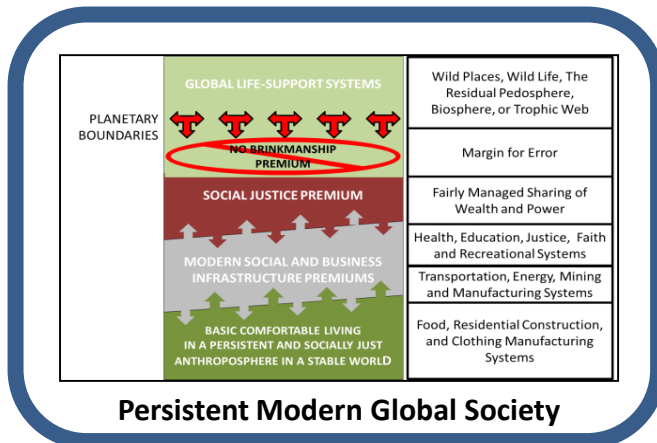
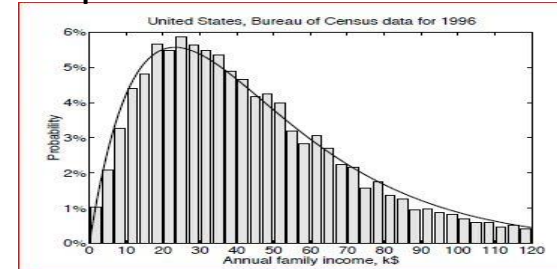


# Sustainability ≠ Social Justice

## How Do We Make These Goals Compatible?

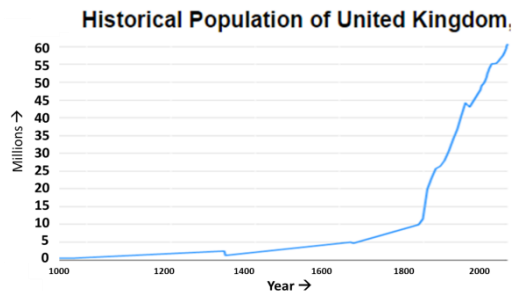


### Empirical Trend: Unequal Distribution of Power and Wealth



**Typical Distribution of Income**

### Empirical Trend: Relentless Pressure on Boundaries



### What Social Contract Could Work?

Based on widespread:

- **Understanding of the relentless deep dynamics:**
  - ❑ Distal Causes: E.g. nature's relentless exploitation of matter and energy for growth
  - ❑ Distal Causes: E.g. relentless rise of economic entropy causing disparity of wealth, power, access to energy
  - ❑ Ultimate Constraints: E.g. carrying capacities, planetary boundaries.
- **Acceptance of needed social strictures**
  - ❑ E.g. restricted reproductive rights
  - ❑ E.g. restricted property rights
  - ❑ E.g. restricted access to wild nature
- **Establishment of needed social structures**
  - ❑ E.g. global authorities for lawmaking and enforcement
  - ❑ E.g. global world view through education

# A MODERN PROBLEM – AS I SEE IT!

THERE IS A **FUNDAMENTAL INCOMPATIBILITY** BETWEEN:

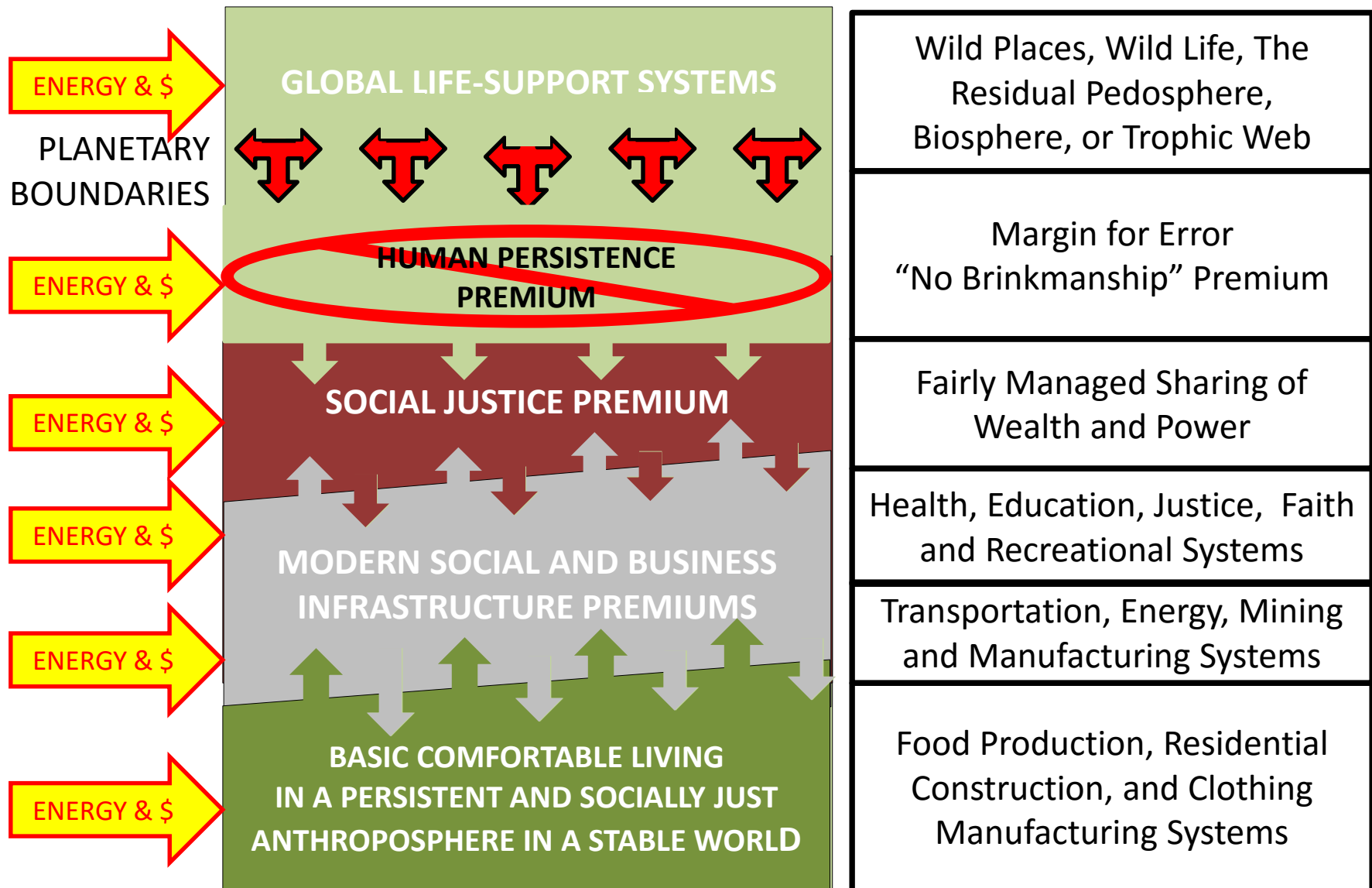
## **SOCIAL JUSTICE** **AND** **SUSTAINABILITY**

- As we define these concepts today, we cannot have both.
- **There must be a compromise.**
- But, if we compromise on sustainability then we are gone.  
That is, logically, an “on/off” switch.
- **So, we MUST come to understand the conflict, and find an acceptable compromise.**

# DEEP, RELENTLESS, REMORSELESS DYNAMICS

- **Modern economies are shaped by a complex of deep and powerful dynamics that are relentless, remorseless, and amoral, and have never before operated on such a grand scale.**
- **When I look at the myriad of uniquely modern global problems, I see two dynamics in particular that can be characterized as distal causes; and they face one ultimate constraint:**
  - **Cause: Propensity of natural systems to grow and press against carrying capacity; → human persistence**
  - **Cause: Propensity of wealth and power to aggregate in the hands of an elite; → social justice**
  - **Constraint: Planetary boundaries.**

# A PERSISTENT AND JUST MODERN SOCIETY IN THE POST-OIL AGE

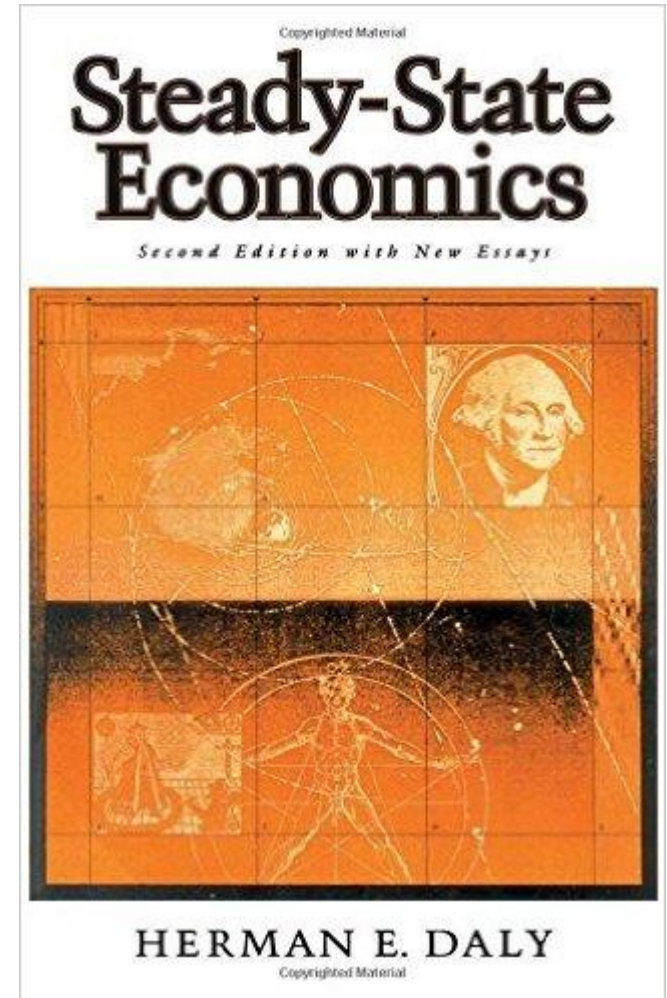


# Herman Daly's Bold Vision

Recognized the ultimate constraint – the existence and impact of finite carrying capacity.

But, does it go far enough!

Next Step?



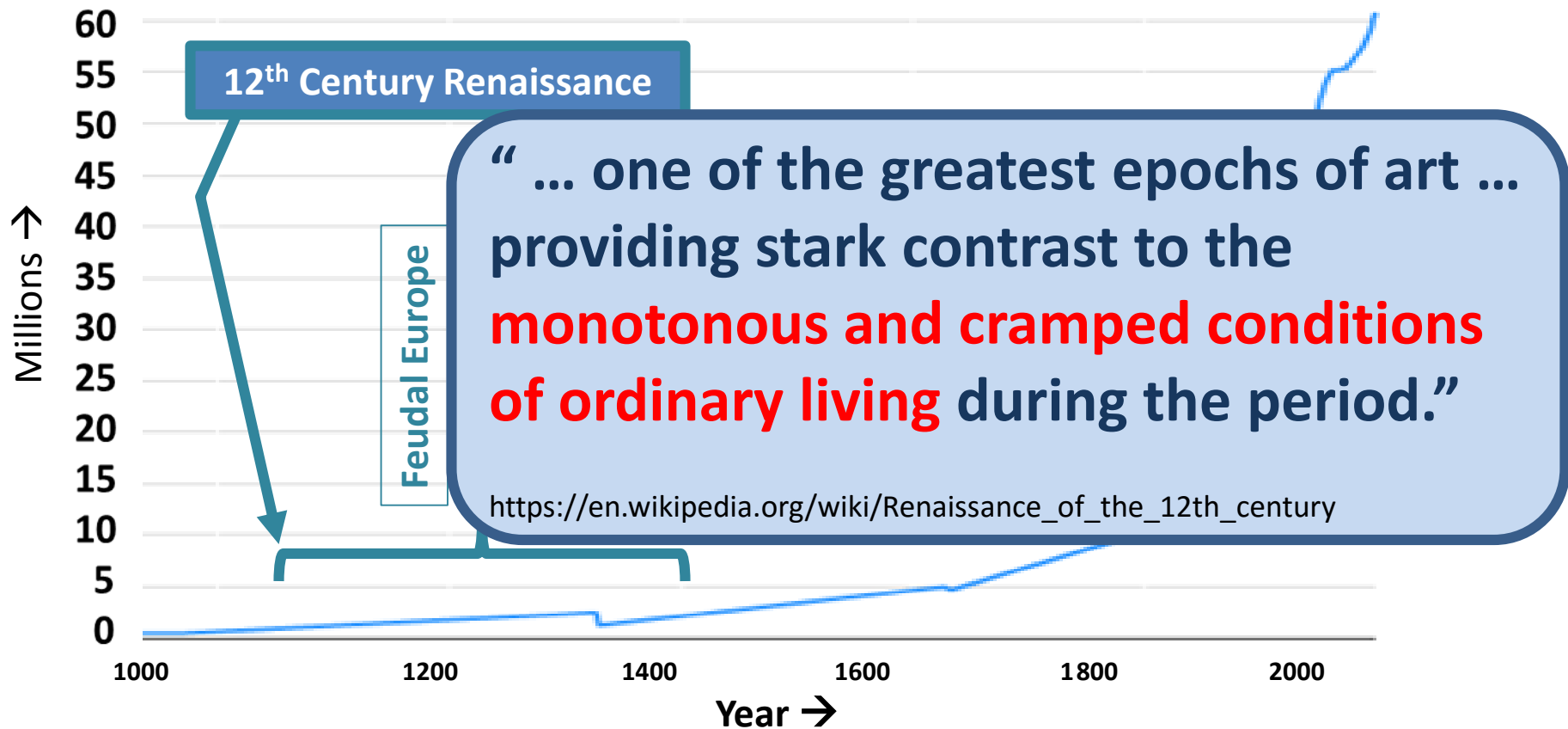
# Challenge for Ecological Economics Theorists

If the science-based  
Theory of Ecological Economics  
cannot soon address the  
Fundamental Dynamics  
affecting all economic systems,  
and does not resolve the conflict  
between human persistence and  
social justice,  
Then it is impotent and irrelevant.

# Empirical Trends Affecting Persistence

## Empirical Trends – UK History

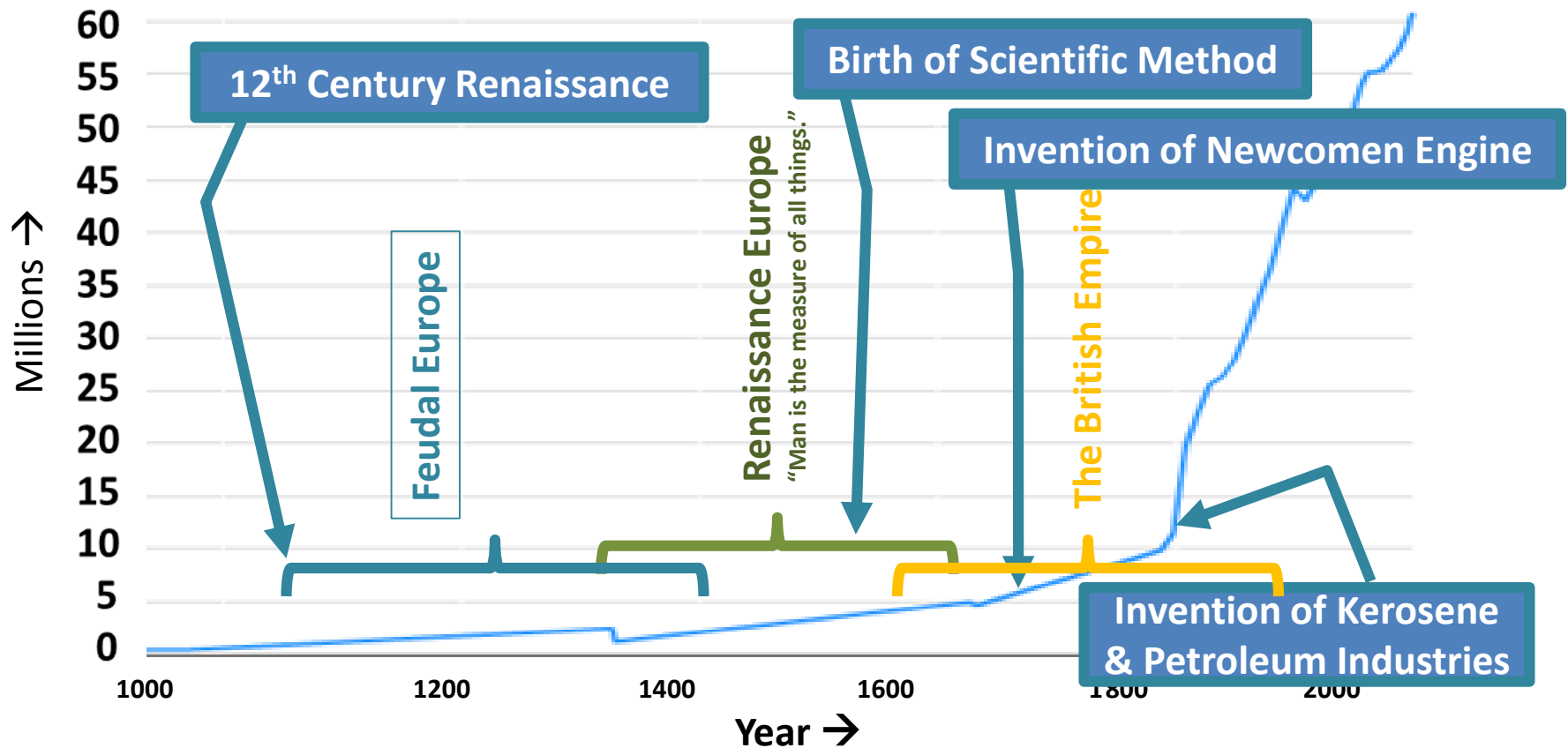
### Historical Population of United Kingdom



# Empirical Trends Affecting Persistence

## Empirical Trends – UK History

### Historical Population of United Kingdom



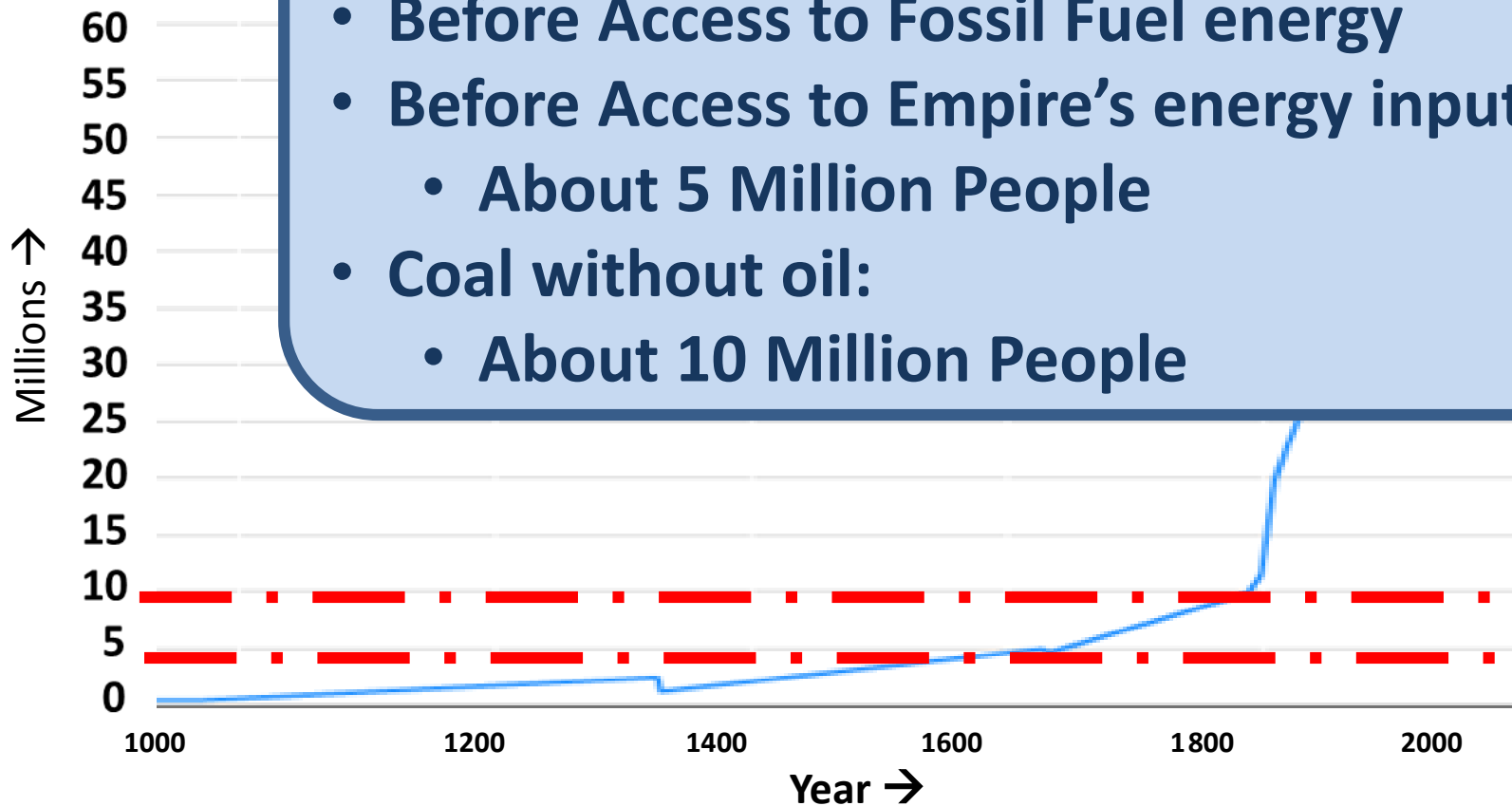


# Empirical Trends Affecting Persistence

## Empirical Trends – UK History

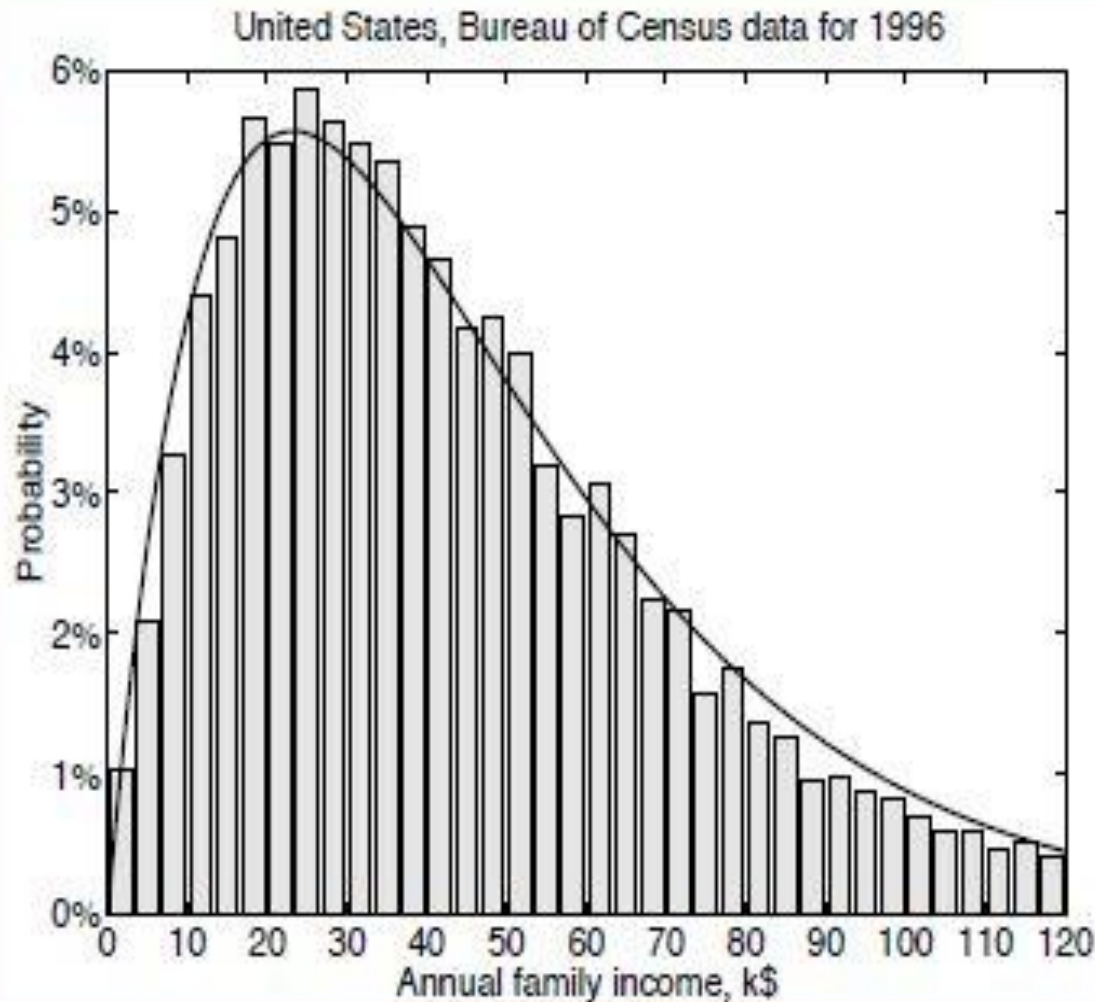
### Carrying Capacity:

- Before Access to Fossil Fuel energy
- Before Access to Empire's energy inputs
  - About 5 Million People
- Coal without oil:
  - About 10 Million People



# Empirical Trends Affecting Persistence

## Empirical Trends – Global History



**US Family  
Income Tax  
data, for 1996,  
compared to  
model curve.**

SOURCE:

Drăgulescu and Yakovenko (2001)  
Evidence for the exponential  
distribution of income in the USA",  
The European Physical Journal B,  
20: 585-589.

# What Social Contract Could Work?

Based on widespread:

- **Understanding of the relentless deep dynamics:**
  - ❑ **Distal Causes: E.g. nature's relentless exploitation of matter and energy for growth**
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- **Establishment of needed social structures**
  - ❑ **E.g. global authorities for lawmaking and enforcement**
  - ❑ **E.g. global world view through education**

**DAUNTING TASK!**

**THERE ARE MORE WELL-EDUCATED  
GENIUSES ALIVE TODAY THAN IN THE  
HISTORY OF THE WORLD PRIOR TO 1900.**

**WE CAN DO THIS!**

**QUESTIONS?**

**Contact Coördinates:**

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- Email: [orrery@rogers.com](mailto:orrery@rogers.com)
- Website: [orrery-software.webs.com](http://orrery-software.webs.com)

**My Biophysical Economics Models Online:**

- PSoup: Re evolution of bugs in a pond
- ModEco: Re sustainable model economies
- EiLab: Re economic entropy – a deep dynamic
- OamLab: Re the Maximum Power Principle – a deep dynamic
- MppLab: Re the Maximum Power Principle – a deep dynamic

“Sustainable” has become a word loaded with unintended meanings. I will talk about social persistence, or human persistence.

# Social Persistence

&

# The Consent of the Governed

A society which is characterized as both **socially persistent** and **socially just** requires the CONSENT OF THE GOVERNED, whether tacit or overt.

A new social contract is needed to replace our modern contract.

# Empirical Trends Affecting Persistence

## Empirical Trend

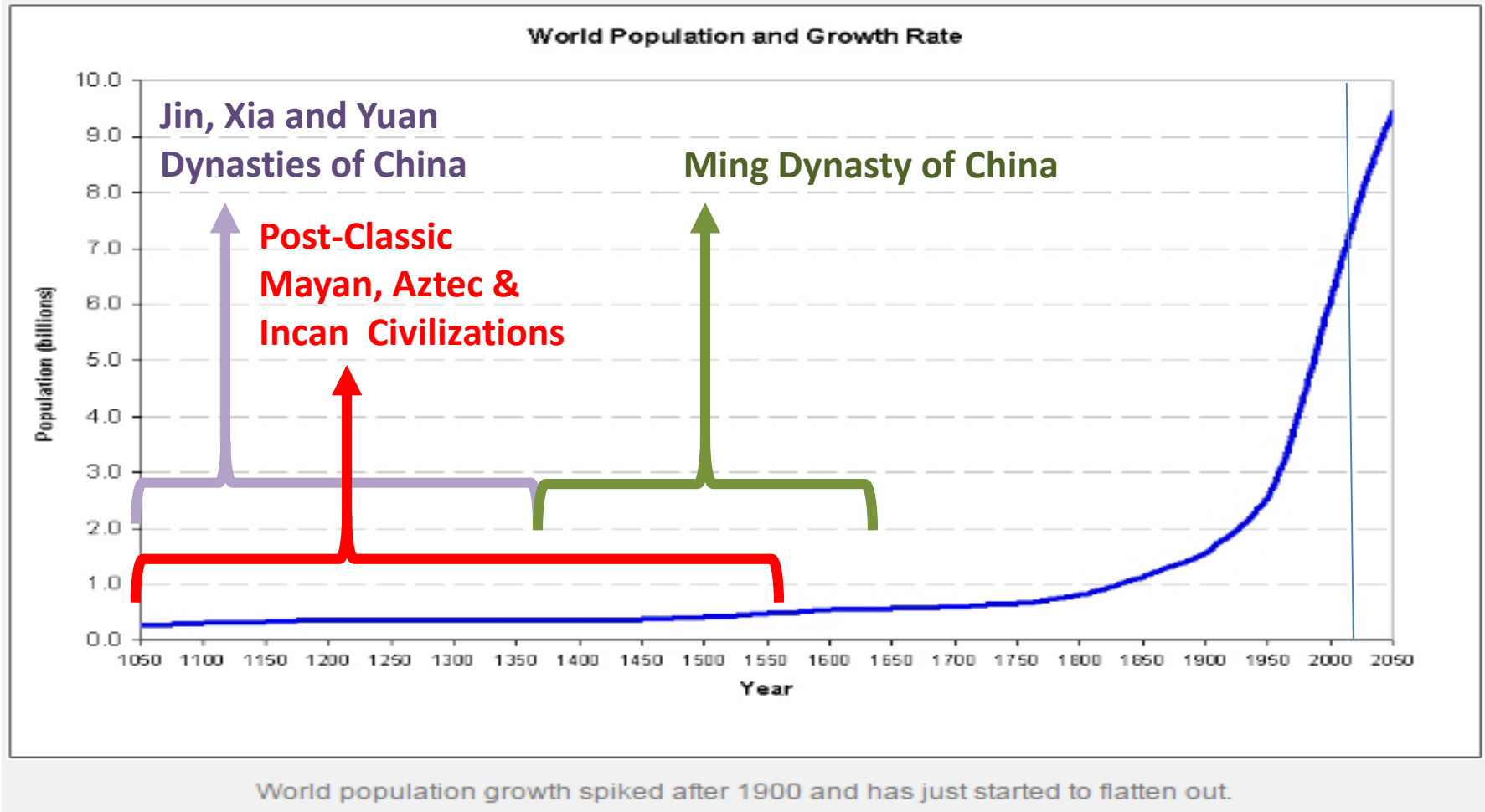
The relentless tendency of any ecosystem or economic system to **press against the carrying capacity** of the environment.

## Implications

- Populations explode in size;
- Rates of recycling of matter increase;
- Rates of consumption of energy increase;
- New sources of matter and energy are found and appropriated;
- Complexity rises;
- **Until some key resource is depleted, and partial or complete collapse follows.**

# Empirical Trends Affecting Persistence

## Empirical Trends – Global History



# Empirical Trends Affecting Persistence

## Empirical Trend

## Implications

The relentless tendency of any economy to **concentrate the power and wealth into the hands of an elite**. This happens at intra-national and inter-national levels. Multi-national corporations exist and benefit at both levels.

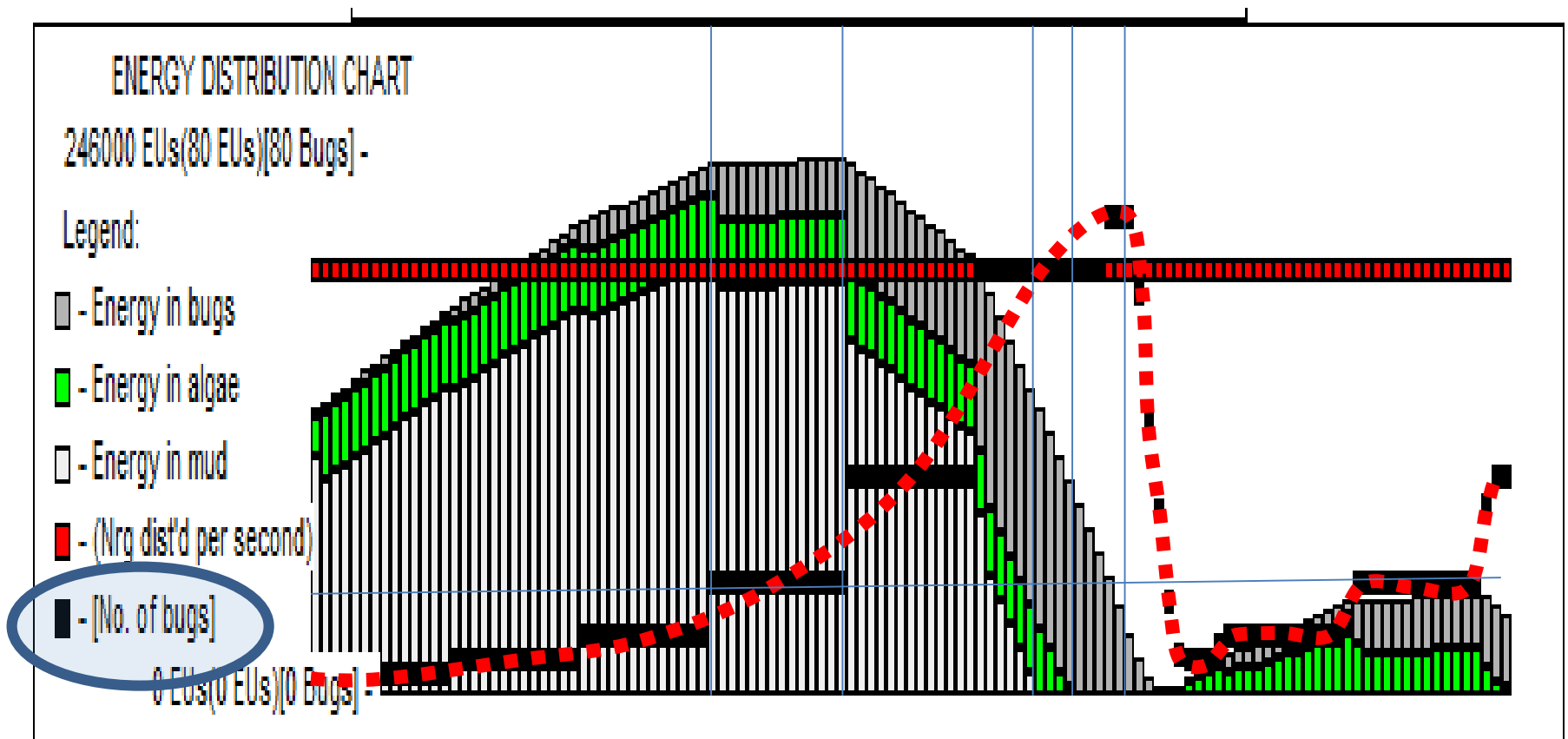
Redistribution of wealth, of political power, and of access to energy must be managed nationally and globally.



# RESERVE SLIDES

# Empirical Trends Affecting Persistence

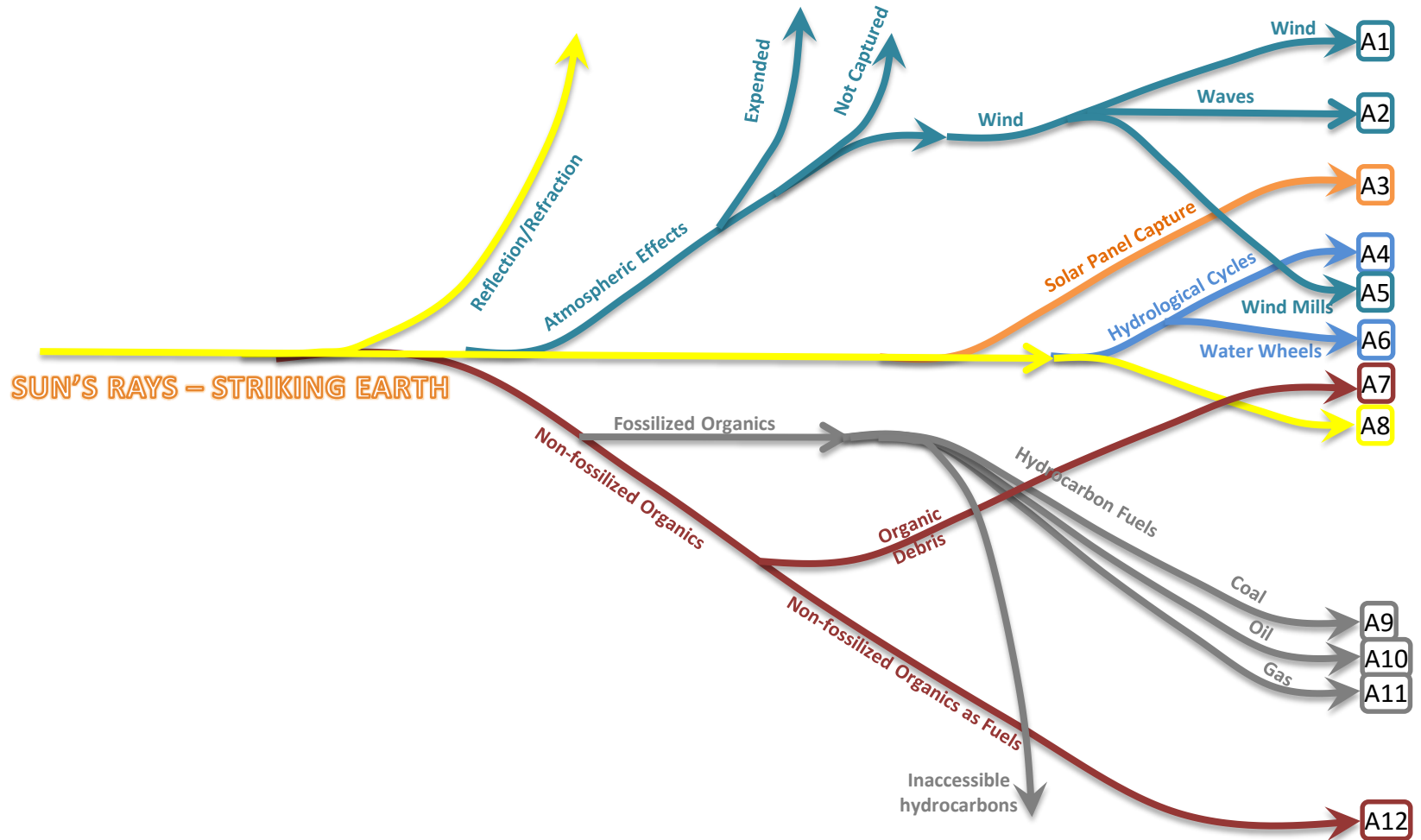
## The Shape of Population Collapse – The Shark Fin



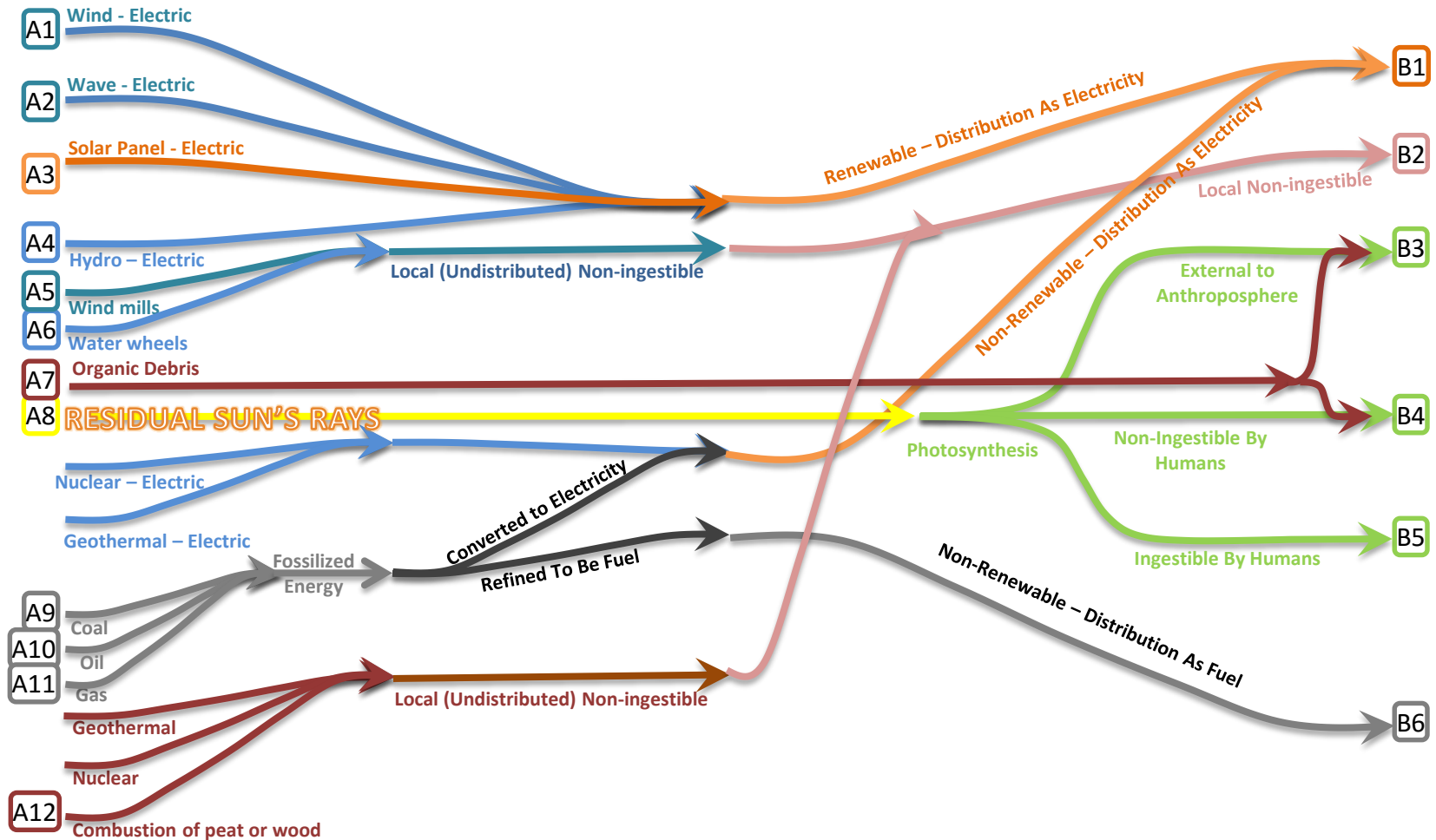
APPLICATION: PSoup Model of Bugs In a Pond  
SCENARIO: Easter Island – Endowed Resources

NO OF BUGS → ■■■■■■■■■■

# Sun as a Source of Energy Flows



# Map of Energy Sources to Distribution/Access Channels



# Five Energy Consumption Bands

