

Convergence: Can The Economy As We Know It Survive Economic Depletion?

LSE, Feb 24, 2010

By Chris Martenson

CO₂
GROWTH

A 3D-rendered seesaw with a wooden beam and a yellow triangular fulcrum. The beam is tilted upwards on the left side, where the text 'CO2 GROWTH' is written in large, light blue, 3D block letters. The right side of the beam is lower and empty.

$$3E + 2Q = 1P$$

The Three “E”s



**THE NEXT 20 YEARS ARE
GOING TO BE
COMPLETELY UNLIKE THE
LAST TWENTY YEARS**

My Track Record

- Dollar in 2003
- Houses in 2007
- Stocks in 2008
- Not really predictions....

Prediction? Sort of...



How Economists See the World

$$(x + a)^n = \sum_{k=0}^n \binom{n}{k} x^k a^{n-k} \rightarrow \text{GROWTH}$$

**What is
Money?**



**All Money
is Loaned
into
Existence**

Key Concept

All money is loaned
into existence.

Key Concept

Perpetual growth is a
requirement
of modern banking.

What's the implicit assumption?

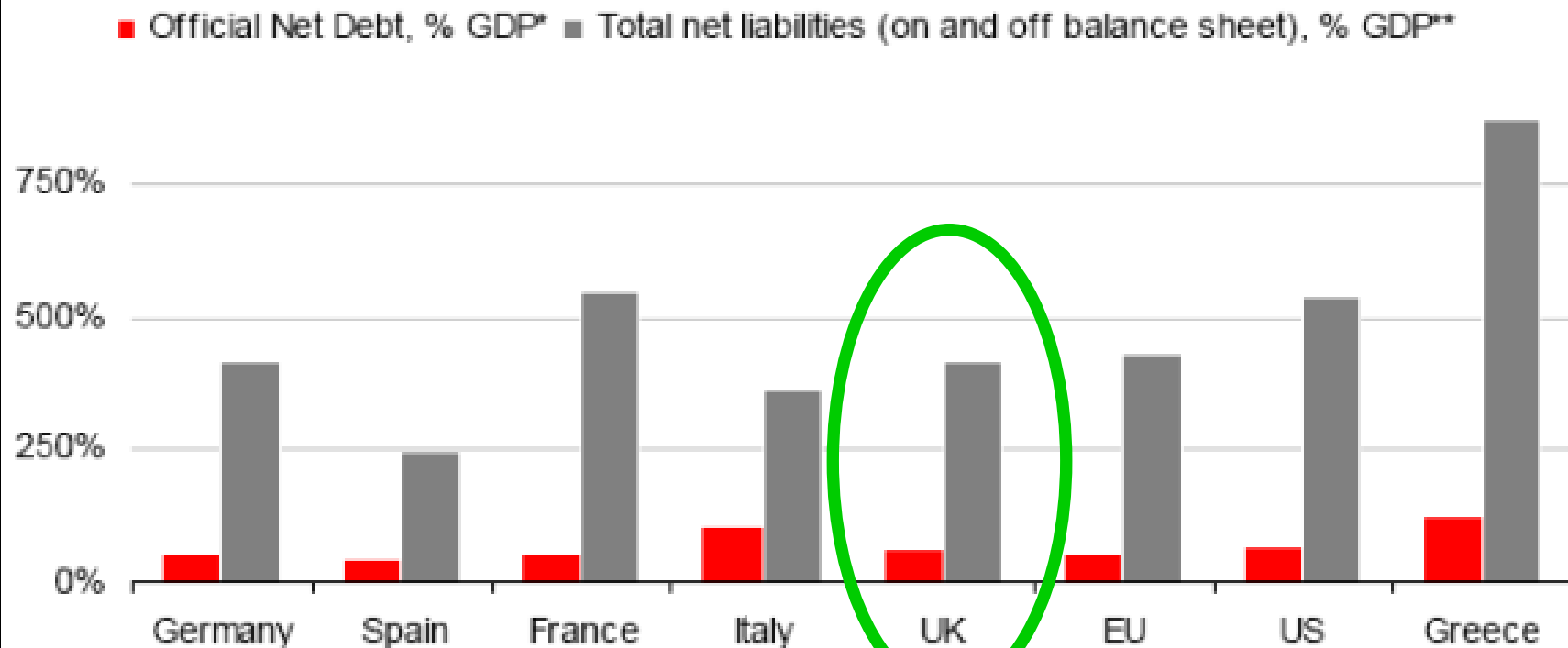
US DEBT TO GDP



Source: Ned Davis Research <http://www.safehaven.com/article-5995.htm>

A Global Phenomenon...

Our governments are insolvent: what's off-balance sheet dwarfs what's on ...

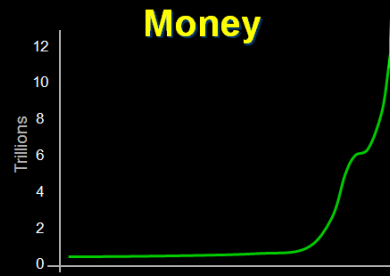


* 2010 OECD projections

** 2005 estimates of total Fiscal Imbalance

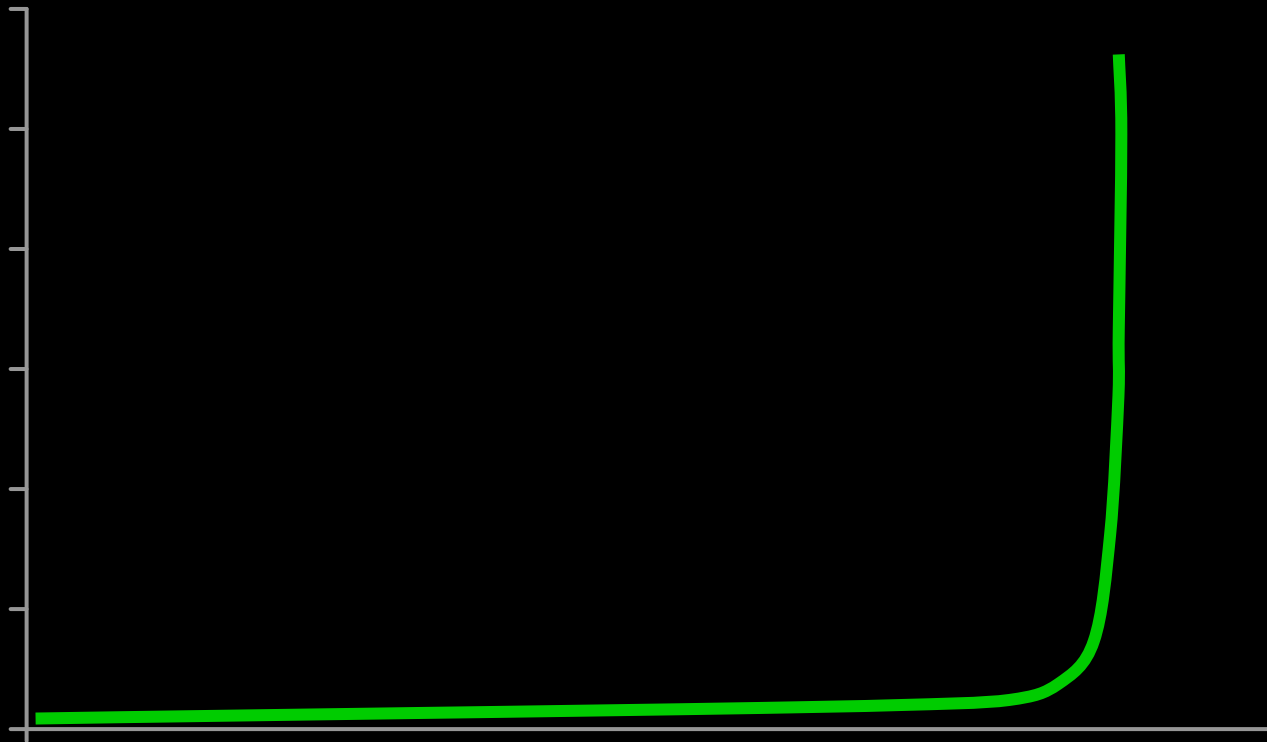
Source: SG Cross Asset Research; Jagadeesh Gokhale (2009); OECD

Must Grow



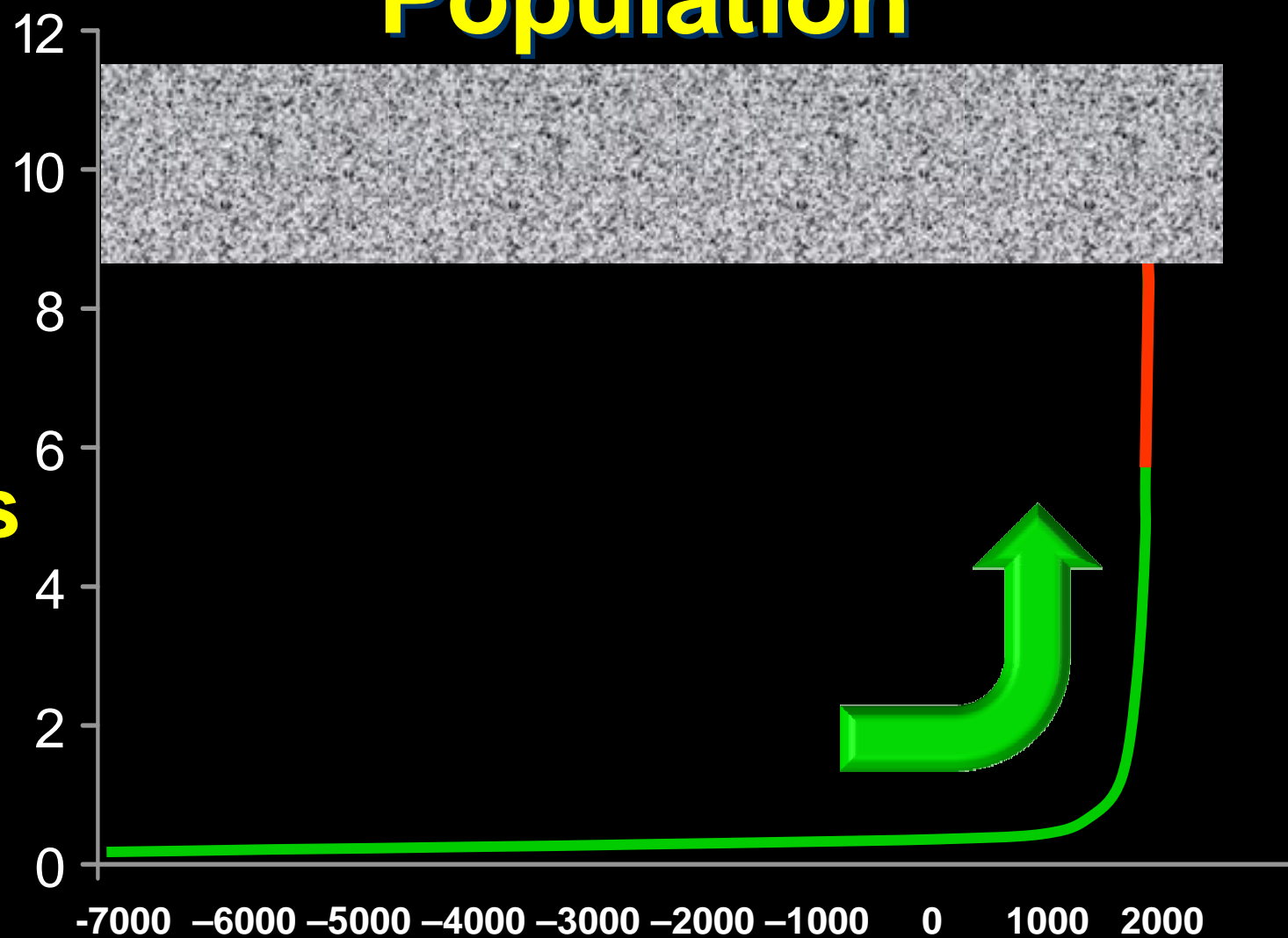
Exponential Growth

A Hockey Stick Chart



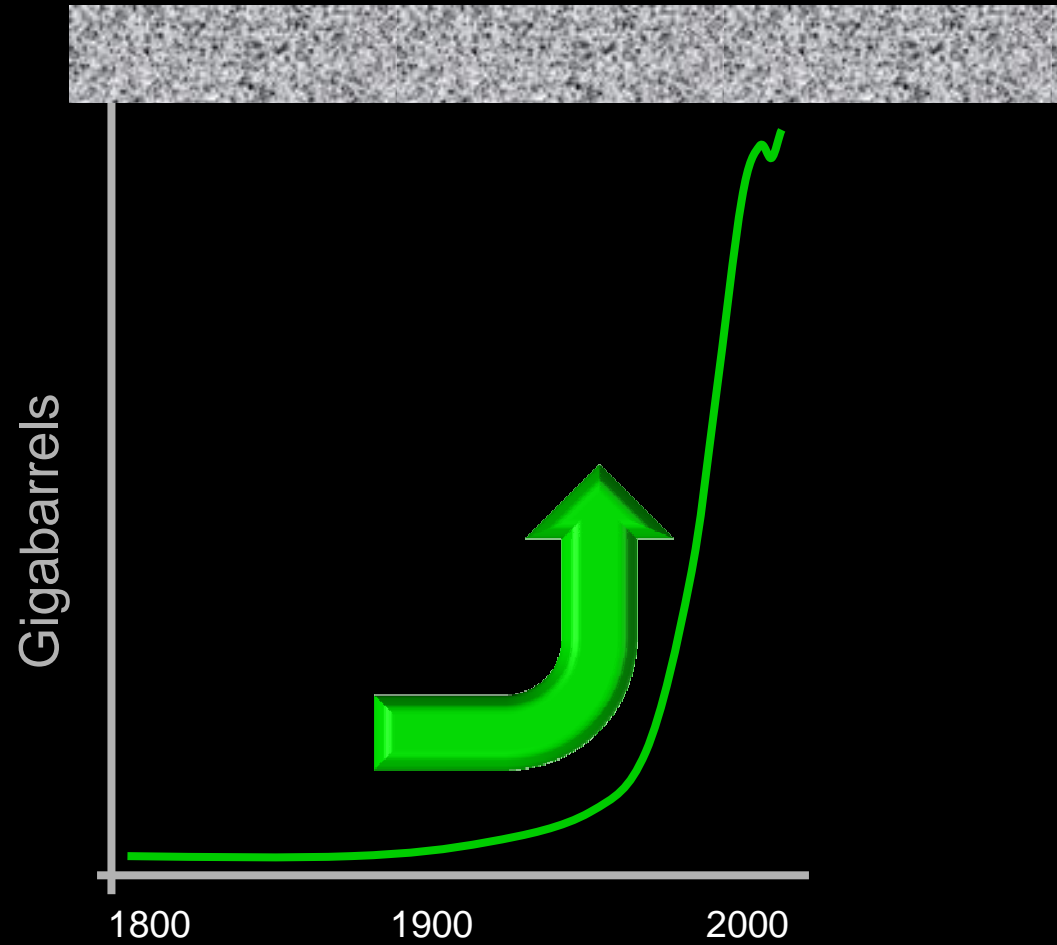
Population

Billions

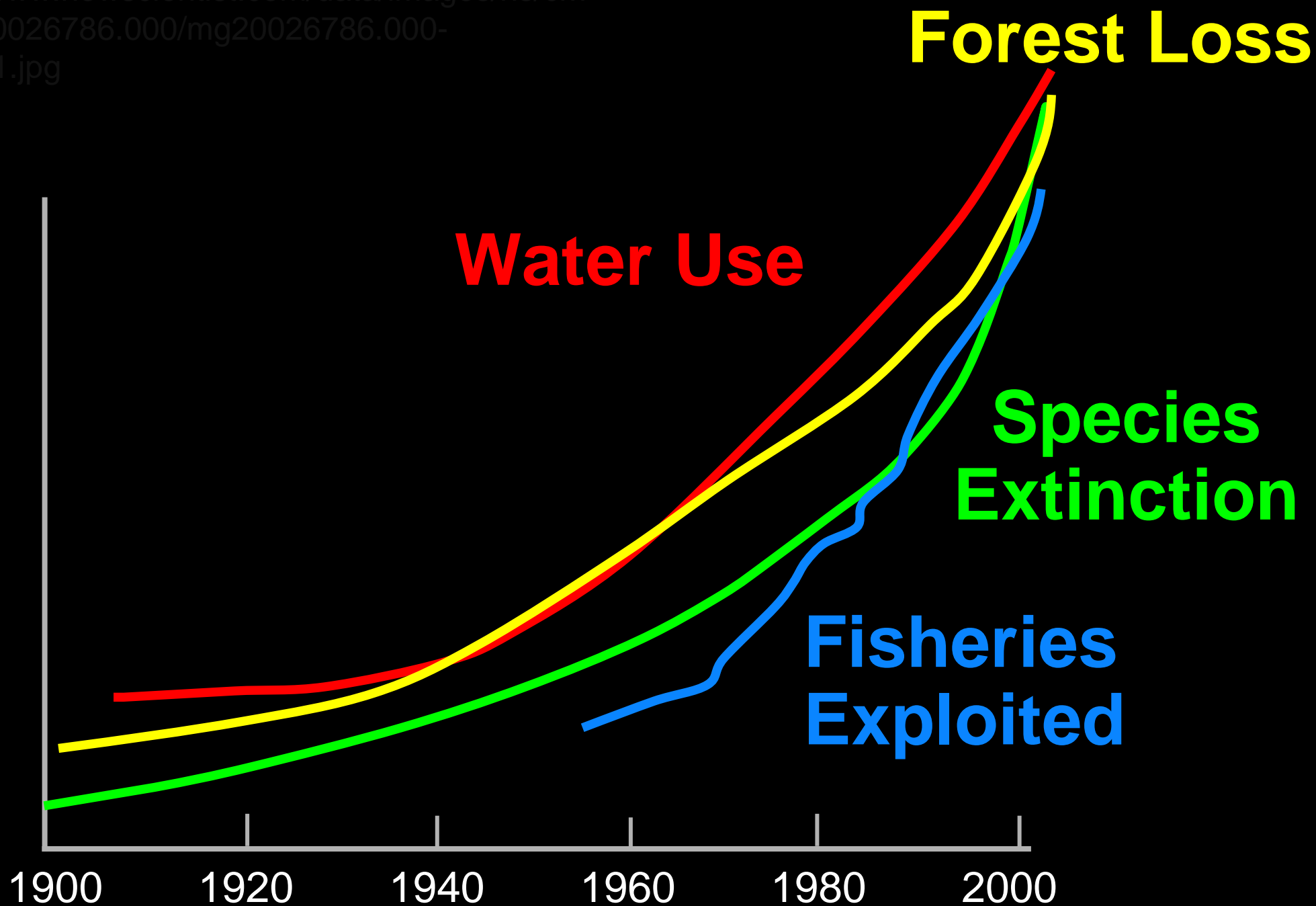


Years

Oil

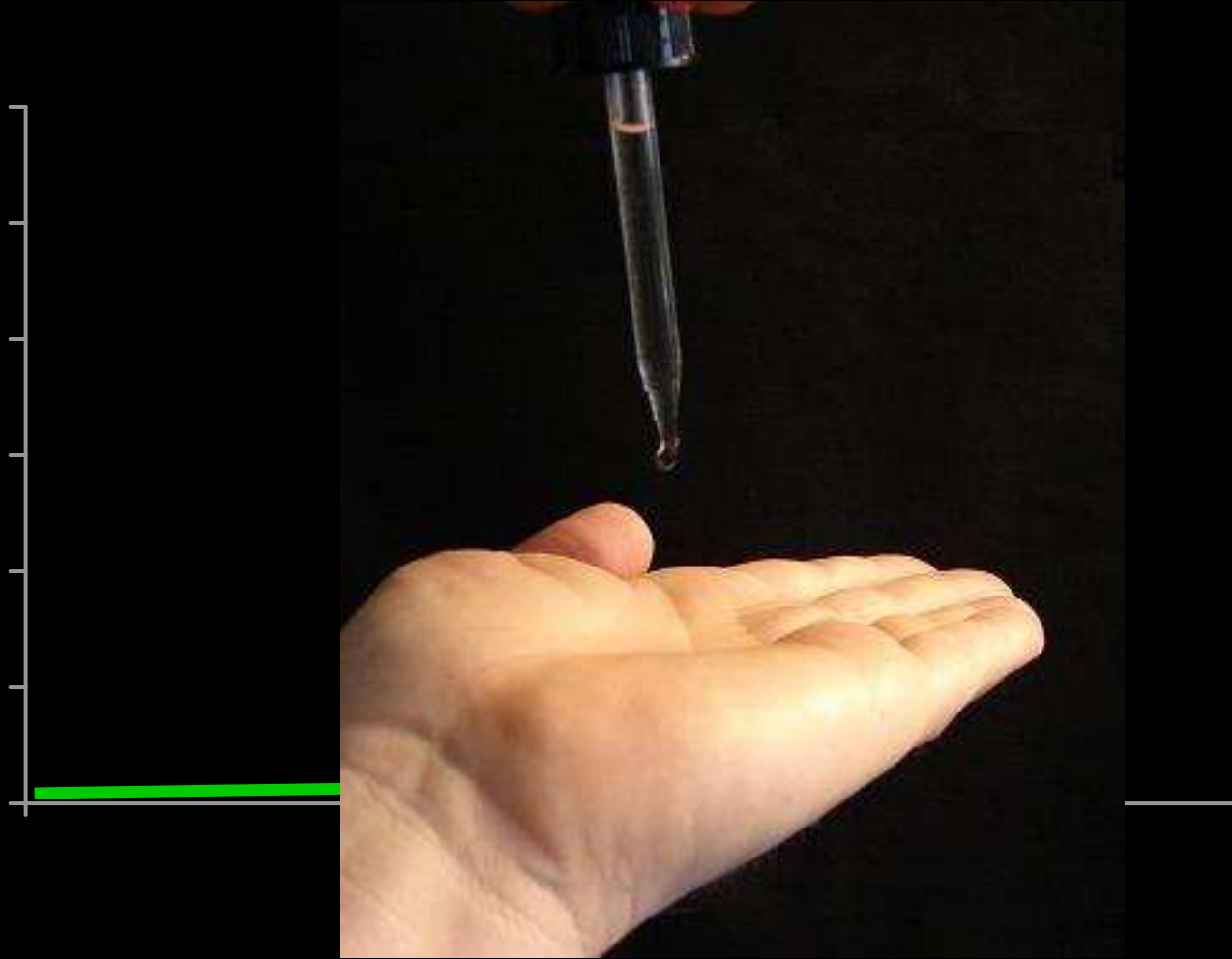


[http://www.newscientist.com/data/images/ns/cm
s/mg20026786.000/mg20026786.000-
1_1701.jpg](http://www.newscientist.com/data/images/ns/cms/mg20026786.000/mg20026786.000-1_1701.jpg)



Compounding

The Power of Compounding



Wembley Stadium



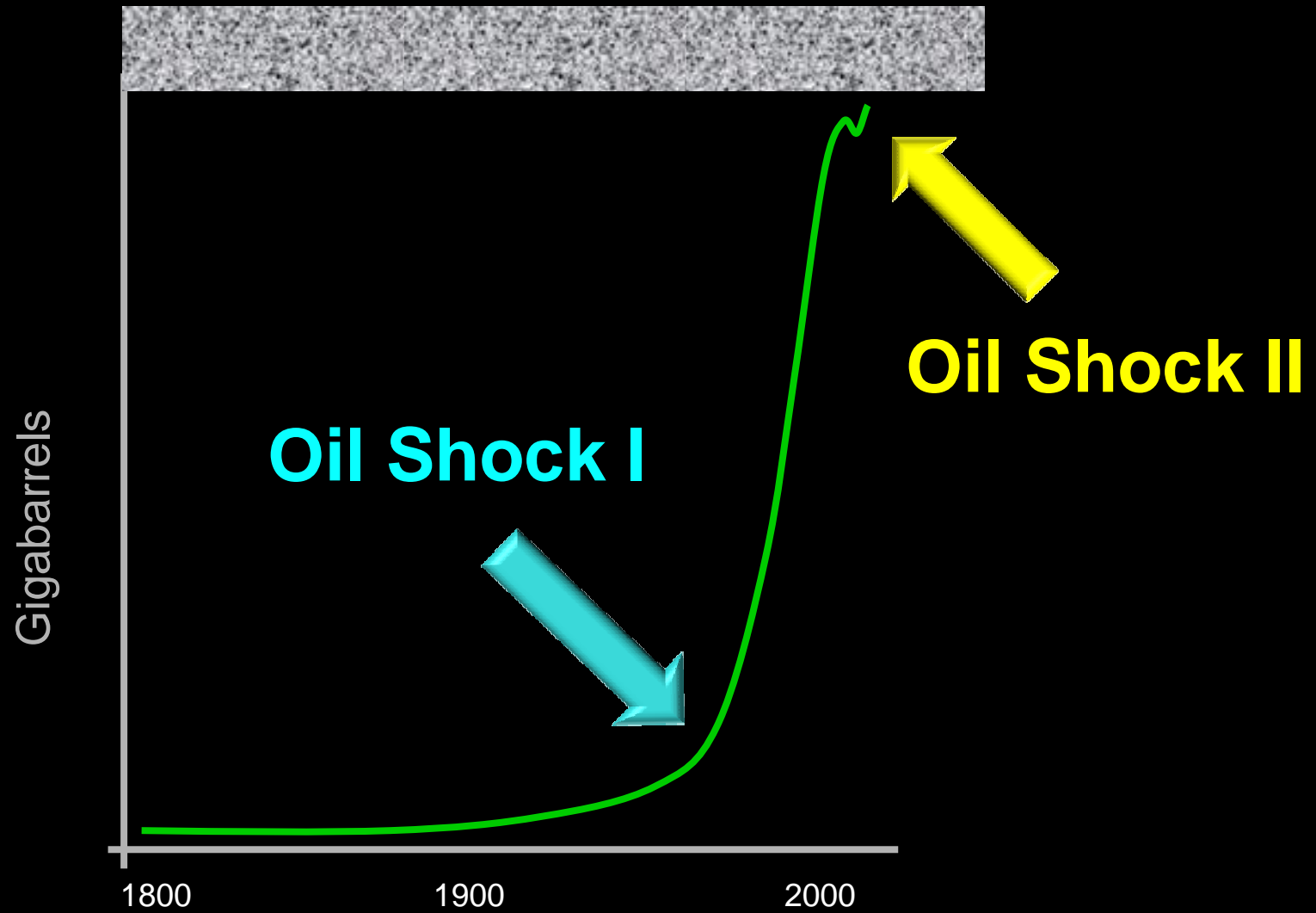
**If we began at 12:00, when would
Wembley Stadium be filled?**

12:50

**At what time would it still be
97% empty?**

12:45

Oil Consumption



Key Concepts

Exponential charts are
everywhere.

Economy. Energy.

Environment.

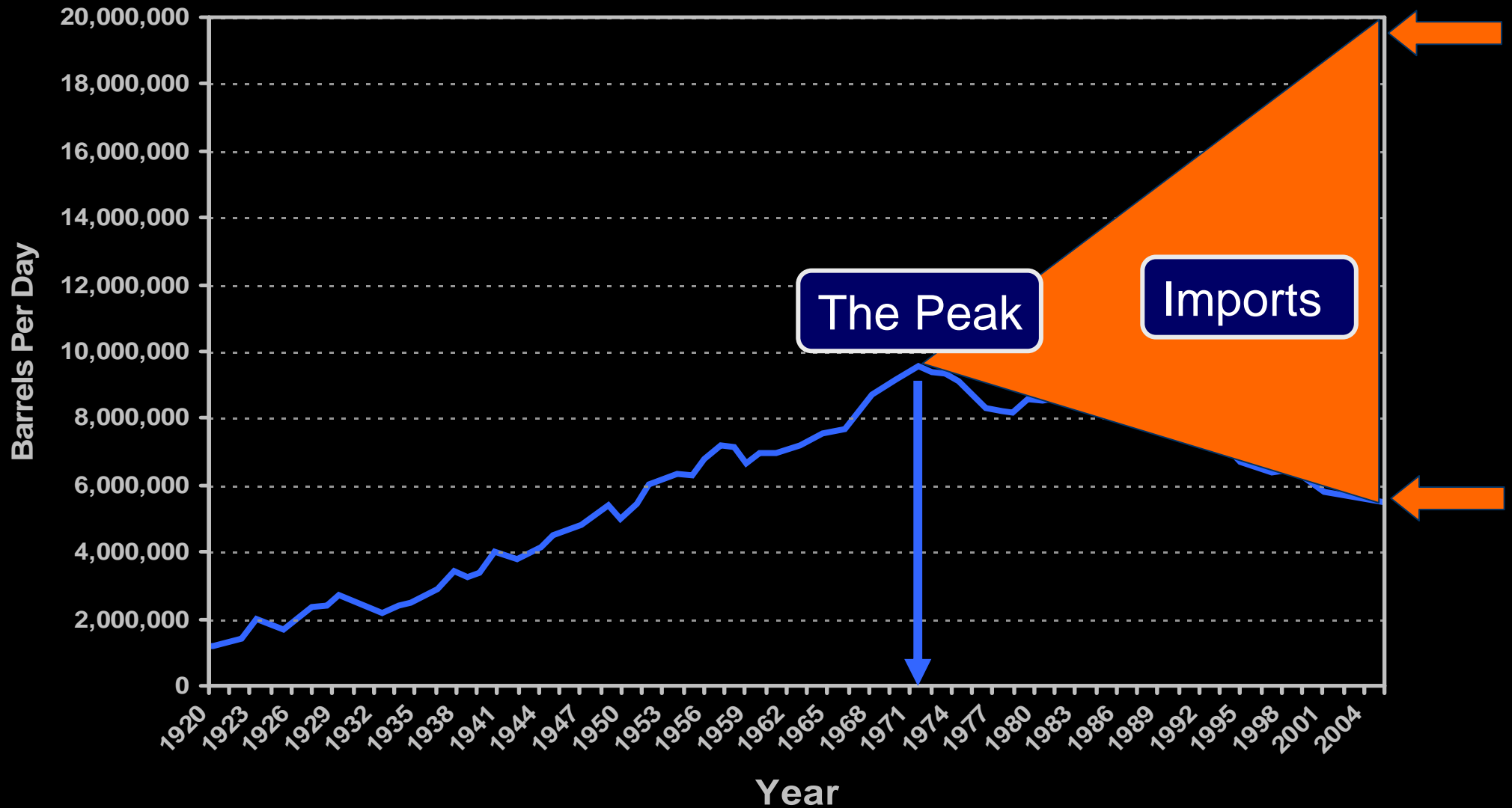
Speeding up!

PROBLEMS VS. PREDICAMENTS

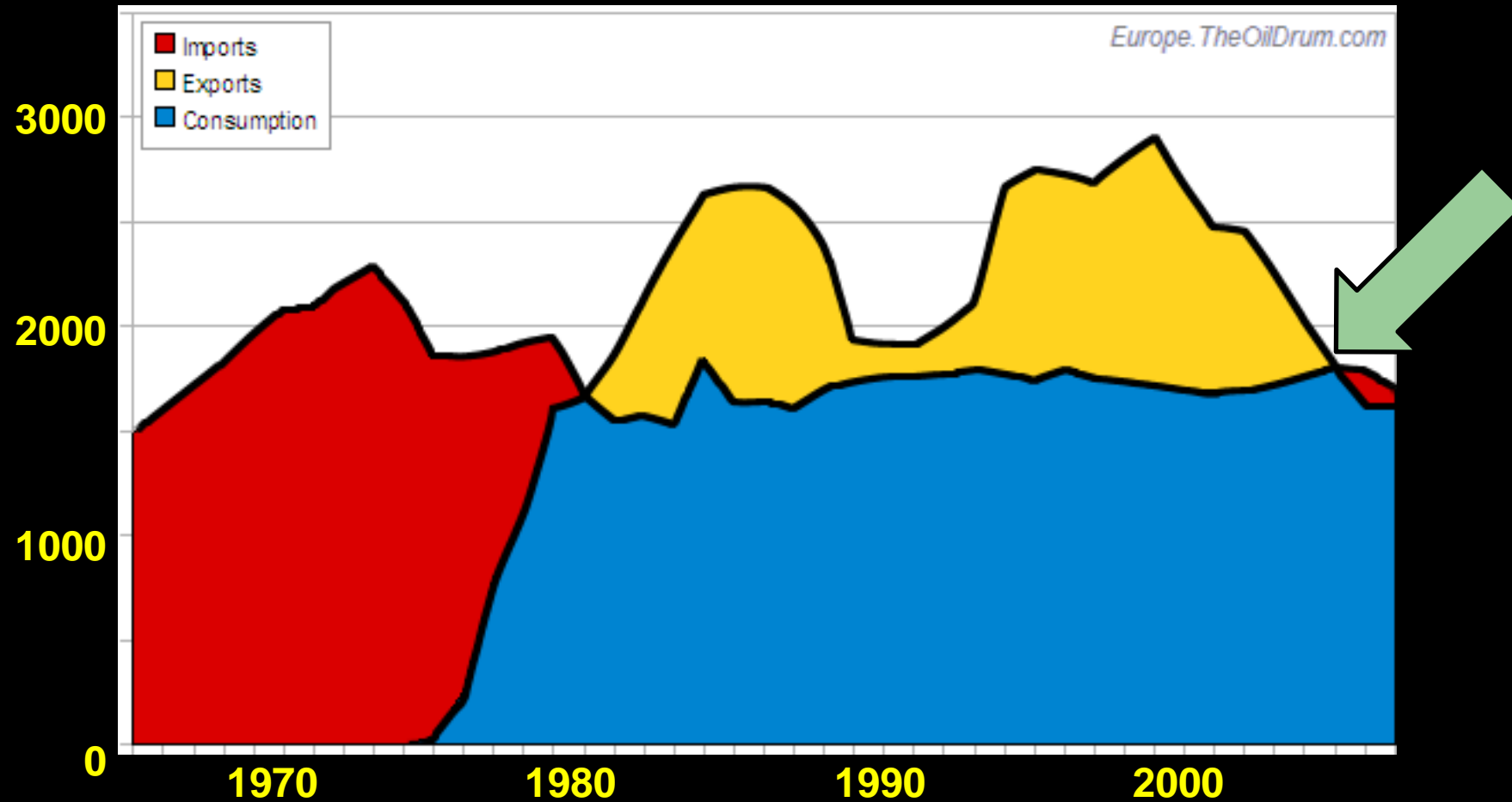


ENERGY

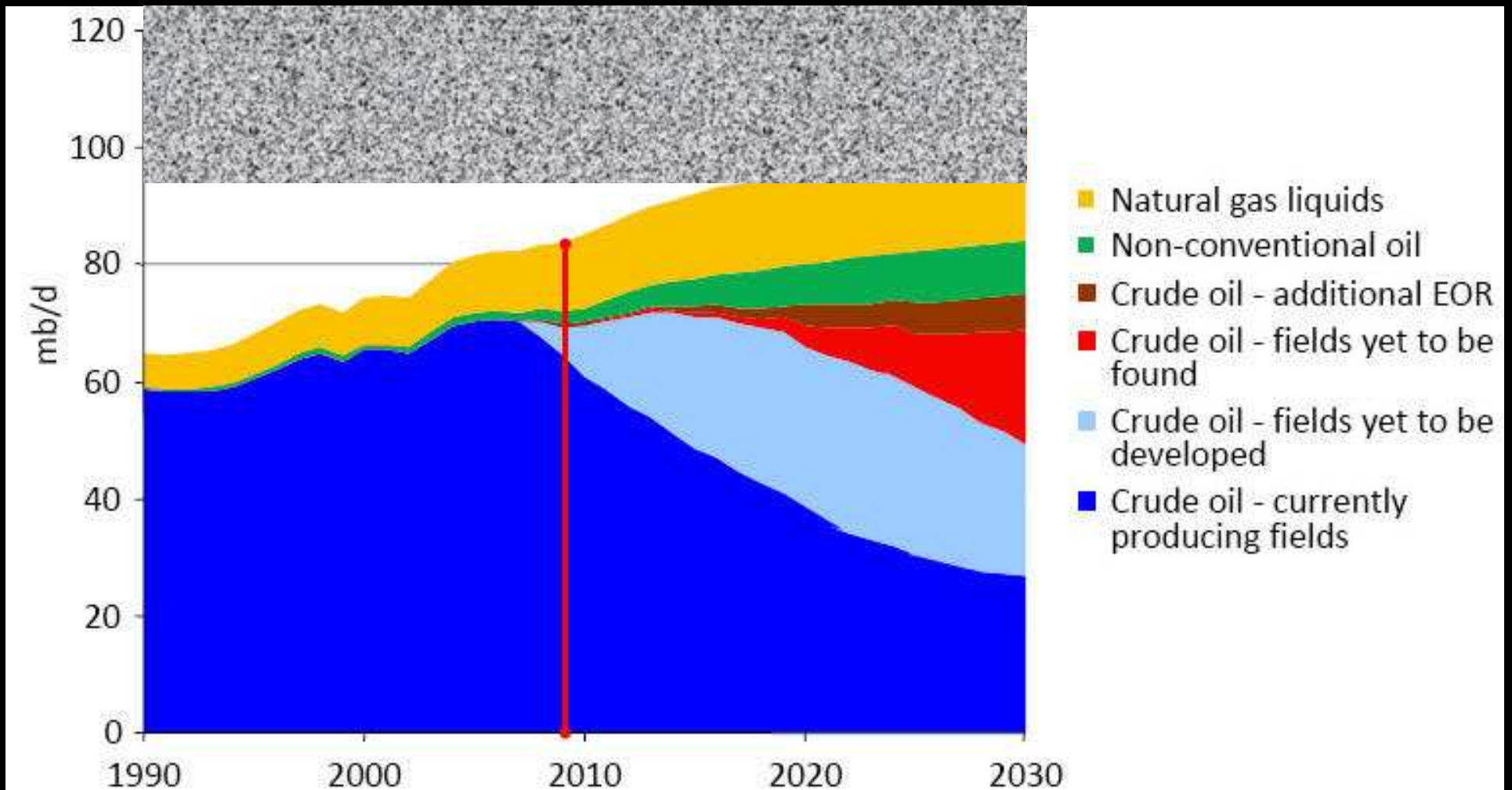
US Oil Production & Dependency



UK Turned Import-Dependent in 2005

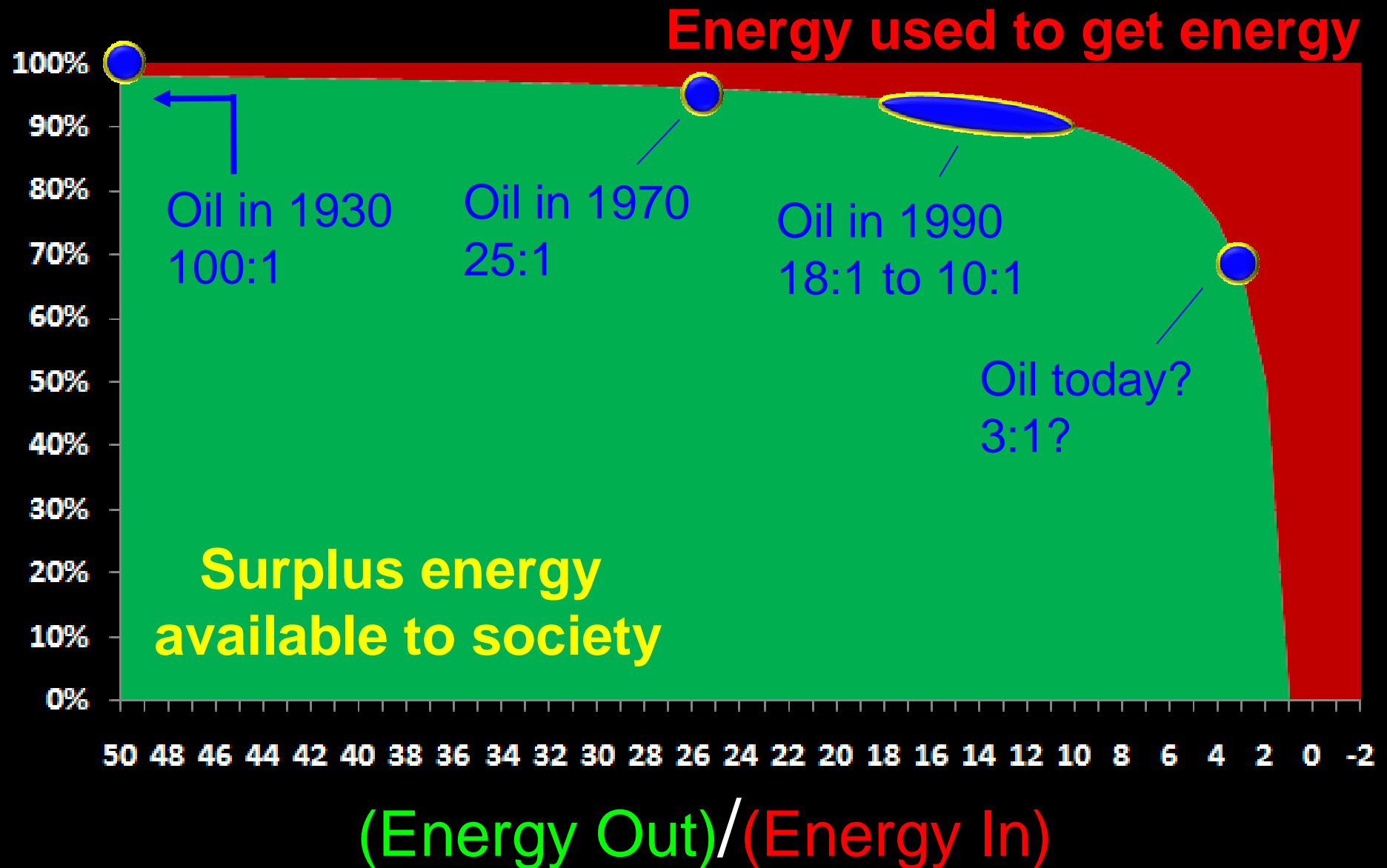


Oil – Past (conventional) Peak Already

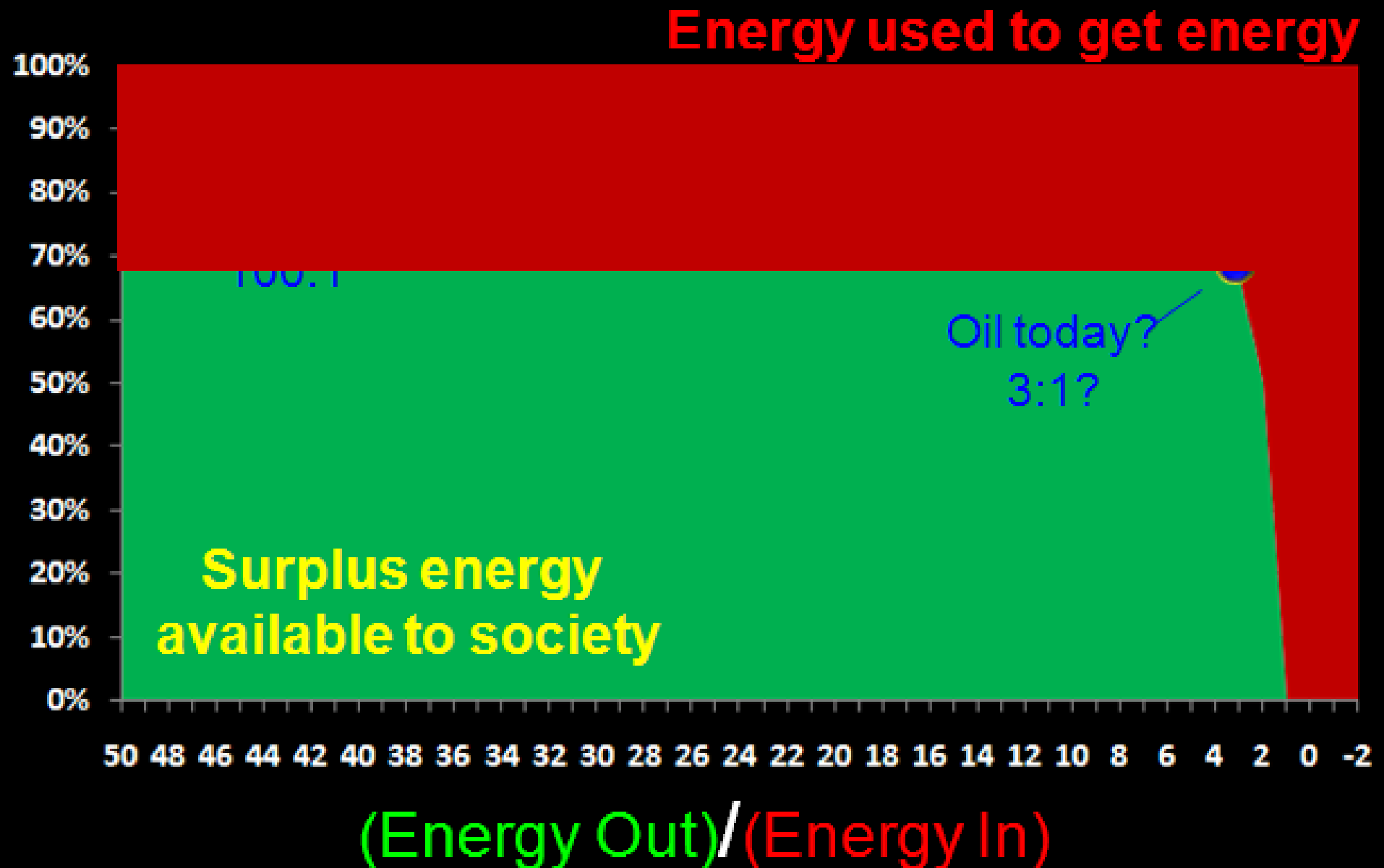


**QUANTITY
IS AN
ISSUE**

The Energy Cliff - Oil



The Reality...

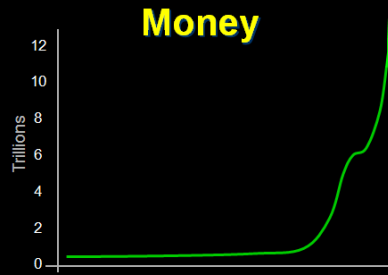


The Worry...

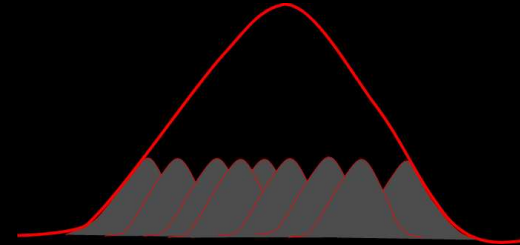


**QUALITY
IS AN
ISSUE**

Must Grow



Can't Grow



Quantity & Quality:
Equally important!

ENVIRONMENT

Copper Ore – 10%



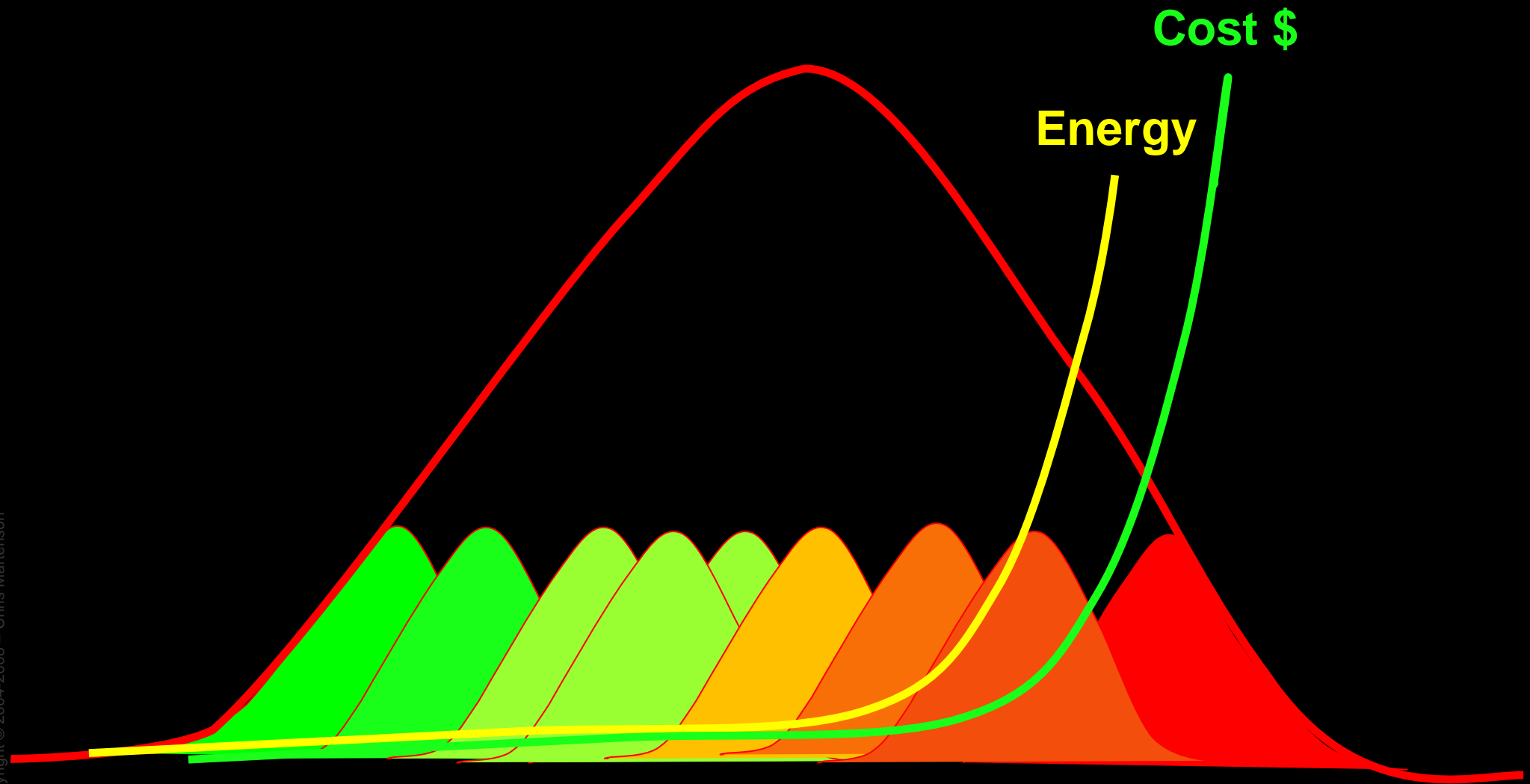
Copper Nugget



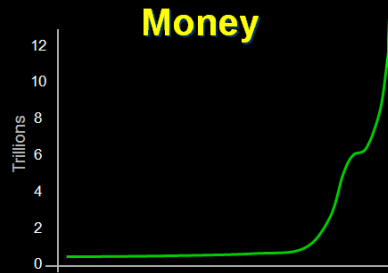
Copper Mining - Bingham Canyon Mine, Utah



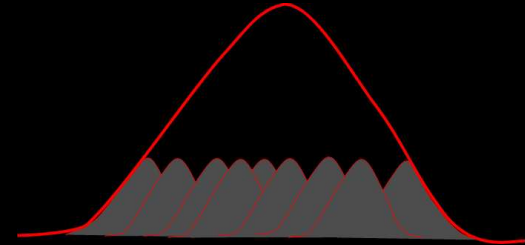
Resource Extraction Profile



Must Grow

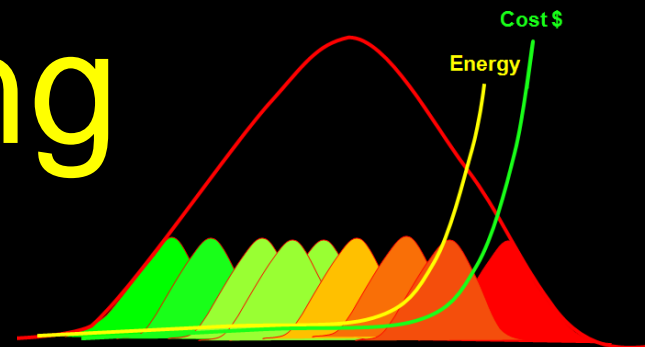


Can't Grow



**Quantity & Quality;
equally important!**

Depleting



PROBLEM OR PREDICAMENT?

$$3E + 2Q = 1P$$

Economy
Energy
Environment

Quality
Quantity

Predicament

**WHAT DO WE
DO?**

Changing Paradigms

OLD

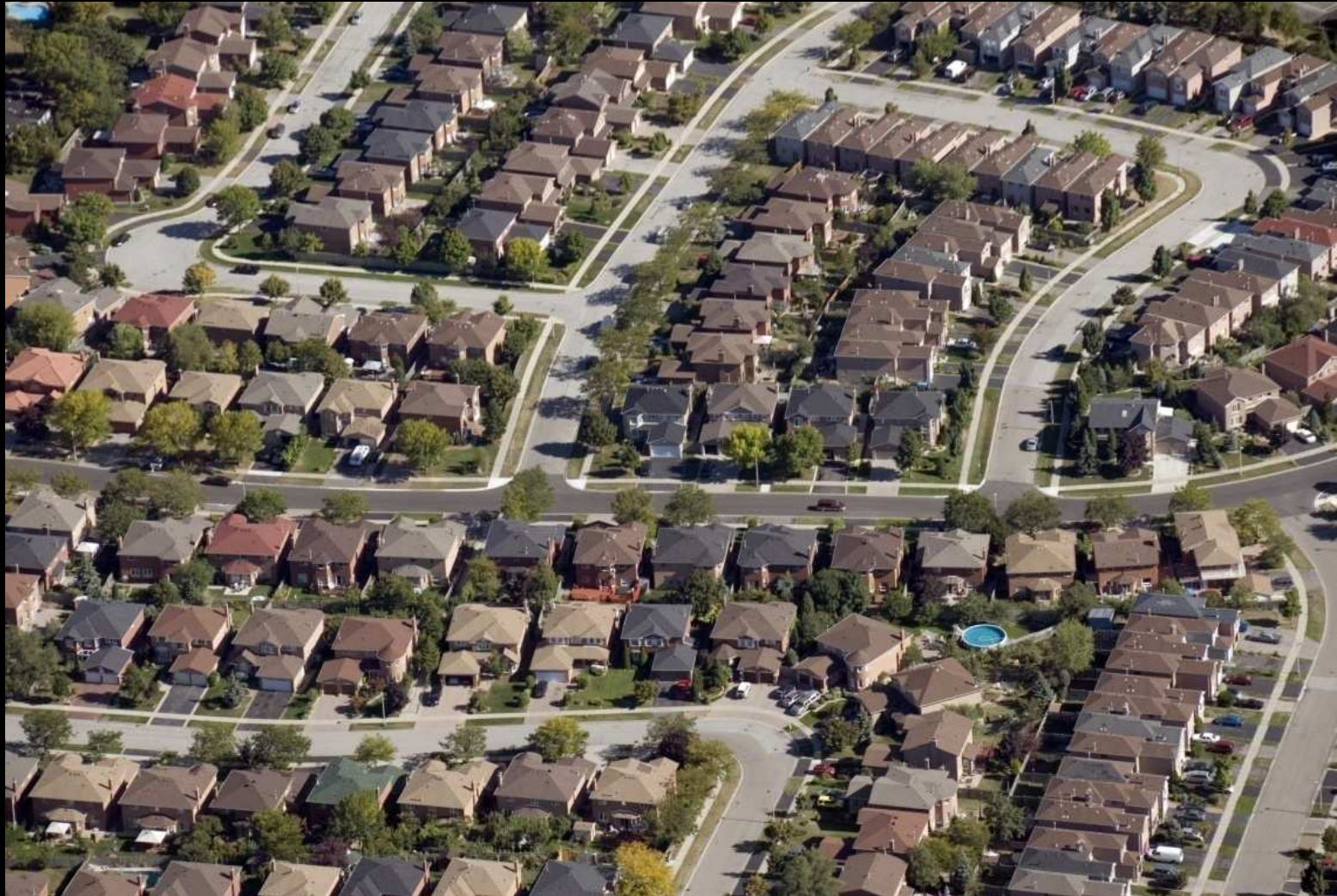
- More energy each year
- More resources each year
- Reliable economic growth each year

NEW

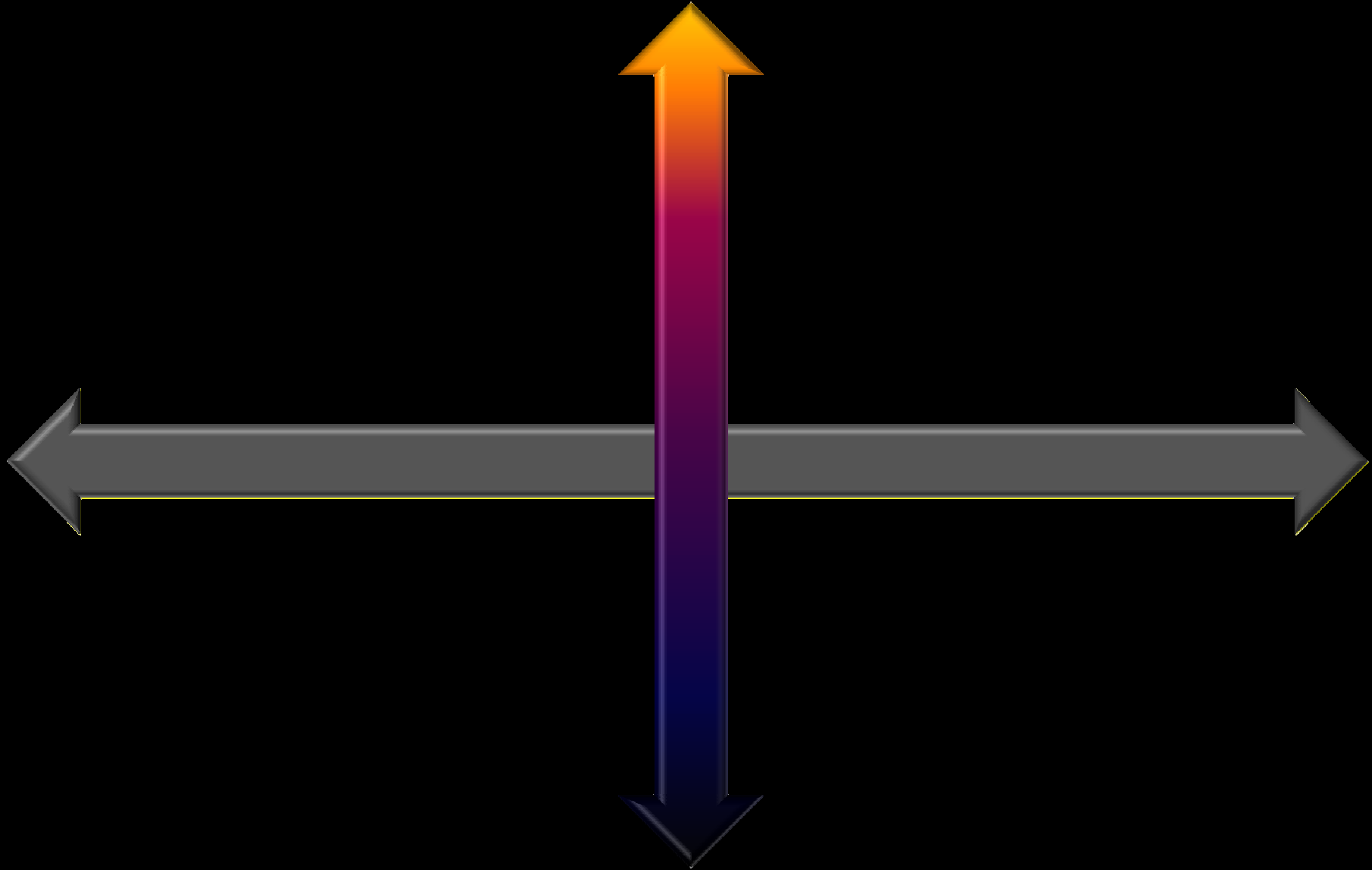
- Less energy each year
- Fewer resources
- Reliable economic shrinkage each year

Implication: Non-status quo solutions needed

Getting The Story Right



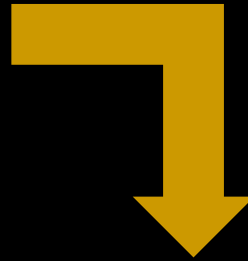
RIGHT



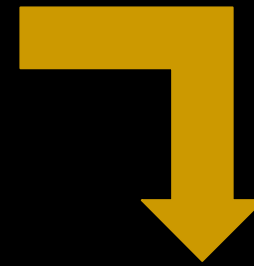
WRONG

The Work

Awareness



Understanding



Solutions

Painting the Vision



A National EROEI Commission

(Energy Returned On Energy Invested)

Insulate or build a new gas pipeline?

**Build a new rail line or
encourage smaller
vehicles?**

Fission or wind power?

Thank You

The Crash Course @

ChrisMartenson.com