16 year old Greta Thunberg has done what more than 30 years of science have largely failed to do, she has pushed the climate crisis to the top of the international agenda. Her plea for action at the opening of the UN Summit on Climate Change Action\(^1\) drove home what she and millions of striking students have been saying for the past year: we need actions, not more words, with no time to lose. The present generation is enjoying the short-term benefits of postponement, and the youth will reap the consequences.

The Intergovernmental Panel on Climate Change, representing the best science available, has said as much. Its recent Special Reports, on the 1.5°C target\(^\text{ii}\), land\(^\text{iii}\) and oceans\(^\text{iv}\) have driven home as never before the crises we are facing and the catastrophic consequences of failing to act.

Those presently in power could be considered guilty of crimes against humanity, only in slow motion, as small island states vanish, coastal cities drown, and hundreds of millions are displaced by sea level rise, extreme storms, and persistent drought. We are trapped in an economic paradigm requiring endless growth in material consumption. The pursuit of profit by multinational corporations justifies any means in a globalized economy with no global governance. Corrupt governments hide behind a smokescreen of national sovereignty. The vested interests in the present system, both economic and political, control the levers of power and are doing everything in their power (which is considerable) to prevent change.

This is an existential challenge threatening civilization as we know it. We have been living for over a century off the cheap energy subsidy from fossil fuels, and our continued release of massive quantities of greenhouse gases is leading to climate catastrophe. Alternative energy technologies exist and could be scaled up rapidly, but we need to transform our built infrastructure, our transportation systems, our food production, our industrial processes and our individual lifestyles. This would be a massive challenge even if everyone was fully committed to making the changes required. When faced with the headwind of denial, resistance and inertia, we are failing to turn the corner.

Behind all of this is the clear fact that the climate crisis is a global problem requiring global solutions, not each sovereign nation going it alone. The climate does not respect borders, and
damaging emissions in any one country have global impacts. There could not be a clearer justification for global governance in the common interest.

What would be the aims of a global governance approach to the climate crisis? The science is clear on the impacts of greenhouse gases and the resulting global heating on the climate, and the global heating potential of each gas can be calculated. There are also reasonable estimates of the emissions of each greenhouse gas including carbon dioxide from different types of human activities, and therefore of national contributions, past, present and projected, to global heating. It is thus possible to set limits for greenhouse gas concentrations in the atmosphere beyond which any particular acceptable level of human-induced global heating, presently estimated as 1.5°C, would be exceeded. Model scenarios can calculate the emission reductions necessary to stay below that limit, or trajectories that might include overshooting the limit but then extracting gases from the atmosphere to come back to the limit. Of course, there are uncertainties around tipping points in the planetary climate system which could produce positive feedbacks, such as releasing the methane stored in permafrost and undersea methane hydrates, resulting in runaway global heating. The precautionary principle requires that we avoid approaching such uncertain tipping points, although some believe that we may already have passed the point of no return.

A global governance mechanism would need to determine an equitable allocation among countries of the reductions required to collectively respect global limits. This might include a consideration of historical contributions to the problem, present emission levels, the financial capacity to cover the costs of emission reductions and investment in alternatives, the technical capacity to plan and install alternatives, the governance capacity to manage and enforce the transition, the anticipated costs of adaptation to changes already underway that must be budgeted for, vulnerable populations to be protected, and the local availability of renewable energy resources that could be developed. Some consideration would also be needed of the liability of high emitting countries for the damage their emissions are causing to other countries. Liability and compensation are highly political issues because historically high emitters refuse to admit responsibility, knowing the financial consequences. The allocations of emission reductions so determined would need to be supported by binding global legislation, with incentives for desirable new investments and penalties for countries, corporations and other actors for failures to respect their allocated limits. This also means appropriate enforcement and dispute settlement mechanisms.

There are other ethical and practical dimensions of the transition to more sustainable energy, food production, and industrial systems that would need to be considered. Countries with weak capacities would need to receive outside support in the common interest. Workers and communities that have depended on emitting industries and damaging activities for employment and income will need to have alternatives developed for them. There are always winners and losers in any change, and if the losers are not offered another way forward, they will resist the change. Major parts of most economies will need to be reoriented in new directions.

Another role for global governance will be in organizing the adaptation of planetary society to the climate changes already underway, anticipating their consequences, acknowledging the need for solidarity with the victims, and acting preventively to reduce human suffering. A sea level rise of half a meter is already locked in, even if strict emission targets are met. Some island nations will become uninhabitable and disappear and many coastal populations displaced. Organizing the moving and settlement of displaced populations with no hope of return, estimated at hundreds of millions, will be a global challenge. Where is there room to receive them? How will new communities be built for them? What employment opportunities can be created for them? How can their cultures and social capital be safeguarded? Who will pay for all this? The rich have caused the problem, and the poor are the first victims.
From the perspective of building better global governance, addressing the climate crisis could be an important precursor. The scientific evidence is clear, the ethical responsibility evident, and the alternatives unthinkably catastrophic. Turning the UN Framework Convention on Climate Change into a body with the capacity to adopt and enforce binding legislation and to negotiate the equitable sharing of responsibilities both for emissions limits and financial compensation, in a significant step beyond the 2015 Paris Agreement, could be a first example of just and effective global governance in one narrow area. As governments see the obvious benefits and the equitable sharing of costs from such an approach, and learn to trust each other and the supranational institutions that they create, a first step will be taken that could subsequently be enlarged gradually to other domains requiring global governance. The European Union started as a simple coal and steel community before gradually expanding its scope. Action to prevent a climate catastrophe could serve as a similar example at the global level.

v Ibid.