

# Emissions trading enhances the social desirability of environmental improvement

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**Abstract:** This paper investigates the role of emissions trading in terms of the *impact on the social desirability of environmental improvement* in an economy with transboundary pollution. We assume a world economy with  $N$  countries, which are Pigouvian, without trade. We first show that emissions trading always makes environmental improvement in countries to import emission permits more socially desirable no matter how emission permits are allocated among countries at the initial time. Moreover, we assume that utility from consumption is expressed as a logarithmic function and the initial allocation of emission permits satisfies Pigouvian optimality for each country (that is, if the allocation is a Nash equilibrium in Pigouvian sense). Then emissions trading makes environmental improvement in every country socially desirable if and only if the rate of income growth of country is strictly greater than that of price rise of emission permit for the country. Finally, in this simple model, we point out that emissions trading equilibrium in general cannot be a Nash equilibrium whatever the initial allocation of emission permits is. This implies that emissions trading equilibrium is generally subject to an international social pressure to move to other states, so it is difficult to maintain emissions trading equilibrium however desirable it is.

**keywords:** Emissions trading; Pigouvian optimality; Social desirability of environmental improvement.

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