

## ECONOMICS RESEARCH SEMINAR



### “Spatial Nexus: Renewable and Nonrenewable Energy Consumption and CO<sub>2</sub> Emissions”

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#### **Abstract:**

Extensive research has explored the relationship between energy consumption, GDP per capita, and carbon dioxide (CO<sub>2</sub>) emissions per capita. Building upon this substantial body of literature, our study employs a dataset of 127 globally selected countries spanning from 1995 to 2022, using a spatial Durbin model to revisit this nexus from a spatial perspective, emphasizing interdependencies of the economies and spatial dynamics of CO<sub>2</sub> emissions. First, our results uncover the spillover effects of CO<sub>2</sub> emissions among geographical, institutional, and economic neighbors. Second, the direct effects of renewable energy consumption suggest that increasing renewable energy consumption in a country reduces its CO<sub>2</sub> emissions. The indirect effects of renewable energy consumption indicate that increasing renewable energy consumption in one country also reduces CO<sub>2</sub> emissions in neighboring countries. Third, most of the direct effects of non renewable energy consumption suggest that increasing non-renewable energy consumption in a country increases its CO<sub>2</sub> emissions. Similarly, the indirect effects show that increasing non-renewable energy consumption in one country leads to an increase in CO<sub>2</sub> emissions in neighboring countries. Thus, international environmental policies are critical in addressing global climate change and achieving the 2030 Sustainable Development Goals (SDGs).

**Friday Sep 11   ♦   4:00-5:15pm   ♦   MULH 3022**