



# Materials Management through Sustainable Consumption

*Bridging to a Sustainable Society*

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West Coast Forum  
on Climate and  
Materials Management

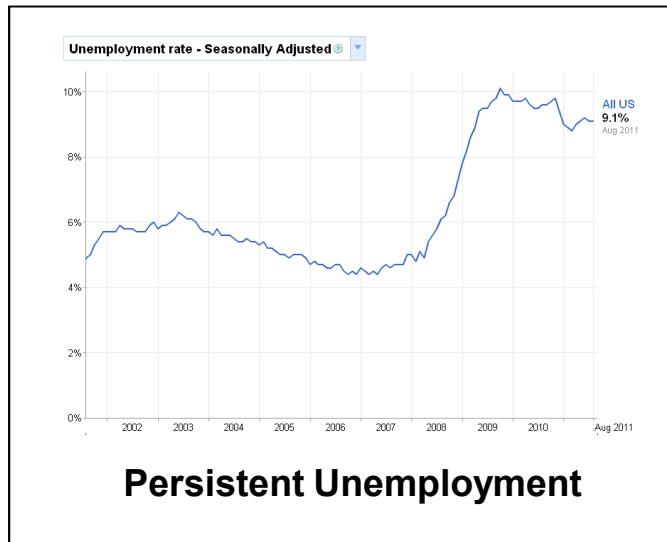


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- Background
  - Hewlett Packard
  - Business and sustainability consultant
  - Co-founded Oregon Natural Step Network
- Conundrum
  - If sustainability is so important, why isn't more being done?
  - Two books may suggest an answer:
    - “The Great Disruption” by Paul Gilding
    - “The End of Growth” by Richard Heinberg

# Unstable Global Economy



# Record-setting Ecological Problems



**April 2011 Tornadoes Break Record For Most Twisters Ever In A Day**



**Memphis and Baton Rouge brace for record-breaking Mississippi flood**







**Texas suffers record drought**

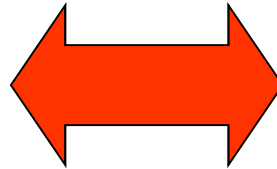





**Greenhouse Gases Hit Record Levels; Concentrations Exceed Scientists' Worst-Case Scenarios**



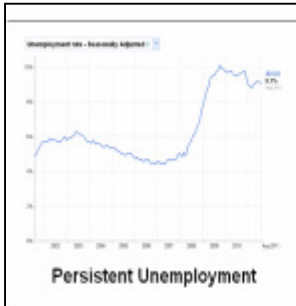
# Are these two connected?

 <p><b>Persistent Unemployment</b></p>	 <p><b>Record Foreclosures Expected In 2011</b></p>
 <p><b>Debt Crisis Lurches Toward Heart of Euro Zone as Rifts Grow</b></p>	 <p><b>Occupy Wall Street Moves Into New Phase With Student Debt Refusal Campaign</b></p>

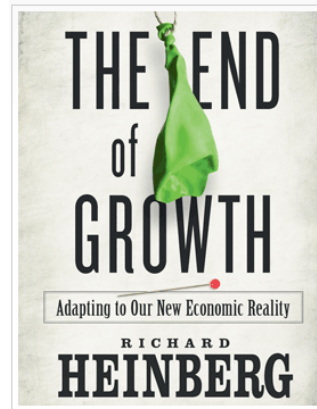
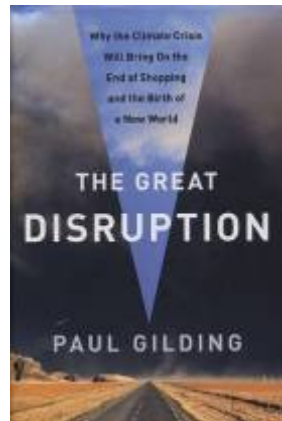
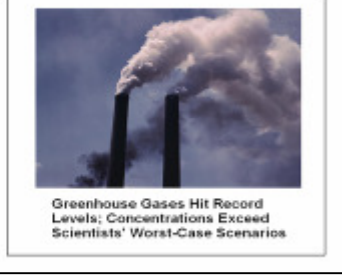
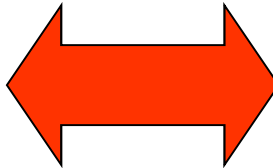
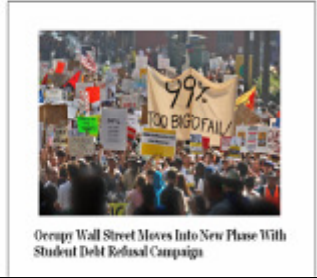


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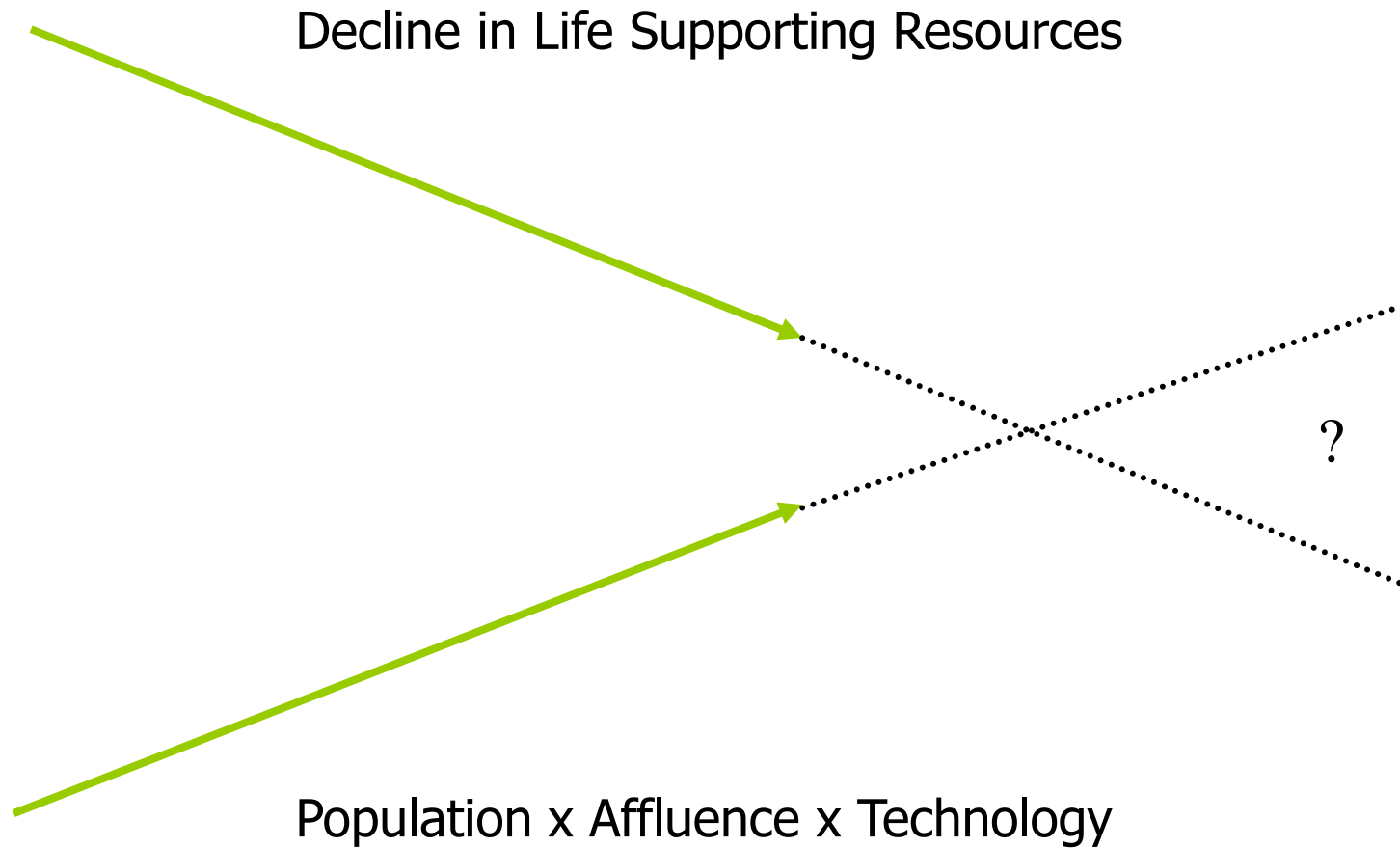
# Are these two connected?



Yes



# Funnel : *a collapsing system*



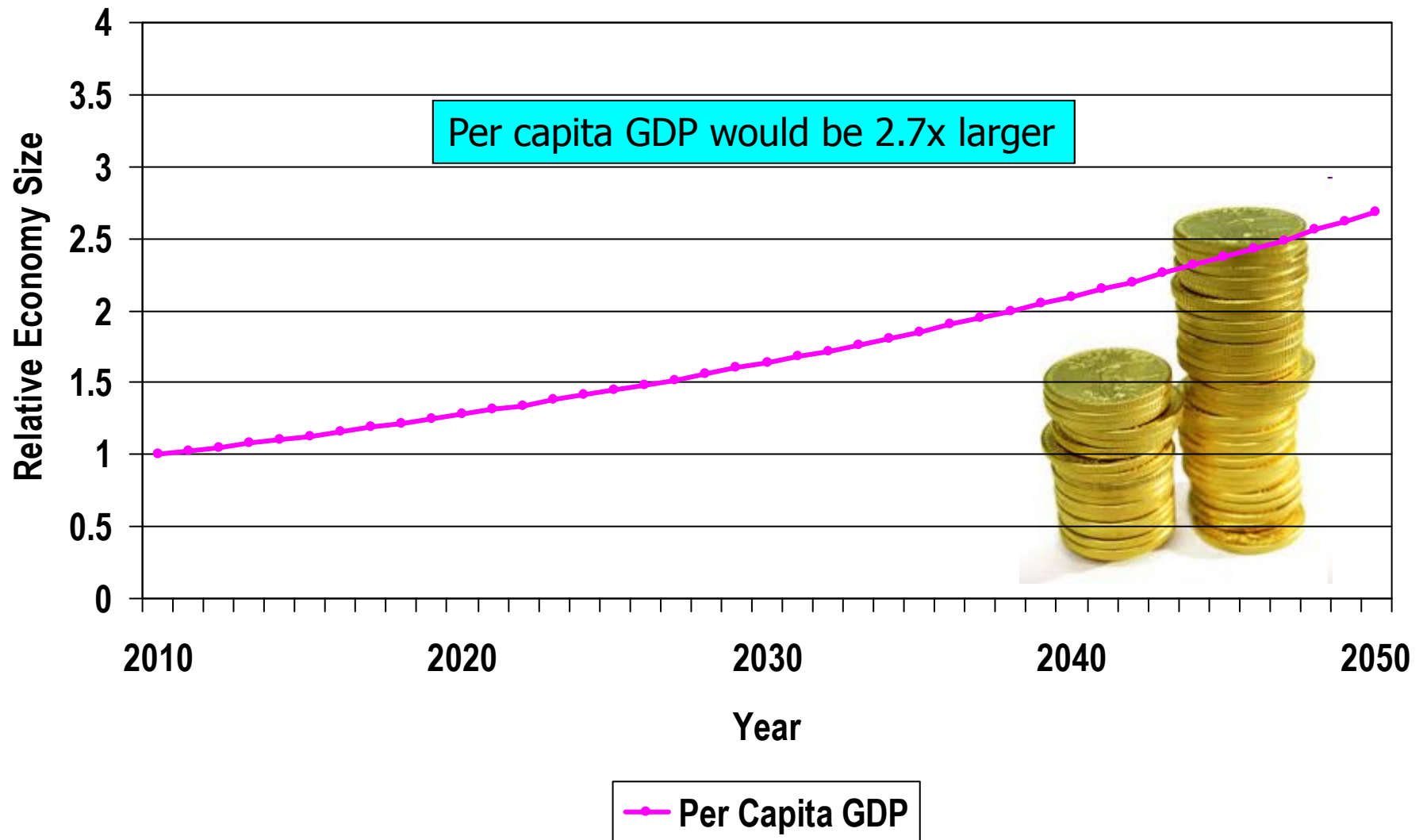
## Economic Model: *Current Projections*

- **Affluence:** International Monetary Fund (IMF) estimates global output per capita will grow 2.5% annually
- **Population:** projected to grow .7% annually until 2050
- **Technology:** Resource use per GDP decreased 30% over last 30 years (1.2% improvement per year)



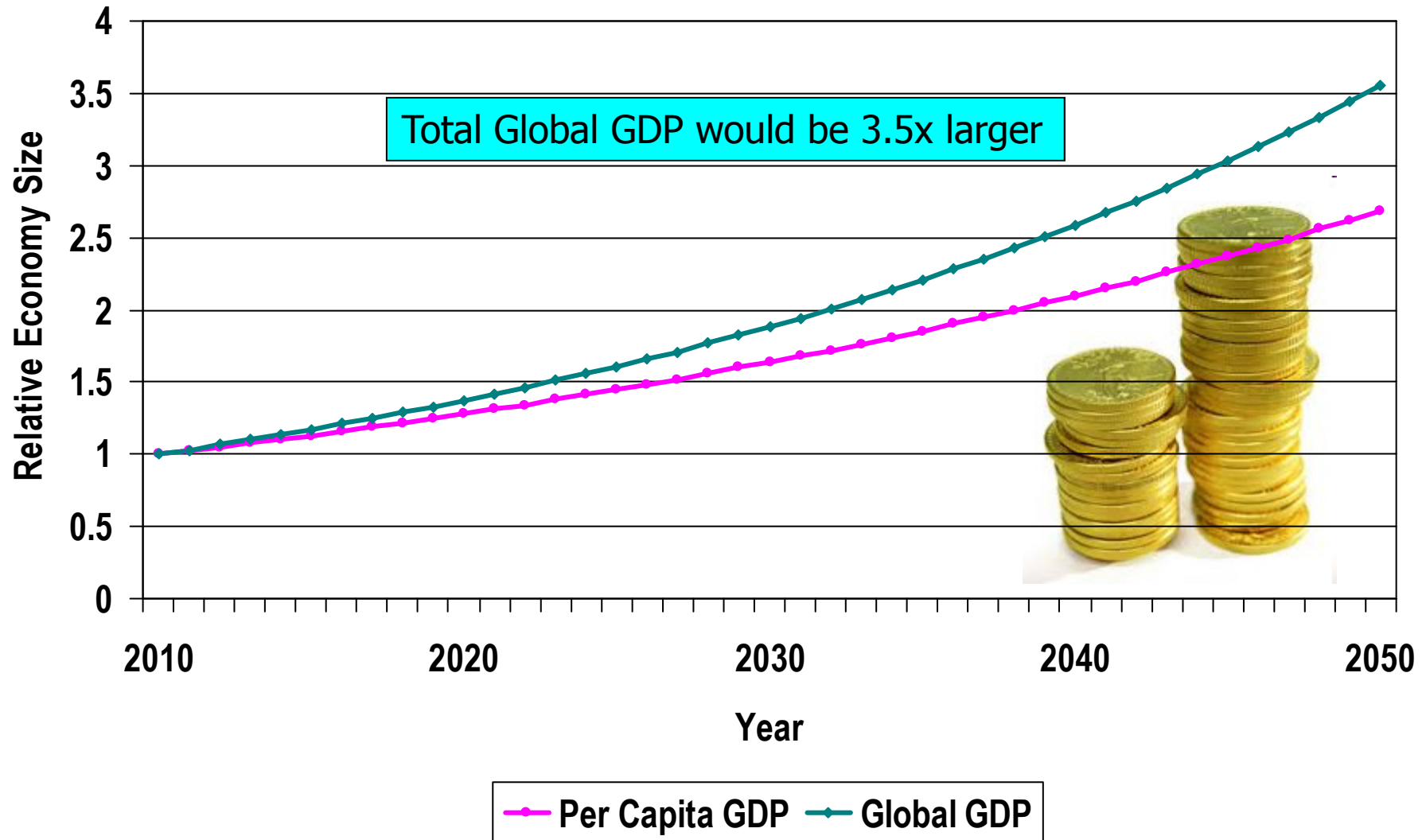
# Affluence: *Projected Global GDP*

2.5% per capita GDP increase



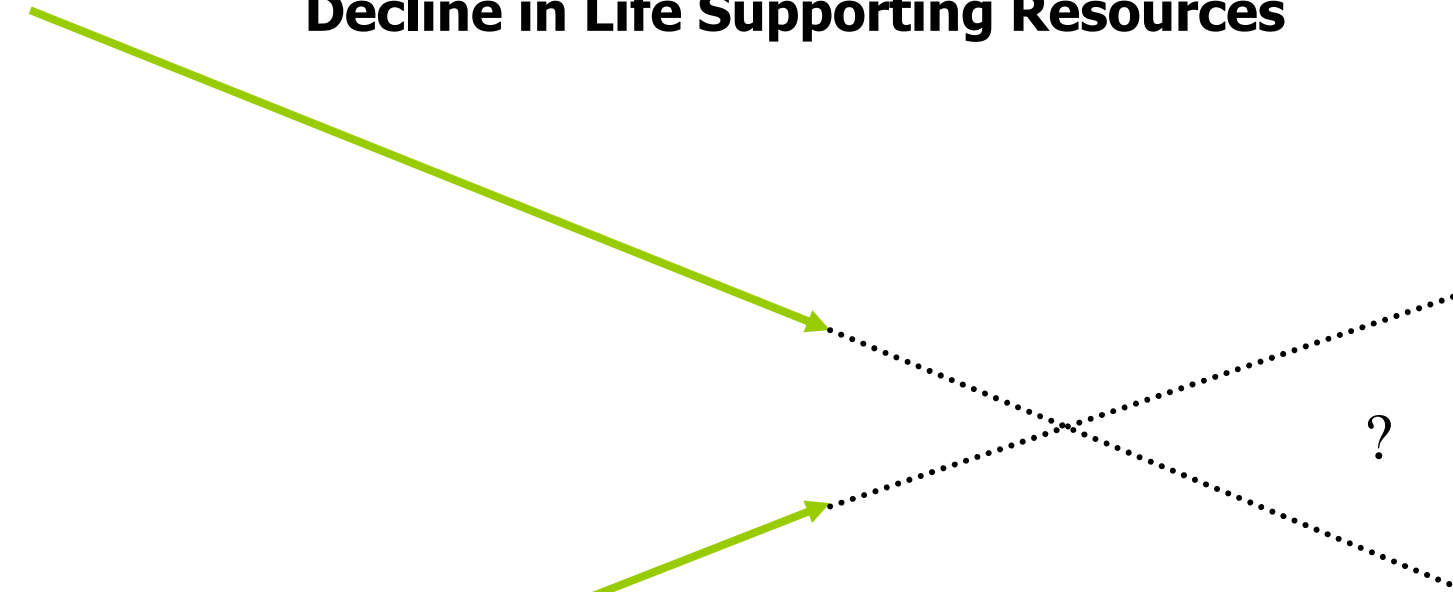
# Affluence x Population: *Projected Global GDP*

2.5% per capita GDP increase x .7% population increase



# Funnel : *a collapsing system*

**Decline in Life Supporting Resources**



Population x Affluence x Technology

# Resource Usage: *Eco-footprint analysis*



- *Global Footprint Network*

- Measures how much land and water area to support human consumption.

# Resource Usage: *Eco-footprint analysis*

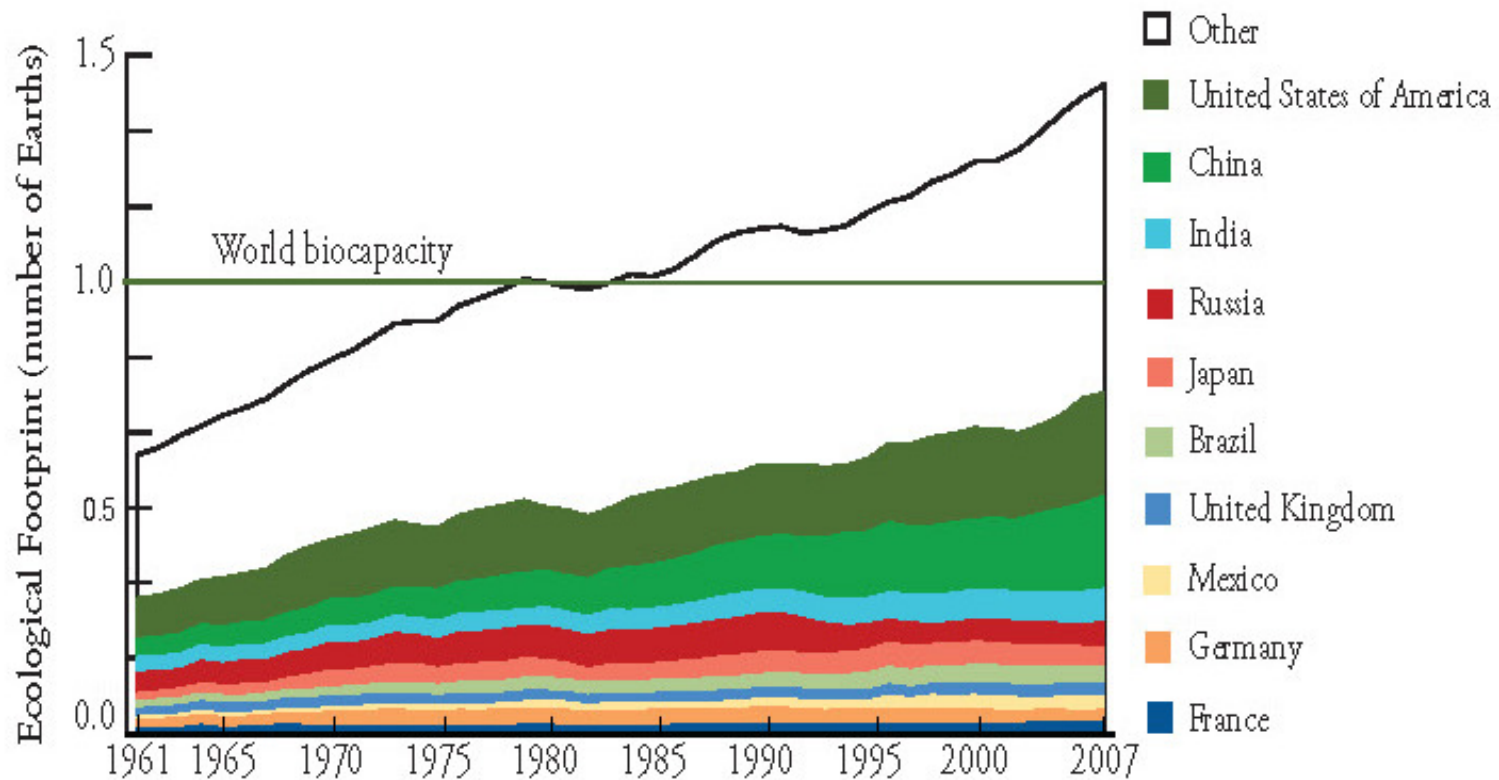


Figure 5. Humanity's Ecological Footprint by country, 1961-2007



# Resource Usage: *Eco-footprint analysis*

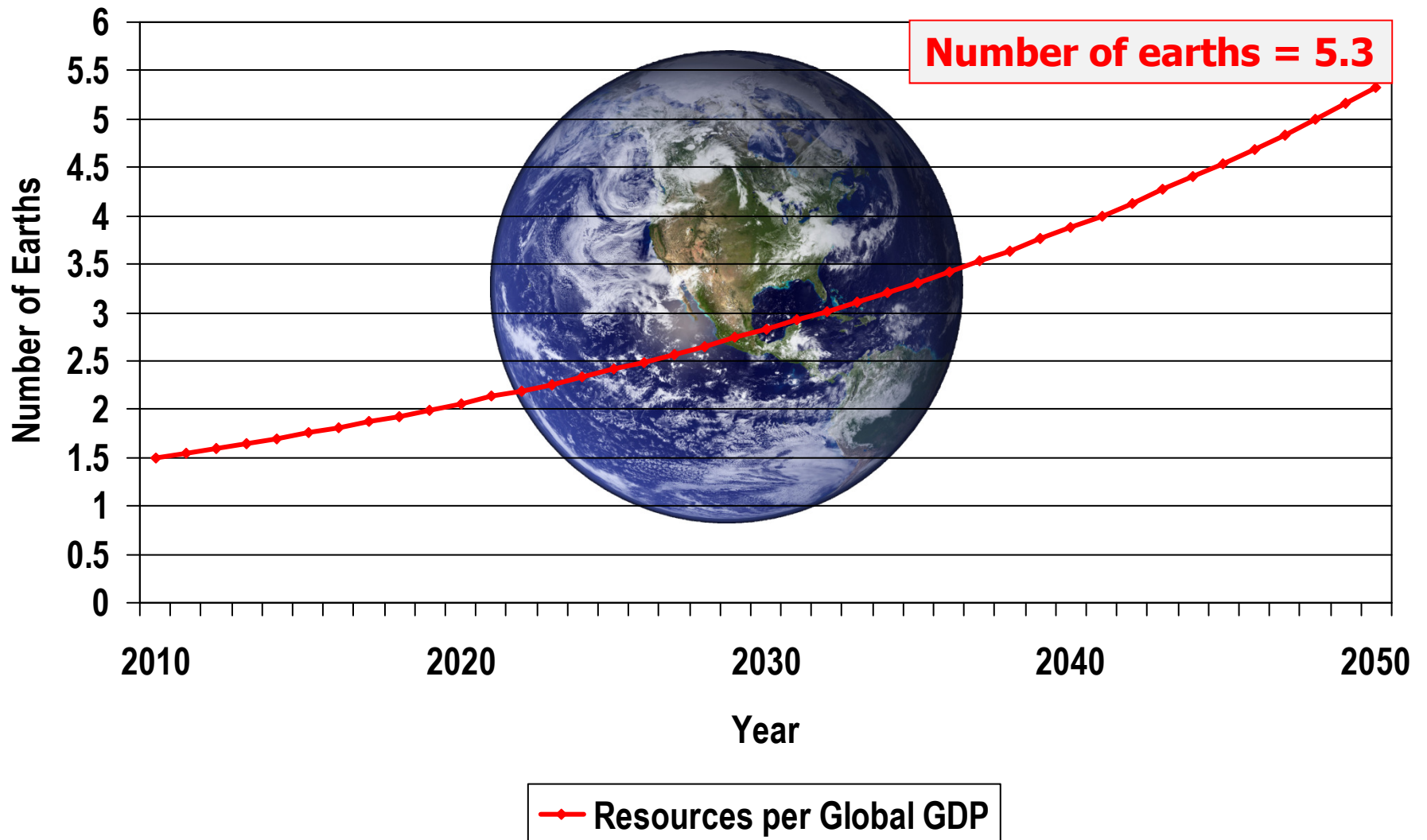


- *Global Footprint Network*

- Measures how much land and water area to support human consumption.
- Currently takes 18 months to support 12 months consumption.
- This overshoot is expressed in “planets”; i.e., currently = 1.5 planets

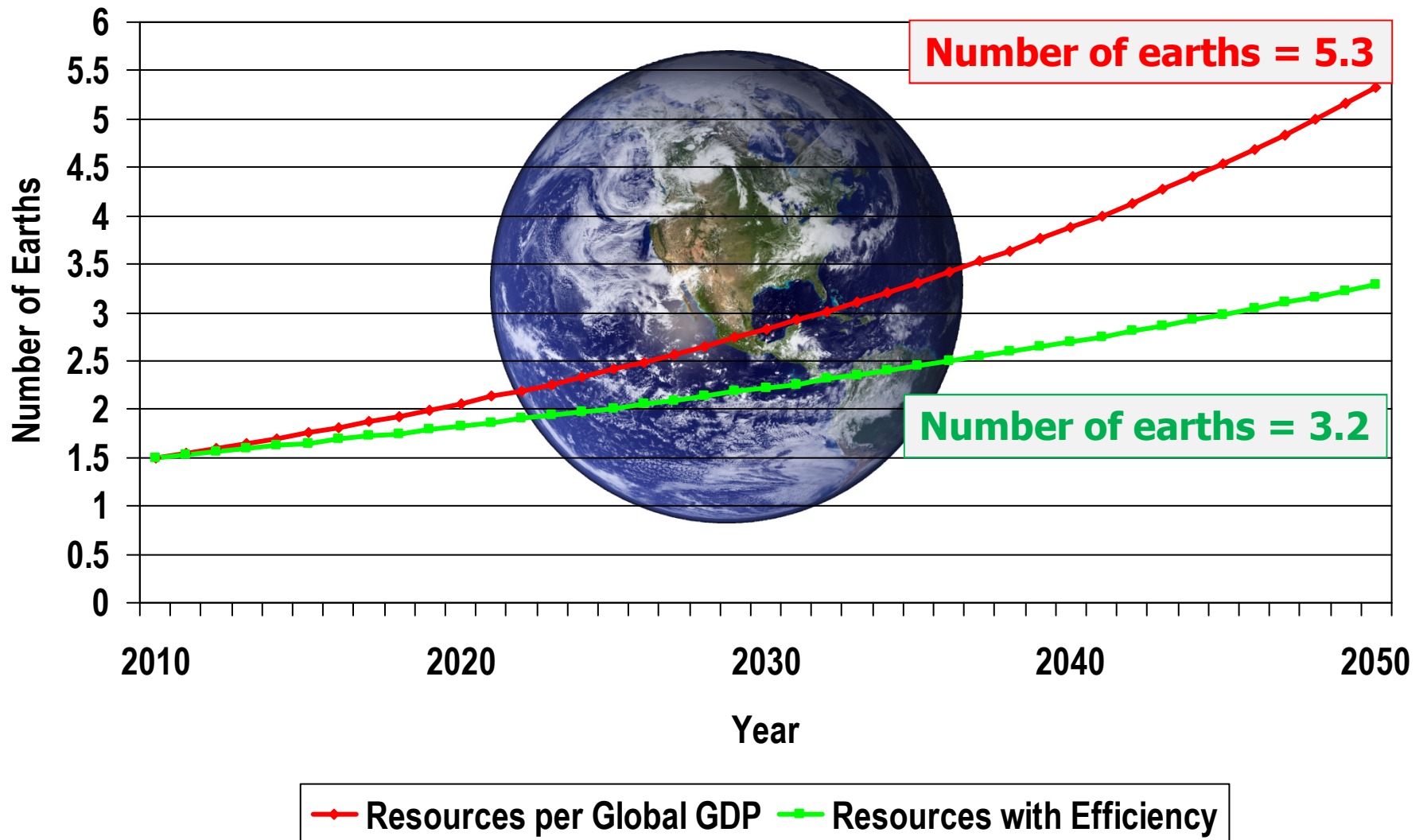
# Resources Needed to Support Global GDP

2.5% per capita GDP increase x .7% population increase

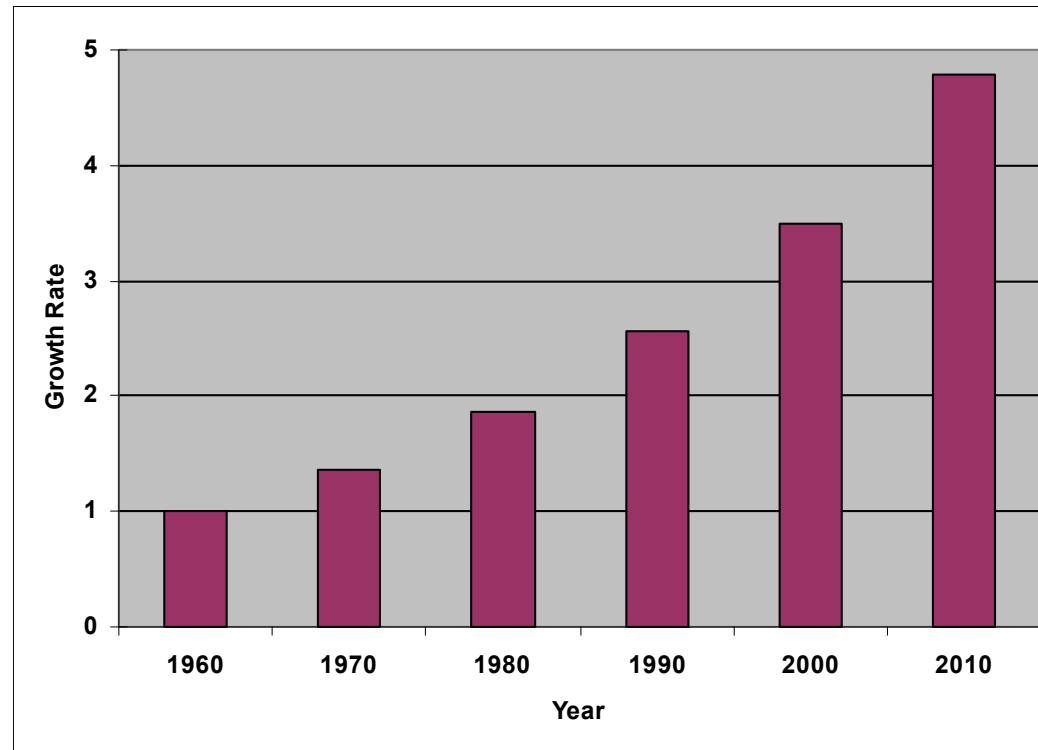


# Resources Needed to Support Global GDP

2.5% per capita GDP x .7% pop. x 1.2% efficiency

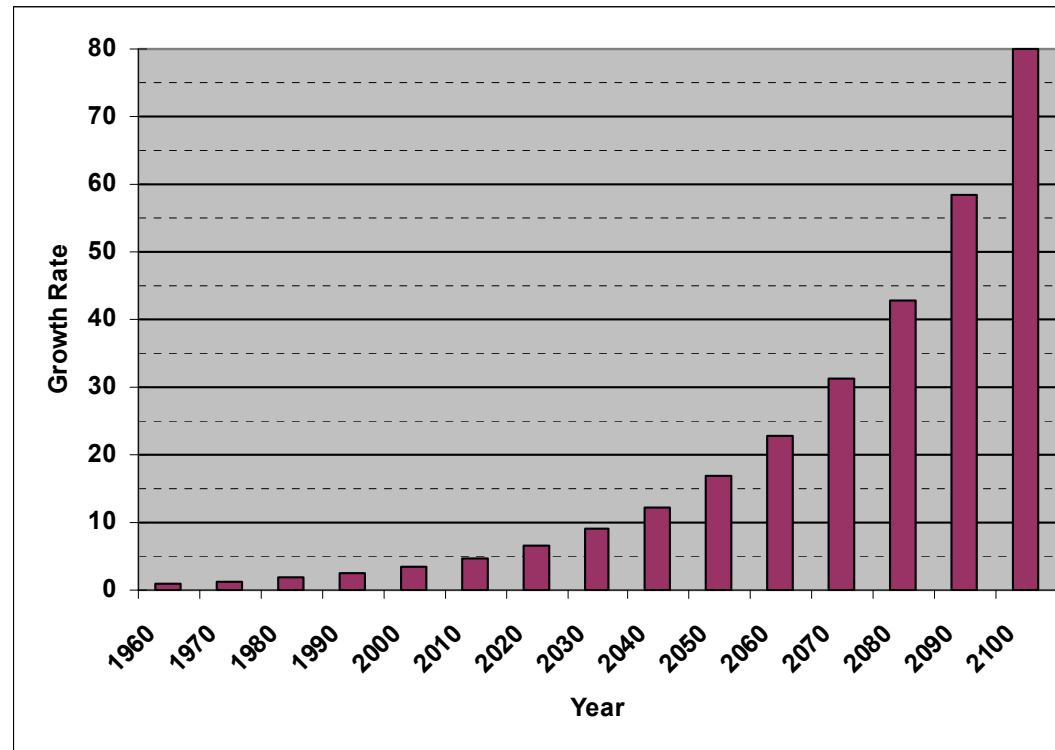


# GDP Growth- *Effects of compounded growth*



Average annual global GDP growth since 1960 was 3.2%, making it almost five times larger than it was 50 years ago.

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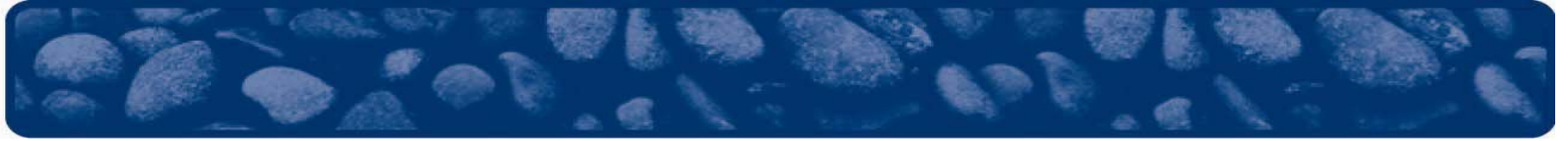
Average annual global GDP growth since 1960 was 3.2%, making it almost five times larger than it was 50 years ago.

At the **same growth rate** the economy would have to be **80x larger by 2100**.



# Why Haven't We Responded

- There is a disconnect with Nature
  - Many are isolated from nature and its effects
  - Consequently “saving the planet” isn't getting through
- Psychological
  - Processing “bad news”:
    - *denial*
    - *anger*
    - *despair*
    - *acceptance*
  - Human nature seems to be to wait until a crisis is immediate and life threatening
- Economic Growth Model
  - Widely accepted due to its past success
  - Is it ultimately sustainable on a planet with finite resources?



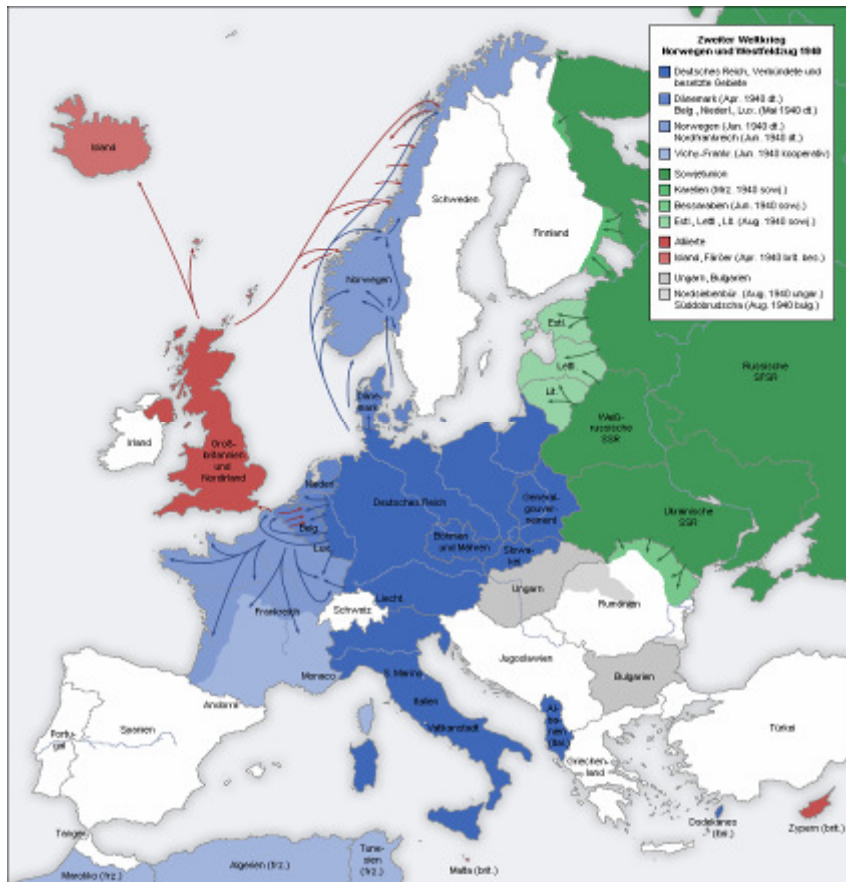
*“We are about to witness humanity deal with its biggest crisis ever, something that will shake it to the core – the end of economic growth.”*

- Paul Gilding, **The Great Disruption**

# “The Great Disruption”

- Is there hope?
  - We can adjust quickly when a crisis is imminent and life threatening. WWII is a good example.
  - We already have answers on how to resolve this crisis
- Response
  - Major difference is that this will not focus on saving things as they are but making things better

# Will We Respond?

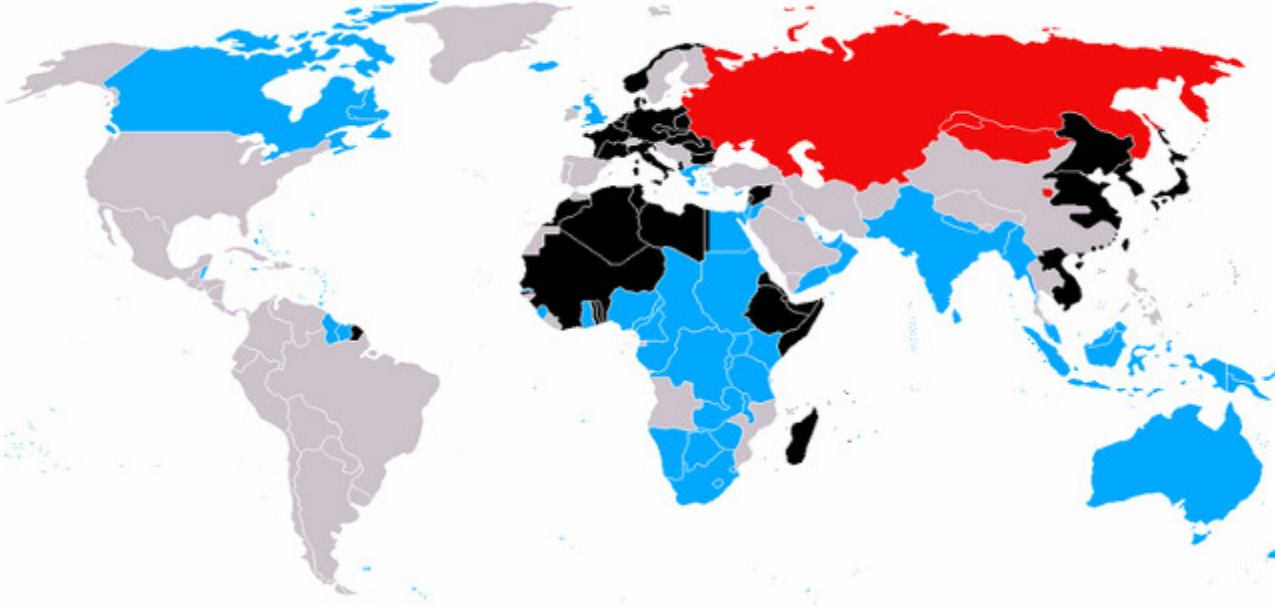


May 1940

## WWII Timeline

- 1925 – 35: Mussolini seizes power in Italy, invades Ethiopia
- 1931 – 37: Japan invades Manchuria and other parts of China
- 1933 – 38: Hitler becomes German Chancellor, repudiates Treaty of Versailles and begins massive rearmament program.
- 1936 – 39: Spanish Civil War used to test new war concepts
- Sept 1939: Poland invaded. Britain & France declare war
- Spring 1940: Axis powers control most of continental Europe. Downfall of Britain seems imminent

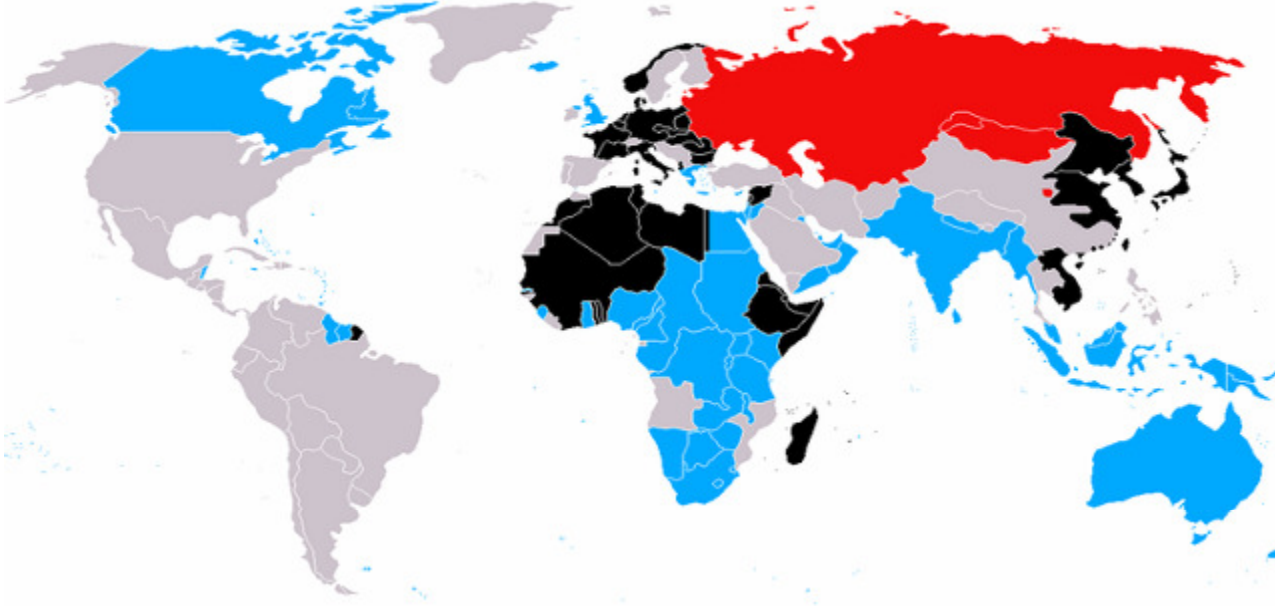
# World War II – *U.S. Situation*



- Overwhelming Isolationist Sentiment
  - Wanted to avoid participating in another European war
  - Felt that U.S. would be protected by its oceans
  - Congress passed series of Neutrality Acts in 1930's



# World War II – *U.S. Situation*



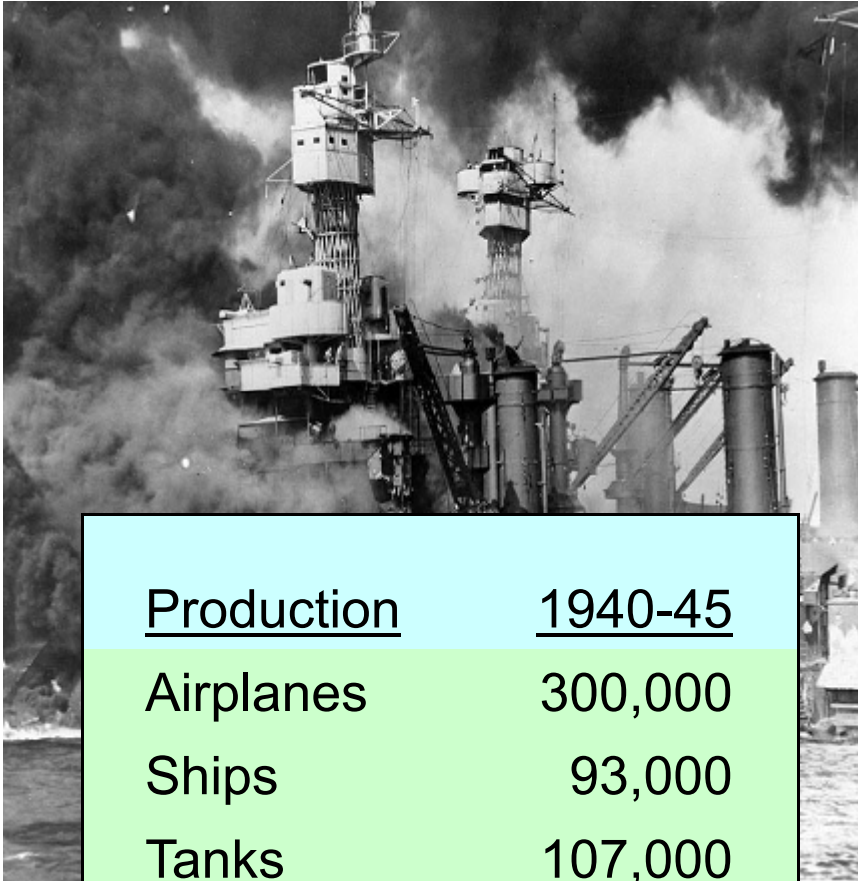
- Overwhelming Isolationist Sentiment
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  - Congress passed series of Neutrality Acts in 1930's
- U.S. Situation in Spring 1940
  - 18<sup>th</sup> largest Army, smaller than Belgium & Switzerland
  - No munitions industry
  - 17% unemployment
  - Situation in Britain looked hopeless

# World War II – U.S. Response



- Four days after Pearl Harbor auto industry was ordered to stop production of civilian vehicles
- Rationing of gasoline, tires and meat
- Public recycling drives to obtain metals.
- Defense spending increased from 1.6% of GDP in 1940 to 37% by 1945
- 15 million men and women served in the armed forces

# World War II – U.S. Response



<u>Production</u>	<u>1940-45</u>
Airplanes	300,000
Ships	93,000
Tanks	107,000
Trucks	2,000,000

- Four days after Pearl Harbor auto industry was ordered to stop production of civilian vehicles
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**Arab Spring**

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**Pearl Harbor?**



**Fall of the Berlin Wall**



**Arab Spring**



**Civil Rights Movement**

# Goal: *Sustainable Triple Bottom Line*

- **Ecological**

- Zero net CO<sub>2</sub>e with elimination of fossil fuel as primary energy source
- Zero waste - closed loop material flows
- Zero persistent toxics
- Zero loss of biodiversity and natural systems

- **Social**

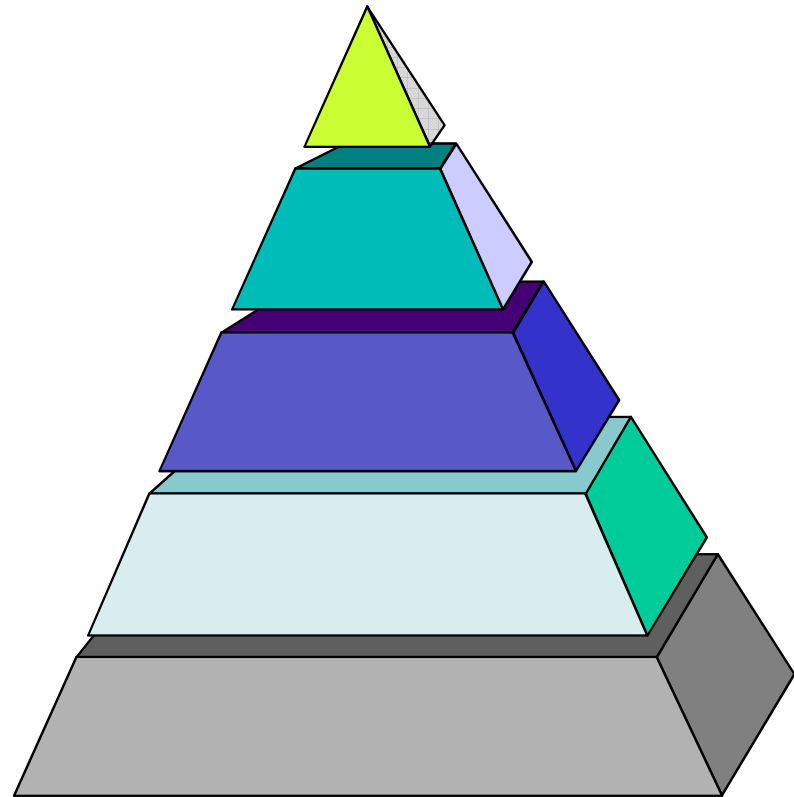
- Meet full human needs in Maslow's Hierarchy

- **Economic**



# Social Sustainability: *Meeting Human Needs*

- Personal Fulfillment
  - *Inherent personal potential, full creativity*
- Esteem
  - *Mastery, recognition, status*
- Social
  - *Sense of belonging, acceptance*
- Safety
  - *Security, stability*
- Physiological
  - *Food, shelter*



**Maslow's Hierarchy**

# Goal: *Sustainable Triple Bottom Line*

- **Ecological**
  - Zero net CO<sup>2</sup>e
  - Zero waste - closed loop material flows
  - Zero persistent toxics
  - Zero loss of biodiversity and natural systems
- **Social**
  - Meet full human needs in Maslow's Hierarchy
- **Economic**
  - *Steady state economy*



# Steady State Economy

- Elements:
  - Isn't "no-growth" but growth to maturation
  - Will vary by region
  - Elimination of poverty
  - Less resource consumption by mature economies.
- Benefit can be more focus on non-economic qualities of life
  - Time with family, community, self, etc.
- Need new indicators for Quality of Life

# Quality of Life

- Alternative indicators: *UN Human Development Index, Gross National Well-Being, Genuine Progress Indicator*
- Australia, Canada, China, France, and UK are all coming up with indices.
- U.S. Health Care bill created a bipartisan “Commission on Key National Indicators”
- North American focus is on *Genuine Progress Indicator*
  - Currently used by Alberta, Nova Scotia, Maryland and Vermont
  - Being studied by Arizona, Hawaii, Minnesota, New Jersey, Oregon and Virginia

# Genuine Progress Indicator

**Gross Domestic Product (GDP) = *Gross Revenue***

- + Non-monetized work (volunteer, housework, etc)
- + Social Capital (education, good infrastructure, etc.)
- + Nature's services
- ~ Wealth disparity

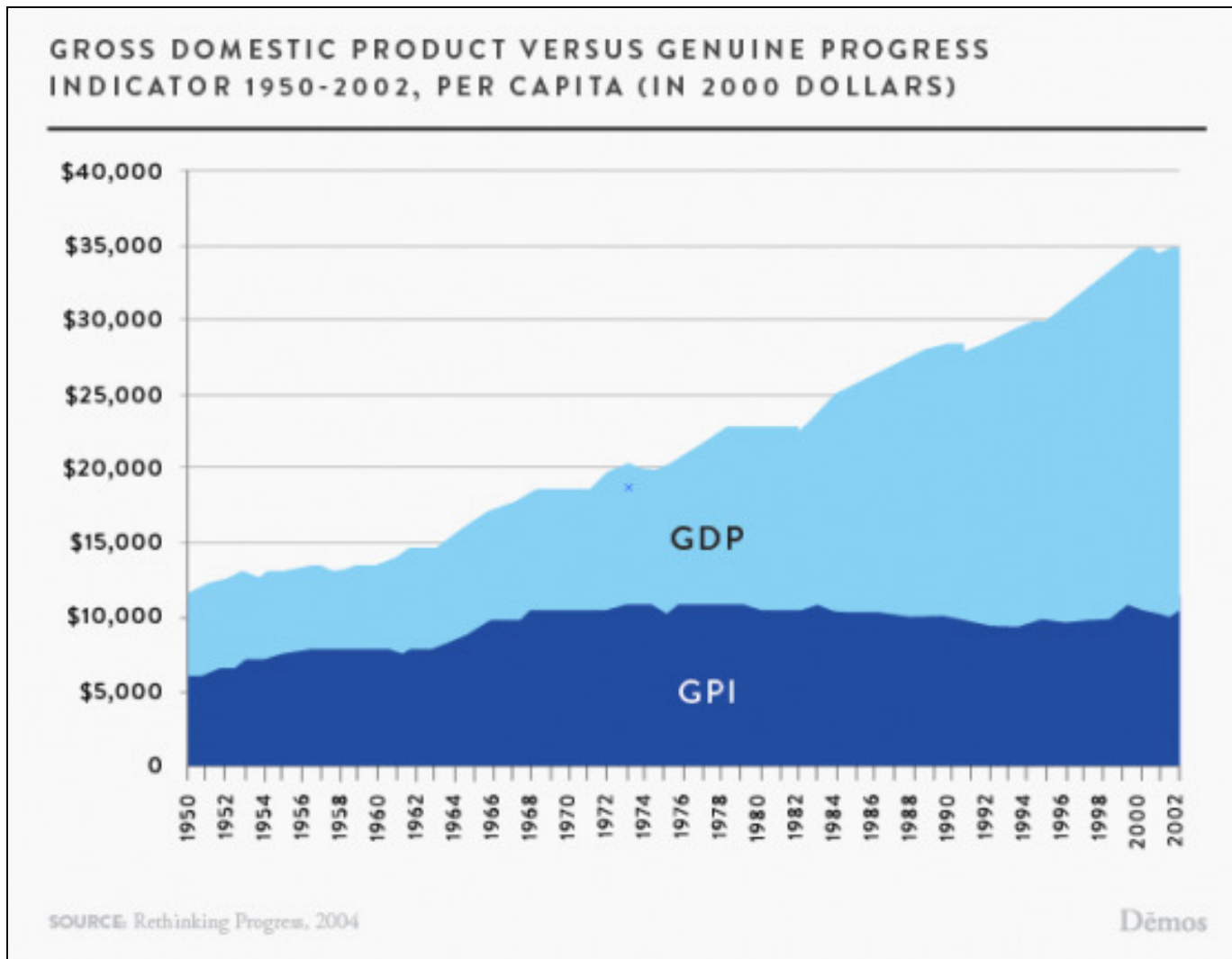
**= *Adjusted Revenue***

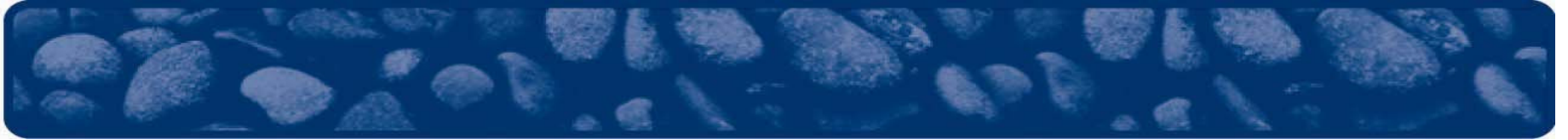
## **Costs**

- Economic (under employment)
- Social (crime, car crashes, etc.)
- Environmental (pollution, climate change, etc.)

**Genuine Progress Indicator = Adjusted Revenue - Costs**    ***“Triple Bottom Line”***

# GDP vs. Genuine Progress Indicator





## Questions

- How do we prepare for this transition?
- What role does government play?