Scientists debate in a public Google Group email thread

(including detours, distractions and extraneous information)

From: H simmens
Subject: Climate Overshoot Commission Newsletter August 2023
Date: August 31, 2023 at 9:13:54 AM EDT

The Climate Overshoot Commission will release its report Reducing the Risks of Climate Overshoot on September 14 at 10 AM in New York.

A link to the press conference is contained in its just released newsletter below.

HPAC will attempt to get a representative of the COC to speak with us at an upcoming regular meeting.

Herb

From: Robert Chris
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 15, 2023 at 6:47:55 PM EDT

Having now had a chance to look through the COC's reports, am I alone in being very disappointed?

They have clearly done a lot of work and brought many of the key issues together but yet again we have lots of rhetoric and little or no detail about how the grand objectives are to be met. There is no analysis, as far as I can see, of the practical feasibility of their decarbonisation and GGR proposals. Nor is there any analysis of the socio-political implications of trying to make the changes they propose.

Science has been telling this story for some decades now. Will these 'twelve eminent global leaders' now provide the final push to get the global elites with the real power to make these change, make them? It would be nice to think so, but their apparent failure to engage with the nitty gritty of how this might be done and how the objections to it can be overcome in sufficient time to make a significant difference to the outcome, suggests to me that this is more likely to be another brave effort that will merely be added to the accumulating pile of such brave efforts.

As ever, the challenge is all about the combination of the scale and the timing. I still see no real understanding, even here, of the sheer enormity of 1GtCO2, let alone the 50GtCO2 we continue to emit yearly, or the 2,400GtCO2 we've emitted cumulatively in the industrial era. Nor of what is entailed in removing fossil fuels, that have doggedly remained at about 80% of total energy production for a very long time, without a major transformation of the global economy and our lifestyles. Moreover, talk of CDR being a critical requirement without sizing what that implies in resource terms leaves their entire endeavour open to serious criticism.

On timing, their discussion of the dangers from tipping points is entirely qualitative, there is no reference to the scientific evidence that gives some sense of their imminence, albeit imbued with uncertainty. Without a clear appreciation of how narrow the time window now is for the extraordinary degree of change their proposals envisage, it is unlikely their report will engender the sense of urgency that is required.

It might be argued that the COC is prioritising securing the political will to act and the practicalities will fall into place thereafter. But the political will to act is not there precisely because of the profound socio-political changes that a truly effective response to climate change must now entail. The political will will not be galvanised in the absence of a credible plan for a rapid and smooth transition to a zero or very low carbon global economy. Such a transition remains as elusive as ever.

In summary, these reports add up to a useful primer on climate change but their failure to convey a real sense of the scale and urgency of the necessary action and the socio-political implications that change of that order implies, makes their considerable efforts a tragic lost opportunity.

If I'm being to harsh or hasty, I'd welcome being set straight.

Regards
Robert

From: H simmens
Subject: [HCA-list] Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 15, 2023 at 7:09:57 PM EDT

Robert,

You are not alone in being disappointed.

For better or worse, despite the membership of former Prime Ministers and others with equally impressive backgrounds the report appears to have been studiously ignored by virtually every major media outlet other than the Guardian.

At the press conference yesterday Oliver Morton of the Economist who was a recent HPAC guest, asked why the commission was not willing to acknowledge that keeping to a 1.5° C limit is all but impossible.

The chair's response focused on two arguments.
First that the IPCC concluded that 1.5° C can be achieved without overshoot - which is questionable at best given the lack of progress in reducing emissions since AR 6 was released.

Mr Lamy also acknowledged that a message that 1.5° C was no longer practically possible could demotivate the public. This bending if not denial of reality to fit a preferred narrative is deeply disappointing, albeit not surprising or unusual.

If one were to acknowledge the all but impossibility of keeping temperatures to 1.5° C, while also acknowledging the likelihood of potentially catastrophic tipping points being activated at or around 1.5° C as the Lenton and McCay paper argues, I suspect it would have been much more difficult for the COC to minimize the need for urgent direct climate cooling in the near future, rather than possibly decades from now.

Herb

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 12:47:31 AM EDT

Robert,

A apologize in advance for most certainly provocative and hopefully not too offensive questions:

Why is the Climate Overshoot Commission composed mostly of retired individuals? How many years has it been since the Commissioners wrote their theses? Are they up-to-date with literature? How many fields of research are they conversant about? Why cannot we have people under 30, fresh PhDs and postdocs, running the Commission, or at least have a more age representation corresponding to the global age structure? Do the above questions apply to other power structures around the globe?

Ye

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 12:51:54 AM EDT

Herb,

Using 1.5C as a motivation for the public is absurd. The public is motivated by the pursuit of comfort in life, and capitalism ensures using fossil fuels as the path of least resistance to satisfy that popular demand.

Ye

From: Michael MacCracken
Subject: [HCA-list] Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 1:16:29 PM EDT

Hi Robert--

Good questions to offer in the upcoming conversation with Chris Field.

Just a couple of thoughts:

1. Note that the IPCC metric for warming is the time lagged decadal average of the annual average of daily average global warming (so encompassing 2/3 ocean) and not current value over land which might be a slightly better metric, so with this metric the impression is given that meeting 1.5 C is more possible than we would say, and I doubt the COC had enough knowledge to be aware of this point--and would not be alone in not knowing as the COP also does not seem to understand this. I posed this question to the Zoom effort Chris hosted last week on extremes and he did ask his panelists for other suggestions of metrics, etc.

2. As was said their press conference, they took a different position than the African leaders who ruled SRM off the table. So, there was at least a recognition (and will be interesting to understand how pervasive the view was), perhaps the first by such a high level group, that SRM might well be needed. So, a key question will be what might lead to a change in their view (which may relate to coming to understand the first point).

So, again good questions for discussion with Chris.

Mike

From: Stephen Salter
Subject: RE: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 1:29:12 PM EDT

Mike

About the IPCC time lagged decadal average:
Do we have numbers for the beginning and end of the decade? If it was linear would this mean that we are five years out of date? If it was accelerating like the Keeling curve would it not be even worse?

Stephen

From: Michael MacCracken
Subject: [HCA-list] Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 1:30:10 PM EDT

Dear Ye--It was interesting how the COC did have an apparently strong interaction with a youth group, recognizing the interests of future generations.

As to your question, one response would be that the whole scientific community acting to try to convince policymakers of the urgency of acting has not had much of an effect over the last several decades.

That this is the case is I'd suggest partly because the issue, as are many public issues, much more than scientific and have to consider a wide range of issues, so this was an effort to get a series of those who have been at high levels making decisions to spend a good deal of time hearing the various arguments and range of thoughts on the issue and hopefully frame the issue in ways that will be more convincing to decision-makers than scientists have proven to be.

And not only did they come away completely accepting the science, the need for adaptation and CDR, they made a pretty strong statement that fossil fuel use has to completely end and quickly--and they kept SRM on the table, something not even all scientists favor. That they did not seem to do the analysis to see how long it is likely to take to get off fossil fuels and how much warming is thus inevitable and so recognize the importance of starting SRM now to prevent further warming is unfortunate, but I'd say they did get a bit closer to where we all generally think is essential.

Mike

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 2:08:52 PM EDT

Thanks for the info, Mike.

Glad to hear you believe the Commission was willing to convey progressive asks. I think we all agree that "a bit closer to where we all generally think is essential" is not enough. My questions still remain to be answered. I suspect

that an alternative group of commissions composed of youth activists and young scientists would have equally kept SRM on the table, when given access to the same resources and presented with the same scientific evidence.

The younger version of the Commission might have moved beyond asking to end fossils, which in itself is not an actionable ask. What is immediately actionable, that only optimizes the biophysical functioning of the system, and prepares the system towards a then feasible task of ending fossil fuels, includes outlawing 1) Inheritance, 2) ownership of material wealth beyond a sustainable level of total material mass and embodied energy (to be determined by degrowth and ecological economics assessment), 3) ownership of financial wealth at beyond a level corresponding to, say, the cost of food and health care for 5 years for that person. In a world where biophysical limits are all being breached, it makes no sense to continue to enable monopoly of the physical world by sexagenarian and septuagenarians.

I suspect the above, essential asks to come hardly out of a power structure that displays an age representation diametrically opposite to that of the most impacted by continued incremental change.

Ye

From: Michael MacCracken
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 2:14:30 PM EDT

Hi Stephen--Here is the finding from IPCC AR6 WG1 SPM finding A.1.2---"Global surface temperature was 1.09 [0.95 to 1.20] °C higher in 2011–2020 than 1850–1900, with larger increases over land (1.59 [1.34 to 1.83] °C) than over the ocean (0.88 [0.68 to 1.01] °C).

And the AR6 results are often quoted as saying the warming to date was about 1.1 C.

They do not, for example, do a linear fit to get likely warming in 2020.

From: Michael MacCracken
Subject: [HCA-list] Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 2:26:56 PM EDT

Hi Ye--From an octogenarian, I'd suggest that the greater ask in you second paragraph is even harder than the first item you consider not an actionable risk. Such a form of government has been sort of tried and proven quite unsuccessful.

On getting to zero emissions, a colleague suggests that the focus of controlling emissions needs to be changes as going to zero emissions without there being sufficient alternatives would lead to rioting in the streets. So, the way to get to zero emissions needs to really focus on rapid deployment of alternatives and in that they are lower cost and less harmful to the environment, this should be beneficial economically, so drive out fossil fuels with lower cost clean energy. And deployment that everyone can work for an encourage personally and locally without having to be lobbying national and international leaders--we all just need to do it (solar on roof, etc.).

Mike

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 2:35:09 PM EDT

Hi Mike,

I recommend reading this article and reviewing the work of the scholars interviewed by the writer. The ask of ending fossil fuels is not a biophysically actionable ask within time relevant for avoiding 2C. The best we can do is to accomplish system changing as the energy system momentum gradually wears off to enable an eventual transition to a near-carbon neutral energy system.

Ye

From: Robert Chris
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 4:21:56 PM EDT
Hi Ye and Mike and all

I have only quickly scanned the Nikiforuk piece you provided a link to but it appears to fit neatly with a wider systems perspective of our predicament. We are dealing with a large number of interconnected complex adaptive systems (CAS) each of which is following its own adaptive cycle through four stages - reorganisation, growth, conservation and collapse. There's lots of good theory and empirical evidence behind what I'm about to say. If you are minded to follow it up I recommend Gunderson and Holling's *Panarchy*. It's a book but but there's a lot of related material that you can locate by searching on 'Panarchy'.

The CAS that is 'humanity' and all the social, natural and physical systems that support our lives and lifestyles is close to the cusp between conservation and collapse. On which side of that cusp is not yet clear. On the conservation side we still have interconnectedness with sufficient flexibility to adapt to changing circumstances in order to preserve the stability of the system. On the collapse side, that flexibility is lost and we become an accident waiting to happen, and when it does, the dominoes fall in quick succession.

The key question is whether the system is manifesting adaptations that demonstrate its ability to adapt to the changes now happening. The rapid increase in GHGs in the industrial era has precipitated a rapid and dramatic change in the climate that is already outstripping the adaptive capacity of many natural ecosystems and is beginning to do likewise for humanity. The adaptations to slow and ideally reverse global warming clearly require rapid decarbonisation of the global economy, possibly some serious removal of GHGs still resident in the atmosphere, and possibly some albedo enhancement.

I don't need to expand for those in these Google groups on the absence of evidence that humanity has demonstrated its capacity to make those adaptations. In effect, the evidence suggests that we have lost the capacity to adapt sufficiently to accommodate the changes we're experiencing. This is so because those elites who wield the power to make those adaptations happen have been working hard, and so far most successfully, to frustrate them. Again, for readers here, I don't need to elaborate on that.

From a systems perspective this means that we are likely to be onto the collapse side of that cusp and that there is now nothing that can be done to stop it. There

are things that could be done to deliver a softer landing, but collapse is collapse and it will be extensive, deep and painful. The collapse phase is typically short in systems terms but in human terms may still last a couple of generations. Thereafter the dust settles and something new emerges at the hands of those still living. They may number thousands, millions or perhaps a couple of billion, but it'll be a very different world from that we know today and much of what we take for granted will have been lost or destroyed.

The tragedy is that understanding this natural progression of CASs does not provide the impetus to avoid the collapse. Those holding on to their wealth, power and influence will never relinquish it willingly. It must either be taken from them in some kind of revolution, or the entire edifice must collapse. My suspicion is that it's already too late for a revolution and I can't see how that happens more or less simultaneously across the globe and even if it did, the restart would be slow and messy. Total system collapse looks much more the likely outcome now.

To be clear, I am not welcoming this troubled future or inviting it out of some kind of ideological crusade. I am merely making an observation about the natural processes of self-organising systems. There are many causes that can be ascribed to our failure to adapt adequately and no doubt the neoliberal form of capitalism introduced by Reagan and Thatcher is the most proximate cause. But there are many other relevant factors, including the collapse of the post WWII international liberal order and the increased nationalism and political polarisation in recent decades. The long shadow cast by centuries of colonialism also has a hand in this.

It's not just the elites that are to blame. Ordinary people are deeply invested in the current system and understandably shy away from the uncertainty of unleashing major system changes. It may be true that turkeys don't vote for Christmas, but in time, Christmas comes.

That's a pretty bleak prognosis. I may be wrong and we may yet just have sufficient flexibility to adapt. I don't see it but others may. Right now we have to assume my analysis is wrong and do what we can to press on with the adaptations. We might also be wise to begin thinking about how we can soften the landing if that fails.

Regards
Robert

From: Michael MacCracken
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 16, 2023 at 10:04:54 PM EDT

Hi Ye and Robert--I'm not going to be so pessimistic and put a bit more faith in human creativity.

As one example, there is a lot of research on solid state batteries that are mainly made of graphene (so carbon). While they may end up being the storage part of a battery with a small lithium or equivalent battery at the front end to stabilize voltage, they would mostly be made of a very available element, ironically C. I was at a US Patent Office event where there were multiple companies reporting on their progress. My understanding at the moment is that a key problem at the moment is cracking that can occur over time, but I actually got to ride (ot at this event but elsewhere) in a golf cart with graphene batteries that could be rapidly charged (and demonstrated) and go through a half million cycles (estimated).

And on magnets, I've heard of some progress in this area, with clever electronics making them not so necessary.

Might it be that these and similar developments would will overcome the minerals problem? I'd like to hope so. Might it be that other problems will keep coming up to haunt us? Quite probably. In 1900, there was no way the technologies (or all types, including, but not nearly only, agriculture) of that time could have sustained the population of 1950 and no way the technologies of the 1950s could sustain the population of 2000 or now. It is pretty much pure faith that the technologies developed by 2050 and then 2100 will be able to sustain the populations of those times. In my humble opinion, this is the one faith we also need to have and work to make the case--being other than optimistic is just too depressing.

Best, Mike

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 12:50:25 AM EDT

Hi Mike,

Some comments on the 3 examples you raise.

Graphene itself is not a energy storage medium. There is no reversible oxidation of graphene due to the huge activation energy required to break carbon-carbon pi bonds. Graphene is used in battery typically as a medium to temporarily store, via a process called intercalation, positively charged metal ions, produced via oxidation of the metal atom giving up electrons and stored chemical potential energy.

If magnets were not used, then one either uses pure electromagnets, or rely on the electrostatic term in Lorentz force. Pure electromagnets don't seem very efficient due to joule losses. Even if there would only be 5% of electricity wasted to generate the magnetic field, waste heat management via circulating liquid coolant would consume extra energy, adding to the overhead not presented in the video. Energy efficiency is likely to drop by some 10s% relative to permanent magnets.

Electrostatic forces are dominant at small distances and routinely used in nano and microelectromechanical systems for actuation and motion detection. Using it for macroscale actuation may be possible but still challenging. Due to the 1/r2 scaling of the force, one would either massively increase the charge delivered to capacitor plates, or reduce the distance between rotor and stator. Increasing peak accumulated charge would ramp up joule heating losses quadratically. Reducing distances require ultra-high precision fabrication (~1um precision and accuracy) of macroscale mechanical components. The longevity of such high-mass, high-tolerance fitted parts is questionable due to mechanical vibration and unavoidable mechanical wear. Actuation would require high frequency electronics. Let's say the gear was 4 in in diameter, with circumference of about 0.3m. Let's say the teeth on the rotor has a periodicity of 100um = 1E-4m. To achieve 1 rotation per second, control circuit frequency needs to be 3kHz. At 6,000 RPM, this would be 300kHz, which certainly requires very good control electronics. Control system sampling frequencies most certainly need to be in the 10MHz range.

Mining sounds more difficult to improve in efficiency, given the intrinsic scale of the challenge, and spatially dilute nature of key elements.

Best, Ye

From: Sev Clarke
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 1:17:47 AM EDT

Some corrections.

Graphene both is and can be a major energy storage medium for two reasons. First, its use in electrolytic double layer supercapacitors , see https://en.wikipedia.org/wiki/Double-layer_capacitance makes it one because when graphene flakes are used in the electrolyte are charged, their alignment provides stored energy that can be tapped. Second, my Few Layer Turbostratic Graphene (FLTG) sheets, to be generated from the pure, gaseous carbon generated from splitting methane using plasma torches and renewable energy should be able to replace the metal foil conductors in ultracapacitors to give a major boost to their energy density. In time, these should be able to replace most, large chemical batteries, along with their use of key metals, such as nickel, copper and lithium. There is no mechanical wear in capacitors as they have no moving parts. Software developed by Kilowatt Labs can now regulate the power output from supercapacitors. The valuable co-product generateable by splitting methane is turquoise hydrogen that may well be cheaper than green hydrogen of which the co-product is almost valueless (at global scale) oxygen.

As an additional prospective bonus, FLTG ought to be able to replace copper in transmission lines and windings.

Sev

From: Douglas Grandt
Subject: Re: [HCA-list] Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 2:50:28 AM EDT

Dear All (especially sexagenarians, septuagenarians and octogenarians)

Today, September 17, a collaboration of NGOs and major thought leaders including, notably Bill McKibben and his **ThirdAct—people over 60**—as well as youthful activists are descending on Manhattan (56th & Broadway) to demand President Biden #EndFossilFuels (period!) on the basis that renewables are cheaper than carbon-based fuels. A valiant and plausible goal, but as we know, the devil is in the ***speed of delivery***.

The **ERA*** dogma and mantra beat goes on. The pied pipers need to be challenged if it's to be overcome as the exclusive "popular" rallying cry. Confronting this challenge is my daily mission, focused on my friend Bill McKibben. Michael Mann and others warrant equal time by any and all who have personal connections. If we don't confront them and prevail, our goose is cooked.

Below is a handful of colorful #EndFossilFuels "tweets" on x.com
(There are many more tagged #EndFossilFuel, singular.)

X. It's what's happening
x.com

Cheers,
Doug Grandt

*ERA - Emissions Reduction Alone

"Half the people on the Amtrak from Vermont this morning are heading for the march! #EndFossilFuel"

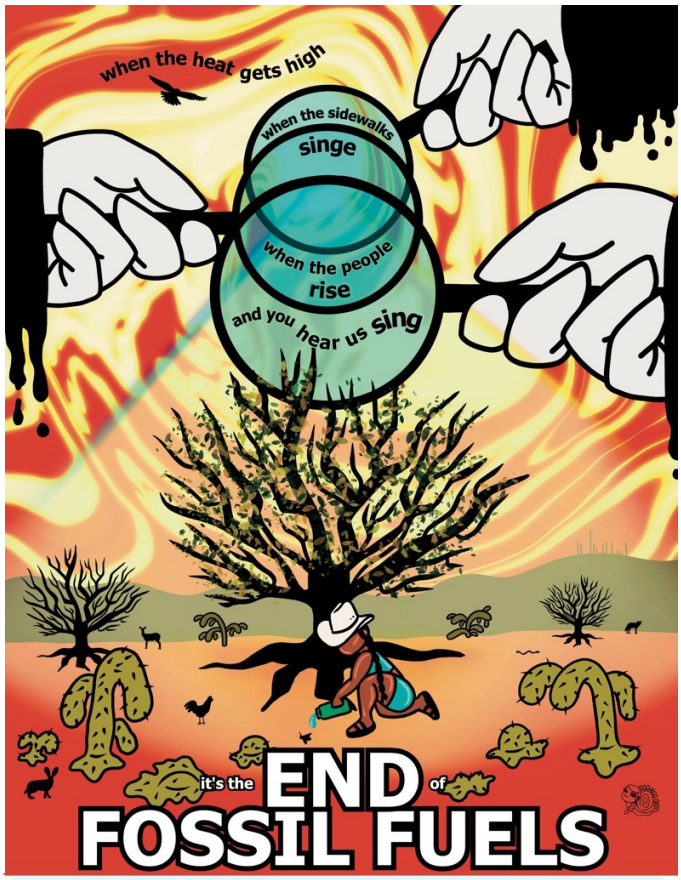
Bill McKibben on X
x.com

"9 Buses. Over 400 activists. The MA Climate Movement is showing up in force this weekend at the March to #EndFossilFuels in NYC! Will we see you there? https://t.co/S3RyfLFupN"

350 Mass on X
x.com

"Sept 17, NC in Solidarity w/March to #EndFossilFuels! 2:30-5 pm Co-hosted by @ThirdActNC & @350Triangle we'll join across NC to watch the livestream of the NYC march & celebrate it by taking action together. RSVP: https://t.co/xbP8ENJ4o0
Art: https://t.co/vMz7s0QEc7"

Third Act NC on X
x.com



"I'll be part of the March to #EndFossilFuels tomorrow in NYC, because we all must show up and push, together, for Biden to end fossil fuel expansion and declare a climate emergency. For godssake. To find a march near you: https://t.co/FrqNzGzrhW Artist: Luz Pacheca"

Peter Kalmus on X
x.com

And Stockholm makes it "global"
Surely there are more venues

"Climate strike week 265. Today, we have a global climate strike with people all over the world taking part, demanding that we #EndFossilFuels . I Stockholm kör vi nästa vecka, samling på Mynttorget kl.12 fredag 22a september. Vi ses där! #climatestrike #fridaysforfuture"

Greta Thunberg on X
x.com

From: Ye Tao
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 8:22:07 AM EDT

Hi Sev,

It seems rather important to also consider the achievable energy density measured in kWh/kg. Do you know what is the current record value for graphene-based super-capacitors? A limiting parameter for both road and especially proposed electricity-powered air travel is energy density. In the road case, mass-range tradeoff is currently a necessary consideration. So I am not sure if more than 1 order of magnitude reduction in energy density going the capacitive route is ready for wide application. I believe similar consideration also goes for stationary grid-level storage. The most promising storage solutions in my opinion will be thermal storage based on cheap molten salts, silicon, and hot sand.

Thanks,

Ye

From: Stephen Salter
Subject: RE: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 9:06:16 AM EDT

Ye
I agree about thermal storage. Check out
https://www.google.com/search?q=Synchrostor&rlz=1C1GCEB_enGB1013GB1014&oq=Synchrostor&aqs=chrome..69i57j0i512j0i13i30l2&sourceid=chrome&ie=UTF-8

The big attraction is reversal of the direction of MW power flow in 20 milliseconds and 0.5% loss in 24 Hours.

I am using the same digital hydraulics for power conversion from flapping hydrofoils.

Stephen

From: Robert Chris
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 10:24:08 AM EDT

Hi Mike

It isn't a question of being optimistic or pessimistic. There's no room for either We're supposed to be scientists who form their judgments based on the facts, not on faith and hope. In any event, optimism and pessimism are time dependent and it's perfectly reasonable to be both simultaneously. Is the notion that things are going to get worse before they get better, one of pessimism or optimism?

We have a tendency to get too hung up on the detail, looking for the next great idea that'll save us, when what we should be doing is taking a cold hard look at the system in its entirety and considering whether it has just got out of control and has become irretrievably unsustainable. Systems do that and there's no reason that humanity, as a system, is exempt from such singularities. Our capacity for reason does not imply that we are always reasonable any more than our capacity for kindness implies that we are always kind. We screw up, and have done so repeatedly throughout human history. Why should now not be another of those instances?

We need to exert great personal control to avoid Panglossian optimism. Things do go well, but not always, and sometimes they go terribly. The good news about system collapse is that once the cracks grow to weaken the structure to a critical point, the collapse then happens very quickly.

As scientists we have a pretty good sense of the current fragility of the environmental conditions that until recently had prevailed fairly consistently for some 10,000 or more years. We now have sophisticated tools to measure the changes we are causing. In response, having faith in human creativity doesn't cut it. We need that, but we need much more. The point I was making in my earlier email was that I see insufficient evidence of that 'more' without which our faith just isn't sufficient.

If we are now on the threshold of the inescapable collapse of civilisation as we know it, let's start looking to the future beyond that collapse when there'll be a reorganisation and regeneration, a new beginning. That'll be an exciting time for those who have the opportunity to build something new, hopefully having learned some lessons from their predecessors' mistakes. All of this provokes us to ask the only question that I think really matters - what is it that as humans we really value? I have no doubt that future generations will find joy and contentment in their lives despite the disappearance of much that we claim is of value but deep down we know really isn't. That's where my faith lies.

In other messages today and in recent days I have said more about what the 'more' is that I mention above. I may be quite wrong, and suddenly the 80% global reliance on fossil fuels is going to begin a steep decline towards zero. I may be quire wrong about the infeasibility of CDR/GGR at scale and speed and applications are going start capturing and sequestering tens of gigatonnes of CO2 and oxidising megatonnes of CH4. I may be quite wrong and the widespread negativity towards albedo enhancement may suddenly dissipate and R&D may begin at scale, rapidly followed by planet-cooling deployment. Evidence. Where's the evidence **now** that the political and corporate dithering, obfuscation, incompetence and downright dishonesty of key actors over the last several decades is about to give way to a new age of enlightenment in which rhetoric subsides in favour of effective action?

Regards
Robert

From: Robert Chris
Subject: Re: [prag] Climate Overshoot Commission Newsletter August 2023
Date: September 17, 2023 at 1:09:58 PM EDT

I have just read the **Nikiforuk article,** the link to which Ye provided below, and **Nikiforuk's earlier article.** These are a must read. They quote Michaux who we've looked at before. However, the main upshot from these articles is the weight of evidence that the proposed global scale transition to renewables is impossible without significant economic degrowth.

He doesn't discuss the implications of degrowth but it would not be compatible with the maintenance of the current global capitalist economic model. Quite what the successor model would be is also not discussed and neither is how the transition from one to the other would happen. Perhaps these are the discussions we should be having rather than getting all excited about of bunch of novel technologies almost none of which will ever see the light of day.

These articles fit nicely with the question I asked in an earlier message today - what is it that as humans we really value?

Regards
Robert