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As far as we know all organisms are built from the same six essential elemental ingredients: carbon, hydrogen, nitrogen, oxygen, phosphorus and sulfur (CHNOPS). Almost all energy comes from the sun with perhaps the only exception being nuclear energy. Heavy elements like uranium got their stored energy from ancient supernovae and fusing hydrogen is tapping energy that has been around since the big bang.

It is time to change the conversation with regards to Population, Energy and the Environment.

Excerpts from **Energy Processing Canada - October 2013 – Change, the Great Neutralizer** by Percy Marshall

I think there is general understanding that huge changes need to be made in order for the planet to sustain 9 billion people by 2050. Given the dark evidence of low sustainability today:

- *With no change, the United Nations predicts that 2 billion people will live in slums by 2050;*
- *With no change, 1.5 billion will lack access to safe drinking water in 2050;*
- *With no change, 2.7 million children will be killed every year by diarrhea in 2050;*
- *And so forth.*

And further along the trajectory...as I write this, there are more than 569 MM people over 65 years of age on our planet, and growing by 1 per second. The fastest growing segment of the total population is the oldest old – those 80 and over. Their growth rate is twice that of those 65 and over and almost four times that for the total population. In the United States, this group now represent 10% of the older population and will more than triple from 5.7 million in 2010 to more than 19 million by 2050.

Quotes from Abundance by Peter Diamandis & Steven Kotler:

- *Right now a Masai warrior with a cellphone has better mobile phone capabilities than the president of the United States did 25 years ago.*
- *And if he's on a smartphone, with access to Google, then he has better access to information than the president did just 15 years ago.*
- *The high-tech revolution created an entirely new breed of wealthy techno-philanthropists who are using their fortunes to solve global, abundance-related challenges. Bill Gates is crusading against malaria; Mark Zuckerberg is working to reinvent education; Pierre and Pam Omidyar are focused on bringing electricity to the developing world.*

Those are the people who know, collectively, the methodology to transform the quality of life from congruency with a GDP of \$500/yr/person to \$5000/yr/person to \$50,000/yr/person progressively (in 2011, the world was populated by 6.9 billion people in 224 countries producing an average GDP of \$11,200/yr/person. [Range: Republic of Congo = \$335/yr/person to Liechtenstein = \$141,100/yr/person; Canada = \$38,841/yr/person; U.S. = \$48,084/yr/person]).

This compelling issue of global human survival, far too big to brush aside, is the neutralizer of the change opposition mentality. The fight-or-flight street response will be suppressed by

the executive “improve-the-planet” alignment. Executive thinking will preserve life, not tribal-level instincts.

That same book, Abundance, mentioned above is a wealth of information on the technical initiatives striding toward the solutions needed to shape how we can cost-effectively provide for the demands of the peopling planet.

The compelling nature of the grand challenge of creating an environment that can sustain 9 to 15 to 20 billion people for the generations to come is the glue that will bind us together in spite of our differences and because of our grander commonalities.

Excerpts from DOB - Nov 12, 2013 - Energy Resources And The Environment Are Not Diametrically Opposed: Green by Carter Haydu

Energy development is inherently destructive to the environment and human health; energy resources are problematically scarce; governments need to transition society to reduced and renewable energy usage -- these are the three most common misconceptions that Kenneth Green, natural resources senior director for the Fraser Institute, said are clouding useful public discussion and understanding regarding the oil and gas sector.

"The environmentalists' narrative about energy and the environment and human health is precisely backwards. In fact, if you look around more energy leads to more wealth creation, which leads to people having the ability to set aside natural resources and things that protect their environment better, as well as protecting their health by controlling pollutants more effectively and efficiently."

In what Green refers to as the "environmental transition curve," when a society is just starting to develop, it will use whatever energy resources are immediately available and pollute the environment with those often dirty resources. However, as a society evolves and gains better economic means, it is able to make choices that reduce pollution, protect lands and support environmental stewardship.

"Here in Canada, every indicator of environmental quality has essentially followed that curve," he said, adding access to affordable and plentiful energy is imperative to such a societal evolution towards cleaner practices.

As for the idea that energy resources will eventually run out, necessitating a switch to renewable energy, Green said new discoveries and new technologies are proving that hydrocarbon resources will be plentiful in such forms as shale gas for many, many years into the future.

"We are in a really interesting time. At this point we are talking about hundreds of years of supply at existing demand or projected demand, and there are game-changing technologies afoot. Japan is now working to develop the methane hydrate deposits off of its coast. If that technology proves out and proves market-ready and affordable-competitive, now you're talking a nearly thousand-year supply of natural gas to fuel the entire world."

Regarding the notion that a government planned transition to lower emissions and renewable energy is necessary, Green said previous attempts to set such policy have worked out terribly for society. For example, he said, when California set biofuel regulations the result was

increased pollution, environmental degradation and greenhouse gas emissions due to the development of lands for agricultural products to become ethanol.

Further, he said, those biofuel standards had a detrimental impact on the price of food worldwide, "because you're taking food and putting it in your SUV."

"What's needed is public policy that leads to abundant and affordable energy, because that is the basis of our society and our civilization as a whole."

Setting carbon prices might alter the behaviour of some members in a society, Green said, but the practice is inherently flawed and does not result in the desired outcome of those governments that institute such policies, largely because more people in a society are poor or middle class than are rich.

"Prices of goods and services will go up, and therefore people will have less and it will be a poorer world. Poorer people use a greater share of their annual income on energy, which is not surprising because they are the ones who live in older houses with less insulation, drive older cars, live further away from where they work and they have to drive to work. They can't afford the newest appliances. "So carbon prices are regressive. They land on poor people, and not the wealthier that can get around them."

While most jurisdictions offer carbon price rebates to those non-wealthy members of the society, Green said such rebates defeat the entire purpose of the carbon price, which was to change the majority's behaviour.

"[Lower and middle class people] are where the biggest part of the emissions is coming from. It's not coming from wealthy people who drive a Tesla." When governments are trying to figure out what they should do in regards to climate change, Green said it is a useful exercise to ask exactly what it is about climate change that makes people afraid. "It's not the temperature. Nobody here is going to mind 2 C warmer in the summertime, and you're mostly going to experience it as a reduction in wintertime lows," he said, adding in those areas of the world that already have extremely hot temperatures, those regions are able to handle a bit hotter weather due to climate change.

According to Green, the biggest threat of climate change comes in the form of rising sea levels. However, he said, this is largely a problem because more and more construction is occurring either on the coast or along flood plains. "My proposal is that we really need to be looking at reforming insurance markets, and changing the way that governments are actually subsidizing risk taking," he said, adding removing such subsidizations would encourage people to move away from coastal regions organically, which would largely resolve this threat from climate change.

From the Thursday Files

If the sun was a sentient being having lived for about 4.5 billion years so far with about the same timeframe left in its existence, humans would have been around for about 10 seconds so far. How long does it take you to notice an anthill in your yard?