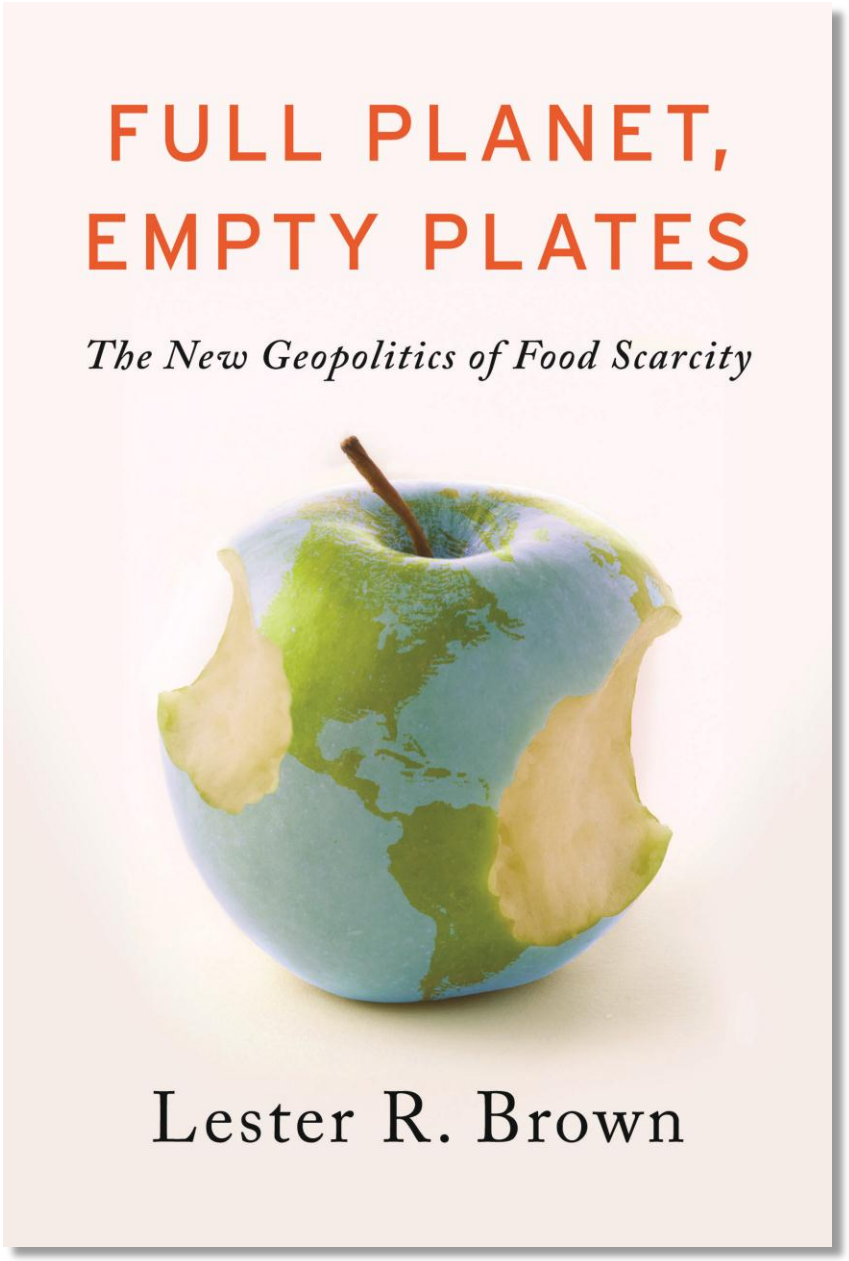


A presentation for

Full Planet, Empty Plates:
The New Geopolitics of Food Scarcity

A book by

Lester R. Brown

EARTH POLICY INSTITUTE


We are entering a time of chronic food scarcity, one that is leading to intense competition for control of land and water resources—in short, a new geopolitics of food.
—Lester R. Brown
Photo Credit: Yann Arthus-Bertrand

Contents

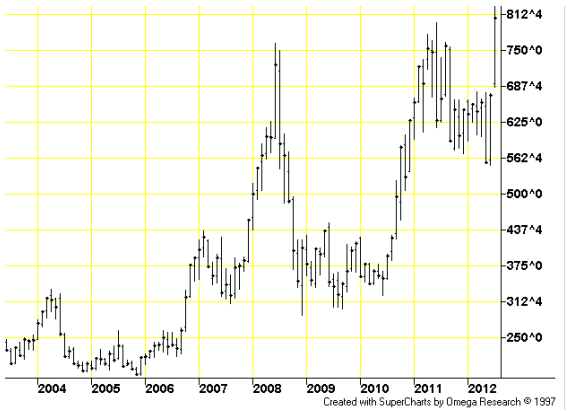
Chapter 1
Food: The Weak Link

Photo Credit: Yann Arthus-Bertrand

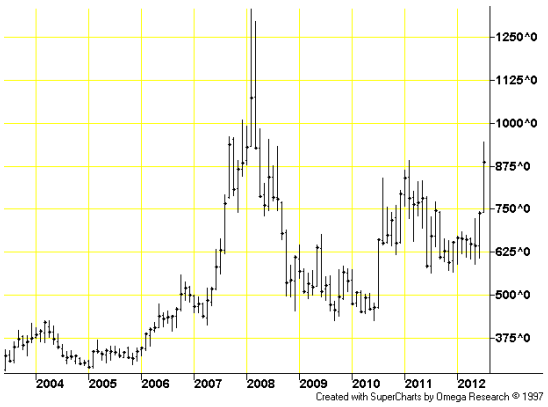
An Era of Rising Food Prices

- 2007-08: Grain and soybean prices more than doubled, leading to food riots and unrest in some 60 countries
- Prices eased somewhat with global recession
- 2010-11: Another price spike helped fuel the Arab Spring
- 2012: Prices again approaching or setting records

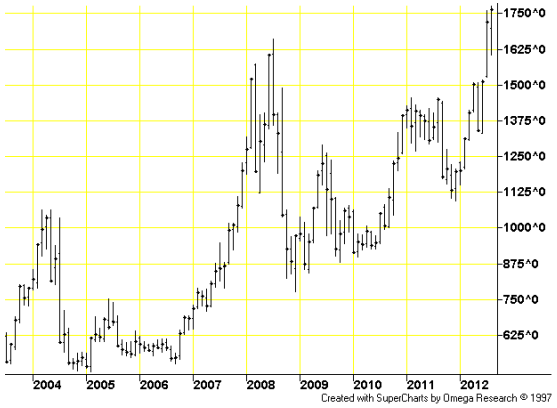
Corn Futures Prices



Wheat Futures Prices

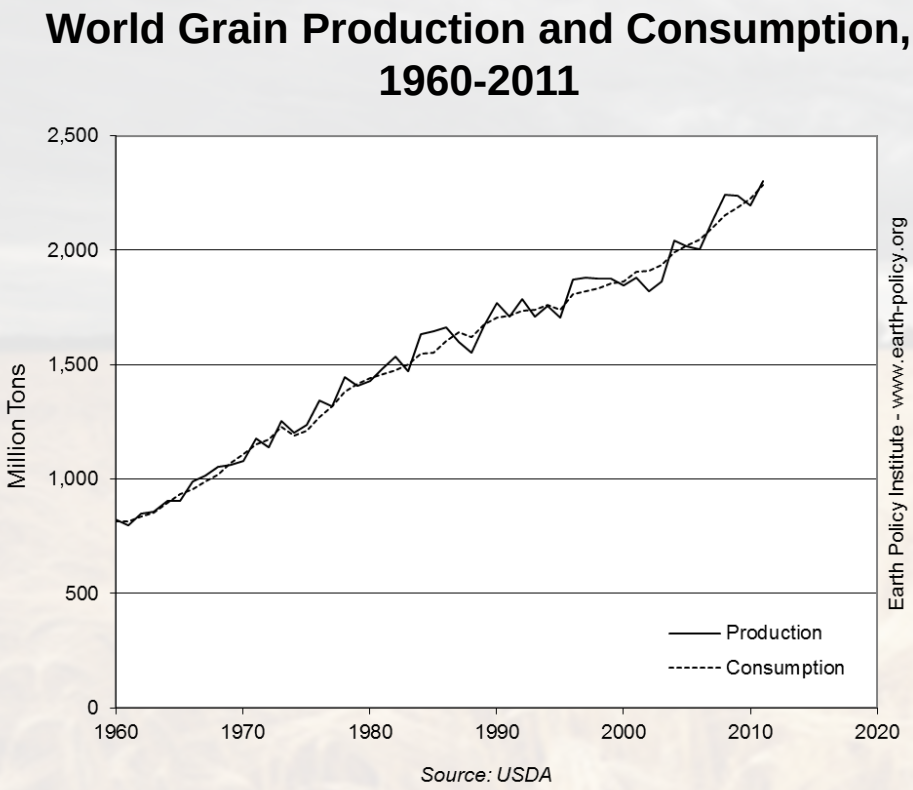


Soybean Futures Prices



Source: CME Group

Precarious Global Food Situation



- Dangerously small margin between grain consumption and grain production
- Now we face long-term trends that:
  - increase food demand
  - limit food production

We are only one poor harvest away from chaos in world grain markets.

Photo Credit: iStockPhoto / Tobias Helbig

Demand Growing, Supply Strained

Demand Side

- Growing population
- People moving up the food chain
- Biofuels turning food into fuel

Supply Side

- Eroding soils
- Depleting aquifers
- Plateauing grain yields
- Rising temperature

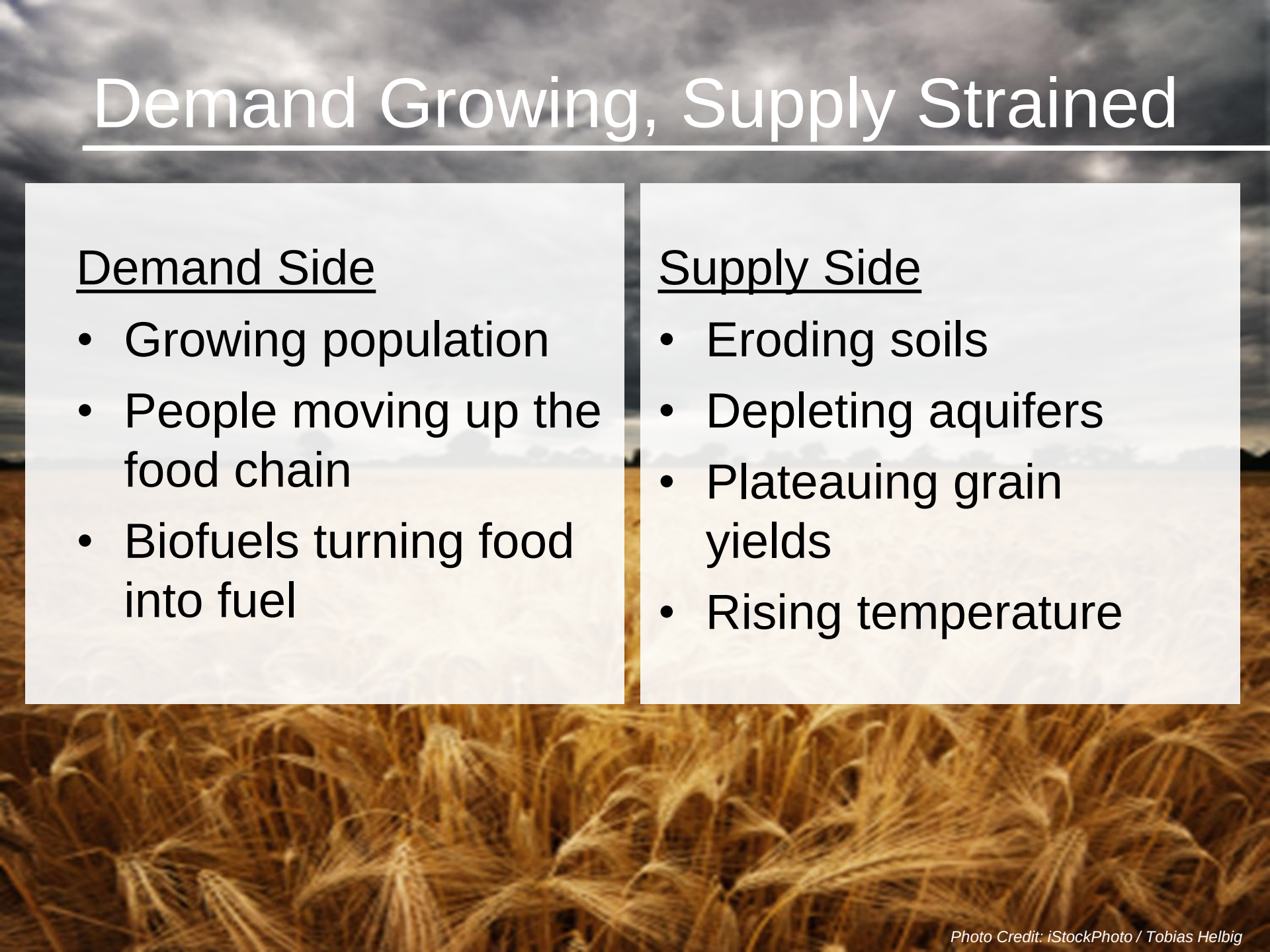
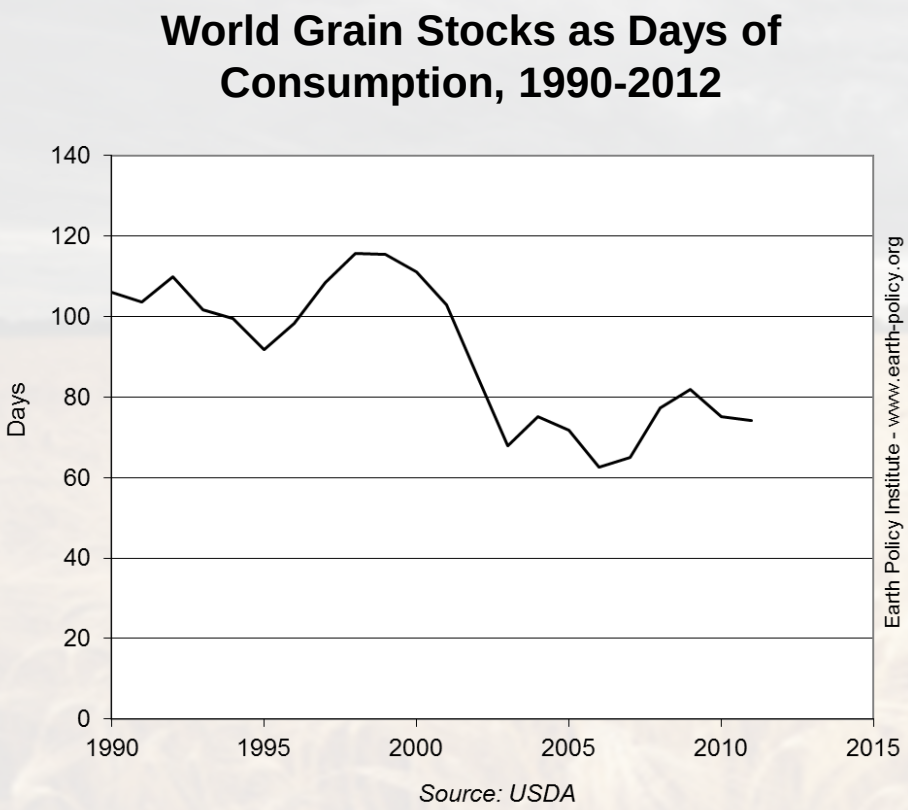


Photo Credit: iStockPhoto / Tobias Helbig

From Surplus to Scarcity



- In the past, world had two safety cushions in case of harvest shortfall:
  - idled U.S. cropland
  - large stocks of grain
- Now, we have lost those two safety cushions
  - U.S. abandoned cropland set aside programs
  - grain stocks have fallen dangerously low

Photo Credit: iStockPhoto / Tobias Helbig

Strained Food Budgets

- Rising demand and tightening supply raise world food prices to new heights
- For consumers who spend 50–70% of their income on food, higher prices mean eating less

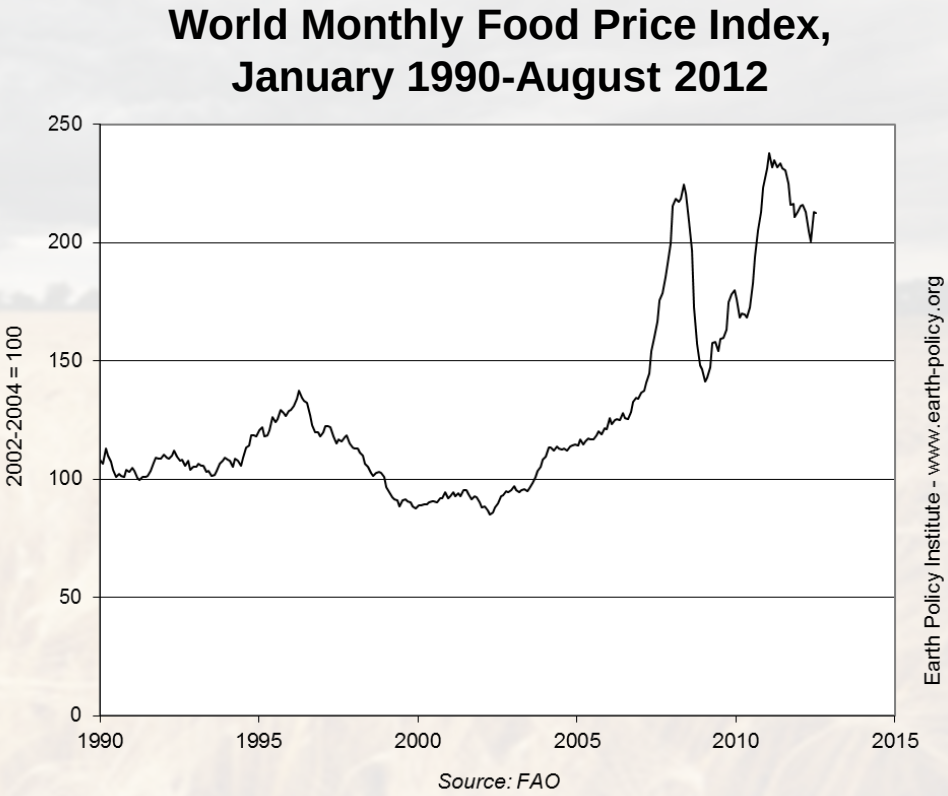


Photo Credit: iStockPhoto / Tobias Helbig

Hunger Rising

- Now close to 1 billion people are hungry
- Some families have “foodless days” when they do not eat at all
- Children suffer the most: some are physically and mentally stunted, unable to reach their full potential

	Percent of Families with Foodless Days
India	24
Nigeria	27
Peru	14

Source: GlobeScan Inc.

Photo Credit: iStockPhoto / Claudiad

Learning from the Past

- Food shortages undermined ancient civilizations
  - Sumer: A flaw in the irrigation system led to rising salt levels in the soil and crop failures
  - Maya Empire: forest clearing led to soil erosion and loss of soil fertility

While the decline of early civilizations can be traced to one or two damaging environmental trends, we are now dealing with several. Will we suffer their fate?

Photo Credit: Yann Arthus-Bertrand

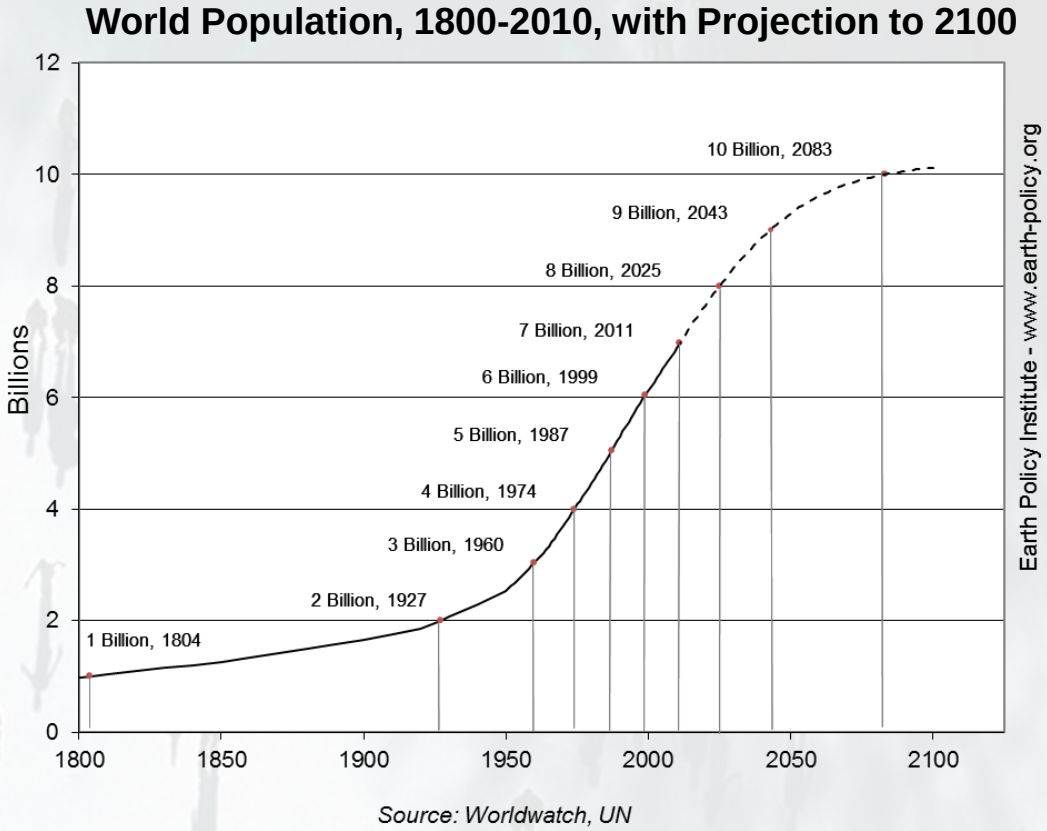
Chapter 2

The Ecology of Population Growth

Photo Credit: Yann Arthus-Bertrand

Population Pressures

- 7 billion people on the planet
- Each year, nearly 80 million people added
- Some 215 million women who want to plan their families lack access to family planning services
- Large families trap people in poverty



We are fast outgrowing the earth's capacity to sustain our increasing numbers.

Photo Credit: Yann Arthus-Bertrand

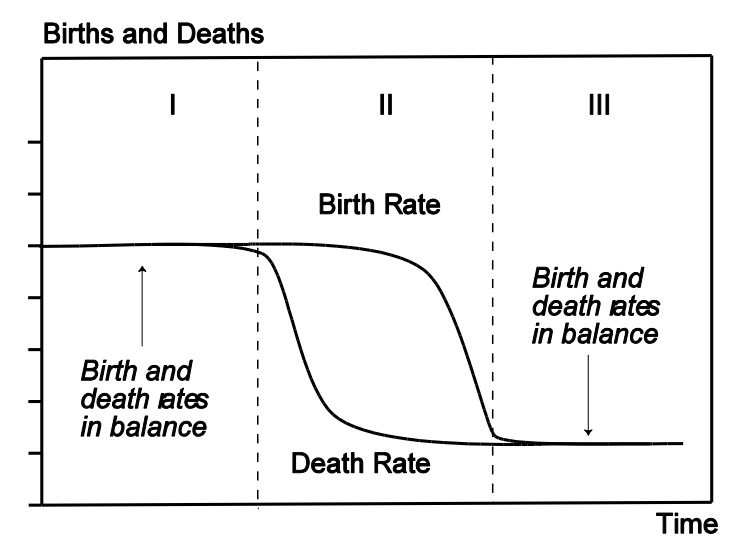
System Overload

- ***Overfishing*:** 80% of oceanic fisheries are being fished at or beyond their sustainable yield
- ***Overgrazing***: The global grazing livestock population grew by 1.2 billion animals since 1960
- ***Overcutting***: The world's forests lose a net 5.6 million hectares—an area the size of Costa Rica—each year
- ***Overplowing***: In parts of Africa, Asia, and the Middle East, productive cropland is turning into wasteland
- ***Overpumping***: Half the world's population lives in countries that are extracting groundwater from aquifers faster than it is replenished

Photo Credit: USDA/ Stephen Ausmus; Yann Arthus-Bertrand

Demographic Transition

- High birth rates and low death rates create a demographic **trap** of rapidly expanding population
  - E.g. Nigeria, Ethiopia, Pakistan
  - Sub-Saharan Africa and the Indian subcontinent will add nearly 2 billion people by 2050



- Countries that reduce both birth and death rates benefit from a demographic **bonus**
  - E.g. Japan, South Korea, Taiwan, Hong Kong, Singapore
  - 44 countries in Europe, Latin America, and parts of Southeast Asia have reached population stability

Photo Credit: Yann Arthus-Bertrand

Population Uncertainty

- U.N. projections of adding 2.3 billion people by 2050 may not in fact materialize because they do not take into account:
  - Resource availability
  - Climate variability
  - Changing geopolitical (in)stability

Human demands have outrun the carrying capacity of the economy's natural support systems, leading us toward collapse.

Photo Credit: USDA/ Lynn Betts

Chapter 3

Moving Up the Food Chain

Photo Credit: USDA / Scott Bauer

More Meat, More Feed

- World meat demand grew fivefold since 1950
- As incomes rise, some 3 billion people in the developing world desire to eat more meat, milk, and eggs
- This requires more grain and soybeans for animal feed

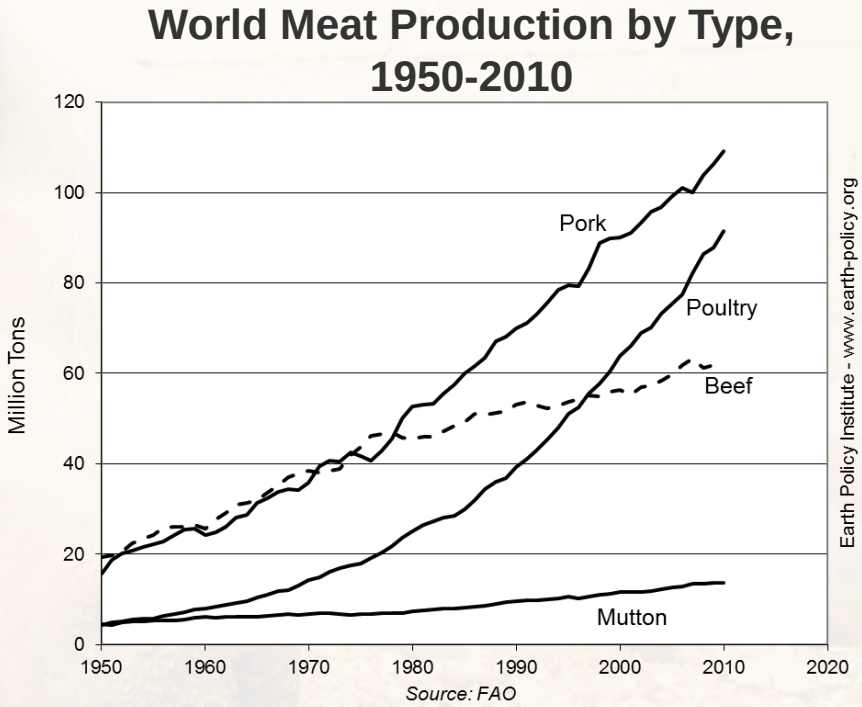
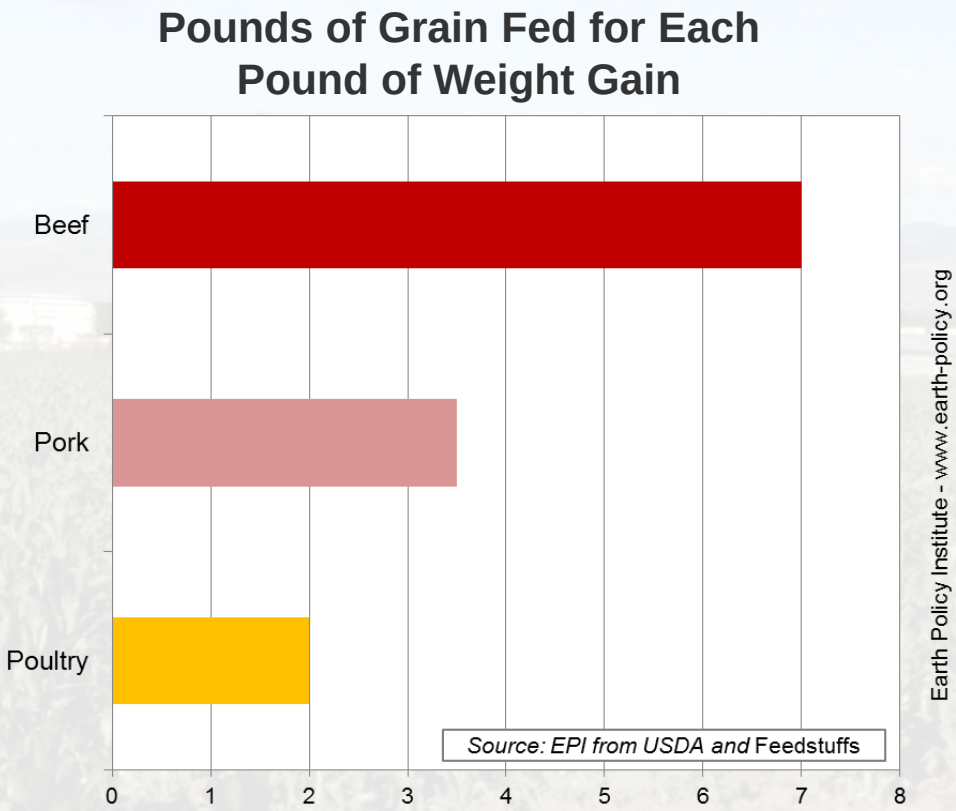


Photo Credit: USDA / Keith Weller

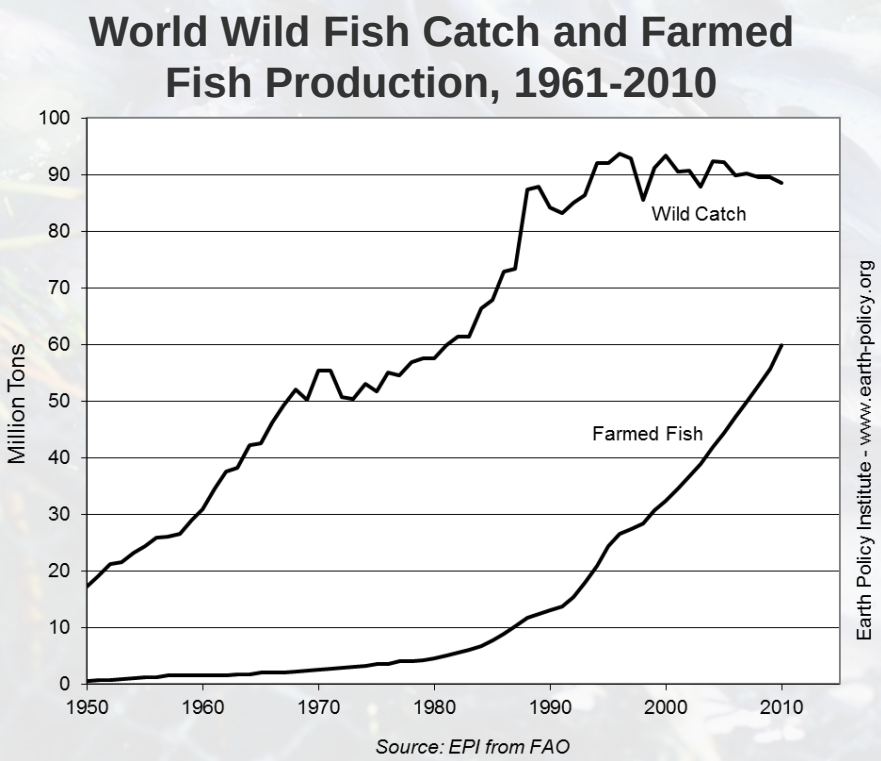
Turning Grain into Animal Protein



Pound for pound, beef takes more grain than other livestock products, and thus more water, too.

Photo Credit: USDA / Scott Bauer

Fish Farming Expands

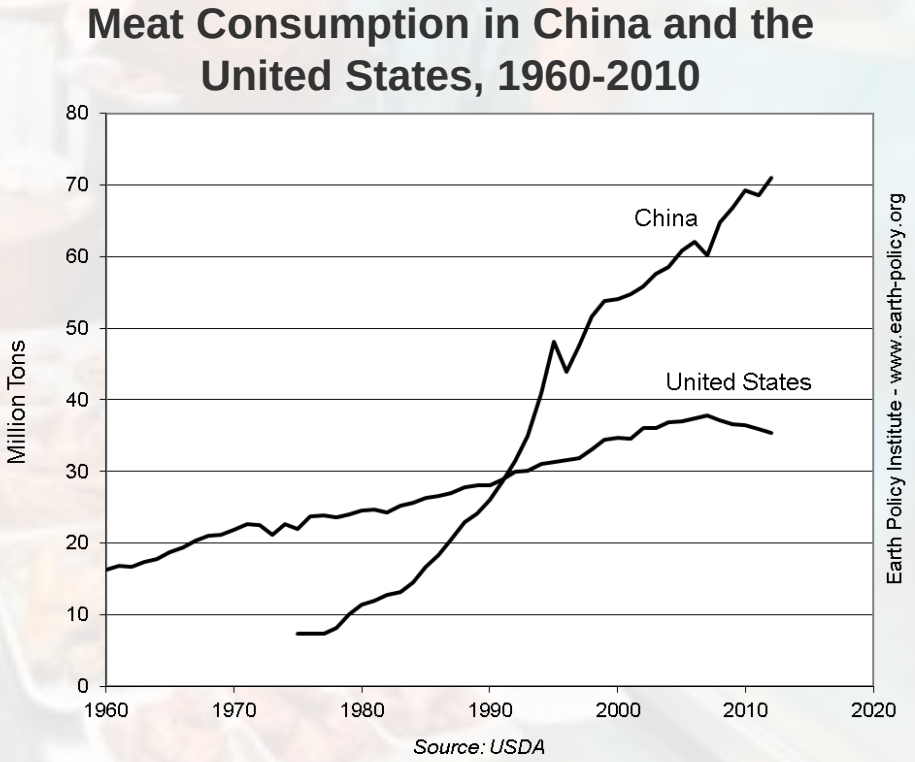


- With most wild fisheries fully or over-exploited, growth in demand for fish now being met by fish farms
- Some aquaculture operations use grain and soybeans as feed; others use fish meal, putting additional pressure on oceanic fisheries.

Photo Credit: USDA / Peggy Greb

China's Meat Consumption Rising

- China now consumes twice as much meat as the United States
- On per capita level, roles are reversed: U.S. consumption per person is twice China's



As incomes continue to rise, the pressure to produce enough grain and soybeans to satisfy the growing appetite for livestock and poultry products will only intensify.

Photo Credit: iStockPhoto / fotoVoyager

U.S. Meat Consumption Declining

- After decades of growth, U.S. meat consumption has peaked
- Fell 6% from 2007 to 2012
- Benefits of moving down the food chain include better personal and environmental health, plus lower grain and water demand

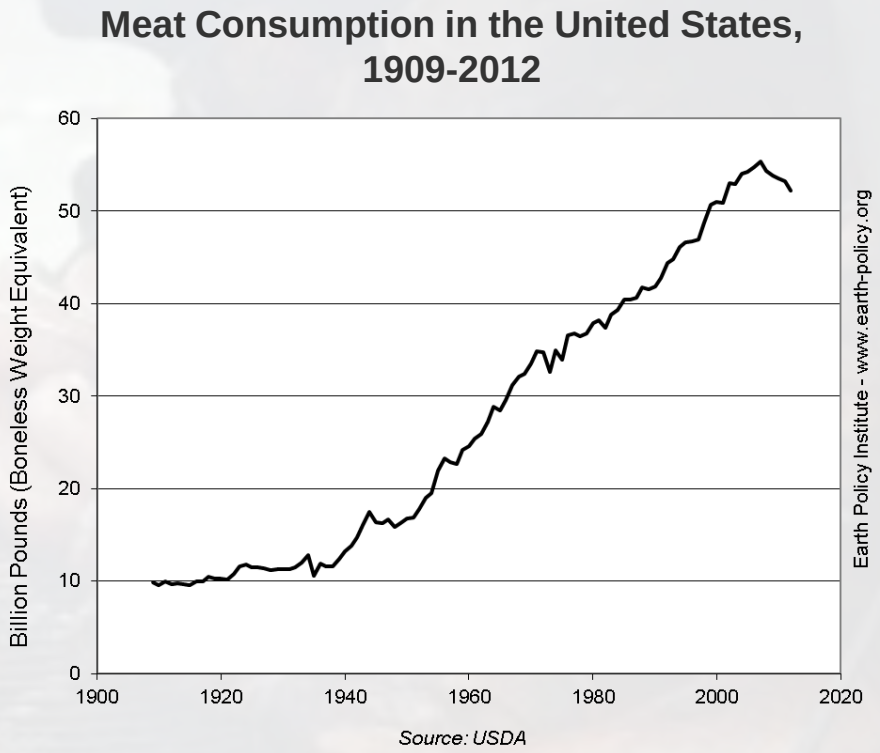
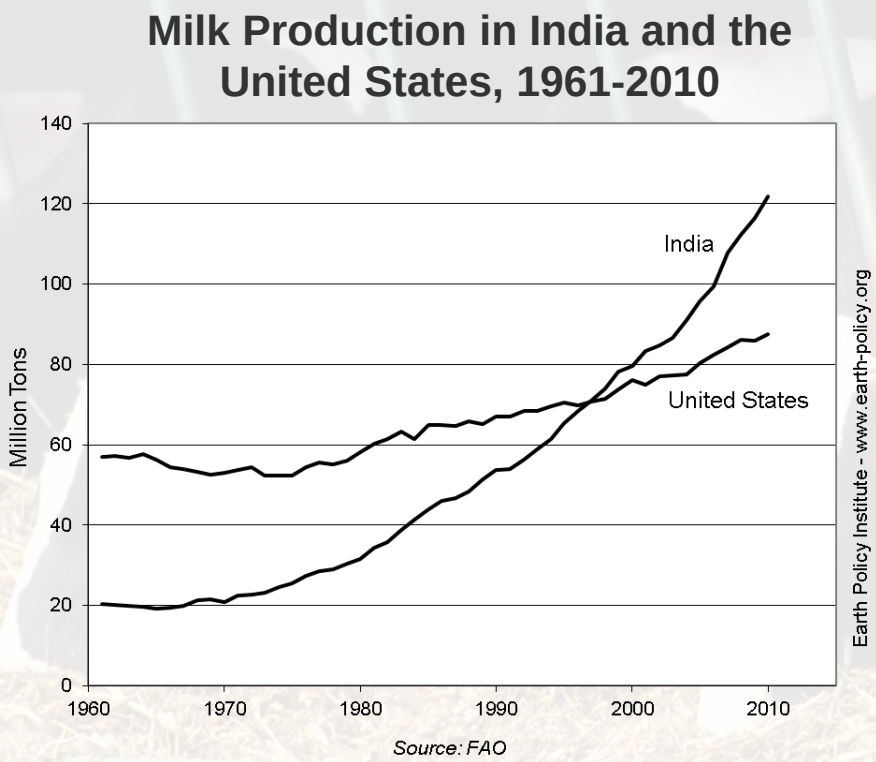


Photo Credit: iStockPhoto / Darin Burt

No Grain Needed: India's Dairy Model



- In the 1960s, Dr. Verghese Kurien organized an umbrella organization for small milk producer co-ops
- India now leads the world in milk production, overtaking the United States in 1997
- Cows are fed almost exclusively crop residues and grass

Photo Credit: USDA / Scott Bauer

No Grain Needed: Beef and Farmed Fish in China

- Cows in China's "Beef Belt" are fed straw and cornstalks from double-cropped winter wheat and corn fields

- Four carp species farmed together in China feed on what they would in the wild (e.g. plankton, aquatic plants); no grain or fish meal involved

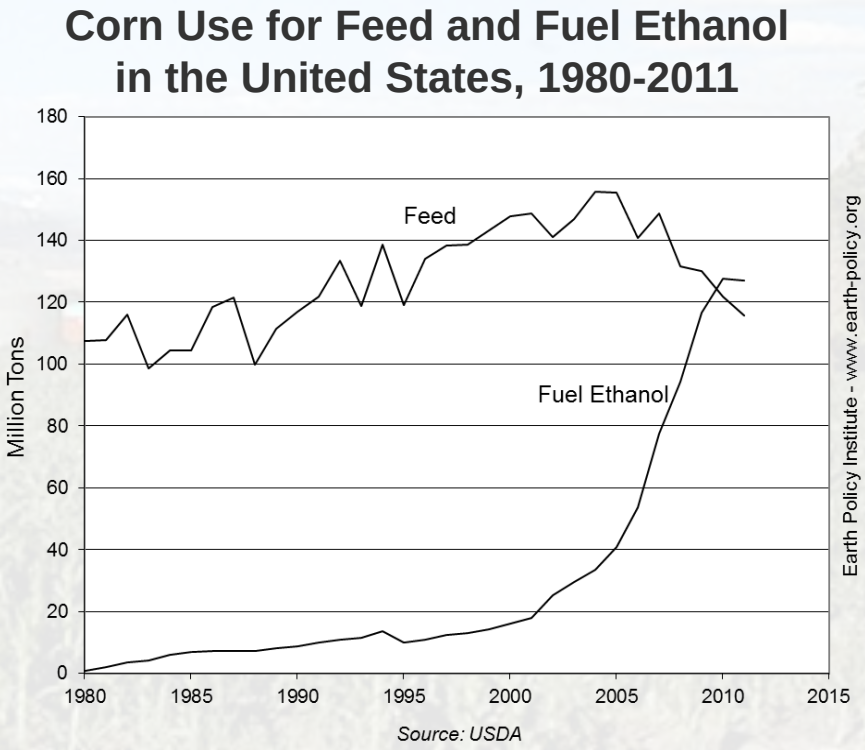
Chapter 4

Food or Fuel?

Photo Credit: iStockPhoto / Vasata Studio

Feeding Cars Instead of People

- U.S. corn is largest crop of any grain worldwide, critical to world supplies
- Close to 1/3 of U.S. grain now going to ethanol
- Grain used to fuel U.S. cars in 2011 could otherwise have fed 400 million people
- U.S. ethanol euphoria beginning in 2005 helped raise food prices worldwide



The grain needed to fill an SUV's 25-gallon tank with ethanol once could feed one person for a year.

Photo Credit: USDA / Scott Bauer

Ethanol Production in Top 10 Countries, 2011

Main ethanol feedstocks:

- Corn in United States, China, Canada
- Sugarcane in Brazil
- Various grains in Europe
- Sugarcane and molasses in India, Thailand

Corn-based ethanol is blended into U.S. gasoline to meet "renewable fuels" mandate

	Million Gallons
United States	14,319
Brazil	5,553
China	555
Canada	462
France	301
Germany	203
India	147
Thailand	135
Spain	122
Belgium	106
World	**22,742**

Source: F.O. Licht

If the entire U.S. grain harvest were turned into ethanol, it would only satisfy 18% of current U.S. gasoline demand.

Photo Credit: iStockPhoto / Bob Randall

Biodiesel Production in Top 10 Countries, 2011

Main biodiesel feedstocks:

- Soybeans in United States, Argentina, and Brazil
- Rapeseed in Europe
- Palm oil in Indonesia, Thailand

E.U. mandate that renewables contribute 10% of transport energy by 2020 coming under fire

	Million Gallons
United States	841
Germany	835
Argentina	729
Brazil	698
France	420
Indonesia	360
Spain	188
Italy	156
Thailand	156
Netherlands	117
World	**5,651**

Source: F.O. Licht

Photo Credit: iStockPhoto / Bob Randall

Biofuel Crops Displace Food Crops, Forests

- Biofuel crops vary in energy “bang for the buck”
- New oil palm plantations come at expense of tropical forests
- Greenhouse gas emissions from land use change and fertilizers likely negate climate benefit of replacing gasoline with biofuels

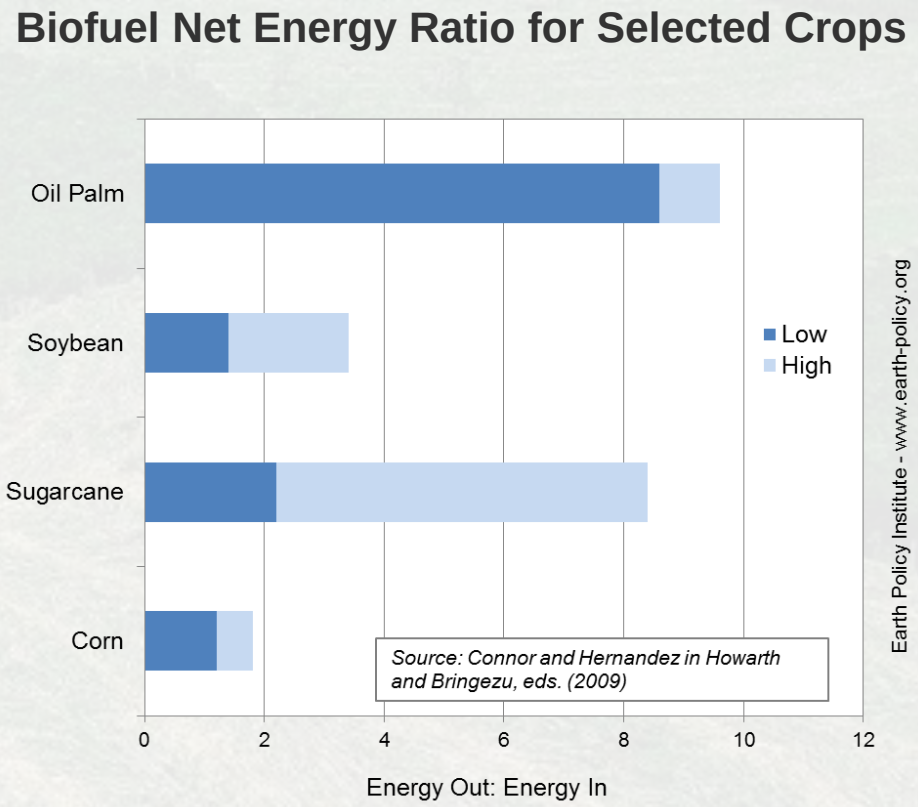


Photo Credit: Yann Arthus-Bertrand

Chapter 5

Eroding Soils Darkening Our Future

Photo Credit: Yann Arthus-Bertrand

Worsening Soil Erosion

- Overplowing, overgrazing, and deforestation make soil vulnerable to wind and water erosion
- Roughly 1/3 of the world's cropland is now losing topsoil faster than it can be re-formed
- Topsoil loss reduces productivity, eventually leading farmers and herders to abandon their land
- Countries such as Lesotho, Haiti, Mongolia, and North Korea are losing the ability to feed themselves

Photo Credit: iStockPhoto / Steven Allan

Grazing Livestock Degrading Land

- The world's 3.4 billion cattle, sheep, and goats destroy vegetation, leaving land vulnerable to erosion
- Goats thrive in degraded conditions, so growth in their population relative to sheep and cattle is a sign of grassland deterioration
- With fast-growing goat numbers, Nigeria is losing 868,000 acres of rangeland and cropland to desertification each year

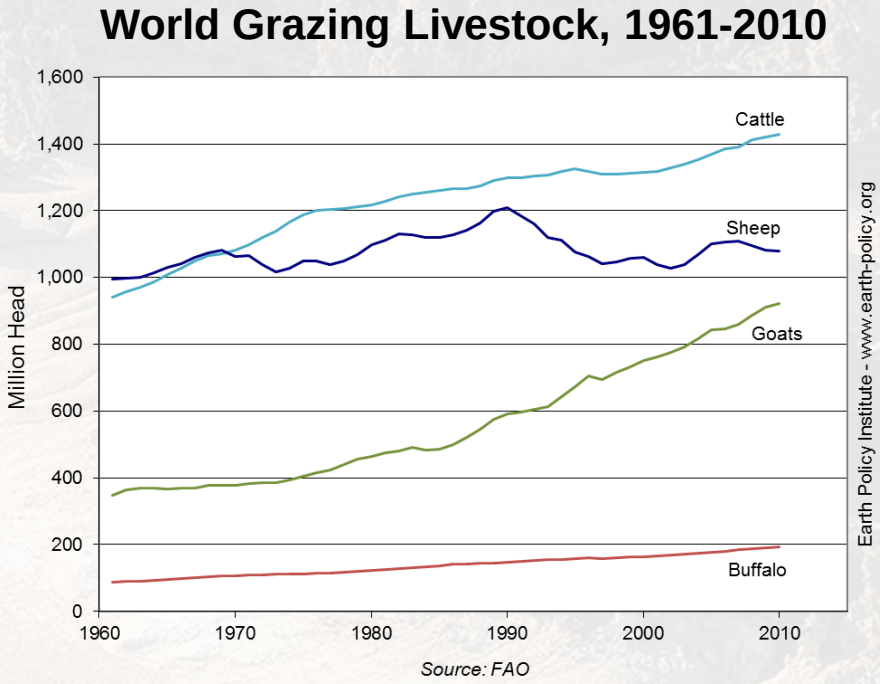


Photo Credit: Yann Arthus-Bertrand

Dust Bowls in History

- Overplowing in the U.S. Great Plains led to the 1930s Dust Bowl that forced the migration of hundreds of thousands of people

- The Soviet Virgin Lands Project converted a massive area of grassland to grainland, resulting in another dust bowl and ultimately cropland abandonment

Photo Credit: U.S. Library of Congress/ Arthur Rothstein

Dust Bowls Today

- Now overgrazing in northwestern China and western Mongolia is leading to the merging of deserts and the formation of dust storms that sweep across the continent, sometimes even as far as North America

- Population and livestock pressure in the African Sahel has destroyed soils; dust storms carrying 2–3 billion tons of soil leave Africa each year

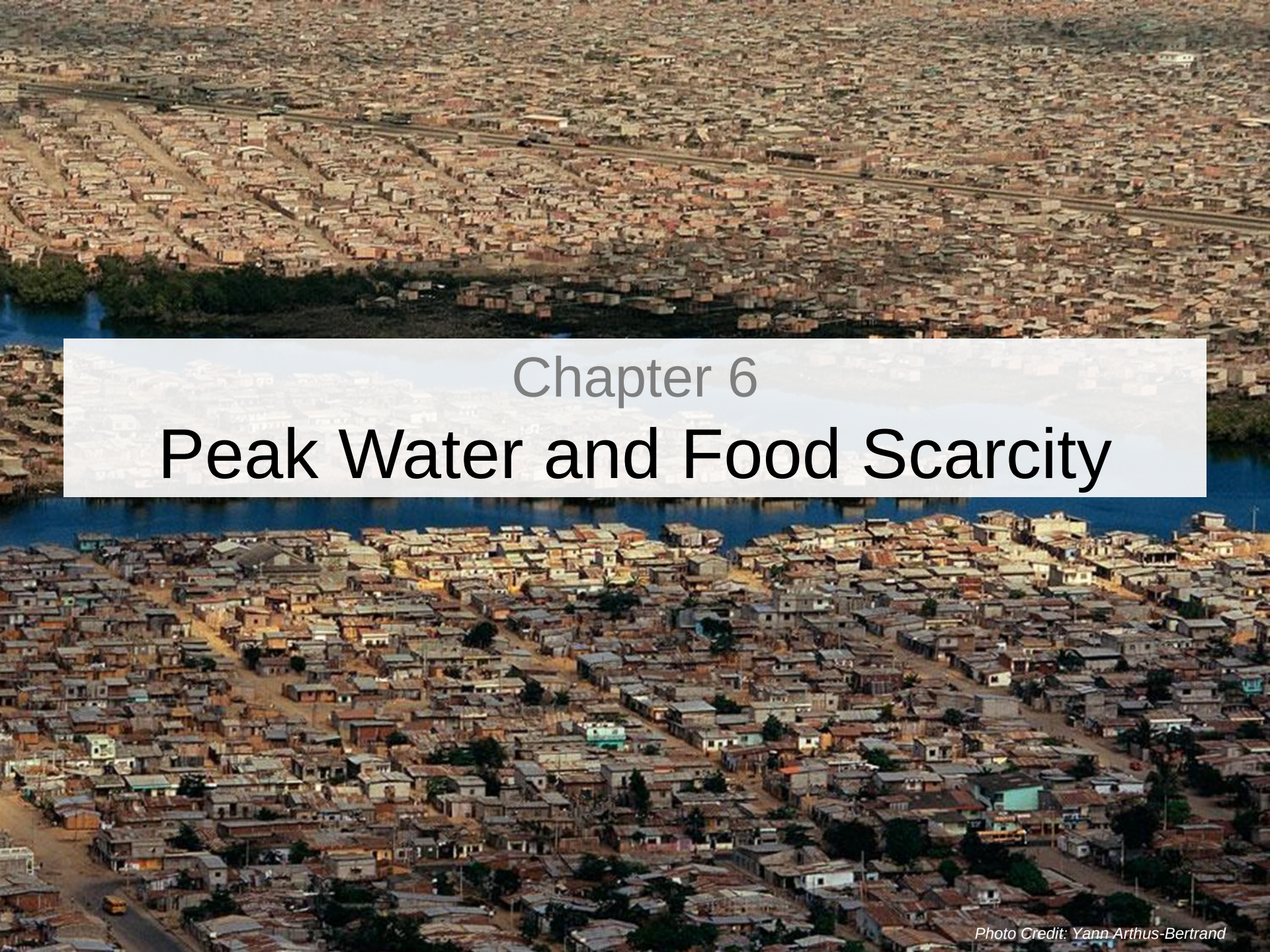
These two newer dust bowls dwarf anything the world has seen before. We have yet to see their full effects.

Photo Credit: NASA Earth Observatory

Erosion of Agriculture

The shrinking area of productive land and the earth's steadily expanding human population are on a collision course. Soil erosion and land degradation issues are local, but the effect on food security is global.

Photo Credit: USDA/ Jack Dykinga



Chapter 6

Peak Water and Food Scarcity

Photo Credit: Yann Arthus-Bertrand

Agriculture's Water Footprint

- Worldwide 70% of water is used for agriculture
- Some 40% of the world grain harvest is grown on irrigated land

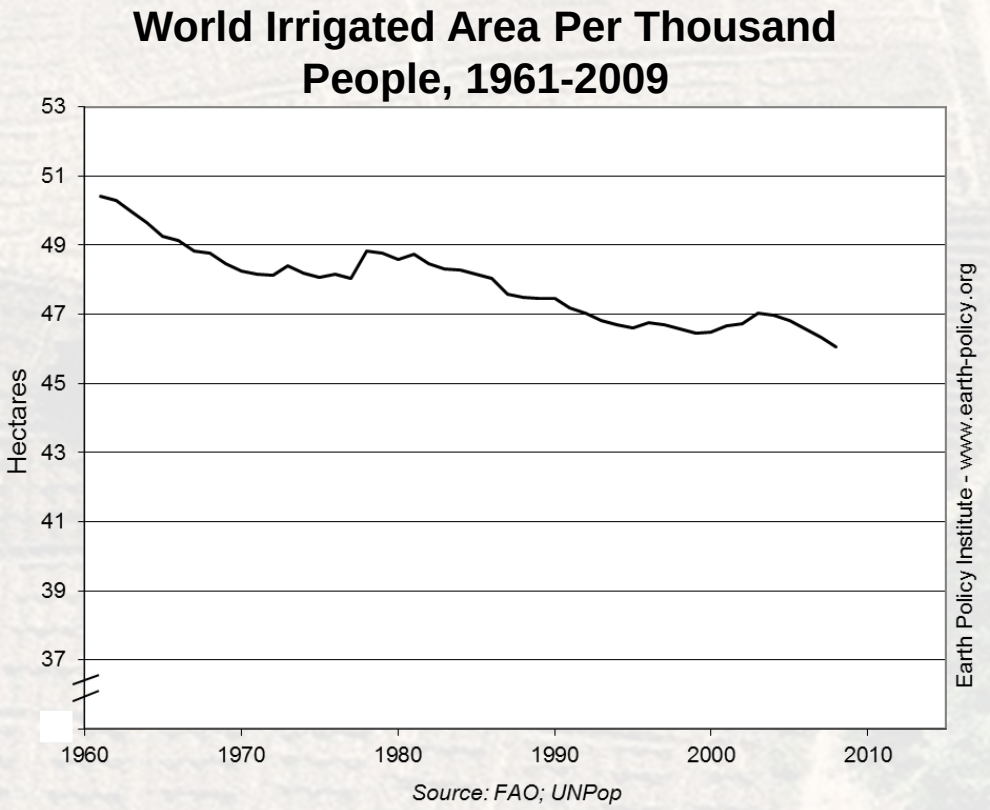


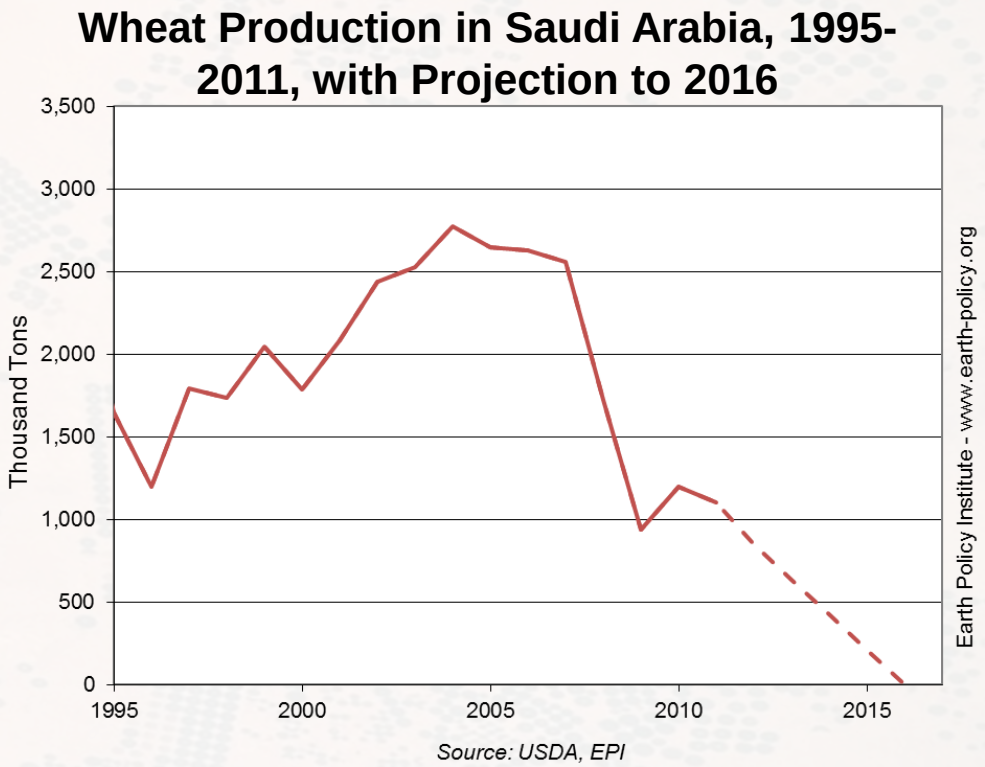
Photo Credit: Yann Arthus-Bertrand

Coming Water Shortages

- Overpumping produces food bubbles that burst when water supplies dry up
- 175 million people in India and 130 million people in China eat grain produced by overpumping
- In the Arab Middle East, a collision between population growth and water supply is reducing regional grain harvests

Saudi Arabia's Bursting Bubble

- Saudi Arabia became self-sufficient in wheat by tapping its non-replenishable aquifer to irrigate the desert
- In early 2008, the government announced the aquifer was largely depleted
- The population of nearly 30 million will be entirely dependent on imported grain by 2016



Saudi Arabia is the first country to publicly project how aquifer depletion will shrink its grain harvest.

Photo Credit: NASA

Potential for Conflict

U.S. water withdrawals from the Colorado River cause it to run dry before it reaches Mexico's Gulf of California

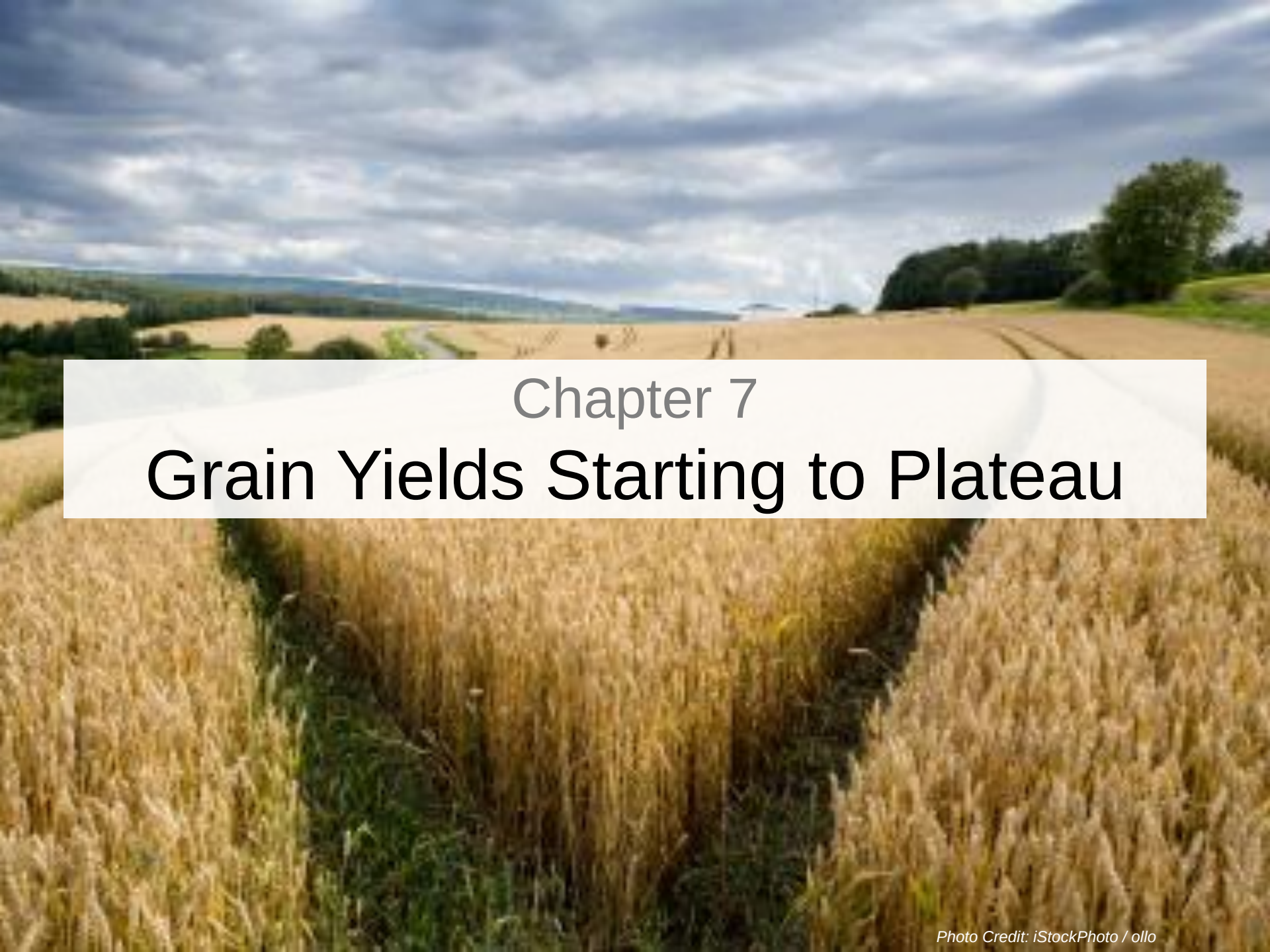
Dam-building projects in Turkey restrict Tigris-Euphrates flow to Syria and Iraq

Foreign land acquisitions for farming in Ethiopia and Sudan will affect the availability of fresh Nile water to Egypt

Dams in China diminish Mekong flow available to Thailand, Viet Nam, and other downstream users

Competition for scarce water resources creates tension on regional and international scales, pitting cities against farmers and countries against each other.

Approximate watershed outlines from EPI, overlaid on map from www.ammap.com



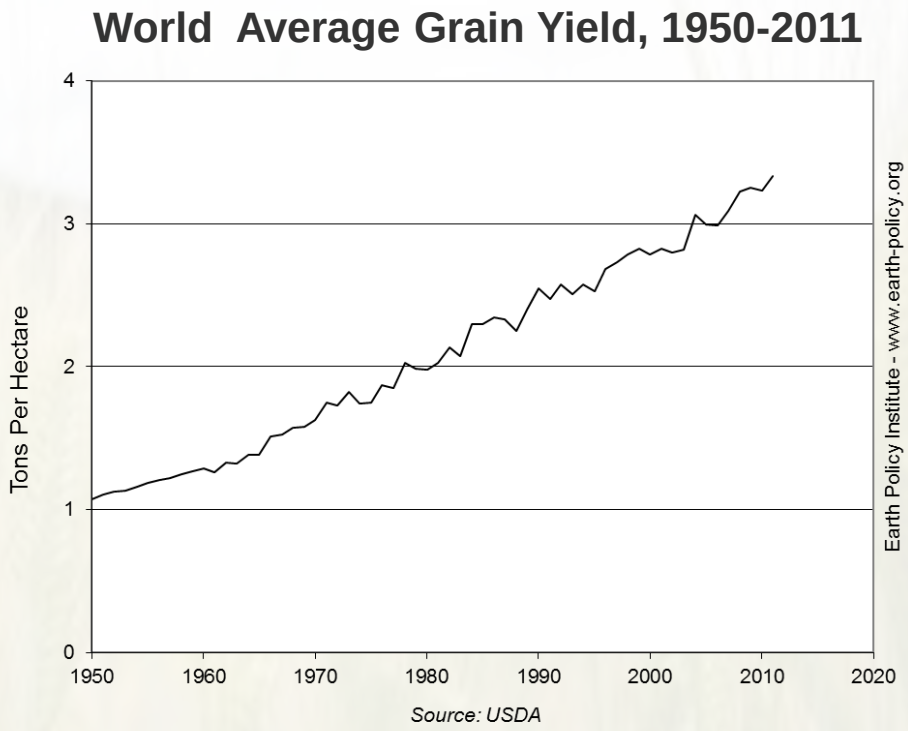
Chapter 7

Grain Yields Starting to Plateau

Photo Credit: iStockPhoto / ollo

Growth in Grain Yields Slowing

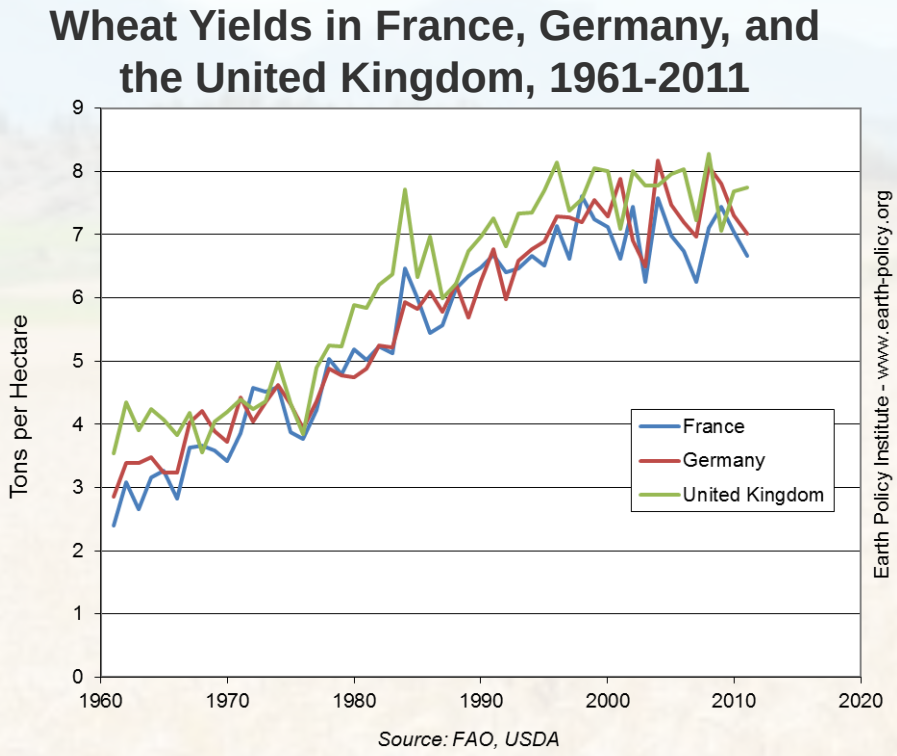
- World average grain yield has tripled since 1950
- But the pace of growth is slowing
  - 1950-1990: It grew 2.2% per year
  - 1990-2011: It grew 1.3% per year



In some of the more agriculturally advanced countries, the increase in grain yields has come to an end.

Photo Credit: iStockPhoto / Simon Oxley

Wheat Yields Flat in Western Europe



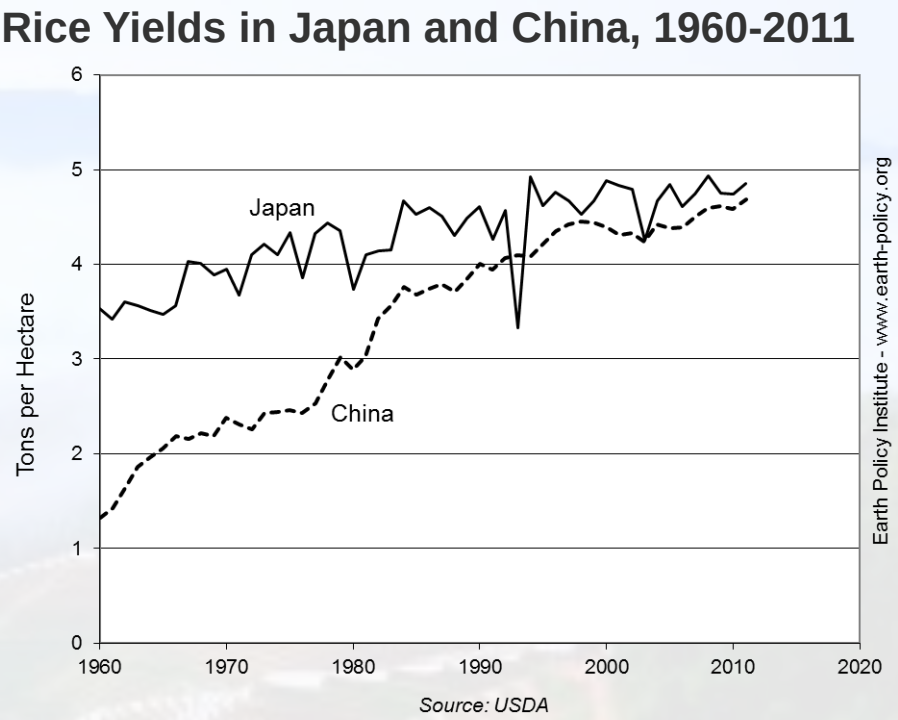
- Farmers in France, Germany, and the United Kingdom appear to have reached upper biological limits, exhausted the backlog of agricultural technology
- They are Western Europe's leading wheat producers
- Wheat yields have plateaued in all three

Together, these three countries produce 80 million tons of wheat per year, 12 % of the world harvest.

Photo Credit: iStockPhoto / img85h

Is China Hitting the Glass Ceiling for Rice?

- Japan's rice yields have not increased in 17 years
- South Korea's rice yields have also plateaued
- China's rice yields are approaching Japan's, may not be able to surpass them



Together, these three countries represent one third of the world rice harvest.

Photo Credit: iStockPhoto / HAIBO BI

Where Else Will Grain Yields Stall?

- China's wheat yields may be approaching a plateau, as with rice
- With rising temperatures, farmers everywhere face new climate constraints even as they approach biological limits

Thus far, rice or wheat yields have plateaued only in medium-sized countries. What happens when grain yields plateau in some of the larger ones?

Photo Credit: iStockPhoto / Dave Hughes

Chapter 8

Rising Temperatures, Rising Food Prices

Photo Credit: iStockPhoto / jansmarc

Climate Disruption

- The massive burning of fossil fuels is increasing the level of carbon dioxide (CO_2) in the atmosphere, raising the earth's temperature and disrupting climate

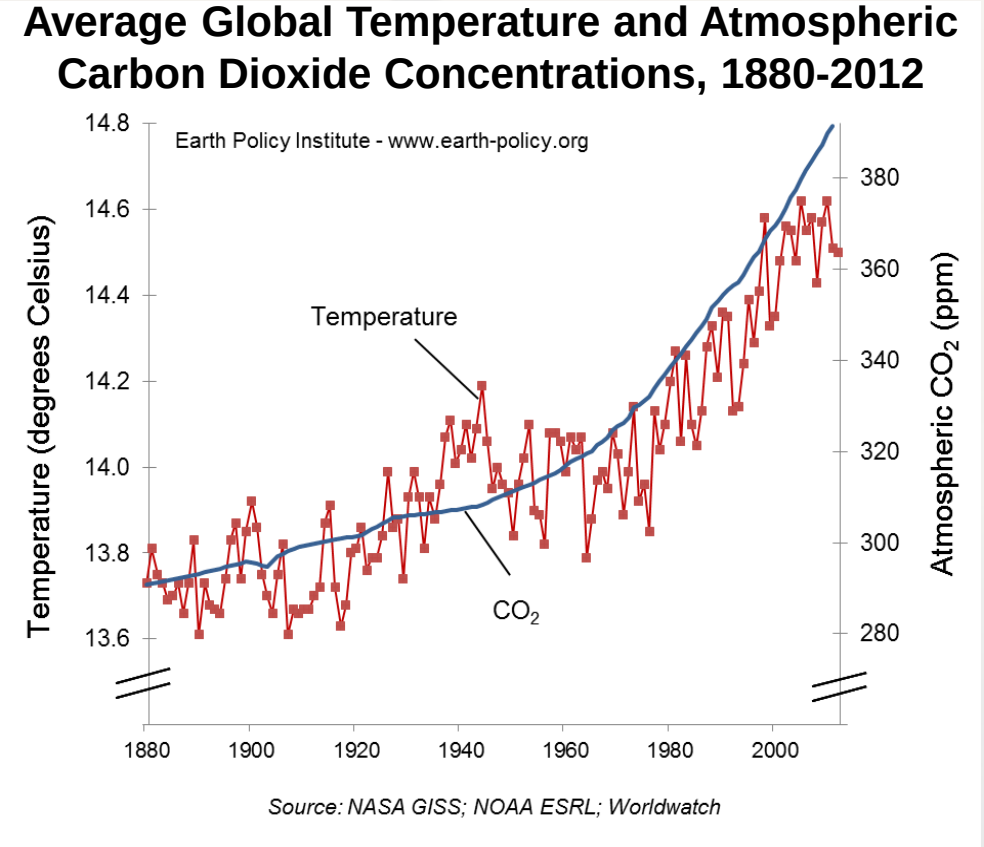


Photo Credit: Yann Arthus-Bertrand

Higher Temperatures, Lower Yields

- The Intergovernmental Panel on Climate Change projects earth's average temperature will rise up to 6.4°C (11.5°F) during this century
- Current trajectory is already outpacing projections
- For every 1°C rise in temperature above the optimum during the growing season, yields of wheat, rice, and corn can be expected to drop 10%

Photo Credit: iStockPhoto / dra_schwartz

Melting Ice Threatens Food Security

- Mountain glaciers are “reservoirs” for many rivers that are a source of irrigation water
  - As glaciers disappear, farmers lose this steady source of water
- Ice resting on land that melts and runs-off into the oceans raises sea level, threatening rice-growing river deltas
  - If the Greenland ice sheet completely melted, sea levels would rise 23 feet
  - Just a rise of 3 feet would inundate half the riceland in Bangladesh

Photo Credit: iStockPhoto / jgareri

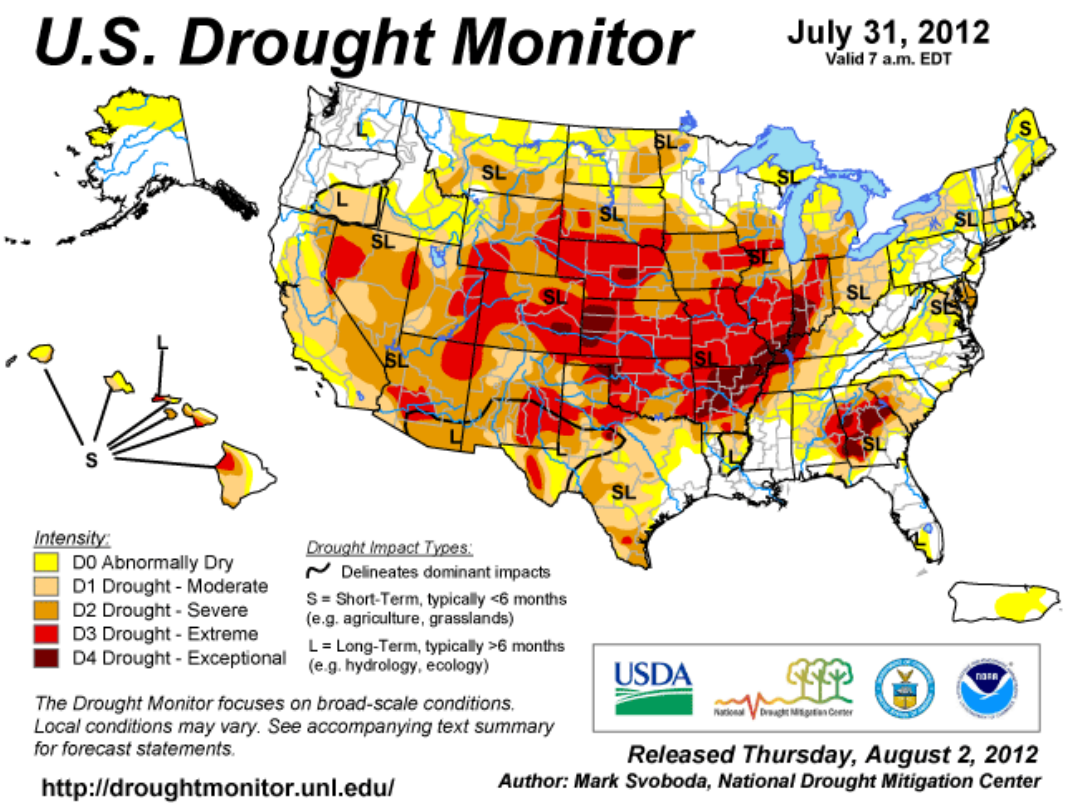
No More "Normal"

- In the past, extreme weather events were anomalies and farmers could expect a return to normal conditions by the next harvest
- But with rising temperatures and changing climate, there is no normal to return to
- The 11,000 year period of relative climate stability in which agriculture developed is over
- Increasing world grain stocks to ~110 days of consumption is one way to create a buffer against extreme weather

With each passing year, the agricultural system is becoming more out of sync with the climate system.

Photo Credit: USDA/Jack Dykinga

2012 Drought Decimates U.S. Corn



- Hottest July on record in United States
- Drought covered more than 60% of contiguous United States
- As the drought and high temperatures damaged the corn and soybean crops, prices for the commodities rose

Climate dice are being loaded, making such extremes more likely.

Chapter 9

China and the Soybean Challenge

Photo Credit: Yann Arthus-Bertrand

Soybeans Rise to Prominence

- Soybeans originated in China 3,000 years ago
- Since 1930, soybean meal has been mixed into livestock feed as a source of high-quality protein
- Today, the United States, Brazil, and Argentina combined account for over four fifths of the total world production of nearly 250 million tons

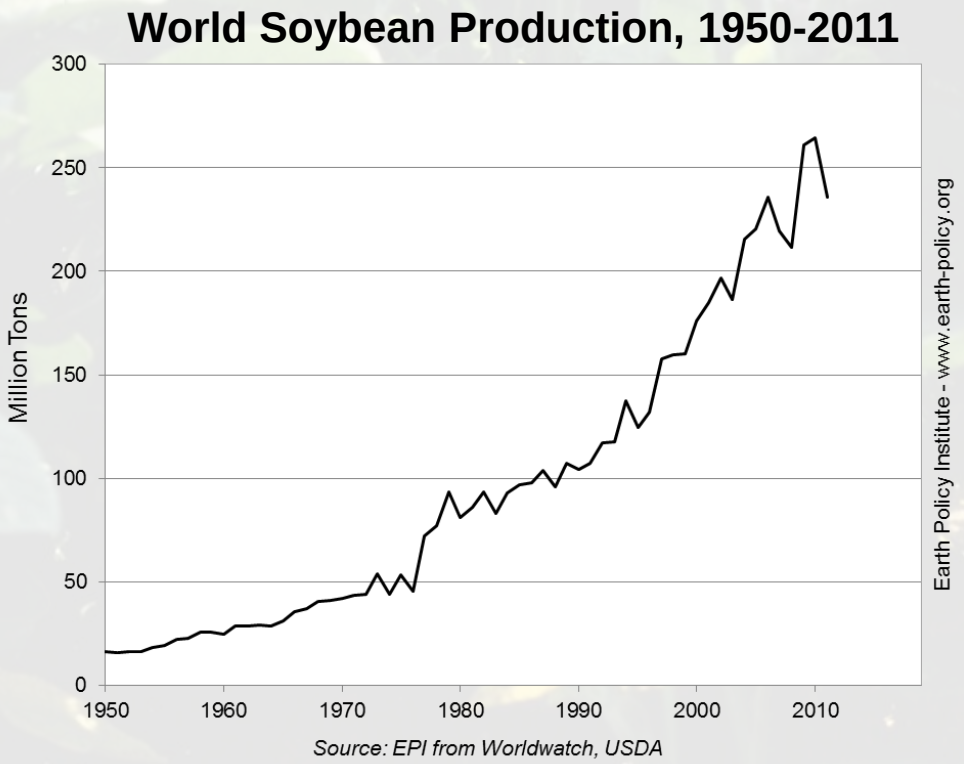
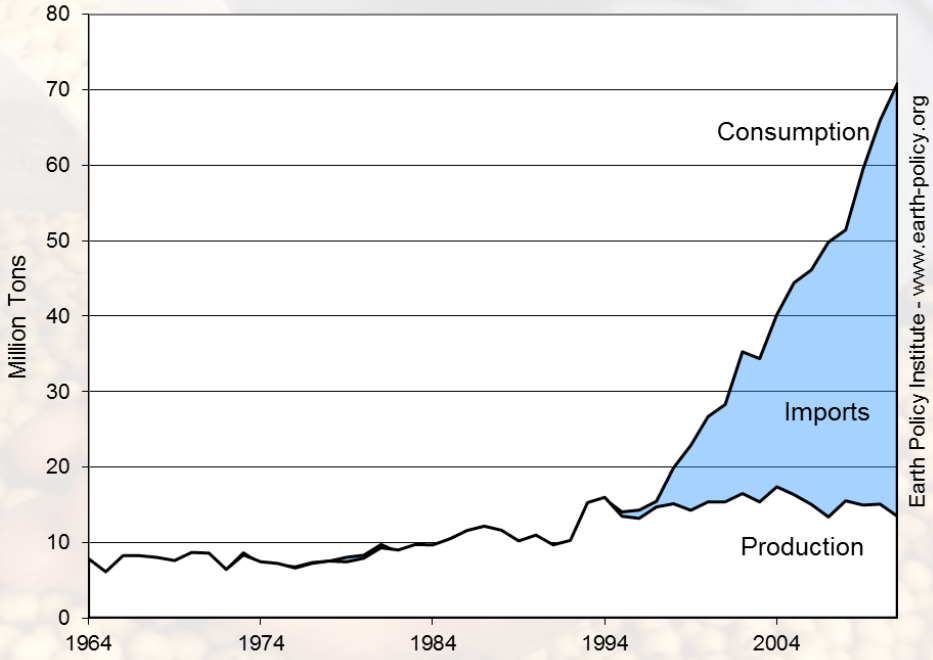


Photo Credit: USDA/ Scott Bauer

China Dominates Demand

- In 2008, China surpassed the United States as the leading soybean consumer
- 500 million pigs – half the world total – live in China, eating soybean meal mixed with grain
- China currently imports 60% of all soybeans traded internationally

Soybean Production, Consumption, and Imports in China, 1964-2011



Source: USDA

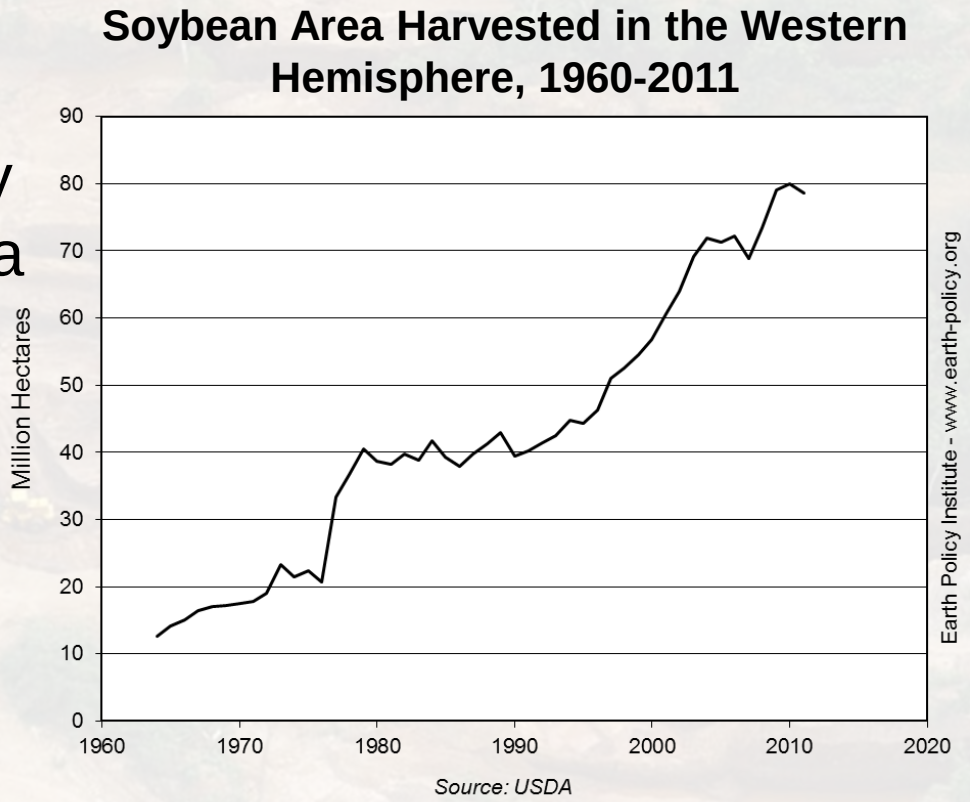
As China and other developing countries continue to move up the food chain, this demand will only increase.

Photo Credit: USDA/ Keith Weller

Clearing the Amazon for Soybeans

- Raising soybean yields is difficult; most of rise in soybean demand is met by expanding the planted area

- In Brazil, this means deforestation in the Amazon Basin and degradation of the savannah-like *cerrado*



Protecting these biodiverse, carbon-capturing ecosystems now depends on the world's more affluent population moving lower on the food chain.

Photo Credit: Yann Arthus-Bertrand

Chapter 10

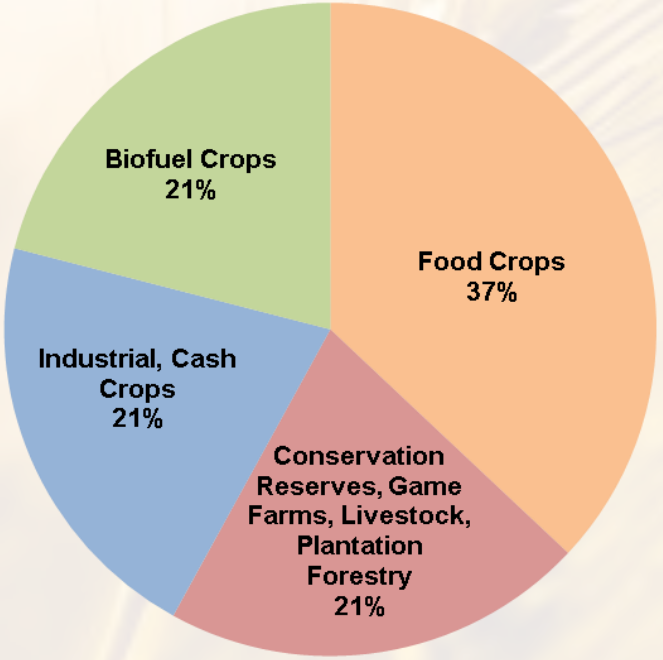
The Global Land Rush

Photo Credit: iStockPhoto / susoy

New Geopolitics of Food Scarcity

- Doubling of grain, soybean prices in 2007-08 revealed a new geopolitics of food—every country for itself:
  - Russia, Thailand, other grain exporting countries restricted or banned exports
  - Some importers turned to buying or leasing tracts of land in other countries on which to grow food
  - These land acquisitions, often called “land grabs,” multiplied quickly

Large-scale Land Acquisitions by Project Type, October 2008 – August 2009



Total Projects: 405

Source: GRAIN data compiled by Deininger and Byerlee (2011)

Photo Credit: iStockPhoto / Pawel Gaul

Land Grabs: The Investors

- Major investors include China, India, Saudi Arabia, South Korea, and United Arab Emirates
- Beyond food security: Some investors—U.S., E.U., Southeast Asian companies—hope to produce biofuel crops
- Other investors see land grabbing as a lucrative investment opportunity: Hedge funds, pension funds, university endowments, speculators

Photo Credit: iStockPhoto / BanksPhotos

Land Grabs: The Host Countries

- Main targets are sub-Saharan African countries:
  - Ethiopia, Sudan, and South Sudan, all emergency food aid recipients
  - Also includes Kenya, Mali,Tanzania, and others
  - Land often leased for 25 to 99 years for less than $1 per acre per year
- Significant interest in Southeast Asia…
  - Cambodia, Laos, Philippines, Indonesia
- …in Latin America…
  - Brazil, Argentina
- …and the former Soviet Union
  - Russia, Kazakhstan, Ukraine

Photo Credit: iStockPhoto / Bob Randall

Selected Examples of Land Deals

Target Country	Description
Brazil	China's Chongqing Grain Group reportedly harvesting soybeans on some 500,000 acres in Bahia state
Cambodia	Singapore-based HLH Group farming corn on 35,000-acre, 70-year lease
Ethiopia	Saudi billionaire's agribusiness firm leasing 24,700 acres for rice in Gambella region; plans to obtain another 716,000 acres
Russia	South Korea's Hyundai Heavy Industries growing corn, oats, wheat, and soybeans to ship home on two farms totaling 40,000 acres

Photo Credit: iStockPhoto / zoran simin

Ethiopia as Microcosm

- Farmers, indigenous people often find out about deals only as they are forced from their land
  - By early 2012, more than 1 million Ethiopians forcibly relocated by their government
- Informal land rights make it difficult for people to protest
- Projects using highly-mechanized, industrial agriculture; few jobs for local people
- Food produced most often shipped to investor's home country, contributing nothing to the local food supply
- Land grabs for agriculture are also necessarily water grabs

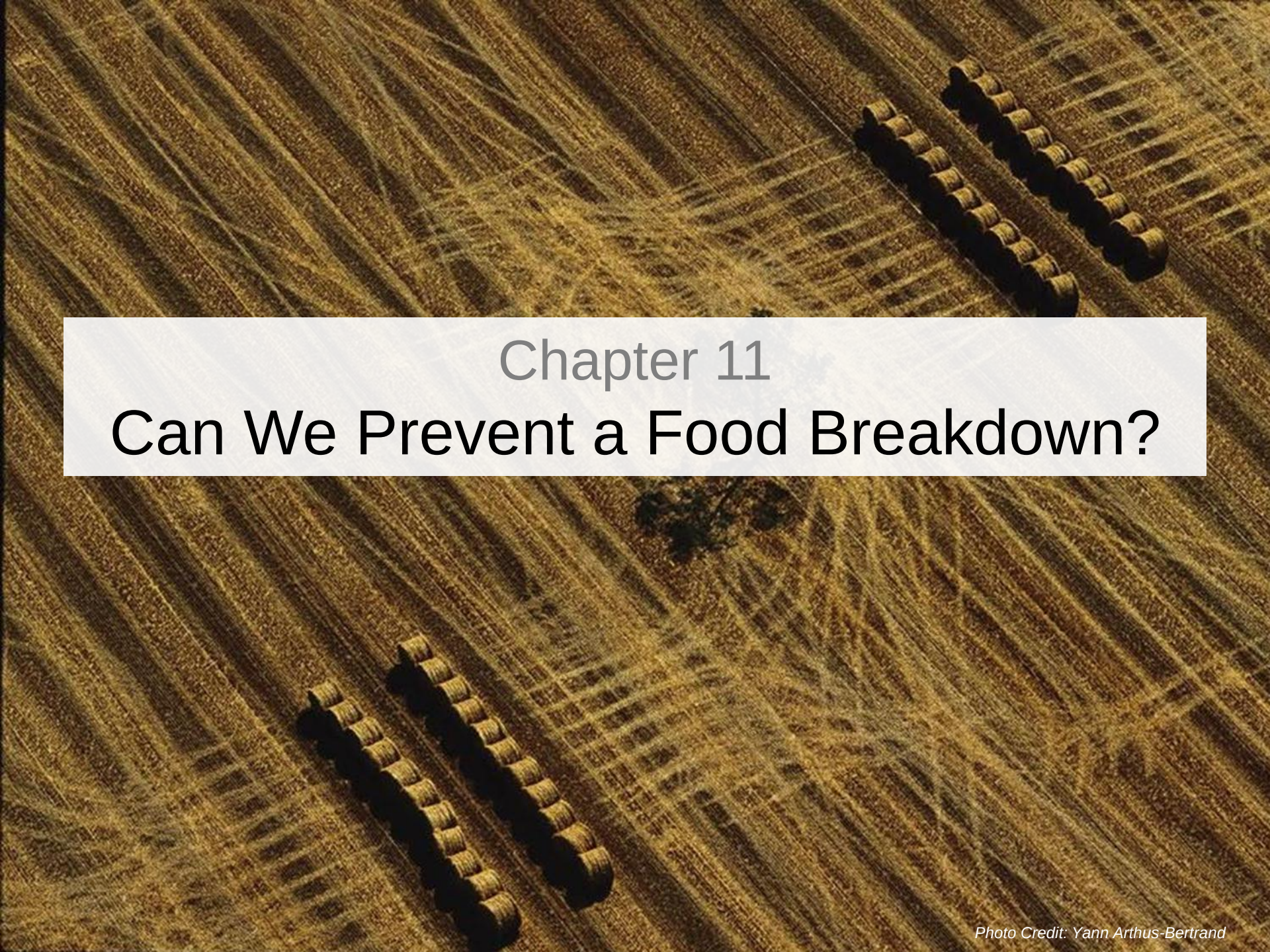
Photo Credit: iStockPhoto / BanksPhotos

The Land Rush Is On

- As more land is acquired and local people are deprived of jobs and land, ranks of the hungry may swell
- Hostility of local people to land grabs is the rule, not the exception
- Rising political instability is a serious concern—may contribute to already growing list of failing states

These land acquisitions are an integral part of a global power struggle for control of the earth's land and water resources.

Photo Credit: iStockPhoto / Bob Randall



Chapter 11
Can We Prevent a Food Breakdown?

Photo Credit: Yann Arthus-Bertrand

Toward a More Stable Food System

Demand Side

- Stabilize population
- Eradicate poverty
- Reduce excessive meat consumption
- Eliminate biofuels mandates

Supply Side

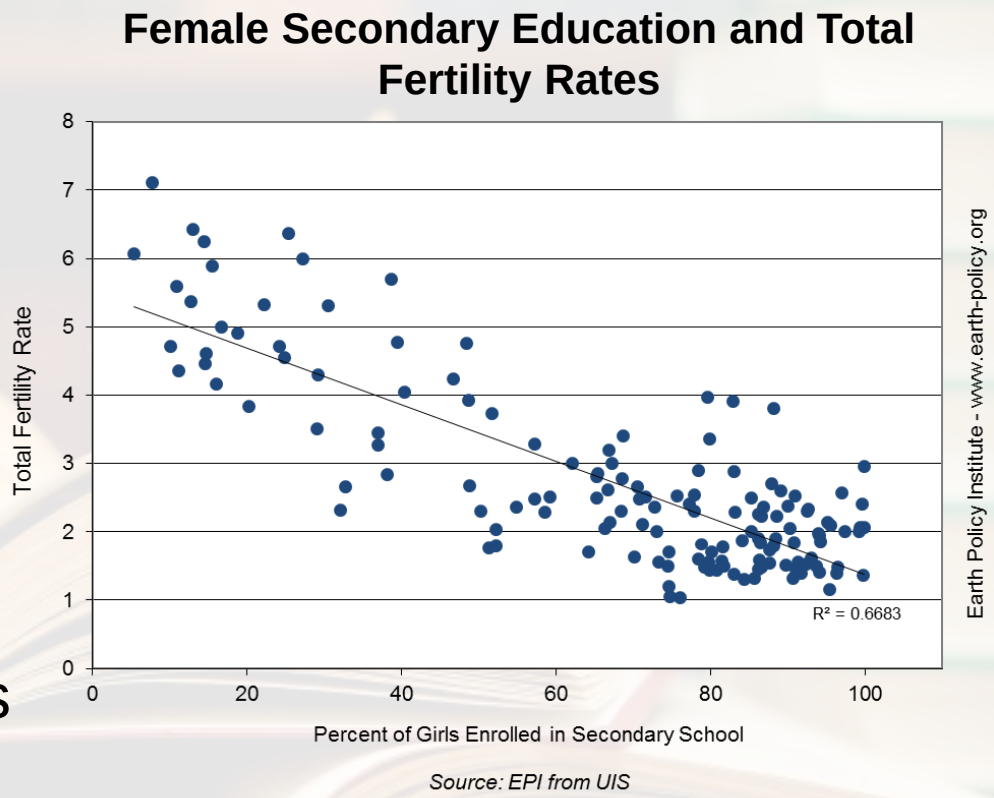
- Conserve soil
- Increase water productivity
- Fill the yield gap
- Stabilize climate

If we tackle both sides of the food equation, we can rebuild world grain stocks, improving food security.

Photo Credit: iStockPhoto / Niko Vujevic

Stabilizing Population and Eradicating Poverty

- School lunch programs help children, especially girls, stay in school
- Girls who stay in school longer are likely to have fewer children
- Reducing family size helps lift families out of poverty
- Malnutrition is found less often in smaller families



Efforts to eliminate poverty and slow population growth reinforce each other.

Photo Credit: iStockPhoto / Viorika

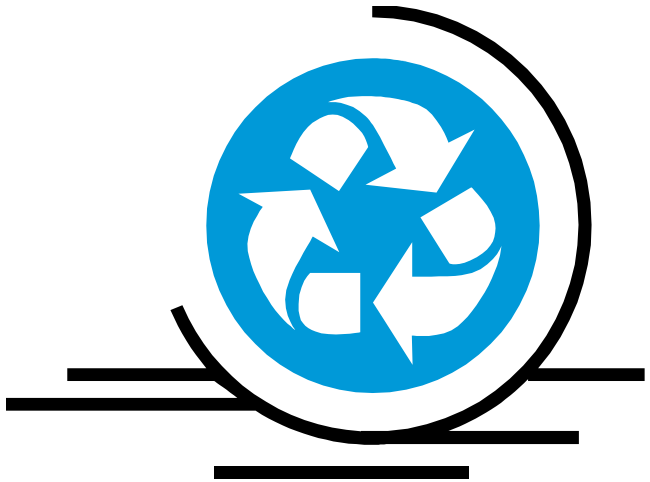
Supply Solutions

Soil Conservation Measures
Return highly erodible land to grass
Terracing
Plant tree shelterbelts
Strip cropping
No-till farming

Supply Solutions

Drip Irrigation

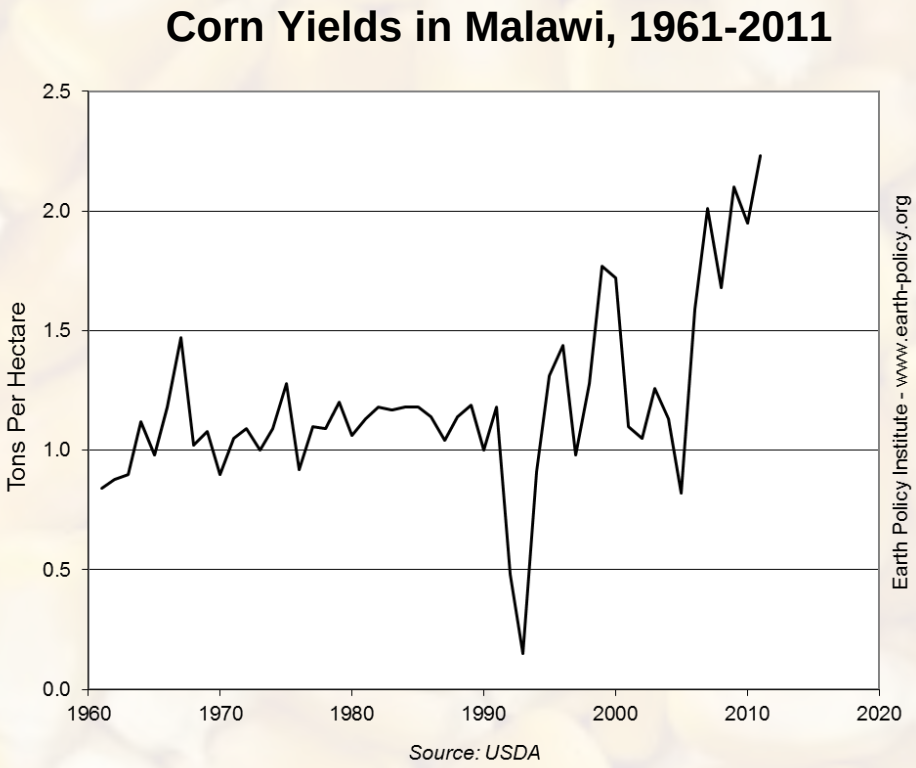
Photo Credit: USDA/Pete Mortimer



Water Conservation Measures
Use more efficient irrigation techniques (e.g. drip irrigation)
Use more water-efficient crops, such as wheat instead of rice
Move down the food chain
Price water to encourage efficiency
Recycle water

Case Study: Raising Grain Yields in Malawi

- 2005 drought left many people hungry or starving
- Government, with international support, provided farmers fertilizer and seed subsidies
- Corn harvest nearly doubled in 2 years; farmers' incomes grew and they were able to export some grain



With economic incentives and access to modern inputs, farmers in sub-Saharan Africa can easily double yields.

Photo Credit: iStockPhoto / Sharon Day

Stabilize Climate

- Need to cut carbon emissions 80% worldwide
- Spur shift to clean energy economy by restructuring taxes to incorporate indirect costs of fossil fuels
  - Increase carbon taxes, reduce income taxes
- Eliminate fossil fuels subsidies

Time is our scarcest resource.

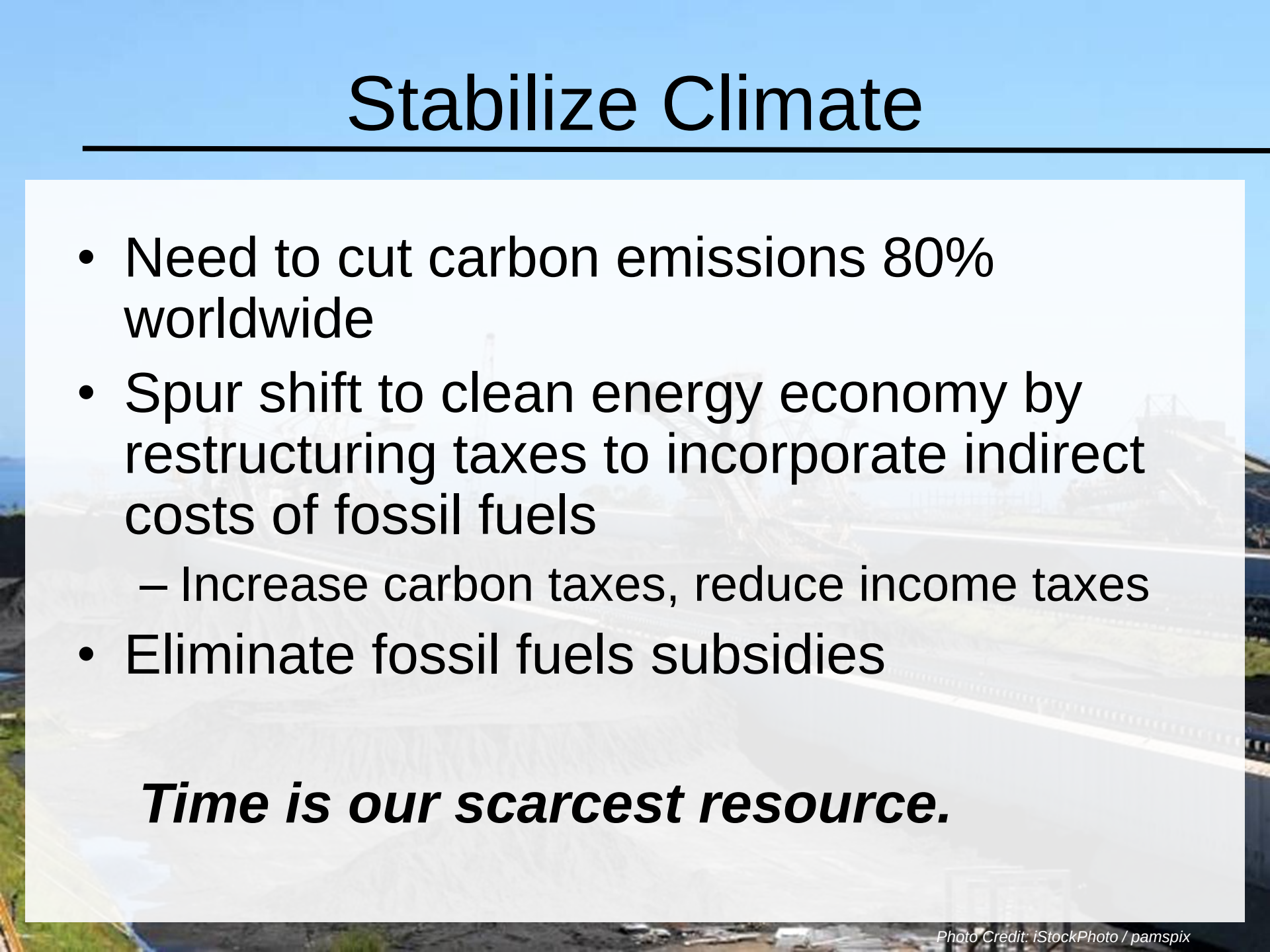
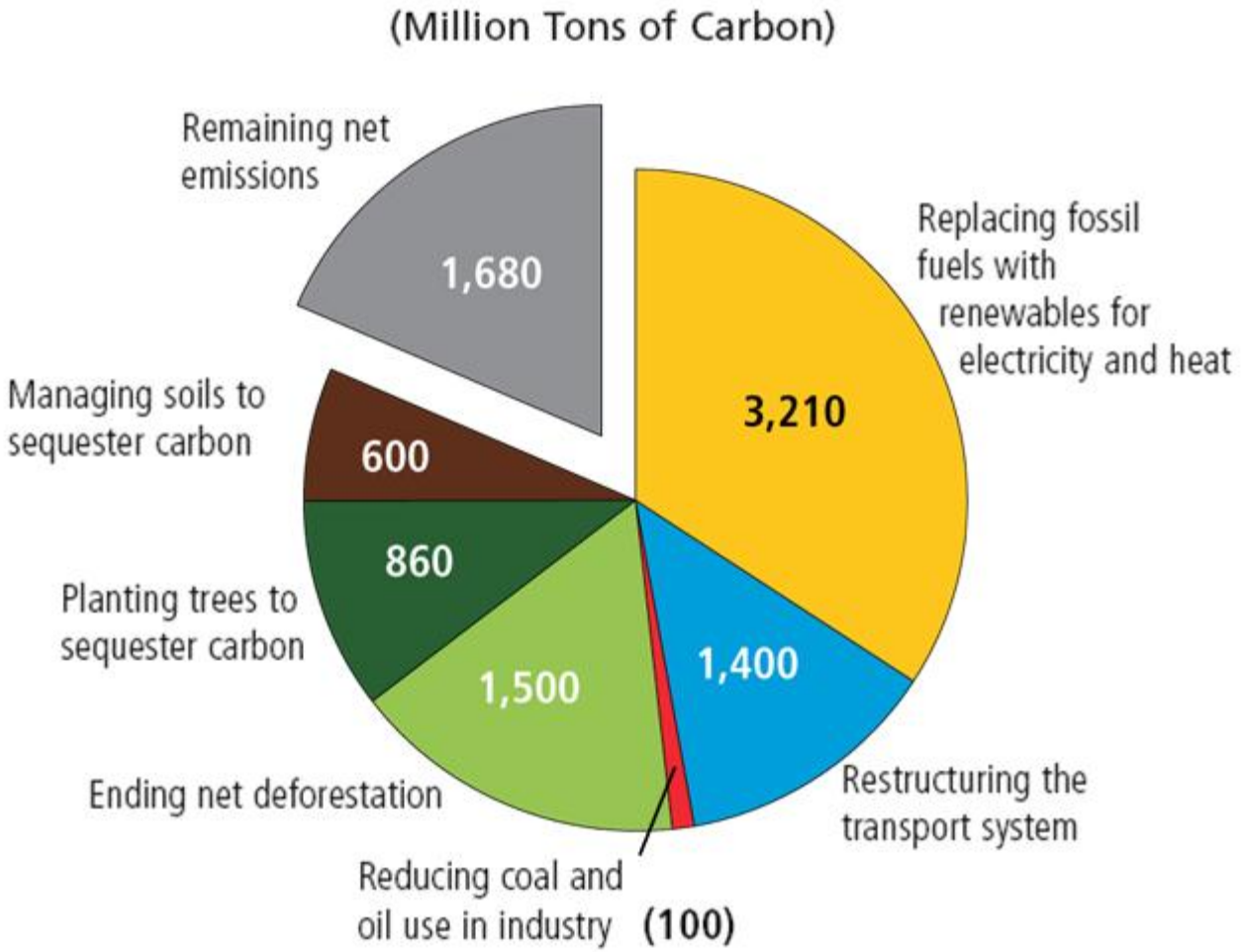


Photo Credit: iStockPhoto / pamspix

Plan B Carbon Dioxide Emissions Reduction Goals



Baseline Emissions (2006) = 9,350 Million Tons of Carbon

Source: EPI

Harnessing the Wind

- Centerpiece of Plan B energy economy
- Growing number of places get a large share of electricity from wind:
  - Germany: 4 states over 45%
  - Denmark: more than 25% nationally
  - United States: South Dakota and Iowa ~ 20%

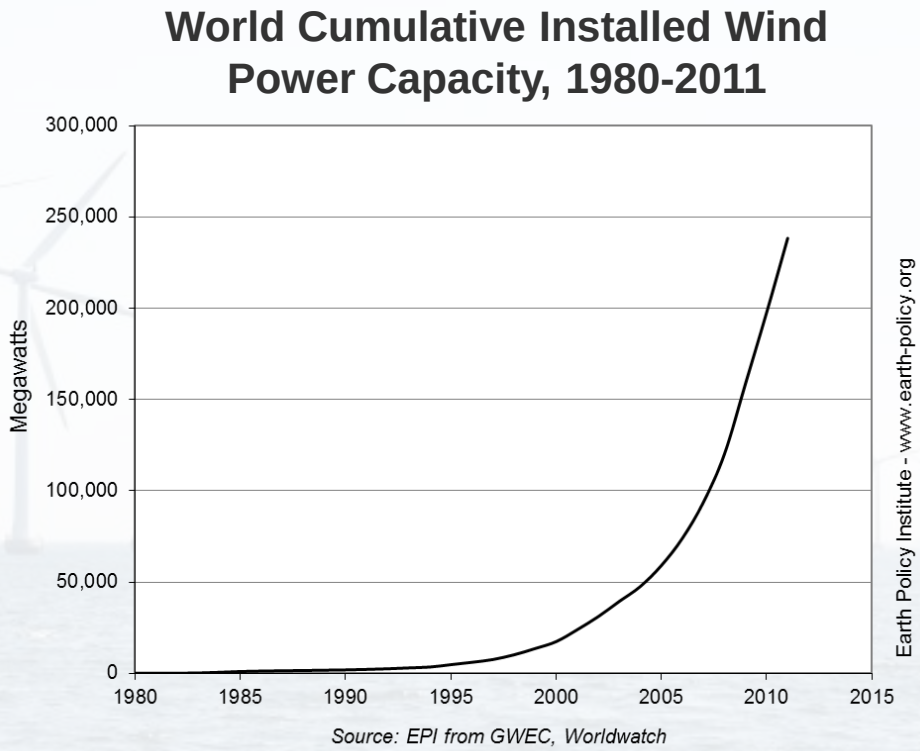
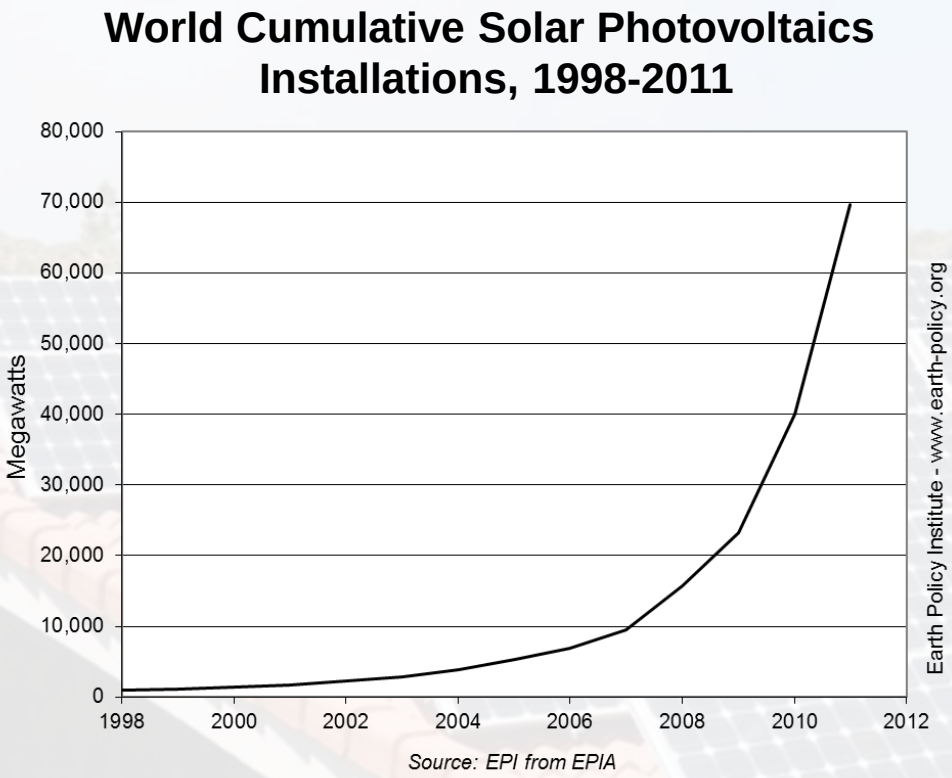


Photo Credit: iStockPhoto / monap

Solar Power Heating Up



- Sunlight hitting the earth in 1 hour could power global economy for 1 year
- Solar power in Europe can now satisfy the electricity needs of some 15 million households
- With 24,700 MW of PV, Germany has twice as much solar installed as number two Italy

Photo Credit: iStockPhoto / manwolste

Geothermal: Energy from the Earth

- Kenya now gets one fifth of its electricity from geothermal energy
- Indonesia is shooting for 9,500 megawatts of geothermal generating capacity by 2025, which would meet 56% of current electricity needs
- Potential geothermal capacity worldwide could power the entire world economy nearly two times over

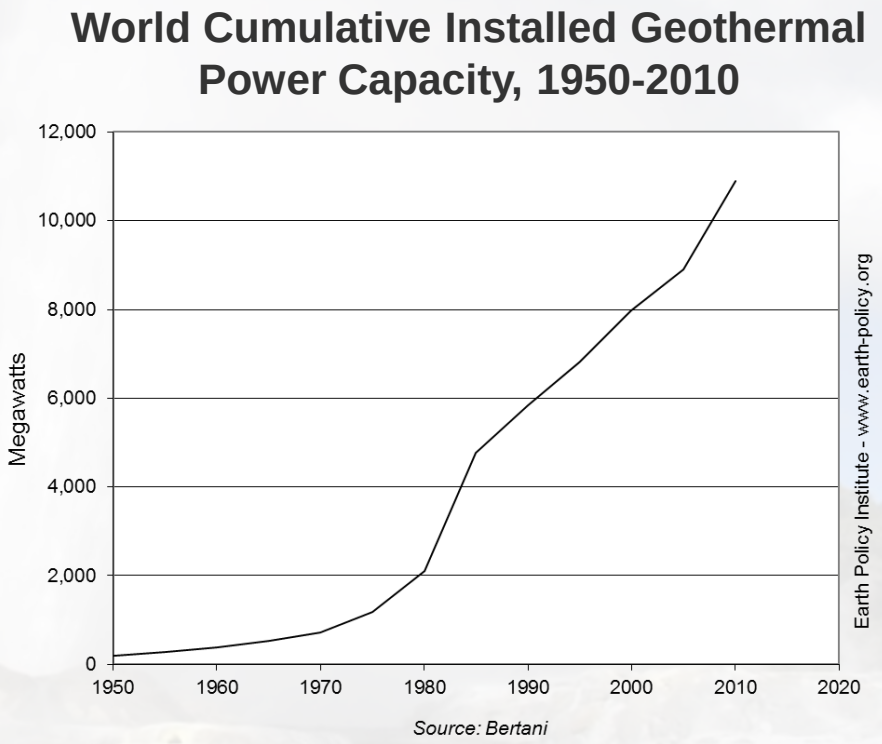
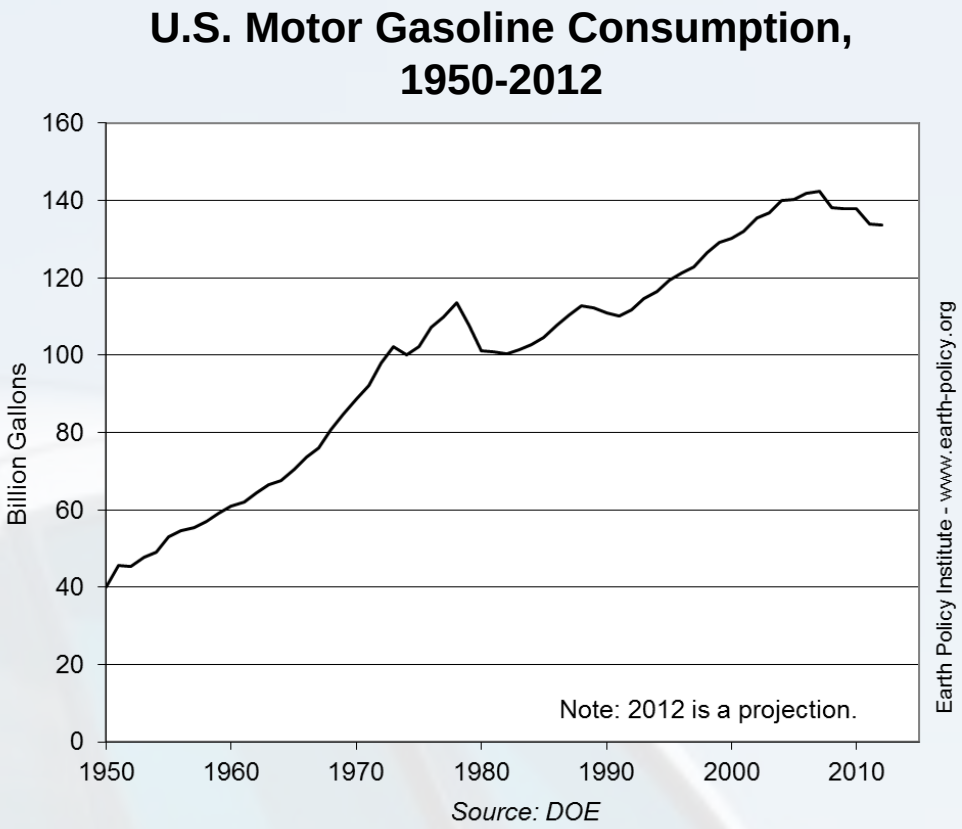


Photo Credit: iStockPhoto / Animean

Restructuring Transport



- Cities emphasizing rail and bus rapid transit need fewer cars
- Plug-in hybrid and all-electric vehicles can run primarily on emissions-free electricity
- Good news: U.S. gasoline use dropped 11% from 2007 peak to 2012, trend likely to continue

Photo Credit: iStockPhoto / mm88

Redefining Security

- Historically, security has been defined mostly in military terms
- But today climate volatility, emerging water shortages, spreading hunger, and failing states are the new threats to survival
- Food security is not just in the hands of agricultural departments
- The challenge is to reorder fiscal priorities to match these new dangers

Photo Credit: Yann Arthus-Bertrand

A Wartime Mobilization

- We have the technologies necessary to prevent a food breakdown– what is needed now is the political will to do so
- Saving civilization will require urgent action on a large scale, but we've mobilized quickly before
- Upon entering World War II, the U.S. mobilized resources and completely restructured its economy within months

Photo Credit: Yann Arthus-Bertrand

Let's Get to Work

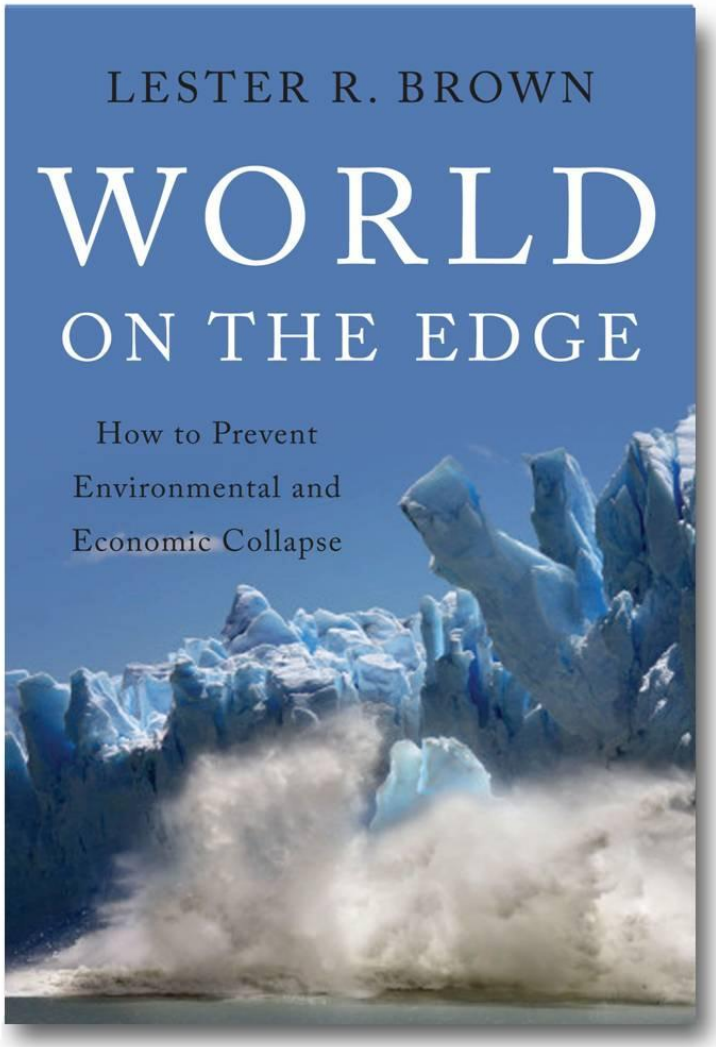
Saving civilization is not a spectator sport.

—Lester R. Brown

- Preventing a food breakdown requires a huge political effort undertaken on many fronts and with a fierce sense of urgency
- Make sure your elected officials know what's important
  - The overriding priority is redefining security and reallocating fiscal resources accordingly
- Take action in an area that concerns or excites you

Photo Credit: iStockPhoto / kryczka

To learn more about this mobilization…

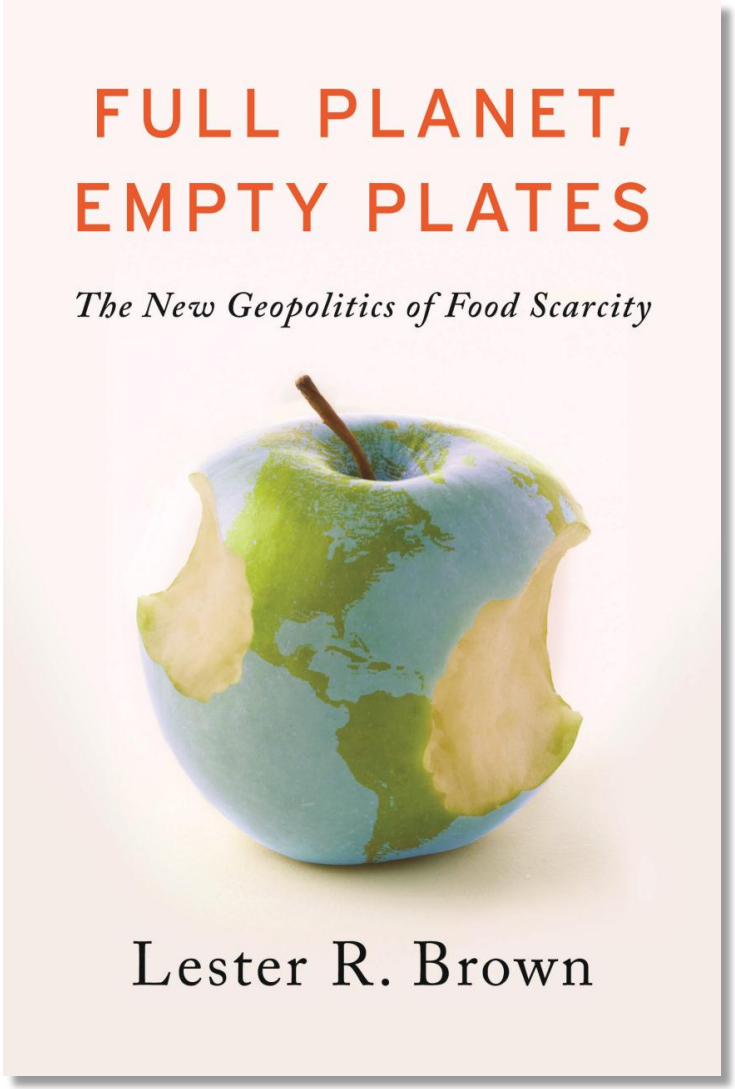


read *World on the Edge* by Lester R. Brown. More information and full-text copies of our publications are available at

www.earth-policy.org

EARTH POLICY INSTITUTE

To learn more about the global food situation…



read *Full Planet, Empty Plates: The New Geopolitics of Food Scarcity* by Lester R. Brown. The book and supporting data sets are available at

www.earth-policy.org

EARTH POLICY INSTITUTE