

Procedures for Dealing with Transboundary Risks in Siting Noxious Facilities

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Hong Kong Siting Problems

- Proposed Liquefied Natural Gas (LNG) receiving terminal and associated facilities by China Light and Power Company Limited (CLP)
- Proposed waste incinerator by the Hong Kong SAR Government
- Upgrading of the Chemical Waste Treatment Centre by the Hong Kong SAR Government
- Proposed landfill expansions by the Hong Kong SAR Government
- Proposed central slaughterhouse by the Hong Kong SAR Government

Key Interested Parties

The developer who is interested in constructing the facility.

The affected public who both benefit from the facility and are affected by the risk.

Public interest groups who have their own agenda regarding future development projects.



Nature of the Problem

District Y is planning to site a facility that not only affects its own residents but also those of District Z.

There may be benefits to both Y and Z from having the facility, but it is likely that Y gains considerably more than Z does.



Questions to Be Addressed

(1) What actions should District Y take with respect to mitigating its risks, recognizing that the negative impacts (e.g., pollution) may extend beyond its own boundaries?

(2) Is there a role that a siting authority can play in managing these transboundary risks?

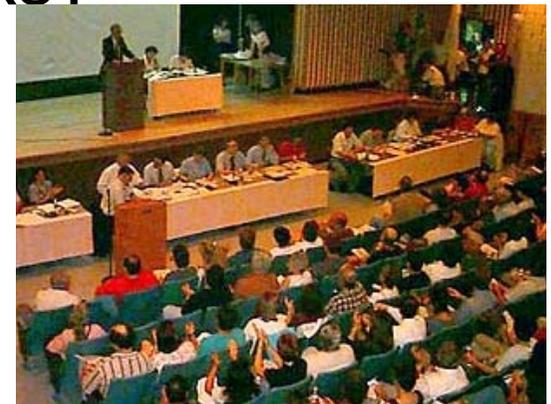
(3) What role can compensation or benefit-sharing by District Y play in satisfying the concerns of District Z?



Questions to Be Addressed

(3) What role should the public and different public interest groups have in making decisions regarding the siting and operation of certain facilities?

(4) How does one create trust in the process of siting facilities and managing them when there is great uncertainty associated with risks?



A Framework for Analyzing the Transboundary Problem

A private firm or developer is trying to find a home for an incinerator.

District Y has expressed an interest in hosting the incinerator right near its political boundary.

Residents in **District Z** are also subject to health and environmental risks from the facility.



A Framework for Analyzing the Transboundary Problem

A voluntary siting process has been proposed whereby all the residents in **District Y** can vote on a referendum.

Each resident j in District Y will determine its benefits and risks.

Benefits:

- Compensation, such as a reduction in property taxes;
- Community-wide or regional improvements such as additional health-related services or higher salaries to attract more and better teachers
- Guarantees against property value declines

Risks are characterized by a perceived probability (p_j) that some type of damage (D_j) will occur to individual j .

Developer has no economic incentive to provide residents in District Z with any benefit package or to reduce the risks facing this group.

Importance of Siting Authority

- Need for well-specified standards
- Role of monitoring and control procedures



Use of Compensation or Benefit Sharing

- Direct monetary payments
- In-kind awards
- Contingency funds
- Property value guarantees
- Benefit assurances
- Economic goodwill

Empirical Evidence on Compensation

Table 1. Effect of Compensation Measures in Increasing Acceptance of Facilities

	<u>Municipal Waste Landfill</u>		<u>Haz Waste Incin²</u>
	<u>Study 1¹</u>	<u>Study 2²</u>	
Acceptance without incentives	30%	25%	15%
29%			
Acceptance with economic benefits		50%	32%
51%			
Rebates on property tax	63%		
State money for schools	62%		
State money for roads		56%	

Empirical Evidence on Compensation: Nuclear Waste Repositories

**Table 2. Limited Effectiveness of Compensation:
the Case of Nuclear Waste Repositories**

	<u>Study 1</u>	<u>Study 2</u>	<u>Study 3</u>	<u>Study 4</u>	<u>Study 5</u>	<u>Study</u>
⁶ Acceptance without Incentives	22%	10%	27%	24%	60%	51%
Acceptance with economic benefits 25%						
"substantial payments"	26%					
"economic benefits"			14%			
\$1,000/yr for 20 yrs			26%	23%		
\$3,000/yr for 20 yrs			30%			
\$5,000/yr for 20 yrs			30%			

Impact of Perceived Risk to Self and Future Generations on Approval of Yucca Mountain

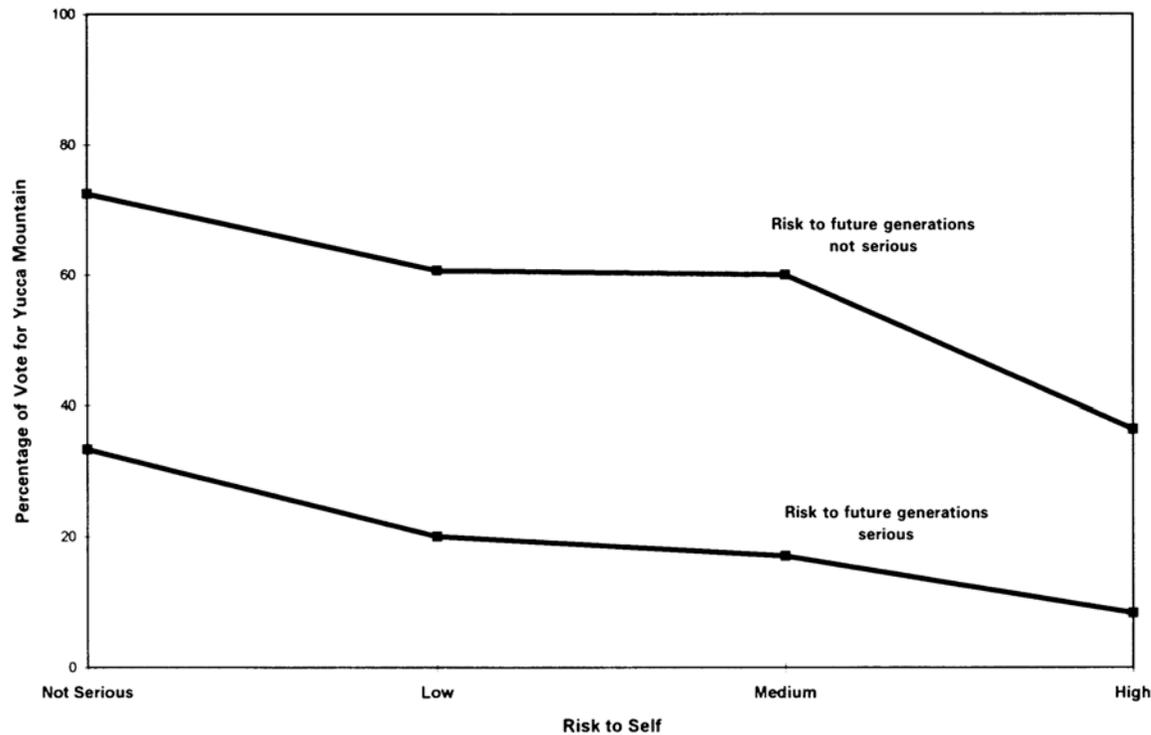


Figure 1. Approval of Yucca Mountain by perceived risk to self and risk to future generations.

Empirical Evidence on Well-Enforced Standards

Table 3a: Percentage Completely or Mostly Accepting Facilities Based on Combinations of Safety and Economic Benefits Measures

(Group 1 Respondents: Benefits Offered Least)

Sequence of Measures	Prison	Landfill	Incinerator	Repository
No Measures	30.5%	18.1%	14.5%	12.4%
INSPECT	54.9%***	53.7%***	42.1%***	31%***
APPROVE	51.8%	46.3%	36.8%	26.2%*
SHUTDOWN	59.8%	65.8%***	55.4%***	42.8%***
BENEFITS	62.8%	56.4%	42.8%***	31.7%

Statistical significance of change from cell above: *** = <0.01; ** = <0.01; * = <0.05

Empirical Evidence on Well-Enforced Standards

Table 3b: Percentage Completely or Mostly Accepting Facilities Based on Combinations of Safety and Economic Benefits

Sequence of Measures	Prison	Landfill	Incinerator	Repository
No Measures	39%	25.2%	14.5%	10.2%
BENEFITS	52.1%***	49.0%***	30.3%***	13.4%
INSPECT	65.1%**	67.7%***	47.4%***	30.0%***
APPROVE	56.8%**	57.4%**	39.5%*	25.5%*
SHUTDOWN	56.2%	75.5%***	52.0%***	42.0%***

Statistical significance of change from cell above: *** = <0.001; ** = <0.01; * = <0.05

A Siting Procedure for Dealing with Transboundary Risks

Stage 1: Screen appropriate sites and specify standards

Stage 2: Engage in a voluntary siting process



HEY! WHAT KIND OF IDIOT GAVE YOU A VARIANCE FOR THAT?!

General Conclusions and Recommendations

Need guidelines for higher quality public involvement

- What do we want from the public?
- Is training and education necessary so public can contribute?

Earlier involvement of the public

- Before an application is filed
- Public is often the last to know of siting problem

Greater reliance on “volunteer communities”

Defining role of public interest groups

Increase public trust