Fair waste pricing:

An axiomatic analysis to the NIMBY problem

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Abstract

A waste disposal facility has to be sited in one of several districts that produce different amounts of wastes. The construction cost of the facility depends on where it is sited. When a district accepts the facility, it bears a disutility. The problem here is to choose a siting district and to share the construction cost with considering fair compensation to the siting district. We provide a framework to normatively analyze this problem by means of fair allocation theory.

A *fair pricing rule* is a rule that selects a district so as to minimize the social loss, puts a negative price to wastes according to the loss, and gives a full compensation to the siting district. We show that this rule is the unique rule that satisfies certain efficiency, fairness, and robustness to strategic transfers of wastes. We also establish the nearly robustness of this rule to misrepresentation of disutility information.

Keywords: Cost sharing, Fair compensation, NIMBY (Not in my backyard), Nash implementation, Indivisible good, Location, Quasi-linear social choice, Reallocation-proofness, Strategy-proofness, Convex game.

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