Comments on GAI Paper

My congratulations to your team on this excellent, timely initiative! I really appreciate the careful, rigorous, comprehensive approach that you’ve taken to data collection and index number construction. I hope that the comments below will be helpful. I have written them serially, while reading the paper.

On the objective: Seeing real results immediately. Adaptation investments have different gestation periods. Is it advisable to lock in so unequivocally?

On the objective: “The GaIn™ model is intended first and foremost to be a tool that decision makers can use to save lives.” This may be too restrictive, for two reasons. First, even countries that do not suffer many climate-related deaths take heavy losses (displacements, injuries, economic damage) from climate events. Second, recorded deaths from climate events are sufficiently sparse in many countries that it is hard to use them as evidence for broader patterns of climate impact.

It’s not immediately clear to me that the Index of Economic Freedom should be the only index of economic readiness. How does this relate to other relevant measures from Kaufman & Kray and other sources? It might be a good idea to test with some correlation analyses.

I very much like your transparent approach to modeling and data use. Credibility will be highly dependent on common access to the underlying information.

I’m all for expositional clarity and simplicity, but is it possible that a 2x2 matrix could gain from adding intermediate cases (thus, 3x3)? Many climate indicators have an exponential distribution, with relatively few countries in the extreme high-risk category. A 3x3 approach would give you more ability to identify the truly extreme cases.

On assignment of weights to indicators in the three categories: It’s probably a good idea (you may well have already done this) to experiment a bit with weights and test the results against informed judgment. To repeat a prior point, I think you may want to compare rankings according to the index of economic freedom with rankings according to other indices of the regulatory and business environment.

On treating coastal as a category distinct from food, water and health. You may want to explain this in somewhat more detail, since the latter three categories apply in coastal areas as well.

Under biophysical impacts, Health: Proportion of population affected by climate events in recent decades (CRED). As you know, even CRED itself has questioned whether reports before 1990 provide a balanced indicator of impacts across countries (I cite CRED’s autocritique in my vulnerability paper). Your expert audience will be aware of this, so you might want to anticipate the critique.

On your scoring and normalization methodology: As you know, I have developed my indices with explicit reference to risks for representative members of the affected populations. Risk underlies your indicators as well, but its role is more diffuse. In checking your indicators, you might want to look for countries where your measures seem to diverge from explicit risk-related measures. This could provide useful food for thought about specification and weighting.

On index shifting to keep all vulnerability index values in the non-zero range: It may not matter too much within the numerical range you’re using, but additive shifts can have significant implications for proportional measures. To cite a crude example, imagine adding a million to each value.

On use of mobile phones for infrastructure indexing: My own experience in central Africa gives me some worry on this score. Many areas that have terrible road access have excellent cell phone coverage.

On readiness indicators generally: Experience suggests that local readiness is the key to damage minimization in many countries when climate catastrophes hit. But it’s not immediately clear that conventional measures of national governance capture local capability very well. The best indicator might actually be life expectancy, since it’s hard to budge that one without a lot of effective local action.

On the median GCM measure for precipitation: Might it be advisable to introduce some weighting for variance, since some countries may have much wider distributions around the median than others?

On the coastal vulnerability indicator. It might be worth devoting some additional thought to an adjustment for storm surge risk. Our own research suggests that introduction of this factor can have significant affects on country rankings.\

On water stress: Have you checked the water stress index work of the University of New Hampshire team?

Use of % of rural population: I understand the rationale here, but I’m not sure that this indicator adds value to the full set. Other indicators measure a lot of the factors that underlie rural vulnerability. And, as recurrent urban flood disasters show, massive squatter zones in unregulated urban areas are also subject to recurrent calamities.

On the medical provider index: This one’s notoriously tricky, since the spatial distribution of providers is so important. The life expectancy component of the HDI may well capture this effect more completely.

Indicator 18 isn’t clear: Do you mean GDP at purchasing power parity? Isn’t the same normalization potentially applicable to the other climate-related problems that you index?

Since your graphs show a strong correlation between income per capita and GaIn indices, is it possible that income per capita should play a more prominent role (either in isolation or in normalizations (as you’ve done for coastal zones)?

This is really careful, fully, documented index number work, and you’ve built an excellent foundation for credible publication here. I think you could strengthen it further by showing that (as I suspect will be the case, given the pairwise correlation patterns) your index rankings are quite robust to substantial shifts in the weights you assign to individual factors. This will make special-interest groups (and there are many …) more likely to accept your index as a guide for their operations.

On operational use: As you know, I spent a lot of time on this in my paper. It might be worthwhile for you to provide some thoughts and examples that would illustrate how decision makers could use GaIn for setting priorities and allocating resources.

Presentation of country cases: You might want to flesh out the climate component a bit more. Your country-specific information isn’t highly differentiated from a standard comparative development profile at this point.

On the CRED data. My current work is based entirely on persons affected, but my previous work combined this with persons killed in a weighted index. I recognize the problems with the mortality data, but they probably have some informational value nonetheless.