

**Title: Global warming, poverty, and hunger – do we care about the global health issues of sustainability?**

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**Abstract:** It is widely accepted in the scientific community, the international political community, and among the global “policy wonks” that issues of sustainability, including global warming, poverty and hunger are the major concerns for the 21<sup>st</sup> Century. To translate those concerns into remedial action requires a broad base of popular support. There is survey evidence of significant popular concern; whether answering “yes” to a survey question translates into something more meaningful is harder to gauge. An alternative measure of commitment, or a genuine appreciation of the scale of the problem might be reflected in information seeking behaviour: on line searches. A review of global, google search trend data from January 2004 to February 2016 shows declining interest in major issues of global sustainability, and persistent and possibly growing fascination with celebrities, entertainment, and consumer goods. While not definitive, the trends should give the global health community and policy makers pause.

**Main Text:**

The confluence of global warming [1] and human population growth [2] leaves little doubt that issues of sustainability will dominate global health in the 21<sup>st</sup> Century.[3] The modelling and the current empirical data suggest that over the coming decades, as a species, we are likely to exacerbate global problems in food production,[4] water availability,[5] pollution,[6] and species loss supporting human life.[7] There are almost daily reminders in the media of the global consequences of continued human activity from the scientific predictions of “super storms”[8] to our destruction of the world's natural wonders.[9]

But do we care? Do we care enough to take action?

To hold climate change to a global temperature rise of no more than 2° Celsius above its pre-industrial values has become the focus of intense international treaty negotiations.[10] Parallel to these efforts, the United Nations General Assembly passed Resolution A/RES/70/1, (Transforming our world: the 2030 Agenda for Sustainable Development) to move towards global sustainable development. The leading elements of the resolution addressed the “planet” (preventing climate change and environmental degradation) and the “people” (reductions in poverty and hunger).

International, political consensus, however is insufficient. Globally we need to move to actual commitments that are scalable, acceptable and sufficient; and such commitments require within country political will and a broad base of popular support.[10]

In 2013 a representative sample of individuals were polled in 19 high and middle income countries. [11] Together these countries contribute about 70% of the global greenhouse gas emissions. When participants were asked whether they agreed with the proposition: “We are heading for environmental disaster unless we change our habits quickly,” 78% of people agreed, and when asked about current climate change, 76% agreed it was due to human activity. There was no

country polled in which a majority of people did not agree with the propositions.

Scientists and Policy Makers could take heart from this. The poll results suggest that (a) the message is getting through – people should be concerned; and (b) there is a basis for action. But agreeing or disagreeing with a proposition in a survey is cost free. What evidence is there that any insight into the fragility of our planetary circumstances might produce observable outcomes in other aspects of people's everyday lives? This is, what health economists recognise as the problem with stated preferences.[12,13] It is easy to say what you will do, how much you will pay, or what your prefer, but doing is rather different saying.

To ascertain global trends in preparedness to do something about the major issues of sustainable development is complicated by a lack of obvious data sources. An alternative and complementary source of information lies in trend data from on-line searches, which are an expression of people's proximate interests and concerns.[14] While not the same as “doing”, in the context of moving from consensus to commitment around climate change and sustainable development, patterns of information seeking are highly relevant, because being informed is a necessary precursor to action. [15]

We looked at the monthly google trends data associated with three SDG targets from January 2004 to February 2016. We started by searching for the key term “global warming” (Figure 1, A). Searches of google trends return normalised data, so the month with the maximum number of searches is always scored 100, and other months represent a percentage of the maximum month's volume. The peak interest in global warming occurred in March 2007, in the lead up to to the fourth Intergovernmental Panel on Climate Change, and in the same month as the European Council approved objectives for the reduction of greenhouse gas emissions. The relative volume of searches reduced steadily from the 2007 peak. Relative search volumes ended in 2016 at levels even lower than 2004 – this notwithstanding the United Nations Climate Change Conference in Paris in 2015 (COP21). While the decline in search volumes for global warming was disappointing, we thought that other global concerns may have dominated people's interest.

We added SDG1 to the search, “poverty” (Figure 1, B). Poverty never showed the kind of surge in interest that global warming achieved, and whiled there is clear, seasonal variation in interest, the trend in search volumes is one of steady decline. In our third attempt to identify a ground swell of growing interest in large global concerns we added SDG2, “hunger” (Figure 1, C).

In early 2012 there was a sudden peak of interest in hunger that dwarfed the interest in global warming or poverty. In the graph, the hunger peak now represents the 100-benchmark and all other results represent search volumes relative to that peak. Global warming at its peak does not even reach 20% of the peak search volume for hunger. While surprised, we felt a certain satisfaction knowing that at least one of the major global issues was capturing people's on-line interest. That sense of satisfaction was, however, short lived. We realised that the peak of interest in hunger coincided with the release of the Hollywood blockbuster, “The Hunger Games.” The subsequent peaks coincided with the release of sequels. This meant that the actual interest in hunger as a global issue was probably closer to the pre-2011 trend, which was lower than poverty or global warming.

Cynicism bit, and we added “Kim Kardashian” as a search term (Figure 1, D). Ms Kardashian and the Hunger Games had similar peaks, but overall Ms Kardashian appears to have more sustained community interest. As a final act of flagellation we added “Samsung” in deference to the largest producer of mobile phones and numerous other consumer electronic goods. Samsung became the new 100-benchmark, peaking in December 2012. The seasonal peaks in search volume coincide with the annual Christmas shopping cycle.

Global warming, poverty, and hunger had flat-lined. They were so close to 0 as to be nearly indistinguishable. Consumption trumped sustainability.

We repeated the searches focusing only on results from Bangladesh. We chose Bangladesh because it is rated as one of the countries most vulnerable to climate change, and therefore (we reasoned) a country likely to exhibit greater interest in the consequences of climate change.[16] While Hollywood movies and American cultural icons did not demonstrate as strong local interest as in the global trend data, Samsung continued to dominate.

There are obvious limitations to this analysis. Google only represents part of the on-line search activity, and we limited ourselves to the English language search terms. It may also be that one can only search for “global warming” so many times before, either, a sense of ennui settles (which proves our point) or everything one needs to know is known. The results do, however, give pause. The science strongly suggests that urgent action is needed to address global warming and sustainable development. In the absence of significant change, the next 80 years will result in global health shocks for which we are ill prepared.[17] While people may be “concerned” or agree that it is a serious issue, global anthropogenic effects still do not have the same immediate interest as a new piece of consumer electronics, a block buster movie, or the prurient fascination with the life of a socialite. We may have persuaded ourselves, we may have persuaded government, but we have failed to bring the issues into the everyday. This is the challenge for Policy Makers, if the believe.

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**Fig. 1:** Time series graphs of relative search volumes (%) returned by google trends between January 2004 and August 2016 for global, keyword search data. **A:** searches for “global warming”; **B:** searches for “global warming” and “poverty”; **C** searches for “global warming”, “poverty” and “hunger”; **D** searches for “global warming”, “poverty”, “hunger” and “Kim Kardashian”; **E** searches for “global warming”, “poverty”, “hunger”, “Kim Kardashian”, and “Samsung”.

