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Existential Risk

Why we urgently need our population and economy to degrow

Seminar - Climate and Energy, Risks and Opportunities
hosted by the Sustainable Engineering and Risk Engineering Societies,
20Feb17

This study started during my research into the viability of vegetable oil fuels
entitled

*‘An assessment of the technical and economic feasibility of using vegetable oil fuels
in compression ignition engines, with comments on more fundamental ways to offset the
impending post fossil fuel dilemma’*

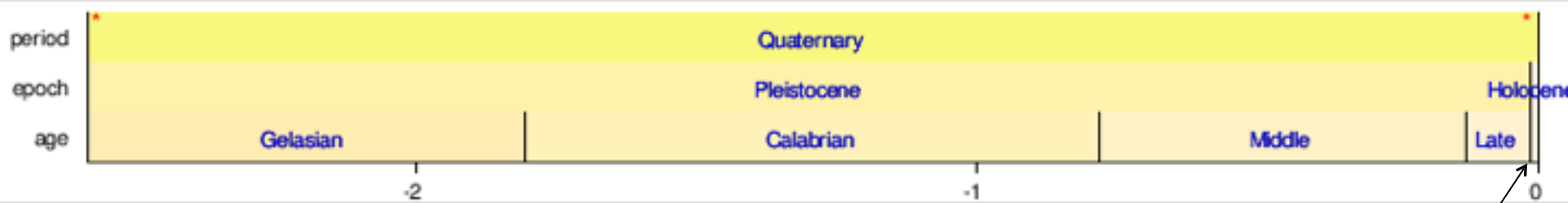
It addresses :-

Existential Risk

Population Degrowth, and

Economic Degrowth but first

Geological time



The last 11,700 years is the Holocene Epoch

but many describe our period commencing in about 1900 as the **Anthropocene Epoch** because most of the changes which have occurred in this period are caused by us

We are also being described as the cause of the **6th Extinction**

Climate Change and the **Energy Crisis** are but two consequences of our greed and growth driven existence

I urge you all to seriously consider the underlying causes, not just the symptoms

The first three extinctions, the dinosaurs and two ice ages were externally caused

The next three, we have caused, firstly as **hunter gatherers**

Secondly when we developed **agriculture**

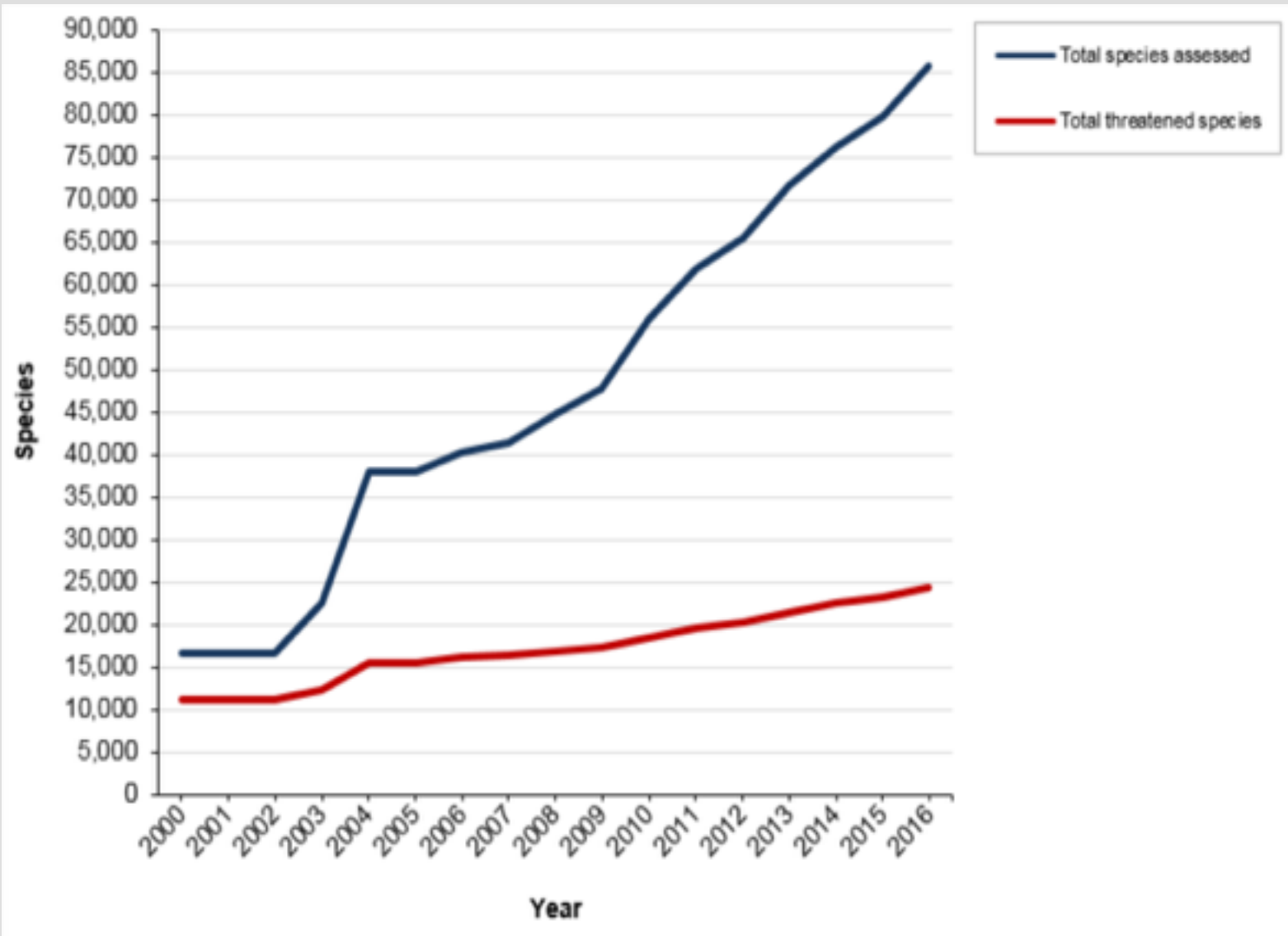
Thirdly when we discovered **fossil fuels** and are now causing what is believed to be the highest extinction rate on record

The current rate has been described as being capable of halving the total number of species by 2100 (Whitty, 2007)

Others have described it as being 100 times the background rate estimate of 2 extinctions per million species per year (Ceballos, Erlich et al, 2015)

The IUCN Red List presently contains 661 species **Presumed Extinct (PE)** and **Presumed Extinct in the Wild (PEW)**

Threatened species in 2016 – 25,000 of 85,000 assessed (29%)



Source : IUCN Red List (2000–2016-3)

The way to avoid all these extinctions, to save ourselves and future generations, is to reduce **Existential Risk (x-Risk)**

not just for our own benefit for other species and the environment as a whole, but for all future generations

A very small reduction in existential risk will save countless future lives and is therefore more important than any other global public good (Bostrom, N)

Given that we are unable in the short term, to develop human settlements elsewhere in the universe, we must learn how to survive here

There are 'external' or 'natural' risks but the most serious are those generated by us

Examples of both of these categories of risk are:-

Existential Risk examples

External (Natural)

Major asteroid impact

Large-scale volcanism

Extra-terrestrial invasion

Natural ice age

Cosmic events

Mega-tsunami

The higher being or beings who set us up, switch us off

Human-caused

Global nuclear annihilation

Dysgenics (perpetuation of defective genes)

Biological warfare

Chemical warfare

Total war

Rogue biotechnology

Release of a pandemic causing agent

Ecological collapse

Global warming

Hostile artificial intelligence

Nanotechnology weapons

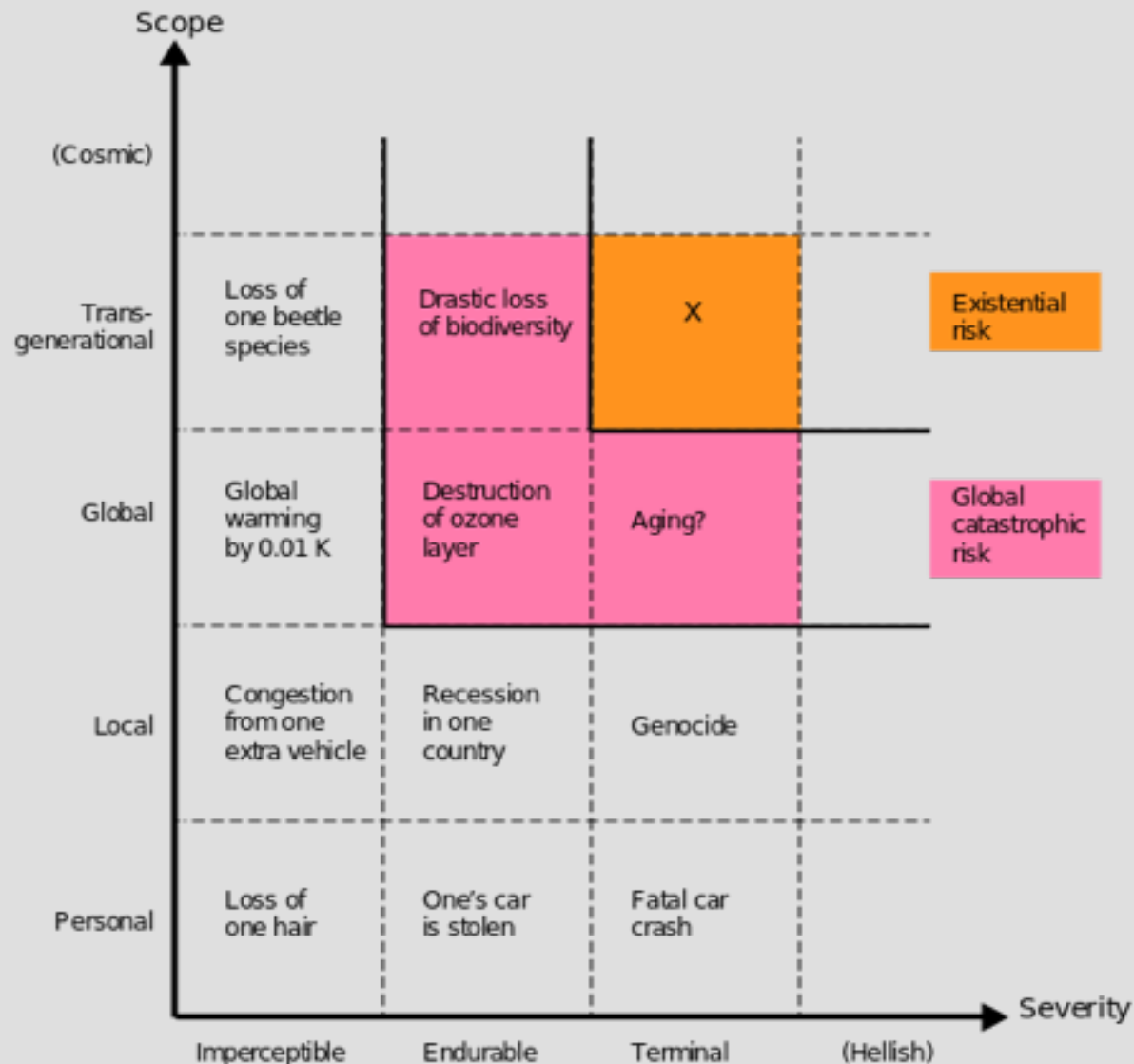
Plague in ever denser populations

Cessation of the advancement of technology

Over-population

Economic Growth

Existential Risk and Global Catastrophic Risk – Scope vs Severity



Some likelihood estimates established during a workshop session at the 2008 conference on *Global Catastrophic Risk* hosted by the *Future of Humanity Institute at Oxford University*

Global Catastrophic Risk examples	Likelihood Estimates
Molecular nanotechnology weapons	5%
Super-intelligent Artificial Intelligence	5%
Non-nuclear wars	4%
Engineered pandemic	2%
Nuclear wars	1%
Nanotechnology accident	0.5%
Natural pandemic	0.05%
Nuclear terrorism	0.03
Overall probability	19%

Some organisations studying existential risk

Academic

The Future of Humanity Institute, Oxford University (2005)

The Centre for the Study of Existential Risk, Cambridge University (2012)

The Millenium Alliance for Humanity and the Biosphere, Stanford University

Government

World Health Organisation – Global Alert and Response

The United States Agency for International Development – Emerging Pandemic Threats Program

The Lawrence Livermore National Laboratory – Global Security Principal Directorate

Private

The Bulletin of the Atomic Scientists of Chicago (1945)

The Doomsday Clock (1947)

The Foresight Institute (1986)

The Machine Intelligence Research Institute (2000)

The Lifeboat Foundation (2009)

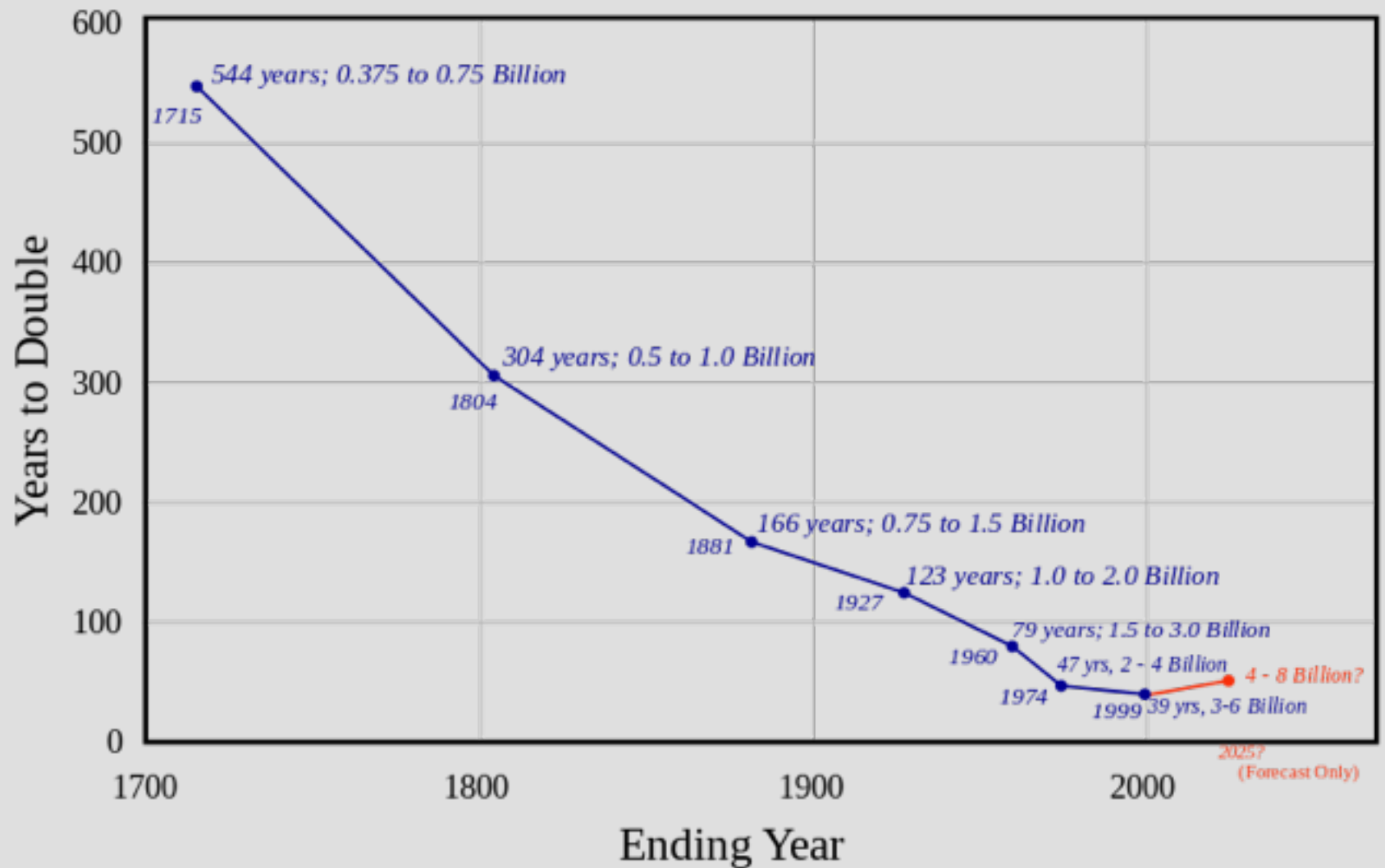
The Global Catastrophic Risk Institute (2011)

The Global Challenges Foundation (2012)

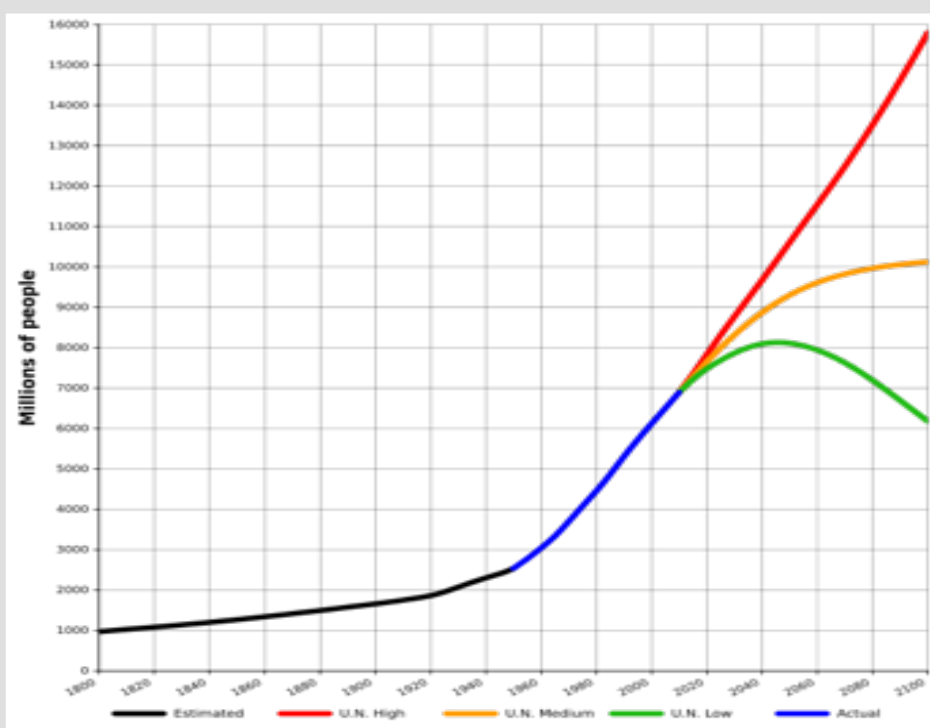
The Future of Life Institute (2014)

Population Degrowth

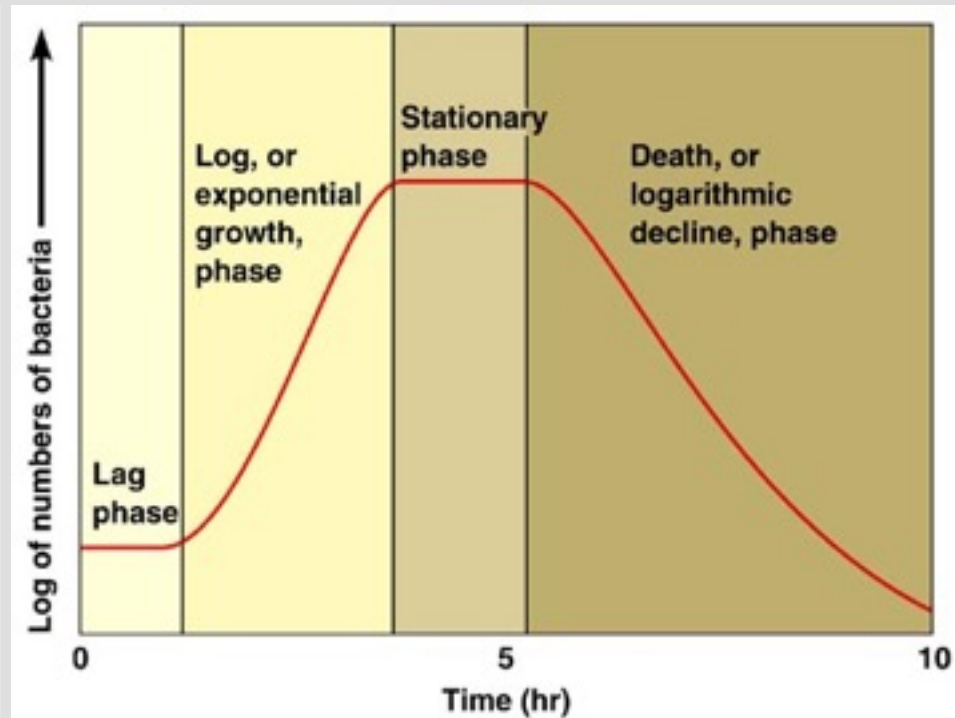
Years to Double Population



Human growth curve 1800-2100



Microbial growth curve 10 hours



We are still in the exponential growth phase

See what happens to bacteria after that. We and all living creatures are the same in this regard. But we just take no notice.

Literature review

Sharif, Mace, Karamouzian, Aloosh, Erfani, Borrie, Jones, Meier and Caldwell

Conclusions of the review are :-

Dismay in demographers not recognising the limitations of continuing economic growth

A need for demographers and environmental scientists to work together

A need for much more research to establish facts pertaining to appropriate levels of population

That there are no easy or quick solutions

Comments

The economy is a wholly owned subsidiary of the environment and not the other way round

If all women in all countries were educated, empowered to plan their families and to abort, we would reduce world population to a sustainable level

Economic Degrowth

The late Professor John Urry (Lancaster University), says

When we discovered fossil fuels we should have either left them in the ground for the future or rationed them : we should certainly do so now.

Energy is not just another commodity, it is the pre-requisite of all commodities



The 6th International Conference on Economic Degrowth for Ecological Sustainability and Social Equity,

is planned for 2018; we can seek to host it here

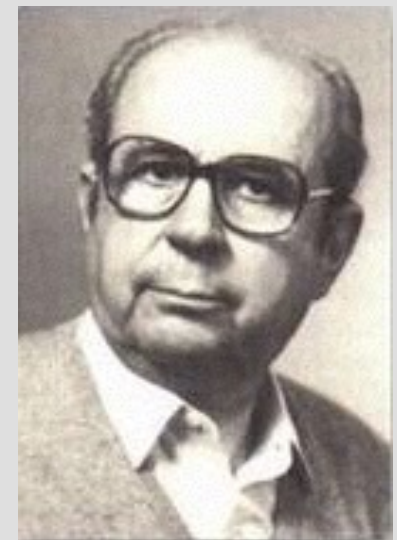
Only mad men and economists believe that infinite growth is possible in a finite world (Kenneth Boulding)

And yet we hurtle along in our greedy growth-before-all style of living, on our way to what many consider to be a very serious demise.

To avoid the apocalypse we must gain wisdom and develop technological maturity with aims like :-

- (i) *equality and sustainability for all people,*
- (ii) *recognition of the rights of other species,*
- (iii) *abandoning the objectives of accumulation and wealth*

Greed (chrematistics) must end and be replaced with Aristotle's oikonomia (Nicolas Georgescu-Roegen, founder of ecological economics)



To avoid the apocalypse, we need to voluntarily degrow (Georgescu-Roegen; Jan van Bavel) and depopulate (Herman Daly) or **go extinct** before reaching technological and moral maturity (Nick Bostrom)

The only way we can grow our population and our economy indefinitely is by populating other planets.

If we do this we should be OK.

If we do not gain wisdom and full international co-operation before colonising elsewhere, we will go prematurely extinct.

(Professor Nick Bostrom, Oxford University)



The 2nd International Conference on Economic Degrowth for Ecological Sustainability and Social Equity (Barcelona 2010), declared :-

An international elite and a “global middle class” are causing havoc to the environment through conspicuous consumption and excessive appropriation of human and natural resources.

anti-crisis measures that seek to boost economic growth will worsen inequalities and environmental conditions in the long-run.

"debt-fuelled growth", ie forcing the economy to grow in order to pay debt, is an illusion.

We need - restrictions to advertising, moratoria on infrastructure and resource sanctuaries,

facilitation of local currencies, gradual elimination of fiat money and reforms of interest, promotion of small scale self-managed not-for-profit companies, defence and expansion of local commons and establishment of new jurisdictions for global commons, establishment of integrated policies of reduced working hours (work-sharing), introduction of a basic income and institutionalisation of an income ceiling,

abandonment of large-scale infrastructure such as nuclear plants, dams, incinerators, high-speed transportation; conversion of car-based infrastructure to walking, biking and open common spaces; taxation of excessive advertising and its prohibition from public spaces,

introduction of global extractive moratoria in areas with high biodiversity and cultural value, and compensation for leaving resources in the ground, denouncement of top-down population control measures and support of women's reproductive rights, conscious procreation and the right to free migration while welcoming a decrease in world birth rates

Some current degrowth practices

1. *Sharing of information via the internet*
2. *Open exchange of information via Peer-to-Peer (P2P) practices w/o copyright, patents etc*
3. *Creative Commons licencing*

Movements such as :-

4. 100 Resilient Cities
5. Tiny House
6. Voluntary Simplicity
7. Co-housing
8. Transition Towns

There are some 500 transition towns around the world, 200 in the UK. Totnes in Devon was the first

Thank you !

This powerpoint and the associated 15-page paper
will be placed on the SEng website



River Exe estuary (Dawlish Warren, Devon)

11/10/2014