

# Climate Action Simulation: Clean Tech



**To:** Chief Negotiators for the Clean Tech Sector  
**Subject:** Preparation for the Climate Action Summit

Welcome to the Climate Action Summit. You and leaders from all relevant stakeholders have been invited by the UN Secretary-General to work together to successfully address climate change. In the invitation, the Secretary-General [noted](#) that: “The climate emergency is a race we are losing, but it is a race we can win...The best science...tells us that any temperature rise above 1.5°C will lead to major and irreversible damage to the ecosystems that support us...But science also tells us it is not too late. We can do it...But it will require fundamental transformations in all aspects of society—how we grow food, use land, fuel our transport and power our economies...By acting together, we will leave no one behind.”

The goal of the summit is to create a plan to limit global warming to less than 2°C [3.6°F] above pre-industrial levels and to strive for 1.5°C [2.7°F], the international targets formally recognized in the Paris Climate Agreement. The [scientific evidence](#) is clear: warming above this limit will yield catastrophic and irreversible impacts threatening the health, prosperity, and lives of people in all nations.

Your group includes chief executives, investors, policy experts, and scientists in the growing industries for renewable energy, clean tech, and technological carbon removal that are aimed at decarbonizing our world. These industries include: solar, wind, hydropower, geothermal, energy storage, fuel cells, electric vehicles, energy efficiency, sustainable materials and manufacturing, green buildings, and yet-to-be-developed zero-carbon energy and carbon capture technologies.

Your policy priorities are listed below. You can, however, propose, or block, any available policy.

- 1. Make fossil fuels pay their true costs through taxes and a high carbon price.** Fossil fuels still dominate the world energy system, and they are by far the biggest source of greenhouse gas (GHG) emissions that contribute to climate change. Market prices today do not include the environmental and social harms caused by fossil fuels (their “negative externalities”). Furthermore, governments globally provide \$775 billion to \$1 trillion annually in subsidies to the fossil fuel industry. Economists agree that a carbon price is the best way to reduce global greenhouse gas emissions. You want a high carbon price (well over \$50 per ton of CO<sub>2</sub>), perhaps phased in over time so the economy can adjust. The fossil fuel industry should be taxed to remediate the decades of harm and delay they’ve already caused. The tax revenues can help offset the costs for the world’s energy transition and aid vulnerable populations as they adapt to climate impacts that are already happening.
- 2. Subsidize renewable energy (e.g., solar, wind, geothermal, hydropower, and storage).** The renewable energy industry is growing rapidly, but still provides a small percentage of the world’s energy supply today. Subsidies will help your industry grow and develop the technology needed to replace more fossil fuels. Storage (e.g., batteries, thermal storage, pumped hydro) and “smart grid” technologies for electric power allow variable renewables like wind and solar to be integrated into the energy system while providing round-the-clock electric power.

3. **Promote energy efficiency and electrification of buildings and industry.** Energy efficiency means using less energy to provide the same service, such as heating, cooling, manufacturing, etc. Improving energy efficiency can dramatically reduce emissions and energy costs for energy intensive buildings and industries. Electrification means converting heating and cooling systems from fuels, such as oil and natural gas, to more efficient electric air and ground-source heat pumps, ideally powered by renewable energy.
4. **Promote energy efficiency and electrification of transportation.** About 15% of the world's greenhouse gas emissions come from transportation, currently powered almost exclusively by oil. Transportation demand is growing rapidly with economic development and greater affluence around the world. Greater efficiency in transportation would cut oil demand significantly. Electrification of vehicles would enable this important transport sector to shift from oil to renewably-powered energy.
5. **Decide whether to invest in research and development (R&D) for a new low-cost zero-carbon energy source.** Some scientists believe a new type of nuclear energy, such as thorium fission or nuclear fusion, would offer the best energy source for replacing fossil fuels, arguing that such technologies could provide low-cost, zero-carbon electricity at scale. Several prominent universities and companies are exploring promising new nuclear energy solutions. However, these new technologies are currently unavailable and would require substantial investment to become commercially viable.
6. **Decide whether significant developments can be made in carbon removal technology.** The emerging field of carbon dioxide removal (CDR) technology seeks methods to remove CO<sub>2</sub> already in the atmosphere. These technologies range from changes in agricultural practices that might be implemented today to speculative and unproven technologies like Direct Air Capture (DAC). Your group may decide to invest in these technologies.

### **Additional Considerations**

Cutting fossil fuel use is critical to reducing greenhouse gas emissions to mitigate global warming and other important public health concerns such as air and water quality. A transition to a low-carbon economy requires shifts in infrastructure, business models, resources, and investments. While these changes will impose some costs in the short run, the costs to society will be even higher if fossil fuel consumption isn't cut as soon as possible.

The costs of renewables like wind and solar, energy storage, efficiency and other technologies are falling rapidly through R&D, learning-by-doing, and economies of scale. The cheaper they get, the greater the demand, and the faster costs fall. Subsidies for clean tech will speed this virtuous cycle and speed the transition to a carbon-free, renewably powered, efficient and healthy world.

Advocate for policies to promote rapid growth of the emerging industries you represent, along with dramatic gains in end-use efficiency to provide the energy needed for economic development around the world. Remind others that people don't want tons of coal or barrels of oil—they want warm homes in winter and cool ones in summer. They want access to health care. They want good jobs, and opportunities for economic and cultural development. Energy efficiency, combined with clean, renewable, carbon-free energy, is the safest, cheapest, fastest way to provide people with the services and opportunities they need while reducing greenhouse gas emissions.

Although CO<sub>2</sub> from fossil fuel use contributes the most to climate change, other gases, including methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), are potent greenhouse gases, and their impact is growing. Global agriculture and forestry practices contribute greatly to emissions of these gases. Methane leakage also occurs in natural gas extraction and distribution. Policies that reduce emissions of other greenhouse gasses must also be enacted.