Welcome to this week's presentation and conversation
hosted by the
Canadian Association for the Club of Rome,
a Club dedicated to intelligent debate and action on global issues.

Pivoting on Climate and Depletion by Substituting Progress for Growth.

Our speaker today is John Erik Meyer, a semi-retired small business owner with a degree in economics. He has written for Canada's major newspapers on topics from population to the failings of GDP-based metrics for social policy formation. He gave a paper on *Energy Currency* at a conference of that name in Split, Croatia, and wrote two books for Springer: *The Renewable Energy Transition—Realities for Canada* and *The World and The Post-Pandemic World—Sustainable Living on a Wounded Planet*.

He is currently President of Canadians for a Sustainable Society and has just built a house he expects to be energy positive. He proposes that business-as-usual will not see us through the threats which even now are starting to seep under our front door. We need new goals and metrics, and a healthy national conversation and the new leaders. He asks, what are the options and the obstacles for reaching the high ground of sustainability before the rising waters of environmental decline and social disorder overtake us?

The presentation will be followed by a conversation, questions, and observations from the participants.

Pivoting on Climate and Depletion by Substituting Progress for Growth

Stepping stones and obstacles on the pathway to sustainability

Presentation Outline

- Current Situation
  - Consumption
  - Metrics
- How to keep the planet human-friendly
  - Metrics
  - Decision making
  - Social structure
- Obstacles
  - National conversation
  - Wrong Elites
  - Money the Master, needs to be returned to being Money the Tool
- Action Needed
  - National
    - Case Study – Germany without Russian gas or oil
  - Community
  - Personal

Money and Equality

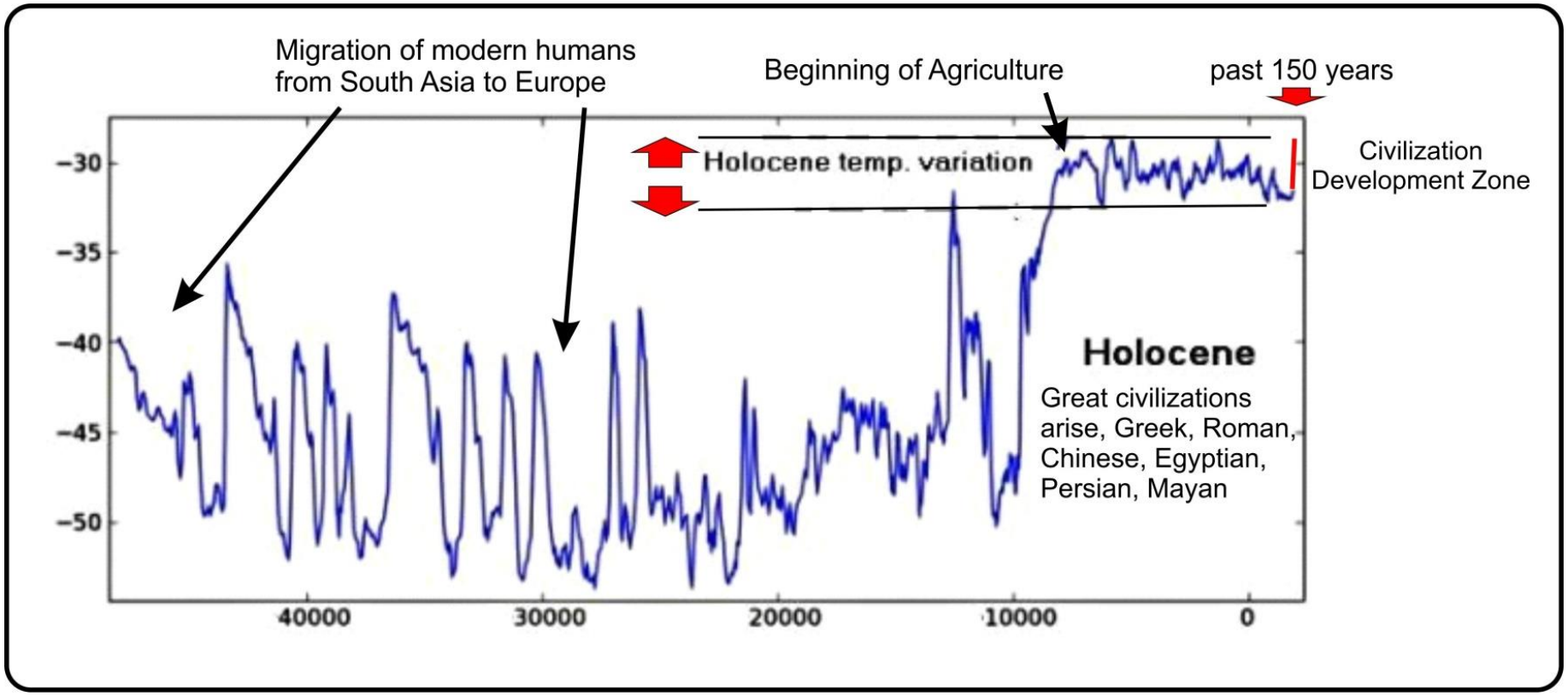
What Just Happened

The Greatest Wave in the ongoing series of Human Population Cycles

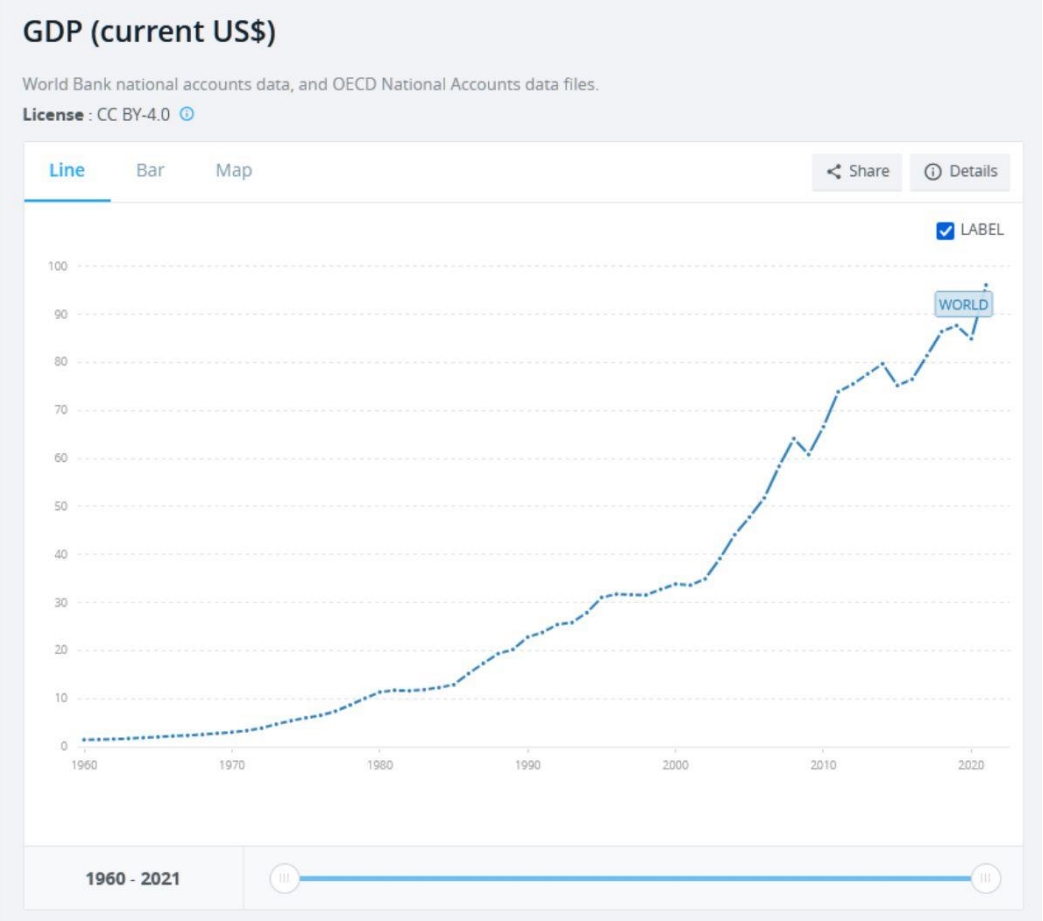
- Colonization of the New World
- Rise of Fossil Fuels
- Rise of Science and Technology
- Explosive Population and Consumption Growth
- Dependence of “developed world” on resources of “undeveloped world”
  - If Covid-19 hasn’t established this by now, the Russian invasion of Ukraine makes clear the urgent need to greatly increase energy, resource, manufacturing and food resilience.

Quick summary of where we are

- Climate as the proxy for our complete overshoot of capacity of earths many resource systems needed to support us
- We are in the process of exiting the Goldilocks climate zone

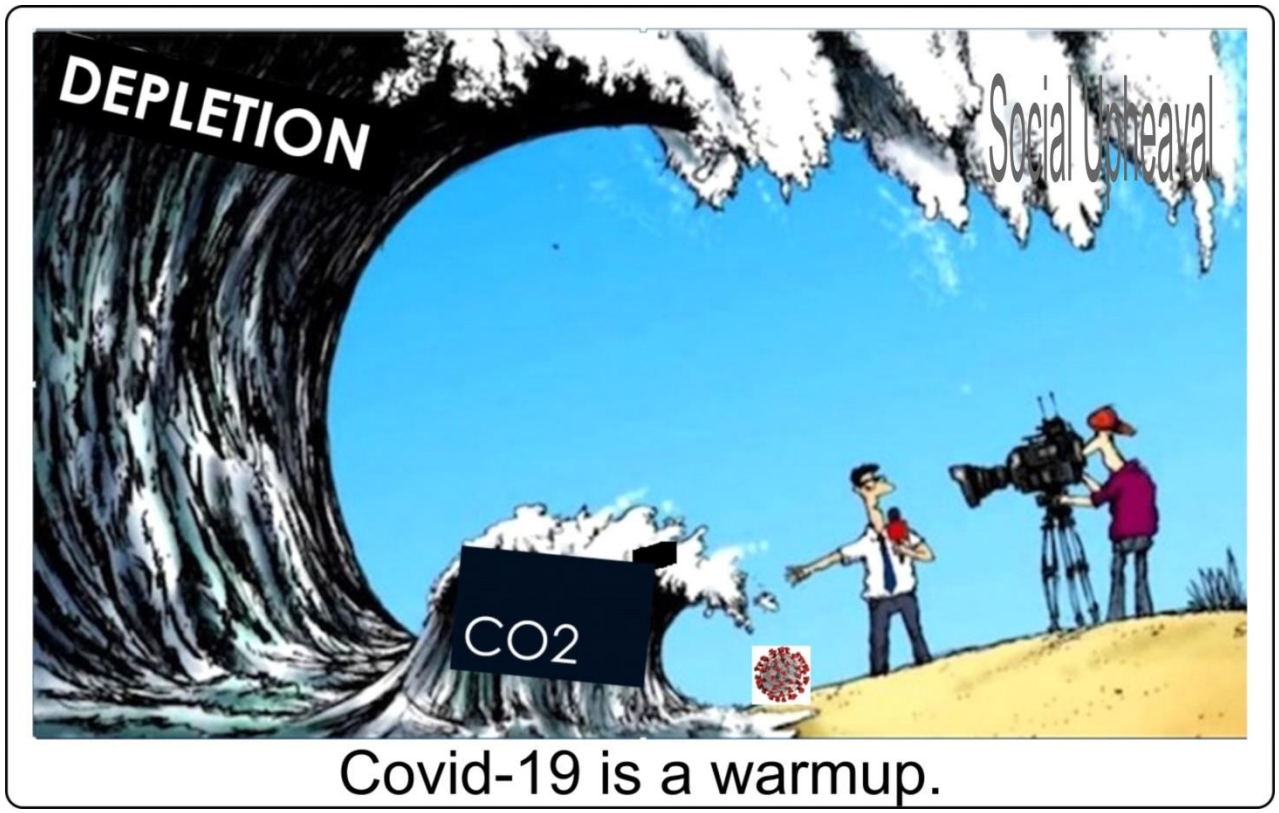


What Problem?



Our first problem is that our prime economic and social metric,
which uses monetary metrics, gives no indication of any existential threat.

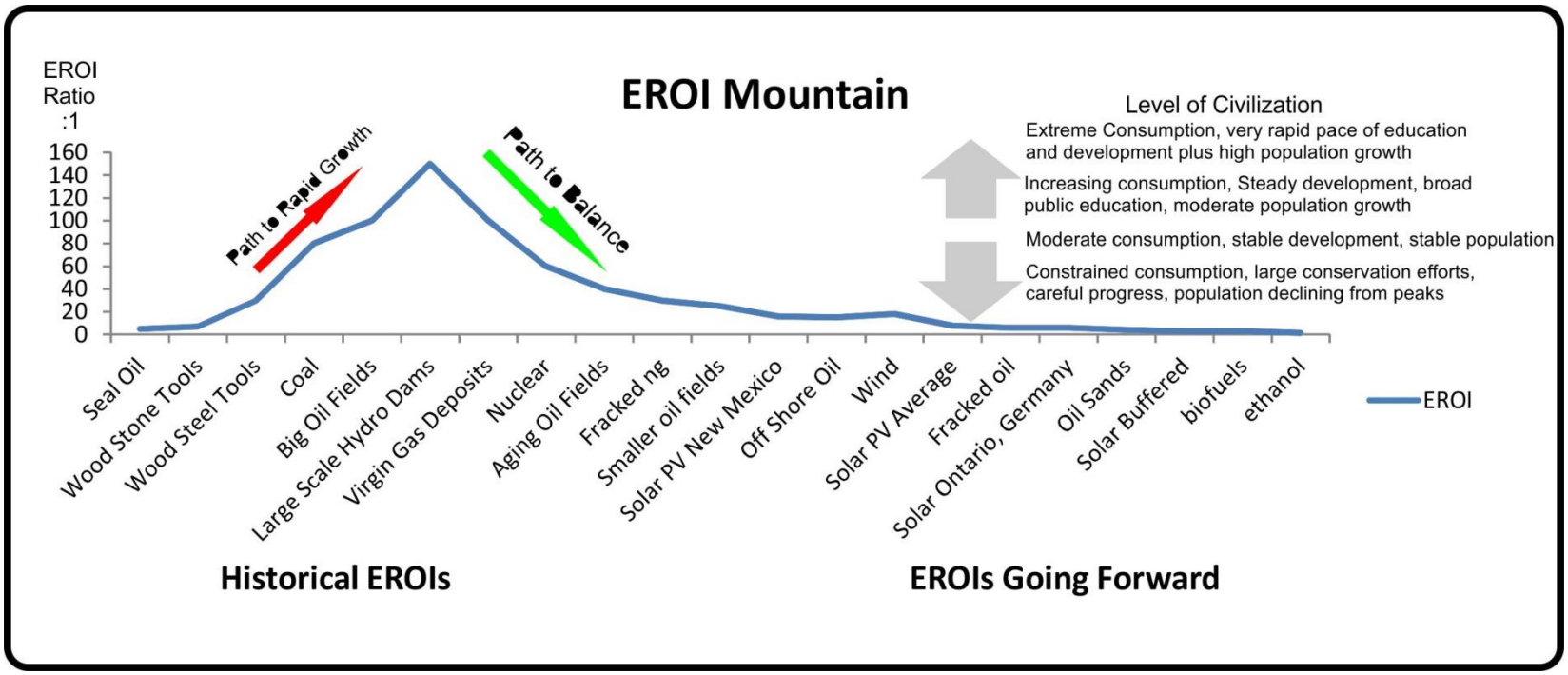
Slowly Increasing Awareness of Biophysical Threats



Business-as-usual may now involve on-going multiple crises.

The Energy Challenge

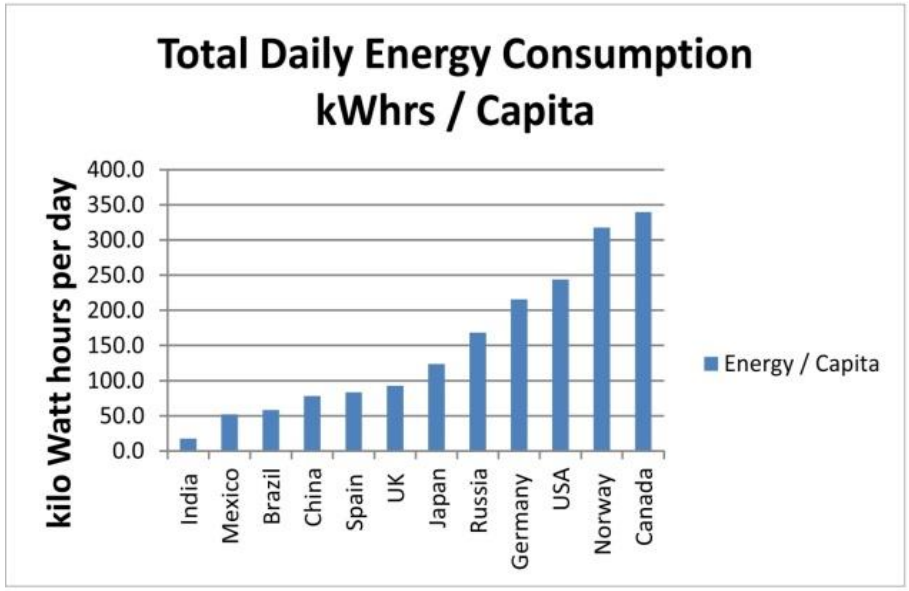
Part 2

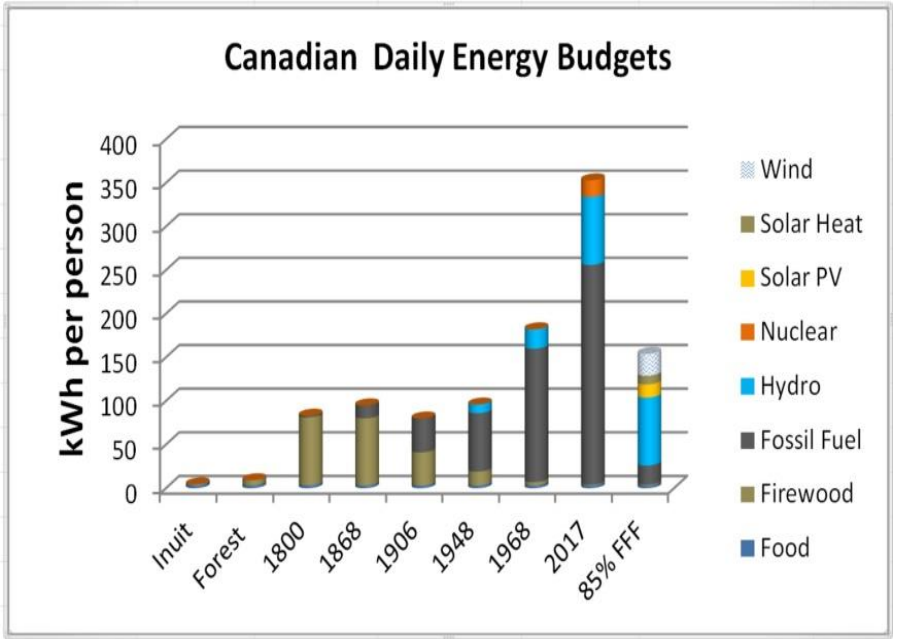


Currently fossil fuels make up 80% of our energy consumption.
They have to be replaced.
Going forward, energy is going to be more expensive and less abundant.

Energy Budgets
and a Standardized Measurement Unit

- Measure energy in daily per capita energy budgets
- Use the kWh which is already the standard for home electricity and EVs.





Shameless Plug

A good deal of this presentation is covered in more detail here.
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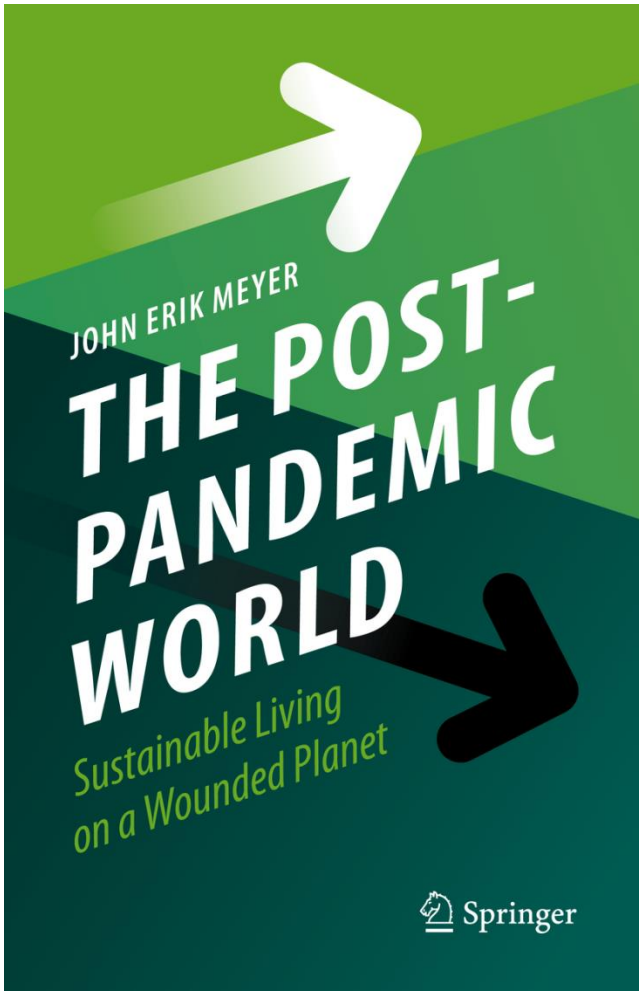


No Going Back

- Fossil fuel based energy abundance gave us high goods consumption, physical freedoms and comfort as well as the infrastructure and tools of a sophisticated society. Advances were enabled by huge amounts of surplus labour freed up by the mechanization of agriculture and the industrialization of resource exploitation ("energy slaves" – Andrew Nikiforuk). This spare human potential was applied to:

  - Education
  - Science
  - Health
  - Social support structures

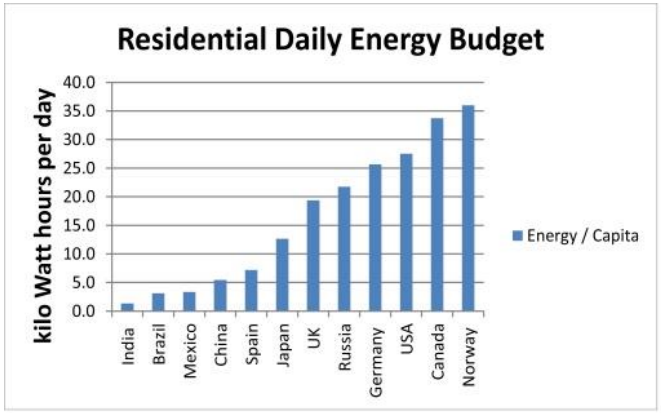
  We can cut back on personal consumption in many areas but reducing investment in social infrastructure can pave the road to decline and instability. We need to hold on to what we've learned and add to it.

Technological/Energy Monkey Trap

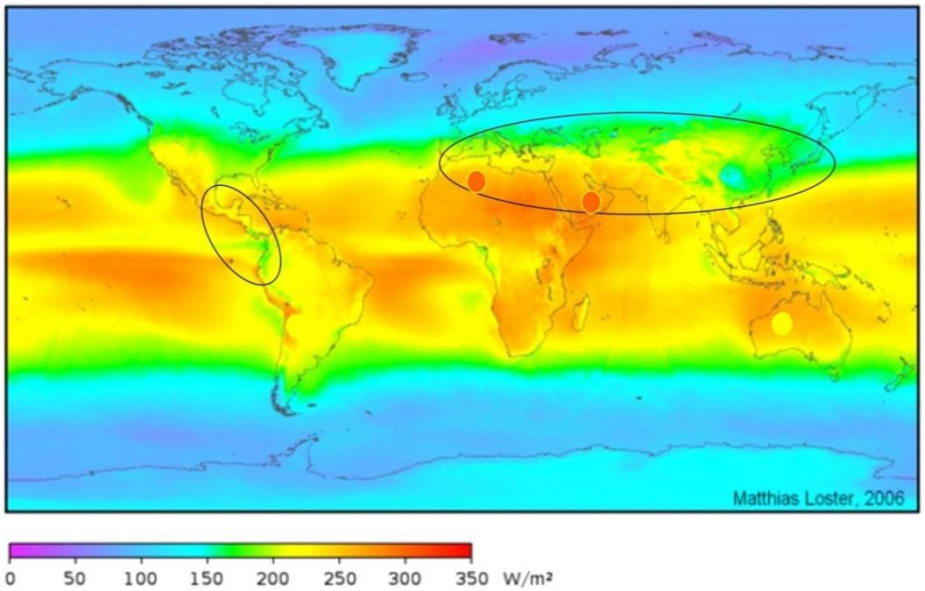
Not Just Toys and Luxury

Fossil fuels allowed us to densely populate regions of the globe which had previously been uninhabitable by large numbers of people.

The challenges of transitioning to renewable energy will be greater in the countries subject to temperature extremes.



Global Empire Belt



In 1500, 2000 Inuit inhabited 1.5 million sq. km of Canada's Arctic while 90 million Europeans lived in an area 30% smaller.

Energy Availability – Energy Demand = Disposable Energy

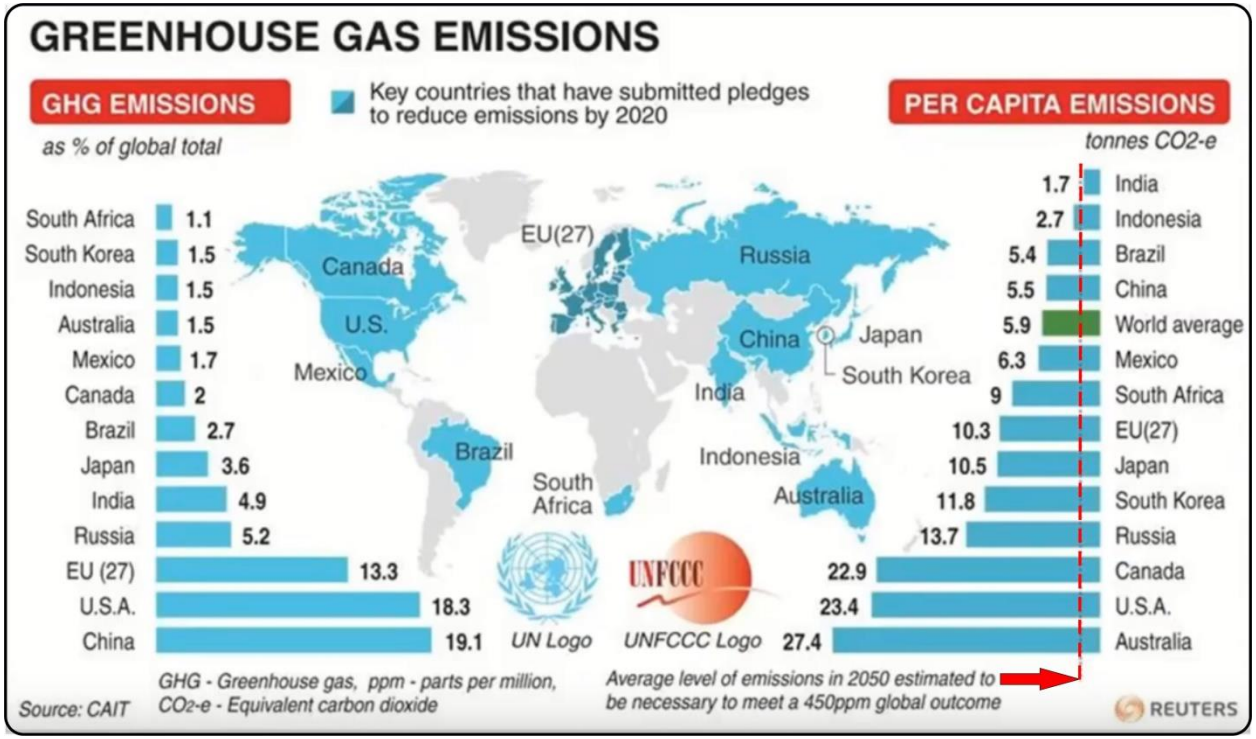
The amount of disposable energy determines population size and the ability to develop higher levels of technology.

We Do Have a Choice

- Business as usual
- Continuing to prove that we are indeed
  the greatest species of world-beating apes.

Evolving into the planets first sustaining caretaker species.

Where do we have to be?



Sustainable Society Ethos

- Generational responsibility is a core theme.
- “son gets the better ricefield” – Japan
- “A society grows great when old men plant trees whose shade they know they shall never sit in.” Greek Proverb
- Biophysical Economics: We lived by this for tens of thousands of years but we have just forgotten it over the past a few hundred.

Chief Sealth

For us, sustainability is a theory. For hunter-gatherers it was a way of life. Here are the words of a 19th century Pacific coast chief witnessing the rapacious nature of European society destroying his world.

Every part of the earth is sacred to my people. Every shining pine needle, every sandy shore, every mist in the dark woods, every clearing and humming insect is holy in the memory and experience of my people.

The white man is a stranger who comes in the night and takes from the land whatever he needs. The earth is not his brother but his enemy and when he has conquered it he moves on. He leaves his fathers' graves and his children's birthright is forgotten.

All Things share the same breath - the beasts, the trees, the man. The white man does not seem to notice the air he breathes. Like a man dying for many days, he is numb to the stench ... What is man without the beasts? If all the beasts were gone, men would die from great loneliness of spirit, for whatever happens to the beast also happens to man.

All things are connected. Whatever befalls the earth befalls the sons of earth ...The whites too shall pass - perhaps sooner than other tribes.

Continue to contaminate your own bed, and you will one night suffocate in your own waste. When the buffalo are all slaughtered, the wild horses all tamed, the secret corners of the forest heavy with the scent of many men, and the view of the ripe hills blotted by talking wires, where is the thicket? Gone.

Where is the eagle? Gone.

And what is it to say good-by to the swift pony and the hunt, the end of living and the beginning of survival.

Biophysical Scientist

Lowdermilk's Eleventh Commandment

Thou shalt inherit the holy earth as a faithful steward, conserving its resources and productivity from generation to generation. Thou shalt safeguard thy fields from soil erosion, thy living waters from drying up, thy forests from desolation, and protect thy hills from overgrazing by thy herds, that thy descendants may have abundance forever. If any shall fail in this stewardship of the land thy fruitful fields shall become sterile stony ground and wasting gullies, and thy descendants shall decrease and live in poverty or perish from off the face of the earth.

From: Conquest of the Land through 7,000 Years, W.C. Lowdermilk (1930s)

Note the similarity of worldviews between Chief Sealth, the "uneducated" hunter-gatherer raised in a sustainable society and Lowdermilk, the highly educated scientist raised in a surging industrial society.

Biophysical economics presents the same picture in any age, no matter what name is applied to the study of the world around us.

Passing on Better Tools

Right now, we are leaving huge problems and debts to our children and few useful tools.

Why Haven't We Done Anything

(substantive)

- Comfort
- Complexity
- Power Elites
- Dislocation - Uncertainty
- Moving away from the maximum consumption
  - model

"It's just a back-up system for your pacemaker."

- Yes, there will be changes.

- In terms of extra effort, most people feel they are already overloaded.
- People like free money from housing inflation even if they are really just taxing their kids.

Just Who is Growth Working For?

- If growth was a solution, Canada would not have any problems at all.
- We have had the highest** rate of population growth in the developed world for 6 decades.
- During that time, our debt level has quintupled while our level of equality has fallen from #2 in the world into the mid-30s – an unparalleled decline.
- The quality of jobs has declined while we rank at near the bottom of performance on GHG emission reductions, paving over farmland and providing foreign aid.
- Housing has become far less affordable while the quality of life has declined for most Canadians.
- Growth hasn't solving these problems; it is actually creating and exacerbating them.
- Why is growth the #1 priority of all politicians and media corporations?

** Australia may now be equaling Canada.

A Healthy Society is:

- Healthy people
- Healthy environment
- Healthy community

- Equality
- Quality of life

- Energy and food resilience and social stability
- Fiscal balance

- More Stuff and More Money don’t make it onto this list.

Necessities for Progress

- These things have to be working in order for us to press ahead with the action we need to take.
  - National conversation – must be inclusive and informed
  - Metrics – must represent social and biophysical reality
  - Information system integrity - independent science and research
  - Trust – citizens must trust their leaders, media and scientists
  - Equality – high level of equality is critical to the willingness of citizens to support change

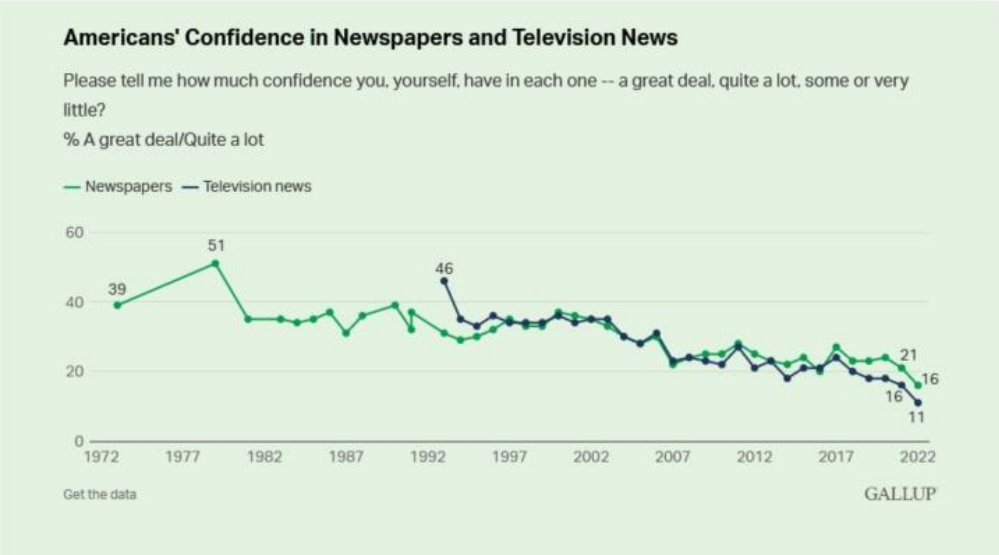
Corrupt elites cannot motivate their citizens effectively in times of crisis regardless of the severity of their control measures.

- Iraq, Libya, Afghanistan, Russia, and increasingly, Western democracies. Disconnected elites and disenfranchised and restive populations

Public Engagement

people will get involved with a system that is involved with them

- Vision
  - common, relatable vision
  - and goals
- Trust
  - broad trust in institutions
- Competence
  - expert input
- Consistency
  - taking emergencies and failures in stride
- Strategy
  - broadly understood plan for achieving goals



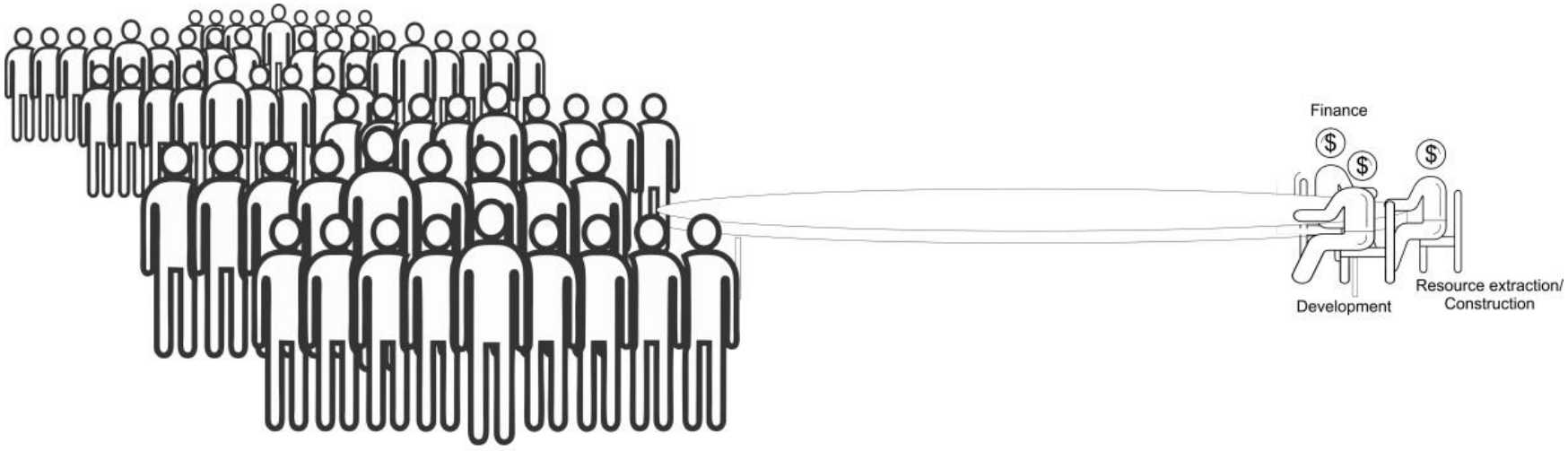
Transparent & Open National Conversation

- Democracy is a mechanism that requires a lot of work and well crafted tools to maintain.

The National Conversation

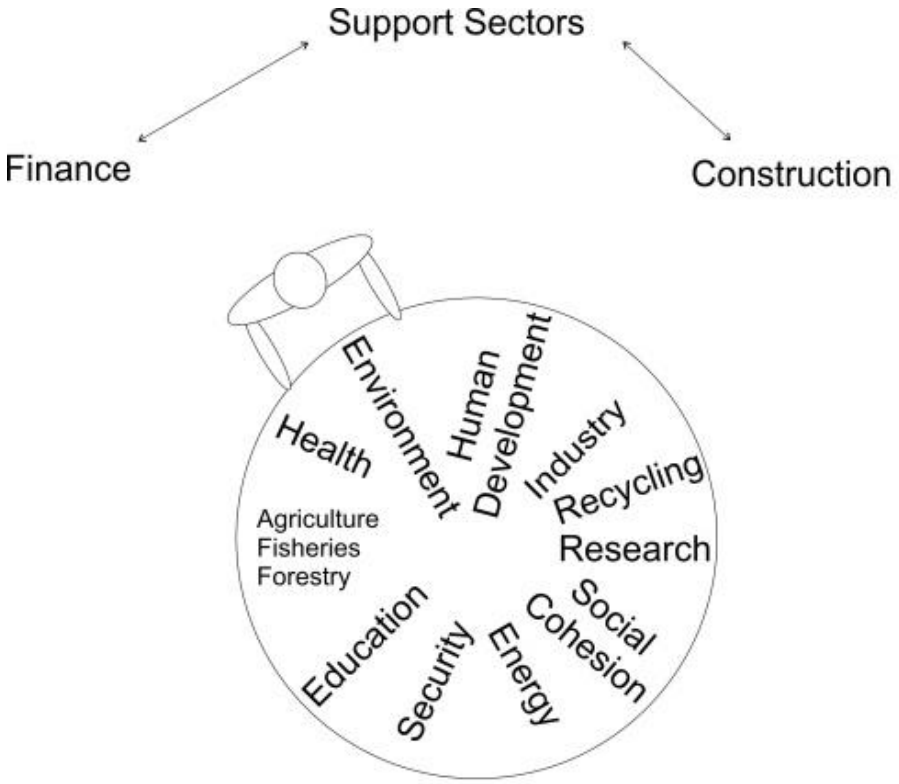
the Most Vital of Democratic Institutions

This is what we have now



Inclusive National Conversation

All productive sectors have a seat at the table



Metrics:
- energy consumption (EROI)
- carbon emissions
- equality
- per capita income
- debt/income
- job quality
- well-being
- recycling %

It Needs to Get Rounder

with a Complete Reversal of Leadership Roles

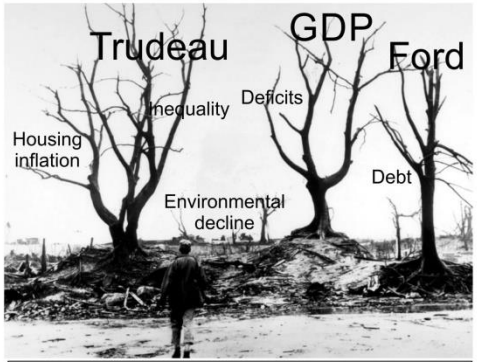
Can we get there from here or is speaking heresy to power impossible?

National Conversation

The GDP model assumes we can consume our way out of resource and environmental crises.

Money is the wrong metric but it is just so seductively easy to count.

Growth Ponzi
Grow or Die



Cash Flow | Cheap Labour Employers | The Wealth effect

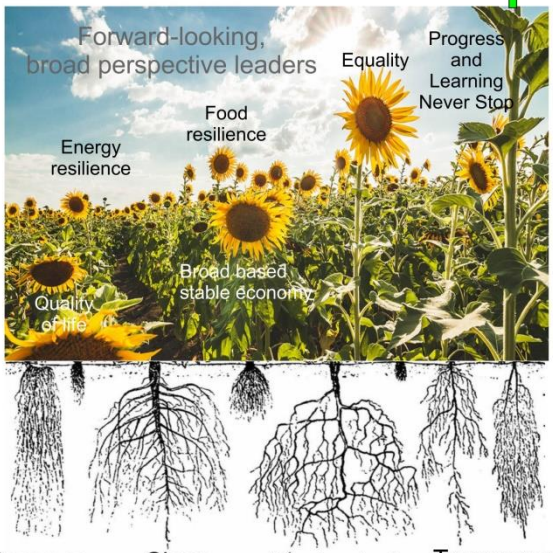
Developers | $ Valuations | Debt

Commercial (money) Economics

All inputs go through a dollar filter.

What we harvest

Sustainable Society



Common interests | Clear goals | Biophysical metrics | Transparent processes

Science | Public will | Well-being metrics

Biophysical (Real World) Economics

Environmental and social balance are much harder to measure than simple cash flow.

Balance can go on forever.
Growth collapses when it stops.

Media Corporation Goals: Fronting The Century Initiative

- Interview with John Stackhouse
  - past editor of the Globe and Mail

- A Leader in Developed Market Growth? | The Big Conversation | Refinitiv - Real Vision Finance
- https://www.youtube.com/watch?v=KbcvWkNhELc
- Run segment from 3:15 to 5:00

- If you think we are alone in damning this Ponzi scheme, read the comments section of this youtube.
- Media corporations are both messenger and lobby.
- They are corporations, owned not for their profit potential, but for the influence they wield.

Control the Media, Control National Policy

- John Stackhouse, editor of *The Globe and Mail*'s Report on Business section replaced Edward Greenspon
  - Now Senior Vice-President, Office of the CEO, at the Royal Bank of Canada,
  - Globe and Mail is a full supporter of The Century Initiative promoting the tripling of Canada's population which is now the de facto policy.
- https://www.youtube.com/watch?v=KbcvWkNhELc

- Edward Greenspon, editor-in-chief, Globe and Mail & Bloomberg News
  - vice president of strategic investments for Star Media Group, a division of Torstar Corp. and publisher of the Toronto Star.
-
- Barbara Frum, prominent and influential CBC journalist (statue in CBC headquarters)
  - Pressed hard to increase immigration levels
  - Frum's husband was a developer
  - Where was the CBC integrity commissioner?

- Media corporation employees appear to be completely oblivious to the concept of conflict-of-interest as it applies to them. After all, who is going to report them?

- In October 2016, a New Jersey hedge fund , Chatham Asset Management, acquired two-thirds of Postmedia, the publisher 130 + Canadian papers. They centralized editorial operations and created "common pages" of National Post content which is inserted into newspapers across Canada.

- Under Chatham, Postmedia has "As far as leadership goes, I feel like the way they talk about it, we're almost operating like a sales agency, not a news service," Mr. Gibson, the union leader, said.

- Media corporation ownership By Edmund Lee Published July 16, 2020,
- https://www.nytimes.com/2020/07/16/business/media/hedge-fund-chatham-mcclatchy-postmedia-newspapers.html

Political Donations

- Funding City Politics by William Macdermid (YU)

- Most of the profit for land developers is captured in the rezoning, subdividing and servicing of raw land. (i.e. inflation)
- In Pickering, corporations contributed almost 77% of campaign donations. In Brampton, Mississuaga, Oshawa, Richmond Hill, Vaughan and Whitby, corporate contributions made up close to or more than 50% of all disclosed candidate funding.
- This was focused on incumbents which were likely to be the winning candidates.

- Developers want councils which are favourable to rapid development and to their own development proposals and they spend accordingly.

- Unsustainable urban sprawl, high transportation costs, environmental degradation, and a weak sense of community that undermines political organization and representation, are all traceable to pro-development councils and the provincial regulatory framework for urban development.

- Supervision of municipal campaign finance laws is largely left to citizens as there is no oversight body like Elections Ontario or Elections Canada.

https://www.academia.edu/7457510/Funding_City_Politics

A Critical Tool

but a

Disastrous Metric

The Special Case of Money

The Fog of Money

(1)

The Promise of Money as Barter Replacement

- Efficiency
  - No need to transport 5 pigs 20km to pay for 15 logs
  - Opens up the range of transactions geographically.
  - Easily calculated valuations
  - Common reference
  - Greatly simplifies transactions

The Fog of Money

(2)

The Problems with Money

- Easily printed money obscures our view of assets and the real wealth production system in both:
  - Biophysical world
  - Commercial economy
    - Which parts of the commercial economy are real wealth contributors?
    - Which parts are wealth transfer mechanisms?
    - Which parts are unproductive and parasitic overhead?

Those in control of the printing presses inevitably print more than they should and repeatedly take much more than the value of their contributions.

When we clearly understand how the productive commercial economy works, we'll be much better able to understand how to put it in sync with the biophysical economy in which it operates.

Fog of Money

(3)

Crypto Currency: Printing Wealth or, how to get rich at everyone else's expense

I propose a superior crypto currency – the DafiDollar. Instead of using a huge amount of electricity and computing time to be awarded a bitcoin through a lottery system, the DafiDollar is awarded to those who dig up and fill in holes.

Dig-up And Fill In – DAFI.

Like the bitcoin, the DafiDollar is ultimately pure wasted effort and creates no value. But unlike the Bitcoin, the DafiDollar does have some value at some point in the process when a hole has been created as well as a pile of dirt. Both of these could have value to someone, somewhere.

However, when extra energy is applied to throwing the pile of dirt in the hole - to merit the awarding of the DafiDollar token - the real value of the currency becomes equal to that of any other crypto currency, which is to say exactly zero.

We must have buying power directly attached to the real wealth creation process or inflation and predatory wealth transfer takes place. That is , (some of) the rich get richer while creating no real wealth.

We need rich people who got rich creating real wealth.

Crypto currency is the ultimate example of the failure of our leaders to deal with the real, productive world. Rather than promote real wealth creation, they grasp at any cash flow deal that comes along.

I.e. fake currencies, speculation, "the wealth effect", "asset enhancement", endless growth and other Ponzi schemes

Making Money from Money

(the Money Economy)

- Asset inflation is not wealth creation
  - Real estate (generational transfer – taxing our children)
  - Stock market, day trading
  - Art
  - Crypto currencies (2000s)
  - Dutch Tulip bulb mania (1600s)
  - Cabbage Patch Dolls (1970s)

Pumping up valuations and printing money to match the higher valuations creates debt for most people and profits for a few.

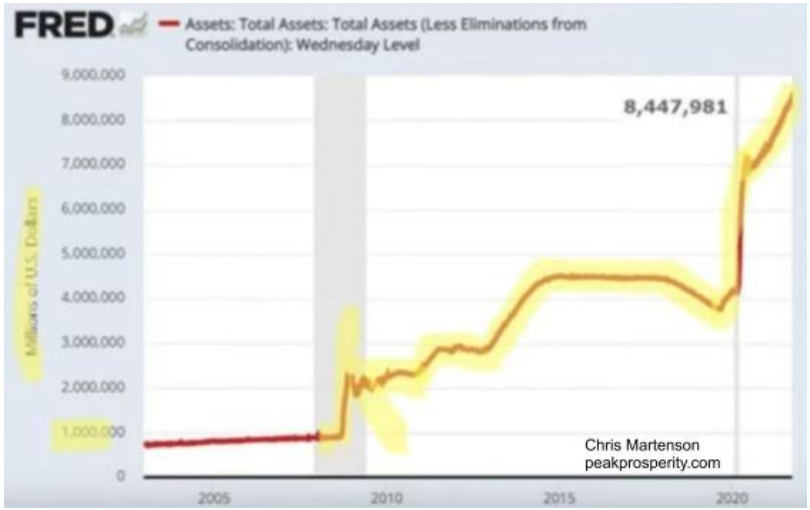
Printing money adds no value but claims on real wealth increase. Inflation ensues. This is a tax on the productive by the unproductive.

The Pump and Print Ponzi is Counterfeiting

We need enterprises which produce real goods and services and pay the full associated environmental and social costs before they turn a profit. This is a Free Productive Enterprise system.

The finance sector is a support sector and produces no real product. Its administrative job is to see that the productive sectors of the economy become more productive. Currently, the finance sector has become a money making sector for those who control it and parasitic overhead for the productive real economy.

Real Inflation vs Avoidable Money Printing Inflation

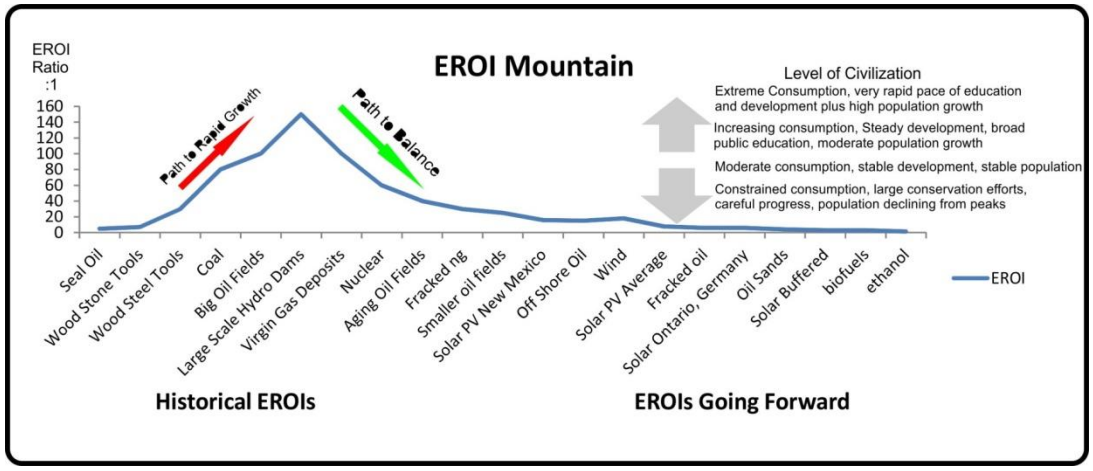


$1 trillion in 2008

$8.45 trillion in 2020

The Fed pumped "liquidity" into the economy i.e. demand notes, rather than increasing production capacity.
Asset inflation ensued. Is this a surprise?

Raising interest rates increases the cost of investments which would offset some of the real cost increases.



Higher real cost driven inflation.

This also applies to food, minerals, forest, fisheries.

Needed:
Non-inflationary Banking

- Using fractional banking (printed, baseless money) to finance consumer goods is inflationary.
- Straight savings based banking should be used for loans for consumer goods – housing, autos etc. – which will never add value.

- Fractional banking should be used only for regenerative investments which increase real goods production/efficiency.

Mistakes We Have to Stop Repeating

(1)

- The Wrong Goals
  - People as Consumers and Nations as Markets
  - More goods as opposed to better lives

- Money Fog
  - Print, boom, collapse – repeat
  - Money printing & asset inflation
    - The scam that is too big and well-distributed to see. (for impacts read: Margrit Kennedy)
    - transfers wealth to the wealthy, creates instability and obscures the real structural weaknesses we need to address
    - "wealth effect", "asset enhancement", "economic growth" are all growth without progress

- Misleading Metrics
  - GDP – get over it. It was designed as a means of developing an equitable tax base.
    - It is not a national policy tool.

- Failure to Identify Real Costs
  - Ethanol - Cheap labour business models - Oil sands legacy costs - Loss of manufacturing capacity and expertise - Clearcutting - Pollution - The list is endless.

- The Old Globalism
  - Maximizes consumption and assures suppliers with lowest environmental and labour standards win

Mistakes We have to Stop Repeating

(2)

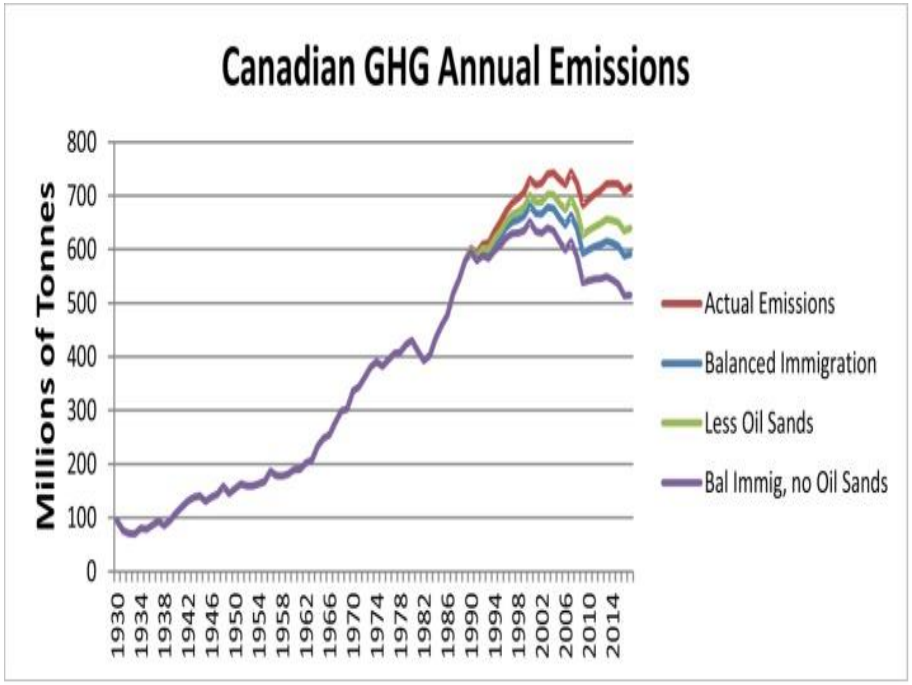
- Population Growth
  - Higher demand on a reduced per capita resource base increases environmental and commodity diseconomies of scale
  - Paving over farmland to accommodate growing population
  - Moving people from low footprint regions to high footprint regions is the single worst policy for both national and global emissions
    - Immigrant stream to Canada sees its carbon footprint increase by a factor of 4.2
    - Ontario is losing over 300 acres per day to urban sprawl
    - Inflow of 500,000 immigrants annually requires the addition of ~ 185,000 housing units annually.

- The Cheeseburger Diet
  - Attempting to consume our way out of social decline, climate change and resource depletion.

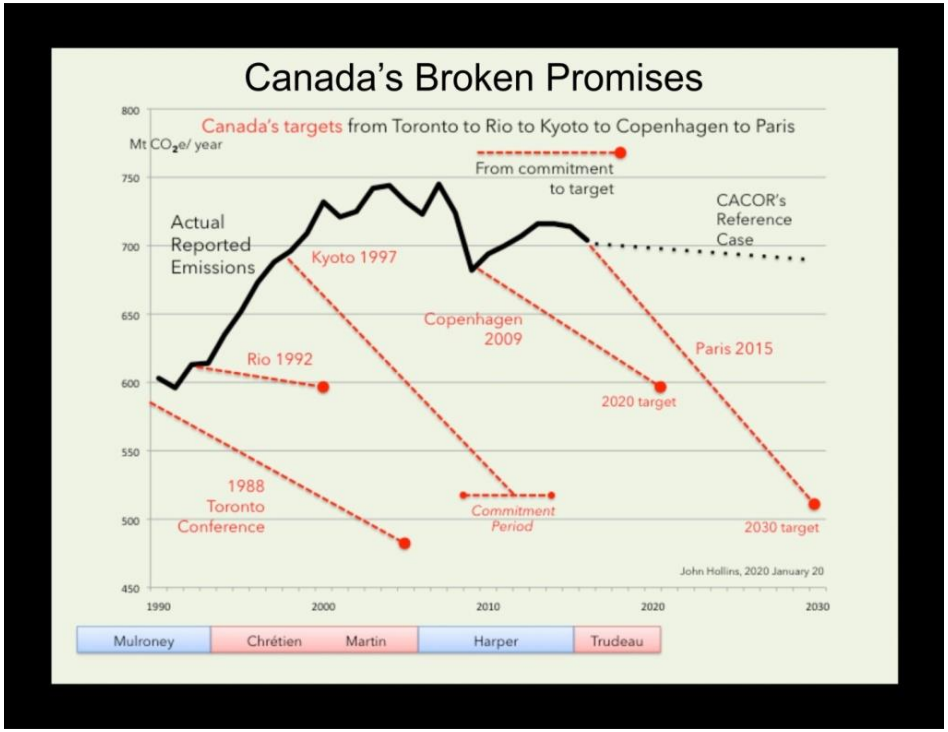
"If we just had a bigger economy, we could afford more energy."

Canada's GHG Performance

Cause



Effect



The Image-is-Reality Society

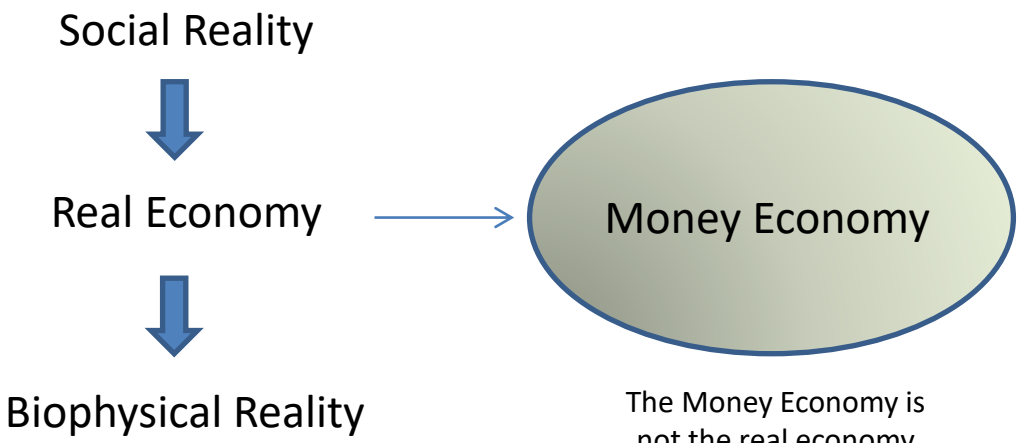
Earth has set its hair on fire
but Canada's political leaders still
won't take it seriously beyond green selfies.

Race down the Rideau River
and take a selfie just before you
sink into freezing waters.

Fix the Structure

- Fix fundamental problems
- Don’t paper over the cracks with “new initiatives”, programs and photo-ops.

Tuning in to Reality



The Money Economy is not the real economy or social reality or biophysical reality but we have allowed it to obscure a clear view of all of them.

Full Cost Accounting

- Examples of failure of the selling price to reflect the full cost of the product.
  - Carbon fuels – climate – leaky, abandoned oil infrastructure
  - Oil sands – tailings ponds
  - Forestry and agriculture – soil loss
  - Cheap labour is, in effect, the country subsidizing low productivity business models.
  - Many biophysical and social examples

International Trade

- There are two means of making payment – with what you produce and with what you own.
- International trade is the exchange of goods and services. Where the value of these do not balance out, as in a chronic trade deficit like that of the USA, there is an exchange of ownership via printing of the US dollar.
- Paying with paper gives trading partners promissory notes meaning they acquire your assets and inflate property prices.**
- This equates to the "wealth effect" and "asset enhancement" schemes where the reckless and cash strapped are enticed to give up ownership through lines of credit to finance a lifestyle that their current incomes will not support. Gains in boats, trips, trucks and nights-out come at the expense of partial or full loss of ownership of prime assets, most often the house.
- Paper should not cross borders.

** The great $500 sticker price deal you got on that 65" LED TV screen also comes with the invisible tax of an extra $15 in monthly rent in perpetuity.

Real World Oversight

How do we identify projects which may look superficially attractive in dollar terms (and have strong lobby promotion) but which will prove to be unsustainable or simply asset transfer mechanisms?

Identify real world boundaries and live within them.

Ecological Footprint - Top Level indicator of national/global potential problems

EROI (Energy Returned on Energy Invested)

- Very specific real cost indicator
- Directly actionable

CROI (Calories Returned for Energy Invested - food production efficiency)

- Directly actionable

Well-being Index

- Top Level indicator of social problems

Job Quality

- tax positive, living wage, stability
- directly actionable

Biophysical Checks

- If, 30 years ago, the Alberta and Canadian governments had had a full suite of biophysical metrics for the oil sands such as;
  - EROI – lowest in the world
  - Carbon emissions – highest in the world
  - Legacy costs – highest in the world

  with which to evaluate oil sands viability, would we have bet so heavily on this $7 trillion @ $40/barrel resource?

The above factors contributed greatly to the oil sands being the highest cost oil play in the world.

Biophysical economics is less suitable for micro management but vastly superior to money metrics for social and environmental oversight.

Hard Conflicts

Obstacles to Progress

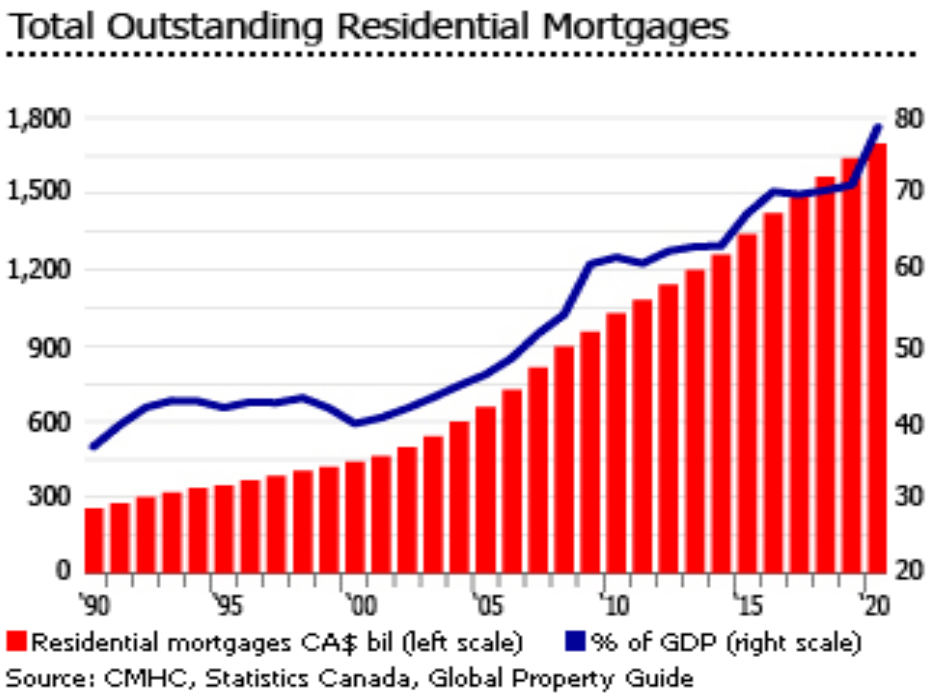
- Growth dependent elites – developers, finance and speculators, corporate media, cheap labour business models
  - Completely committed to The Century Initiative, the tripling of Canada's population
  - Their Ponzi economy dies in any move towards sustainability
- Shattered national conversation – near-complete communication breakdown among groups
- Living large consumers – we love our toys, physical freedoms and comfort
- Exactly wrong metrics – GDP (the commercial economy) is a highly mis-leading indicator of social and environmental health
- Increasing inequality – Canada's equality level has gone from second highest in the world in the early 1960s to mid 30s currently
- Debt trap
  - no wriggle room
  - have we developed Putinvision where we have dug ourselves in so deep that all options are bad and the long term no longer exists
- Complexity of structural change on many levels

Scale of Profit Potential

of the

Asset Inflation Scam

- Newspaper corporation revenue in Canada in 2020 = $0.94 billion
- Defense Industrial revenue in Canada 2020 = $7 billion
- Tobacco Industry sales in Canada 2019 = $19 billion
- Oil and gas company gross revenue in Canada 2020 = $94 billion
- Residential housing asset inflation in Canada 2020 = $280 billion
  - (valuation of $2.8 trillion 2020, with 10% inflation)



Follow the money!

	Impact of Population Growth Policy	Impact of Quality and Stability Policy
Budget	Ever higher demand for infrastructure, higher taxes, deficits	Upgrading of current infrastructure, balanced budgets
Jobs	More gig jobs don't pay a living and tax positive wage and require more support	Stable number of increasingly high quality jobs expands tax base with lower services demand
Healthy Living	Higher density is less healthy as Covid-19 has demonstrated	Healthy environment, healthy living and healthy jobs increase quality of life and reduce service demand
Equality Levels	Increased inequality stresses social cohesion and reduces quality of life for all income levels	An egalitarian society offers higher quality of life for all income levels and has lower support services demand.
Affordable Housing	Growth means inflated housing costs, higher inequality, debt and lower quality housing	Young families can afford to live near their parents and raise children in safe neighbourhoods
Food Security	More people means more food demand and reduced agricultural land due to urban sprawl	Foodland preserved and food demand stabilized allowing focus on healthy food
Renewable Energy Transition	Renewable energy sources are diffuse and require large collection areas. The larger the population, the more area must be "industrialized" with energy infrastructure.	A stable population with greater investments in efficiency, conservation and stability will minimize the size of the renewable energy infrastructure and be more productive using best sites.
GDP	Larger GDP size serves those who live off asset inflation and the flows of money.	GDP per capita indicates the economic health of citizens.

Politicians Assume Growth
but
What Do People Actually Want?

•Survey Results

How would Orillians** spend their own money on improving life in Orillia? What are their priorities?

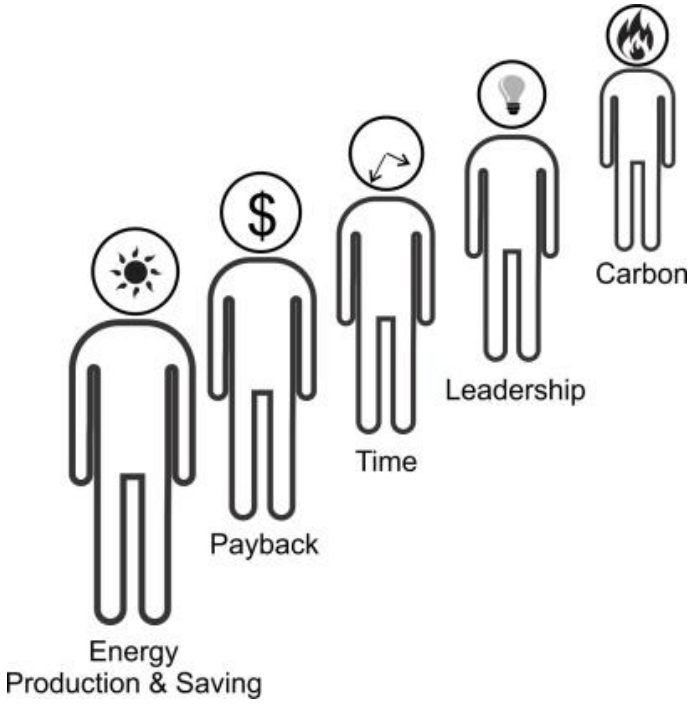
Item	**Average**
Quality of Life	26.5
Healthy Environment	24.3
Sustainable Growth	19.4
Professional, Progressive City	16.2
Vibrant Waterfront	15.5
Heritage Core	14.7

** Orillia, Ontario – population 35,000, targeted for rapid growth

If we did have our ducks in a row, what would we actually do?

Action Needed

- On a national level
  - A cohesive society with
    - competent leadership
- On a community level
  - Proactive NGOs and local leaders
- On a personal level
  - Be a citizen not a consumer



More to think about than just dollars.

National Government Responsibilities

- Clear Goals
  - Resilience
  - Equality
- Coherent Strategy
- National Conversation
- Global Responsibilities

- Proactive Orientation (structure for success)
  - Tax system - more heavily weighted on consumption than income
  - Productivity and Real economy
  - Stable investment environment - predictable energy costs, stable monetary system
    - We are 30 years late in starting the transition, investors need a straight, flat highway to get up to speed.

- Economic Structure
  - Broad based economy
  - Biophysically rational market system
  - The productive are rewarded, the unproductive are not

National Action

- Electrification – The Renewable Energy Transition
- Biophysical metrics and modelling based planning
- Minimizing stranded assets and buffering personal loss and economic damage
  - Some business models will be crushed, make sure people aren't left in the rubble

- Incentivizing change, not subsidizing consumption or obsolete business models
- Support for repatriating core manufacturing, food and energy production to assure food, medical and energy resilience.

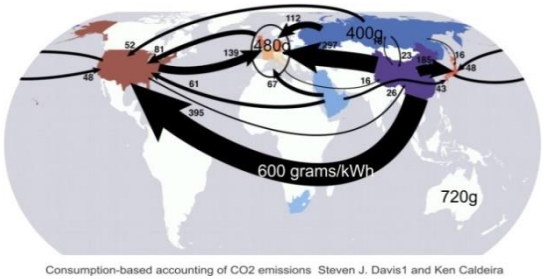
- Transform from a debt fuelled consumer economy to a broad-based producer economy.
- Tax base shifted towards consumption and away from income
- Make the national conversation and research independent of commercial interests.

- Make democratic process issue based rather than brand based

The Right Elites

- Old Elites
  - Came to power during an earlier phase of development of the country and now can't lead in the right direction.
    - Mineral extraction, fur trade, construction, fossil fuels, trading
- New Elites needed
  - Their fortunes are built in stride with the changes we need to make.
    - Renewable energy, electrification, return of manufacturing, recycling, energy, technology and resource conservation
      - Get rich saving the planet, not destroying it
- Parasitic Elites never needed
  - Elites which never contributed to progress or which profited excessively and who shaped the market for their exclusive benefit.
    - Finance, speculation, cheap labour employers, vice

Globalism Old vs New



Consumption-based accounting of CO2 emissions Steven J. Davis1 and Ken Caldeira

- Commercial Economics, Globalism
  - Maximum consumption
  - Beggar they neighbour economics (winners and losers)
  - Destroyed manufacturing base of the west
  - Increased GHG emissions
- Current Globalism is a fragile structure designed with just-in-time efficiency but is a house of cards when confronted by:
  - Pandemic
  - Putin
  - Resource depletion
  - Social unrest
  - Transition to renewable energy

Globalism
Resiliency

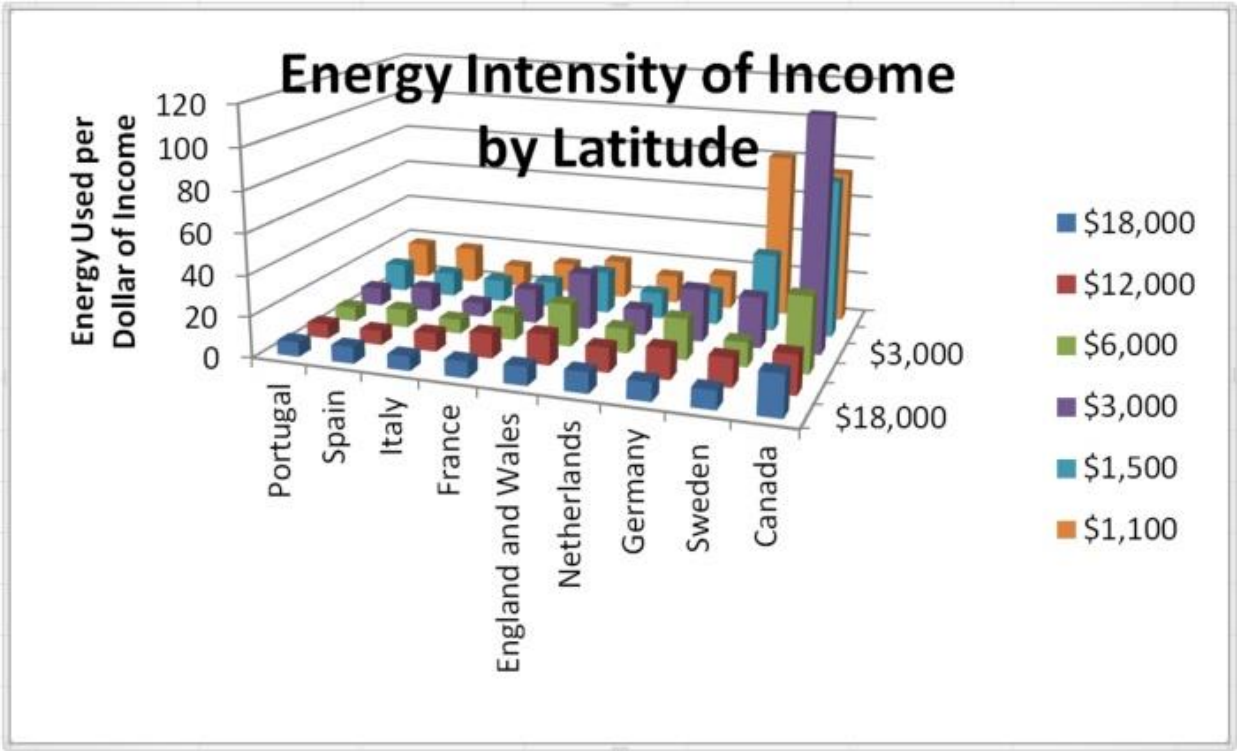
- New Globalism
  - Cooperative development
  - Support of broad based resilient economies in all countries (high, consistent tariff walls)
  - Rapid international technology transfer
  - Minimized goods/resource/population transfer
  - All countries learn to live within their own borders
    - A prerequisite for the elimination of international wars

Equality
(1)

Energetic equality is much easier to achieve in moderate climates than extreme ones. Note northern countries of Sweden and Canada vs Portugal & Spain.

Netherlands appears to set the standard – a relatively northern country with outstanding energy equality.

How did they achieve that?



Richard Unger

Equality
(2)

- Income equality via high quality jobs and low unemployment is the best treatment for broad social problems.

- Adapt business models to jobs people want to do and can live well with.
    - Current labour policy is to supply worker cannon fodder for old business models

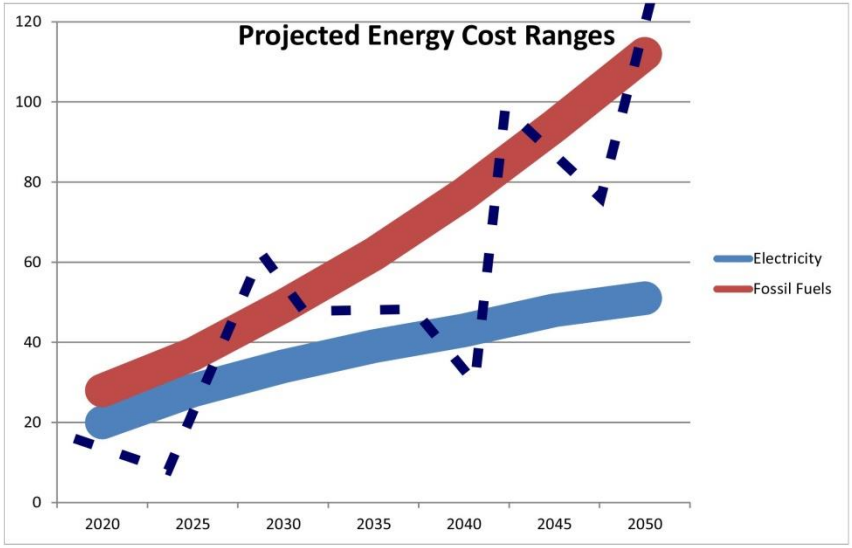
- Canada's record of equality decline from 2nd highest in the world in the early 1960s to the mid-30s now. (the world's worst performance??)
  - Driven by a policy of rapid population growth to keep wages low and housing costs inflating.
  - This is the perfect engine of inequality.
  - A failure on inequality will bring change to its knees.

We need to instill a culture of productivity improvement as we enter a permanent era of aging** induced labour shortage.

A mild labour shortage is the most effective engine of social health and fiscal balance if well embraced.

** Population stabilization and possibly mild decline

Stabilize Investment Environment



- Investment can be optimized with predictable energy costs.
- Volatility disrupts investment for large and small producers and consumers alike.

National Energy Strategy

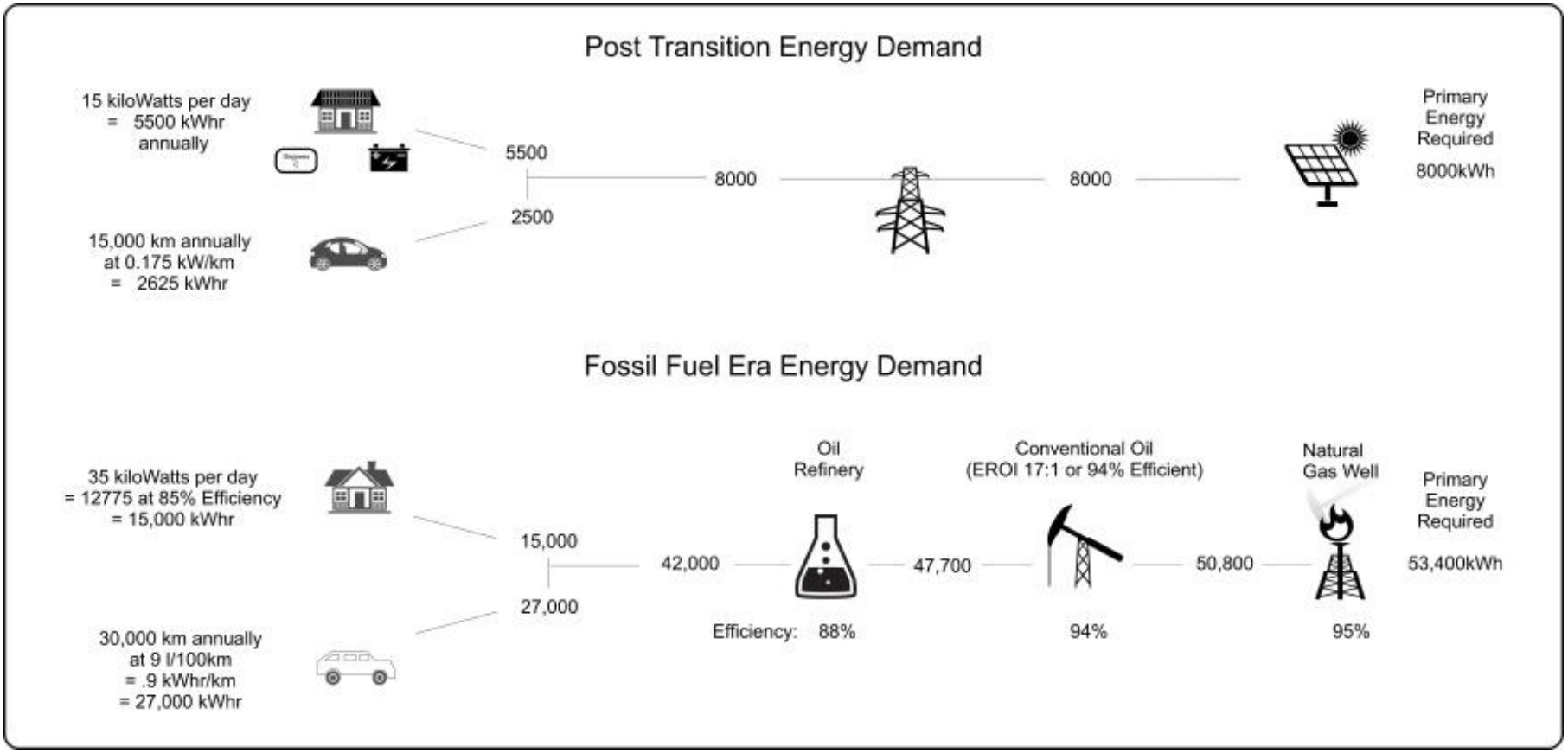
(biophysical economics overview)

- Full system EROI (Energy Returned on Energy Invested)
  - EROI of obtaining energy
  - EROI of obtaining and storing energy
  - EROI of obtaining, storing and paying legacy costs
    - Legacy costs of conventional oil and oil sands cleanup, battery, solar panel re-cycling, carbon capture to neutralize fossil fuels

Make sure "sticker price" reflects full lifecycle costs.

Distinguish between high grade energy (electricity, fossil fuels)
which can be used for almost any purpose and shipped long distances
with low losses,
vs.
low grade energy (**HEAT**) which has to be stored and used locally and can only be used basically for heating or cooling applications. But it is abundant and cheap.

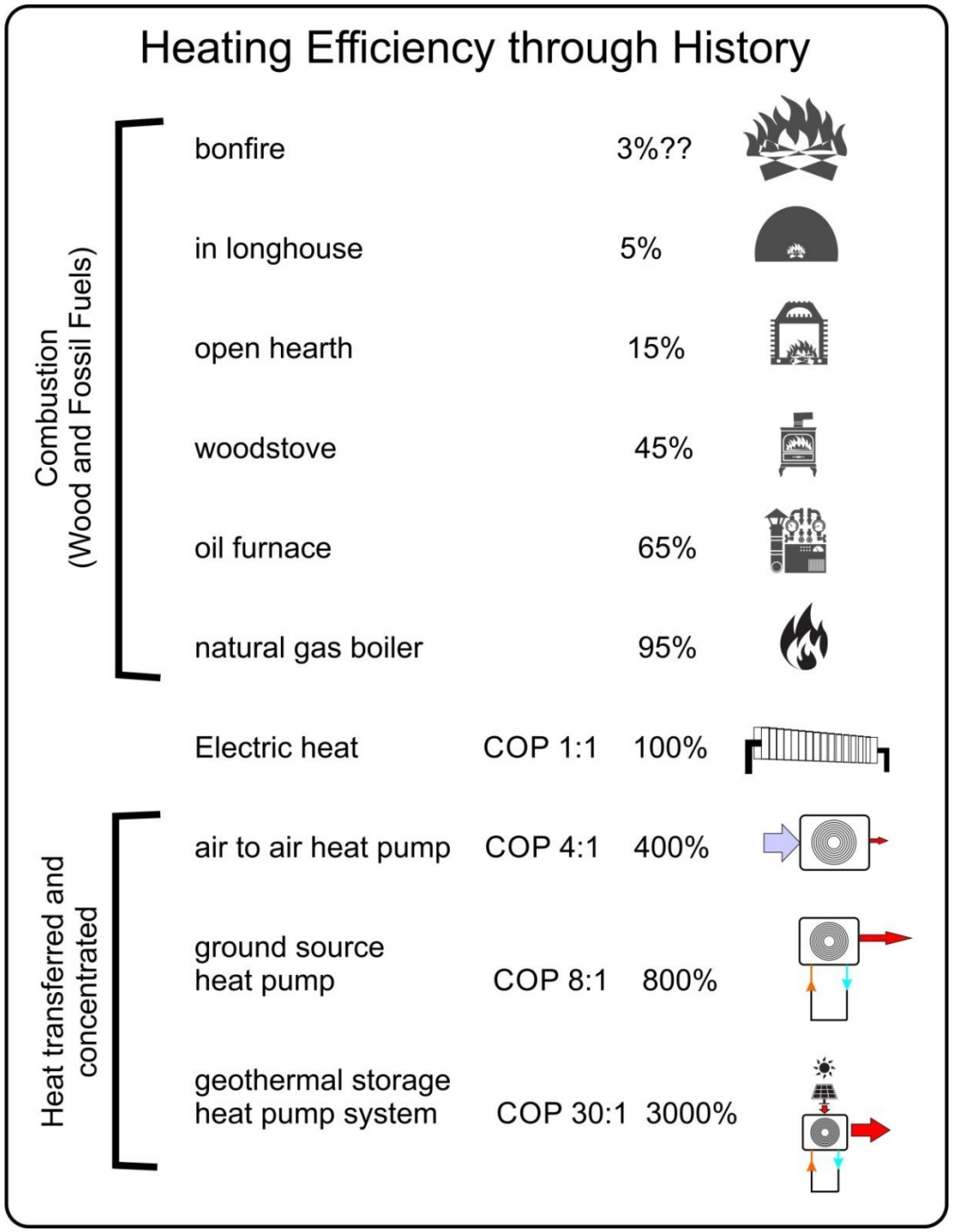
Electrification means much lower overall energy demand



The Old World of Burning Fuel

The New World of Electricity

Progress in the electric world will be extremely rapid.



Coefficient of Performance
COP

- Heat pumps do not produce energy but rather gather it.
- COP is a ratio relating the energy harvested to the energy used.
- COP represents the energy multiplier effect of heat pumps.
  - a COP of 4:1 means 1 kWh is used to harvest 4 kWh of heat.
- Hence, they can produce (transfer) more energy than they consume.

3 Types of Geothermal

- Geothermal Energy
  - Iceland produces electrical power from steam turbines as well as heat from their 4km deep boreholes over magma flows. Temperature in the borehole can exceed 400C.

- Geothermal Heat Pumps
  - Pipes buried underground
  - harvests ambient heat from the earth and pumps it into buildings.
  - Art Hunter, Manotick, Ontario – COP 8:1

- Geothermal Storage
  - Heat is harvested from solar hot water, incinerators, gas plants, etc., and is stored in the ground and recovered months later.
    - Drake Landing development, Okotoks, Alberta - 30:1
    - Whisper Valley development, Austin, Texas
    - Sweden

Geothermal heat pumps (ground source) have higher COPs than air source because in winter, the ground has a higher temperature (14C) than the outside air (-10C).

Geothermal COP Impact

Case Study: Germany 2022

(1)

Currently Germany and the EU are hard pressed to meet their heating energy demands.

Germany gets :

- 55% of its natural gas from Russia and 45% from Norway and the Netherlands
- 7.3% of gas is used for electricity generation and 93% for heat.

Solution:

Fossil fuels should not be burned for heat and only used to produce electricity where "efficiency" levels can go far above 100%. Therefore build natural gas electrical plants or convert coal plants to drive heat pump and geo storage systems.

Germany could then provide both heat at the current level and full ground fleet mobility with zero Russian natural gas and oil.

If equipped with heat pumps (air and geothermal), a national COP average of 3:1 would allow Germany to supply all of the heating it needs using only the electricity produced by plants driven by the current level of Nordic natural gas imports.

If all the electricity required to power both the heating infrastructure and the electrified automobile network came from Nordic gas, a COP of 4.6:1 would be required.

Allowing for peak demand in extreme weather the required COP must be higher.

Allowing for what must now be a strong conservation effort, the COP could be lower.

Case Study: Germany 2022
(2)

Effectively, COP is a multiplier of energy potential. Once turned into electrical energy and used to power an Art Hunter level non-storage geothermal system, natural gas can deliver 6 to 8 times the heat that it could simply burned for heat.

With a full geothermal storage system on the level of Drake Landing in Okotoks, Alberta, a multiplier of 20+ times would be possible.

A heat pump program using a high percentage of geothermal systems can allow the delivery of adequate heat plus full EV mobility (450 billion km for passenger cars) for Germany while also lowering GHG emissions.

Therefore, using natural gas strictly for electricity generation could eliminate all Russian gas & oil imports.

How quickly could this be done?

The math applies to all northern countries.

Community Action

(activist driven)

- District heating and cooling systems
- Active transportation – walking and biking infrastructure
- Education – every school has a living energy lab.
- Stopping sprawl
- Farmers and local manufacturers markets
- Carbon budgets
- Assuring food, energy supply resilience
- Access to nature
- Assuring all housing, **including rental properties, **** transition to renewable energy and support EVs, conservation and energy harvesting and storage.

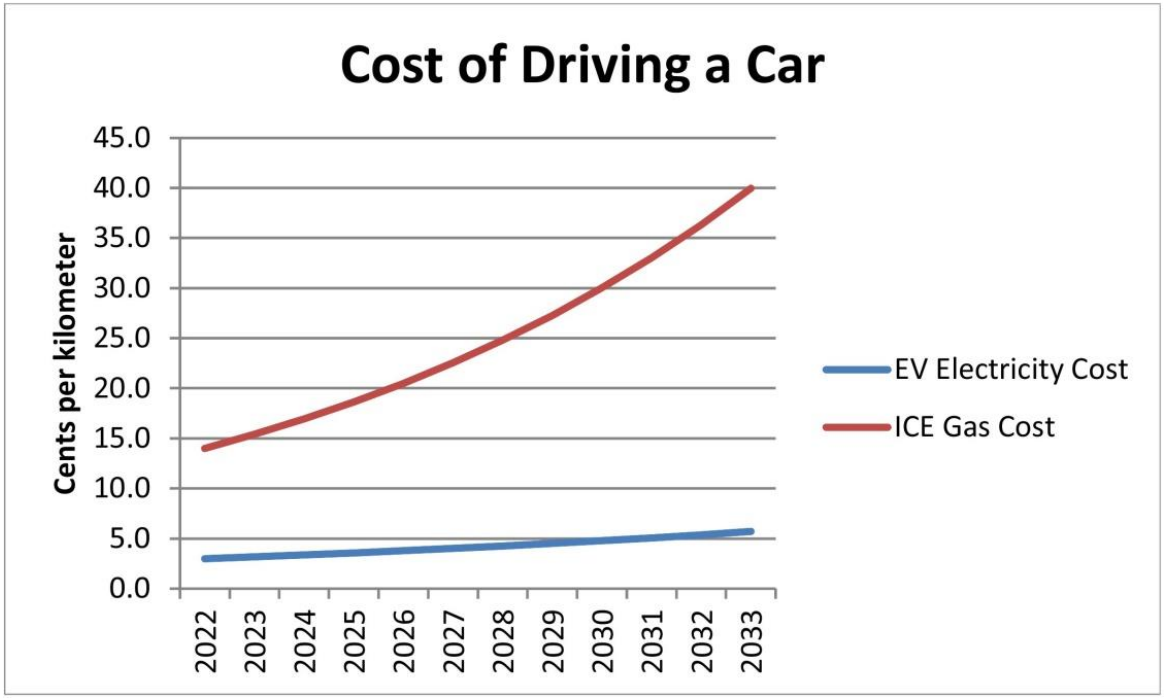
- ** 30% + of all residences.

Personal Action

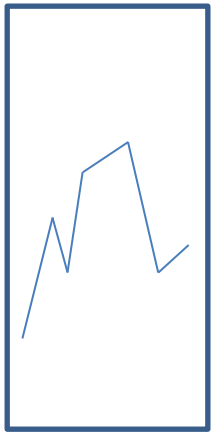
Invest to Reduce Long Term Costs and Improve Resiliency

- Downsize
- Electrify
  - EV – electric vehicle
  - heat pump
  - all toys and tools
- Pick your spot! The right community counts.
- Be a responsible citizen, not a rights-driven consumer. Lead by example.
- Your new hobby - energy harvesting, storage and conservation
- Micro-grids make good neighbours
- Buy less, keep it longer, repair, upgrade, and finally recycle it
- Make your business proactive to achieve resiliency or you will be repeatedly blindsided by “unforeseen” events.

Likely energy costs – what is coming?



Gas Prices?



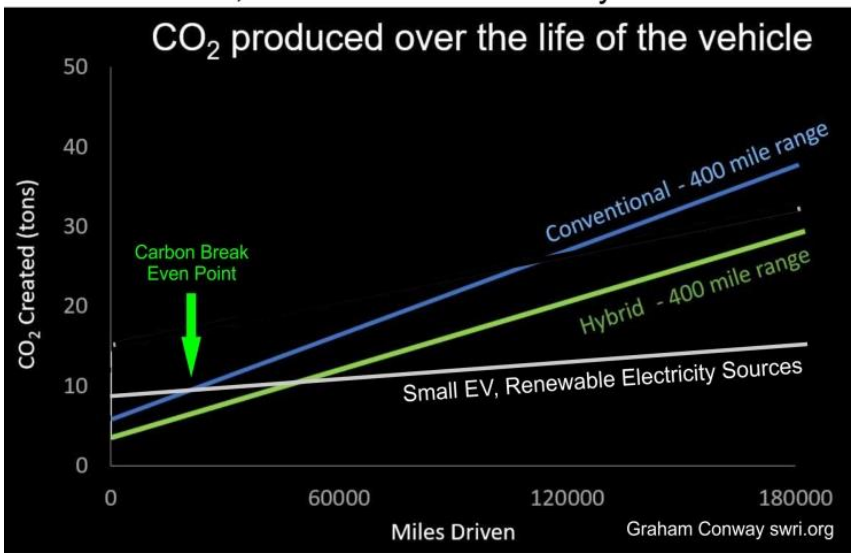
Based on gas consumption of 10L/100km and electricity consumption of 15kWh per 100km.

Gas increases from $1.40 per litre in 2022 to $4.00 in 2033.
Electricity increases from 20 cents per kWh in 2022 to 38 cents in 2033.

Whatever happens, electricity prices are likely to be far more stable than fossil fuel prices.
But all energy prices are generally going up. Remember the EROI mountain.

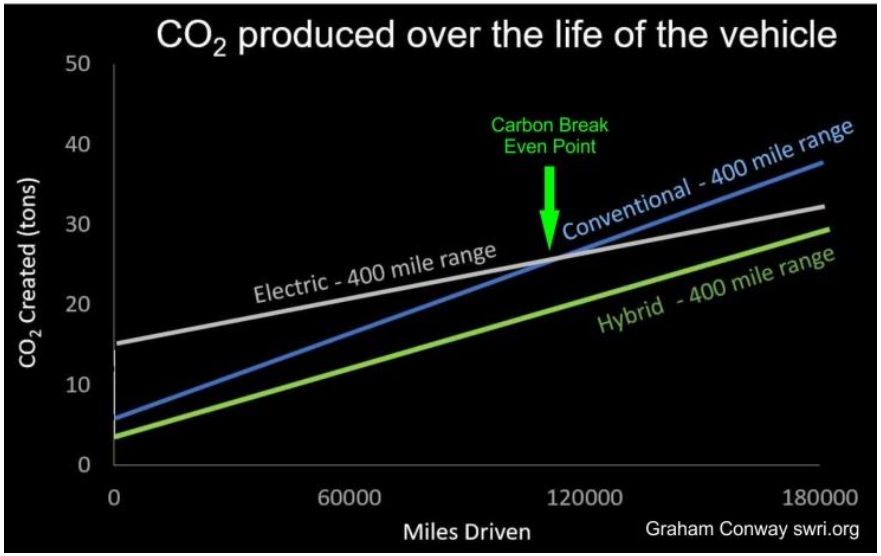
EV Carbon Lifecycle

Small EV, All Renewable Electricity Sources



18,000 miles

Large EV, Current US Electricity Source Mix

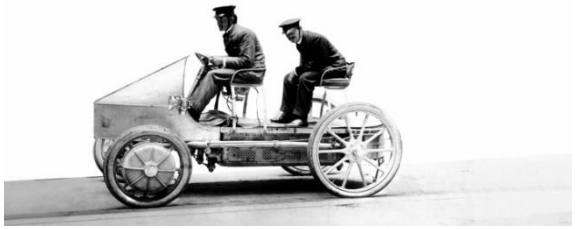


120,000 miles

The carbon breakeven point depends on the size of the EV and its battery and on the percentage of renewable energy powering its grid.

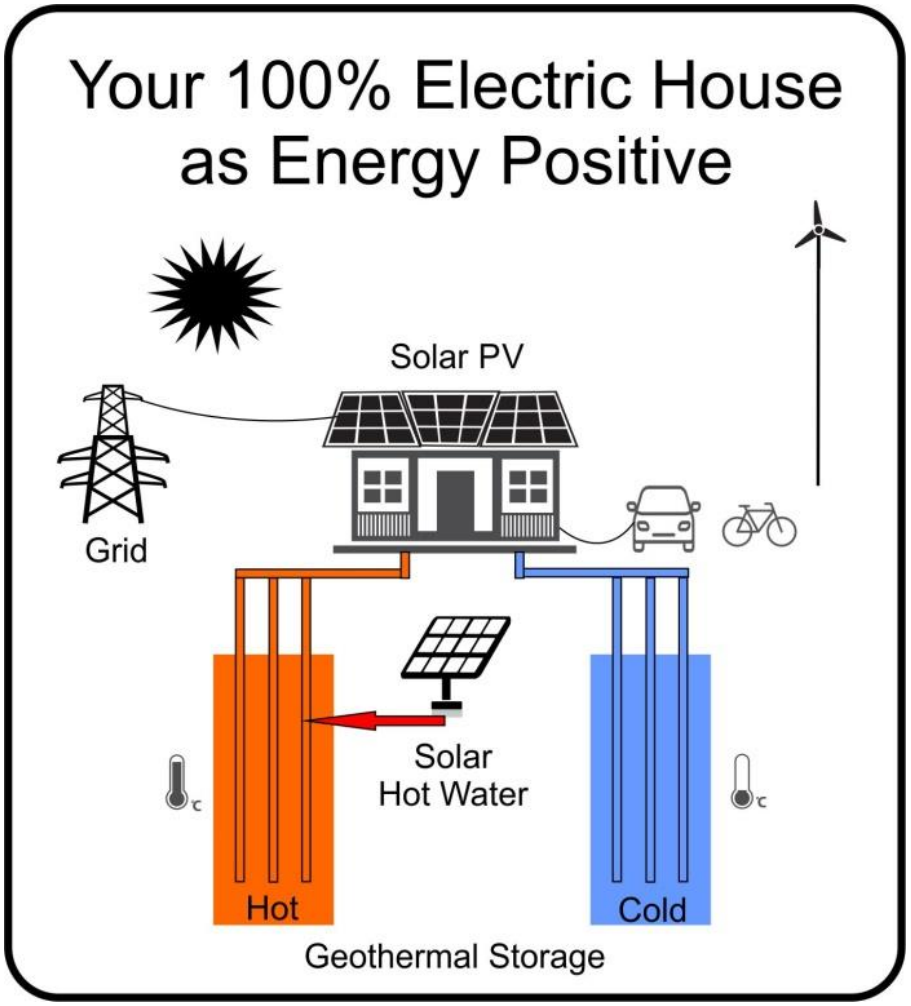
Put 10kW of solar panel capacity on your roof and the breakeven point arrives more quickly.

As far as the cars themselves are concerned, efficiency remains the goal and we have learned a lot in 120 years.

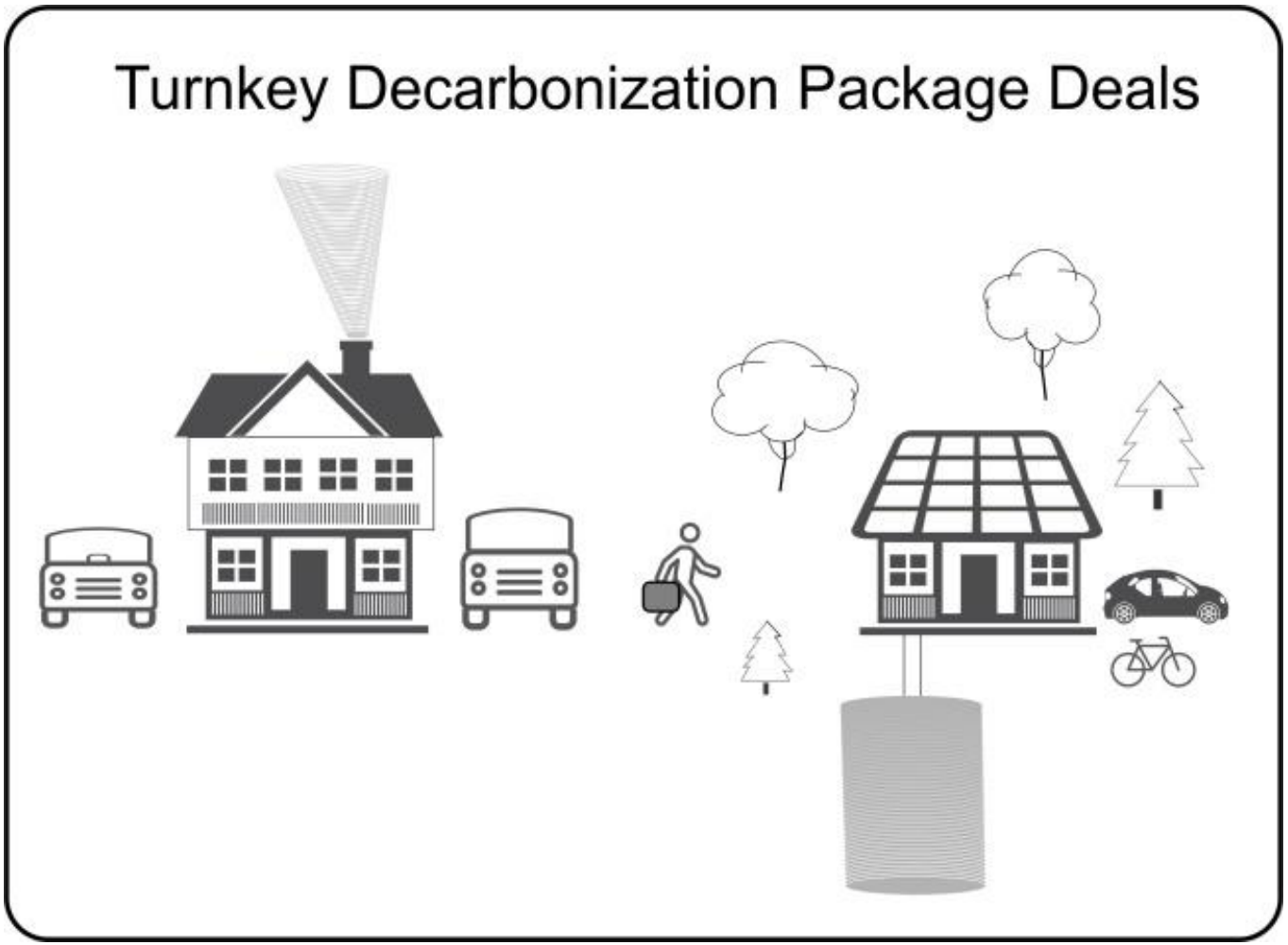


Upgrade	Time	Cost (for scale purposes only - get local quotes)	Energy Impact per $ 1 - 10	Carbon Impact/$ 1 - 10	Comfort Improvement Impact 1 - 10	Resilience Improvement 1 - 10
Window film	Hours	< $100	10	10	4	2
Door sealing and window caulking	1 or 2 days	< $200	10	10	4	2
Storm doors	1 day	$700/door	7	6	2	2
Storm Windows	Several days	$ Several thousand	7	5	3	2
Ceiling insulation upgrade	1 – 2 days	~ $4,000	8	6	4	4
Installing granite countertops in the kitchen	3 days	~ $10,000	0	0	4	0
New Windows	1 week	$10,000 +	5	4	4	4
External Roll-down shutters for large windows	Several days	$2500.00/ window	4	3	5	5
Tankless water heater	2 – 3 days	$4,000 +	4	3	2	2
Natural Gas Boiler with hot water radiators	One week or more	~ $15,000	5	4	4	1
In-floor heating	weeks	$$$	4	3	7	1
Air-to-air heat pump and mini-split head units	3 or 4 days	$7,000 to $15,000	7	6	4	4
Geothermal Heat pump	1 or 2 weeks	~ $35,000	8	8	2	6
Geothermal heat pump, solar hot water panels	2 or 3 weeks	~ $60,000	9	9	2	8
Geothermal heat pump, solar hot water, solar PV panels and 30kWh of battery storage **(EV with V2G much better!)**	weeks	~ $120,000	10	10	2	10

What Every Building Needs to Become



One Fell Swoop



- Drake Landing
- Whisper Valley
- Customized

Many Step Process

- Unlike a well-heeled individual, nationally, we will have take many medium sized steps to both get back on the track as a progressive society and transform into a sustainer society.

- We have to recognize the obstacles in front of us as well as build the tools and the habits which will make the transition** a success.

- 400 years ago our ancestors fled social and environmental decline in a chaotic Europe to colonize a vast New World.

- To avoid similar threats, this time we will have to stay where we are and migrate to a different worldview where progress, rather than endless growth, is the vision.

** the transition will actually be continuous adaptation to a dynamic planet

The

End of Growth

can be the beginning of

Lasting Progress

Useful References

Conquest of the Land Through 7000 Years – Lowdermilk (pdf)

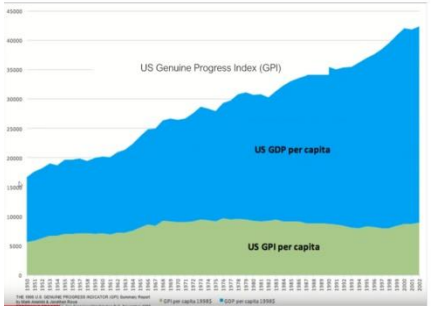
- A civilization is only as healthy as its soil.

- Global Crisis – Geoffrey Parker
- Energy and the Wealth of Nations – Hall, Klitgaard
- Energy and Civilization – Vaclav Smil
- Failing States, Collapsing Systems; Biophysical Triggers of Political Violence – Nafeez Mosaddeq Ahmed

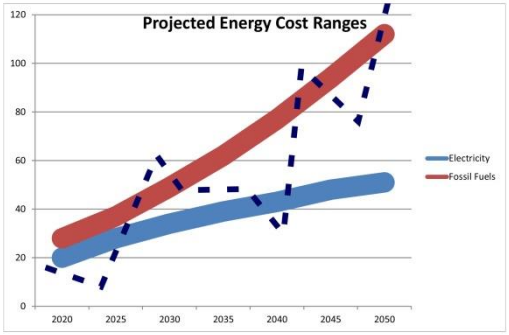
Other Factors in CO2 Emissions

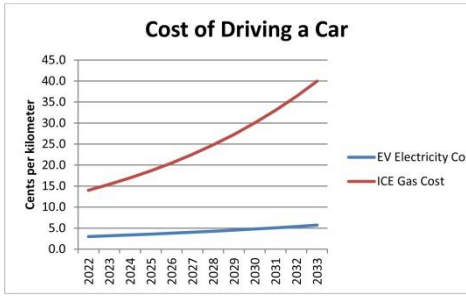
- Is the country a net exporter or importer of food, energy, manufactured goods?
- Severity of climate

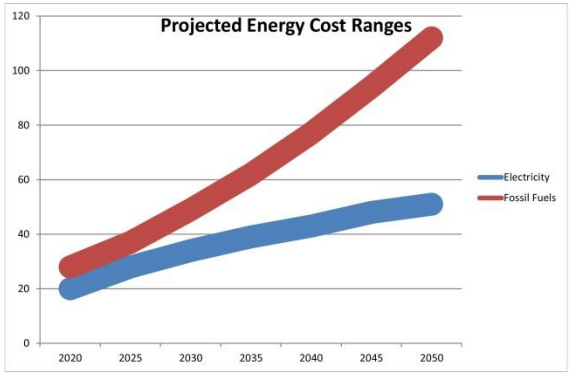
https://www.youtube.com/watch?v=foJjoGMEVm4&t=295s
David Polluck

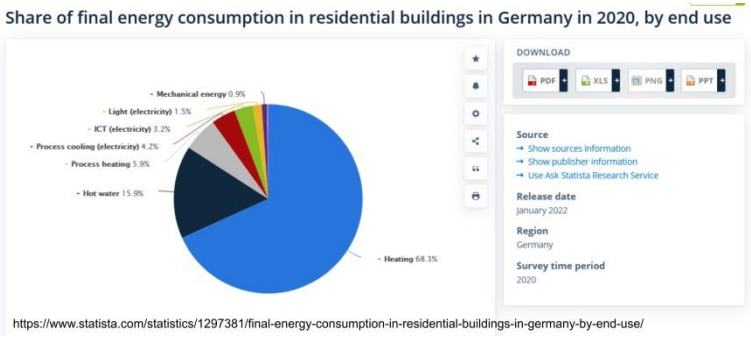


Debt x 5
Job Quality - Down
Inequality - Up
Quality of Life - Down
Food Security - Down
Energy Security - Down
Cost of Living - Up
Time to Climate Crisis - Shorter

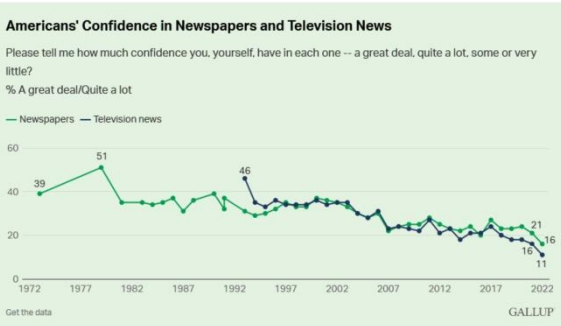


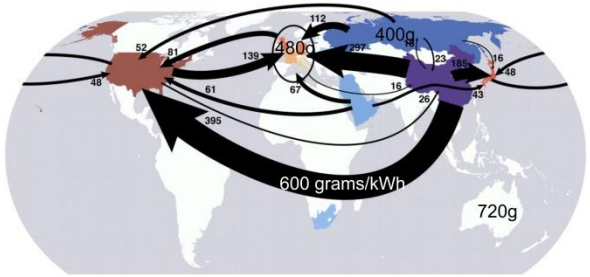






https://www.statista.com/statistics/1297381/final-energy-consumption-in-residential-buildings-in-germany-by-end-use/



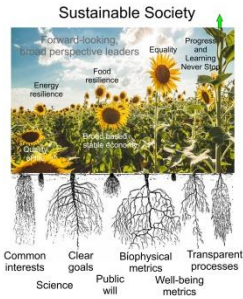


Consumption-based accounting of CO2 emissions Steven J. Davis1 and Ken Caldeira

National Conversation

Commercial (money) Economics

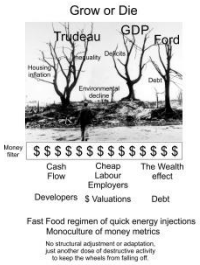
All inputs go through a dollar filter.

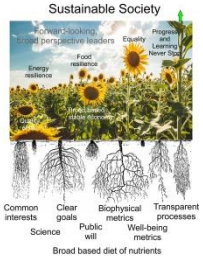


Biophysical (Real World) Economics

Balance can go on forever.
Growth collapses when it stops.

National Conversation





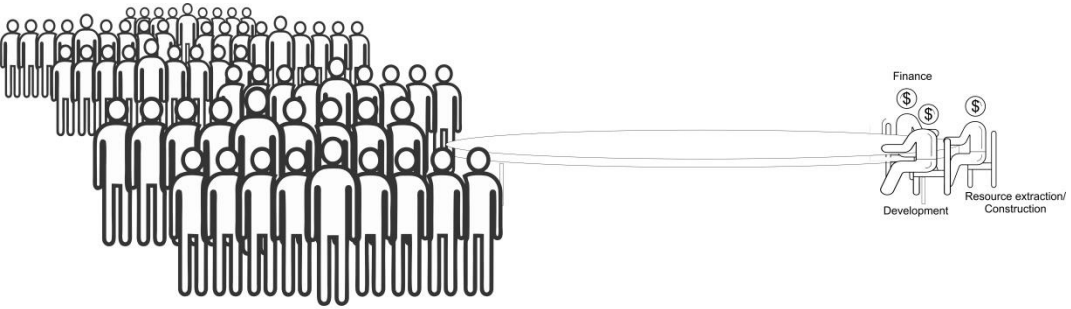
Balance can go on forever.
Growth collapses when it stops.

Fractured National Conversation
The Curse of the Complex Society

Highly stratified, urbanized and specialized society
all see the world differently and have interests which directly conflict

The Tribe
one worldview
one standard of living
one location
one source of income
what is good for one is good for all
chief sees the same landscape
and
eats the same food
and
lives in the same housing

communal discussion
connected decision makers
interests strongly linked to welfare of tribe members



The Table is Getting Longer

Metrics: GDP and profit for Finance, development, construction/ single use resource sectors

Metrics:
- energy consumption (EROI)
- carbon emissions
- equality
- per capita income
- debt/income
- job quality
- well-being
- recycling %

Administration

Development

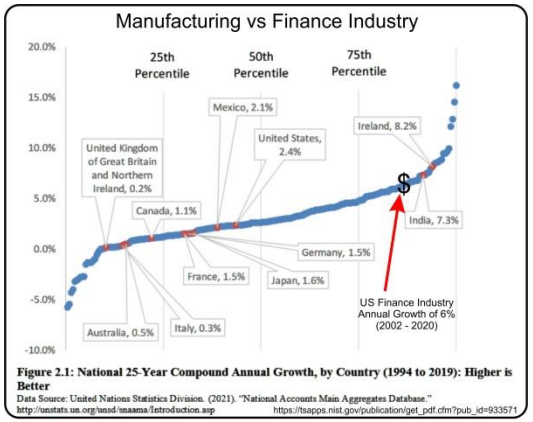
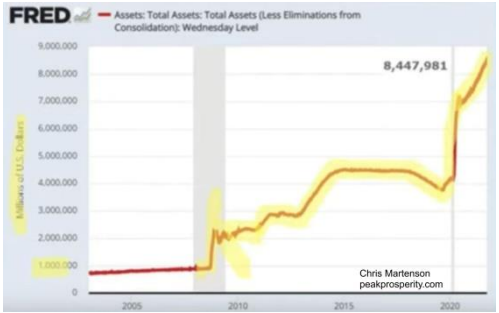


Figure 2.1: National 25-Year Compound Annual Growth, by Country (1994 to 2019): Higher is Better

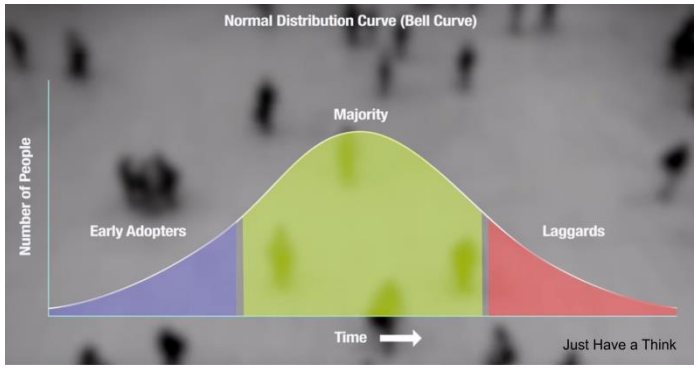
Data Source: United Nations Statistics Division. (2021). "National Accounts Main Aggregates Database."
http://unstats.un.org/unsd/snaama/Introduction.asp https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=933571



It Needs to Get Rounder

with a Complete Reversal of Leadership Roles

Earth has set its hair on fire
but Canada's political leaders still



U.S. Billionaires Got 62 percent Richer Durin Pandemic. They're Now Up $1.8 Trillion.

First Name	Net Worth Mar. 18, 2020 ($ Billions)	Net Worth Aug. 17, 2021 ($ Billions)	17 Month Wealth Growth ($ Billions)	17 Month % Wealth Growth	Source
Jeff Bezos	$113.0	$188.0	$75.0	66.4%	Amazon
Elon Musk	$24.6	$175.4	$150.8	612.8%	Tesla, SpaceX
Bill Gates	$98.0	$130.6	$32.6	33.3%	Microsoft
Mark Zuckerberg	$54.7	$128.9	$74.2	135.7%	Facebook

Chris Martenson peakprosper

The Immediate Truth

What business and governments see

- apparent full set of numbers for size of the commercial economy and its health
- in daily use by many parties
- used worldwide
- easy
- but mis-used and manipulated to serve the interests of a small minority.

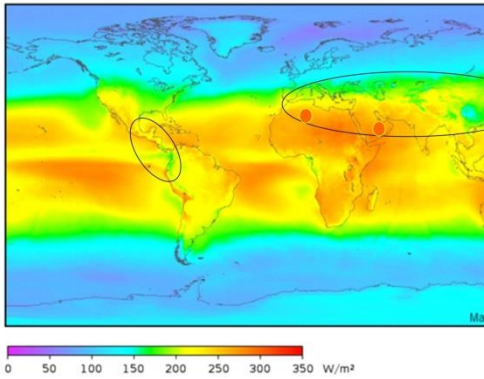
$ GDP $

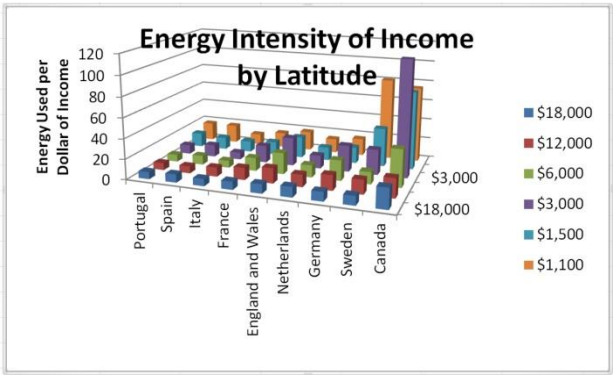
The Popular Truth

What people live

- hard to describe, measure/qualtify and compare
- disparate metrics
- not in daily conversation
- discussed only by specialists

Global Empire Belt





The Greater Truth

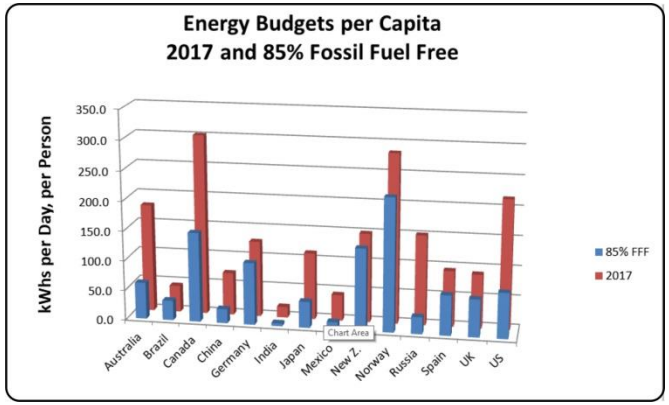
How the planet functions

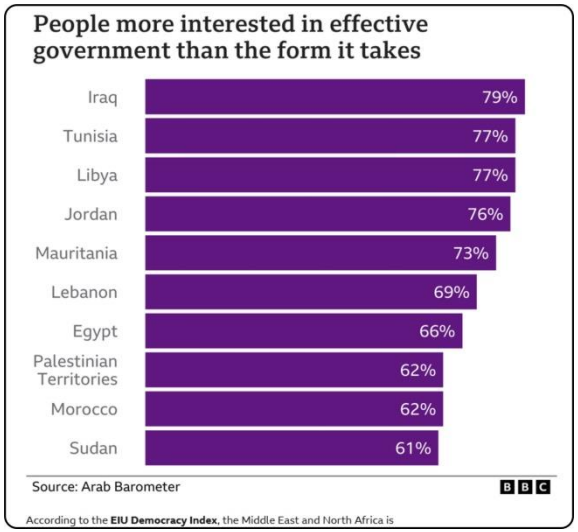
- biophysical economics ie real physical units
- requires measurements in the field rather than taking numbers off a screen
- unpleasant conflicts with commercial market (GDP) metrics
- real science and a solid base for decision making

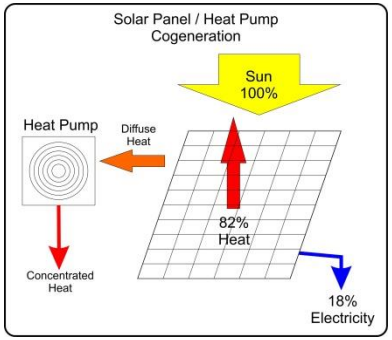
By contrast, controlled con

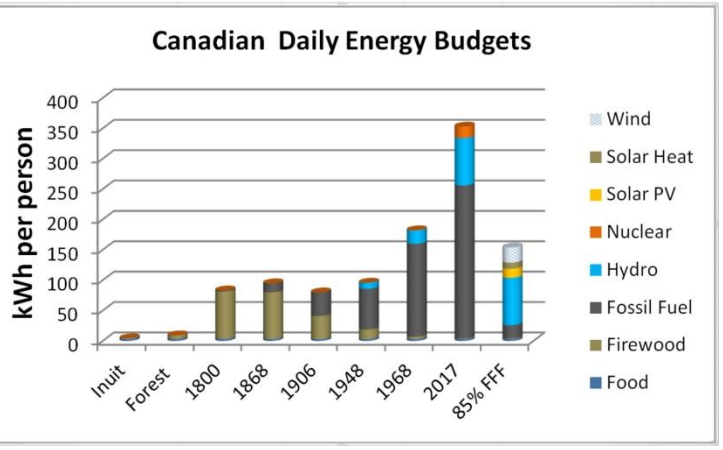
A sample of what we *should* be doing (assuming the goal i

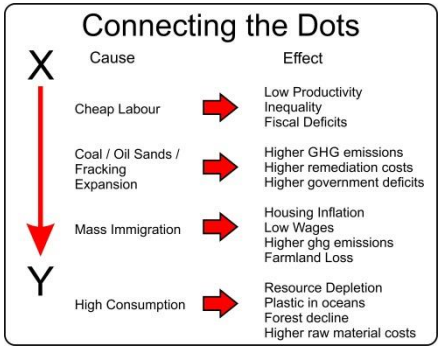
- Phase out non-essential and frivolous uses of (e.g., private vehicles including EVs, ATVs, jet-skis, leaf-bl
- Allocate remaining FF budget to essential use (e.g., agriculture/food processing, inter-urban truck tran
- Implement carbon taxes, depletion taxes, etc (i.e, internalize social and eco-externalities through *full s*
- Re-localize essential manufacturing and food (i.e., reduce dependence on unreliable global supply cha
- Reorganize settlements into more self-reliant bioregions integrated into local ecosystems.
- Downsize housing (new house = 1000 sq ft, down fro
- All new construction to passive house standa
- Implement a fair income-tax system and mini
- Restore essential ecosystems and life-support

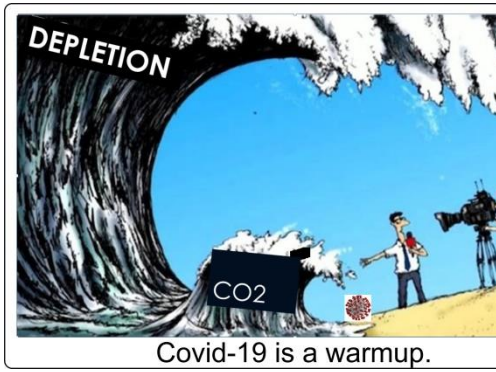




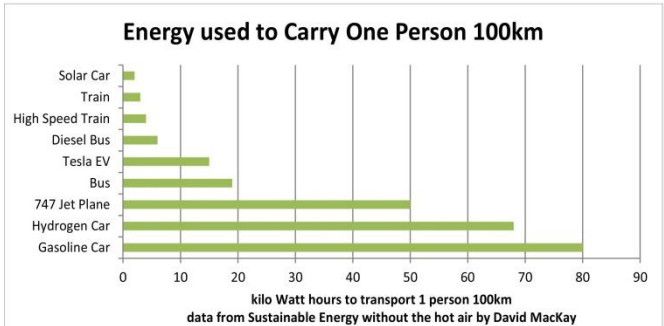


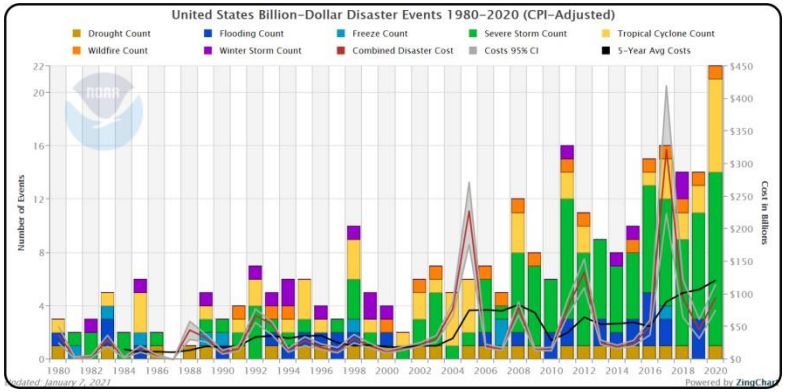


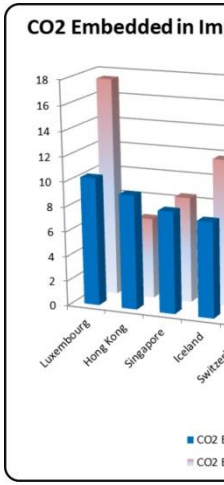


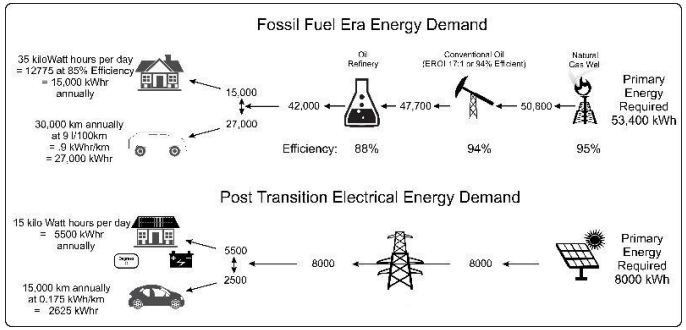


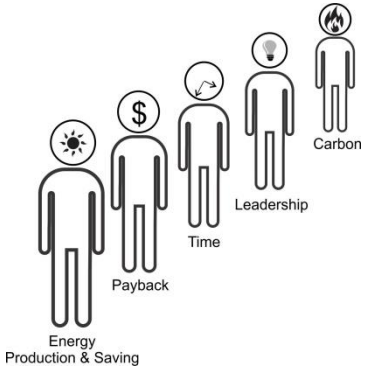
Covid-19 is a warmup.

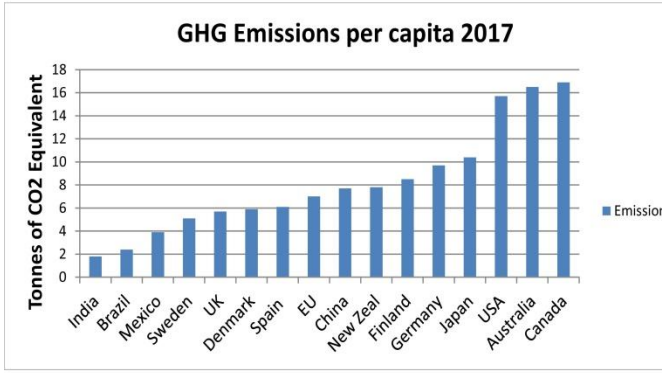


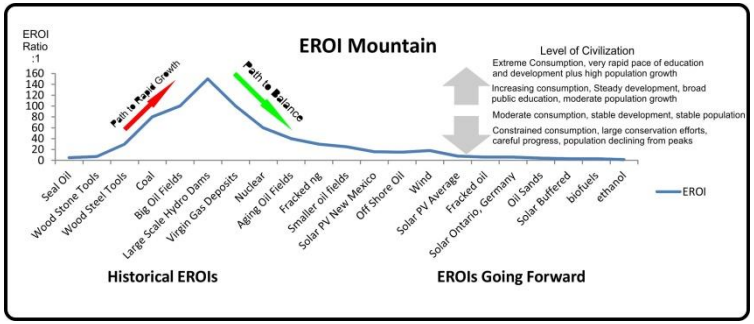


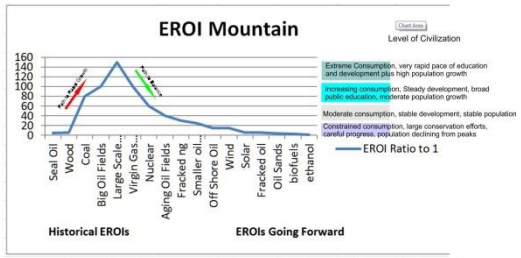




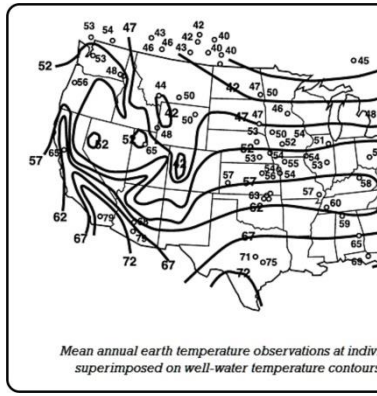


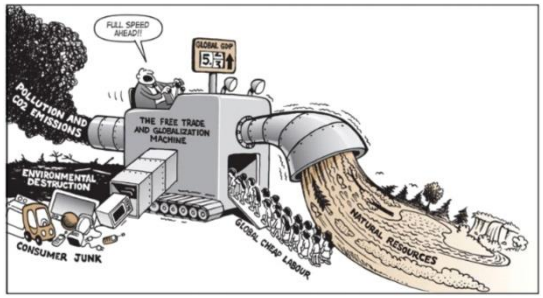






Progression of fuel sources as humanity burns through its options

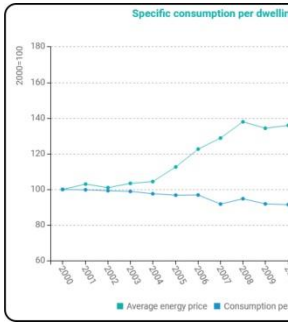


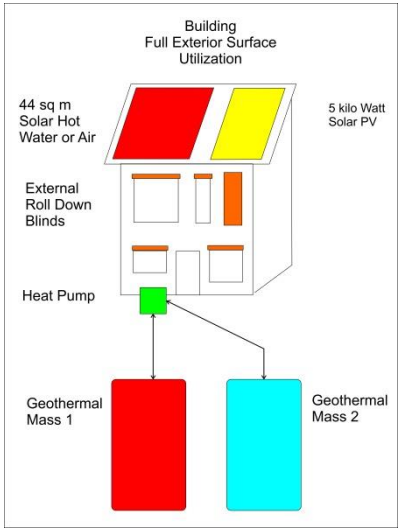


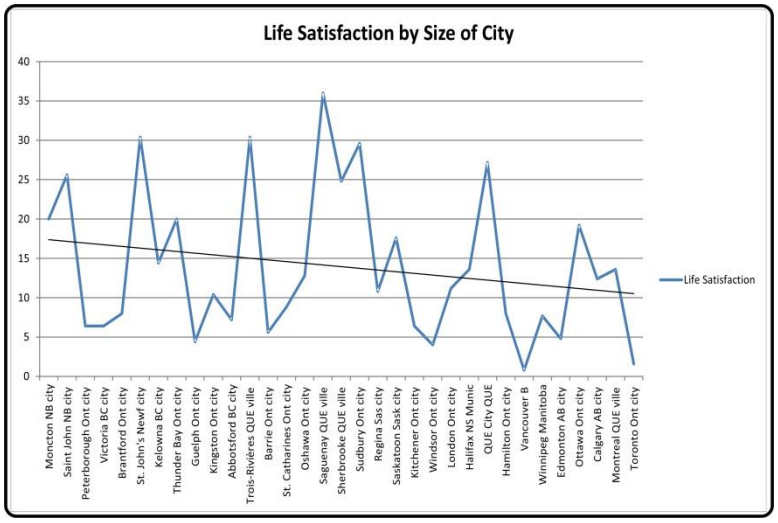
"It's just a back-up system
for your pacemaker."

Globalism
Resiliency

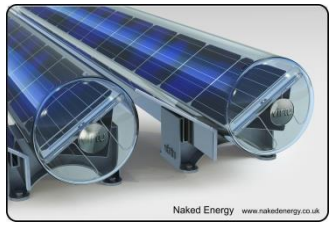
It takes more energy to live
here
than it does
here.

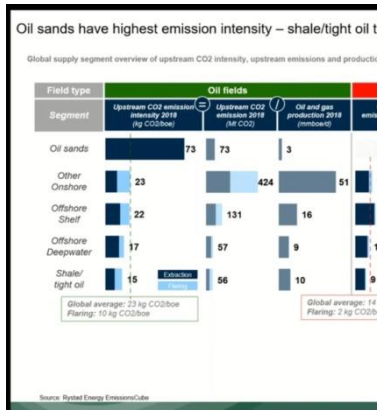


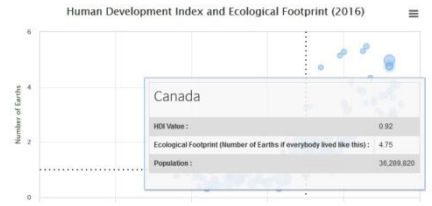


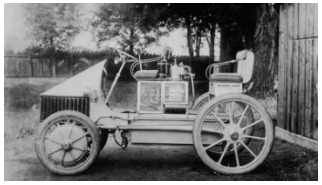


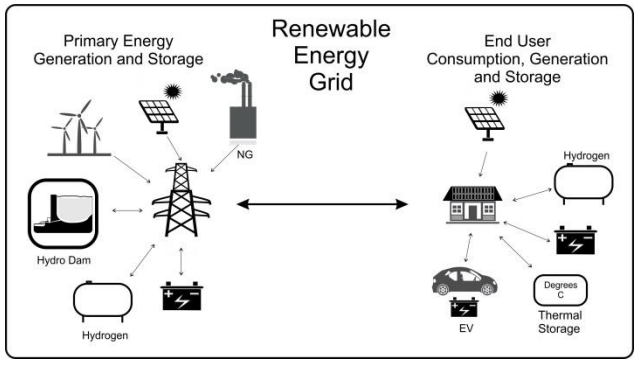
Live in the style of bygone days in an unfixable house or live comfortably in a house built for the future

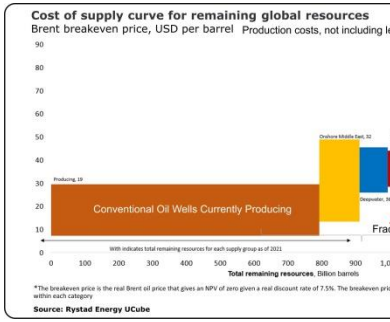






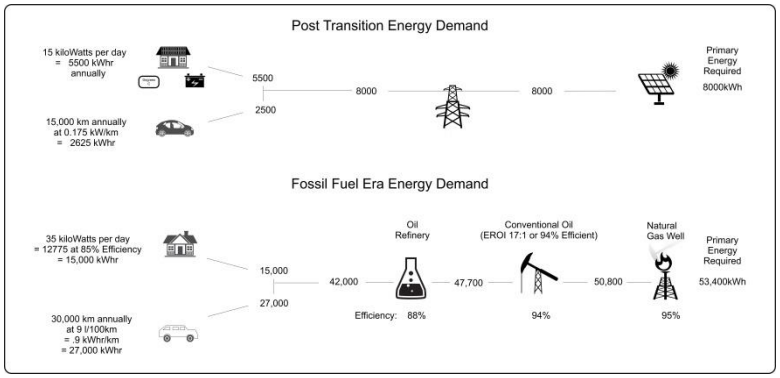


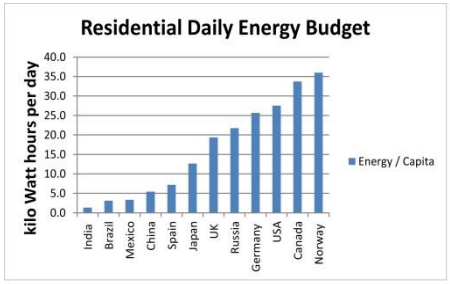


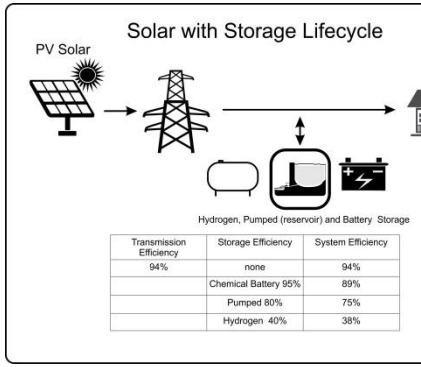


Renewable Energy Infrastructure by Latitude

	Annual Budget kWh	Storage Required Days	Storage Required Annual kWh	Size of Array Required kilo Watts	Storage	Array	Total
Igloolik	14600	120	4800	63.4	$ 4,080,000	$ 126,736	$ 4,206,736
Calgary	10950	90	2700	27.2	$ 2,295,000	$ 54,315	$ 2,349,315
Victoria	7300	60	1200	17.3	$ 1,020,000	$ 34,564	$ 1,054,564
St. John's	10950	90	2700	28.5	$ 2,295,000	$ 57,031	$ 2,352,031
Wilmington	4380	4	48	3.2	$ 40,800	$ 6,337	$ 47,137
Guadalajara	1825	0.5	2.5	0.7	$ 2,125	$ 1,302	$ 3,427







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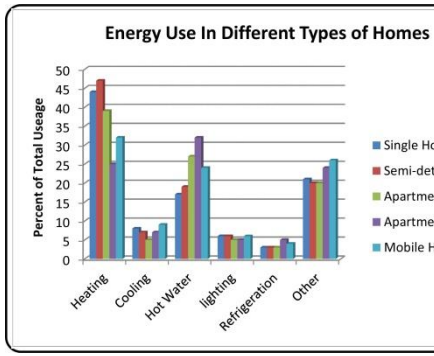
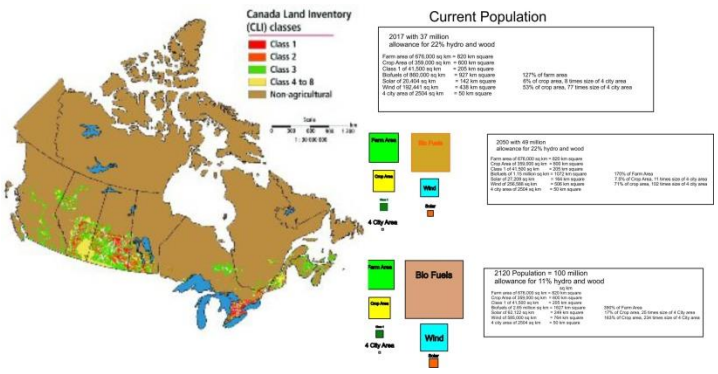
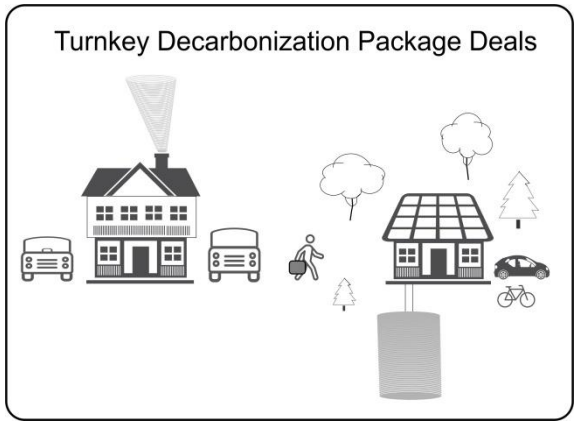
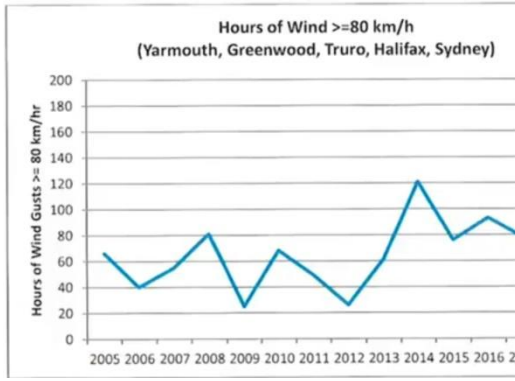
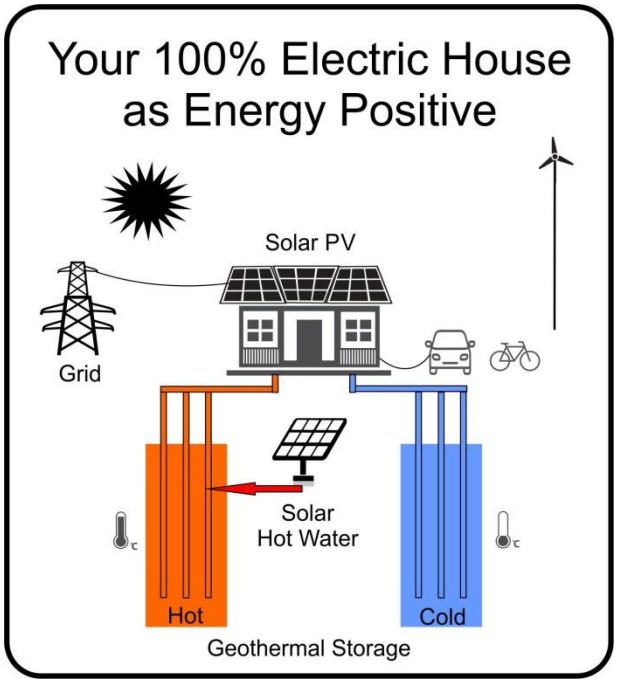
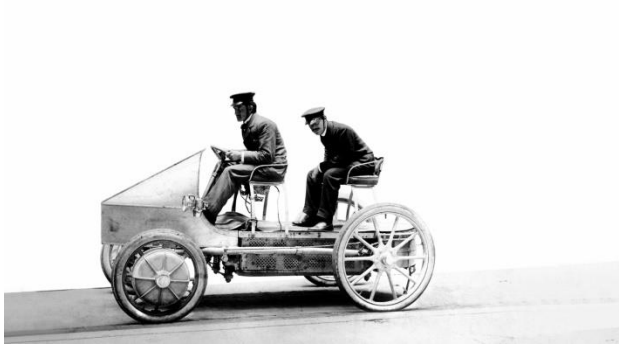


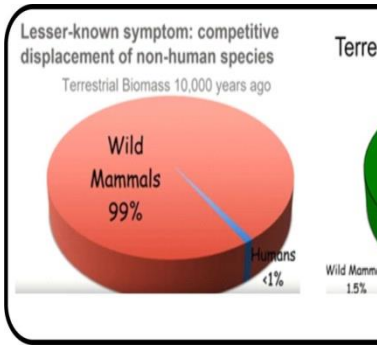


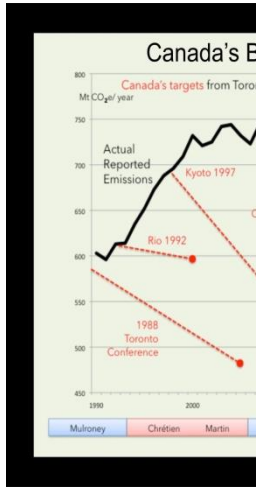






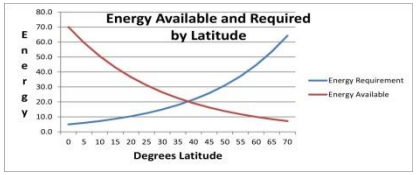






Band-aid Solutions

Every Disaster Movie Starts with a Government Ignoring a Scientist



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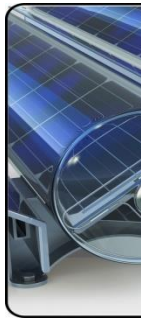

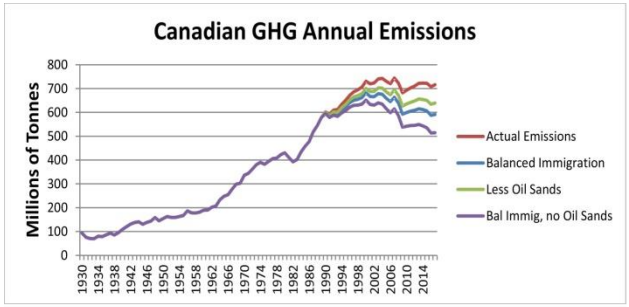

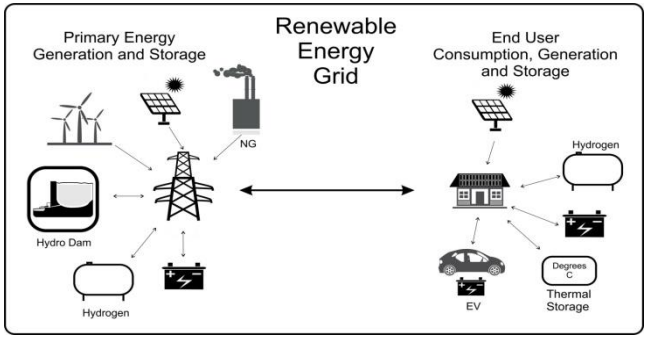

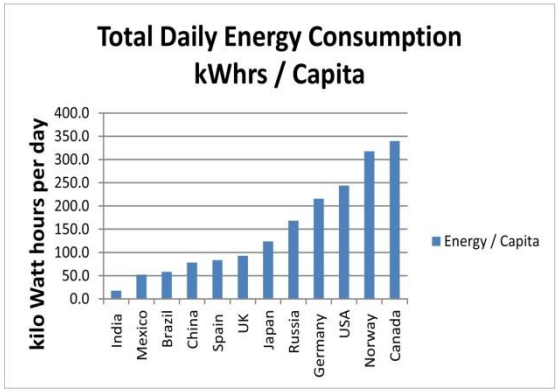

1000
500
0

Rate of Population Growth	Annual Population Increase	Number of Increased Residential Units	Number of 500 home Subdivisions	House Price Inflation
Stable	0	0	0	0%
0.5%	200,000	74,000	480	?

Conquerors or Stewards; It's Our Choice

- King Kong
- Man standing in garden with hoe.

Critical Strong Nation Structure

- Regardless of what type of government is in power, a resilient nation needs the following in place to make and execute progressive decisions.
  - Create strong institutions which are widely trusted to do their job
    - Expert input at all levels
    - Minimal corruption or cronyism
    - Ability to absorb different opinions
    - Co-ordinate with all sectors

  Freedom to speak truth (and opinion) to power.
  - Right now, we do not have the freedom to speak heresy to power. (right now, what we speak is heresy and power is in business to make sure it isn't heard.)
  - We have mistaken money based commercial economics for science and rejected fact based biophysical economics.
  - Fortunately in Canada, the federal government and most provinces still regard medical science as a true science. Environmental science, not so much.
  - Science has to speak in comprehensible terms to the general population.
    - Paper entitled; "An Analysis of the Potential for the Formation of 'Nodes of Persisting Complexity'"
      - Plain English; "Regions Most Able to Avoid Collapse", "Resilient Communities", etc.

For the past 60 years, growth has been the assumption in Canada but once simple growth is replaced by public welfare, environmental health and fiscal balance
In this submission we break down the survey results in a manner consistent with progressive goals, establish parameters for sustainable infrastructure and expo

- Survey Results

How would Orillians spend their own money on improving life in Orillia? What are their priorities?

Item	Average
Quality of Life	26.5
Healthy Environment	24.3
Sustainable Growth	19.4
Professional, Progressive City	16.2
Vibrant Waterfront	15.5
Heritage Core	14.7

Ranking:
#1, Quality of Life
#2 Healthy Environment,
#3 Sustainable Growth
#4 Professional Progressive City
#5 Vibrant Waterfront
#6 Heritage Core
Total of Quality of life and healthy living related categories = 82.5
(26.5 + 16.2 + 15.5 + 24.3 = 82.5)
Total involving any kind of simple growth = 19.4 but even sustainable growth implies quality, not quantity. Vibrant Waterfront (15.5) does imply more infrastructure.
Theme – Professional and Progressive City
Preferences expressed by Orillians stressed quality of services and fiscal balance, not bigger services or more expenditure.
This implies high paid jobs, highly skilled jobs and stable jobs.
Theme – Quality of Life
Affordable housing is key to an egalitarian community and broad and dependable services produce a clean, well-maintained, environmentally balanced hometown that is a pleasure to live in.
Theme – Healthy Environment
All responses dealt with the themes of more effective, cleaner, higher quality environment and none implied support for more people or more buildings. Higher density is generally assumed to be less healthy, particularly in the age of Covid-19.
Theme – Waterfronts
Responses dealt with Cleanliness and Activities, again the demand is for quality experiences. Why were the terms "Selective Development" and "Increased Access" combined into one category? They conflict directly.
Theme - Sustainable Growth
"Sustainable" and "Growth" are combined despite being in direct conflict.
Affordable housing - More demand via higher population means less affordable housing.
Environmental considerations
•Nothing is more basic to our interaction with the environment than making it natural, having open spaces, clean air, low noise, high per capita space, healthy
Theme – Heritage Downtown
Improved maintenance – i.e., quality not asking for more downtown.
Improved accessibility – more active transportation options.
Increased parking availability implies putting more cars downtown.
Vibrant Waterfront – well cared for and natural, with more organized activities and probably not the paved Toronto waterfront experience with large crowds, concrete and high rises.
Fundamental Conflict
Despite the poll findings that Orillia residents place quality of life, environment and health at the top of their priority list, the consultants recommended more, or simply accepted, population growth, termed "sustainable growth" which is guaranteed to deliver results exactly contrary to public interest and clearly expressed public will.
In addition to increased crowding, higher housing costs and less healthy space for residents, population growth will also assure both fiscal imbalance and higher taxes.
There is a clear need to differentiate between growth and progress. From the survey, Orillians appear to be a strongly in favour of sustainability and all of the social cohesion, lifestyle and health benefits it implies.
If Orillians were in favour of the impacts growth brings, they would have moved to Toronto. Instead, for decades we have seen Canadians attempting to leave the growth "benefits" of unaffordable housing, congestion, noise, poor transit, pollution and crime behind and get back into a healthy community.
The term "sustainable growth" is an oxymoron which conflates or sugar-coats simple "growth" with the very positive "sustainable". The word "sustainable" with all of its positive implications is used to sell a growth agenda which means more housing and consumption based infrastructure – more of what we have now – and do it in a less harmful way. But less harmful doesn't mean no harm and it certainly doesn't mean sustainable.
What constitutes the public interest? We'd suggest the following:

- Better healthier lives, not more consumption
- Environmental balance
- Stability
- Self-sufficiency
- Resilience
- Social cohesion
- High quality jobs
- Fiscal balance

“Public” debate vs Real Policy Making

- Media presentation of the Public debate
  - Aging
  - Labour shortage
  - Growth of economy
  - Rights and saving the world
  - Media superficial coverage of extreme views polarizes and breaks apart the conversation
  - The solution to problems is always “more will make it better”

Real policy making behind closed doors

- Growing Markets for real estate
- Asset inflation
- Cheap labour flow
- Boosting consumption and debt
- Control of conversation