

Climate Change: The Challenges of Adaptation

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Earth's climate is changing, with the global temperature now rising at rates unprecedented in the experience of modern human society. While some historical changes in climate have resulted from natural causes and variations, the strength of the trends and the patterns of change that are now emerging indicate that human influences, resulting primarily from increased emissions of carbon dioxide (CO₂) from fossil fuels and other greenhouse gases along with the deforesting of the tropical rain forests, have now become the dominant factor. Recent studies by a global team of scientists concluded that since 2000, anthropogenic CO₂ emissions have been growing 4 times faster than in the 1990s and are now above the worst case emission scenario projected by the 2007 Intergovernmental Panel on Climate Change (IPCC) Assessment. These climate changes are being experienced particularly intensely in the Arctic where the average temperature has risen at twice the rate as the rest of the world during the last half of the 20th century. Widespread melting of high latitude glaciers, dramatic reductions of the summer sea ice in the Arctic oceanic basin and the rising permafrost temperatures across the Arctic region, present early and documented evidence of a strong climatic warming trend. Further, the marked acceleration of CO₂ emissions will have dramatic consequences during this century and beyond as CO₂ remains in the atmosphere for centuries influencing climatic processes across the globe. The current accelerating changing of the climate will result in increases of sea level of a meter or so this century and will continue to rise for centuries to come. These changes will alter the biodiversity of marine and terrestrial flora and fauna, and many aspects of human social and economic systems, particularly for the poorest of poor around the world. In summary, the current scientific projections of a warmer planet suggest a mean global surface temperature of 4.1 degrees C by the end of this century. The consequence of these projections clearly indicates that humankind and its social institutions will have major challenges to cope and adapt to these likely realities. Many national and local economies are already impacted by climate events, in the form of floods, droughts, heat waves, and tropical storms. This presentation will consider the need for scientific analyses to impact and extend our adaptation capacities and focus on international

exchange of adaptation experiences and plans, and identifying priorities for adaptation research, as well as discussion of possibilities of stabilizing climatic parameters at an acceptable level. In summary, we will explore these challenges, as they have profound implications for the economically developed world as well exacerbating consequences for poverty and hunger in the developing nations and their peoples, cultural stabilities, economic security, and human well-being of all peoples of the world.