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## **A GAME MODEL FOR ENVIRONMENTAL POLLUTION AND CONTROL IN LOCAL GOVERNMENT AND RURAL TOWNSHIP ENTERPRISE**

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### **Abstract**

Rural environmental pollution management is a societal issue involving multiple interested parties. However, when seeking to combat rural environmental pollution, local governments and local township enterprises can have the same and conflicting interests. Therefore, it is necessary to determine an equilibrium that maximizes the interests of both sides. To examine this dilemma, this study developed a game with incomplete information that described the possible interactions between local governments and local township enterprises. It was found that when collaboratively managing the rural environment, local township enterprises and local governments both supervised and constrained each other. To successfully promote interactions between these interested parties and ensure effective rural environmental governance, it is necessary to increase the status of environmental protection in local performance assessment mechanisms, reduce the cost of local government supervision, and increase environmental taxes and emissions reduction subsidies. The simulation experiments showed that the initial willingness of the local governments and township enterprises affected the convergence speed towards equilibrium, but not the convergence direction.

*Key words:* enterprise, environment, game with incomplete information, government, pollution

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