

# Watt's Happening? #252

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## Because we are AMAZING!



*It is beginning to look like the human species can do anything it needs to do if it has the will. We have the smarts and the know-how, but for some strange reason we hesitate until the last minute to do the right thing. This time around our hesitancy and confusion could be our final undoing, but I don't think so.*

**T**he human race astounds me. How I love us! Look what we have accomplished: a planet-wide civilization that is now reaching out and exploring the cosmos. We stared at the moon for millions of years, wondering what it was, then a few decades ago we decided to find out by going there. So we did!

Now we carry super-computers in our pockets: unlimited, essentially free instant information and worldwide communications at the touch of a button. Yet after just a few short years, we take them for granted.

We know now that our amazing world civilization is in big, big trouble, and we are a primary, probably THE primary source of the

problem. We have taken too much, and like our cell phones, we just take our level of consumption for granted. Yes, we are happy to carry on as if everything is fine, the world is not burning, no big deal. Amazing.

### THE ENERGY CHANGES WE NEED

This is an energy column, so I am going to talk energy, because the new energies we now have access to, thanks to science and technology, blow me away.

We now know that energy is actually everywhere, and we now know how to capture it and use it at any scale imaginable.

Unlimited energy in sunlight and wind,

energy in the very air we breathe, and unlimited energy beneath our feet in the heat of the Earth itself. We know how to make powerful liquid fuels from just sunlight and air! And that's just the obvious stuff. Give it a few years.

So for now, let's clear up two big myths around renewables that I keep hearing and that drive me crazy:

**Myth One:** "Electricity from renewables is not clean when you consider the resources required to produce solar panels and wind turbines."

Total life cycle studies (covering all stages of electricity generation, from resource extraction and power plant construction to operation and decommissioning and recycling or disposal) by the U.S. National Renewable Energy Laboratory and cited by the Intergovernmental Panel on Climate Change, show that total life cycle greenhouse gas emissions from solar and wind are considerably lower than those from natural gas or coal.

This new study shows that emissions from natural gas power is almost 40 times that of wind and more than 10 times that of solar. Previous studies have found similar results.

**Myth Two:** "Because the sun and wind are variable, they will only be able to contribute a small share of grid electricity."

Right now, wind and solar power 61% of Denmark's grid, Ireland 34%, Germany and the Netherlands 32%, South Dakota 55%, Iowa 63%, California 34%, South Australia 70%. The Canada Energy Regulator projects Canada will reach at least

37% renewables by mid century (if the politicians would let us, we could probably do that in just 15 years!)

## CAN WE MAKE THE CHANGE?

I recently spent some time in the Vancouver area after a long time away, and saw it all with fresh eyes. As I zoomed along a freeway crowded with tens of thousands of vehicles, I looked left and right and saw massive infrastructure to the horizon: countless homes, businesses, overpasses, towers reaching skyward. Wow.

Then I had a sudden realization: everything I was seeing had been built from scratch over the last 50 years, much of it over the last 10 or 15. That's all new materials, newly extracted and processed resources, and huge, huge effort. Perfectly normal. It's just what we do.

That's when I had another insight: much of this infrastructure, probably most of it, will have to be replaced or upgraded as we move to a truly sustainable world over the next 30 years or so.

All new energy infrastructure, all new transportation infrastructure, a lot of new or upgraded building infrastructure. Huge! Seems impossible!

But just have a look around next time you are in a larger metro area. Replace everything is what we just did. We just built all of this! Yes, for sure, we can do it again, right now, only this time we can do it a lot better.

Because we must.

Because we know how.

Because we are amazing!

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