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Speaker
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"Climate Change the Quantifiable Sustainability Challenge"

Population growth and the pressures spawned by increasing demands for energy and resource-intensive goods, foods, and services are driving unsustainable growth in greenhouse gas (GHG) emissions. Recent GHG emission trends are consistent with worst-case scenarios of the previous decade. Dramatic and near-term emission reductions likely will be needed to ameliorate the potential deleterious impacts of climate change. To achieve such reductions, fundamental changes are required in the way that energy is generated and used. New technologies must be developed and deployed at a rapid rate. Advances in Carbon Capture and Storage, renewable, nuclear and transportation technologies are particularly important; however, global research and development efforts related to these technologies currently appear to fall short relative to needs. Even with a proactive and international mitigation effort, humanity will need to adapt to climate change, but the adaptation needs and damages will be far greater if mitigation activities are not pursued in earnest. In this review, research is highlighted that indicates increasing global and regional temperatures and ties climate changes to increasing GHG emissions. GHG mitigation targets necessary for limiting future global temperature increases are discussed, including how factors such as population growth and the growing energy intensity of the developing world will make these reduction targets more challenging. Potential technological pathways for meeting emission reduction targets are examined, barriers are discussed, and global and United States modeling results are presented that suggest that the necessary pathways will require radically transformed electric and mobile sectors. While geoengineering options have been proposed to allow more time for serious emission reductions, these measures are at the conceptual stage with many unanswered cost, environmental and political issues.

Biography

Frank T. Princiotta is the Director of the Air Pollution Prevention and Control Division at the United States Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory, Research Triangle Park, NC.