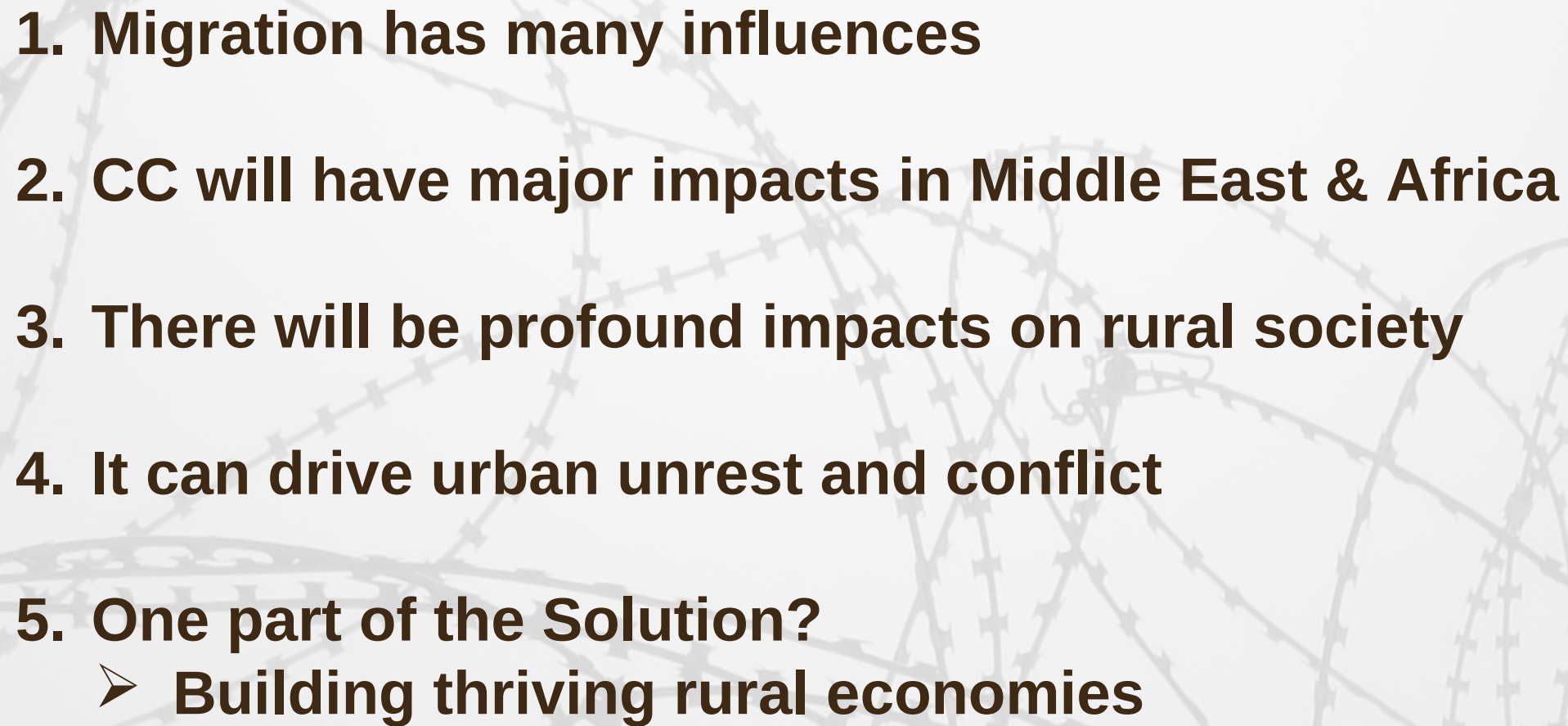


Climate change and forced migration

Bruce Campbell, Director, CCAFS



- 
- The background of the slide is a light gray, semi-transparent image of barbed wire. The wire is tangled and crisscrosses the entire frame, creating a complex, web-like pattern. The sharp points of the barbs are visible, adding a sense of texture and depth to the background.
- 1. Migration has many influences**
 - 2. CC will have major impacts in Middle East & Africa**
 - 3. There will be profound impacts on rural society**
 - 4. It can drive urban unrest and conflict**
 - 5. One part of the Solution?**
 - Building thriving rural economies**

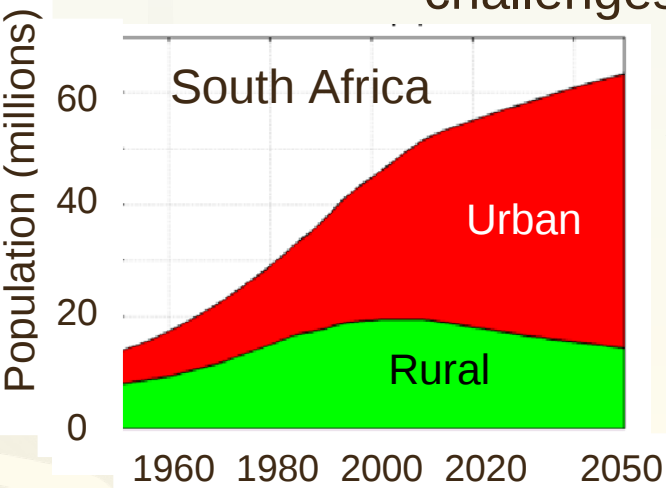
1. Migration has many influences





Extreme events and gradual climate change

Production & livelihood challenges



Migration



Urban unrest & conflict

Cross-border migration

Environmental change, migration & conflict

COLLAPSE

HOW SOCIETIES CHOOSE
TO FAIL OR SUCCEED

JARED DIAMOND

Author of *GUNS, GERMS, and STEEL*

Winner of the PULITZER PRIZE



...but fraught with controversy

- Lack of systematic data
- Complex circumstances that influence decisions
 - economic opportunities (push and pull)
 - land degradation
 - political persecution
 - overpopulation

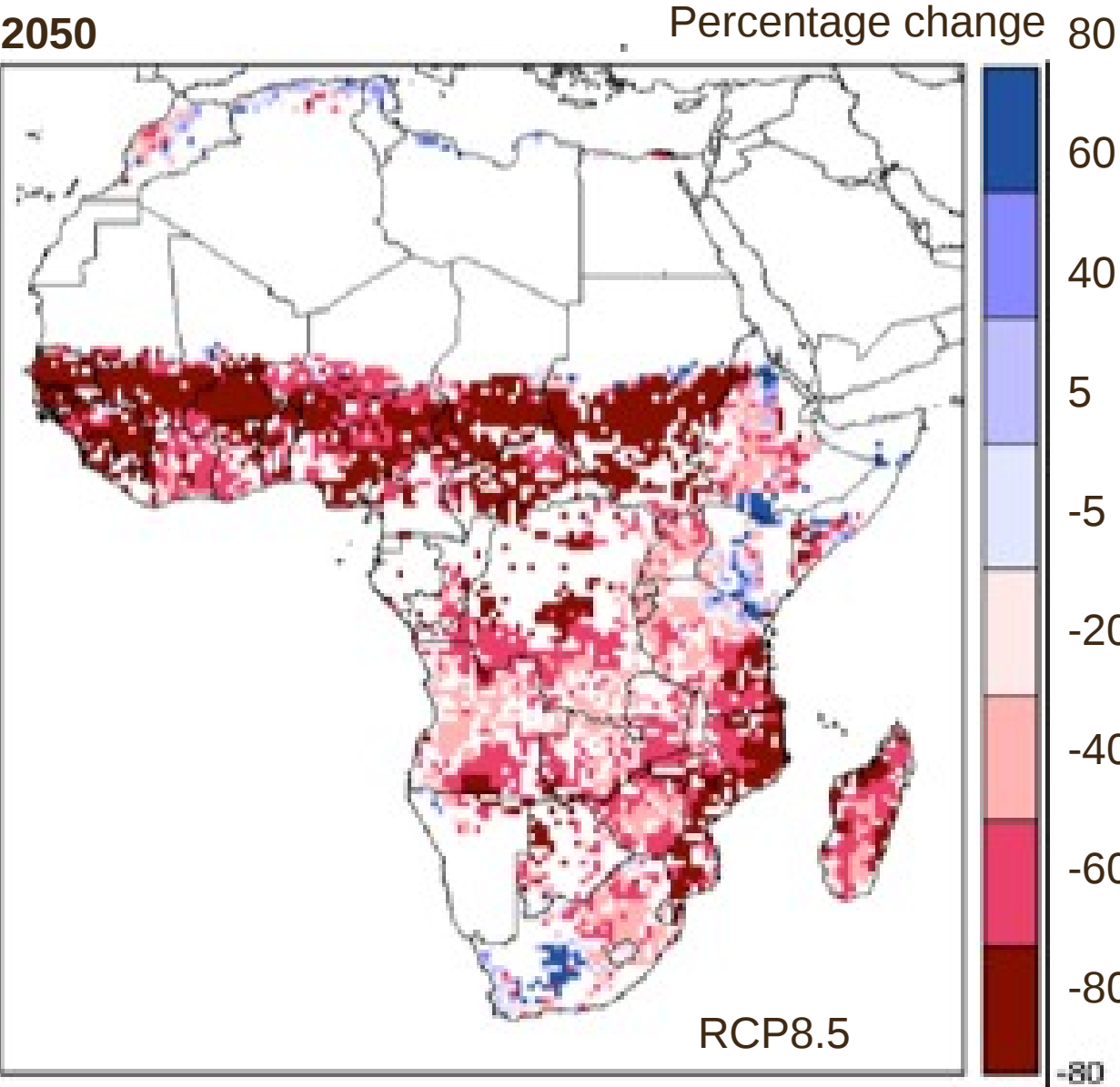
Black et al., 2011







2. CC will have major impacts

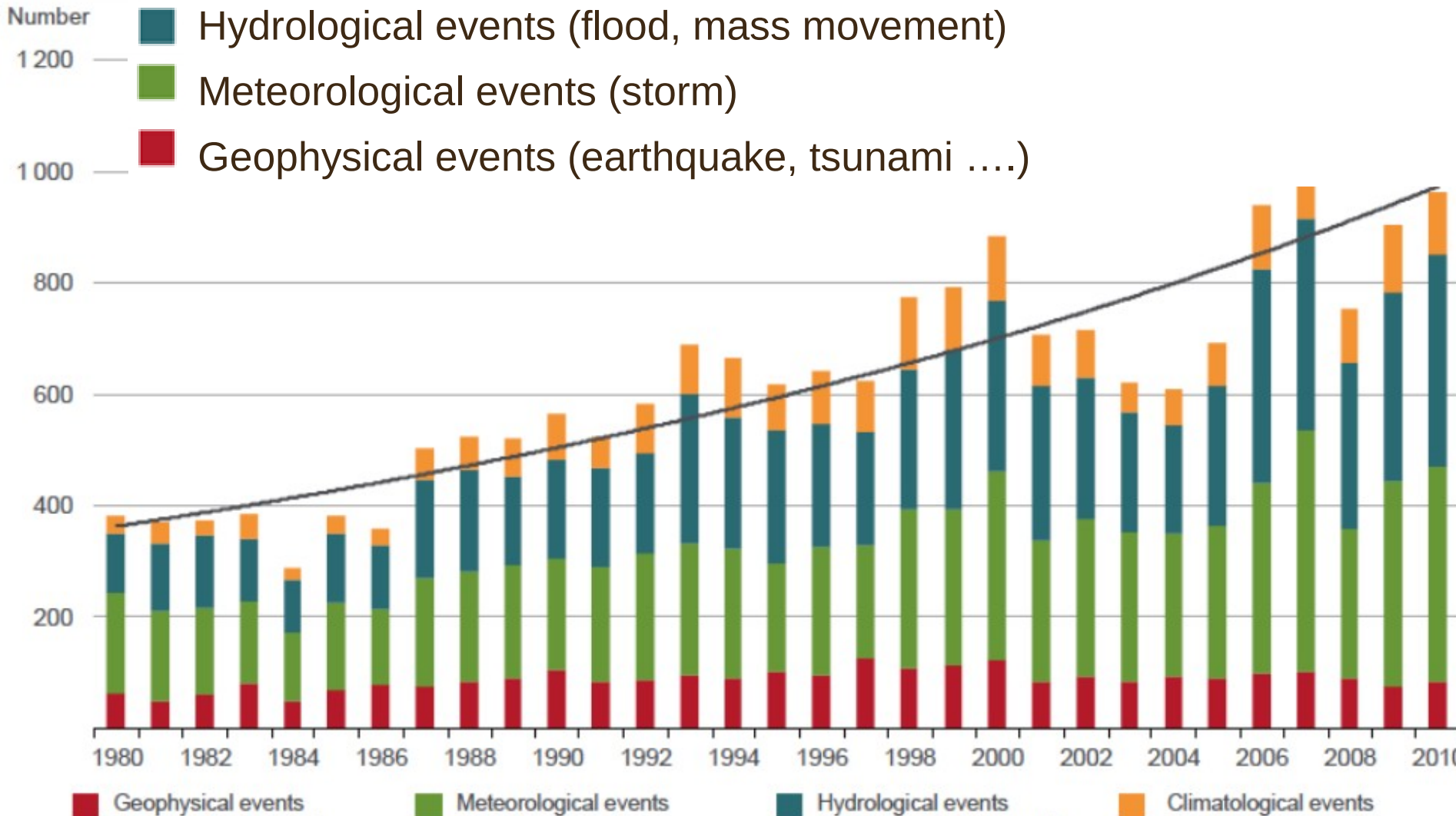


Beans – on their way out

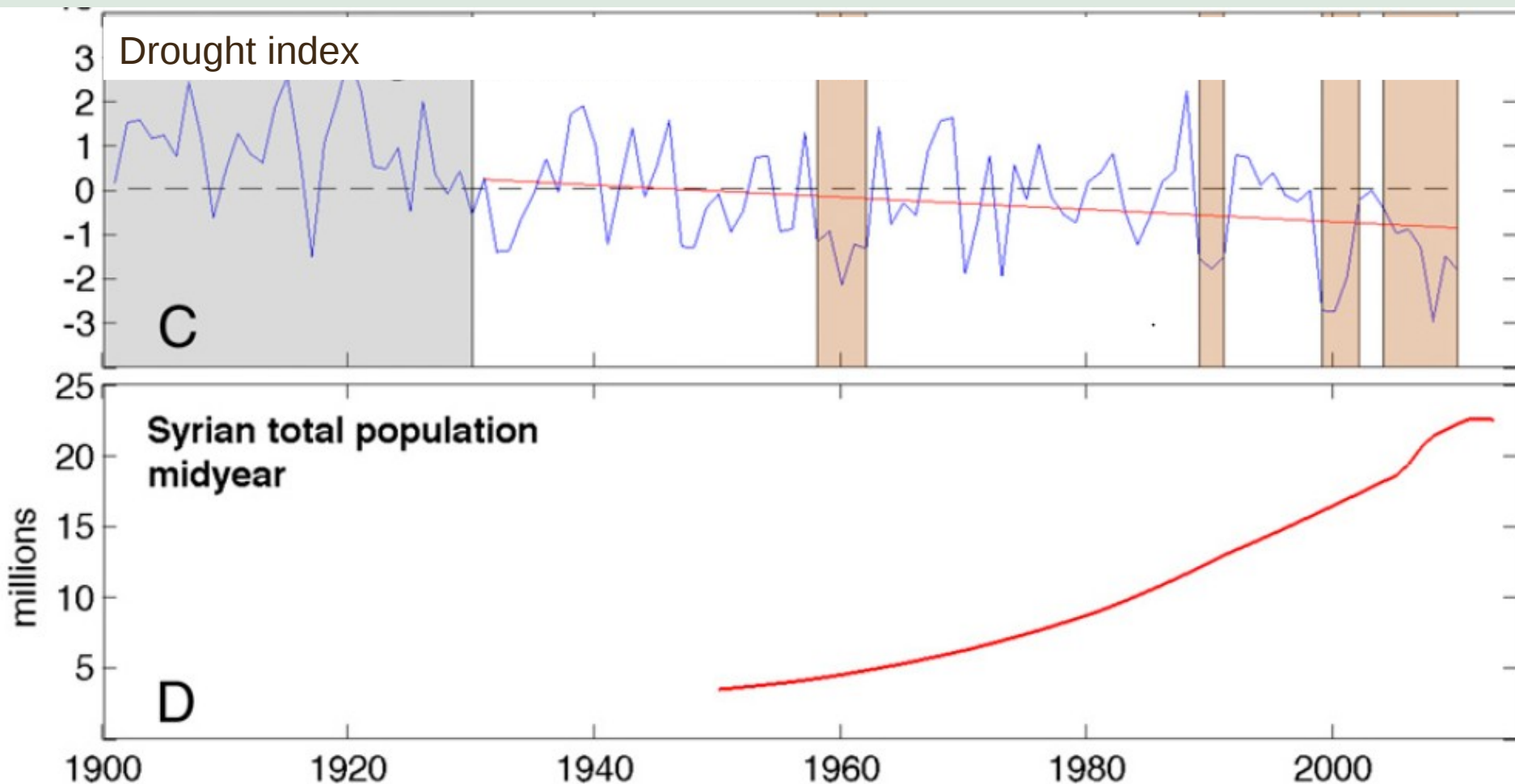


Natural Catastrophes Worldwide

-  Climatological events (extreme temperature, drought, forest fire)
-  Hydrological events (flood, mass movement)
-  Meteorological events (storm)
-  Geophysical events (earthquake, tsunami



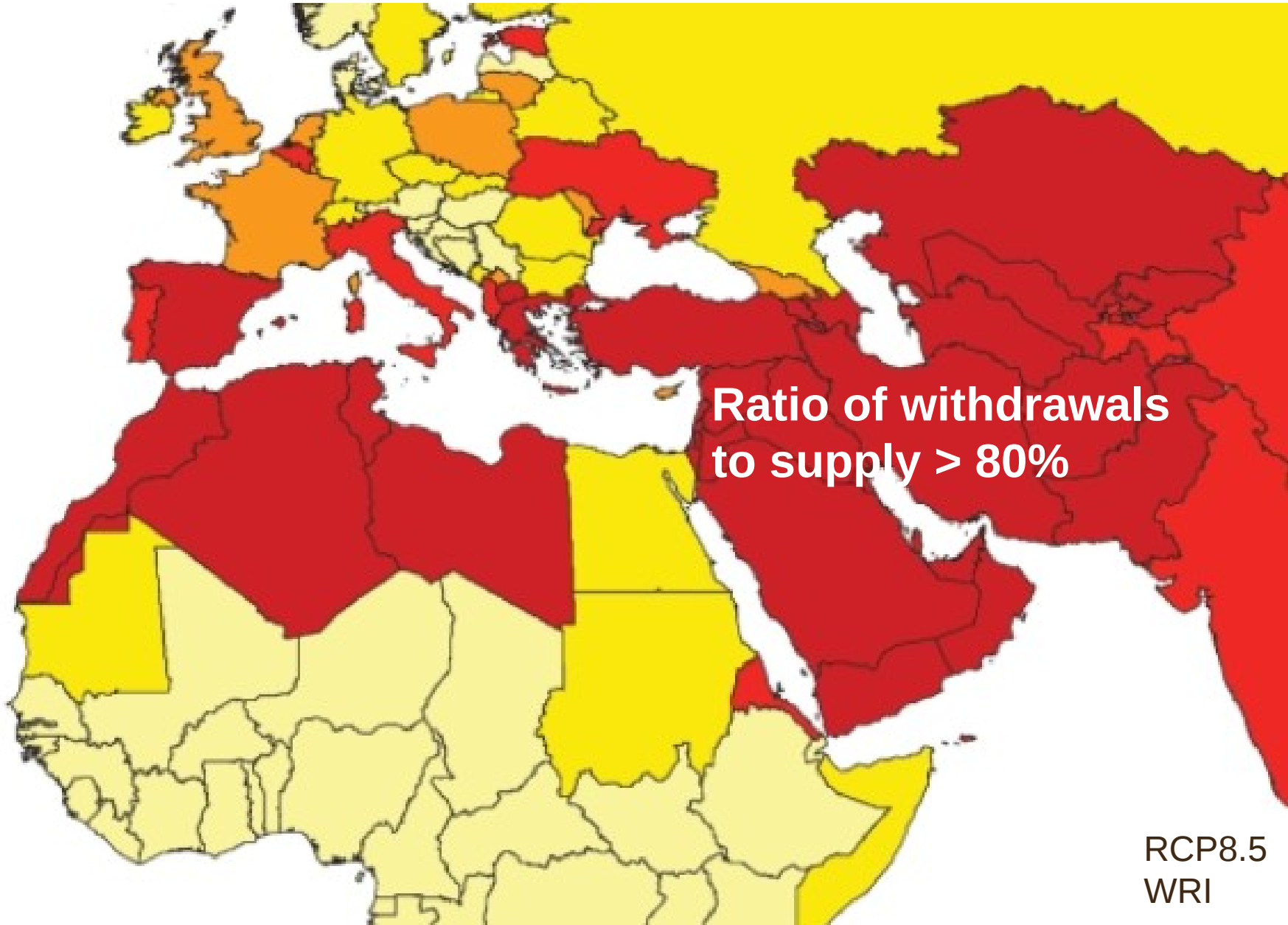
“the worst 3-year drought in the instrumental record”



Water stress by country: 2040



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3. There will be profound impacts on rural society

Agricultural
and economic
shocks

“migration is the
most important
coping strategy”

rainfall
variability and
food insecurity

Vietnam: Loc Duc Nguyen et al., 2012
South Asia: Bhatta and Aggarwal 2015
Ghana: Rademacher-Schulz et al. 2014



Largely male out-migration
Increasing gendered vulnerability

Generally only one member migrates
60% males
Age 24
Better educated
Less poor



Vietnam: Loc Duc Nguyen et al., 2012
Nepal: Sugden et al., 2015
Ghana: Rademacher-Schulz et al. 2014

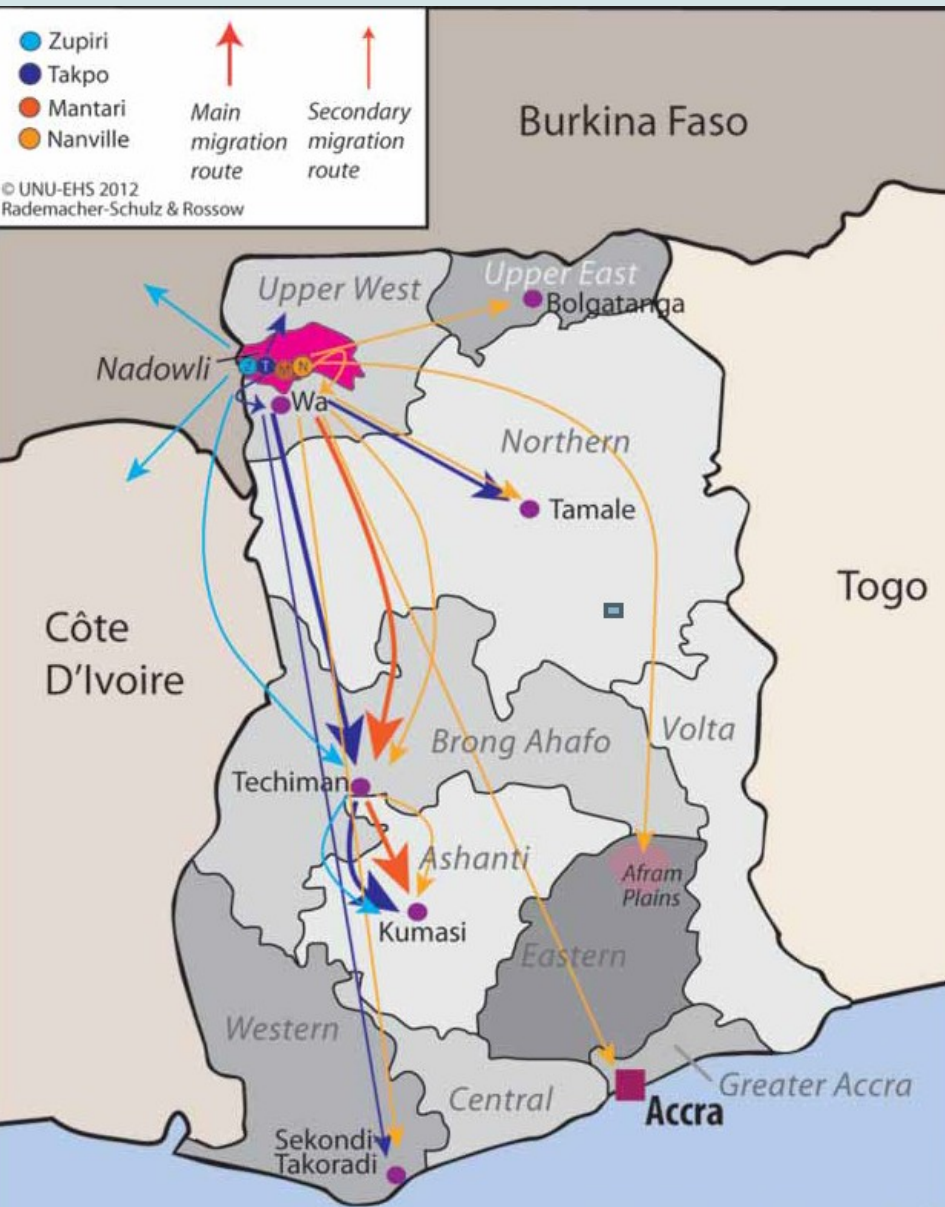
<1 year out: very unsatisfied with choice
3–5 years: most satisfied
> 5 years: less satisfied





Much back-migration

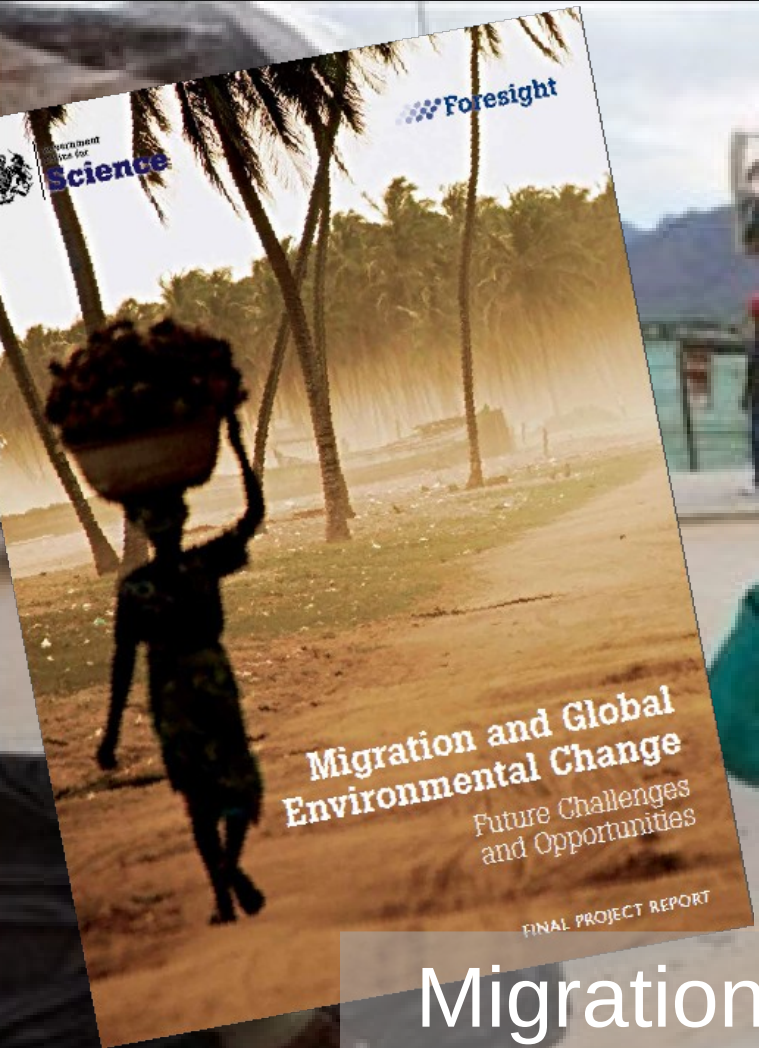
MORIM

Rainy season migration



- “Rainfall now is unpredictable, it stops when it is needed and it rains when it is not needed”
- Sell assets (livestock) to cope -  vulnerability
- Rainy season migration
- Reduced labour for ag production -  vulnerability





\$300 billion per annum

Migration is a legitimate form of climate change adaptation

“.... will be an extremely effective way to build long-term resilience”

Despite many exit barriers

Beegle et al. 2011

26 million people per
year are internally
displaced due to natural
disasters

(INDC, 2015)

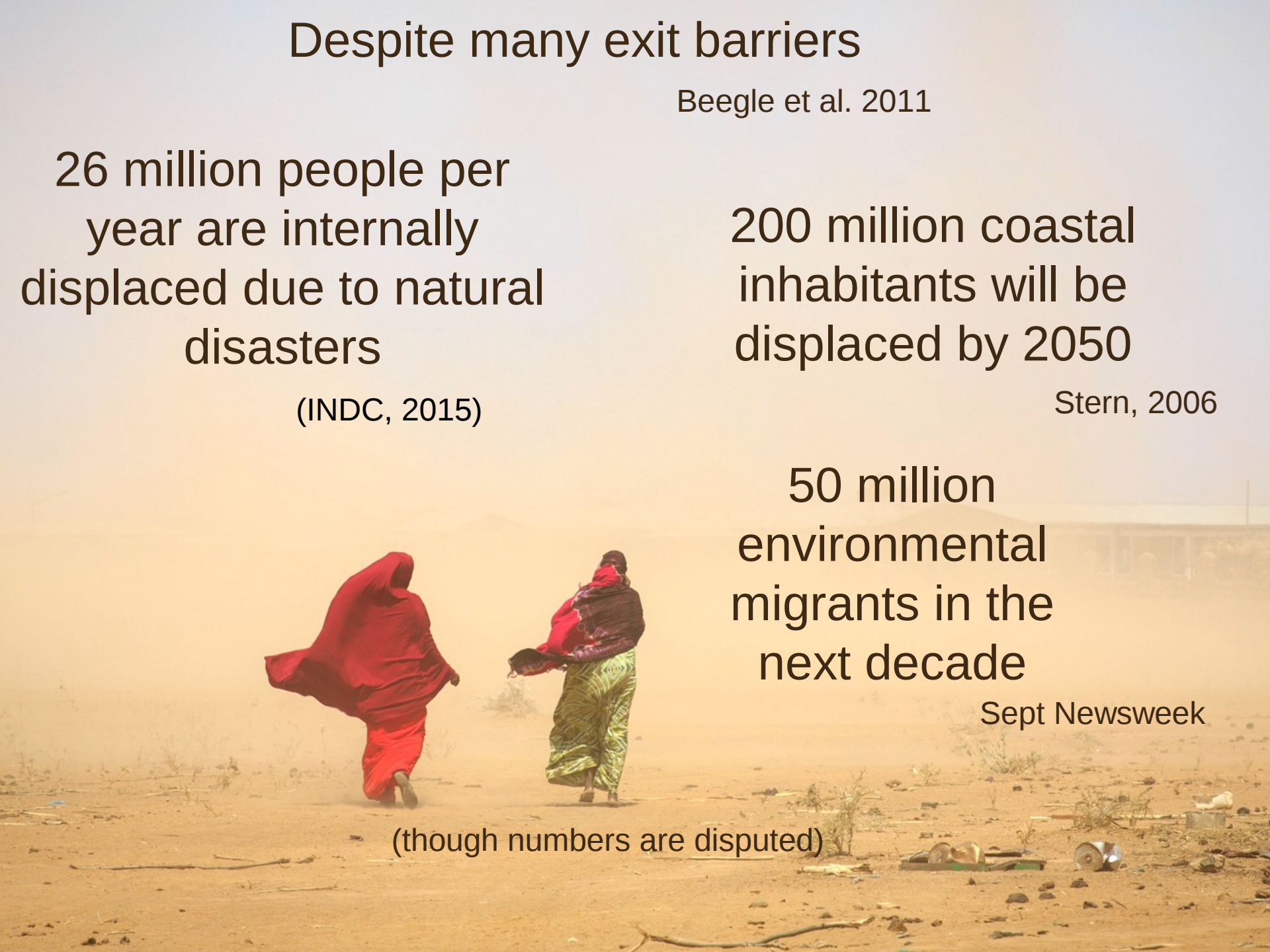
200 million coastal
inhabitants will be
displaced by 2050

Stern, 2006

50 million
environmental
migrants in the
next decade

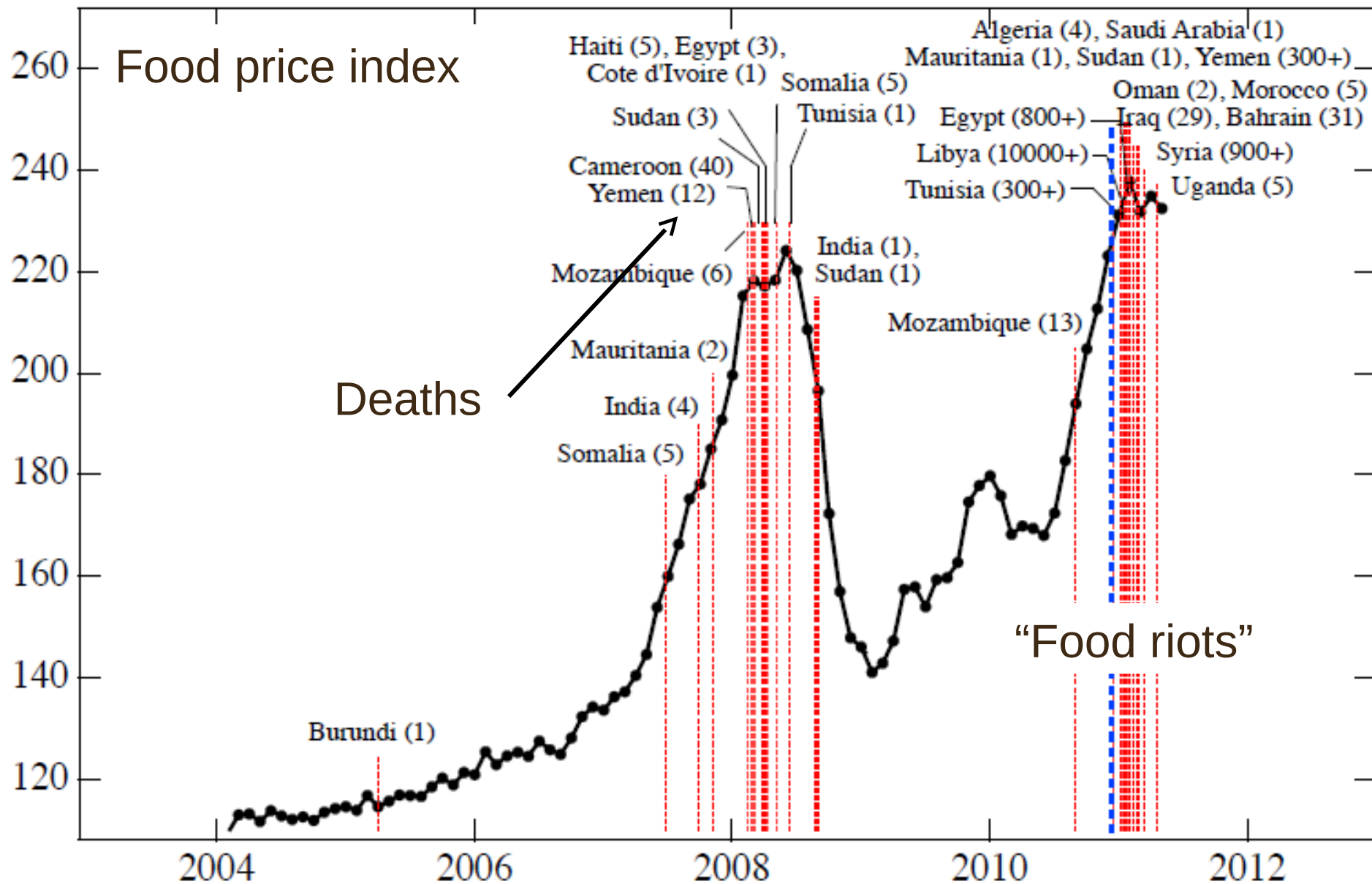
Sept Newsweek

(though numbers are disputed)



4. Migration can drive urban unrest and conflict





- ❑ 1.5 million displaced to cities
- ❑ Large influx of Iraqi refugees
- ❑ Poor governance
- ❑ Poverty
- ❑ Socio-political factors
- ❑ Failure to address suffering of a displaced population

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

Colin P. Kelley^{a,1}, Shahrzad Mohtadi^b, Mark A. Cane^c, Richard Seager^c, and Yochanan Kushnir^c

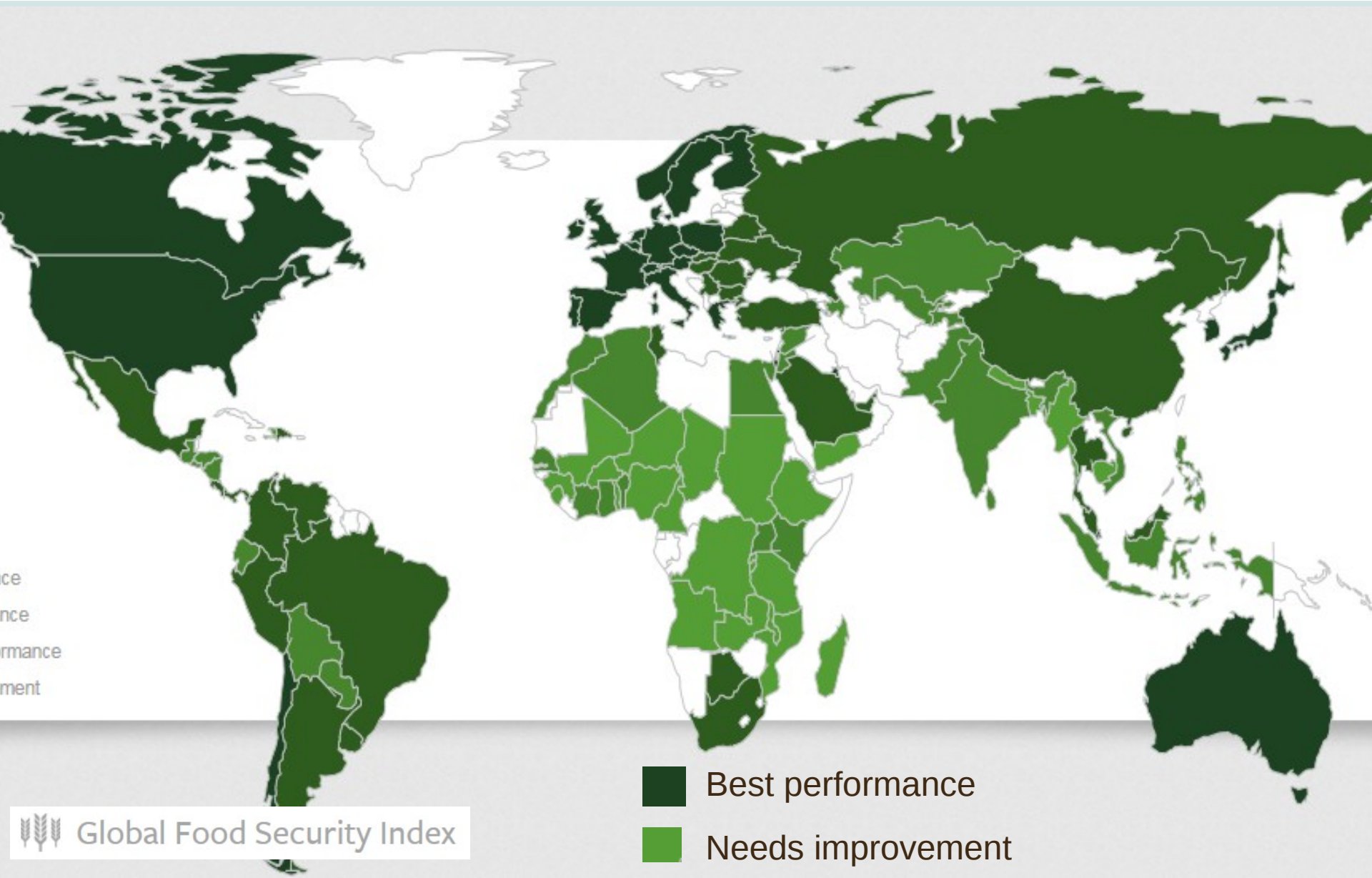
^aUniversity of California, Santa Barbara, CA 93106; ^bSchool of International and Public Affairs, Columbia University, Palisades, NY 10964
Edited by Brian John Hoskins, Imperial College London, London, United Kingdom, and approved January 30, 2015 (received for review November 16, 2014)

Before the Syrian uprising that began in 2011, the greater Fertile Crescent experienced the most severe drought in the instrumental record. Syria, a country marked by poor governance and un-
Synia's water security by exploiting limited land and water resources without regard for sustainability (10).
One critical consequence of these unsustainable policies is

**5. One part of the solution:
Build thriving rural economies**



Food security index



ice
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ment

- Best performance
- Needs improvement

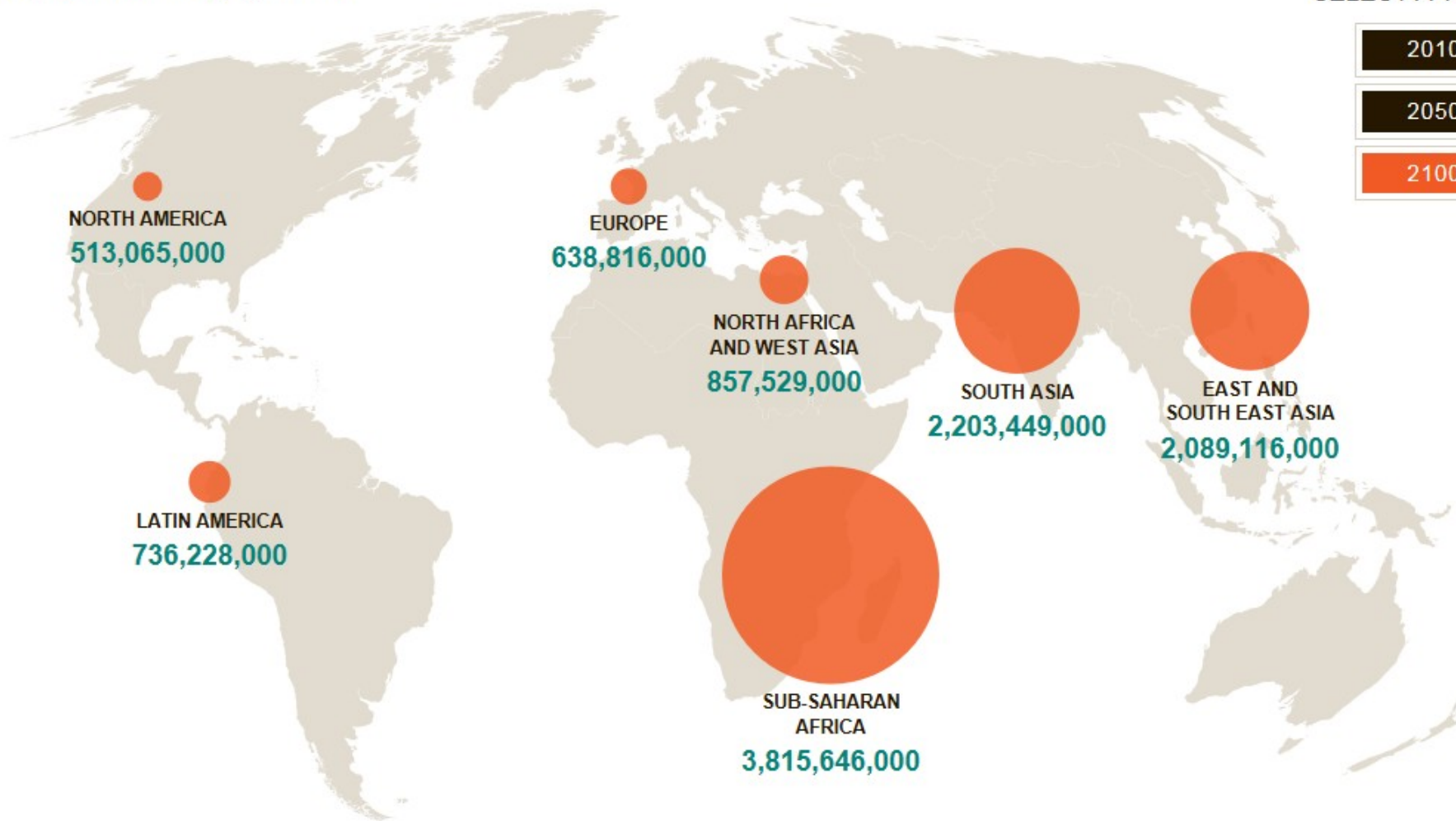
Regional population through year 2100

SELECT A YEAR:

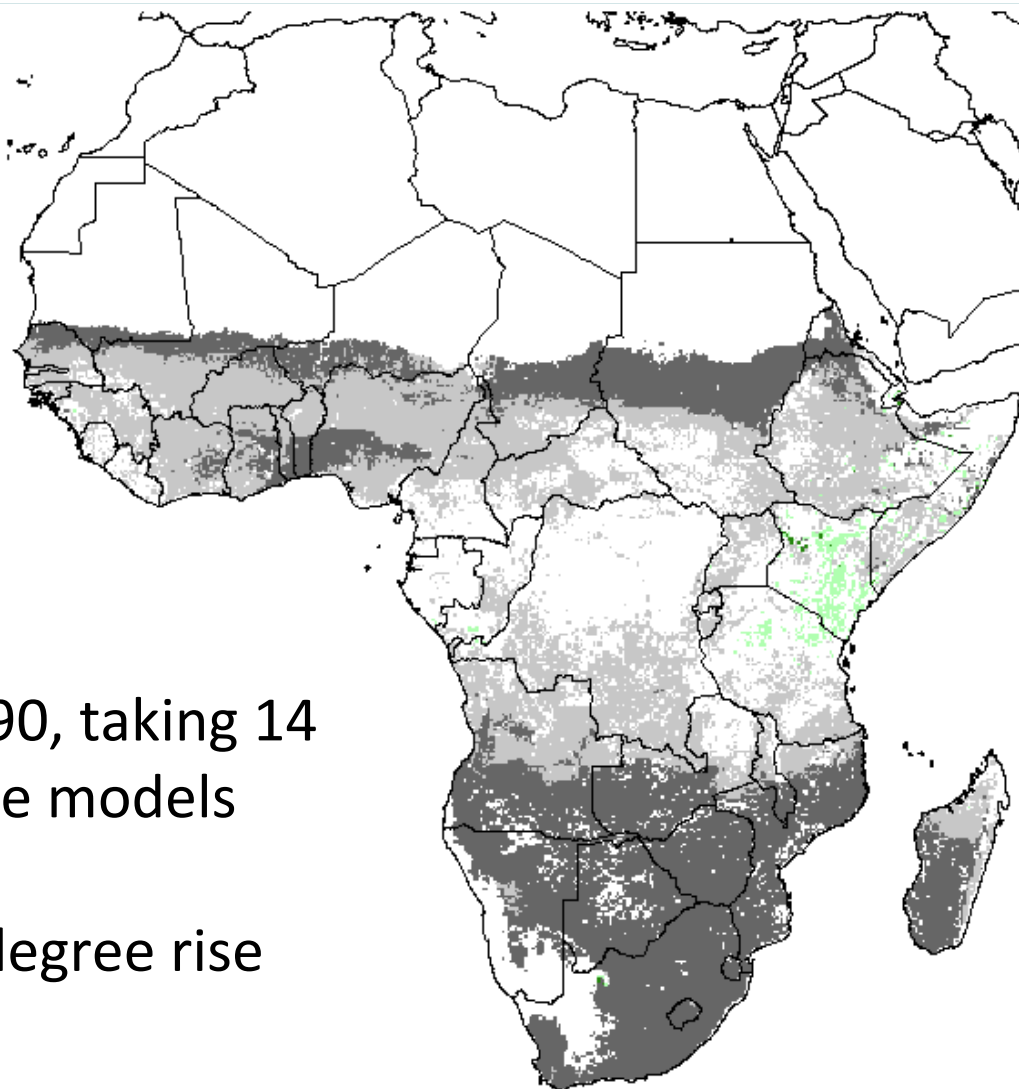
2010

2050

2100

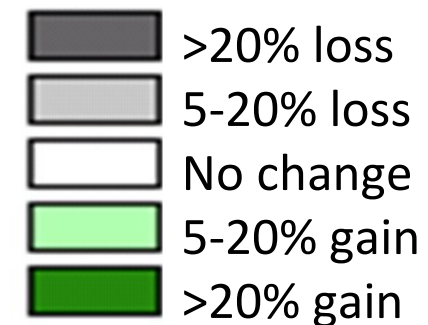


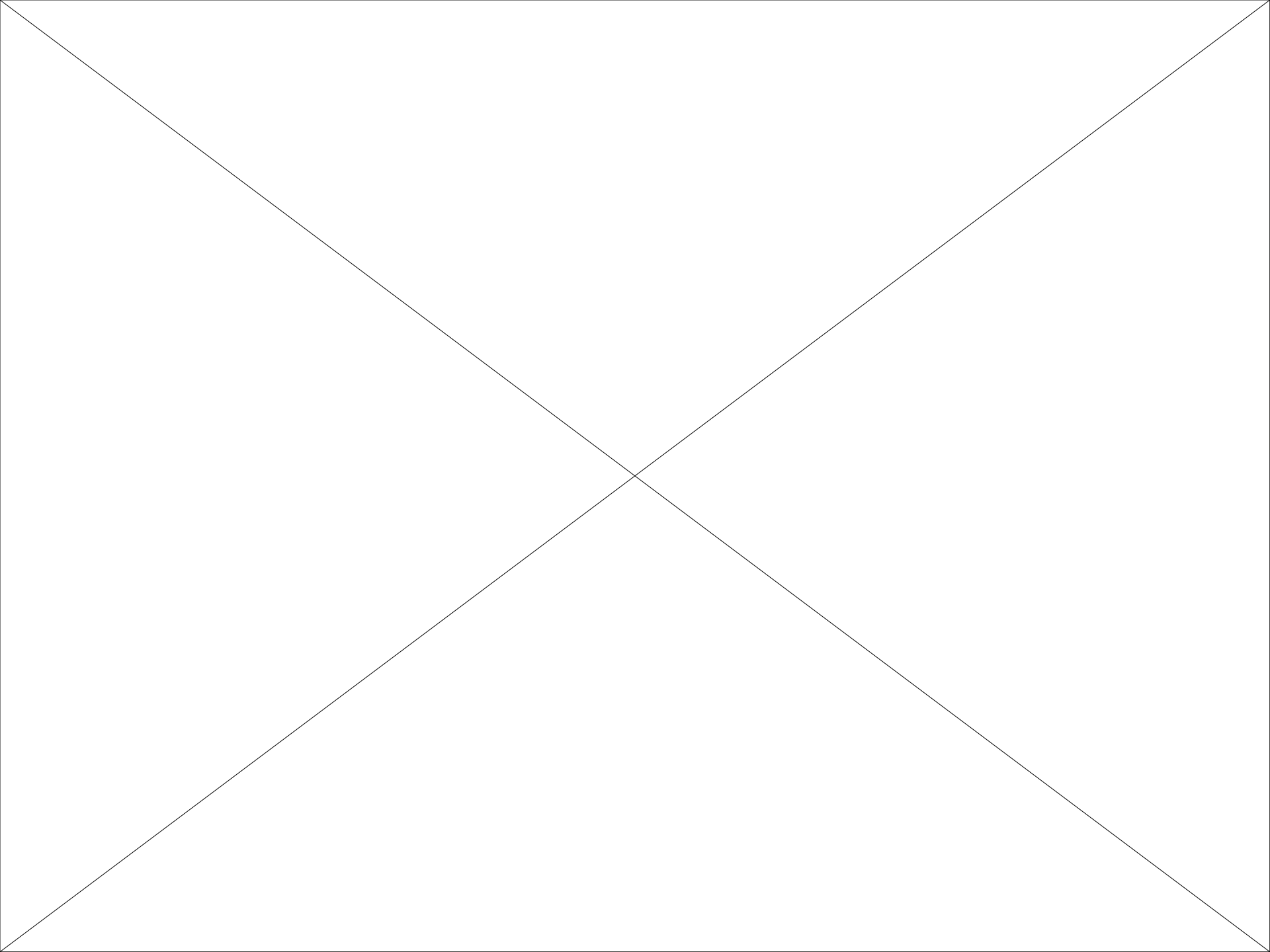
Length of growing season



To 2090, taking 14
climate models

Four degree rise







Extreme events and gradual climate change

Thriving rural economies

Production & livelihood challenges

Migration

Urban unrest & conflict

Cross-border migration





International Research Institute
for Climate and Society
EARTH INSTITUTE | COLUMBIA UNIVERSITY

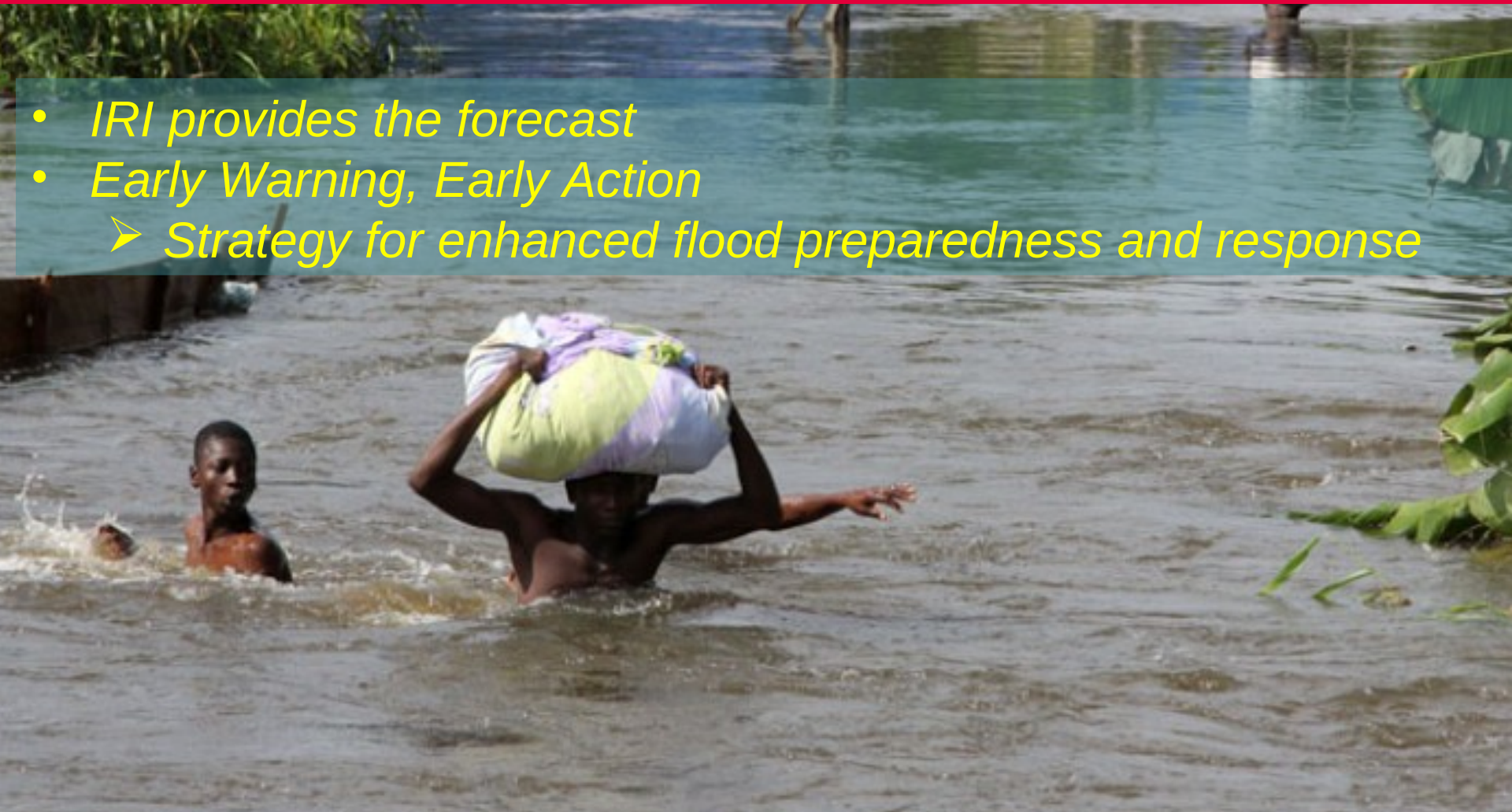


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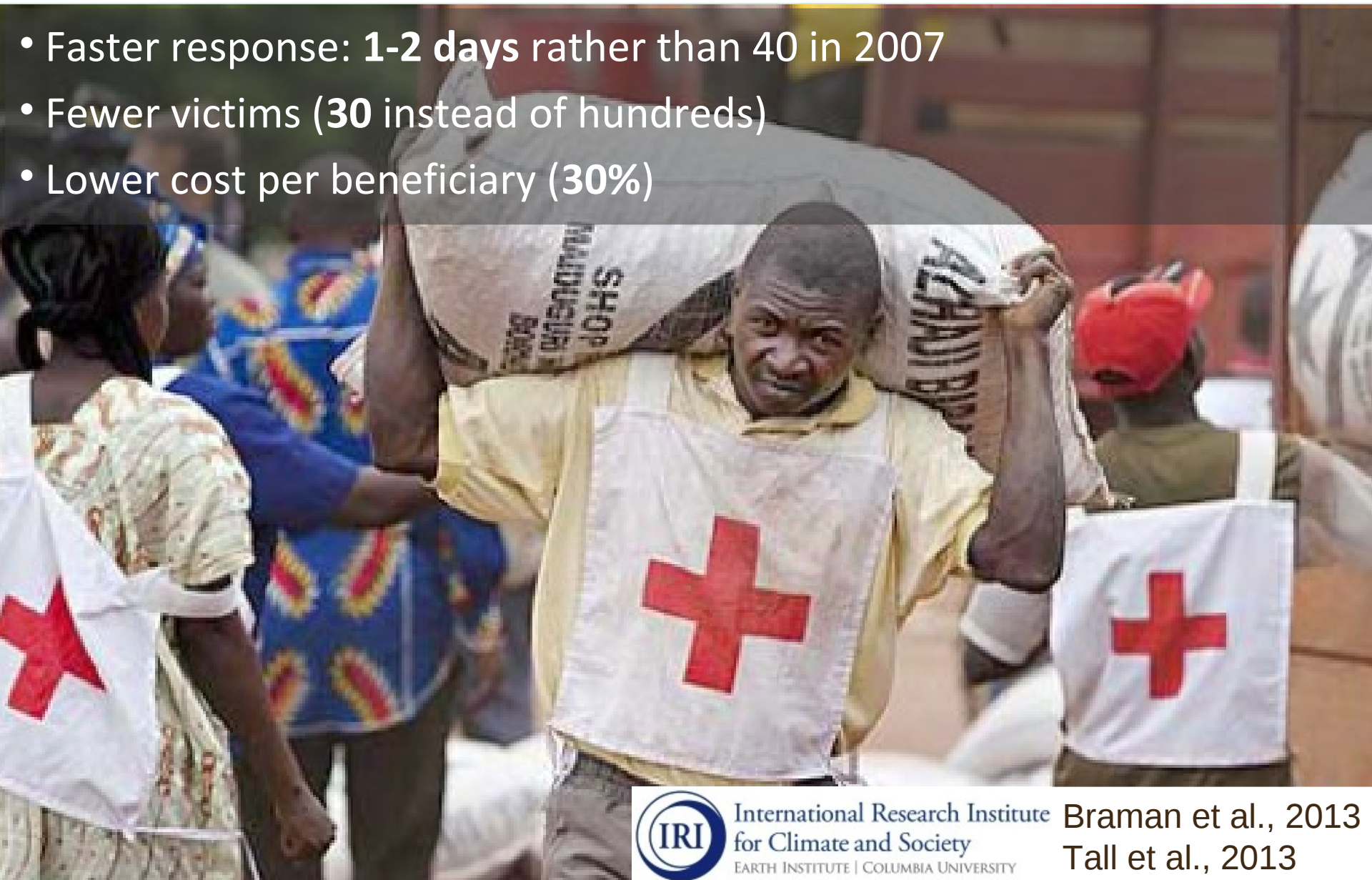
International Federation
of Red Cross and Red Crescent Societies

- *IRI provides the forecast*
- *Early Warning, Early Action*
 - *Strategy for enhanced flood preparedness and response*



Early Action works:

- Faster response: **1-2 days** rather than 40 in 2007
- Fewer victims (**30** instead of hundreds)
- Lower cost per beneficiary (**30%**)



Productive Safety Nets

Example: Ethiopia

- Cash transfers for work by chronically food insecure populations
- ~1.3 million made food secure
- Growth in livestock holdings
- 9 million ha rehabilitated
- Better access to clean water
- Increase in school attendance



Senegal: Climate information services



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- Male and female farmers
- Indigenous & scientific
- 3.9 million farmers



URAC

Union des Radios Associatives et Communautaires (Sénégal)





Improved index insurance products for 1 million farmers in India

“Climate-smart villages” – High-value sustainable agriculture



Thank you



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