

# Postdoctoral Position in Environmental and Natural Resources Economics

## Environmental zoning in a game theory setting

<b>Research Unit</b>	CESAER, AgroSup and INRA Dijon
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<b>Duration</b>	12 months
<b>Period planned</b>	2017
<b>Key words</b>	Differential game, spatial game, zoning, optimal control

### CONTEXT

CESAER is a mixed research unit between AgroSup Dijon (engineering school in agricultural science) and INRA (French national research institute of agricultural science). It is mainly specialized in both sociological and economic analysis of rural spaces. This position will contribute to the research axis related to economic analysis of dynamics and planning of rural spaces. More particularly, the link between environmental zoning and the location of activities will be investigated in a game theory framework.

### TOPIC

A number of works listed below are looking for a spatial-dynamic optimality of environmental policies. The main contribution of these works is to add a dynamic component into the more classical research of spatial optimality. It is particularly relevant for a policy aiming the regulation of use of a natural resource which renewal takes time. The main result of these works is to recommend the introduction of policy instruments that affect choices at the extensive margin (land-use taxes or land zoning) in addition to more classical intensity oriented instruments (spatially differentiated tax on inputs or outputs). This position will look for the robustness of this result with strategic agents. For this purpose, a game theory framework will be added into the picture. Two main approach could be investigated: spatial game and/or differential games.

### REFERENCES

Goetz R.U., Zilberman D. (2000) The dynamics of spatial pollution: the case of phosphorus runoff from agricultural pollution, *Journal of Economic Dynamics and Control* 24, 143-163

Goetz R.U., Zilberman D. (2007) The economics of land-use regulation in the presence of an externality: a dynamic approach, *Optimal Control Applications and Methods* 28, 21-43

Liu X. (2006) A Spatial Supergame Model of Bilateral Interactions, Chapter Modeling Bilateral International Relations - Part of the series *Advances in Foreign Policy Analysis*, 37-64

Millock K., Xabadia A., Zilberman D. (2012) Policy for the adoption of new environmental monitoring technologies to manage stock externalities, *Journal of Environmental Economics and Management* 64, 102-116

Xabadia A., Goetz R.U., Zilberman D. (2008) The gains from differentiated policies to control stock pollution when producers are heterogeneous, *American Journal of Agricultural Economics* 90(4), 1059-1073

### ADDITIONAL INFORMATION

Salary of around (according to past experiences) 2 000 €per month.