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Session 7: Special lectures on Integrated Assessment Model in the Future

Modelling approach to bridge the climate change and SDGs

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Abstract

Researches that take into account both mitigation and adaptation become more and more important as evidences of rising risks due to climate change are growing. The five Shared Socioeconomic Pathways (SSPs) have been developed to analyze the feasibility of mitigation and adaptation of climate change under different socio-economic development paths. Another important modelling approach is to link mitigation and adaptation strategies with United Nations Sustainable Development Goals (SDGs). United Nations released the 17 Sustainable Development Goals (SDGs) and 169 targets which cover the three dimensions of sustainable development: the economic, social and environmental. Climate action is one of the most challenging goals, as on the one hand drastic GHG emission cuts necessitating major changes in energy systems and socio-economic structures are essential to prevent dangerous climate change, and on the other hand every country's domestic developmental goals must not be compromised. In order to achieve these goals, we need to identify future paths by taking into account various factors such as economic activities, lifestyles and environmental conditions. We have developed an integrated assessment model called AIM and applied it to assess policy options to realize sustainable development. Examples of issues assessed are i) leap-frogging development to a low carbon society, ii) competition of biomass energy and food production, iii) social infrastructure and low materialization, and iv) low carbon transportation. The analysis shows that technology and institutions are the key to address environment and development trade-offs, that quantitative assessment can provide information and insights for making innovative choices delivering co-benefits, and that integrated assessment tools provide such assessment, and thereby link science and policy, and improve effectiveness of policy-making.