

On the folly of promoting ECONOMIC GROWTH

(draft)

- especially without considering its unintended consequences

Economic growth, especially if unlimited, has damaging consequences on climate and the environment, habitats and biodiversity, and inequality (and thus wellbeing and security), and is unsustainable. There are much better, more positive, happier, appealing alternatives with hope for the future...

By Dr Henry Adams as a member of [SLACctt](#) - South Lakes Action on Climate Change Towards Transition, 2018, with hope that Councillors and public body officials in particular will read it, and especially the SLDC, CumbriaCC.

This document is a collation of studies which together show how economic growth, or GDP growth – if pursued as a priority aim or without taking into account consequences, is damaging to our climate and environment, biodiversity, vital finite resources and equality. GDP and GDP growth are both shown to be very poor measures and aims for how our economies should be working for us, and there are much better alternative aims to pursue. GDP growth continues to be coupled to growth in carbon emissions.

Climate scientists state that we have but a brief window of opportunity left to have any good chance of keeping “the increase in the global average temperature to well below 2°C above pre-industrial levels” (I quote the upper temperature goal from the 2015 Paris Agreement which the UK government has signed up to but has yet to comply with by updating its policies). Keeping “well below 2°C” is vital not just because +2 marks a threshold from dangerous to very dangerous climate conditions per se, but also because climate scientists specializing in positive feedback loops for global warming predict that around +2 degrees these positive feedbacks may reach tipping points where warming itself adds to more warming, and at such an exponential rate that we are most unlikely to be able to stop it [“Hothouse Earth” paper - [Steffen, Rockstrom, et al. 2018 PNAS](#)].

On 8th October the IPCC published its ‘Special Report’ on ‘[Global Warming of 1.5°C](#)’ (SR15), and “According to the SPM ([Summary for Policymakers](#)), in order to limit warming to 1.5C with “no or limited overshoot”, net global CO2 emissions need to fall by about 45% from 2010 levels by 2030 and reach “net zero” by around 2050.” [[Carbon Brief](#)]. The CEO of UK’s Committee on Climate Change (CCC) responded: “In the words of the [#IPCC](#): “limiting [global] temperature increase requires unprecedented changes in society””.

But BEIS Minister Claire Perry’s written response instructed CCC *not* to produce carbon budget paths for the period from now to 2032, which implies she does not want UK policies to comply with either the SR15’s “by 2030” for 1.5C, nor to the Paris “well below 2°C”, nor even to a 2 degrees path, because all these require much more carbon emissions reduction by 2030 or 2032 than UK’s current “80% by 2050” budget path (which is above 2°C according to climate scientist Professor Kevin Anderson ([REF](#))). This I find extremely worrying, and I hope it is challenged by CCC, and provides further useful evidence for the legal challenge by [Plan B Earth](#). Update: Perry has now yielded to pressure to remove this restriction on CCC. However she has shown her tendency to delay compliance with UK’s climate commitments.

Despite the warnings from climate science, and being ticked off by CCC for being off-course for the “80% by 2050” budgets up to 2032, UK government policies are still on a pathway nearer to +3 degrees than below +2, and Claire Perry has shown no solid signs of changing course (e.g. fracking, [2018 NPPF](#)).

The climate challenge is technically feasible but is being blocked by the fossil fuel political incumbency.

Co-author of the “Hothouse Earth” paper Professor Rockstrom said that we have technical “solutions at hand that can not only decarbonise the world energy system to get us on a trajectory below the 2 degrees Celsius planetary limit, but also benefit us health-wise, security-wise, equity-wise and economically.” But to get on that trajectory we need to make fundamental changes in our social, political, and economic thinking. Both Rockstrom and Professor Kevin Anderson (Tyndall Centre Manchester) insist that developed countries need to urgently discard the blinkered pursuit of economic growth to have any chance of the world staying sufficiently below +2 degrees. This is because GDP growth and carbon emissions are still very much ‘coupled’ together (despite claims in 2016 of signs of decoupling), as this chart and tweet by the International Energy Agency shows.

Furthermore, the only modelled trajectories I have so far encountered that lie within the Paris temperature limits, without requiring future “Negative Emissions Technologies” (NETs) on an unfeasible and damagingly large scale, require developed countries to reject the economic growth model and to reduce consumption demand (e.g. Arnulf Grubler, Charlie Wilson et al. 2018 – the “LED paper”). This can be done, but requires changes in political, economic and social thinking.

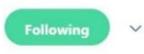
And don’t forget that exceeding +1.5 degrees C is dangerous and massively damaging (we are at +1 degrees now), especially so for low-lying or coastal areas, for poor people in poor countries such as in the Global South (who contribute magnitudes-less CO2 emissions, especially per person, than developed countries) and for biodiversity such as coral reefs. That’s why the Paris Accord also states “to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”. Thus we must de-carbonize urgently and as rapid as possible. As the SR15 SPM [here](#) states: “limiting global warming to 1.5°C would require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO2) would need to fall by about 45 percent from 2010 levels by 2030, reaching ‘net zero’ around 2050.”

We thus have a stark choice: If we are to avoid the disastrous climate breakdown towards +2 degrees C we need to closely and critically examine our political-economic “imperatives” such as the imposed-on-us “need” for pursuing economic growth as an imperative above-all-else, and question who is it primarily designed to benefit(?) and exactly why(?) and then reject it as an over-reaching goal in itself. GDP and GDP growth should be “put back in the toolbox” as being useful economic empirical variables but with limitations, not misused as a blinkered political goal, over-riding other factors so vital this century, and reducing people to be consumers or servants to growth.

Do we have an underlying corporatocracy? Or even a crony capitalism?

This collation of references is designed to help you make such a critical examination, and I hope have a re-think of your assumptions. This document will be a success if you end up taking just the first step – to de-prioritize economic growth below our vital needs this century such as tackling climate change, the 6th mass extinction, habitat and resource depletion and degradation, and inequality.

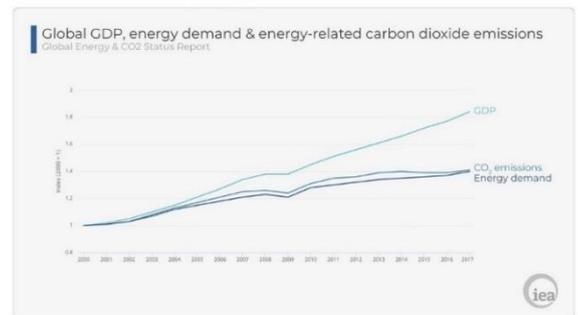
<https://twitter.com/IEA/status/1033655353542631424>



The 1.4% increase in energy-related CO2 emissions in 2017, equivalent to the emissions of 170m additional cars 🚗, was the result of:

- Robust global economic growth of 3.7%
- Lower fossil-fuel prices
- Weaker energy efficiency efforts

Learn more bit.ly/2BOVjvH



11:00 AM - 26 Aug 2018

List of sections: (doubles-up as a summary)

1. **The push for economic or GDP growth is dangerous for our climate while it is coupled to growth in carbon emissions and other negative impacts.** Growth measured as global GDP is unlikely to decouple.
2. **We cannot continue with exponential economic growth in a world with resources that are finite.** Our economic activity must not transgress social and planetary boundaries, and economist Kate Raworth's 'doughnut' graphic helps us visualize this.
3. **The pursuit of unqualified economic growth is incompatible with what climate scientists say we must do to comply with the temperature goals of the Paris Agreement.**
4. **There is no leeway for any growth that increases UK emissions because we are "not on track".**
5. **GDP is a very poor measure:** it adds harmful activities as positives, such as fossil fuel burning.
6. a Thus it is not surprising that **GDP growth is also a poor measure.** Again – many studies show this.
b There are much better alternatives to GDP and GDP growth, such as GPI. Wellbeing is important.
7. **INEQUALITY**, wellbeing, growth and climate change are linked.
Economic growth can widen inequalities if in-equitable. The richest 10 percent of the global population is responsible for almost half of global carbon emissions from lifestyle consumption.
8. **'Prosperity without growth'.** Towards a **Post Growth** economy for Europe.
9. **ESCAPING GROWTH DEPENDENCY – Why reforming money will reduce the "need"* to pursue economic growth at any cost to the environment –** a Positive Money report. [* I've added the ""]
10. **Alternatives to GDP growth are actually more positive, and:**
We need an economy to work for us, not the other way round.
11. A discussion section:
 - (a) **Adding an adjective in front of 'growth' does not per se resolve the growth problem or justify growth**
 - (b) **Green growth or de-growth, or both? Or "a-growth", or post-growth?** (discussion points)
 - (c) **Your response:** Could be one or more of a number of steps, because you need not be confined to the opposites of either growth as an over-riding priority OR de-growth. There are intermediate steps away from the mainstream growth mantra that you might initially prefer.

12. CONCLUSIONS

Local/Cumbria implications

PLANNING implications

I have also written a discussion document with the following title which is an annex to the present document: **The 2018 revised NPPF and the planning system in relation to economic growth and climate change** It is online as a pdf via this shortened link: www.bit.ly/growth-cc-nppf

Appendices: Other references and possible future additions

The sections

1. The push for economic or GDP growth is dangerous for our climate while it is coupled to growth in carbon emissions, resource use, environmental degradation, habitat and biodiversity loss, and increasing inequality.

At a recent speech I attended by Associate Professor Julia Steinberger (Leeds University) she stressed that “GDP growth has **not** decoupled from resource use”, and “internationally, 80% of growth is fossil-fuelled and results from carbon emissions.” Global economic growth is most unlikely to rapidly adjust to being zero carbon.

“In contrast: wellbeing or social function or the things that allow us to lead decent long healthy lives are not highly coupled to energy or to fossil fuels, and don’t need more than a certain level of energy use - which is decreasing over time with increasing efficiency. ...

“So why the continued push for economic growth when we don’t need it to serve our wellbeing?”

The answer lies in the politics of production and consumption: Who is being served by economic growth.

Answer: A very small minority of us, not all of us. It is because the people in power see growth as the only way to maintain their power. Growth is a stabilization mechanism for maintaining capitalism. Capitalism requires growth in order to keep the machine going. That's the trap we are in. ...” – Condensed notes I took of part of her speech.

[In section 9 below, Positive Money examine ways of reforming money creation to help get us out of “the trap”.]

There are numerous studies on the issue of decoupling of global GDP growth from carbon emissions and/or the use of limited natural resources, which try to answer questions such as (a) is it possible? (b) any signs of it happening? The more credible ones I’ve encountered are pessimistic:

Anthropologist Jason Hickel writes that “three major empirical studies have arrived at the same rather troubling conclusion: Even under the best conditions, absolute decoupling of GDP from resource use is not possible on a global scale.” <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/> This is a good read but does not link to its references so I provide these in my appendix. The most easily accessible abstract is from the study by Ward et al. (2016) ‘[Is Decoupling GDP Growth from Environmental Impact Possible?](#)’ which I quote:

“The argument that human society can decouple economic growth—defined as growth in Gross Domestic Product (GDP)—from growth in environmental impacts is appealing. If such decoupling is possible, it means that GDP growth is a sustainable societal goal. Here we show that the decoupling concept can be interpreted using an easily understood model of economic growth and environmental impact. The simple model is compared to historical data and modelled projections to demonstrate that growth in GDP ultimately cannot be decoupled from growth in material and energy use. It is therefore misleading to develop growth-oriented policy around the expectation that decoupling is possible. We also note that GDP is increasingly seen as a poor proxy for societal wellbeing. GDP growth is therefore a questionable societal goal. Society can sustainably improve wellbeing, including the wellbeing of its natural assets, but only by discarding GDP growth as the goal in favor of more comprehensive measures of societal wellbeing.”

The decoupling illusion: rethinking growth and sustainability 12mar17

<http://theconversation.com/the-decoupling-delusion-rethinking-growth-and-sustainability-71996>

Resilience on this subject:

<https://www.resilience.org/tag/decouplingemissionsfromeconomicgrowth/>

The International Energy Agency [was more optimistic on decoupling in 2016](#), but is renowned for making poor predictions (and now look at its tweet on 26aug18)

Note that [Global Energy Growth Is Outpacing Decarbonization](#) by RB Jackson, C Le Quéré, RM Andrew, JG Canadell, JI Korsbakken, Z Liu, GP Peters, and B Zheng (2018), Environmental Research Letters. 5 December 2018. DOI: 10.1088/1748-9326/af303.

Bear in mind that because CO2 emissions (unlike methane emissions) are largely net-accumulative in the atmosphere, and continue heating while there, the total CO2 emissions of all economic activity (not just growth additions) needs to become zero, or net zero, just for total atmospheric CO2 not to increase ... The atmospheric CO2 acts a bit like a thermostat (but with a ratchet), and the amount of cumulative CO2 emissions is near linear with the global mean temperature, unless (until) positive feedbacks become more significant... <https://www.cicero.oslo.no/no/posts/klima/beyond-carbon-budgets>

<https://twitter.com/IEA/status/1033655353542631424>



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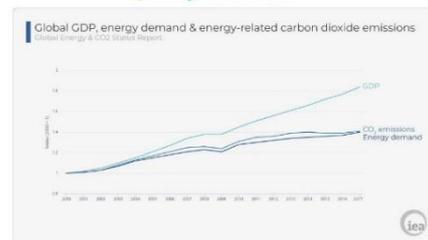
@IEA

Following

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2. We cannot continue with exponential economic growth in a world with resources that are finite.

This important concept was first investigated in depth four decades ago by a team at MIT, with their findings summarized in the 1972 book **'The Limits to Growth'** by Meadows et al. for The Club of Rome.

This century follow-on studies by for example Rockstrom et al. (2009, Nature) provided infographics to help visualize **'A safe operating space for humanity'** within **'planetary boundaries'**

http://www.steadystate.org/wp-content/uploads/2009/12/Rockstrom_Nature_Boundaries.pdf

Rockstrom has more recently put the SDG's (Sustainable Development Goals) at the centre, which gives similarities with the following:

More recently the graphic developed into the 'doughnut' shape used by for example the economist **Kate Raworth** in her widely acclaimed and very readable book **"Doughnut Economics"**. I strongly recommend you visit her website and then read her book. www.kateraworth.com

In her book and website her doughnut-shaped graphic helps us visualize the planetary and social boundaries within which our economic activity must reside, without causing unsustainable damage to our climate, environment and biodiversity (to the outside) and (to the inside) without depriving us (especially the poor) of important life requirements:

Graphic from www.kateraworth.com/doughnut/

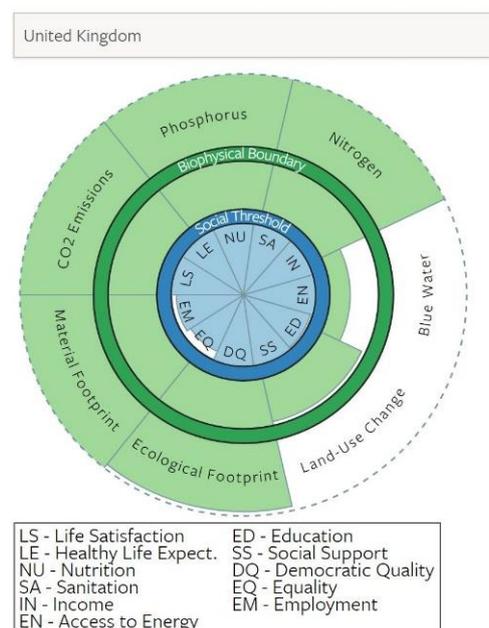
Kate Raworth writes two chapters focusing on "growth": One on the "cuckoo" mantra of using GDP growth as an aim – it clearly pushes us beyond the planetary boundaries within which we must reside. And another chapter in which she discusses the two concepts of "green growth" and "de-growth" as ways forward within the boundaries (and admits she is "agnostic" about these, whereas other researchers are more insistent on de-growth). I strongly recommend you read those two chapters.

Julia Steinberger and her colleagues at Leeds University quantify and study in depth our states of resource use and wellbeing in relation to planetary and social boundaries and also uses a "doughnut"-type graphic to help visualize the results of their analyses. Here is a recent study she has contributed to:

A good life for all within planetary boundaries [Daniel W. O'Neill](#), [Andrew L. Fanning](#), [William F. Lamb](#) & [Julia K. Steinberger](#) *Nature Sustainability* volume 1, pages88–95 (2018) <https://www.nature.com/articles/s41893-018-0021-4>

"The theory of human needs developed by the above authors underpins the safe and just space (SJS) framework proposed by Raworth¹, and described in her book *Doughnut Economics*²."

The Doughnut of social and planetary boundaries (2017)



Do visit their website: **A Good Life For All Within Planetary Boundaries:** <https://goodlife.leeds.ac.uk/> - from which I have pasted part of the web-page on the UK as an example (above)

<https://goodlife.leeds.ac.uk/countries/#UnitedKingdom>

But first read the home page, from which I quote:

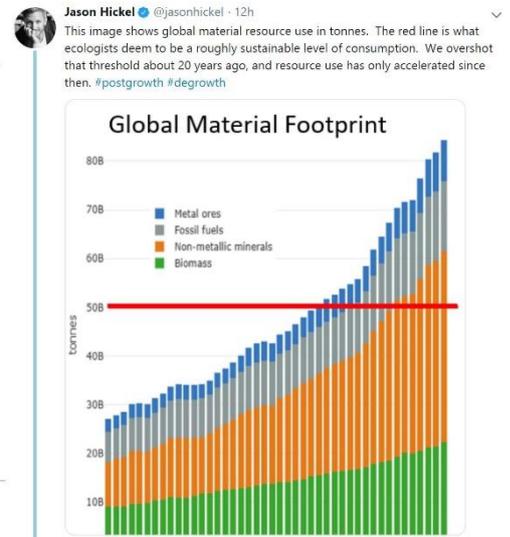
“No country in the world currently meets the basic needs of its citizens at a globally sustainable level of resource use. Our research, recently published in [Nature Sustainability](#) (and summarised in [The Conversation](#)), is the first to quantify the national resource use associated with achieving a good life for over 150 countries. It shows that meeting the basic needs of all people on the planet would result in humanity transgressing multiple environmental limits, based on current relationships between resource use and human well-being.”

The topic of limits to growth has been studied and debated for many years since the publication of ‘The Limits to Growth’ back in 1972¹, but despite the accumulation of empirical data and modelling that supports this argument, mainstream economists and politicians appear to be ignoring such work and are continuing to push GDP growth regardless, or else dressed up such as “inclusive growth” or “green growth” to make it appear to be climate and resource sustainable.

From the work on planetary boundaries it is clear that pushing for economic growth in developed countries is unsustainable and disastrous folly. We need to de-grow at least those sectors that produce carbon emissions, pollute, over-consume limited global resources and cause biodiversity and habitat loss, and on the positive side ensure equitable provision for all of those vital requirements for life that don’t have significant negative externalities – as shown in the “doughnut” infographics.

The Global Footprint Network

(explained in the appendices) calculates and graphically shows how much natural resources each country uses. It expresses resource use for example in terms of how many earths we would need for all of us to enjoy the resource use of a particular country. It shows well which countries need to reduce consumption demand, and has obvious implications for developed countries continuing to push the growth mantra.



‘Resource extraction responsible for half world’s carbon emissions’

Extraction also causes 80% of biodiversity loss, according to comprehensive UN study – Jonathan Watts, 12mar19 <https://www.theguardian.com/environment/2019/mar/12/resource-extraction-carbon-emissions-biodiversity-loss>

“The authors said it was essential to decouple economic growth from material consumption. Without change, they said resource demand would more than double to 190bn tonnes a year, greenhouse gases would rise by 40% and demand for land would increase by 20%. ...”

¹ Donella Meadows et al. (1972) ‘The Limits to Growth’ (book) A report for The Club of Rome’s Project on the Predicament of Man. https://en.wikipedia.org/wiki/The_Limits_to_Growth and <http://donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf> and <https://www.theguardian.com/commentisfree/2014/sep/02/limits-to-growth-was-right-new-research-shows-were-nearing-collapse>

The climate planetary boundary

A “domino effect” or cascade of multiple “tipping points” to a “hothouse earth”

The climate planetary boundary worryingly involves multiple “[tipping points](#)” in which positive feedback loops (in which warming itself results in more warming) can amplify the more linear consequences of anthropogenic emissions into an overall *exponential* increase in global warming and its damaging consequences - that we are most unlikely to be able to stop (“runaway” climate breakdown). The multiple tipping points could be linked as a “cascade” or “domino effect”, and a recent paper by [Steffen, Rockstrom et al. \(2018\)](#) tried to assess where the threshold to triggering such a cascade might happen. I quote:

“Where such a threshold might be is uncertain, but it could be only decades ahead at a temperature rise of ~2.0 °C above preindustrial, and thus, it could be within the range of the Paris Accord temperature targets.” More recently a paper by Gasser et al. concluded that our carbon budgets are significantly reduced if we take into account “CO₂ and CH₄ emissions caused by permafrost thaw, a non-linear and tipping process of the Earth system”.

In summary re tipping points: Fairly certain they will happen if we fail to rapidly reduce global emissions, but lack of uncertainty exactly when, and we may not know - until they’ve happened; by then probably too late to stop them.

However UK government policy ([as other government policies](#)) is still promoting a fossil fuel path that is well over +2 degrees and thus takes risks with triggering the tipping points. Hence the very urgent need for realization that the mantra of blinkered economic growth (and neoliberal ideology²) is disastrous (also for our long-term economy!).

The key reference on climate tipping points is Steffen, Rockstrom et al. (2018) **Trajectories of the Earth System in the Anthropocene** – PNAS, August 2018 <http://www.pnas.org/content/early/2018/08/07/1810141115> (further info on this paper in appendices). This paper concludes that “Incremental linear changes ... are not enough to stabilise the Earth system. Widespread, rapid and fundamental transformations will likely be required to reduce the risk of crossing the threshold.”

3. More on climate: The pursuit of unqualified economic growth (and increasing consumption) is incompatible with what climate scientists say we must do to comply with the Paris temperature goals.

The implications of the above studies fit in well with what Tyndall climate scientist **Professor Keith Anderson** insists – that to achieve the necessary emissions reductions we must not only push for clean green renewables, efficiencies and e.g. buildings insulation, but also **radically reduce our consumption demand** – and this demands a radical change to the UK’s political and “media macro” mind-set from outdated old growth economics of the past.

A recent paper nick-named the “LED paper” in Nature Energy by Arnulf Grubler, Charlie Wilson (Tyndall UEA) et al. provides future pathways that are more scientifically feasible than those relying on our future generations “sucking CO₂” out of the atmosphere to pay off our carbon debt (NETs/BECCS text box below). Its title is well-descriptive: “A low energy demand scenario for meeting the 1.5 °C target and sustainable development goals without negative emission technologies”. The abstract is well

² Neo-Keynesian economics is also growth-promoting, potentially more so in effect, because neoliberal austerity reduces growth – (read e.g. neo-Keynesian macro-economist Professor Simon Wren-Lewis). However, neo-Keynesians are (hopefully!) more likely to be open to having consideration for the consequences of what type of growth they wish to promote.

worth reading: <https://www.nature.com/articles/s41560-018-0172-6> Note the “developing a narrative of future change”. That is what we need: an alternative ‘narrative’ to that of pursuing “economic growth” from increased consumption and demand.

Scientist Professor Rockstrom echoed this need on Channel 4 News: that we vitally and urgently need to push towards a tipping point of big social, political and economic changes, if we are to have any hope of avoiding a cascade of climate tipping points from positive feedback loops to a “Hothouse World”.

NETs such as **BECCS** are *not* a reliable bailout for continuing “business as usual” (to put it mildly!) Once tipping points are reached, sucking CO₂ out of the atmosphere would face an even harder challenge.

A major criticism of many IPCC Integrated Assessment [climate] Modelling runs (IAMs) is that those future scenarios that meet the Paris temperature goals (especially 1.5 degree pathways) by the end of this century do so by the use of unfeasibly large-scale future use of negative emissions technologies (NETs) yet to be invented or developed, such as Biomass Energy with Carbon Capture and Storage (BECCS) that would be unacceptably destructive and even “unfit for purpose”³. The removal of atmospheric CO₂ by future NETs are incorporated in the model runs to try and pay off carbon debts for an assumed continued increase in consumption-related energy demand from global economic growth (also incorporated in the model scenarios). Furthermore – the IAMs use last-century economics inappropriate for the 21st century response we need. But there is no evidence as yet that such NETs/BECCS are possible at the huge scale required. The modelling scenarios with big NETs dangerously (and arguably unintentionally) provide a hollow false “hope” (or scope for misuse) to politicians that we might be able to meet Paris temperature goals without having to make fundamental economic/political/social changes. Clearly such scenarios would be a highly risky gamble if mistakenly followed (as they appear to be).⁴

Another problem with many such scenarios using NETs is that many allow overshoot of temperature goals, though returning below those goals by 2100. This again is incompatible with tipping points, and extinct species cannot de-extinct! The recent “LED” paper by Arnulf Grubler, Charlie Wilson et al. provides a much more sensible and feasible alternative, though with a present-day political/social hurdle: demand reduction.

4. There is no leeway for any growth that increases UK emissions because we are “not on track”

The Committee on Climate Change (CCC)’s 2018 Progress Report made clear that the UK is *not* on track for complying in the mid-twenties with the pathway projected from the 2008 Climate Change Act remit. And the CCC’s remit has yet to be made compliant with the Paris temperature goals. I explain this discrepancy in this pdf: <https://henryadamsblog.wordpress.com/2018/07/02/how-the-ccc-is-not-paris-compliant/>

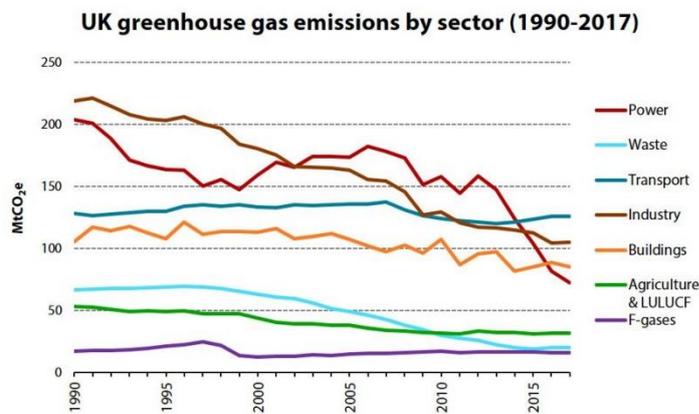
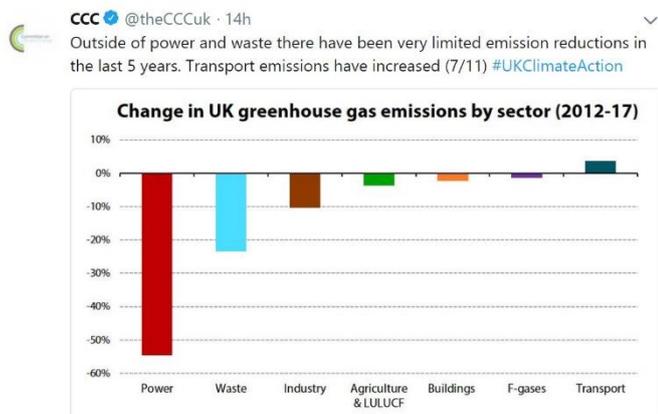
We need to halve our emissions globally by 2030 for a having any good chance of staying below +1.5 degrees, and to have net zero emissions globally by 2050 (preferably by 2030 in developed countries), not just the CCC’s remit to “reduce emissions by at least 80% of 1990 levels by 2050”.

³ E.g. Dr Anna Harper (Exeter Uni.) ‘Guest post: Why BECCS might not produce ‘negative’ emissions after all’ 14aug18 <https://www.carbonbrief.org/guest-post-why-beccs-might-not-produce-negative-emissions-after-all> and http://www.exeter.ac.uk/news/featurednews/title_674141_en.html

⁴ E.g. Prof. Anderson 2015 just after Paris – very readable 1-page criticism of reliance on NETs-BECCS so as to avoid questioning current economic growth mantra: https://www.nature.com/polopoly_fs/1.19074!/menu/main/topColumns/topLeftColumn/pdf/528437a.pdf and Alice Larkin: <https://climatestrategies.wordpress.com/2017/08/23/what-if-negative-emissions-fail-at-scale/> Alice Larkin et al. <https://www.tandfonline.com/doi/full/10.1080/14693062.2017.1346498> and Anderson & Peters (2016) <http://science.sciencemag.org/content/354/6309/182> and Fuss et al. ‘Betting on negative emissions’ <https://www.nature.com/articles/nclimate2392>

Although our power sector has recently made good emissions reductions by dramatically reducing coal-burning, the within-UK transport sector is increasing its carbon emissions (and emissions from international flights to/from the UK are increasing too), and other sectors are disappointing. <https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/>

2 charts from CCC's report:



5. GDP as a measure: It is important to acknowledge the abundance of respected research over the years which show that GDP itself is a very inadequate and inappropriate measure of equitable prosperity and well-being, and of what core purposes our economics should prioritize. Also, a major flaw is that GDP adds as positives, transactions that have negative consequences impacting on people, climate, environment and/or wildlife (or treats costs of dealing with such consequences as positives). In section 6 I'll provide an example of an alternative to GDP that subtracts the latter and addresses our main needs in the 21st century.

Diane Coyle's '**GDP: A Brief but Affectionate History**' - Revised and expanded Edition "The book ends by making the case that GDP was a good measure for the twentieth century but is increasingly inappropriate for a twenty-first-century economy driven by innovation, services, and intangible goods."

'**Mismeasuring Our Lives**' Sarkozy-commissioned report by Joseph Stiglitz, Amartya Sen and J.P. Fitoussi <https://www.amazon.com/Mismeasuring-Our-Lives-Why-Doesnt/dp/1595585192>

In February of 2008, amid the looming global financial crisis, President Nicolas Sarkozy of France asked Nobel Prize-winning economists Joseph Stiglitz and Amartya Sen, along with the distinguished French economist Jean Paul Fitoussi, to establish a commission of leading economists to study whether Gross Domestic Product (GDP)—the most widely used measure of economic activity—is a reliable indicator of economic and social progress. The Commission was given the further task of laying out an agenda for developing better measures.

Mismeasuring Our Lives is the result of this major intellectual effort, one with pressing relevance for anyone engaged in assessing how and whether our economy is serving the needs of our society. The authors offer a sweeping assessment of the limits of GDP as a measurement of the well-being of societies—considering, for example, how GDP overlooks economic inequality (with the result that most people can be worse off even though average income is increasing); and does not factor environmental impacts into economic decisions.

In place of GDP, *Mismeasuring Our Lives* introduces a bold new array of concepts, from sustainable measures of economic welfare, to measures of savings and wealth, to a "green GDP." At a time when policymakers worldwide are grappling with unprecedented global financial and environmental issues, here is an essential guide to measuring the things that matter.

6. (a) Thus it is not surprising that **GDP growth is also a poor measure** for how our economies achieve the core purposes of equitable distribution of resources in a sustainable way and with regard to other non-monetarizable, not-marketable vital needs. And that numerous studies, reports and books over the years have concluded this from analysis. An example of the many:

29jun18 **The Growth Delusion by David Pilling review – the economy is made up** – Adam Tooze

<https://www.theguardian.com/books/2018/jun/29/growth-delusion-david-pilling-review>

A summary: David Pilling **The Growth Delusion** “In this powerful, incisive book, David Pilling reveals the hidden biases of economic orthodoxy and explores the alternatives to GDP, from measures of wealth, equality, and sustainability to measures of subjective wellbeing. Authoritative, provocative, and eye-opening, *The Growth Delusion* offers witty and unexpected insights into how our society can respond to the needs of real people instead of pursuing growth at any cost.” *[I must admit I haven't yet read this myself]*

An example of the absurdity of GDP growth used as a yardstick was the claim by a Canadian pipeline company that oil spills from leaky pipes were helpful to GDP growth because of the extra expenditure and jobs created to clean up the spills (as if oil spills can be 100% cleaned up without environmental damage and death to wildlife). However this example is usefully correct in pointing out that GDP is calculated irrespective as to whether transactions are for beneficial or harmful things, or whether for gains or costs for losses.

“Jacinda Ardern, the Labour prime minister [New Zealand], [says](#): “It will no longer be good enough to say a policy is successful because it increases GDP if it also degrades the physical environment.”

<https://www.theguardian.com/commentisfree/2018/sep/26/economic-growth-fossil-fuels-habit-oil-industry>

6 (b) **Alternative measures to GDP and economic growth**

There are a number of alternative measures proposed. One example is the **Genuine Progress Indicator (GPI)**:

“Using GPI would help us maximize socially good outcomes while minimizing ecologically bad ones” - Jason Hickel in <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/> Hickel also brilliantly and briefly sums up the negative consequences of economic growth and of GDP (a “crude measure of progress”) in a video from BBC Newsnight in 2017, and concluded: “It’s time for a more sensible metric like the **Genuine Progress Indicator**, which takes GDP and subtracts these negative outcomes. ...”. In the appendix below I have written a transcript of what he said in the following BBC link: <https://www.facebook.com/bbcnewsnight/videos/10154834613726200/>

Here are several good reads on the GPI:

6jun14 **Abolish GDP in favor of a genuine progress indicator** - When countries factor drug money (but not costs) into GDP, can it be called a good indicator of success and happiness? – John Havens

<https://www.theguardian.com/sustainable-business/2014/jun/06/abolish-gdp-genuine-progress-indicator-gpi>

23sep14 **Beyond GDP: US states have adopted genuine progress indicators** - From Vermont to Hawaii, the GPI is becoming more popular. How can states use it to inform policy and economic development strategies? – Marta Ceroni <https://www.theguardian.com/sustainable-business/2014/sep/23/genuine-progress-indicator-gdp-gpi-vermont-maryland> I quote:

[“Vermont](#) two years ago became the first state in the US to pass a law introducing a new metric for measuring economic performance and success.

The Genuine Progress Indicator (GPI) offers an alternative to the Gross Domestic Product (GDP), which has been used at national and state levels since Simon Kuznets presented it to Congress in 1934, despite his warning of the oversimplifications embedded in the metric.

Systems thinker Donella Meadows, the founder of the Vermont-based organisation that I now direct, cut to the heart of GDP’s limitations when she wrote: “If you define the goal of society as GDP, that society will do its best to produce GDP. It will not produce welfare, equity, justice or efficiency unless you define a goal and regularly measure and report the state of welfare, equity, justice, or efficiency.”

So it should come as no surprise that Vermont has been joined by 19 other US states and dozens of nations in working on “beyond GDP” metrics. ...” *Do read the rest!*

Wikipedia on the Genuine progress Indicator, GPI:

https://en.wikipedia.org/wiki/Genuine_progress_indicator

14sep18 **We’re Measuring the Economy All Wrong** - David Leonhardt

<https://www.nytimes.com/2018/09/14/opinion/columnists/great-recession-economy-gdp.html>

‘NZ Government [PM Jacinda Ardern] to lead world in measuring success with wellbeing measures’

<https://www.stuff.co.nz/national/politics/101066981/nz-government-to-lead-world-in-measuring-success-with-wellbeing-measures>

7. INEQUALITY, growth and climate change are linked

It is widely accepted that the major injustice of climate change is that it is caused by the wealthiest people in the world but inflicted on the poorest people, especially in poor countries such as in the Global South – who have very much lower carbon footprints per person. This section examines how inequality, growth and climate change are linked.

Thomas Piketty’s ground-breaking and acclaimed ‘Capital in the 21st Century’ examined economic growth and wealth inequality (both wealth inequality and income inequality are important). However it failed to properly account for the ecological limits to growth which is one of the big flaws in arguing that [endless] growth (with pre- or redistribution) is necessary for reducing inequality. Rupert Read (UEA) points this out here: 18mar15 [What Piketty missed - the ecological limits to growth](#)

I intend to add more on Piketty’s work in relation to this section. In the meantime:

31july14 [Constant growth can only make most of us poorer](#) – Rupert Read

Jan/Feb15 [Green economics versus growth economics - The case of Thomas Piketty](#) – Rupert Read

Depending on circumstances economic growth can decrease or widen inequality, in the latter case resulting in a negative effect on equitable well-being.

Bear in mind there is a difference between absolute poverty (that growth can potentially decrease, though not necessarily) and relative poverty (that growth under neoliberalism tends to increase). [\[Ref\]](#)

Proponents of the growth mantra advocate ‘inclusive growth’ to try and alleviate how growth tends to increase relative poverty even though it can potentially decrease absolute poverty. I’ll discuss that in section 11. Here I’ll provide references for why reducing inequality is a better goal than increasing growth, and why inequality must be considered when reducing carbon emissions (both inter-nation inequality and within-nation inequality).

The Spirit Level: Why Greater Equality Makes Societies Stronger 2011 by [Richard Wilkinson](#) and [Kate Pickett](#) is probably the best known work on this topic. But there are other contributors too, e.g.:

Dr Federico Demaria writes: “Happiness and economics literature shows that GDP growth is not needed for well-being, because there are other important determinants (See [Easterlin paradox](#)). [High life expectancy is compatible with low carbon emissions, but high incomes are not.](#) ...” in his transcript address to the European Commission in preparation for the [2018 Post-Growth conference at the EU Parliament](#), 18-19 Sept 2018 <https://www.cusp.ac.uk/themes/p/growth-for-the-sake-of-growth/>

Inequality and climate change are very much linked. See infographic:

This infographic – shown in an [Oxfam report](#) is based on work by Lucas Chancel and Thomas Piketty (author of ‘Capital in the 21st Century’).

Climate scientist Professor Kevin Anderson said “Well firstly, although Oxfam used that data, that originally came from some work by Lucas Chancel and Thomas Piketty, and Piketty is well known for his work as an economist. And that demonstrates that rather than necessarily always focusing on countries, we need to focus on the people who are actually emitting. So the idea that **10 percent of the global population are responsible for 50 percent of global emissions**, or 20 percent of the global population are responsible for 70 percent of all global emissions, tells us that we need to be tailoring our policies towards that small group, rather than trying to squeeze the emissions out of the majority of the world’s population, who are hardly emitting anything at all.

So, one of the ways to explain this that I often use, which will hopefully be helpful, is that if that 10 percent of high emitters reduce their carbon footprint, their individual carbon footprint, to the level of the average European citizen, that would be equivalent of a one-third cut in global emissions, even if the other 90 percent did nothing. I mean, a one-third cut in global emissions just from the 10 percent reducing to the level of the average European citizen.” Also see:

Otto et al. (28jan19) ‘Shift the focus from the super-poor to the super-rich’ Nature Climate Change.

“In the UK, per capita emissions of the wealthiest 10 per cent are up to five times higher than those of the bottom half.” – p.22 IPPR report 12feb19 **This is a crisis: Facing up to the age of environmental breakdown** <https://www.ippr.org/research/publications/age-of-environmental-breakdown> and quoted in <https://www.ippr.org/files/2019-02/risk-and-environment-feb19-summary.pdf> with reference to Oxfam (2015): ‘**Extreme carbon inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first**’, media briefing. https://d1tn3vj7xz9fdh.cloudfront.net/s3fs-public/file_attachments/mbextreme-carbon-inequality-021215-en.pdf

A good example of how carbon emissions is strongly related to wealth is in aviation emissions:

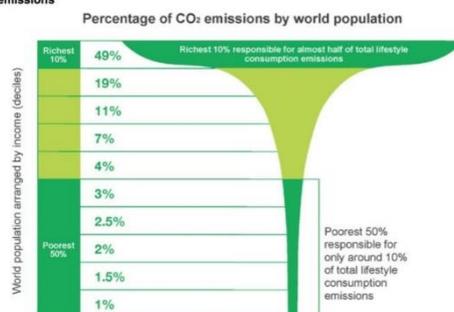
“70% of all international flights by UK residents are taken by just 15% of the population” <https://s3-eu-west-1.amazonaws.com/media.afreeride.org/documents/Air+Traffic+Controls.pdf>

“Emeritus Professor of Transport Studies at [@UniofOxford](#) lays out the (barely mentioned) injustice at the heart of the [#HeathrowExpansion](#) debate. “**The richest 10% make nearly seven times as many trips by air as the poorest 10% of the population.**” <https://theconversation.com/heathrows-third-runway-is-expensive-polluting-and-unequal-why-the-poor-will-lose-out-98781> 13feb19 **The future of UK aviation: Letter from Lord Deben to Chris Grayling**

<https://www.theccc.org.uk/publication/the-future-of-uk-aviation-letter-from-lord-deben-to-chris-grayling/> “...Aviation emissions in the UK have more than doubled since 1990 ... Achieving aviation emissions at or below 2005 levels in 2050 will

Extreme Carbon Inequality

Figure 1: Global income deciles and associated lifestyle consumption emissions



Source: Oxfam

If top 10% reduced carbon footprints to that of average EU citizen, that would mean a 33% reduction in global emissions

require ... It will also require steps to limit growth in demand. In the absence of a true zero-carbon plane, demand cannot continue to grow unfettered over the long-term. ...”

So focusing on the wealthy highest consumers to reduce emissions should be one priority, despite their power and influence on the establishment to resist this approach. As an aside we also mustn't let those on the supply-side of emissions continue to escape with impunity, such as fossil fuel companies (and their financiers), despite their similar government links, because “It is estimated that 100 companies are responsible for the emission of 71 per cent of industrial greenhouse gases since 1988 ([Griffin 2017 \[the Carbon Majors report - an update from Rick Heede's work\]](#))” (my quote again from IPPR *ibid*).

The idea of a ‘frequent flyer levy’ ensures that poorer people are not hit by a ‘flat rate tax’, which leads us on to the warning in the next paragraph.

Frequent Flyer Levy <http://www.afreeride.org/> Everyone gets one tax free return flight each year. Tax kicks in at a low rate from the second flight, then goes up a notch for each extra flight in that year. The extra money is set aside to support greener alternatives to flying.

A mistake in nations of any inequality is to impose climate policies that have a regressive impact on those of lower means – for example as Macron recently found to his cost (the ‘Gilets Jaunes’ protests). If carbon is taxed – it must avoid such errors. One idea favoured by climate scientist James Hansen, and echoed by for example in *The Economist*, is for revenue from any national carbon tax to be distributed equally back to all people in the nation (I would add that a zero/low carbon transport also be provided for those in rural areas for essential needs such as work, school and shopping for food). But such an orthodox neoclassical economics method has other flaws – such as enabling the very wealthy to carry on their high consumption as they may not notice the tax they pay. It is inadequate on its own.

The inequality – growth – climate change topic is so huge – that I can only give you several important points in this section and leave some important debatable questions unanswered for now (such as: (i) Would a more equal society be more amenable to reducing its emissions? [The IPCC reckons yes!]); and (ii): Don't some notable economists say that more equality favours growth? [Yes, but...].)

I can't resist starting to answer (i) by quoting [Kate Aronoff \(in the Intercept\)](#) on the IPCC:

A group of researchers preparing their findings for the U.N. Intergovernmental Panel on Climate Change's next report have started to sketch out that link, laying out a series of what they called [Shared Socioeconomic Pathways](#) that forecast how we do or don't avert planetary catastrophe. SSP 1 — a kind of best-case scenario — envisions “more inclusive development that respects perceived environmental boundaries. Management of the global commons slowly improves, educational and health investments accelerate the demographic transition, and the emphasis on economic growth shifts toward a broader emphasis on human well-being. Driven by an increasing commitment to achieving development goals, inequality is reduced both across and within countries.” Perhaps unsurprisingly, the more unequal economies sketched out in further SSPs are also far less likely to reign in emissions along the timeline needed, as may not be too difficult to guess based on what the Donald Trumps and Jair Bolsonaros of the world have planned.

I'll end this section by again referring you to the February 2019 IPPR report – which promotes “transformative socioeconomic change” to be vital for tackling not just climate breakdown but also the wider environmental breakdown, and recognises that such breakdown [and tackling it] “is fundamentally an issue of justice” as regards the lack of justice that inequality and climate breakdown compound (those who emit the least – the poor – get hit the hardest). These key 21st century issues are best considered together not in isolation.

Related topics: **Just Transition** (ensuring jobs for those losing jobs in the fossil fuel industry), the Green New Deal (jobs and inequality need to be addressed at the same time as climate - this is somewhat neo-Keynesian – incorporating investment which some might say is green growth – but would hopefully de-grow fossil fuel burning activities including material consumerism).

Also worth reading: LSE anthropologist Jason Hickel continually writes very readable pieces on inequality – and often in relation to climate change.

8. ‘Prosperity without growth’. Towards a **Post Growth** economy for Europe.

It is important that politicians, counsellors and public officials in particular do not dismiss studies on how prosperity for all can be achieved without growth, and should not support a “no alternative” perception of so-called “political reality” (neoliberalism). The latter is incorrect and maintains a wide chasm with what scientific reality necessitates, such as regarding climate change, and also ignores reliable ways for preventing increases in inequality (which is not an inevitable consequence of declining growth, but can be a consequence of pursuing growth at all costs – including social costs*).

Furthermore, growth may decline in the UK/Europe context to low or near zero anyhow, and Professor Tim Jackson points out: “More recently, mainstream economists have begun to suggest some ‘secular’ limits to growth. Sluggish recovery in the wake of the financial crisis has revived discussion of a ‘secular stagnation’ in advanced economies, in particular.” We thus need to change our economics to ensure equity without growth (as well as to reduce our carbon emissions and other damaging impacts from over-consumption).

Re-focusing on more equitable goals for the UK and Europe than GDP growth is thereby becoming more urgent for economic as well as climate/environment reasons. A recent letter signed by 238 academics states: “Right now the response is to try to fuel growth by issuing more debt, shredding environmental regulations, extending working hours, and cutting social protections. This aggressive pursuit of growth at all costs divides society, creates economic instability, and undermines democracy.” The letter strongly recommends a better direction towards a “Post Growth” economy in Europe, and I strongly recommend everyone reads it.

The EU needs a stability and wellbeing pact, not more growth - 238 academics call on the European Union and its member states to plan for a post-growth future in which human and ecological wellbeing is prioritised over GDP – 16sep18 letter prior to the 2018 Post-Growth Conference 18-19 September 2018, Brussels re EU <https://www.theguardian.com/politics/2018/sep/16/the-eu-needs-a-stability-and-wellbeing-pact-not-more-growth>

The Post-Growth Challenge — Secular Stagnation, Inequality and the Limits to Growth | Discussion paper by Tim Jackson, 13may18 <https://timjackson.org.uk/the-post-growth-challenge/>

**NB: Please read the abstract.*

Prosperity without Growth – Tim Jackson <http://timjackson.org.uk/ecological-economics/pwg/>
Jackson, T., 2009. Prosperity without growth? The transition to a sustainable economy. Sustainable Development Commission.

The Steady State Economy – CASSE – Center for the Advancement of the Steady State Economy <https://steadystate.org/> and Herman Daly. [Critique by Elke Pirgmaier, Leeds University.](#)

Steady State Manchester – Mark Burton <https://twitter.com/SteadyStateMcr>

9. ESCAPING GROWTH DEPENDENCY – Why reforming money will reduce the need to pursue economic growth at any cost to the environment - a report pdf by Positive Money [*for need read “need”*]
<http://positivemoney.org/publications/escaping-growth-dependency/>

“A finite planet cannot sustain an ever-growing economy, and the effects of environmental degradation are already becoming alarmingly manifest. But governments around the world make growth their overriding economic objective. Why are governments so set on a policy that seems destined to destroy the environment and ecosystems on which we all depend?” This report tackles for example: “WHY DEBT IS A SOURCE OF GROWTH DEPENDENCY”, “HOW TO ESCAPE DEBT-DRIVEN GROWTH DEPENDENCY”...

One of the main drivers of a “need” for economic growth stems not just from un-constrained capitalism and the shareholder expectation of unearned gain, but also from the way most money in circulation is created as debts by banks lending money they have created “out of thin air” (as stated by a former head of the Bank of England Mervyn King and given publicity by Positive Money). The economists at Positive Money educate and campaign for changing how money is created so that it no longer drives a “need” for economic growth, and so that it causes less consequential harms to people (such as inequality), our economy, our climate, environment and biodiversity.

<http://positivemoney.org/>

Some other useful references on this topic:

‘Sovereign Money Creation for a Post-growth Economy’ – Discussion paper by FoE Europe and Positive Money – www.foeeurope.org/sites/default/files/resource_use/2018/sovereign_money_creation_discussion_paper.pdf September 2018 “...High levels of public and private debt create the pressure for ongoing economic growth. But if governments are to be persuaded to abandon the pursuit of endless economic growth as an overriding policy objective, it will be necessary to find other, non-growth solutions to these problems. To this end we propose the adoption of a new monetary tool: Sovereign Money Creation (SMC). ...”

17sep18 FoEE: **Three policy ideas for a post-growth economy** – discussion papers arising from ideas expressed in booklet *Sufficiency: Moving beyond the gospel of eco-efficiency* <http://www.foeeurope.org/post-growth-economy>

10. Is economic de-growth negative? That depends:

(i) on whether or not you disregard the “externalities” or negative collateral consequences of growth, and

(ii) whether or not you focus on more positive alternatives.

Alternatives to GDP growth are actually more positive, and:

We need an economy to work for us, not the other way round. People should not be regarded as consumers working for the economy – by being pressured to pursue discredited goals.

The economic growth mantra promotes a demand for over-consumption, and a linear economy for resources ([single-use plastic and polluted oceans](#) is a topical example), instead of a circular economy with “reduce, re-use, recycle”. As we’ve seen from for example, section 3 above – climate scientists state that our consumption demand needs to be reduced for us to meet the Paris temperature goals.

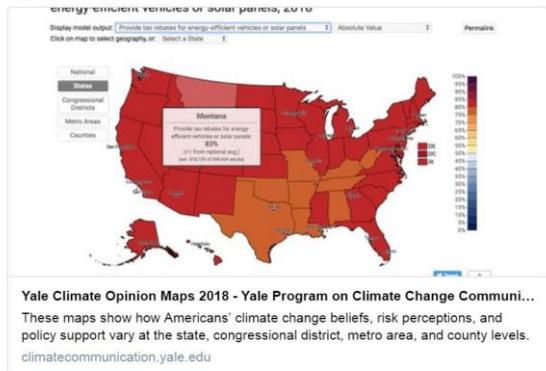
The push for (unqualified) increase of “GDP growth” in the UK – though it may seem positive at first glance to those who haven’t studied it - can in fact be a **net negative** thing – when negative global impacts or ‘externalities’ (such as carbon emissions) exceed national or regional benefits. This is especially unjustifiable when the latter are un-equitably distributed.

A recent Yale ‘climate opinion’ survey shows that 70% of US adults consider ‘Environmental protection is more important than economic growth’ (28% opted for the opposite). (This Q was 1 of 15 policy

choices concerning climate change, mostly with regards energy policy options). Reference link: <http://climatecommunication.yale.edu/visualizations-data/ycom-us-2018/?est=happening&type=value&geo=county>



This is huge. US opinion survey by Yale shows that 70% of adults believe that environmental protection is more important than growth. Even in the deep south. climatecommunication.yale.edu/visualizations-data/ycom-us-2018/?est=happening&type=value&geo=county ... #degrowth



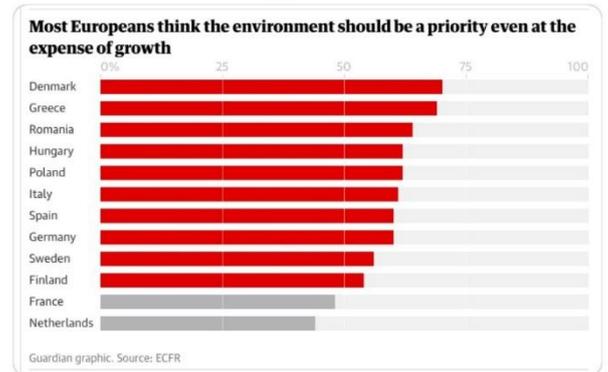
6:50 PM - 26 Aug 2018
396 Retweets 648 Likes

And in Europe:



Wow, these results are staggering. New surveys show that a large majority of Europeans believe that the environment should be prioritized *even at the expense of growth*.

So much for the argument that people won't accept #degrowth.



Alternatives to GDP such as GPI are more positive and remove transactions or activities that have negative outcomes (and in GDP are misrepresented as positive additions).

The alternative policy aims to GDP/economic growth – some of which are listed in the two doughnut graphics in section 2 above, and described in the references in 7 and 8 – are much more positive in human-appeal than the words ‘economic growth’ (and appealingly happier if pursued) – if implemented in ways that don’t cross the “biophysical boundary” or “ecological ceiling”. The term ‘economic wellbeing’ is much more appealing than ‘economic growth’. We do need an alternative coherent “narrative” for policy goals. But that is a “next step” on from the scope of this collation. (George Monbiot has had a recent attempt at this, as have other authors and NGOs/thinktanks e.g. NEF/PIRC/NEON).

It is much more promisingly positive economics for economics to be re-directed to serve our vital human, wildlife and planetary needs, than for us to be slaves serving an outdated economics of the last century – unfit for the twenty-first (i.e. slaves to “economic growth”). Ask yourself: **Should economics serve us as citizens or we be “consumers” serving an unsustainable out-of-date economics?**

Also as I’ve brought up already and will again below in relation to Green New Deal – reducing carbon emissions and inequality go together, and also go together with the **happiness** part of wellbeing – a very attractive positive – much more appealing than the emptiness of growth-promoting, resource-depleting, emissions-increasing, materialistic consumerism.

11. Discussion section: types of growth, through to a-growth, post-growth or de-growth. Your choice.

(a) Adding an adjective in front of ‘growth’ does not per se resolve the growth problem or justify growth

As Kate Raworth discusses in her “Doughnut Economics” book, there have been numerous attempts to add aspirational adjectives in front of the word growth or economic growth, instead of replacing the word ‘growth’ with words expressing what 21st century economic and social goals should be. I have also heard statements that growth is necessary for that aspirational adjective to be achieved, such as in the use of the word ‘inclusive growth’, or ‘inclusive green growth’ (e.g. World Bank):

I hope that politicians who have supported the economic growth mantra can acknowledge that it is inadequate to say that growth or “inclusive growth” is necessary to maintain living standards for the poor, because there are other ways to do the latter: it is government policy (central and local) that has the means to maintain the latter – even if growth decreases or becomes zero (or even negative). There is plenty of UK wealth in total to maintain equitable quality of life for all in the UK – its inequitable distribution is a flaw in the current neoliberal economic system. And growth cannot be relied upon to be “inclusive” (and it’s certainly not equitable) – even if it is strongly positive growth (US growth this century provides a good example – most of the growth went to the wealthiest, and with no “trickle down” [“suck up” would be a more accurate metaphor]).

11. (b) **Green growth or de-growth, or both? Or “a-growth”, or post-growth?** (discussion points)

You will probably have noticed (understatement) that there is a debate amongst those pushing for action on climate change between those who advocate that de-growth is essential, and those who push for green growth or green inclusive growth. But could we have both de-growth and green growth occurring simultaneously? Could we be “agnostic” about growth – as long as it lies within limits?

Clearly it is essential to have de-growth in those economic activities, sectors or sub-sectors, in which growth is very linked to burning fossil fuels and carbon emissions. Also at the same time it is beneficial to have expansion (dare I say growth? – depends on how growth is defined) of investment into those activities, sectors or sub-sectors that provide zero carbon (or very low carbon) alternatives, such as insulating buildings, space-heating without fossil gas, energy efficiency with minimal “rebound”, clean green renewable energy (RE) etc. However, it is important to note that ‘green’ investment into RE in itself does not reduce carbon emissions (it has its own embedded emissions, though relatively small) – but only indirectly - via to what extent it might reduce and replace methods using fossil fuels (ff’s). So replacement of ff’s not addition to ff’s is essential for emissions reductions, as well as demand reduction. The Green New Deal (now promoted in both UK & US) is a good example of what jobs and investments can be encouraged while simultaneously de-growing fossil fuelled economic activity, and it can make people happier too:

[David Roberts @drvox](https://twitter.com/drvox) “If the Green New Deal leads to a shorter work week, more public provision of basic needs, & lower material consumption [*so less growth than otherwise*] ... it will make us happier. All of those things are empirically connected with greater happiness! Excellent point from [@KateAronoff](https://twitter.com/KateAronoff)”
<https://theintercept.com/2019/04/07/green-new-deal-happiness/> [added by HA]

A great problem that can confuse is the current assumed meaning of economic growth as being GDP growth – which is an assumption used by both neoliberal economists working for the interests of big business and “the 1%”, and also independent or academic mainstream neo-Keynesian economists. Because it is difficult to use the words ‘economic growth’ without also implying the meaning of GDP growth, and because the latter is damaging to climate and environment, it is arguably best to avoid the word “growth” and “economic growth” as much as possible when describing green investments. Unfortunately “old-school” mainstream economists who are promoting green investments are advertising their ideas to governments and big investors as being good for “green growth” or “inclusive

growth”, which may encourage uptake in those investments – many of which may be climate-beneficial, but at the same time inadvertently (or intentionally?) perpetuates the false assumption that GDP growth is compatible with meeting Paris temperature goals or a liveable climate.

On ‘Green growth’ the following article by Jason Hickel is well worth reading. However I don’t like the title and sub-title as they don’t explain that the article looks at GDP growth, and on a global or national scale, and is thus potentially misleading if taken to be against investment into the above-listed green alternatives: <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/>

Some academics argue against the polarization between “green growth” and “de-growth” and prefer the concept of being “agnostic” about growth as long as it lies within planetary boundaries, such as Kate Raworth. Professor Jeroen van den Bergh in his ‘A third option for climate policy within potential limits to growth’ argues for a similar position which he labels an ‘agrowth’ strategy, “proposed to depolarize the debate and reduce resistance to climate policies” in Nature Climate Change (2017). His brief abstract is worth a read: <https://www.nature.com/articles/nclimate3113>

BloomsbergNEF founder Michael Liebreich, who is very optimistic that innovations will succeed in fighting climate change but has been criticized by degrowth-ist Jason Hickel for omitting important issues, tweeted to me on 22mar19 his desire to find some common ground in his [very useful debate with Kate Raworth \(at ODI, 20mar19\)](#):

Henry Adams @henryadamsUK

Fortunately ML shows acknowledgement of some problems with growth meme in this excellent and much needed friendly debate. @MLiebreich is doing a good job giving Tories a potential interest in tackling climate breakdown as cf fossil Tory mainstream mindset.

Michael Liebreich @MLiebreich

It's a vital debate. I'm trying to move it on from 'stupid GDP growth vs stupid degrowth'. I don't like the 'green growth' framing because it is just a less stupid variant of GDP - when we really need to do is to focus on building stocks of value, not flows.

11. (c) **Your response.**

If you have read this from a pre-conceived assumption that GDP growth or economic growth is both necessary and also potentially compatible with meeting our climate goals and resource requirements through this century then I hope this collation of references has made you question these assumptions.

I hope also that you are making at least several or hopefully more of the following steps (here in approximate order of progression from initial assumptions).

(i) That the carbon footprint of economic proposals involving fossil fuels (e.g. extra runways, power stations, more roads) must be measured and be given strong consideration and weight. And that your suspicions will be raised at such projects being promoted as being “good for growth”.

(ii) That action on climate breakdown is more important than economic growth, especially if the latter is assumed to mean GDP growth. Thus economic growth should not be given the primacy that it is given by those currently in power, including primacy above all our most vital needs this century.

(iii) That GDP growth is flawed as it includes economic activities detrimental and damaging to our climate, environmental and social needs and is thus a poor measure of what our economy should be doing for us and our children. There are better alternatives.

(iv) That emissions-linked components of growth are reduced as fast as possible, and are not accepted just for the reason of being “good for economic growth”, such as by any cherry-picking of growth-promoting text out of the NPPF for example, without taking into account whether it is sustainable.

(v) To accept that [the possibilities for a post-growth future in the UK and Europe needs to be explored](#), as a no-growth scenario may happen anyhow, as well as for climate and other vital reasons.

(v) “a-growth”: That we need to be at the very least “agnostic” about growth, but also with the condition that growth is limited within planetary boundaries.

(vi) That we should be at least open-minded to the arguments for de-growth in the debate between de-growth and green growth, which has sadly become polarized.

That there are debatably intermediate positions between the two poles, such as the possibility of an economy being a combination of green growth (or maybe better-termed green investment) in very low to zero carbon activities (and even carbon negative or sequestration activities) simultaneously with rapid de-growth in high carbon activities; the result of simultaneous [green growth]+[de-growth] might be no growth, positive growth or de-growth in total; our economic system should function for the wellbeing of all regardless, even if that means re-distribution of wealth.

(vii) Some readers may take the step of concluding that de-growth is essential for meeting the temperature goals of the Paris Agreement, because it is most unlikely to be possible to totally decouple carbon emissions from growth.

Note: The above sections refer primarily to well-developed comparatively wealthy nations. I have excluded poor and under-developed countries because (out of equity considerations) we cannot deny them sufficient economic growth to enable especially poor people to have the vital necessities for life and wellbeing. Wealthy nations should help them with green growth so they can miss out the fossil fuel paths we have taken.

12. CONCLUSIONS

The temperature goals of The Paris Agreement are to keep “the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

“Well below 2°C” is vital – because climate scientists reckon that “tipping points” of positive feedback loops in the climate system are likely to be reached or exceeded near the +2 degree threshold⁵. There are already indications (from changes shifting from linear towards exponential) e.g. in sea-level rise, and arctic warming, that those tipping points are close. The climate reality is actually much worse than public and political perception.⁶

However our present government policies (and our economy) are still on nearer to a +3 or more degrees trajectory (significantly above +2 degrees according to the Commission on Climate Change –

⁵ Steffen, Rockstrom et al. (2018) <http://www.pnas.org/content/early/2018/07/31/1810141115> & see media articles referring to this e.g. <https://www.bbc.com/news/science-environment-45084144> & <https://www.theguardian.com/environment/2018/aug/06/domino-effect-of-climate-events-could-push-earth-into-a-hothouse-state> & <https://climatenewsnetwork.net/hothouse-earth-could-soon-be-unavoidable/>

⁶ See for example Professor Gem Bendell’s 2018 summary review of climate science <https://jembendell.wordpress.com/2018/03/22/a-summary-of-some-climate-science-in-2018/>

and even the CCC's remit has yet to be made compliant with the Paris Temperature goals). This is not just due to our present government's facilitation of fossil fuel extraction and use, but also due to how government and politicians (and the MSM) cling on to neoliberal⁷ "economic" policies and the pursuit of economic growth⁸, in '[cognitive dissonance](#)' with climate reality, and which keeps open a widening gap with what climate scientists say we must do and not do.

The blinkered greed and money-based pursuit of economic growth, especially when assumed to be GDP growth – which includes climate-harmful transactions as positives, is clearly incompatible with meeting the Paris temperature goals. There are better alternatives to GDP such as GPI – Genuine Progress Indicator – which subtracts out economic activities that are harmful – such as to our climate, and includes factors that are beneficial to our climate, wellbeing and genuine prosperity.

I hope the above convinces you the reader that the SLDC, Cumbria CC and other public bodies likewise, must look critically at and then discard the pursuit of economic growth as a prime goal, and replace it with aims of relevance to the pressing needs of the 21st century, and with open-minds to current thinking on economics that complies with those needs, which include achieving the rapid reductions in carbon emissions required to have any good chance of complying with the temperature goals of the Paris Agreement before climate "tipping points" are reached.

Local/Cumbria implications

The above document has largely examined the climate and other impacts of the economic growth mantra with examples applied to a global and national scale, and a multi-sector scale. The arguments also apply to a regional/local scale but clearly the climate impact of growth within sectors will vary according to their varying carbon footprints. Also we need to rethink, reframe and redirect local or regional economic/social goals to be better for our wellbeing and climate-compliant and truly sustainable:

For Cumbria small businesses and communities a replacement term such as "economic wellbeing" looks in a much more appropriate direction. This term was recently used by Lord Inglewood in his speech following his appointment as Chair for Cumbria LEP, and is a much better re-framing of what the LEP goal should be (hopefully without becoming a greenwash euphemism for growth). This paragraph points towards a possible follow-on document by other multiple authors including those with a more business-related experience, for an alternative narrative to growth, with re-framing of economic goals to be truly sustainable and Paris-compliant.

⁷ Unfortunately both neoliberal "economics" [which increases inequality], and neo-Keynesian economics [e.g. Corbyn/McDonnell-type] both push for economic/GDP growth. Green economics in contrast does not promote GDP growth.

⁸ It is ironic that the neoliberal over-preference for austerity actually dampens economic growth (Prof Simon Wren Lewis).

PLANNING implications

I have also written a discussion document with the following title which is an annex to the present document:

The 2018 revised NPPF and the planning system in relation to economic growth and climate change

It is online as a pdf via this shortened link: www.bit.ly/growth-cc-nppf

Appendices: Other references and possible future additions:

It's not just climate and carbon footprint: On the folly of growth-fuelled consumption of natural resources:

The Global Footprint Network – ‘Advancing the Science of Sustainability’

<https://www.footprintnetwork.org/>

The Earth Overshoot Day – referred to by e.g.: **‘Earth's resources consumed in ever greater destructive volumes** - Study says the date by which we consume a year's worth of resources is arriving faster’

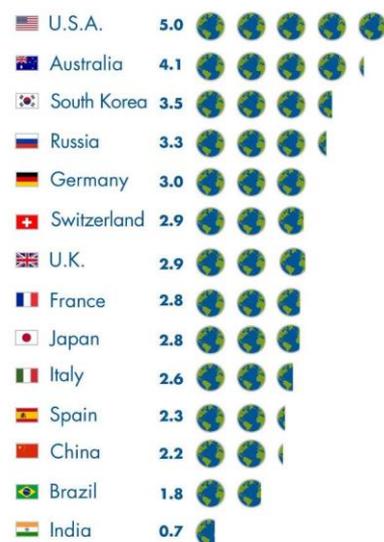
<https://www.theguardian.com/environment/2018/jul/23/earths-resources-consumed-in-ever-greater-destructive-volumes>

Sufficiency: Moving beyond the gospel of eco-efficiency – booklet published by FoE Europe <http://foeurope.org/sufficiency> “‘Sufficiency: moving beyond the gospel of eco-efficiency’ suggests introducing hard limitations to unsustainable trends—in particular to overconsumption—and putting emphasis on distributional justice. Seven chapters written by sustainability and economics ... The booklet ends with a discussion of several eco-social policies that can start the transition towards an “economics of enough”.”

Also see e.g.:

https://www.eurekalert.org/pub_releases/2015-01/igp-npd010915.php

How many Earths do we need if the world's population lived like...



Source: Global Footprint Network National Footprint Accounts 2018

How about poor people in poor countries? Don't they need “economic growth”?

I have focused above mainly on developed countries. It would be hypocritical to deny poor people in poor countries access to electricity if they want it, and vital and basic needs such as those shown within the doughnut graphics in section 2 above. Thus I am not going to here push against economic growth in poor countries except to suggest that the requirement for economic development is better expressed, maybe just as economic development, or by using a term such as GPI, so as to help steer a better path than developed countries have pursued via fossil fuels. For example:

The UN amongst its SDGs (Sustainable Development Goals) has goal 13 as “Climate Action” or “Take urgent action to combat climate change and its impacts” and goal 8 as “Decent Work and Economic Growth” or “Promote inclusive and sustainable economic growth, employment and decent work for all” or “Sustainable, Sustained and Inclusive Economy Growth”. I suggest that the UN should replace the term Economic Growth (maybe arguably better expressed here as Economic Development) with an index such as GPI not GDP, for the reasons I've given above in sections 5 and 6.

<https://www.un.org/sustainabledevelopment/>

On UNEP and SDGs Jason Hickel writes: “Green growth first became a buzz phrase in 2012 at the United Nations Conference on Sustainable Development in Rio de Janeiro. In the run-up to the conference, the World Bank, the Organization for Economic Cooperation and Development, and the U.N. Environment Program all produced reports promoting green growth. Today, it is a core plank of the U.N. Sustainable Development Goals.

But the promise of green growth turns out to have been based more on wishful thinking than on evidence. In the years since the Rio conference, three major empirical studies have arrived at the same rather troubling conclusion: Even under the best conditions, absolute decoupling of GDP from resource use is not possible on a global scale.”

Source: <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/>

Jason Hickel's book 'The Divide' examines global inequality, its causes and solutions:

<https://www.jasonhickel.org/the-divide/>

And in this May 2018 blog-post he criticizes the growth-friendly "ecomodernism" concept and also clarifies that he has never called for de-growth in developing countries:

<https://www.jasonhickel.org/blog/2018/5/15/ecomodernism-and-the-sacred-shibboleth>

Tweet by Jason Hickel @jasonhickel Sep 13 "Absolute decoupling is the UNEP definition of green growth..."

I refer to a relevant 2017 UNEP report below under "[Re section 1 on decoupling](#)"

Alternative measures to GDP, 'GDP growth' and 'economic growth'

One example is the **Genuine progress Indicator GPI**, as referred to by Jason Hickel:

Jason Hickel "Our addiction to economic growth is killing us" BBC Newsnight 2017 "Does economic growth really make our lives better? Anthropologist Jason Hickel says it's killing us [#viewsnight](#)"

<https://www.facebook.com/bbcnewsnight/videos/10154834613726200/> Transcript:

"Right now, the entire global system is captive to a single idea – economic growth. Politicians rise and fall on their ability to increase GDP year-on-year. They promise that growth will make our lives better. But there's a catch: We can't have infinite growth on a finite planet. We are already overshooting our planet's biocapacity by nearly 60%. The consequences are all around us: climate change, deforestation, and rapid rates of extinction. This crisis is due almost entirely to overconsumption in rich countries. They use more than 3 times their fair share of biocapacity. Scientists warn that the only way to prevent ecological collapse is for rich countries to scale down their consumption. This is called "planned de-growth". De-growth is not the same as austerity. The goal is to increase human well-being and happiness while reducing our economic footprint. Instead of intensifying our plunder of the earth, we can share what we already have more fairly. We can cut excess consumption by curbing advertising and taxing carbon. Introducing a basic income and a shorter working week would allow us to get rid of unnecessary jobs and redistribute labour. But the first step is to overthrow the tyranny of GDP. GDP is a crude measure of progress. When we slice down our forests for timber or strip our mountains for coal, GDP goes up, When natural disasters strike, or hospital visits rise, GDP goes up. It ignores environmental and social costs. It's time for a more sensible metric like the Genuine Progress Indicator, which takes GDP and subtracts these negative outcomes. It accounts for the costs of growth. We need an economic model that promotes human flourishing in harmony with the planet on which we depend."

An overview with similarities with my collation but shorter and punchier

'Growth for the sake of growth' - FEDERICO DEMARIA

<https://www.cusp.ac.uk/themes/p/growth-for-the-sake-of-growth/>

"Growth for the sake of growth" remains the credo of governments and international institutions, Federico Demaria finds. The time is ripe, he argues, not only for a scientific degrowth research agenda, but also for a political one. (*This article is a transcript of Federico's address to the European Commission, in preparation of the [2018 Post-Growth conference at the EU Parliament](#), 18-19 Sept 2018.*)

by Dr FEDERICO DEMARIA - co editor of book **Degrowth: A vocabulary for a new era** <https://vocabulary.degrowth.org/>

"Economic growth is presented as the panacea that can solve any of the world problems: poverty, inequality, sustainability, etc. You name it. Left wing and right wing policies only differ on how to achieve it. However, there is an uncomfortable scientific truth that has to be faced: [Economic growth is environmentally unsustainable](#). Moreover, beyond a certain threshold already surpassed by EU countries, [socially it is not necessary](#). The central question then becomes: [How can we manage an economy without growth?](#)

Economist [Kenneth Boulding](#) famously said that: "Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist".

..."

Quotes: e.g. "[climatologists Kevin Anderson and Alice Bows have argued convincingly that](#): "for a reasonable probability of avoiding the 2°C characterization of dangerous climate change, the wealthier (Annex 1) nations need, temporarily, to adopt a de-growth strategy."" Linking to:

<http://rsta.royalsocietypublishing.org/content/369/1934/20>

Beyond 'dangerous' climate change: emission scenarios for a new world

Kevin Anderson, Alice Bows

Published 29 November 2010.DOI: 10.1098/rsta.2010.0290

Re section 1 on decoupling

From constraint to sufficiency: The decoupling of energy and carbon from human needs, 1975–2005 J.K.

Steinberger & J.T. Roberts 2010

http://www.gci.org.uk/Documents/EE_SteinbergerRoberts_2010_DecouplingEnergyCarbonHumanNeeds_.pdf

"... more researchers are questioning the necessity and adequacy of economic growth for ameliorating the human condition (Latouche, 2007; Jackson, 2009), and human well-being is arguably a more central measure of social progress than economic growth. ..."

Abstract: We investigate the relationship between human needs, energy consumption and carbon emissions for several indicators of human development: life expectancy, literacy, income and the Human Development Index. We find that high human development can be achieved at moderate energy and carbon levels; increasing energy and carbon past this level does not necessarily contribute to higher living standards. By conducting a novel longitudinal analysis from 1975 to 2005, we observe a previously undetected decoupling of the per capita energy and carbon required for human needs. If resources were equally distributed, current energy and carbon levels would be more than sufficient to satisfy global human needs at high levels of human development. By projecting current trends to 2030, we demonstrate that the global energy consumption and carbon emissions required to satisfy human needs will decrease with time, despite growth in population.

Anthropologist Jason Hickel writes here criticizing eco-modernism, and re decoupling of GDP growth ...

<https://www.jasonhickel.org/blog/2018/5/15/ecomodernism-and-the-sacred-shibboleth>

Jason Hickel writes that **"three major empirical studies have arrived at the same rather troubling conclusion: Even under the best conditions, absolute decoupling of GDP from resource use is not possible on a global scale."** <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/> but better to read his blog

version as it links to references frustratingly not provided in the above version <https://www.jasonhickel.org/blog/> 14sep18.

He refers to e.g.:

(i) Dittrich, Monika, Stefan Giljum, Stephan Lutter and Christine Polzin (2012) **Green Economies Around the World? - Implications of resource use for development and the environment**. Vienna: Sustainable Europe Research Institute (SERI).

https://www.boell.de/sites/default/files/201207_green_economies_around_the_world.pdf and e.g.

<https://www.scribd.com/document/100476746/Green-Economies-Around-the-World>

(ii) Heinz Schandl (CSIRO) et al. **Decoupling global environmental pressure and economic growth: scenarios for energy use, materials use and carbon emissions**

<http://eprints.whiterose.ac.uk/92268/13/Owen%20Journal%20of%20Cleaner%20Production%202015%20AAM.pdf>

(iii) UNEP (2017) **Resource Efficiency: Potential and Economic Implications. A report of the International Resource Panel**. Ekins, P., Hughes, N., et al. March 2017

http://www.resourcepanel.org/sites/default/files/documents/document/media/resource_efficiency_report_march_2017_web_res.pdf

Also see: <http://wedocs.unep.org/bitstream/handle/20.500.11822/14816/Deep%20dive%20presentation%20-%20Resource%20Efficiency.pdf>

Hickel also refers to e.g.:

Ward, James & Sutton, Paul & Werner, Adrian & Costanza, Robert & Mohr, Steve & Simmons, Craig. (2016).

Is Decoupling GDP Growth from Environmental Impact Possible? PLOS ONE. 11. e0164733.

10.1371/journal.pone.0164733. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0164733>

https://www.researchgate.net/publication/309166474_Is_Decoupling_GDP_Growth_from_Environmental_Impact_Possible

Abstract: “The argument that human society can decouple economic growth—defined as growth in Gross Domestic Product (GDP)—from growth in environmental impacts is appealing. If such decoupling is possible, it means that GDP growth is a sustainable societal goal. Here we show that the decoupling concept can be interpreted using an easily understood model of economic growth and environmental impact. The simple model is compared to historical data and modelled projections to demonstrate that growth in GDP ultimately cannot be decoupled from growth in material and energy use. It is therefore misleading to develop growth-oriented policy around the expectation that decoupling is possible. We also note that GDP is increasingly seen as a poor proxy for societal wellbeing. GDP growth is therefore a questionable societal goal. Society can sustainably improve wellbeing, including the wellbeing of its natural assets, but only by discarding GDP growth as the goal in favor of more comprehensive measures of societal wellbeing.”

Bear in mind there is a difference between **relative decoupling** and **absolute decoupling** - explained by e.g. Kate Raworth, and by UNEP e.g. here:

BRIEFING Green Economy **WHAT DO WE MEAN BY GREEN ECONOMY?** By Doreen Fedrigo-Fazio and Patrick ten Brink With input from: Samuela Bassi (IEEP), Jennifer Emond (UNEP), Thierry Lucas (UNEP), Leonardo Mazza (IEEP) and Axel Volkery (IEEP MAY 2012 <https://wedocs.unep.org/bitstream/handle/20.500.11822/8659/-%20Green%20economy%20what%20do%20we%20mean%20by%20green%20economy%20-2012Main%20briefing%202012--Final.pdf>

And perhaps easier in this 2017 UNEP pdf:

<http://wedocs.unep.org/bitstream/handle/20.500.11822/14816/Deep%20dive%20presentation%20-%20Resource%20Efficiency.pdf>

Climate tipping points

Key ref on climate tipping points: Steffen, Rockstrom et al. **Trajectories of the Earth System in the Anthropocene** – PNAS, 6aug18 <http://www.pnas.org/content/early/2018/08/07/1810141115>

A recent major example: **Paris global warming targets could be exceeded sooner than expected because of melting permafrost, study finds** - Planet on brink of 'tipping point' as thawing soil and sediment releases large volumes of carbon dioxide and methane into atmosphere - Tom Batchelor 18sep18 <https://www.independent.co.uk/environment/climate-change-paris-agreement-permafrost-melting-carbon-emissions-a8541686.html>

Refers to: T. Gasser, M. Kechiar, P. Ciais, E. J. Burke, T. Kleinen, D. Zhu, Y. Huang, A. Ekici, M. Obersteiner. **Path-dependent reductions in CO2 emission budgets caused by permafrost carbon release**. Nature Geoscience, 2018; DOI: 10.1038/s41561-018-0227-0 Research by International Institute for Applied Systems Analysis

Cited by e.g. **Paris climate targets could be exceeded sooner than expected** 17sep18

Summary: ‘A new study has for the first time comprehensively accounted for permafrost carbon release when estimating emission budgets for climate targets. The results show that the world might be closer to exceeding the budget for the long-term target of the Paris climate agreement than previously thought.’ <https://www.sciencedaily.com/releases/2018/09/180917111554.htm>

And: https://www.eurekalert.org/pub_releases/2018-09/iifa-pct091418.php

With reference to Steffen et al., Tim Radford of ClimateNewsNetwork writes that “researchers have raised the hazard of **“tipping points”** that could send the climate into a state of irreversible change. Professor Steffen three years ago warned that of the nine safe “planetary boundaries” that kept Earth in a stable climate state, **four had already been crossed.**” - **‘Hothouse Earth could soon be unavoidable’**

<https://climatenewsnetwork.net/hothouse-earth-could-soon-be-unavoidable/>

He links to: <https://climatenewsnetwork.net/the-world-we-are-shaping-is-feeling-the-strain/> which refers to e.g. “Will Steffen [et al.] of the Stockholm Resilience Centre at Stockholm University and the **Australian National University** report in the journal **Science** that the world has now crossed four of nine planetary boundaries within which humans could have hoped for a safe operating space. The four boundaries are **climate change**, land system change, alterations to the biogeochemical cycle that follow phosphorus and nitrogen fertiliser use, and the loss of a condition called “biosphere integrity”.”

“the humans most implicated in this change so far are the 18% of mankind that accounts for 74% of gross domestic productivity.” These changes are associated with indicators that greatly accelerated since 1950, with ‘economic growth’ being one of them. https://www.eurekaalert.org/pub_releases/2015-01/igp-npd010915.php

Cumbria Uni. Ambleside IFLAS Sustainability Professor Jem Bendell’s 2018 review

<https://jembendell.wordpress.com/2018/03/22/a-summary-of-some-climate-science-in-2018/> – its section on multiple positive feedback mechanisms highlights contention and uncertainty as regards the timing of tipping points, such that we are playing a “Russian roulette” by not taking heed to the increasing risk.

Amongst his concluding personal remarks he writes: “All manner of personal and institutional pressures and incentives work towards making us ignore or de-prioritise the kind of information and analysis I have presented above.” I agree. However I am not convinced by his personal choice of “Dark Mountain” thinking of “inevitability”, as it might have the unintended psychological consequence in some people to become cynical towards achieving any success in engaging with and changing “the system” to comply with the Paris temperature goals. Not all climate scientists say that we are too late to avoid the unstoppably disastrous climate breakdown of around 2 degrees and above. Some say we still have a small window though rapidly closing. We must still push for a tipping point in social/political/economic changes and not present a narrative that is likely to make many resign to that being impossible.

I agree with Rupert Read’s criticisms of Jem Bendell’s paper – which matched my thoughts: https://www.uea.ac.uk/philosophy/news-and-events/-/asset_publisher/wb9yCV6vd5EC/blog/after-the-ipcc-report-climatereality-by-rupert-read

NETs, BECCS, CCS, CCUS ... - for a “business as usual” of high consumption, delay-action excuse for the rich?

Carry on with high emissions aviation, consumption, growth – because our children can pay the debt? Response by Alice Larkin: <https://climatestrategies.wordpress.com/2017/08/23/what-if-negative-emissions-fail-at-scale/>

Economic growth and planning

I have now written on this as a separate document (as an annex to the present document).

It is online via this shortened url: www.bit.ly/growth-cc-nppf

However I’ll retain here a few comments:

The NPPF’s core strategy of “Sustainable economic development” or “sustainable economic growth” is in many ways a contradiction in terms, typical of the NPPF and its regard to climate change and fossil fuel extraction.

I have added text to the annex document on the words ‘growth’, ‘development’ and ‘sustainable’ in the 2018 Revised NPPF. The word ‘growth’ is used a number of times and in a way which explicitly or implicitly implies it is an important aim to pursue.

However on the plus side, near the start of the document where core principles and aims for planning are set out, the word ‘sustainable’ is defined using the UN definition which implicitly points to ensuring necessary climate conditions and natural resources are maintained for future generations. I quote:

p.5:

7. The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs⁴.

⁴ Resolution 42/187 of the United Nations General Assembly.

Future possible additions

- Suggestions for a follow-up collation(s) (multi-author?) on the next steps on from the present work (as 1):
 2. An alternative narrative re-framing by using alternative yardsticks to growth such as well-being, prosperity(?), and the benefits to these of a cooperative (rather than competitive) and community approach (e.g. [Monbiot ref](#)). Also e.g. **FRAMING THE ECONOMY** - How to win the case for a better

system... - NEON, NEF, FrameWorks Institute, PIRC

<http://neweconomyorganisers.org/wp-content/uploads/2018/02/Framing-the-Economy--NEON-NEF-FrameWorks-PIRC-1.pdf>

3. What does the present work (1) and an alternative narrative imply for Cumbria and local (mainly small) businesses? See e.g. what KBB thinks on this re local small businesses and ProfGB re sustainability, and Dr JL re education re small businesses and sustainability.

- Link to aviation example, and frequent flyer levy.

- The academic green philosopher RR on “growthism” and degrowth.

- Thomas Piketty on growth – and critique of his work wrt e.g. climate change – such as by RR..