

A Rationale for a National Organization to Leverage the Expertise of the Design and Planning Professions and Institutions to Address the Impending Catastrophic Impacts of Climate Change

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Leading climate and global scientists now think that the most recent report of the Intergovernmental Panel on Climate Change (IPCC) underestimated the rate and extent of global climate change. Recent empirical observations indicate that climate change has accelerated, with worldwide emissions of greenhouse gases (GHG) growing 30% faster than predicted, the southern oceans sequestering a smaller percentage of emissions, and terrestrial CO₂ sequestration slowing because of droughts. As a result, CO₂ concentrations in the atmosphere have increased even faster than the increase in emission rates. Clearly observed impacts, such as the dramatic decline in Arctic ice cover, more severe weather events around the globe (tornados, typhoons, droughts and floods), and rapidly retreating glaciers, all directly reflect this acceleration and add to the concern. The new data suggest that the probability of experiencing the extremes of climate change has become much higher than previously thought and the consequence on human health, safety, security and well-being may be dire.

To date, most of the responses and planning for climate change have assumed a steady, linear increase in GHG emissions and climate change. The hypothetical scenarios for reducing GHG emissions—like the Pacala/Socolow “stabilization wedges” and the McKinsey “cost curve for greenhouse gas abatement”—assume a slow growth rate over decades, allowing 50 to 100 years to stabilize emissions (at much higher levels than today).¹ These strategies may be much “too little, too late” to avoid catastrophic climate impacts on humanity. In response to this newly perceived urgency, scientists at Lawrence Livermore National Laboratory have called for Plan Z. If Plan A is business as usual, and Plan B the “too little, too late” scenarios, the Livermore scientists think we need a Plan Z (for zero emissions or our contingency plan of last resort) that drastically reduces emissions within decades. The scientists at LLNL have speculated that to be successful, Plan Z may require the kind of national mobilization that occurred in response to World War II.

Reducing GHG emissions, not just slowing their growth, presents an enormous challenge. The global economy as well as our political institutions and processes depend on a carbon-based energy system. Influenced by both religious and secular ideologies, they have been slow to respond to scientific predictions in the face of more immediate human needs. While we already have some low-risk or “no regrets” strategies like energy efficiency, we do not have a clear idea of how to achieve Plan Z’s more drastic reductions. In spite of a grassroots movement to reduce GHG emissions, political leaders, facing conflicting recommendations, have been reluctant to act without a clear plan. Simply stated: “Without a way, there is no will.”

To achieve a clear way forward, global societies need more planning, design, and research that carefully describe the physical, social, economic, cultural, and policy changes involved in each scenario. Time is of the essence, since some scientists think that the current concentration

¹ See S. Pacala and R. Socolow, *Science*, August 13, 2004, and McKinsey & Co., “Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?” <http://www.mckinsey.com/client/service/ccsi/greenhousegas.asp>.

of GHG (390 ppm) has already begun to create cumulative and extremely dangerous climate interference. We cannot wait for a comprehensive plan. We must move forward to quickly implement the low-risk, “no-regrets” options and to take action to promote a more sustainable future in both domestic and foreign politics. At the same time, we need to propose a process that will enable the planning, design, and research necessary to define the scenarios in Plan Z that are most likely to succeed, with good information and clear options available “just in time.”

Many of the available options described by Pacala/Socolow, although technically feasible, involve major technology development and cost reductions for widespread market acceptance. Carbon sequestration, biofuels from sources like “switch grass” that do not compete with food production, more efficient nuclear power that eliminates the waste disposal problem, and entirely new methods of withdrawing carbon from the atmosphere have all been the subject of major scientific research efforts. Unfortunately, most of these options are decades away from large-scale deployment. The more immediate options—such as energy efficiency in buildings and vehicles, land use and transportation planning that reduces vehicle miles traveled, lower carbon agricultural practices, investment in more efficient and low-carbon infrastructure, and the deployment of renewable energy and resources—all depend on how we plan, design, approve, finance, build, maintain, and operate our built environment. These immediate options are enmeshed in a complex web of legal, political, economic, and social constraints that drive current practices and limit their deployment. Nonetheless, when we reconsider currently disconnected energy, waste, water, and transportation systems in a whole-systems design approach, we can achieve tremendous efficiencies and synergies. Waste becomes energy, sewage becomes a water resource, and garbage powers alternate transportation modes that reduce vehicle miles traveled. Through better design and planning, we can reap double and triple dividends. But to unlock the legal and policy frameworks, change the economic incentives, and weigh the social consequences, this design approach must also improve the quality of people’s lives. Often this goal can be better served by redefining needs and aspirations than by increased efficiency or relying on renewable energy.

When we apply a whole-systems design approach at the scale of the neighborhood, the metropolitan region, the mega-region, the nation, and across international borders, we face the ultimate whole-systems design challenge. The challenges are more vexing and the solutions more complicated than climate change alone, with the obligation to other strong imperatives in energy and resource depletion, environmental pollution, epidemic disease, and geopolitical unrest. There is neither the time nor the money to solve the complex web of problems one at a time. The effort needs to be multi-sectoral, deeply interdisciplinary and multidisciplinary, and they should range in scale from the atom to the building to the city to the ecosphere. Although the focus will be on the designed environment, there is an underlying mandate to relate the work to other efforts in a larger, more universal campaign to save and regenerate the planet and human civilization as we know it. It must involve architects, communications designers, developers, ecologists, economists, engineers, industrial designers, interior designers, landscape architects, lawyers, planners, policy analysts, sociologists, and urban designers, among others. While the prospect of organizing such a collaborative effort may appear overwhelming, the planning and design process as practiced by the many environmental design disciplines and professions is ideally suited to lead such an effort. What we lack is an overarching, national organization to galvanize, convene, coordinate, and help conduct a whole-systems planning and design effort to arrest and even reverse global climate change.

Given the urgency and magnitude of the challenge, we propose the creation of a new national organization to lead this effort. The purpose of this new national organization is to convene the best, most innovative design thinkers from the multiple disciplines/professions involved in the built environment to identify and describe, in concrete physical and spatial terms, the most promising and effective whole-systems strategies and scenarios for reducing GHG emissions. Rather than compete with other national academies like the National Academy of Sciences or the National Academy of Engineering, this new organization must complement the work being done across disciplines and professions to create specific design alternatives that can focus and apply the detailed analysis and findings. The design process becomes a “search engine” for creative solutions. Most of the preliminary assessments of GHG-reducing scenarios have been primarily hypothetical and highly technical, based on scientific parameters. The preparation of whole-system design alternatives will allow for much more detailed assessment of barriers and practical steps in achieving wide-spread applications, estimating economic costs, and evaluating policy changes.

The challenge is profound, the solution is essential, and the time is now!