

# Everything is Connected: Prosperity, Food and Biodiversity



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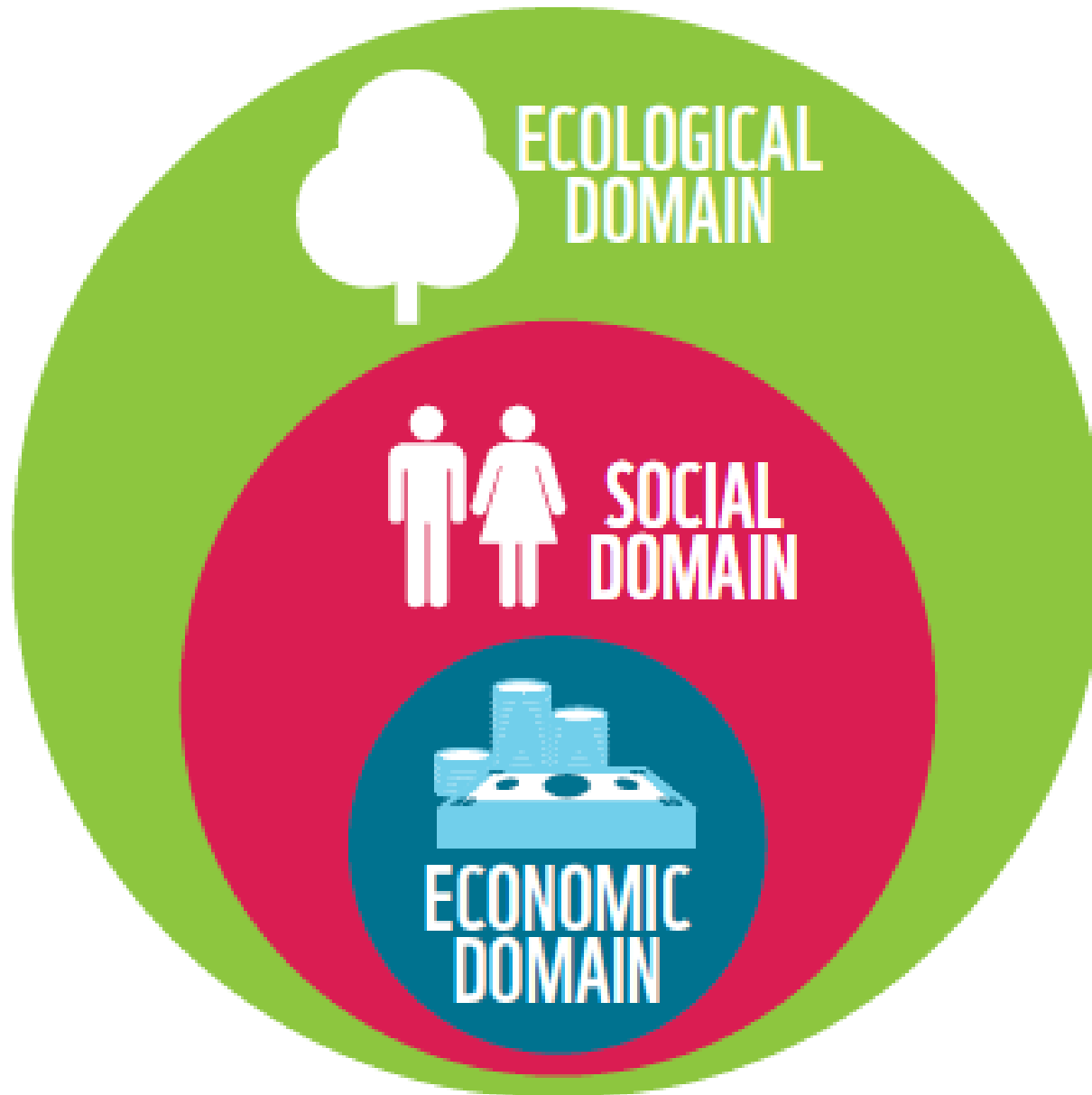
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# Everything is Connected



**Everything is changing**



# We are all in this together





**What are we trying to sustain?**

**Actually...**



**We are trying to  
advance and  
sustain human  
prosperity!**



# SUSTAINABLE DEVELOPMENT GOALS



<b>1</b> NO POVERTY 	<b>2</b> ZERO HUNGER 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>4</b> QUALITY EDUCATION 	<b>5</b> GENDER EQUALITY 
<b>6</b> CLEAN WATER AND SANITATION 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>10</b> REDUCED INEQUALITIES 
<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 
<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 			



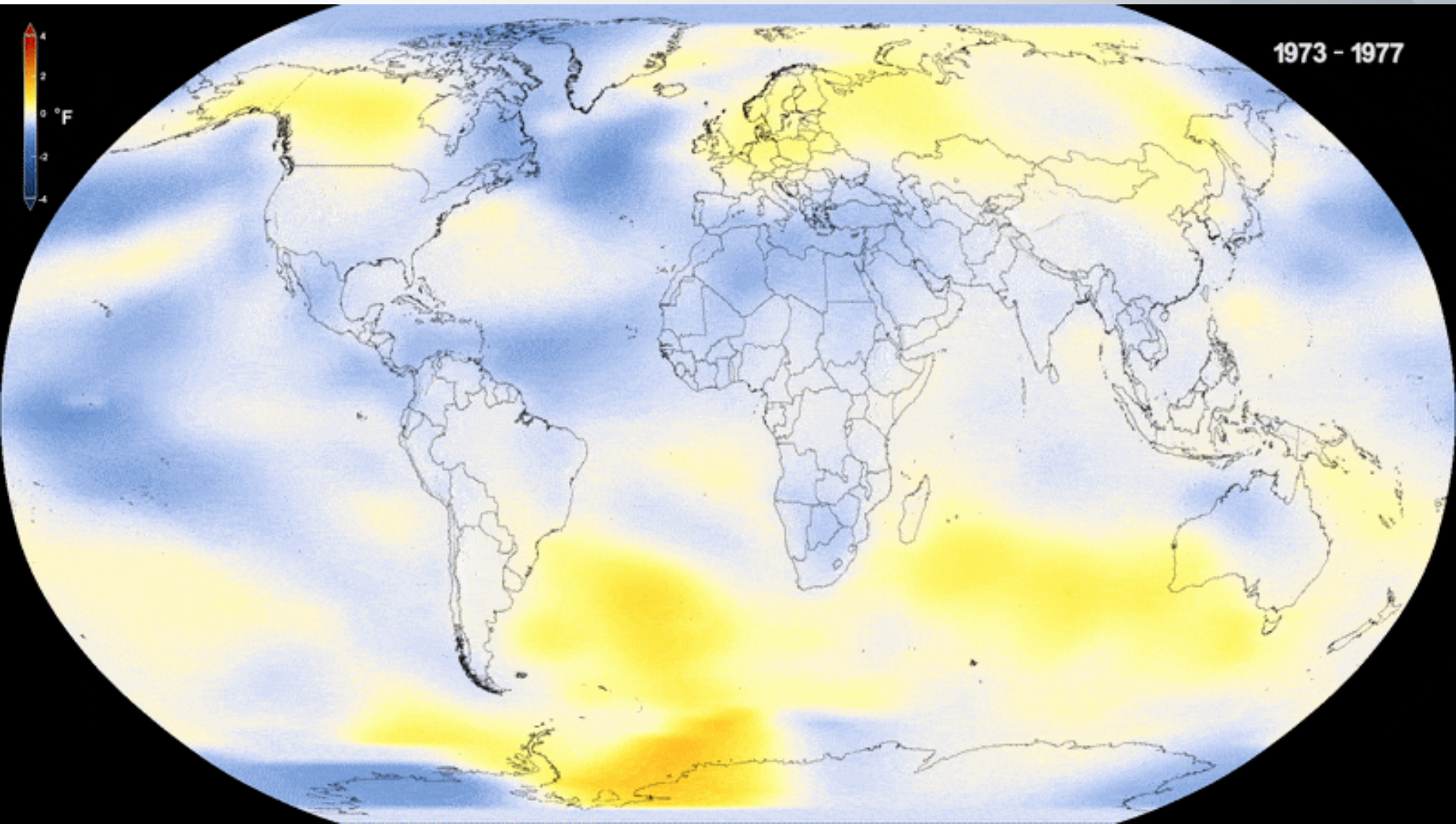
# SUSTAINABLE DEVELOPMENT GOALS







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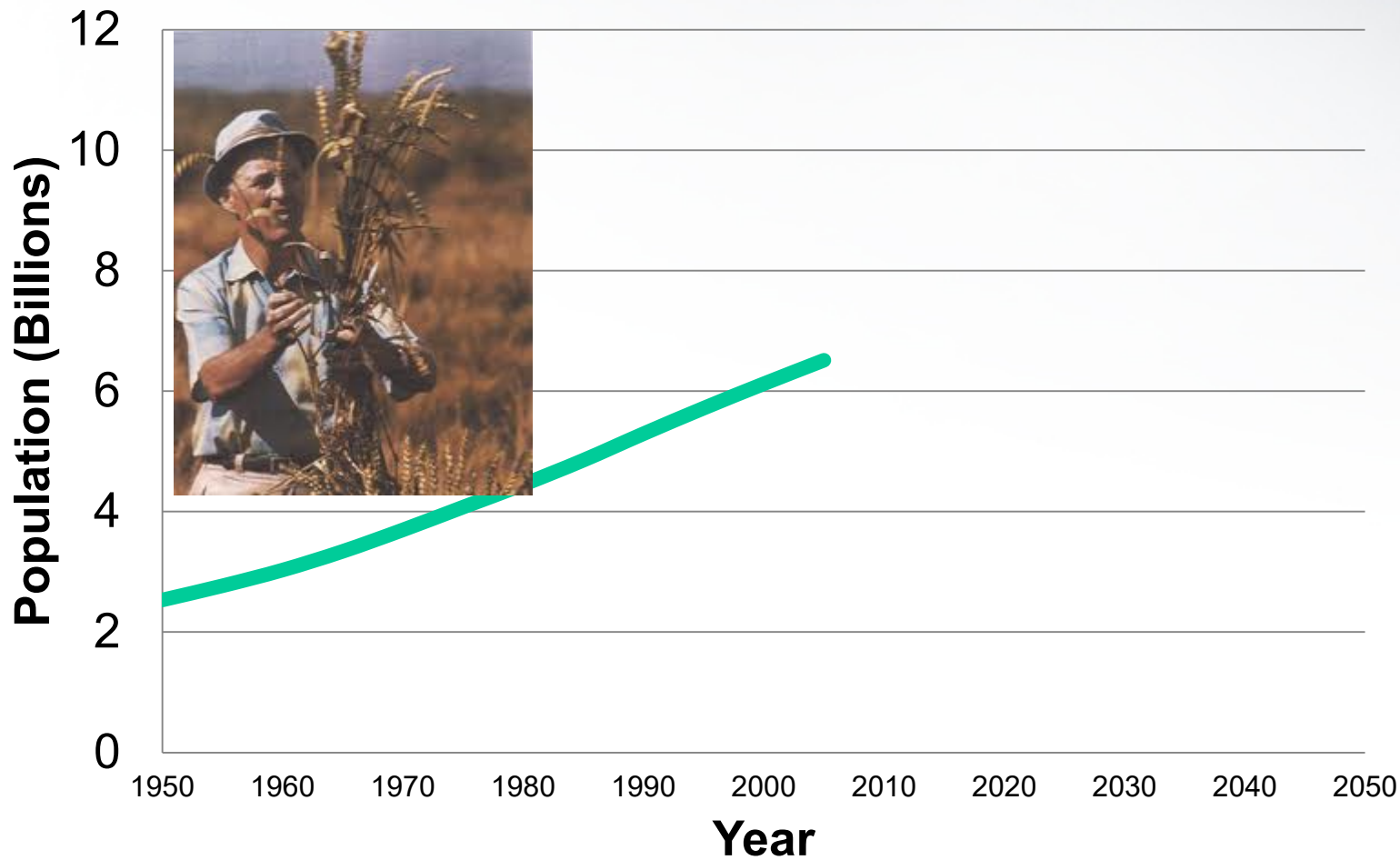


**Prosperity is  
the goal**

# Sustainability 2050: The Challenge



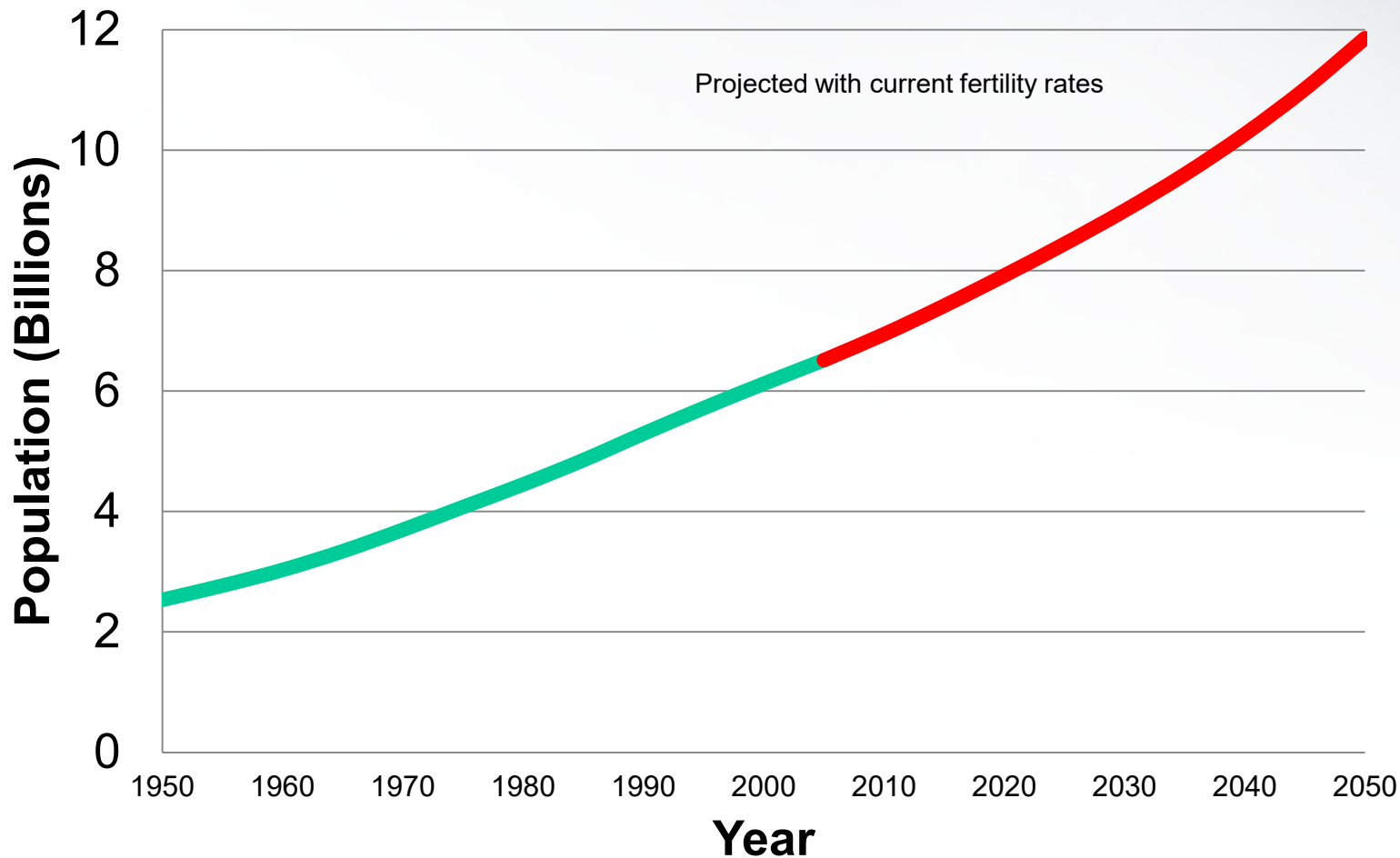
## UN Population Projections



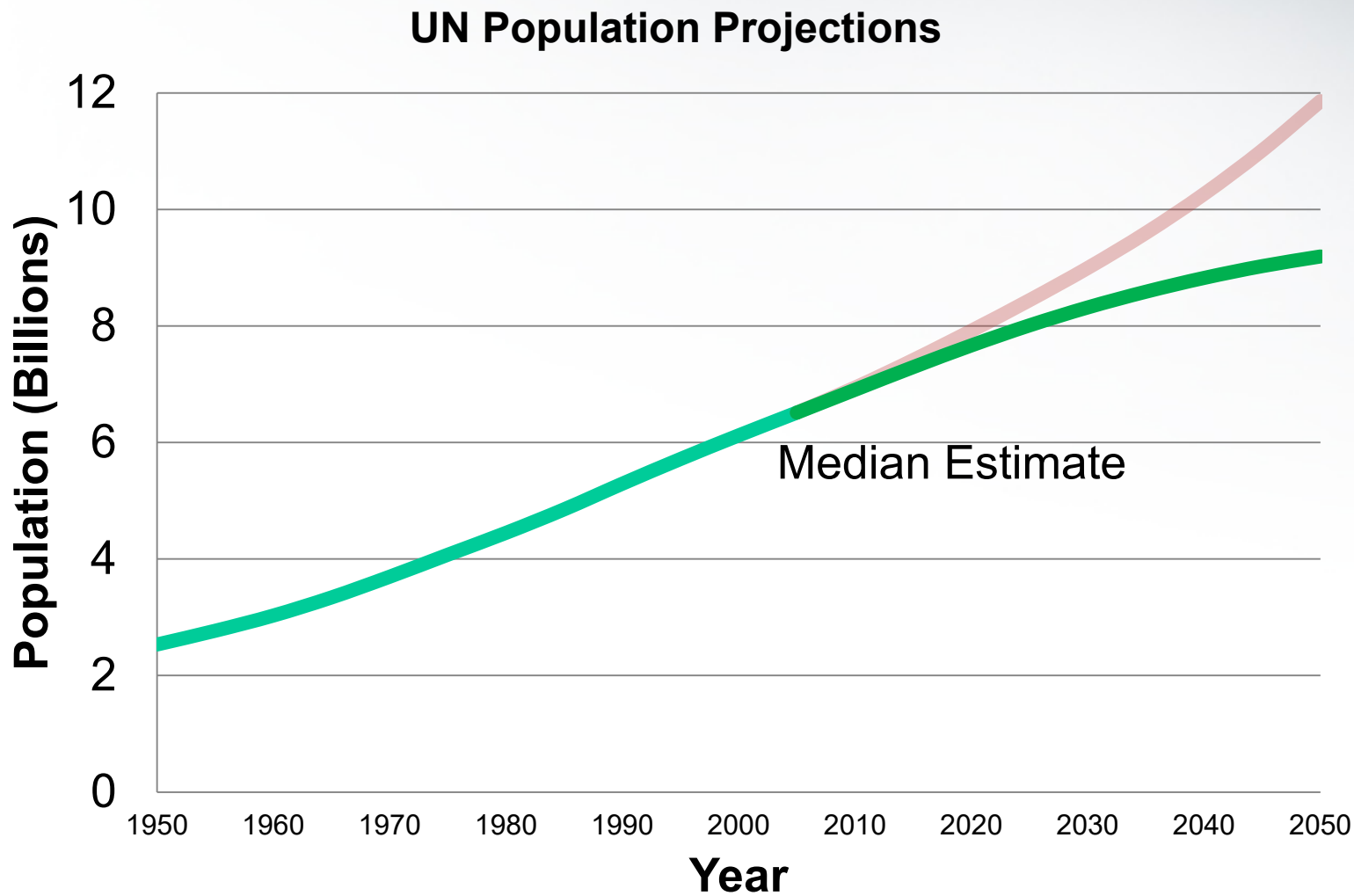
# Sustainability 2050: The Challenge



## UN Population Projections



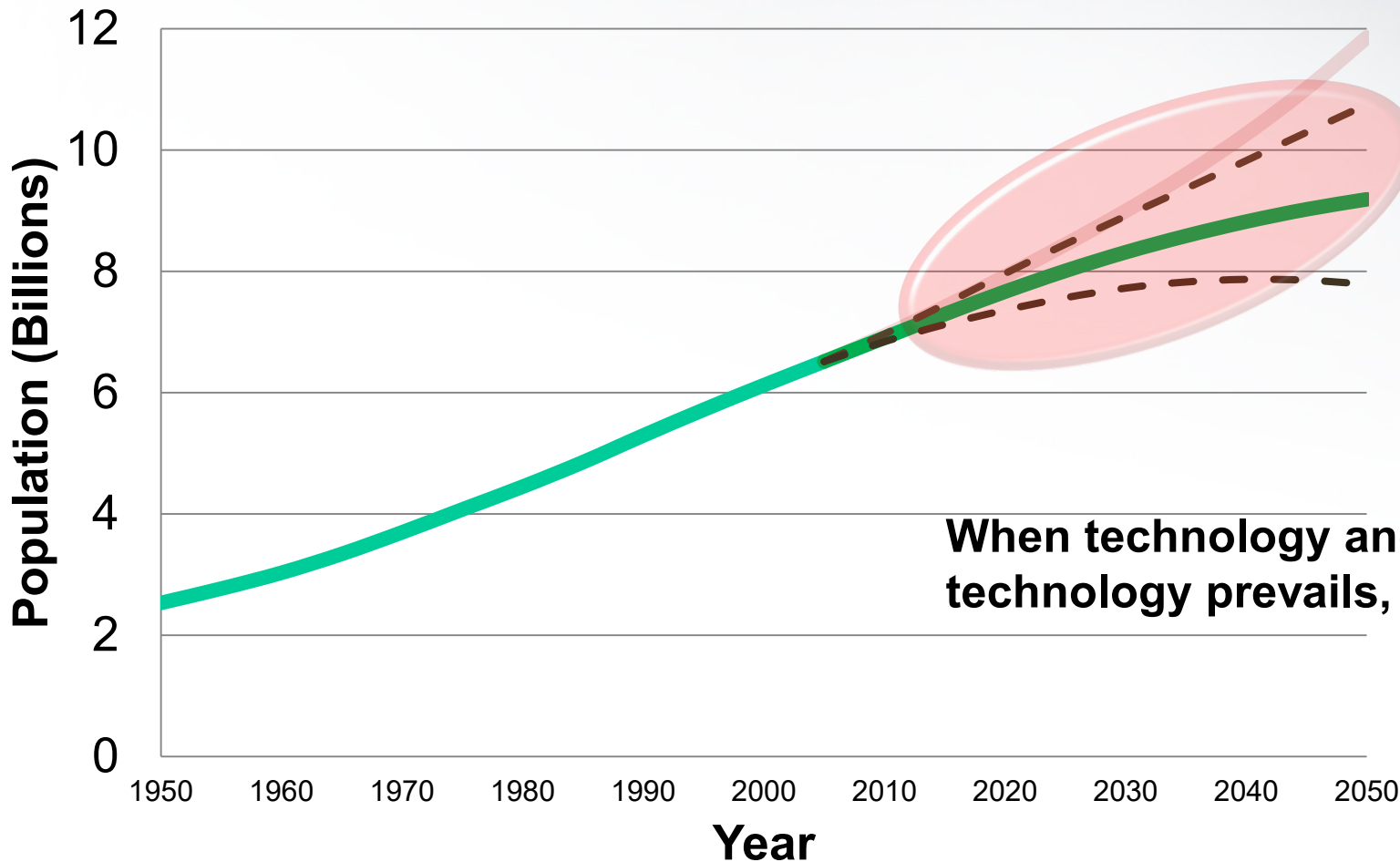
# Sustainability 2050: The Challenge



# Sustainability 2050: The Challenge



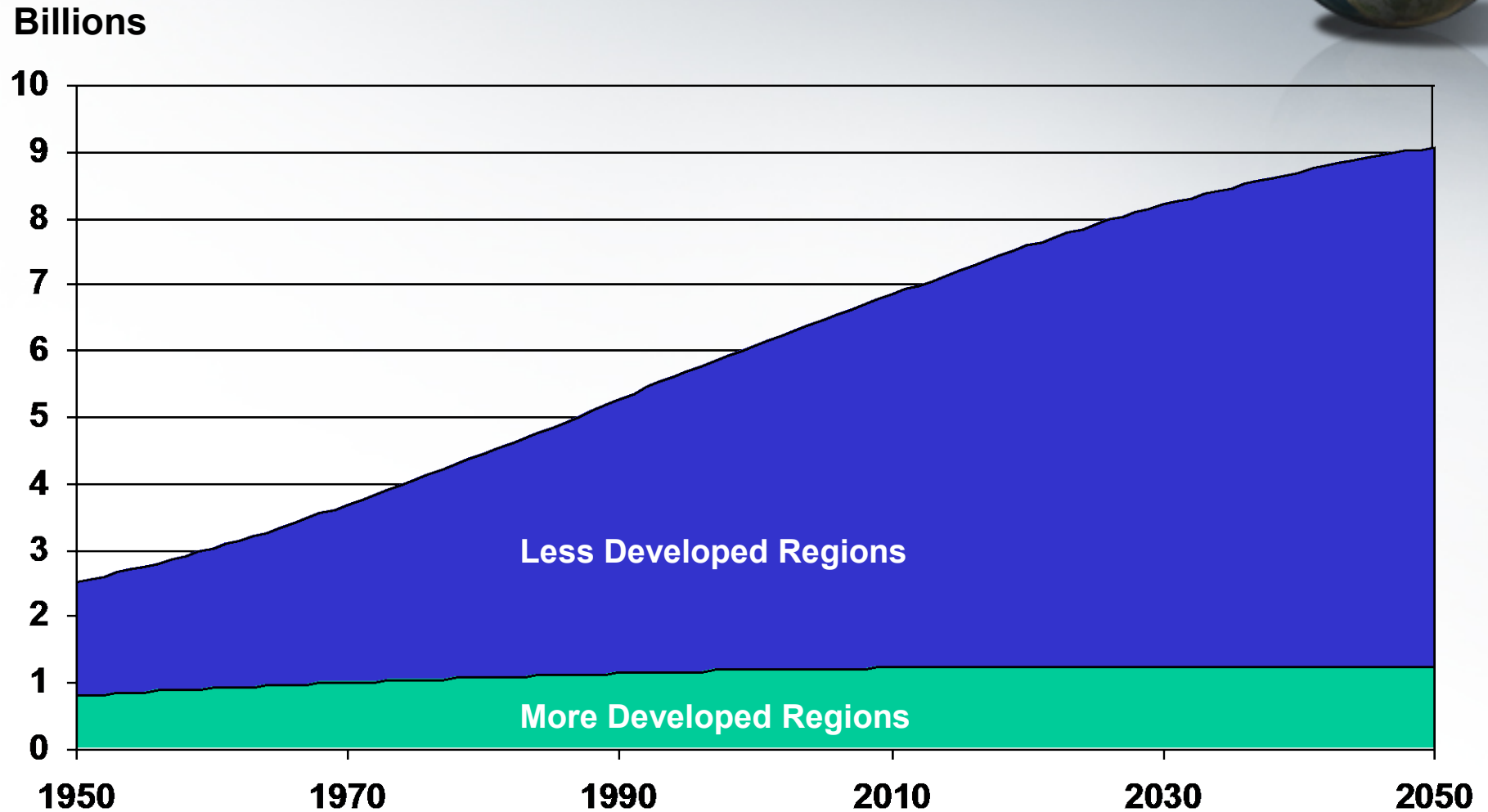
**UN Population Projections**



What we do in the next 10 years will shape Earth and Humanity for the next 100 years

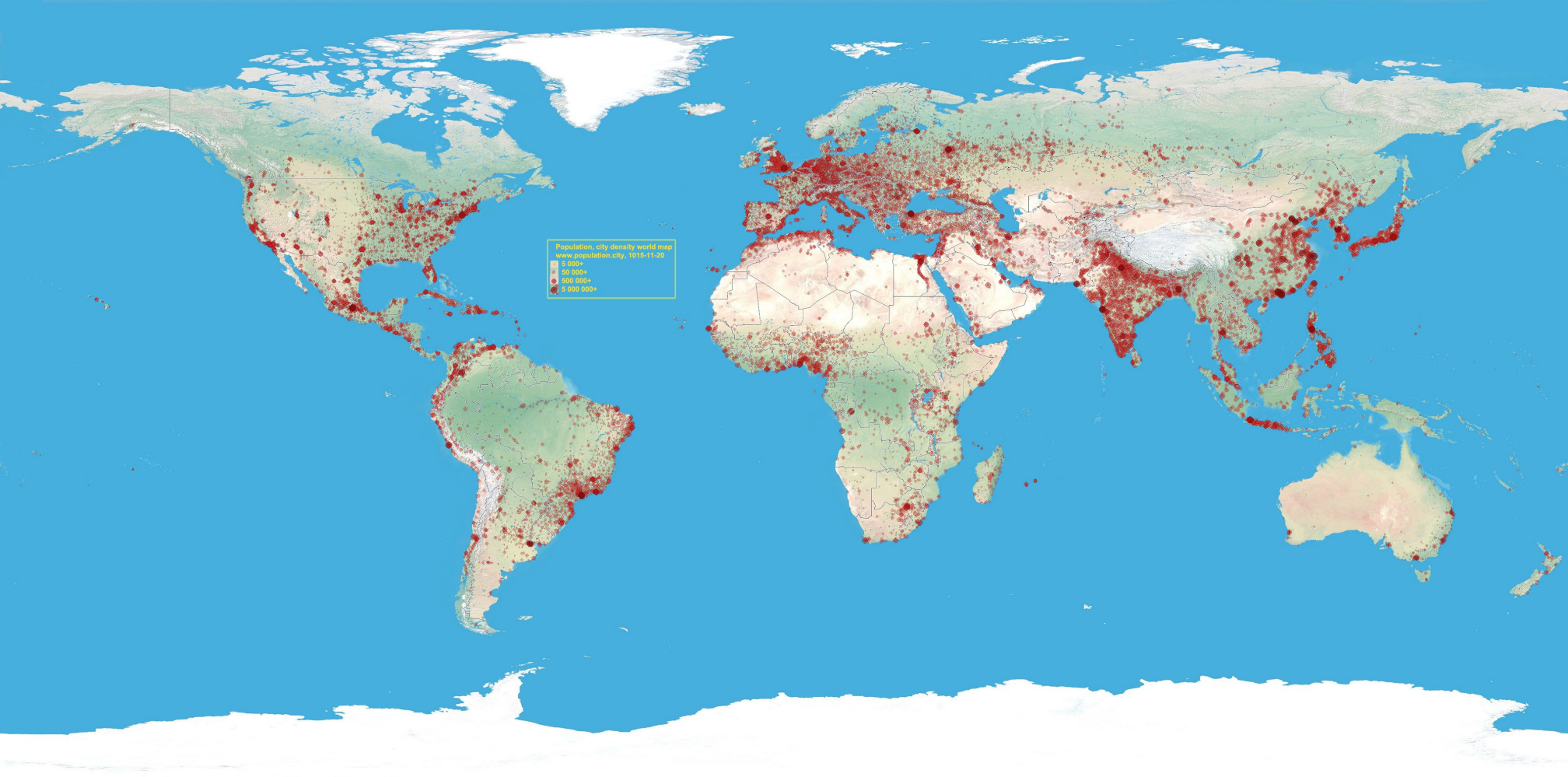
**When technology and culture collide  
technology prevails, culture changes**

# We are all in this together



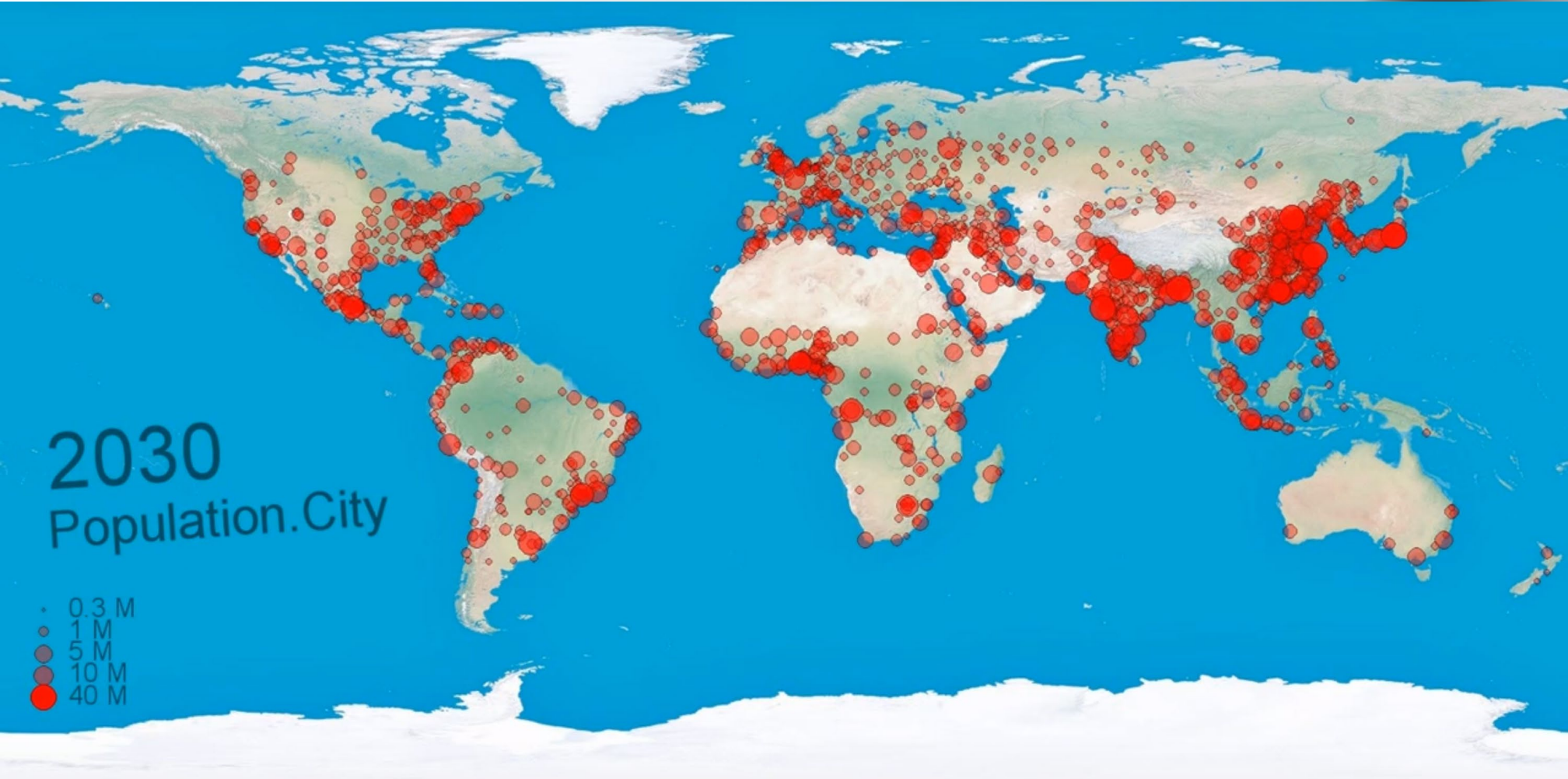
Source: United Nations, *World Population Prospects: The 2009 Revision* (medium scenario), 2009.

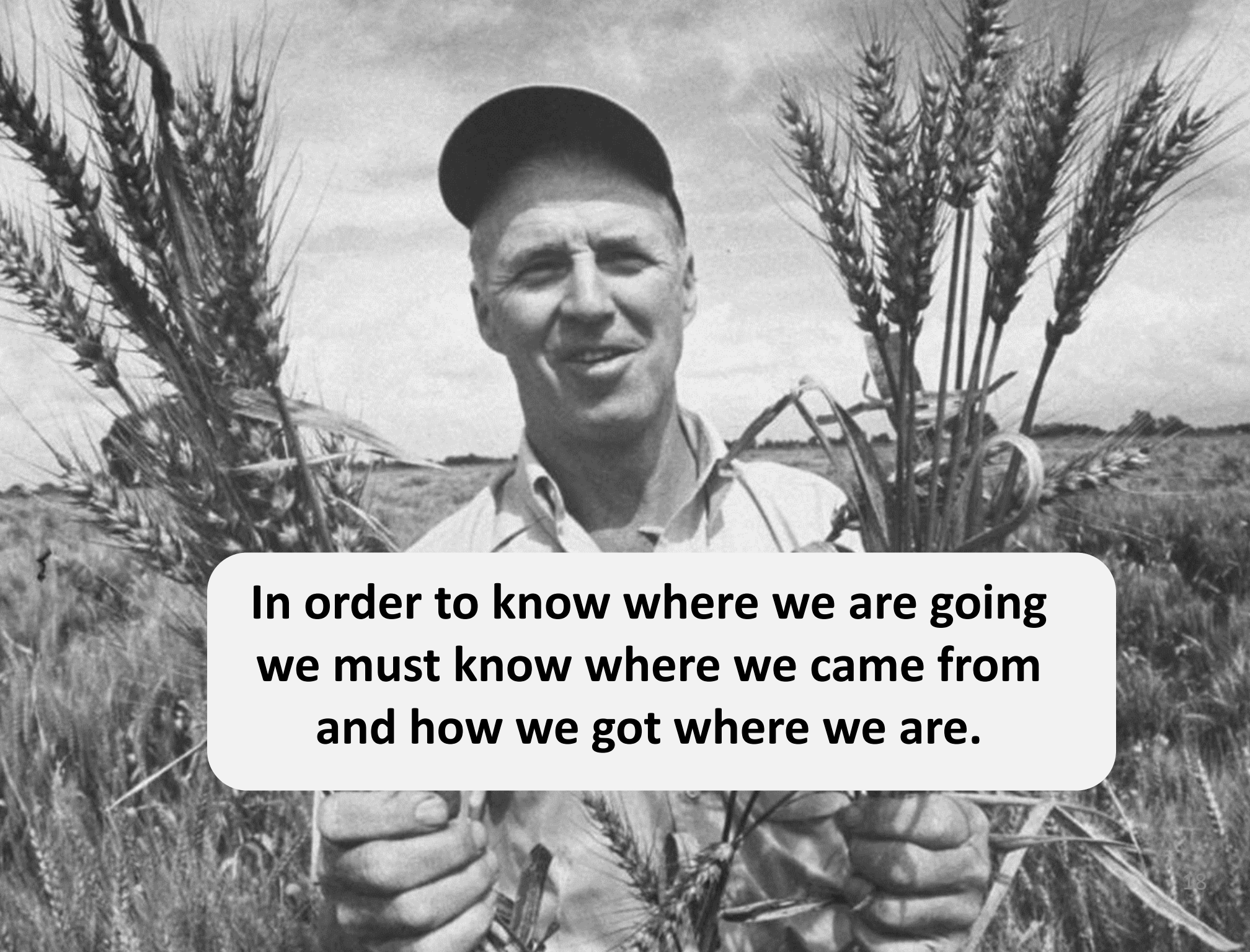
# We currently live here...





# ...but will live here by 2050



A black and white photograph of a man in a cap and light shirt, smiling and holding wheat stalks in a field. The man is the central figure, looking directly at the camera with a slight smile. He is wearing a dark cap and a light-colored, short-sleeved button-down shirt. He is holding several stalks of wheat in both hands, which are in the foreground. The background shows a vast field of wheat under a cloudy sky. The overall tone is positive and agricultural.

**In order to know where we are going  
we must know where we came from  
and how we got where we are.**



In 1950, an estimated 30 percent of humanity was chronically malnourished, and half of us were food insecure

Today, only 11 percent of humanity is hungry





In 1950, global child mortality, death before 5 years of life, was greater than 22 percent. Today it is less than 4 percent.





LANDS

ROOMS  
ALBERS



Prosperity from the land created opportunities for people to improve their lives, and the lives of their children.





In 1950 more than 44 percent of the world was illiterate.  
Today more than 86 percent of us can read and write!



**So, how did we get  
here?**

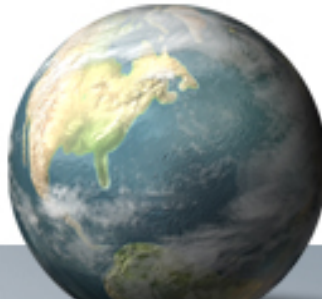


**Sweat and Science!**



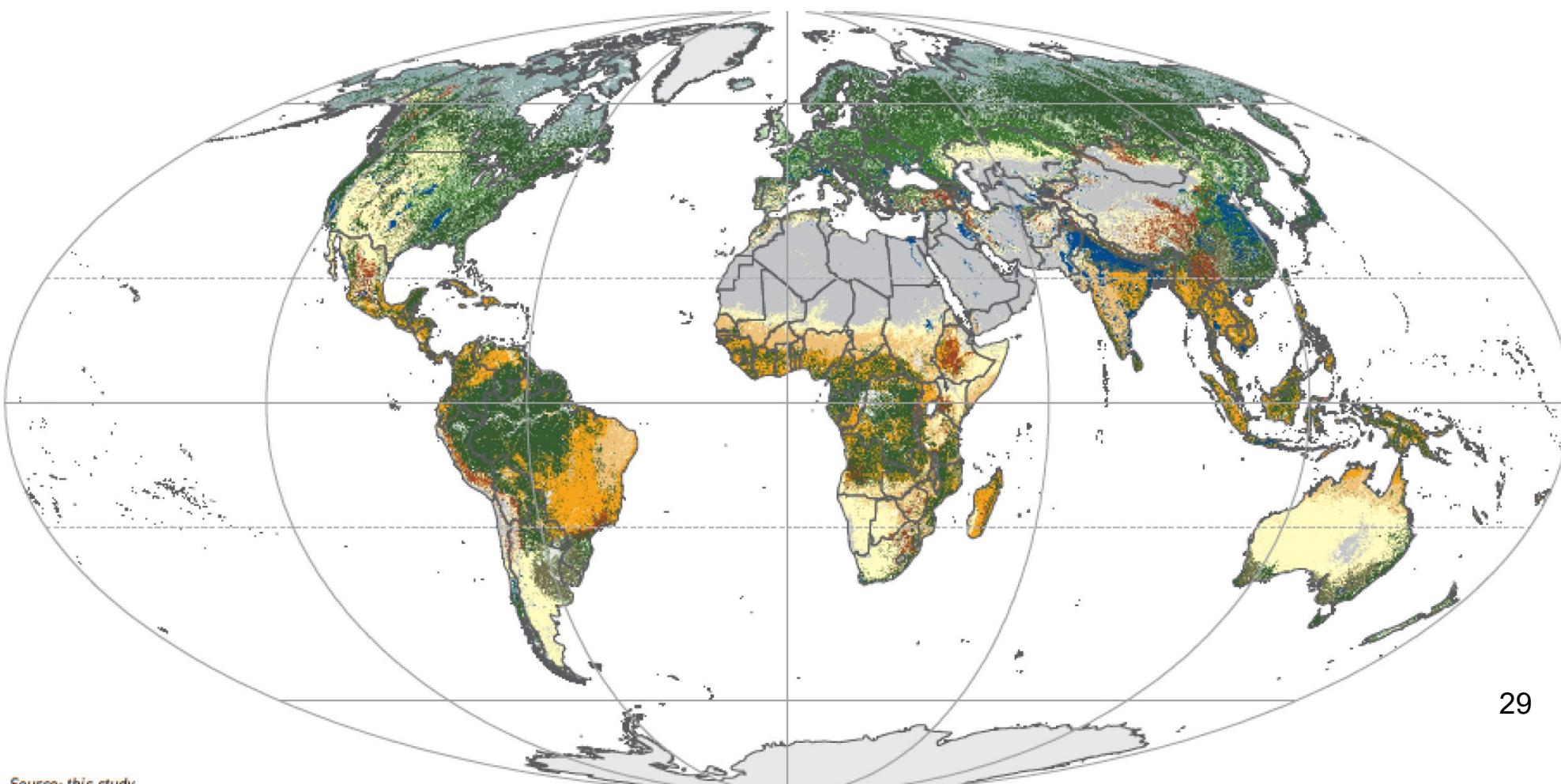
**Where are we going?**

# Feeding 10 billion people with one Earth



MAP 1.3: MAJOR AGRICULTURAL SYSTEMS

- Rainfed agriculture: humid tropics
- Rainfed agriculture: dry tropics
- Rainfed agriculture: subtropics
- Rainfed agriculture: highlands
- Rainfed agriculture: temperate
- Rangelands: subtropics
- Rangelands: temperate
- Rangelands: boreal
- Irrigated crops: paddy rice
- Irrigated crops: other than paddy rice
- Forest
- Desert
- Other land

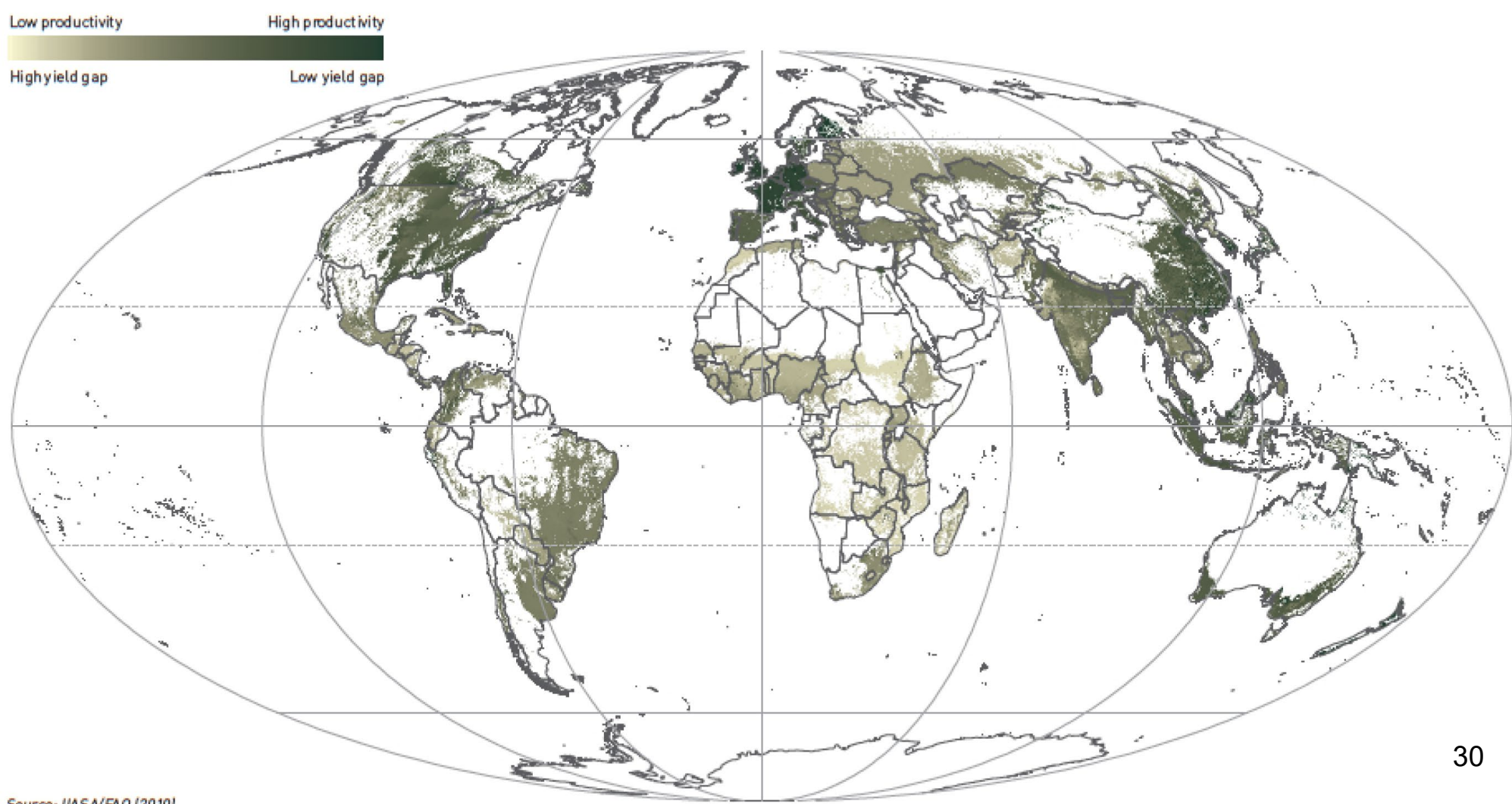


Source: this study

# Feeding 10 billion people with one Earth

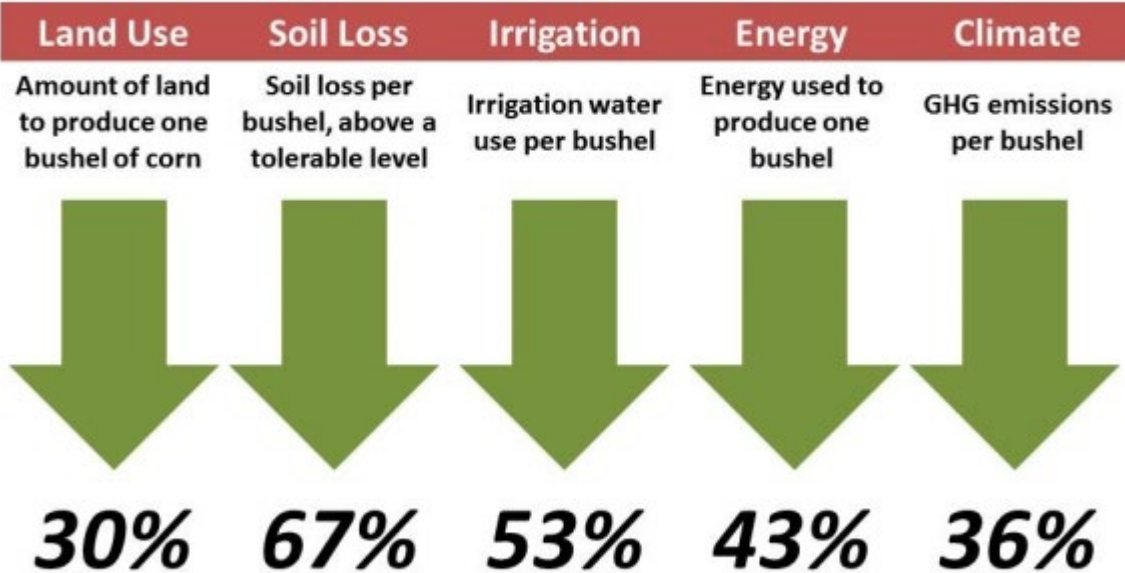


MAP 1.5: YIELD GAP FOR A COMBINATION OF MAJOR CROPS



Source: IIASA/FAO (2010)

# Corn's Impacts, 1980-2011



# Poultry Production





## 1965 Production



*Image source: USDA. 1967. Commercial  
Broiler Production*

## 2010 Production



*Image source: Rhodes et al. 2011. Broiler  
Production Management*

**1957 Broiler**



**2005 Broiler**



*\*Image source: Zuidhof et al. 2014. Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005*



Land-based  
prosperity is  
changing

# How does the future look?



It's tough to make predictions,  
especially about the future.

— Yogi Berra

# Peri-urban agriculture is no longer a fringe enterprise



# A pathway to production for new farmers...



- Small Scale, high density, high value, direct to market production of Specialty Crops





- Small land area
- High value crops
- Managed risks
- Accessible for entry-level producers



- Sensors
- Controls
- Autonomous vehicles
- Decision support



# The Real Work – Wendell Berry



It may be that when we no longer know what to do,  
we have come to our real work...  
and when we no longer know which way to go,  
we have begun our real journey.

The mind that is not baffled is not employed.  
The impeded stream is the one that sings.