Not Just an Inconvenient Truth – a Heart Wrenching Truth

Key Questions in Seeking Sustainability :

Global ? What Human Population can the Earth Sustain over time with a good life for all?

Personal?

How many children can my family have and still sustain the earth?

Vicki Watson, April 2020

With every Right comes a Responsibility –

- to exercise that right in a way that does not harm the rights of others – now or in the future.

- Science Guides
- but Philosophy/Ethics Decides

Guidance from Science

- Earth is a self-sustaining, living system – with a limited ability to maintain a regulated climate and provide resources at a renewable rate. Using resources at an unsustainable rate depletes them and degrades the earth's ability to regulate climate and clean the air and water.

So a limited # of people can be sustained -- depending on

- Earth's limited ability to produce renewable resources and recycle waste;
- Human lifestyles (amount of resources they consume, amount & kinds of waste they generate) ;
- Needs of other life forms – they use many of the same resources we do,
- so the more resources (land, water) we take – the less there is to support other species;
- The more waste we generate, the harder for other species to survive.

Evidence human demands exceed what the Earth can sustain

- Extinction crisis,
- Climate crisis,
- Waste crisis,
- resource wars,
- climate refugees,
- pandemics
- see images in Overdevelopment, Overpopulation, Overshoot

How has science tried to quantify # of humans Earth can sustain?

- Carrying Capacity or Biocapacity to support life vs
- Total human demands/impacts on the Earth using
-
- I = PAT and Ecological Footprint
- Ehrlich & Holden Wackernagel & Rees
- 1970s 1990s

I = P A T

- I = total impact or demands of humans; their ‘footprint’ on the earth

- P = Population
- A = Affluence/quality of life/good & services used per person
- T = Technology’ efficiency at delivering those goods & services
- Does it use energy efficiently? Renewable or nonrenewable?
- Does it waste or recycle materials?
- We can choose simpler lifestyles and reduce A;
- choose more efficient technology & reduce T
- But continued population growth will quickly wipe out those gains

When applying I=PAT or EFA

- hard to assess everything we use at once – so often focus on one resource at a time
- how much land or water used to produce good or service;
- how much fossil fuel used & Carbon released?
- Ecological Footprint Analysis first focused on amount of land we used
- (later focused on water and carbon emissions)
- Land we use includes – land covered by
- infrastructure (buildings, roads, airports) ;
- land used for food & other renewable resources,
- land used to produce energy (or absorb C).

EFA also estimated what a country used

- then divided total land area used by its population, to get the average footprint per person.
- EFA Developed simple calculators to allow you to answer some questions about your lifestyle, and then adjust your personal footprint up or down slightly from the average for your country. Allowed people to see how lifestyle choices affected their footprint. And also that a lot of their footprint was determined by how their society had designed its food & transportation & manufacturing systems.
- http://www.footprintcalculator.org/
- offered by Global Footprint Network

EFA

- Also estimated the Biocapacity of the Earth and divided by the population to obtain – your Fair Share.
- You could compare your footprint to your fair share – do you use more than your fair share?
- Note – as population grows, your fair share gets smaller and smaller.

- Recall Rob Davies at Big Climate Event – took the remaining fossil C we can burn & divided by human population to produce your share of that.

EFA also concluded that

- Total Human Footprint > Earth's biocapacity
- Borrowed some terms from economics :
- Earth Principle (savings) -- stock of renewable resources that produce more
- resources each year – Earth Interest
- We are not just living on Earth Interest
- we are now using up some Earth Principle each year
- EFA estimates Earth Overshoot Day – the day each year that we have used up what the earth produces in a year and start using up Earth Principle.
- (in 1970's happened in December, now in August)

- (evidence -- deforestation, desertification, declining fisheries, eroding soils, extinctions, etc)

isn’t this just due to some people overconsuming?

- If we change our light bulbs, buy electric cars, eat less meat – won’t we be OK even with population growth?

- Some human populations do use much more than others –
- EFA says that if all 7.7 B people lived like the average US citizen – it would take 5-10 earths to support them (why range?)

- Which lifestyles must we all adopt for 1 earth to be able to sustain 7.7B ? the lifestyles of the poorest people on the planet – the people we hoped to lift out of poverty.

- So while we do need to reduce consumption of the richest 20%, and use more efficient technologies, unlikely this alone will reduce total consumption enough – especially with continued population growth and the desire to raise the poorest 80% out of poverty.

- Note US is 5% of world's population, using 24% of energy
- World's wealthiest 26 % uses 80% of natural resources

So how many people can the earth support?

- wide range of estimates depending on assumptions.
- Highest estimates are based on assuming that the most limiting factor is land to grow food –
- Assumes unlimited water and energy; continue using fossil fuels & high tech ag; devote all land to growing food for humans (leave nothing for wildlife) – then get estimates of 10 billion or more
- **Above is Unrealistic and not sustainable**

Let’s Get Real

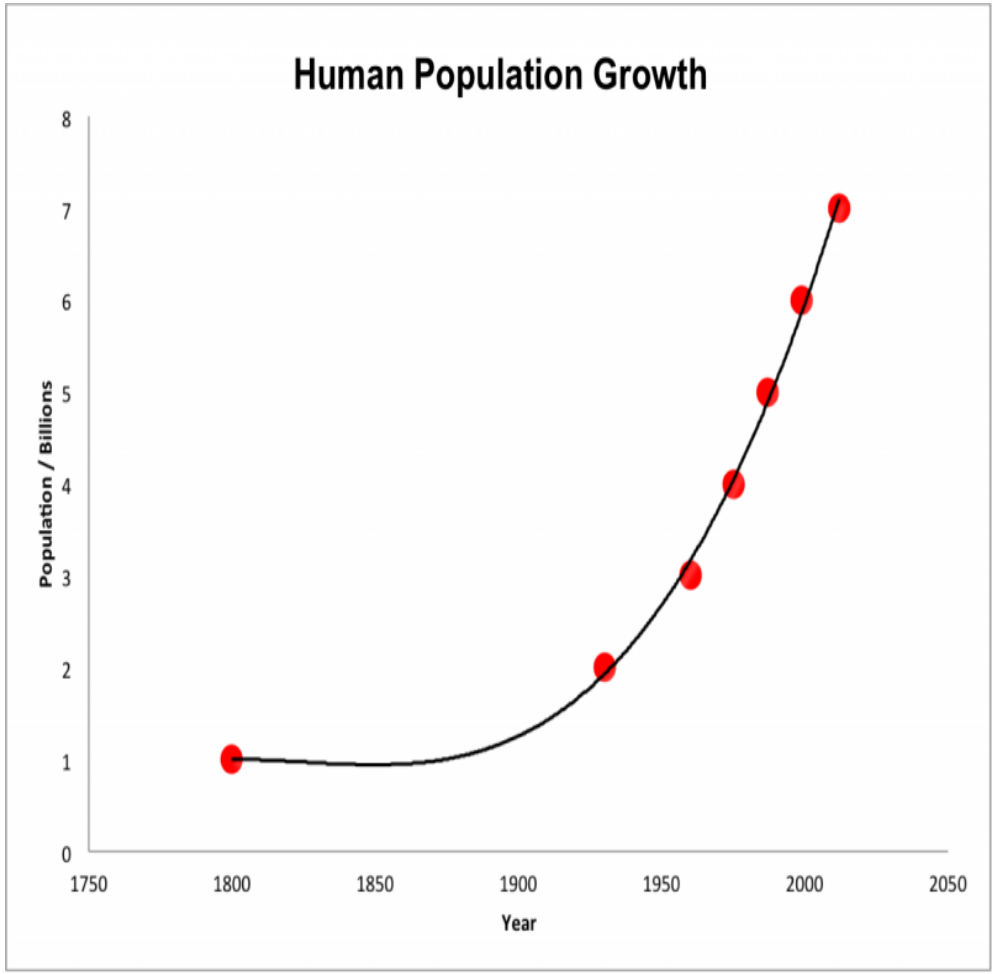
- Must keep some land natural/wild – to support other forms of life and ecosystem services (water cycle, climate stability, soil regeneration, pollination services, etc).
- how much to keep wild: 10-50 % (how much protected ~15%)
- Stop using Fossil Fuels – just use renewables --much less energy to work with (have been burning over 400 years of earth production a year).

  even solar & wind devices require energy to make & don’t last forever

- People need more than food – need clean air, water, shelter, mobility, health care, education – these all require resources also. So let’s assume we give everyone a modest Scandanavian lifestyle –One of the less consumptive, more energy efficient lifestyles with a good quality of life.
- Now how many can be supported?

1 billion

- We're already at 8 times that.
- 1 B was the world population in 1800
- Earth could have sustained that
- Harnessing fossil fuels and
- learning to control many
- bacterial diseases allowed
- explosive growth



Now – how many kids is your fair share?

- To stop population growth – 2 kids per family is the replacement rate.
- To start moving towards a sustainable population –
- how about 1 kid per family
- in a generation 8 billion to 4 billion
- in another 4 billion to 2 billion
- 3 generations 2 billion to 1 billion

- Reducing P will take a while, so we must reduce A & T meanwhile
- reduce A with simpler, less consumptive lives for richest;
- reduce T with more efficient, renewable technology

But it’s Draconian to tell people to have only one child

- Alternative – Let the 4 Horsemen of the Apocalypse
- reduce P to what can be sustained.
- War & Conquest (resource wars)
- Famine
- Pestilence/pandemics
- Add Climate Chaos

- These are harsher

Lots of painful truths –
but here is a happy one

Unlike some of our problems,

We have simple, affordable technology that can address the population problem -- Family planning services. (3% of military budget)

we'll hear about the struggle to keep these affordable and accessible

before, during, and after the current pandemic crisis.

But do think about –

how do we get folks to limit themselves to one child per couple?

How do we get them to exercise their right to parent responsibly?