

# Sustainability in the City and Beyond

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## The Formation of International Environmental Agreements

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In this paper, we examine the formation of international environmental agreements (IEAs). In an earlier study, Diamantoudi & Sartzetakis (2006) demonstrate that if the number of countries is greater than four, there exists a unique stable IEA with either two, three, or four signatories. The low signatory outcome is due to the strong free riding incentives created by the joint welfare maximization of the signatories. In our model, similar to D&S, each country's choice variable is carbon emissions. We show that without maximizing the joint welfare of signatories, there can exist a stable IEA of more than four signatories, and a stable grand coalition at the optimal level of emissions. We provide an analytical solution to the general leadership model. With more than two countries in the agreement, the welfare of signatories increases monotonically with respect to the number of signatories. We provide an example that shows that for any number of signatories in the coalition, the coalition is stable and the free-riding incentive is well-diminished compared to the welfare maximization setup.



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