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Strategic Decisions Making Analysis of the 2015 Paris Climate Change Negotiation

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Abstract

The 2015 Paris Climate Change Agreement stands as a transformative milestone in climate change negotiations. This historic summit united developed and developing countries in a binding commitment to combat the effects of climate change. Notably, even the largest greenhouse gas emitters, China and the U.S., displayed an unprecedented cooperative stance in addressing this global challenge. This study examines the agreement's sustainability, considering the collaborative efforts of both nations.

The Graph Model for Conflict Resolution provides a strategic framework tailored for complex scenarios involving multiple stakeholders and intricate decision-making dynamics. It forecasts potential compromise outcomes in real-world disputes, offering strategic insights. In this research, the GMCR framework analyzes the conflict among major Greenhouse Gas emitters during the December 2015 Paris Climate Change Agreement.
During the 2015 Paris climate negotiations, key emitters were identified based on their emissions. The United States contributed about 14.02% of total GHG emissions, while China accounted for roughly 29.18%. Developed countries, excluding the U.S., were responsible for approximately 19.52% of GHG emissions, and emerging countries, excluding China, contributed around 9.47%. Developing nations collectively accounted for about 0.02% of GHG emissions, constituting approximately 72.19% of global emissions.

The U.S. committed to reducing emissions by 26% to 28% below 2005 levels within a decade. However, challenges arose due to legal and political complexities, hindering their target achievement. China aimed to reduce carbon intensity by 60% to 65% from 2005 levels by 2030, increase non-fossil fuel energy consumption to nearly 20%, and enhance forest stock volume by about 4.5 billion cubic meters. China allocated $3.1 billion to support developing nations in addressing climate change. The European Union and Developed countries aimed for a minimum 40% reduction in domestic emissions below 1990 levels by 2030. Unique strategies were adopted; France focused on nuclear energy, and Germany prioritized renewables despite challenges like high energy prices. Emerging nations invested in renewables, energy efficiency, carbon pricing, and climate adaptation. The agreement acknowledged the differentiation between developed and emerging economies, granting flexibility to developing nations in emissions reduction goals. Developing countries submitted Nationally Determined Contributions (NDCs) outlining emission reduction commitments. They pursued policies, programs, and engaged in international mechanisms such as the Green Climate Fund for NDC implementation and climate adaptation.

The 2015 Paris Climate Change Agreement's dispute exemplified a pivotal moment in international environmental diplomacy. This intricate conflict encompassed diverse interests and responsibilities among nations, particularly China and the U.S., the largest emitters. The Graph Model for Conflict Resolution (GMCR) will delve into decision makers' strategies during the negotiation, aiming to reach a resolution. Additionally, the Prisoner's Dilemma, a classic game theory model, will shed light on how rational decision makers, despite potential benefits from cooperation, often make suboptimal choices due to uncertainty and differing interests. This model will depict the behavior of decision makers during the 2015 Paris Climate Change Agreement.

Keywords
Game theory, The Graph Model of Conflict Resolution (GMCR), Climate change, Conflict, Paris Agreement

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Biographies

Abdullah Alrabghi is an Associate Professor of Industrial Engineering at University of Jeddah. His research interests include Discrete Event Simulation and simulation based optimization. His current work examines advanced applications of simulation based optimization in industry where he published several conference and journal papers. He obtained his PhD in Manufacturing from Cranfield University (UK), his MSc in Engineering Business Management from University of Warwick (UK) and his BSc in Industrial Engineering from King Abdulaziz University (SA).

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Khalid Atallah is an Industrial Engineer graduate with expertise in project and performance management. He received his B.Sc. degree in industrial engineering from the University of Jeddah, Saudi Arabia, in June 2023. His research interests include conflict analysis, multiple criteria decision analysis, group decision and negotiation, and project management. His current work in Saudia Aerospace Engineering Industries (SAEI) at the Project Management Office (PMO) Department. His roles are project management, facilitating SAEI departments in ICF initiatives alignment, and developing a PMO dashboard for weekly reviews.