

THE FUTURE AHEAD WINNEMUCCA



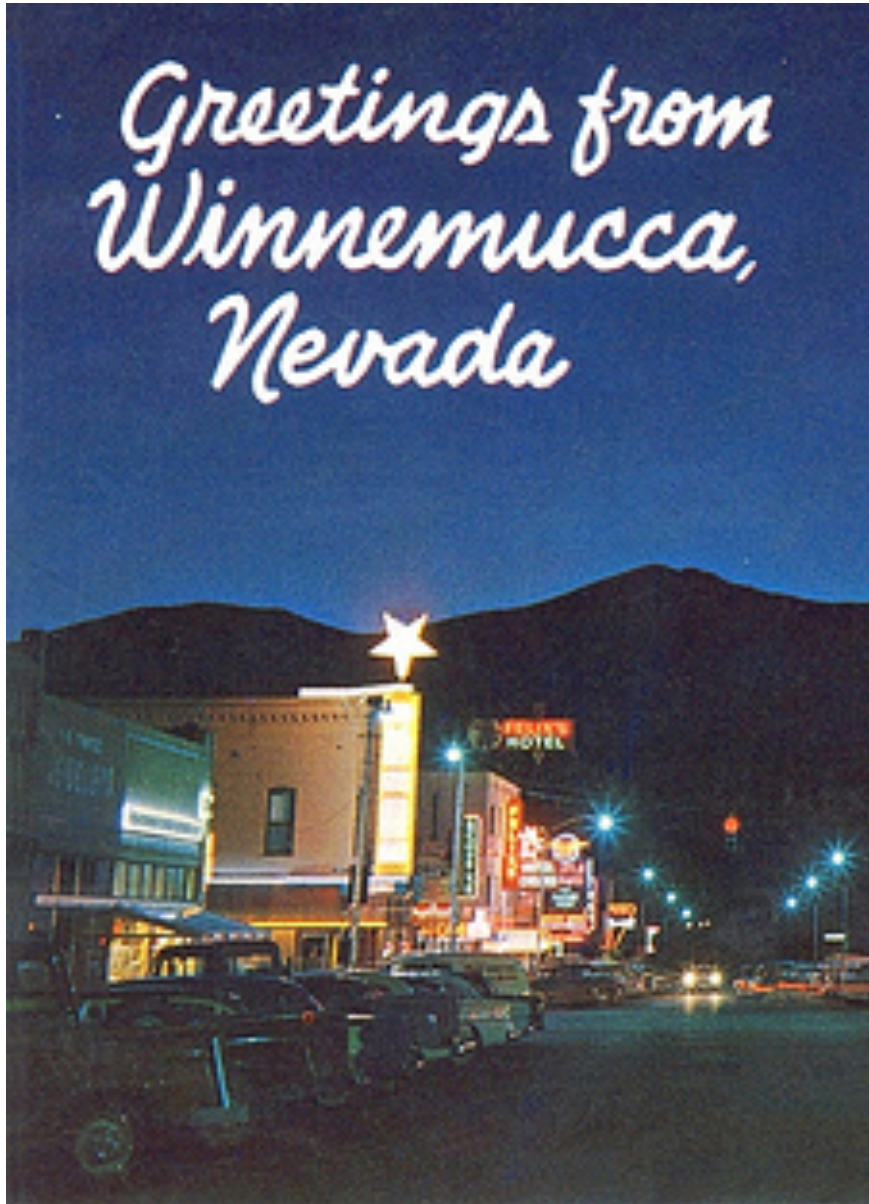
DAVID BEURLE & JULIET FOX



**INNOVATIVE
LEADERSHIP**

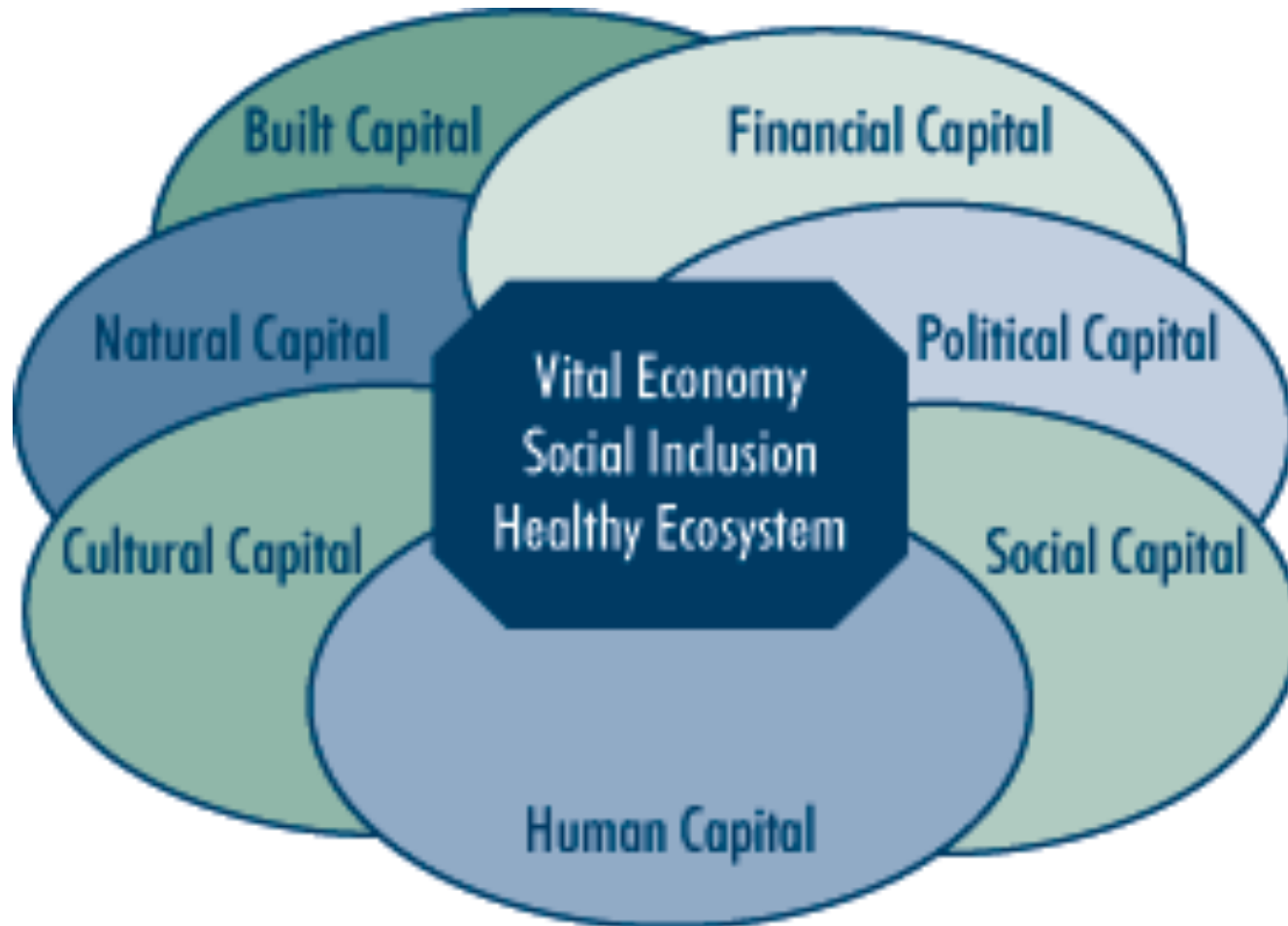
A U S T R A L I A • U S A

WINNEMUCCA FUTURES PROJECT



- › SCENARIO PLANNING
- › COMMUNITY ENGAGEMENT
- › PRIORITY ACTIONS
- › STRATEGIC PLAN

WHY ARE YOU HERE?

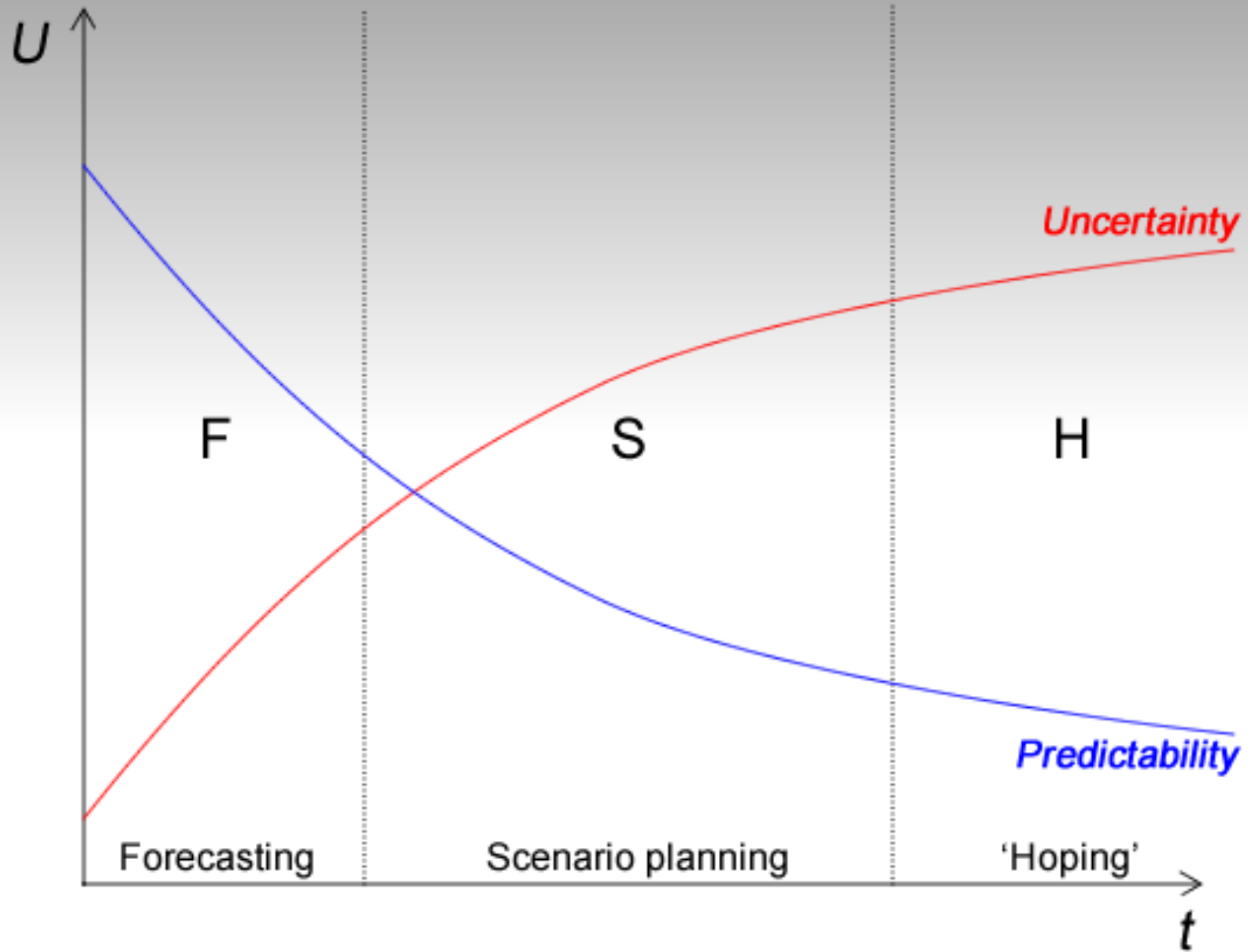


WHAT IS SCENARIO PLANNING?

A tool best used to embrace an uncertain future

Explores a range of plausible futures

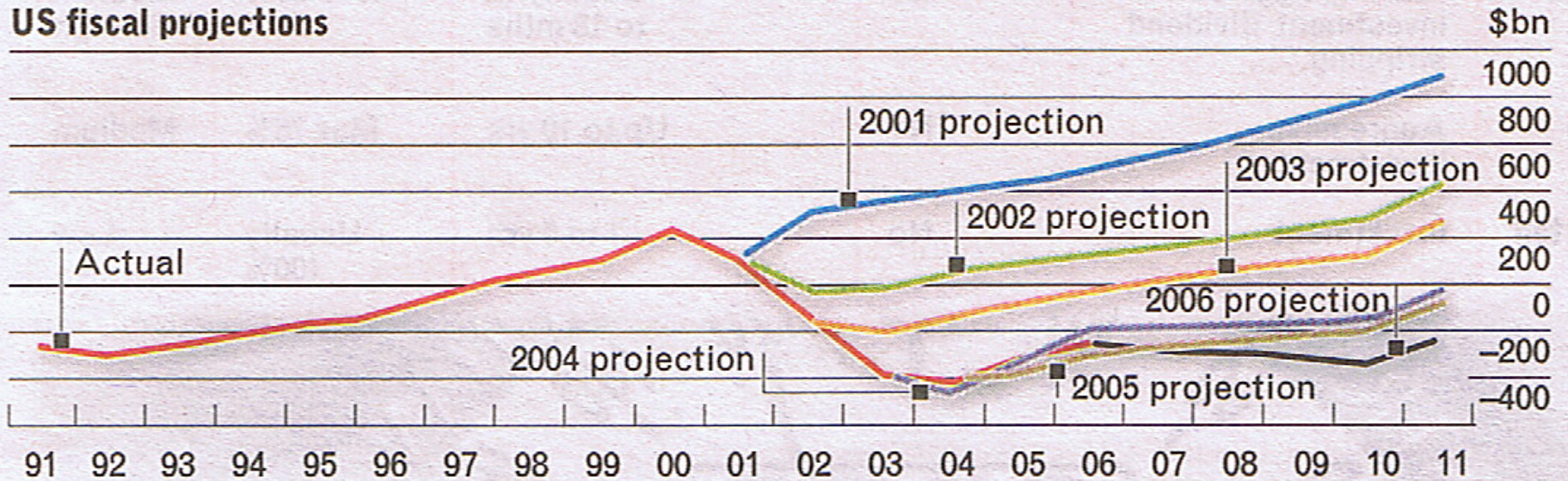
Allows for the consideration of complex and interrelated forces



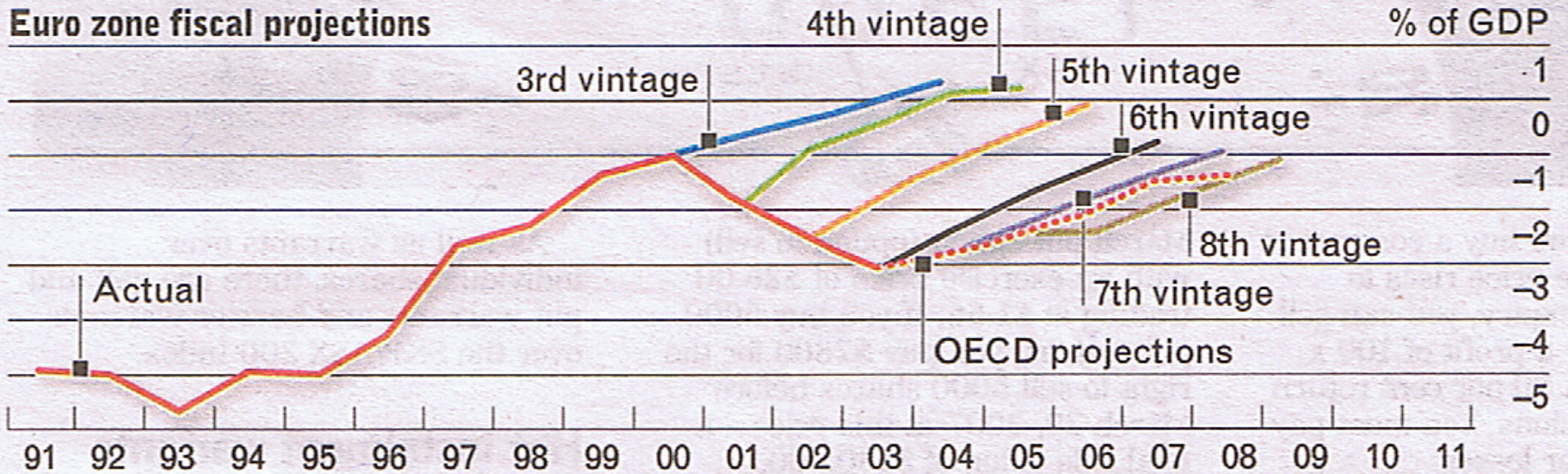
By Brett Kromkamp - Adapted from K. van der Heijden

STRATEGIC PLANNING OPTIMISTIC LINEAR PROJECTIONS

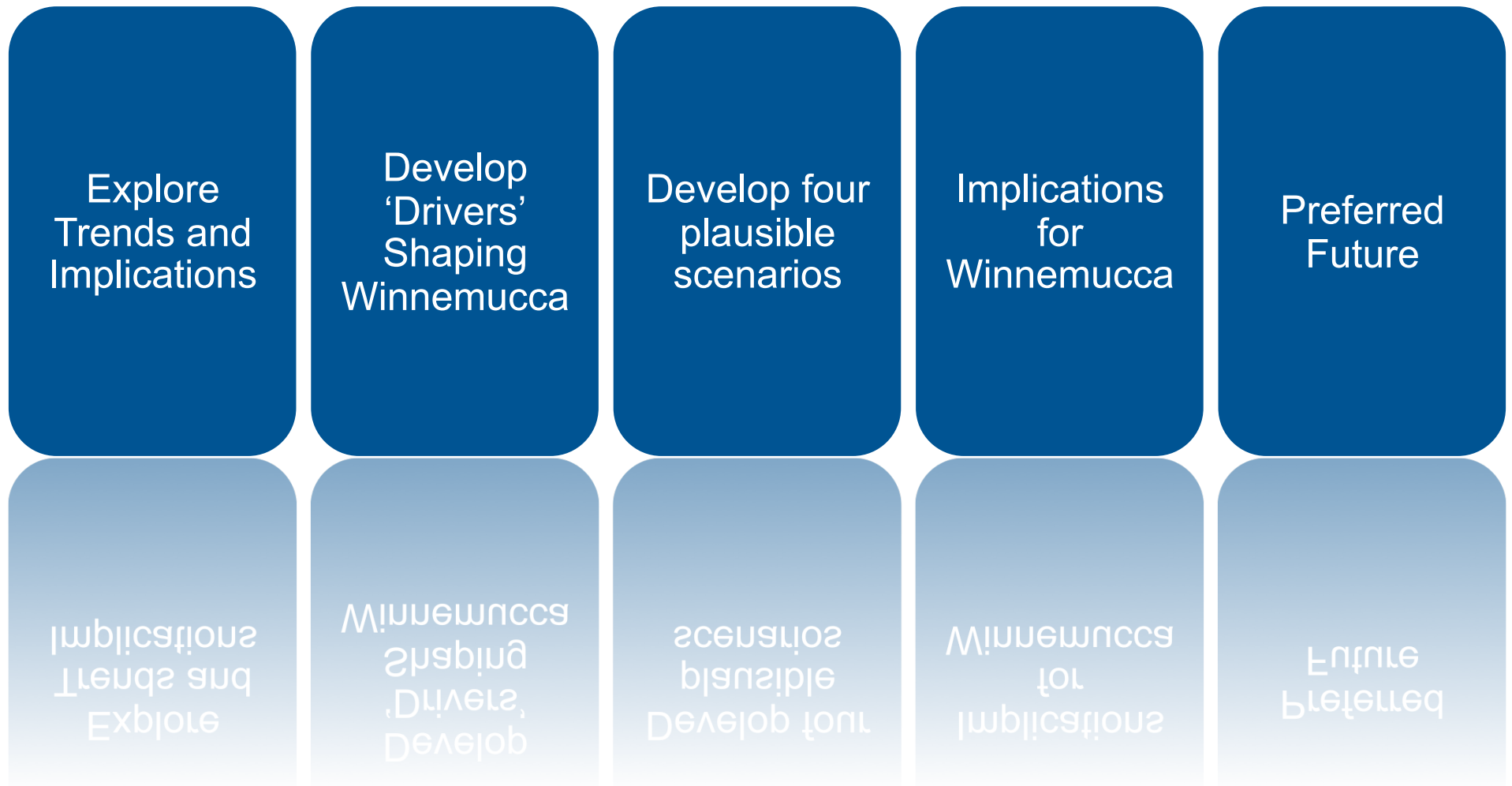
US fiscal projections



Euro zone fiscal projections



SCENARIO DEVELOPMENT





**FORCES
IMPACTING THE
WORLD**

**WHAT ARE THE
EMERGING
MACRO
DRIVERS..**

MACRO TRENDS AND FORCES OF CHANGE RELATED TO . . .

- **Global power and wealth**
- **Growth in Asia**
- **Energy**
- **Climate change**
- **Water**
- **Food security**
- **Technology**



The major nations of the developed world (North America, Japan, western Europe) have 15% of the total global population and 80% of the wealth.

This gap between the developed and developing world will be bridged within the next 20 years.

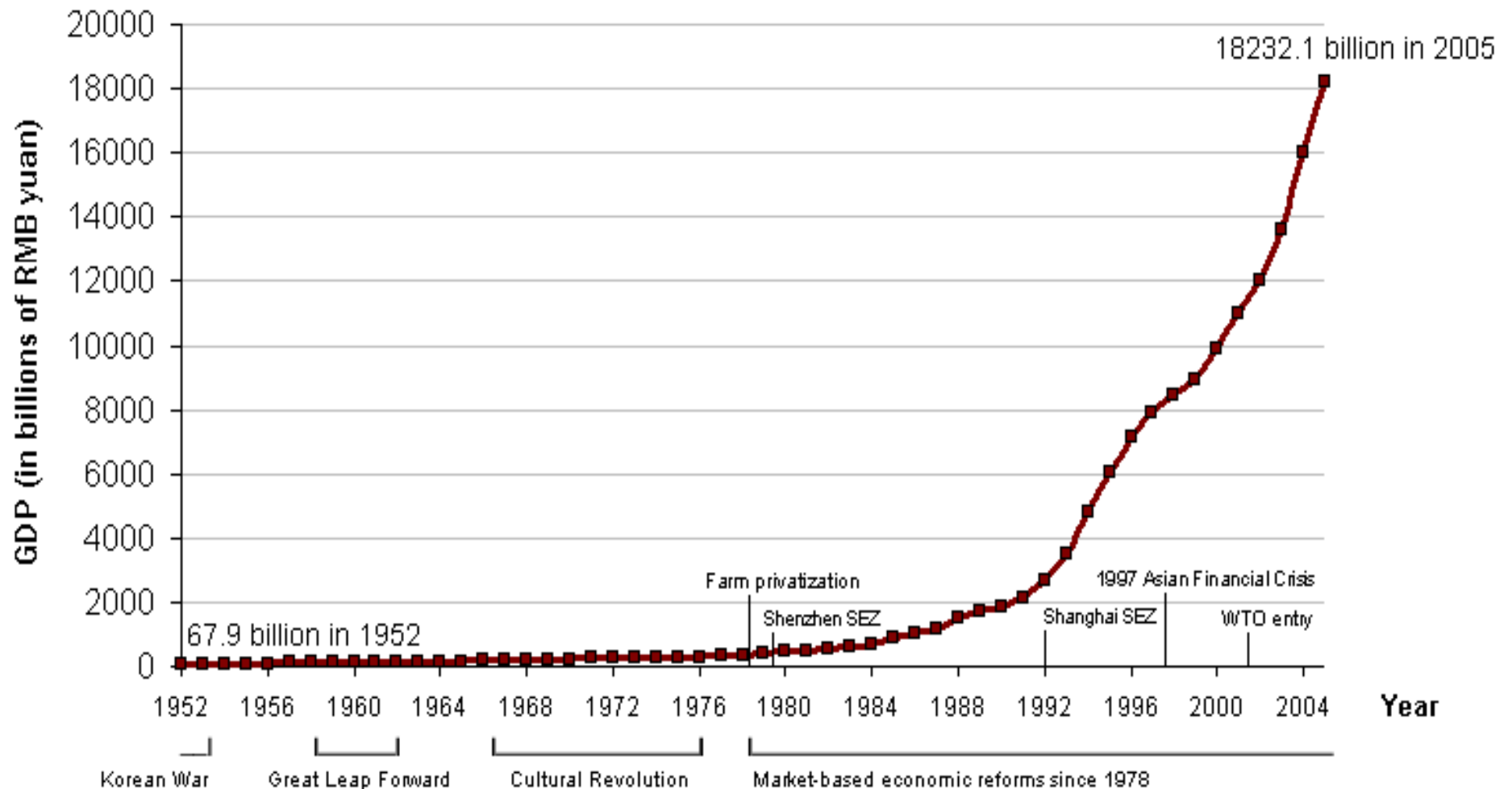


ECONOMIC POWER IS SHIFTING AND DIFFUSING

China's growth appears certain to continue at about 7-9% per year, and India's at about 5-7% per year.

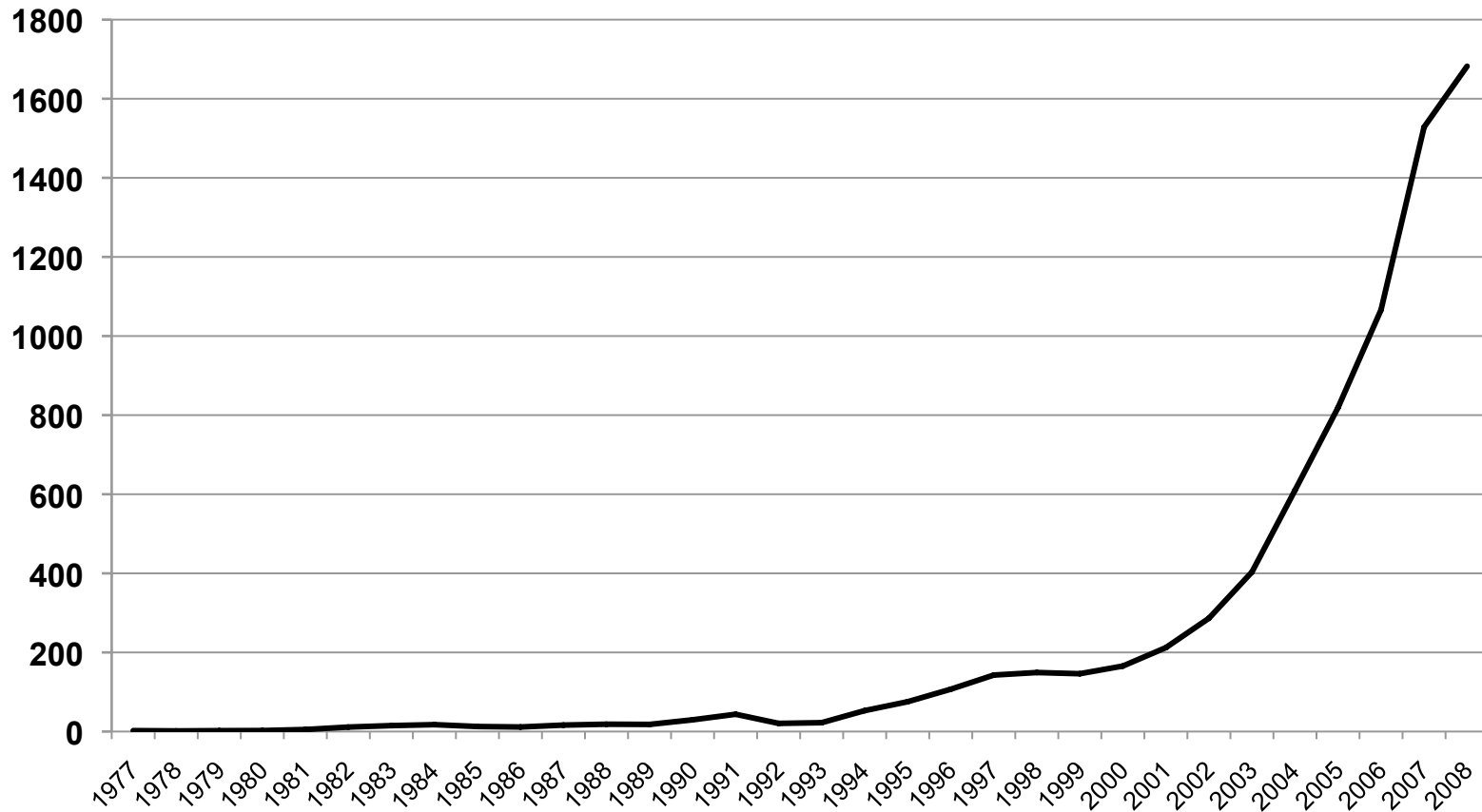
Global political and financial architecture will have to change to take account of this.

People's Republic of China's Nominal Gross Domestic Product (GDP) Between 1952 to 2005



Source: State Administration of Foreign Exchange, People's Republic of China

China Foreign Exchange Reserves 1977-2008 in \$US Billions

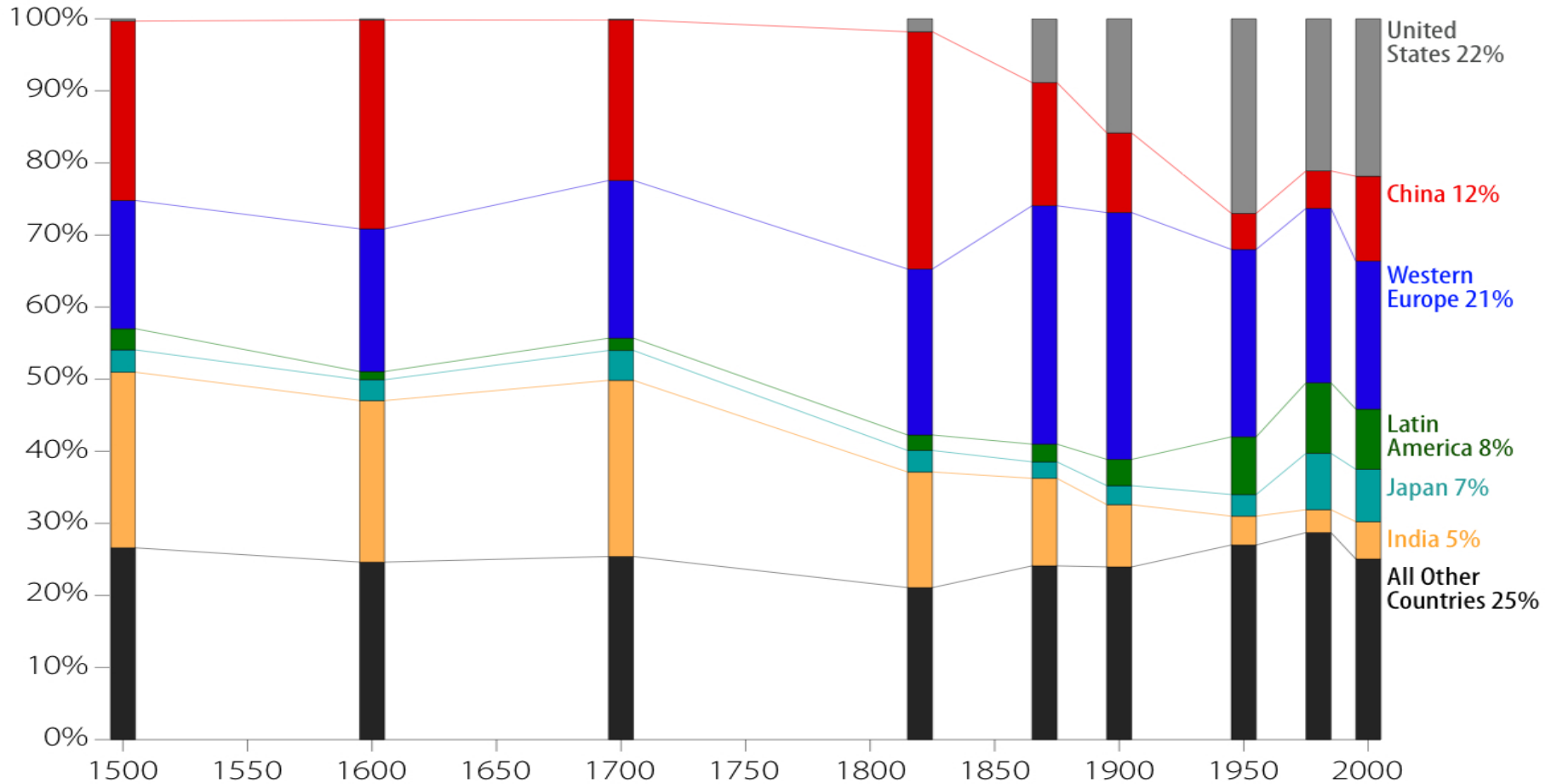


Source: State Administration of Foreign Exchange, People's Republic of China



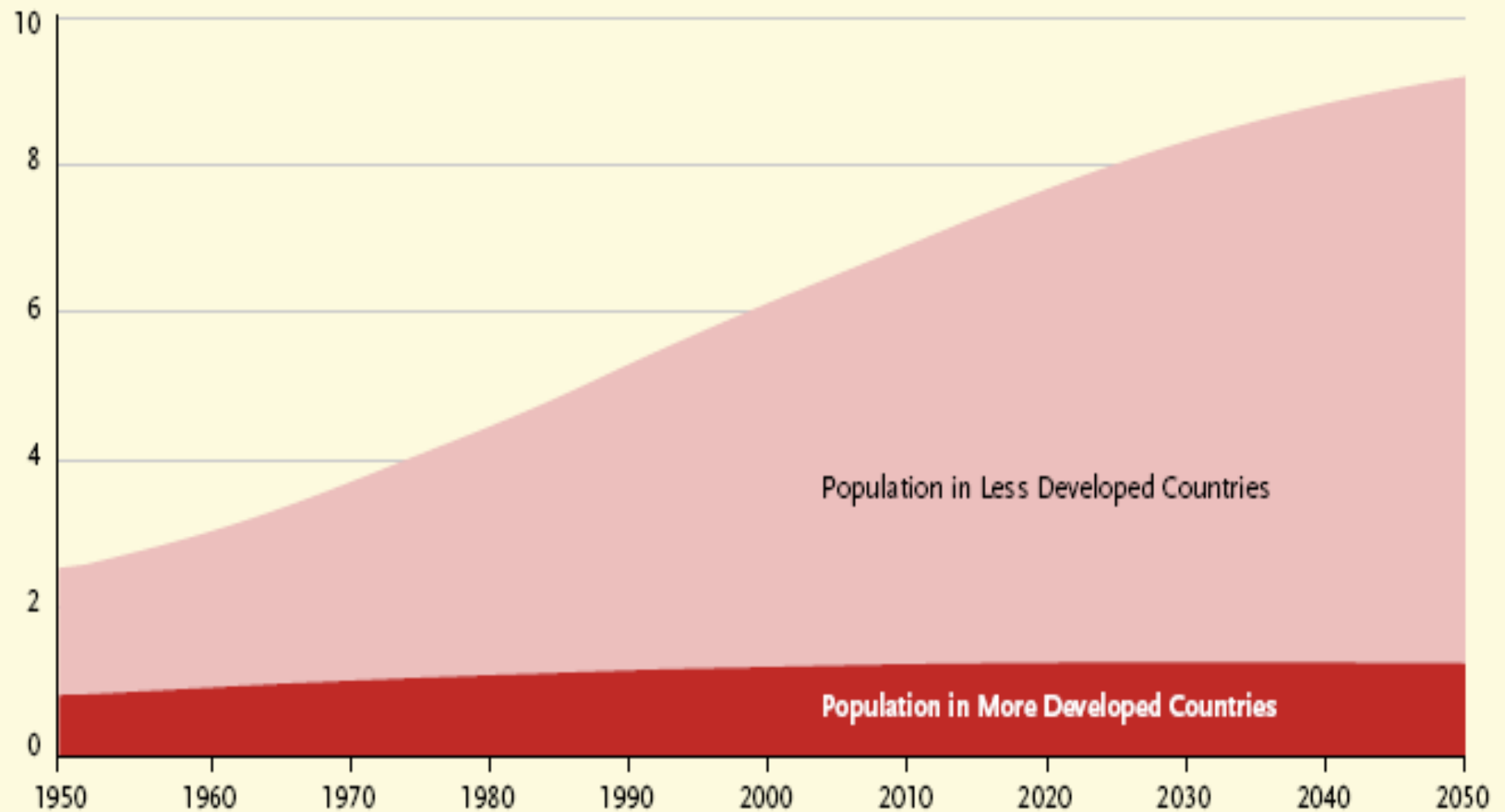
Percentage of World GDP (last 500 years)

China, India, Japan, Latin America, Western Europe, and United States



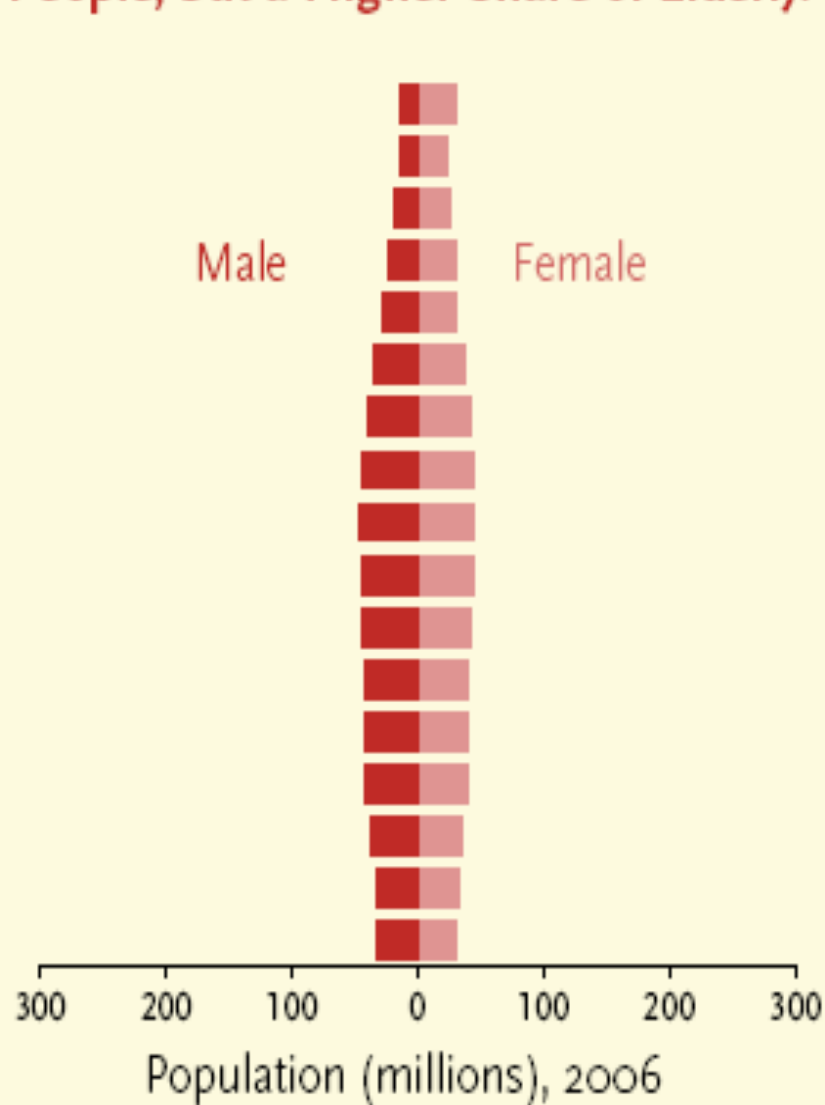
Global Population Growth Is Driven By Developing Countries.

World population in billions, 1950-2050 (projected)

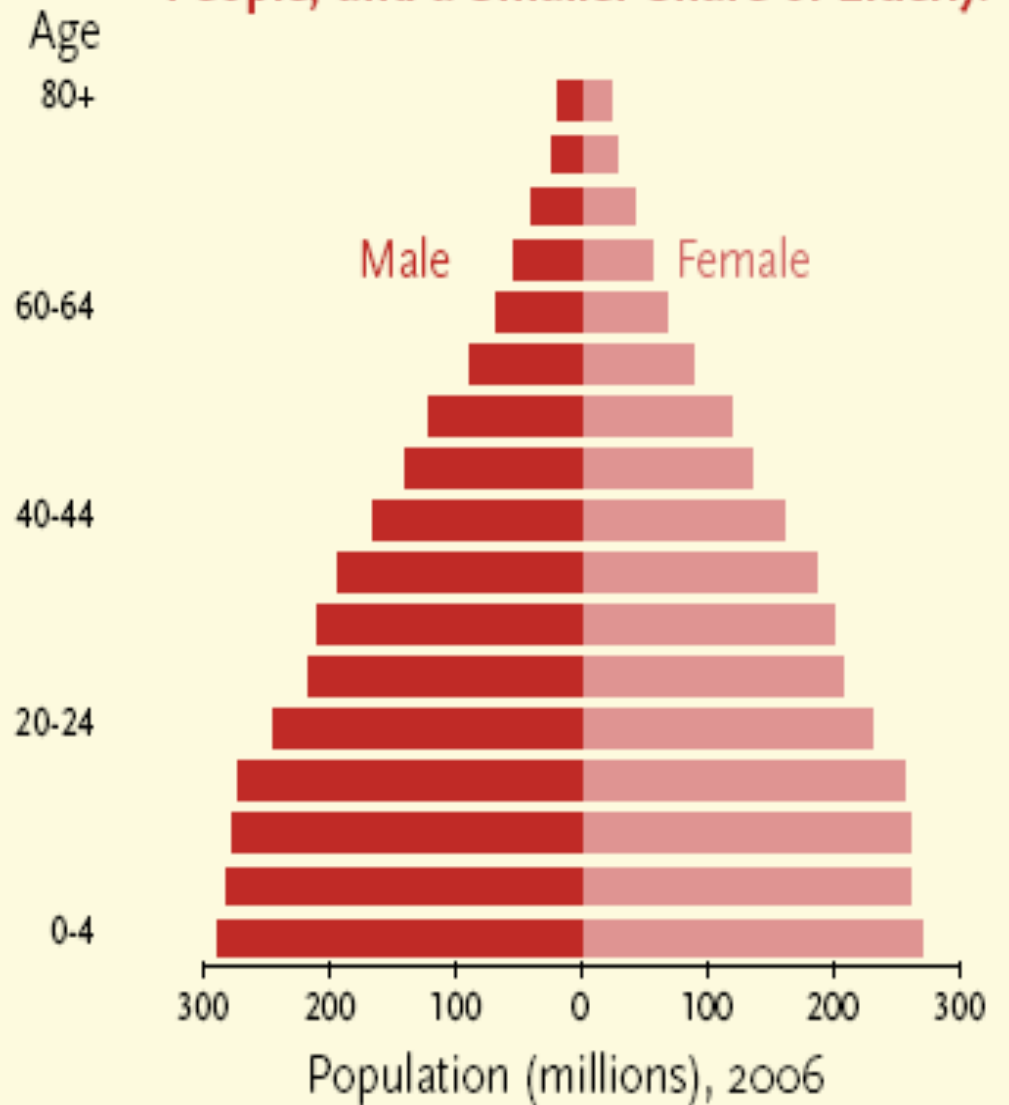


SOURCE: United Nations, *World Population Prospects: The 2006 Revision* (2007).

Developed Countries Have Fewer Young People, but a Higher Share of Elderly.



Developing Countries Have More Young People, and a Smaller Share of Elderly.



SOURCE: United Nations, *World Population Prospects: The 2006 Revision* (2007).

**Within 10 years,
India's working
population will have
increased by 250
million – to over 870
million people.**



**In the next 20 years,
half of all the new
buildings in the world
will be built in China.**



- › WE HAVE BEEN THROUGH ONE OF THE MAJOR FINANCIAL MELTDOWN'S IN HISTORY.....
- › IT HAS LEFT HUGE GOVERNMENT AND INSTITUTIONAL DEBTS AND A WEAKENED EURO AND \$US.....
- › SIGNIFICANT PROPERTY BUBBLES HAVE BURST IN USA, UK, IRELAND AND ELSEWHERE.....
- › IT IS NOT OVER YET.

WHAT DO THESE MAJOR
GLOBAL TRENDS AND
EVENTS IN THE ECONOMY
AND GLOBAL POPULATION
MEAN FOR WINNEMUCCA?

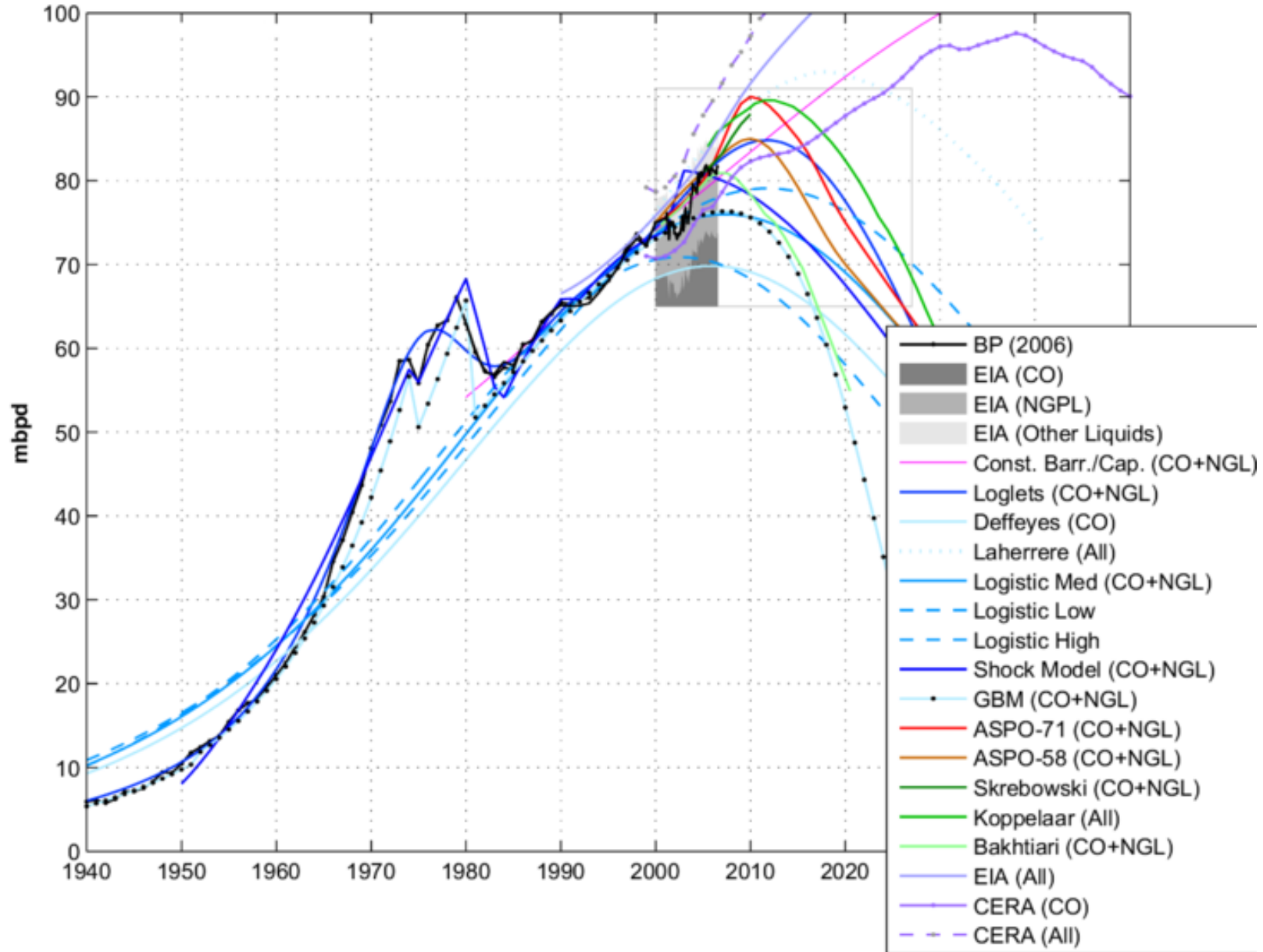
ENERGY

- **At present 2.5 billion people rely on burning wood and animal dung as their chief source of energy**
- **1.6 billion people have no electricity of any kind.**

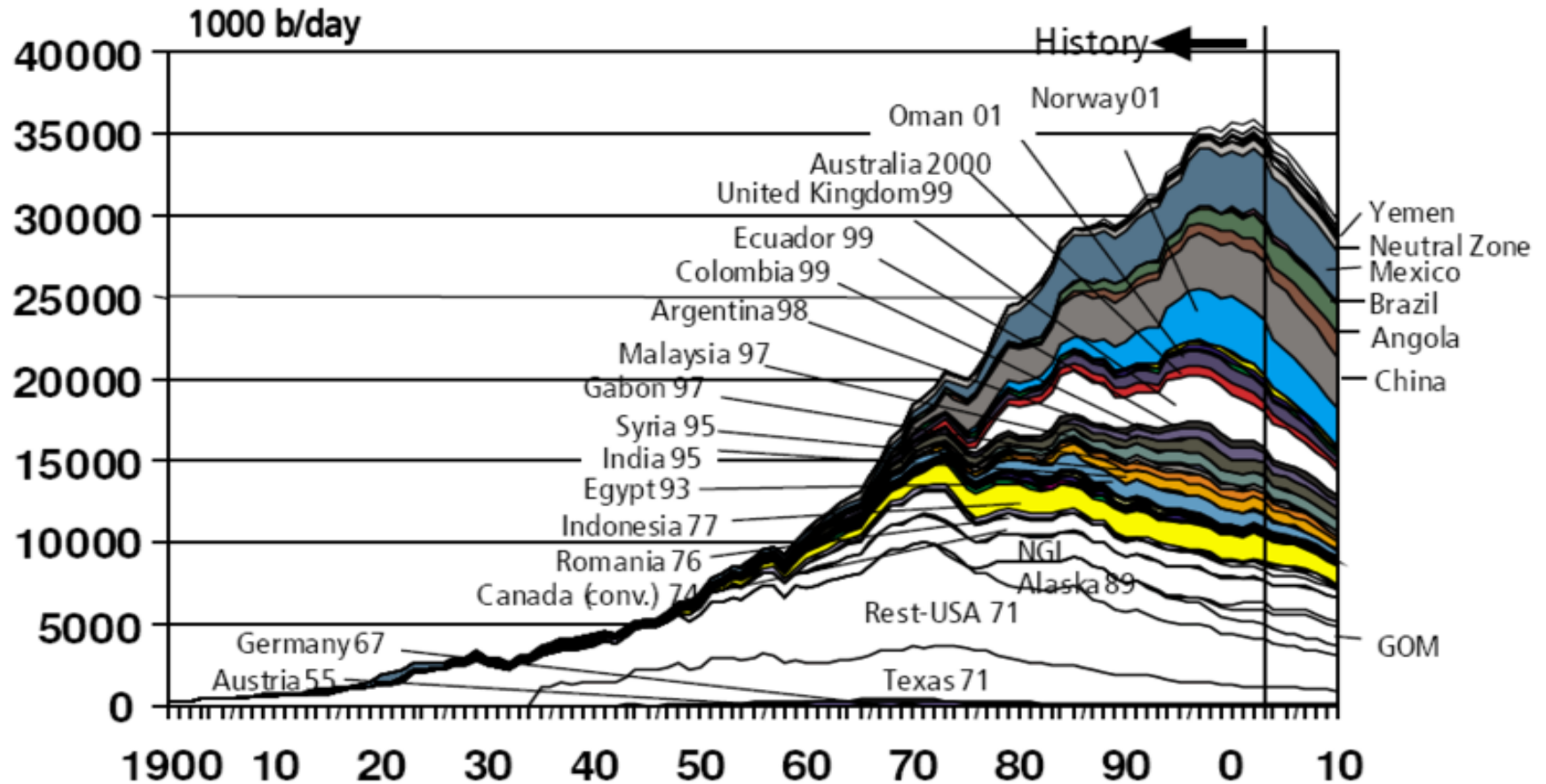
ENERGY - OIL

- **Global energy consumption is equivalent to 230 million barrels of oil per day, 80% from fossil fuels.**
- **By 2030, energy consumption will have increased by 50% - of which 80% will still come from fossil fuels.**
- **'Peak oil' is thought to have occurred / is occurring.**

World Production



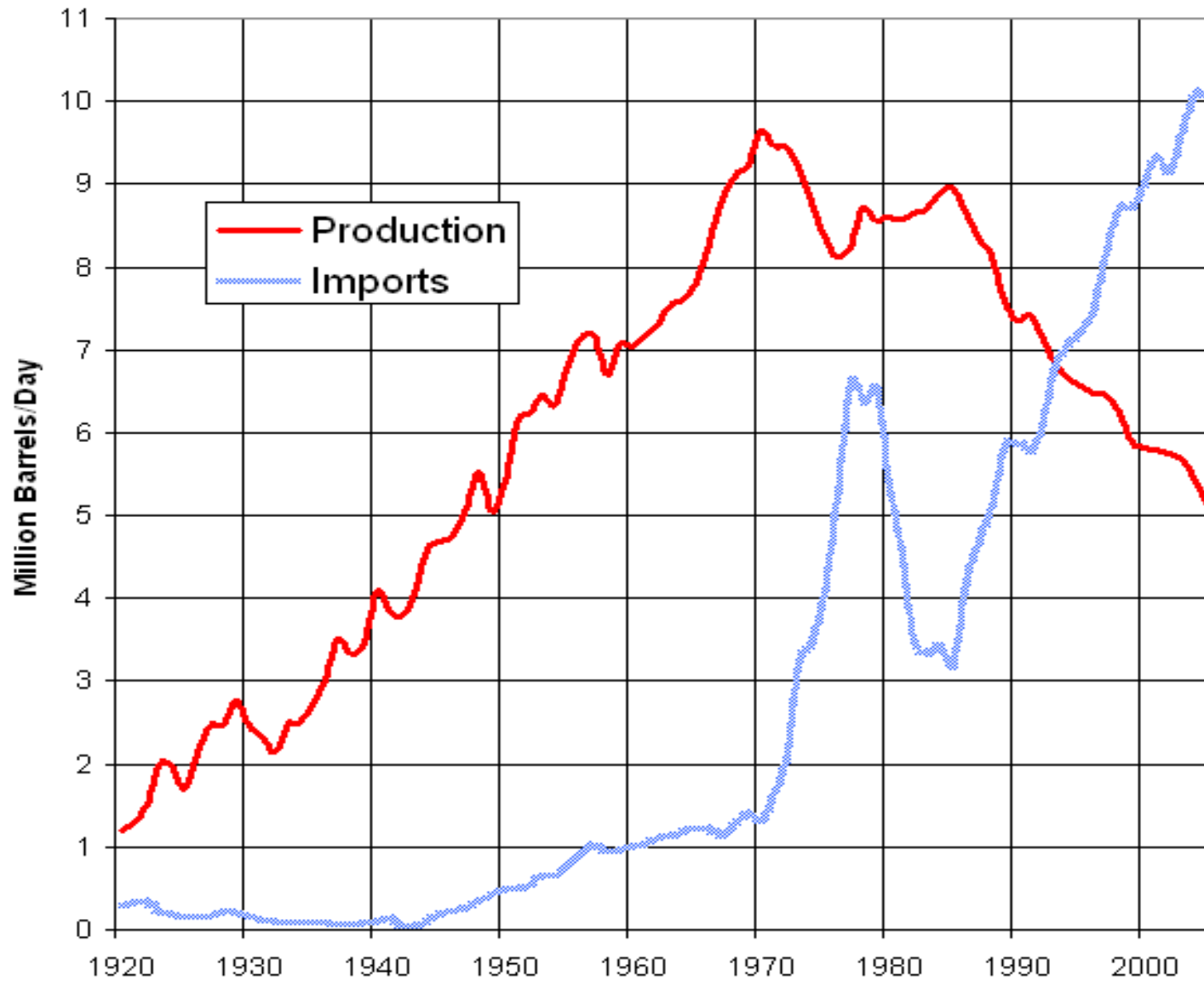
'Peak Oil' by County



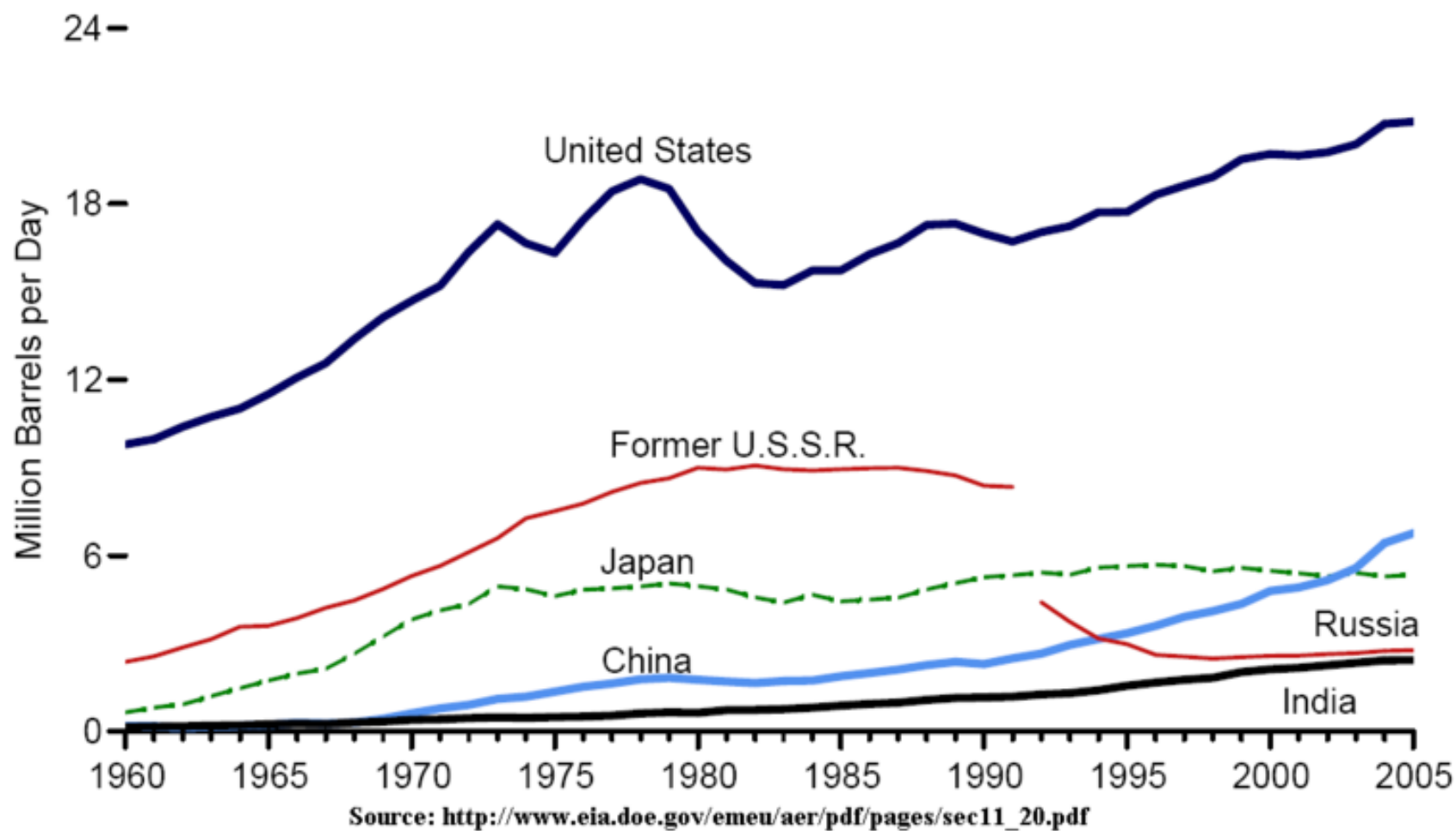
Source: Industry database, 2003 (IHS 2003)
 OGI, 9 Feb 2004 (Jan-Nov 2003)

Iraq: 2018; Kuwait: 2013; Saudi Arabia: 2014

US Oil Production and Imports



Top Consuming Countries, 1960-2005



Top Oil Consuming Countries 1960 -2005

THE HIRSCH REPORT - 2005

“The peaking of world oil production presents the world with an unprecedented risk management problem. As peaking is approached, liquid fuel prices and price volatility will increase dramatically, and without timely mitigation, the economic, social and political costs will be unprecedented”

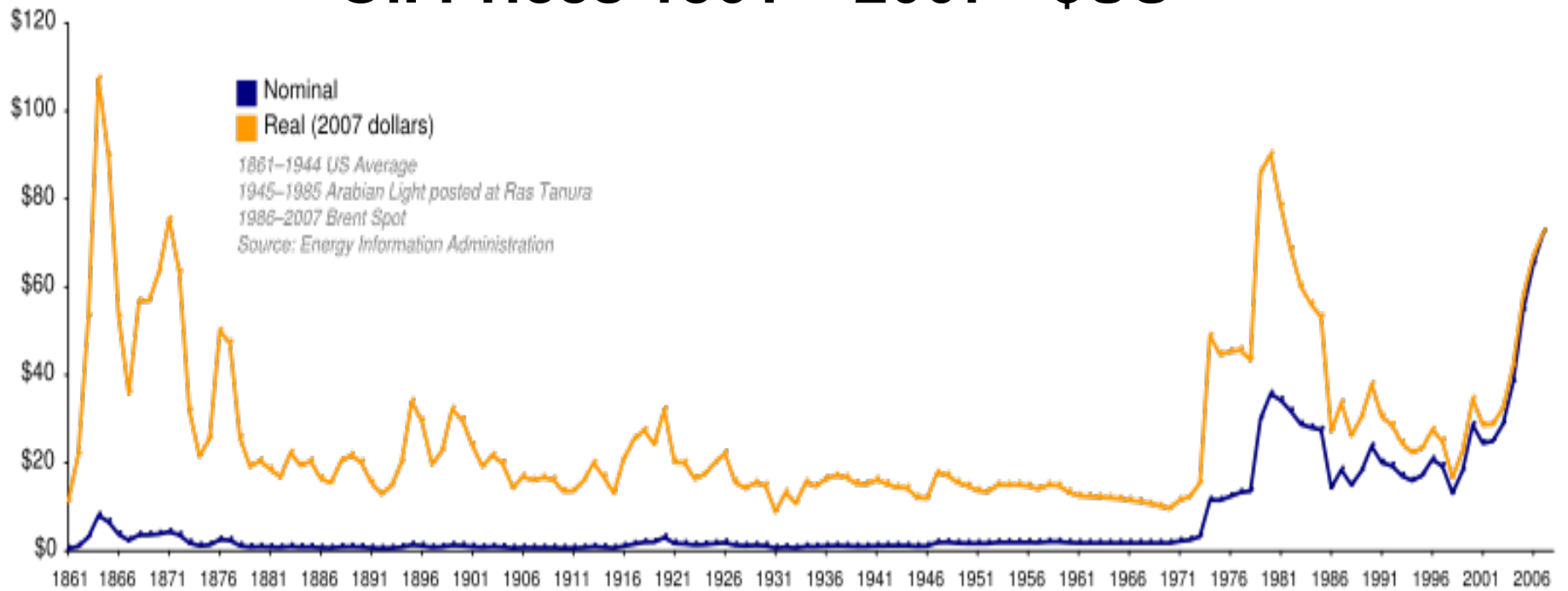
2005 US Department of Energy – *“Peaking of World Oil Production: Impacts, Mitigation and Risk management”*

CONCLUSIONS - THE HIRSCH REPORT

- World oil peaking is going to happen and is likely to be abrupt;
- Will adversely affect global economy and those most dependent on oil;
- The problem is liquid fuels (transport);
- Mitigation efforts will require substantial time;
- Economic upheaval is not inevitable – given enough lead time.

2005 US Department of Energy – *“Peaking of World Oil Production: Impacts, Mitigation and Risk management”*

Oil Prices 1861 – 2007 - \$US



THREE POSSIBLE SCENARIOS - THE HIRSCH REPORT

- 1** **Waiting until world oil production ‘peaks’ before taking crash program - action leaves the world with a significant deficit for more than 2 decades**
- 2** **Initiating a mitigation crash program 10 years before world oil peaking helps considerably but still leaves a liquid fuels shortfall roughly a decade after the time that oil would have peaked;**
- 3** **Initiating a mitigation program 20 years before peaking appears to offer the possibility of avoiding a world liquid fuels shortfall for the forecast period.**

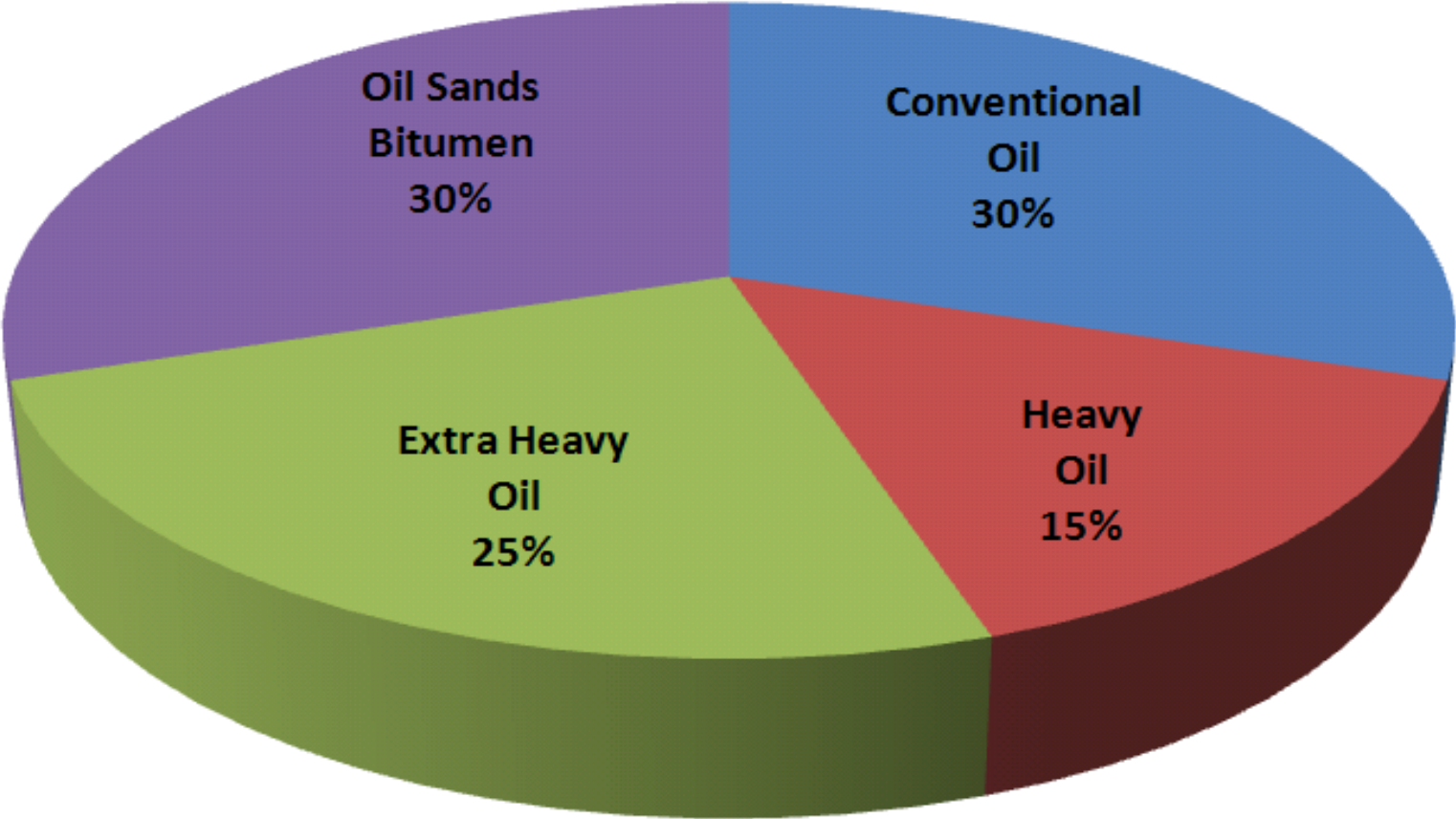
2005 US Department of Energy – *“Peaking of World Oil Production: Impacts, Mitigation and Risk management”*

IMPLICATIONS OF PEAK OIL

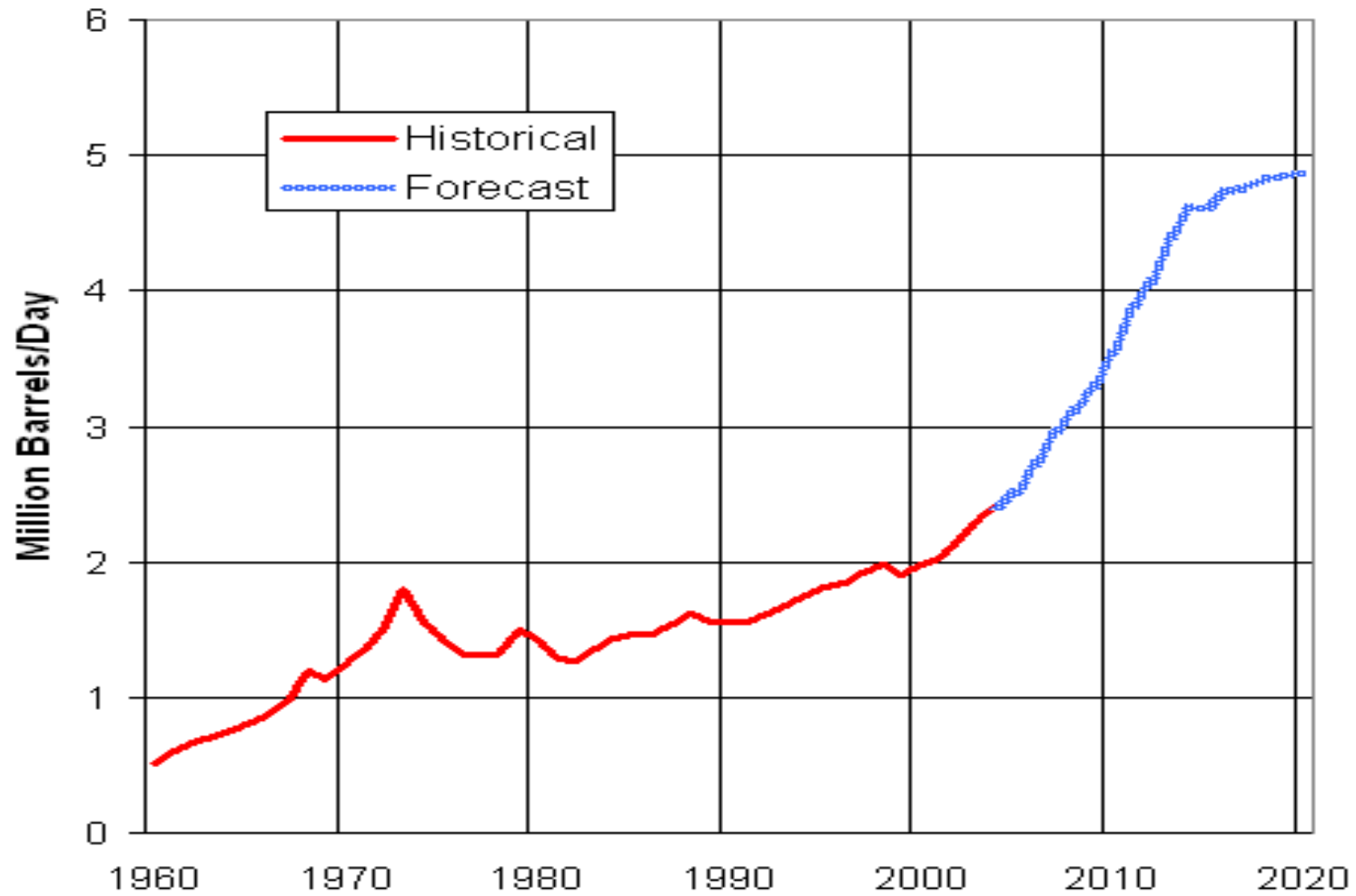
- **Impact on agricultural production** – modern agriculture and food production systems heavily dependent on petro-chemicals and fuel.
- **Price of food** – 80% of cost of food is energy related; impact on existing ‘food system’ – possibly drive a return to ‘local food’; inflationary effect.
- **Food vs. Fuel** – social and economic implications for poorer nations – spike in food prices; shortages.
- **Housing** and urban patterns – suburbs ‘unviable’
- **Transport** costs and patterns – dramatic changes

2005 US Department of Energy – *“Peaking of World Oil Production: Impacts, Mitigation and Risk management”*

Total World Oil Reserves



Canadian Oil Production



Non-Conventional Oil Sources – potentially boosts production

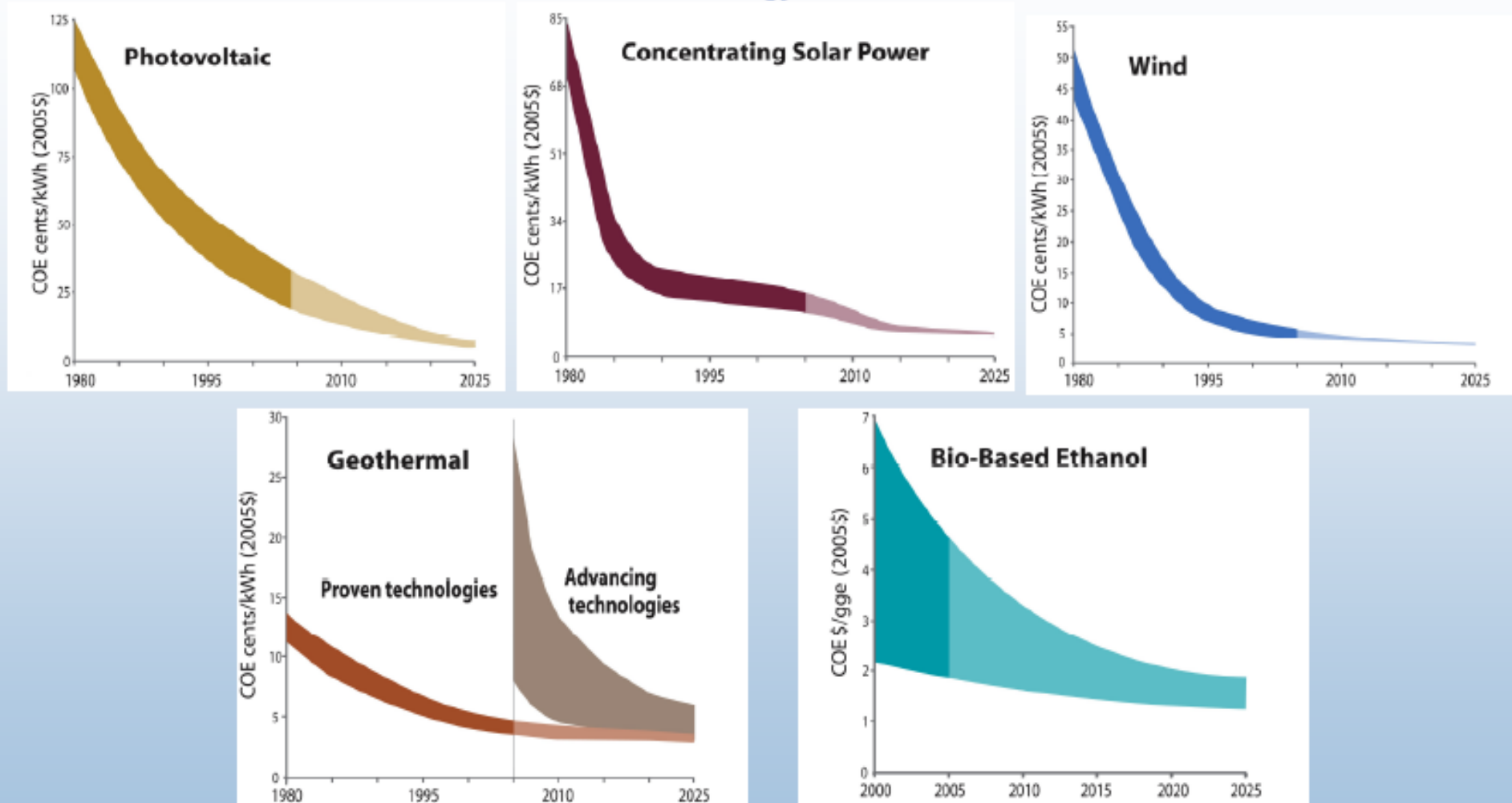
Even if investment in renewable energy sources occurs at double digit rates per annum, renewable sources will still only account for less than 2% of global energy supply by 2030.



Summary – deliberations at 2007 World Economic Forum

Renewable Energy Cost Trends

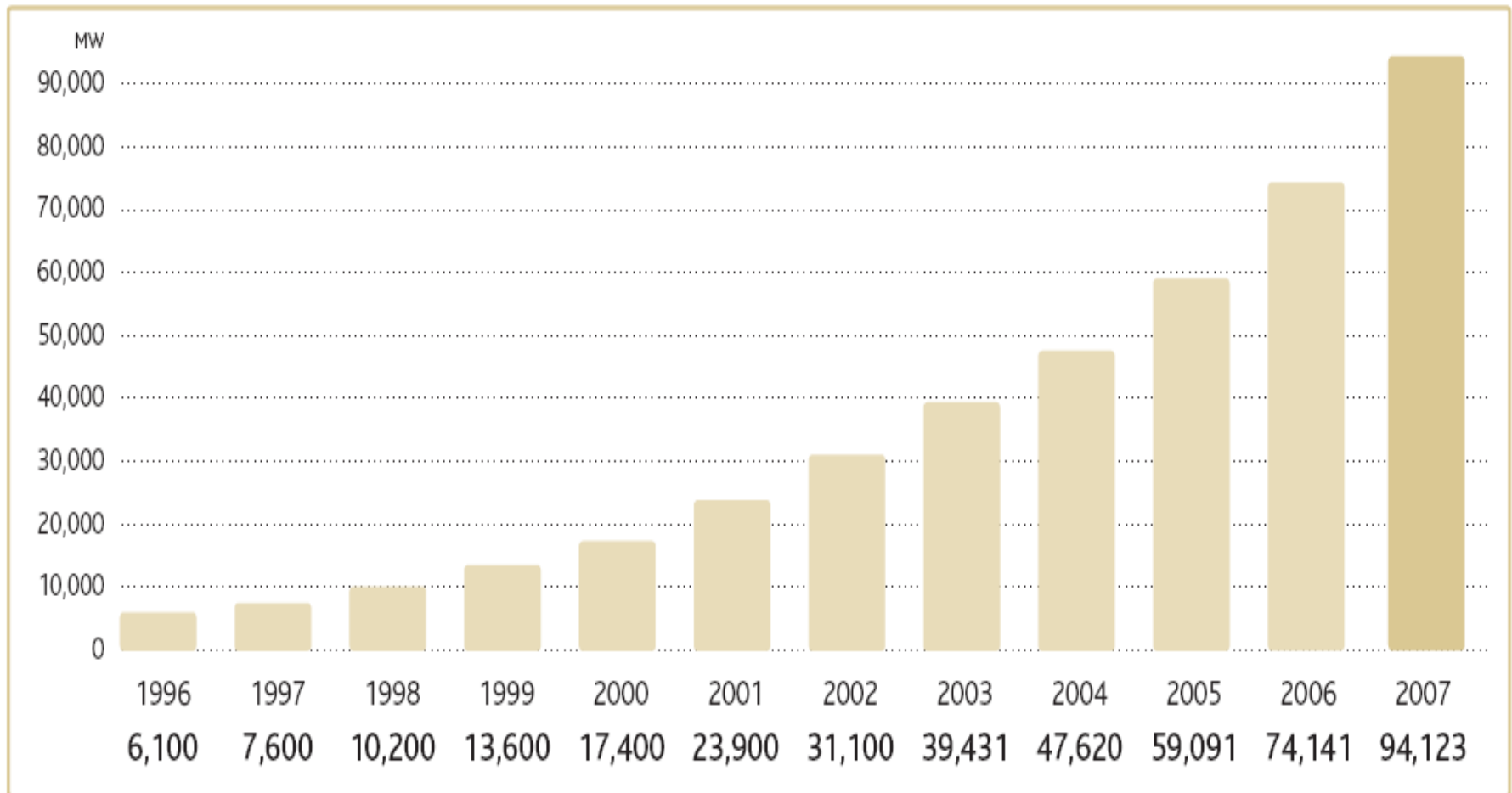
Levelized cost of energy in constant 2005\$¹



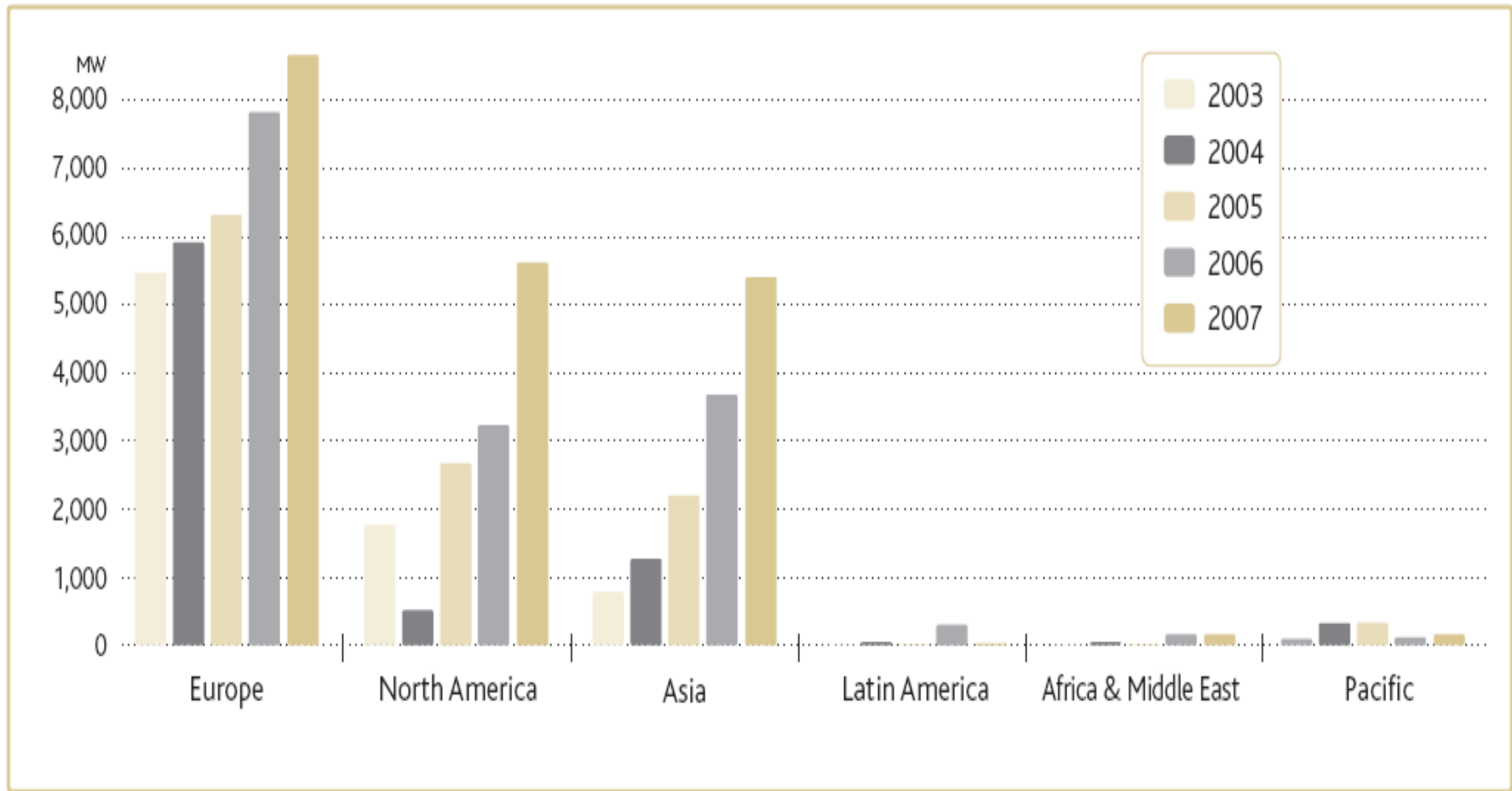
Source: NREL Energy Analysis Office (www.nrel.gov/analysis/docs/cost_curves_2005.ppt)

¹These graphs are reflections of historical cost trends NOT precise annual historical data. DRAFT November 2005

GLOBAL CUMULATIVE INSTALLED CAPACITY 1996-2007



ANNUAL INSTALLED CAPACITY BY REGION 2003-2007



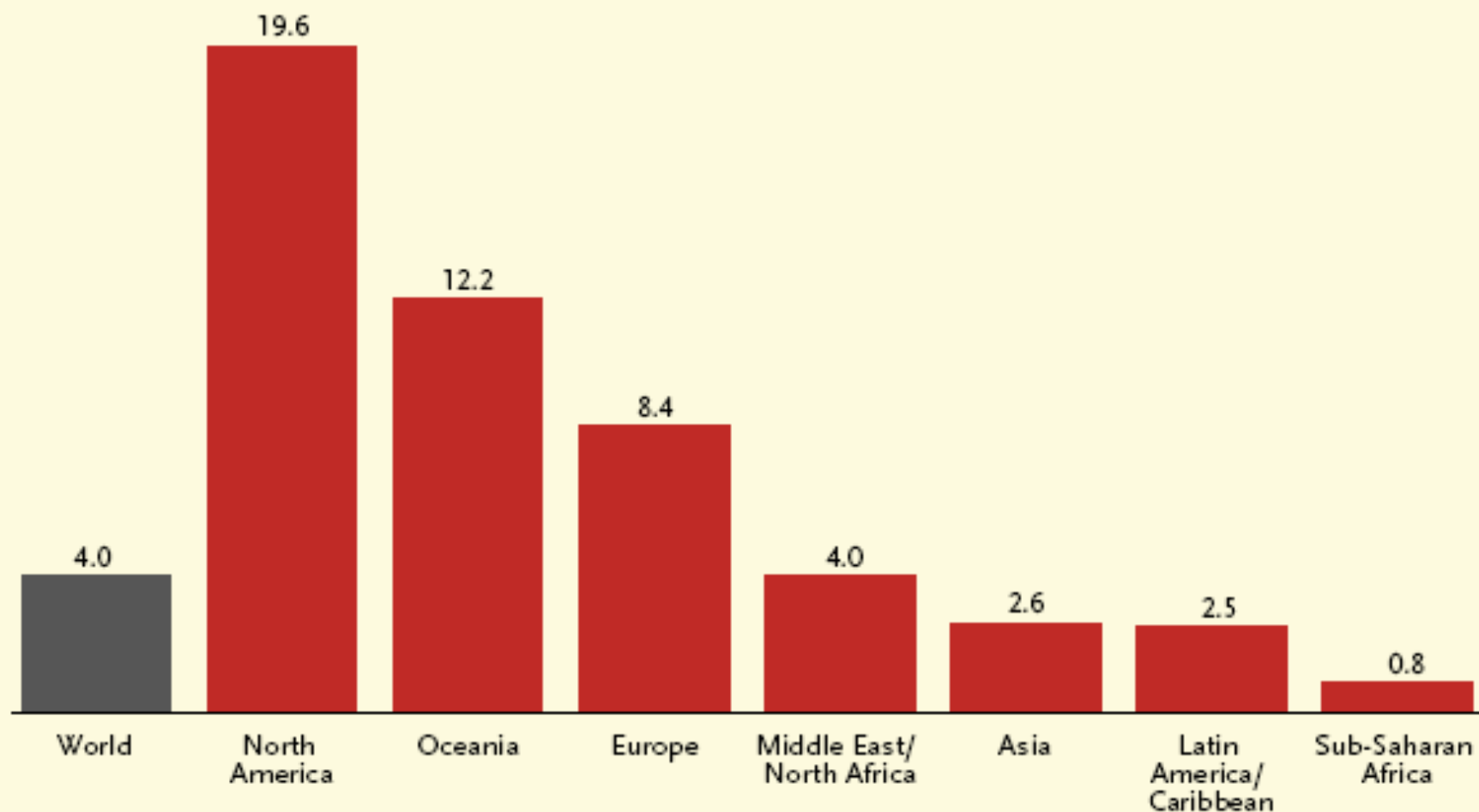
WHAT DO THESE MAJOR
TRENDS IN ENERGY MEAN
FOR WINNEMUCCA?

GLOBAL CLIMATE, FOOD AND WATER

- **The Kyoto treaty on global warming, if fully implemented, would have resulted in a 5% reduction in global carbon dioxide emissions.**
- **Experts now say the science is suggesting a reduction of up to 70% is required to stabilize the global climate.**
- **Hence breakdown of negotiations at Copenhagen**

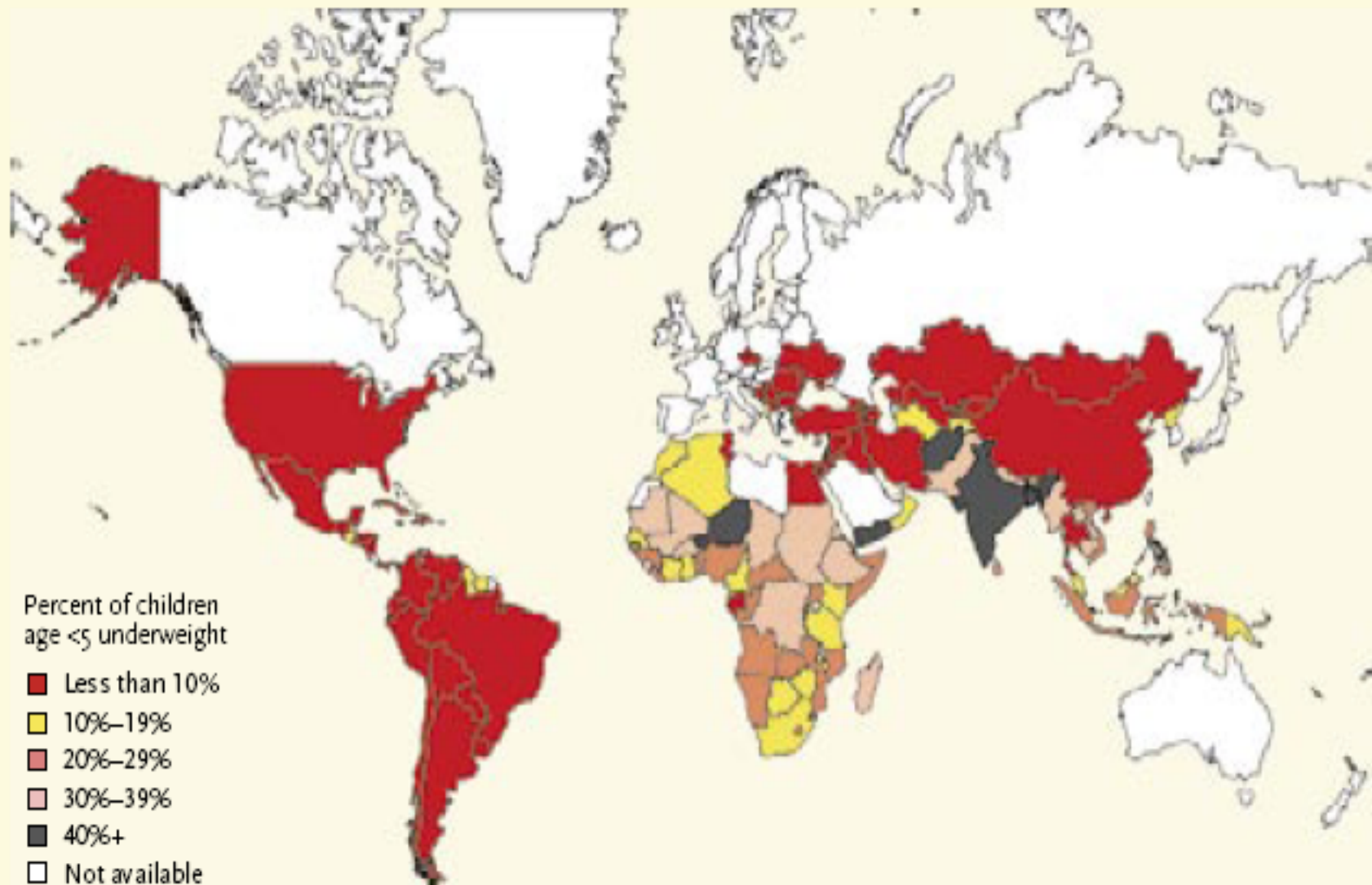
A Large Gap Exists Between Carbon Dioxide Emissions of Developed and Developing Regions.

Carbon dioxide emissions per capita (in metric tons), 2002



SOURCE: C. Haub, 2007 *World Population Data Sheet*.

In Low-Income and Middle-Income Countries, 30 Percent of All Children Are Underweight.



SOURCE: C. Haub, 2007 *World Population Data Sheet*.

Nearly 450 million people in 29 countries now face severe water shortages

As much as 2/3 of the world population could be water-stressed by 2025

Aquifers, which supply 1/3 of the world's population, are being pumped out faster than nature can replenish them

Half the world's rivers and lakes are seriously polluted

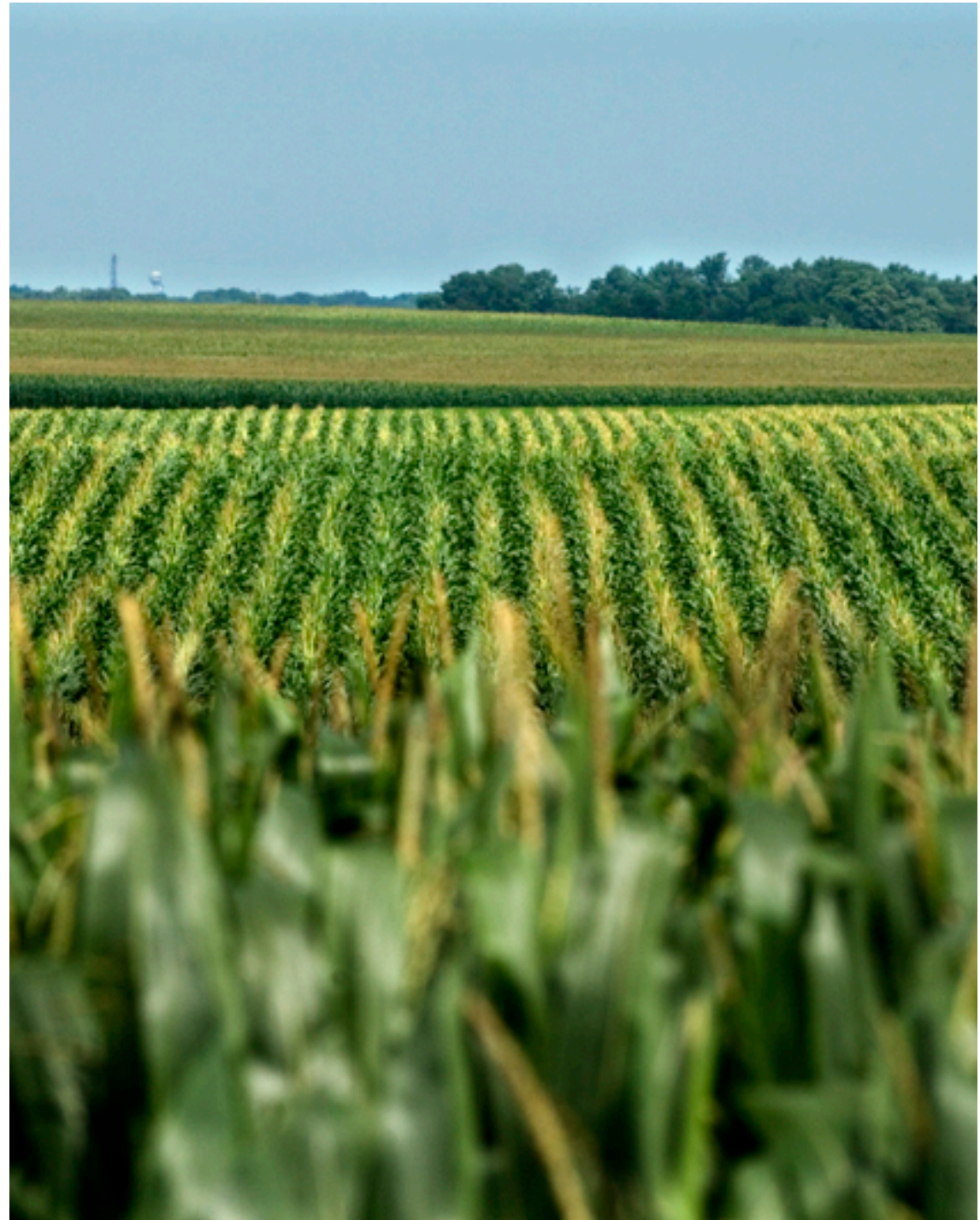


Irrigation uses 70% of the world's fresh water resources drinking and sanitation use 10%

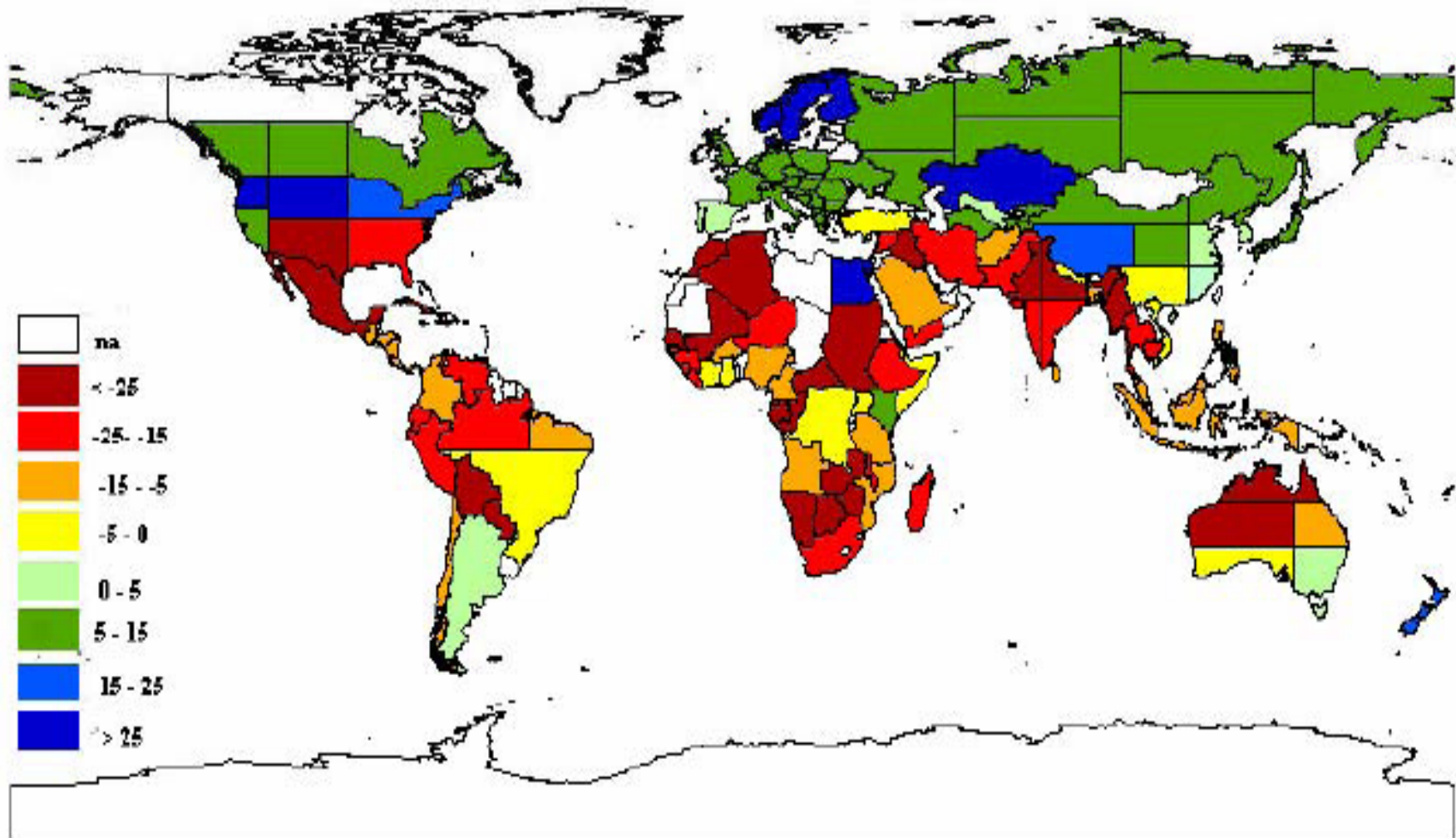
Water scarcity, not lack of arable land, will be the chief constraint to increased food production

The threat to water resources stands as one of the major crises facing the planet

WORLD HUNGER 2007



Changes in crop yields, 2080s, with CO2 effects. Ricardian economic analysis



*Martin Parry, Centre for Environmental Policy, University of London and Hadley Centre
UK Met Office, December 2007*

CROP YIELD MODELING - CONCLUSIONS

- **Climate change may lead to increases in yield potential at mid and high- mid-latitudes, and to decreases in the tropics and subtropics;**
- **Risk of hunger appears to increase generally as a result of climate change, particularly in southern Asia and Africa;**
- **The potential for adaptation is greater in more developed economies and that this is likely to aggravate inequalities in development potential.**

TECHNOLOGY
– A CATALYST
FOR
COMMUNITY
CHANGE



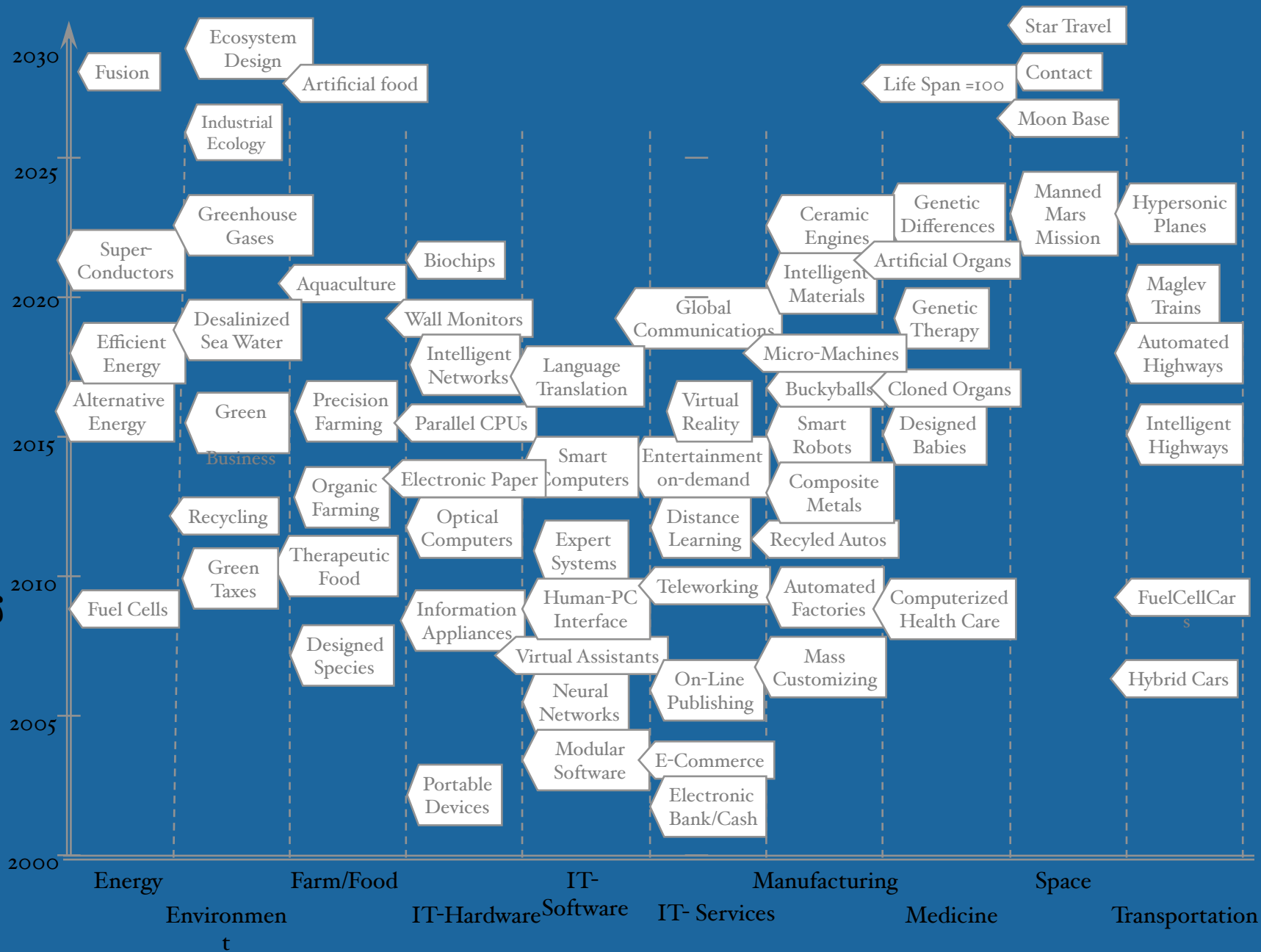
THE 'MINE OF THE FUTURE'



Remote operations centre; mines thousands of kms away



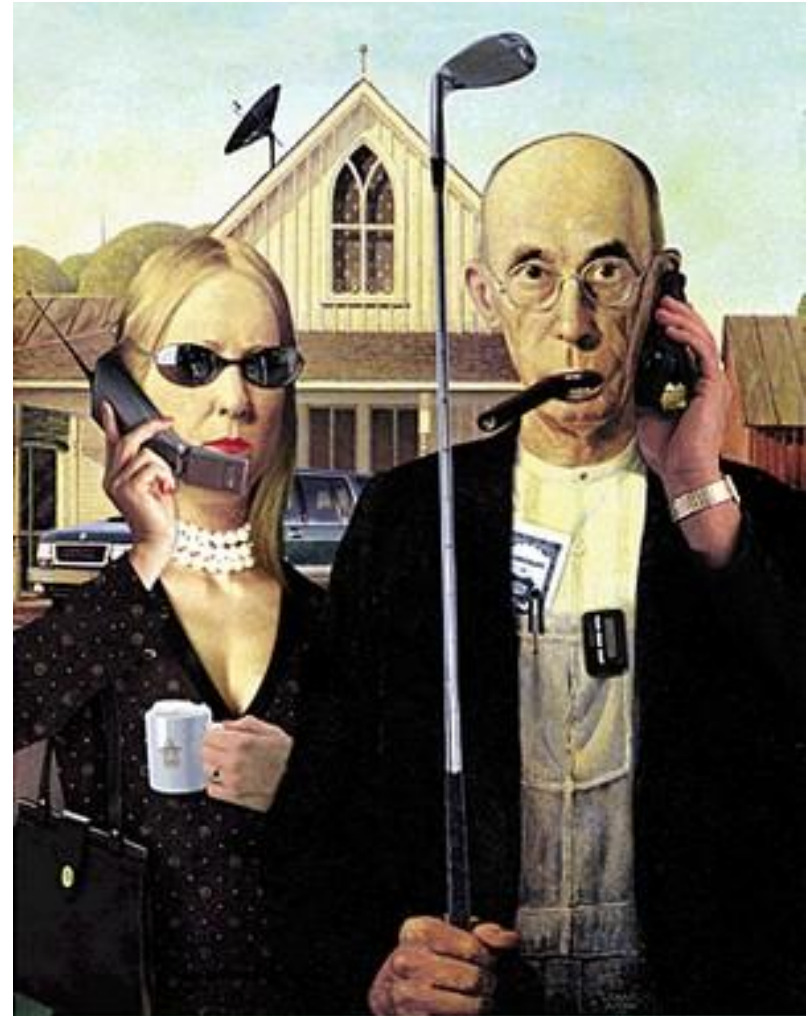
Estimated Year Emerging Technology Enters Mainstream



Infrastructure deployment is something Americans do well; it plays to our national strengths. We have built canals, bridges, electricity, telephone service, roads, and highways.

Now, with much history to learn from and with an array of technological resources at our disposal, we can and will do it again.

- FCC REPORT ON A RURAL BROADBAND STRATEGY - 2009



WHAT DOES THIS ALL MEAN?

- **There is an energy revolution coming** – are we ready?; how will life in the region look?; how will we adapt?; what can we do to plan for a different future?
- **Climate change is here** – potential positive and negatives; do we have some unique opportunities?
- **The world will be hungry and will need new technology**; does that play to potential local or regional competitive advantages?
- **What about the region's natural resources** – will it change?
- **Technological Change is fast and volatile** – Society expects to be “Always on”. Are we ready?

WHAT ARE THE
IMPLICATIONS
OF THESE
EMERGING
MACRO FORCES
OF CHANGE?

Opportunities?

Challenges?

**Local
implications?**



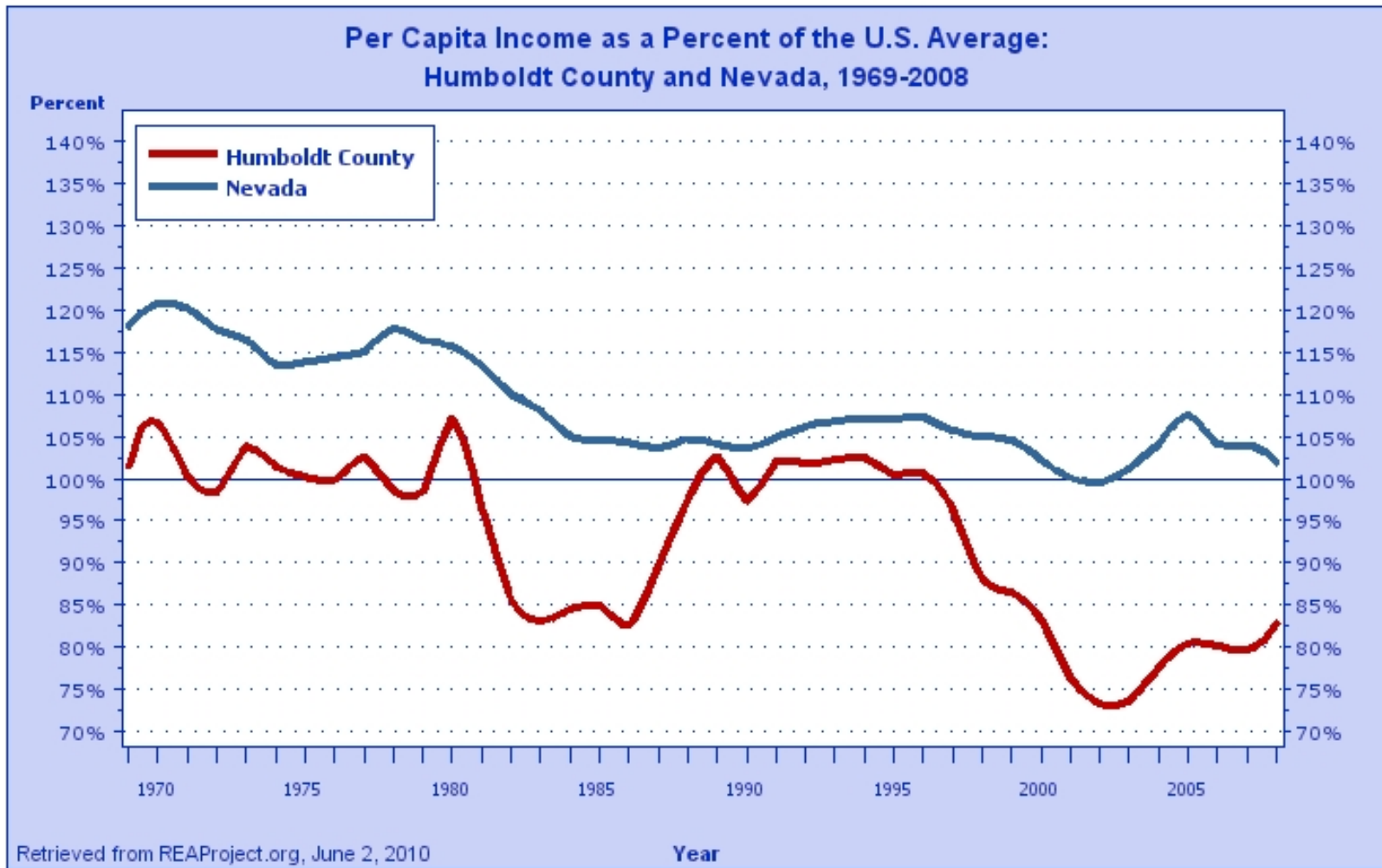


Figure 3.

Figure 3 highlights Humboldt County and Nevada per capita income relative to national trends by tracking their per capita incomes as a percent of the national average over 1969-2008.

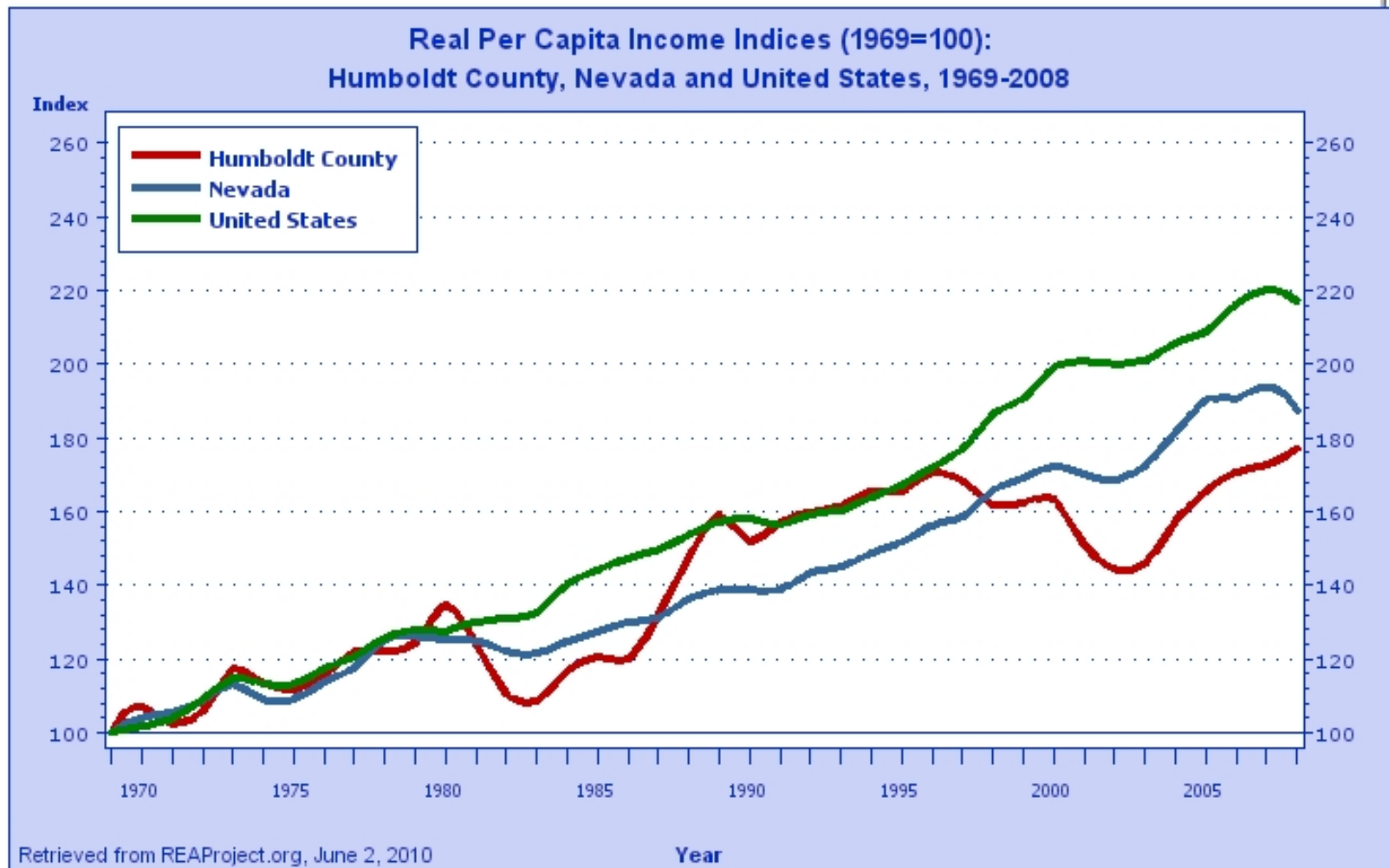


Figure 2.

The long-term growth of Humboldt County's real per capita income is compared with that of Nevada and the nation in Figure 2. Cumulative growth indices express each region's real per capita income as 100 for the base year 1969, and the per capita income of subsequent years as a percent of 1969. These indices allow a direct comparison of the differences in cumulative growth in per capita income for Humboldt County, Nevada, and the nation.

Humboldt County's real per capita income climbed 77.2% over 1969-2008, trailed the gain by Nevada (87.4%), and fell below the increase nationally (117.2%).

WHAT ARE THE KEY
REGIONAL ISSUES
SHAPING THE FUTURE OF
WINNEMUCCA?

KEY ATTRIBUTES OF WINNEMUCCA?

WHAT ARE THE KEY
DRIVERS SHAPING THE
FUTURE OF
WINNEMUCCA?

KEY FORCES/DRIVERS

SHAPING THE FUTURE OF WINNEMUCCA

1. Mining longevity and stability
2. Increasing Hispanic population
3. State tax base and revenues for education and other social services
4. 85% Federal land ownership
5. Tourism and gaming and the economic impact on community
6. Ageing population – becoming a retirement community and brain drain
7. Availability of water
8. Lack of broadband infrastructure and connectivity/integration
9. Community apathy and complacency / resistance to change
10. Availability of transportation
11. Development of geothermal resource
12. Vulnerable to volatility in energy prices / impact on local food security
13. Checkerboard lands
14. Local government vision
15. Recreation as an attraction to area
16. Agriculture price of crops and cattle
17. Success or failure of California's economy
18. Influx of 'new' industry
19. Availability of local healthcare services and Access to affordable housing
20. Lack of cultural arts infrastructure

PROGRAM FOR DAY 2

- **Develop detailed narratives for four plausible scenarios for the future of Winnemucca (based on clusters of key drivers).**
- **Explore the possible futures before and the consequences for Winnemucca**

8:30am start – please be on-time!