

Will Modern Civilization be the Death of us?

Envisioning Tomorrow's Earth

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Premise: our world is in ecological and cultural 'overshoot'

- ❑ GHGs are accumulating
- ❑ climate is changing
- ❑ the oceans are acidifying
- ❑ fresh waters are toxifying
- ❑ the seas are over-fished
- ❑ soils are eroding
- ❑ deserts are expanding
- ❑ tropical forests are shrinking
- ❑ biodiversity is plummeting
- ❑ wealth accumulates yet income gaps widen (etc., etc.)

Bottom line? **We have entered a stage of eco-destructive uneconomic growth:**

The human enterprise already exceeds the long-term carrying capacity of Earth; resource consumption and waste generation exceed the regenerative and assimilative capacities of the ecosphere yet egregious poverty persists.

'Overshoot:' the global picture



2016 human eco-footprint:

20.5 billion hectares (2.6 gha/cap)

2016 global biocapacity:

12.2 billion hectares (1.7 gha/cap)

= **68% OVERSHOOT**

Humans are consuming/
dissipating/displacing other species,
ecosystems, soils, etc., faster than
nature can regenerate and dumping
wastes beyond nature's capacity to
assimilate.

*This means everyone is competing with
everyone else for the shrinking bio-
capacity of Earth.*

Causal factor 1

Base nature (genetic predisposition)

- ❑ Unless or until constrained by negative feedback, *H. sapiens*, like all other species' populations tends to:
 - ❑ *expand to fill all accessible habitat*
 - ❑ *use all available resources (in the case of humans “availability” is constantly being redefined by technology)*
- (Rees 2006).

Causal factor 2

Creative nurture (social learning)

- ❑ Human beings socially construct their 'realities.' More accurately:
- ❑ We socially construct *conceptual lenses* through which we perceive reality.
- ❑ **Problem: the conceptual lenses through which we perceive reality determine the kind of reality we perceive.**

Social constructs are powerful

- ❑ All traditional myths, political ideologies, religious doctrines, academic paradigms and cultural narratives are *conceived by the human mind, shaped by social discourse, and ultimately become received wisdom to their adherents.*
- ❑ Not all such social constructs are equally valid. Some are nurturing of spirit, supportive of community, harmonious with nature or otherwise adaptive; others are positively hazardous.
- ❑ Whatever the case, **people ‘live out of’ their social constructs and act as if they were real.**

We are in thrall of a modernist techno-industrial narrative, including neoliberal economics, that *reinforces* innate expansionism

❑ **Neoliberal market economics promotes:**

- self-interest and efficiency in ‘utility maximization’ (accumulating stuff);
- a theoretically perfect market as the arbiter of social value.

❑ **Ethical and moral considerations are disallowed:**

- family and community are not part of market calculus;
- compassion for others is also ‘extra-market’.

❑ ***Neoliberal economics assumes unlimited economic growth propelled by boundless technological progress:***

- ❑ ***“We have in our hands now... the technology to feed, clothe, and supply energy to an ever-growing population for the next seven billion years...”***
(J. Simon 1995).

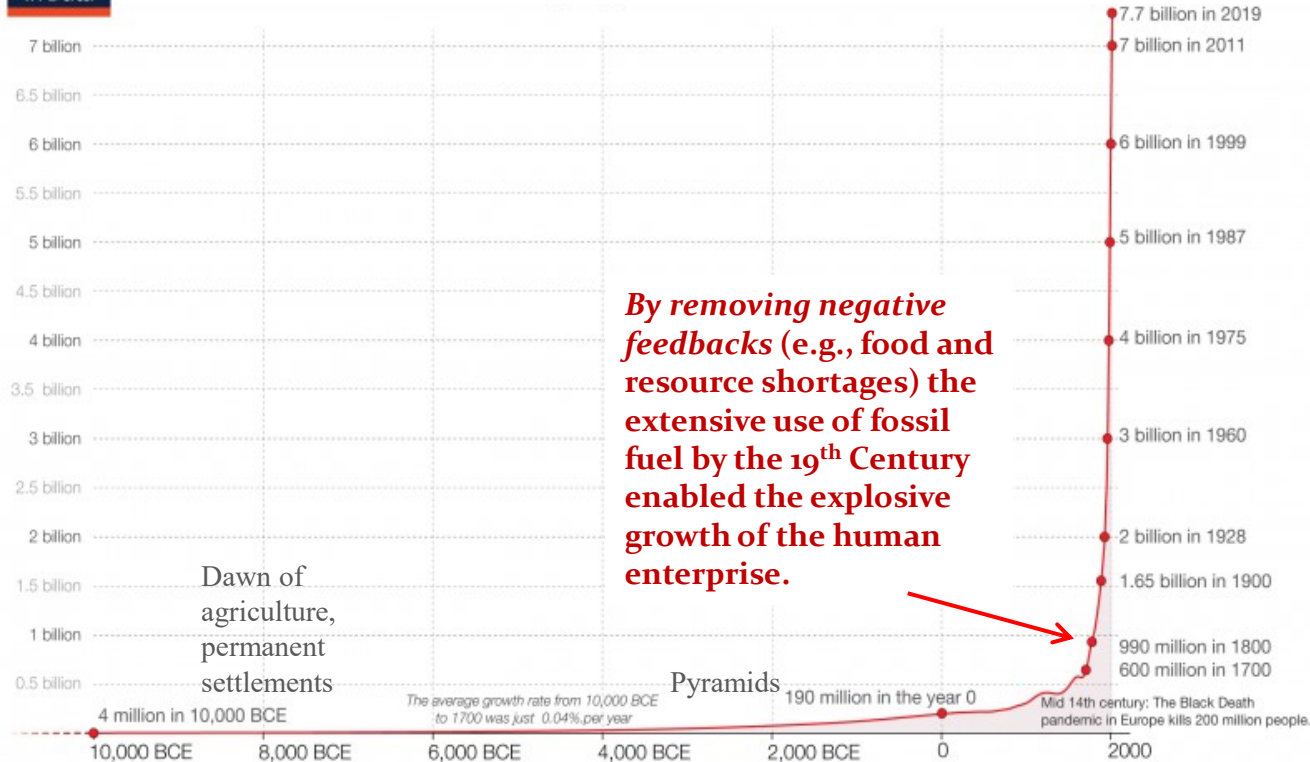
Base nature + modernist nurture = A mind-blowing rate of geometric growth

- ❑ It took 200,000 years for the human population to hit one billion in the early 1800s.
- ❑ The population expanded an additional seven-and-a-half-fold in the next 200 years – **1/1000th as much time!** We will top 7.8 billion in 2020.
- ❑ Meanwhile, real gross world product increased >100-fold and per capita incomes (consumption) increased by a factor of 13 (25 in rich countries).

Problem: Earth didn't get any larger.

The exponential growth of the human enterprise is fueled by fossil energy

Our World
in Data



By removing negative feedbacks (e.g., food and resource shortages) the extensive use of fossil fuel by the 19th Century enabled the explosive growth of the human enterprise.

Continuous population and economic growth is an anomaly. The growth spurt that recent generations take to be the norm is *the single most abnormal period of human history.*

Based on estimates by the History Database of the Global Environment (HYDE) and the United Nations. On OurWorldinData.org you can download the annual data.

This is a visualization from OurWorldinData.org, where you find data and research on how the world is changing.

Licensed under CC-BY-SA by the author Max Roser.

Consumption has exploded accordingly (This can't end well!)

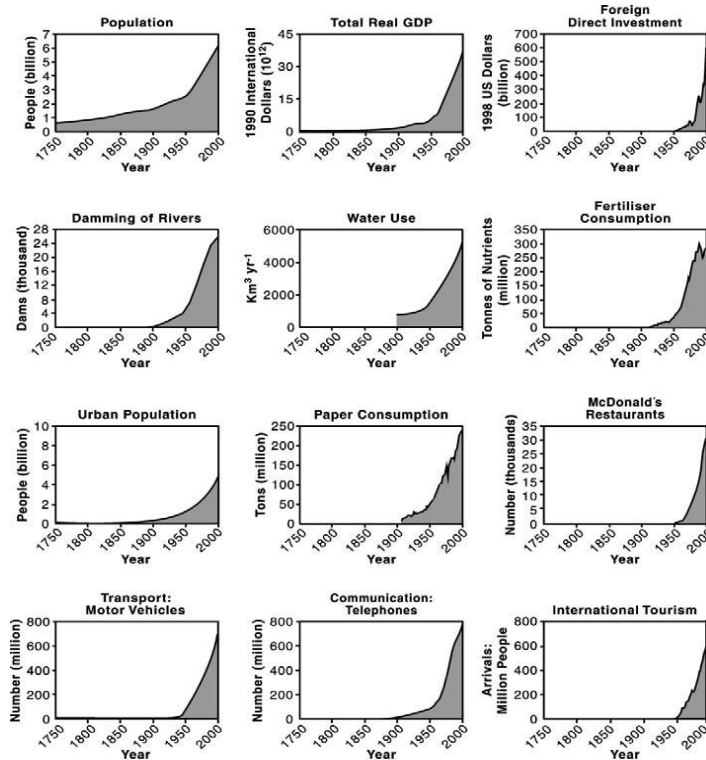


Image source: Steffen, Crutzen & McNeill 2007 [Ambio 36: 314-321]

- Half the fossil fuels and many other resources ever used by humans have been consumed *in just the past 30 years*

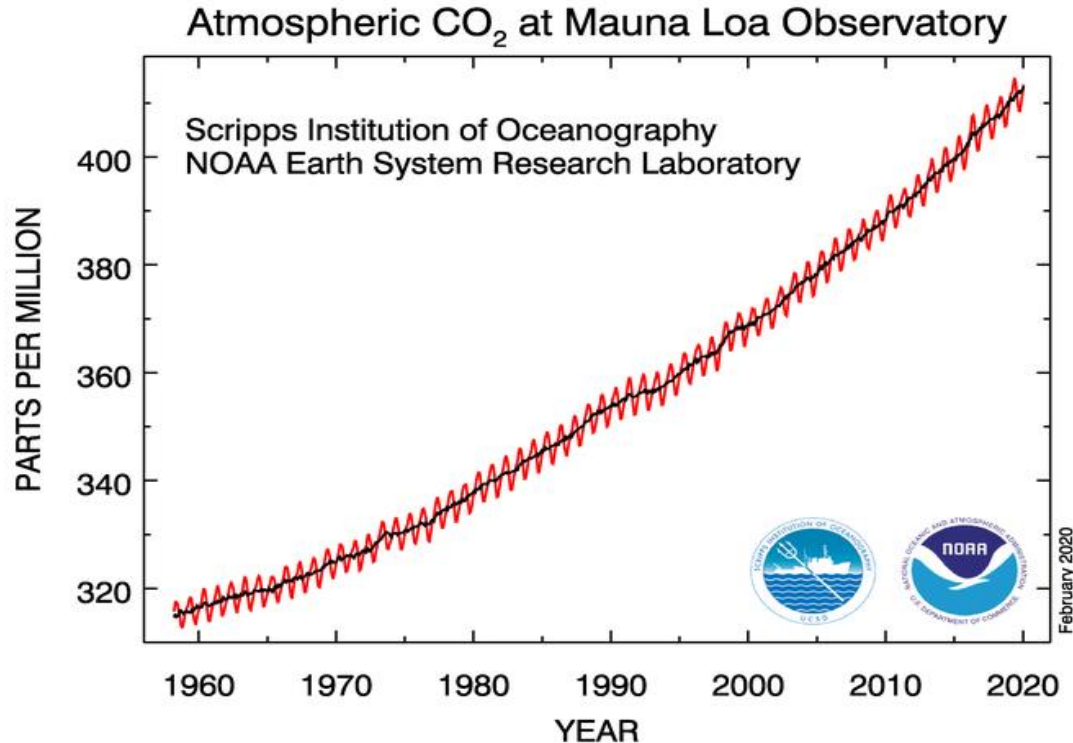
NB: Contrary to received wisdom, techno-efficiency *promotes* consumption: the recent explosion of consumption (and pollution) has occurred during a period of *unprecedented increases in technological and economic efficiency*.

Neoliberal growth economics: divorced from biophysical and social reality

- ❑ Neoliberal economic models (social constructs all) *contain no useful information* about the structure or dynamic properties – interdependence, lags and thresholds, discontinuous behaviors, irreversibilities and limits – of the ecosystems, or even the social systems, *within which* the economy operates in the real world.
- ❑ What could possibly go wrong?

Plenty as it turns out –

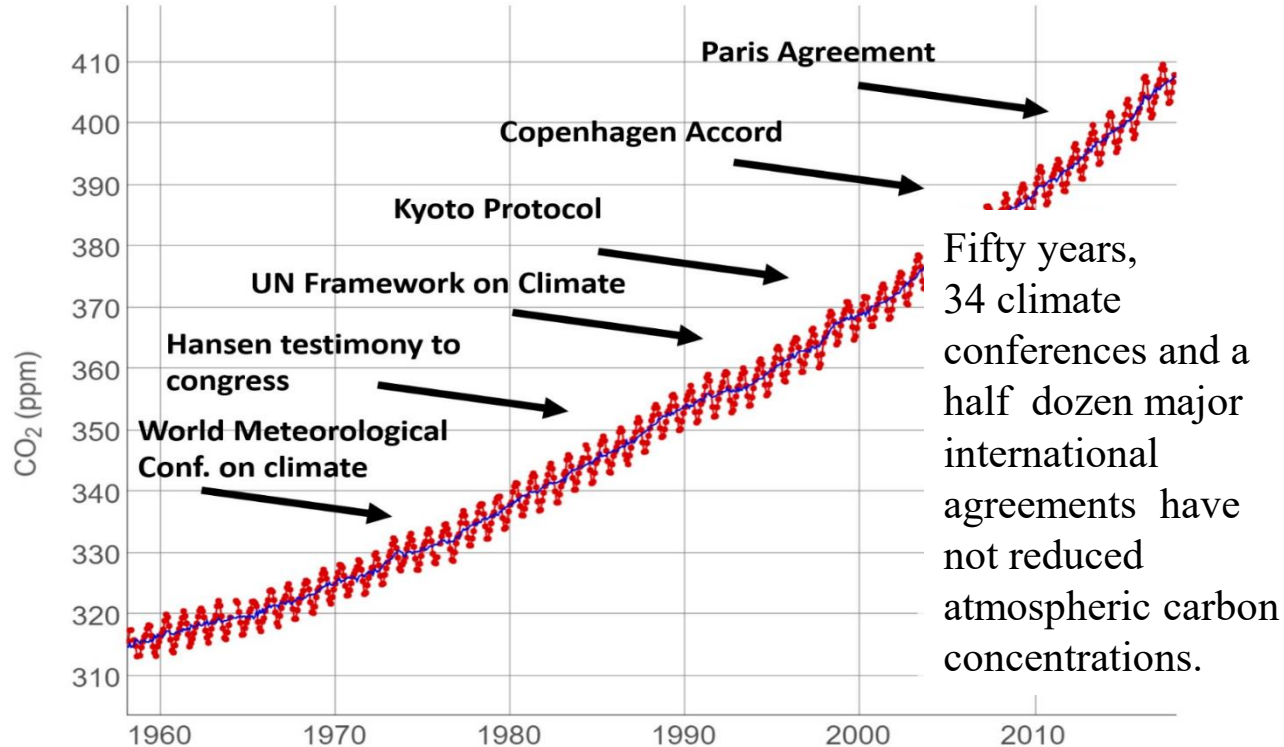
Best-known symptom: Increasing atmospheric carbon dioxide and climate change



- ❑ A 48% increase above pre-industrial levels to date.
- ❑ Humans are changing the chemistry of the ecosphere.

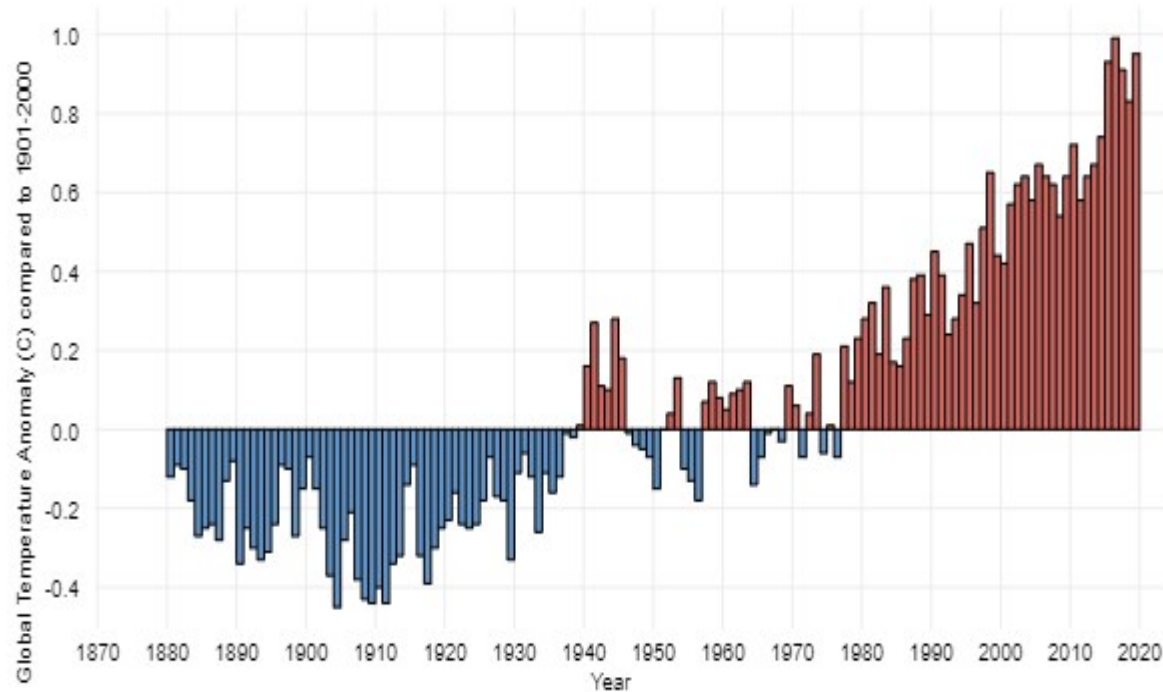
Captives of the modernist paradigm seem incapable of implementing their own negotiated climate agreements

Mauna Loa Monthly Averages



Global surface temp since 1880

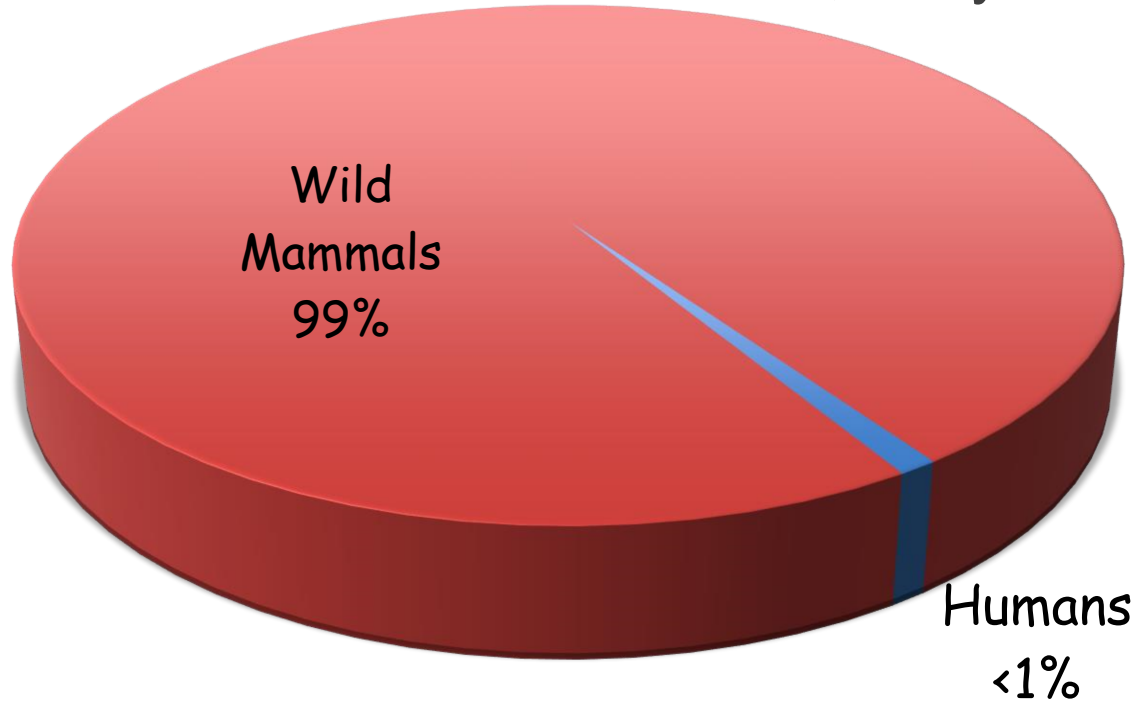
(relative to 1901-2000 average)



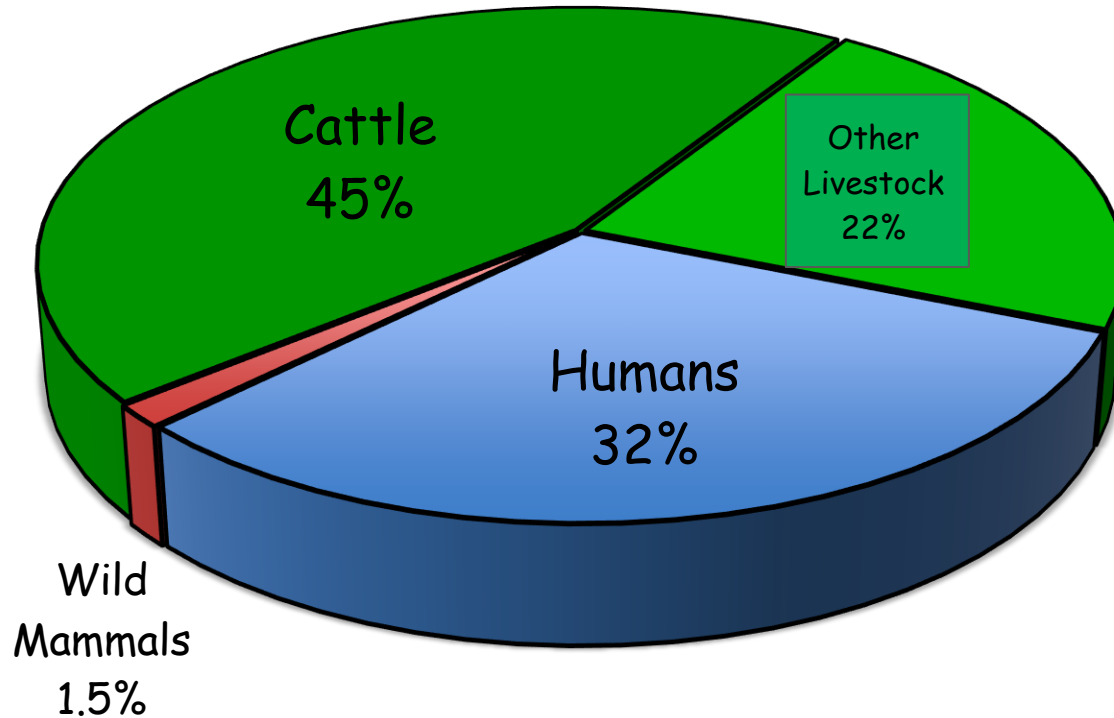
The past five years are the warmest years in the instrumental record. Nine of the 10 warmest years have occurred since 2005.

Lesser-known symptom: plummeting biodiversity

Terrestrial Mammal Biomass 10,000 years Ago



Terrestrial Mammal Biomass 2015



This is the result of *H. sapiens*' technology-enhanced 'competitive displacement' of non-human wildlife. The process may be complete in this century.

It's not just mammals

- ❑ Wild bird populations are also tumbling. Domestic poultry now constitute 70% of the world's avian biomass.
- ❑ Average populations of thousands of monitored species of wild vertebrates (birds, fish, mammals, amphibians) have declined 60 percent since 1970.
- ❑ Populations of invertebrates, including essential pollinators, are also in free-fall: Butterflies down 53%; beetles down 49%; bumblebees down 46%.

Warning: some social constructs are merely shared illusions

- ❑ These data show that, contrary to conventional political wisdom, **there is an absolute conflict between the growth of the human enterprise and protection/conservation of ‘the environment’.**
- ❑ The continuous growth of the human enterprise on a finite planet *necessarily* means the displacement, sometimes to extinction, of non-human species.
- ❑ **Modern humans are systematically destroying the biophysical basis of their own existence.**

The modernist ‘solution’ is completely self-referencing: More growth through technology

Example 1 – the taboo population problem:

- ❑ “We find a strong and increasing focus on feeding the world through increasing food production *via technology*... Population [planning] has declined from being the dominant lever discussed in 1969 to the least researched in 2018” (Tamburino *et al.* 2020, emphasis added).

Example 2 – climate change

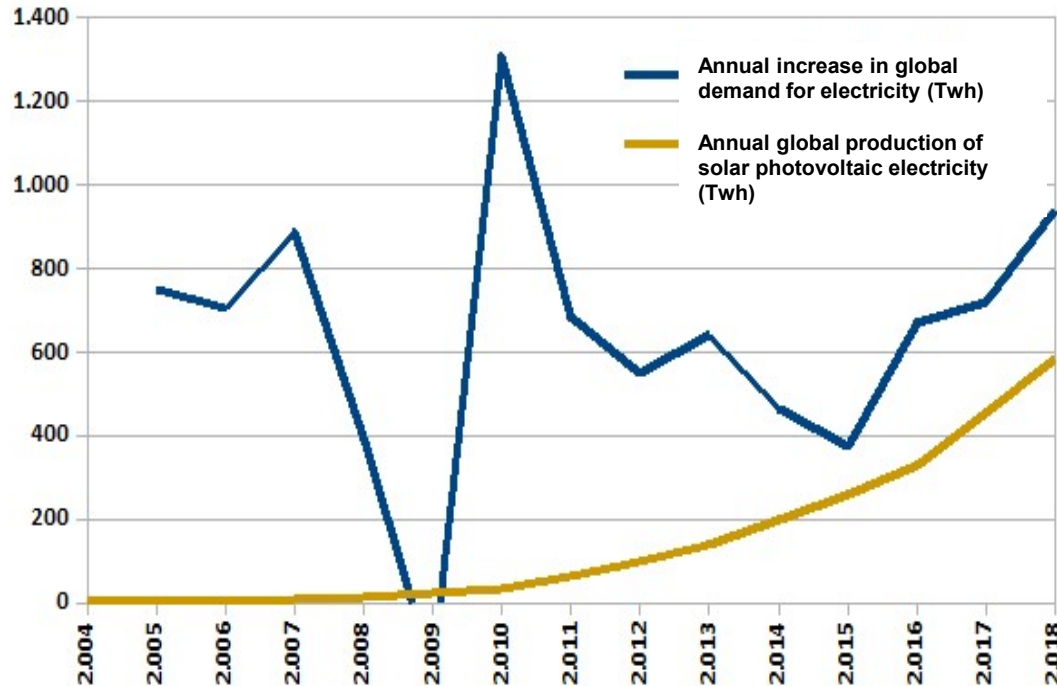
To avoid potentially catastrophic climate change we must:

- ❑ reduce CO₂ emissions by ~ 50% below 2010 levels by 2030 (i.e., 7.5% per year beginning now).
- ❑ achieve complete decarbonization by 2050.
- ❑ Politically acceptable ‘solutions’ include any capital-intensive investment (e.g., wind and solar power) that will *maintain the existing growth-based economic order*.
- ❑ Serious conservation, demand reduction, life-style changes, more equitable distribution, etc., are not on the table.
- ❑ Disaster policy is being designed to serve the capitalist growth economy “...so the latter becomes the solution to (not the cause of) the [problem]” (Spash 2016, p.931).

Some editorial cartoons say it all



Non-solution! Despite the hype, a 'green energy' transition is not really happening

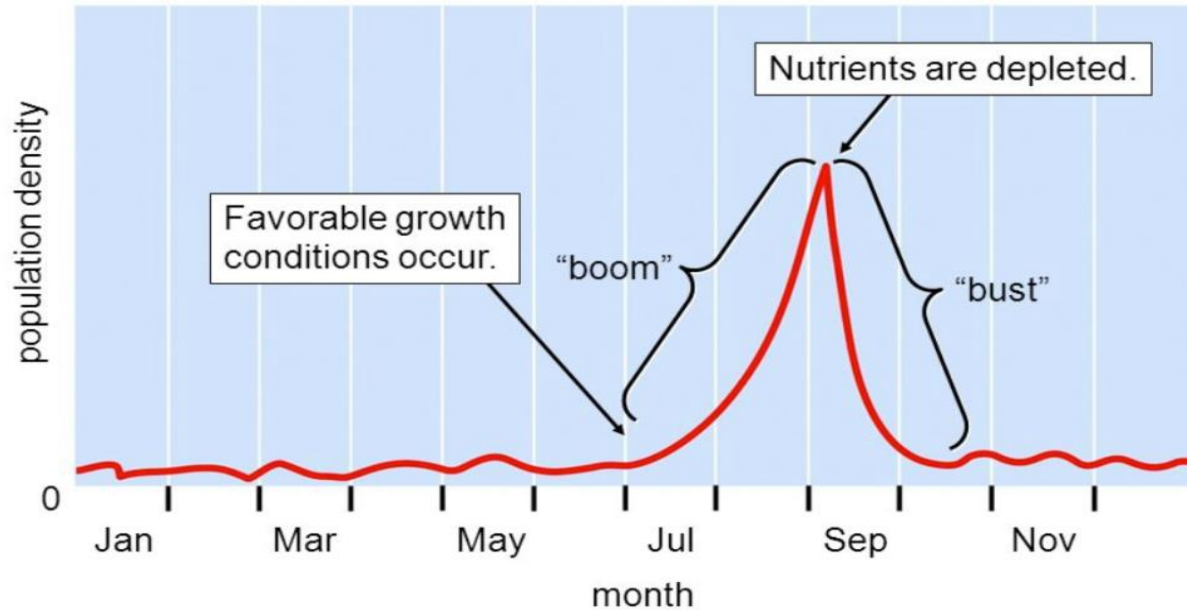


- E.g., under the modernist growth agenda, the *increase* in demand for electricity has regularly outpaced – by 60% in 2018 – *total electricity generation* by solar PV after 30+ years of significant deployment.
- In 2019, fossil fuels still accounted for 84% of global primary energy consumption.

As matters stand, the expansion of the human enterprise resembles the 'plague phase' of a one-off boom/bust population cycle common in nature.

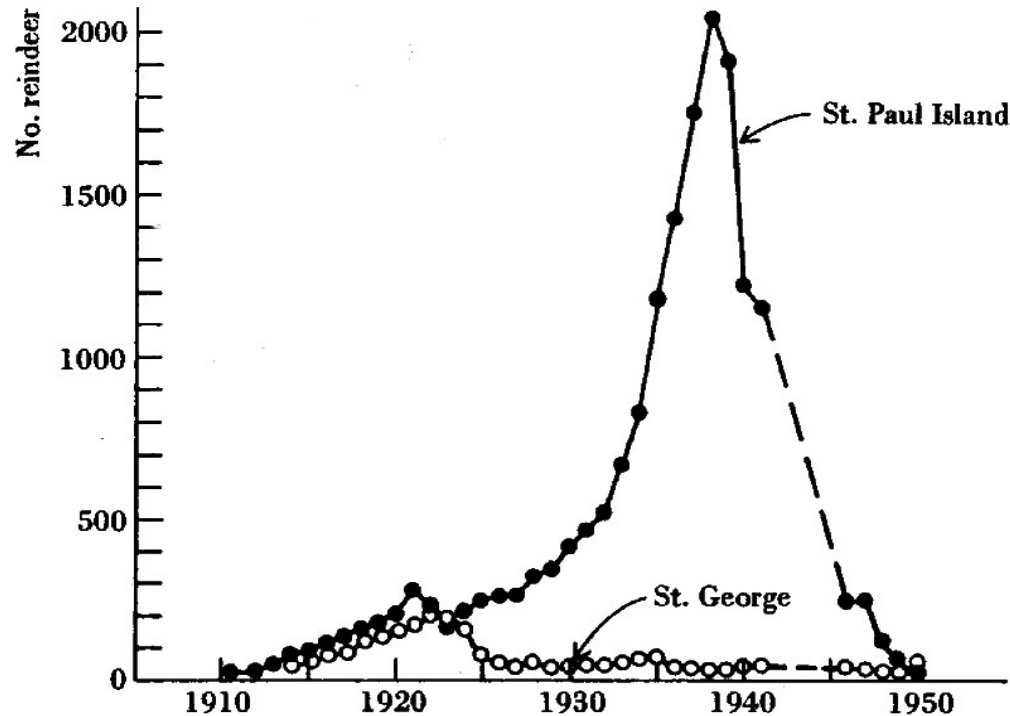
The 'boom-bust' population cycle

What goes up will come down!



(Source : *Biology – Life on Earth*, 8th ed, Fig.26-3)

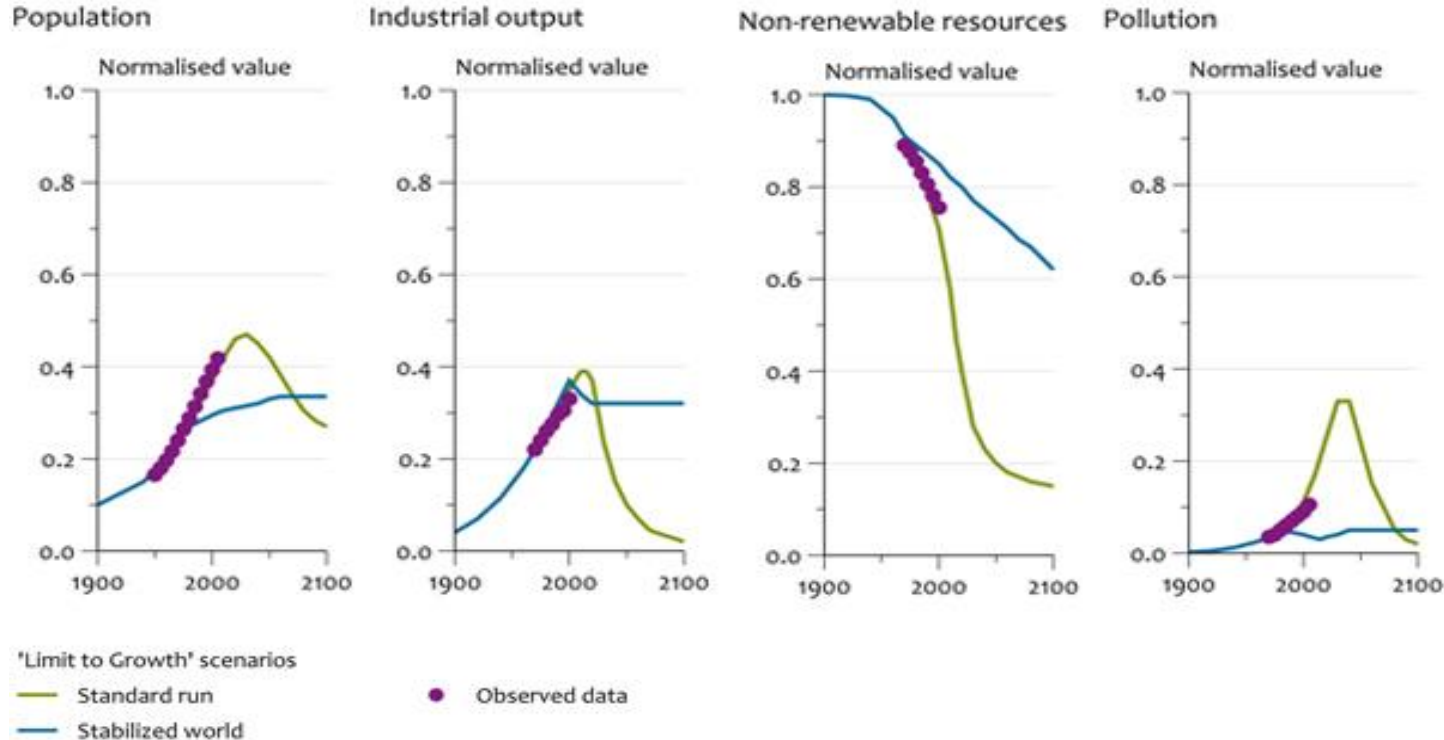
The pattern is common to non-human species introduced to initially resource-rich ecosystems



- Here we see the rise and fall of reindeer populations introduced to the Pribilof Islands.
- The population crashes resulted from resource depletion – in this case overgrazed lichens.

BAU: On course for collapse

Comparing 'Limit to Growth' scenarios to observed global data



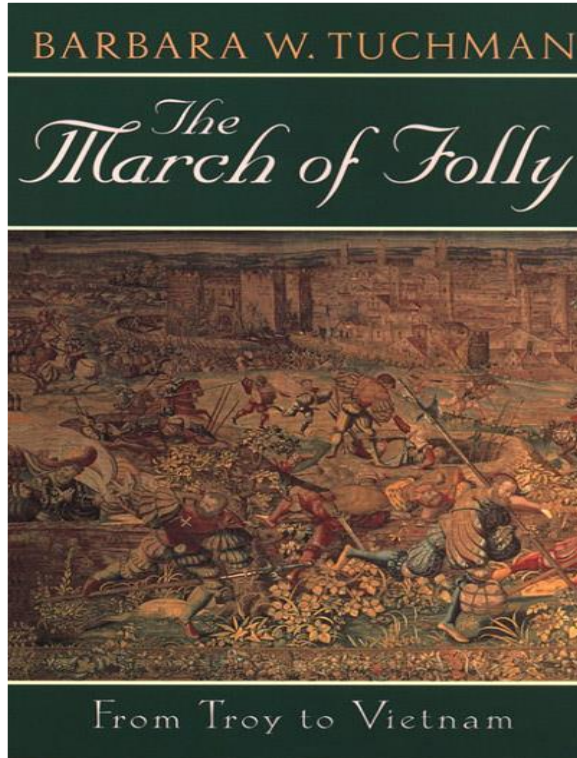
Source: PBL Netherlands Environmental Assessment Agency

In theory, we should be able to avoid implosion

Unique qualities distinguish *H. Sapiens* from other species:

- ❑ high intelligence, (e.g. logical analysis, the ability to reason from the evidence);
- ❑ the ability to plan ahead;
- ❑ the capacity to exercise moral judgement;
- ❑ empathy/compassion for other people and other species.

However, logic reason and compassion are not the primary determinants of human affairs



- ❑ “The masses have never thirsted after truth. They turn aside from evidence that is not to their taste, preferring to deify error, if error seduce[s] them. Whoever can supply them with illusions is easily their master; whoever attempts to destroy their illusions is always their victim.” (Gustave le Bon 1896).
- ❑ “Wooden-headedness... plays a remarkably large role in government. It consists in assessing a situation in terms of preconceived fixed notions [i.e., ideology] while ignoring any contrary signs. It is acting according to wish while not allowing oneself to be deflected by the facts” (Tuchman 1984).

Or, to put it more simply



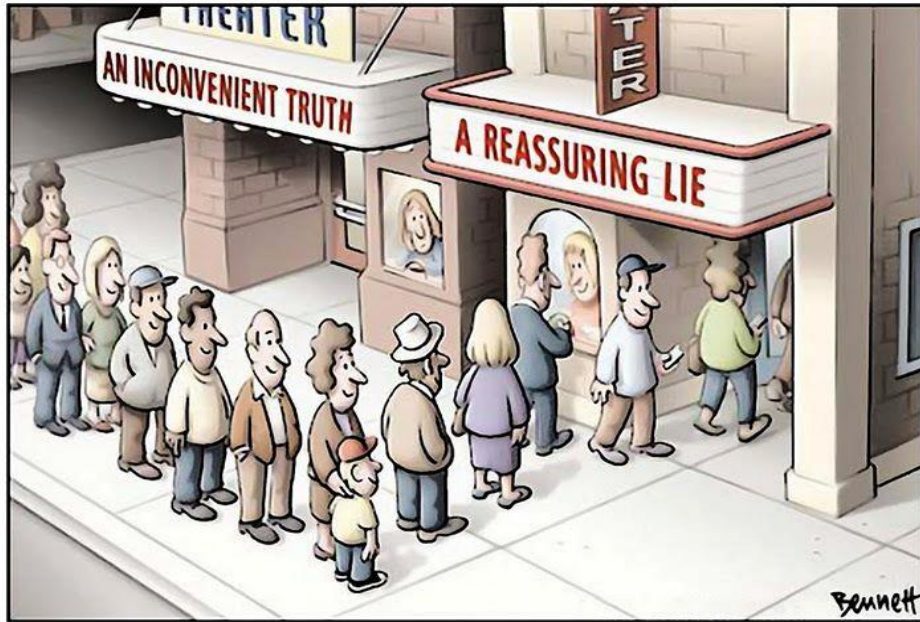
"The problem with your reasoned solutions is they don't fit my preconceived notions of the problems."

An Explanatory Cognitive Mechanism



- ❑ During individual development, sensory experiences and cultural norms literally help shape the human brain's synaptic circuitry in patterns that reflect and embed those experiences.
- ❑ Subsequently, people seek out *compatible* experiences and, **“when faced with information that does not agree with their [preformed] internal structures, they deny, discredit, reinterpret or forget that information”** (Wexler, *Brain and Culture*, 2006).

Worse, in recent decades, the population has been *socially engineered* to ignore reality



- ❑ Ours is a socially-constructed ‘age of unreason’, the ‘endarkenment’.
- ❑ The 2016 Oxford Dictionaries word-of-the-year was, **post-truth**, an adjective defined as ‘*relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.*’
- ❑ Politics is increasingly influenced by neoliberal ideology, religious fundamentalism, climate-change denial, anti-intellectualism and other forms of ‘magical thinking’.

Social construction, part of the problem, must also be part of the solution

The global community must deliberately, consciously, socially co-construct a new cultural narrative that:

- ❑ Acknowledges *H. sapiens* is part of nature;
- ❑ Recognizes limits to material growth;
- ❑ Satisfies the human need for love, spiritual fulfilment, community and ecological-with-economic security.
- ❑ I.e., we must transcend techno-modernism and catalyze a ***personal-to-civilizational change, transition, transformation*** to a way of being on Earth in which humans live spiritually satisfying lives more equitably within the biophysical means of nature.