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Why is the Process of Siting So Difficult Today?

The difficulties in siting new waste facilities epitomizes the many challenges our society now faces in dealing with situations where there are perceived health, safety and environmental risks. All interested parties concerned with a proposed facility have a set of values and agendas that influence their attitudes toward locating the facility in someone's backyard. As a result, conflicts which result in an impasse between the developer and the potential host communities are likely.

Given the relatively high degree of media scrutiny of technology and its failures in recent years,[1] it is easy to forget that concern with siting noxious facilities is relatively new. Twenty-five years ago it was not difficult to find homes for nuclear power plants and waste disposal facilities. The public was less concerned with risk than now; special interest groups paid relatively little attention to the impact of technology on the environment; and environmental legislation was in its infancy. Regulatory bodies, such as the U.S. Environmental Protection Agency (EPA), were just beginning to be established.

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1 Eleanor Singer & Phyllis M. Endreny, **Reporting on Risk** (1993).

Today, waste-disposal facilities have become a focal point for environmental concerns and intense public opposition. A principal reason for this is that the public has grown more cynical and mistrustful of government and industry, what Laird has referred to as the "decline of deference."[2] In other words, the public no longer regards those stakeholders as having requisite legitimacy. Also, the public now recognizes that it is possible to stop facilities by working with community groups and national environmental organizations who have this as part of their agenda.

It is thus not surprising that few hazardous waste facilities (treatment, disposal and incineration) have been sited in the past 15 years despite the EPA's estimate that between 50 and 125 would be needed in the 1980's. No facilities were sited by 1986 and very few since. For example, 28 of the 34 solid waste incinerators proposed for California were either canceled or postponed in the late 1980's.[3]

Public empowerment in risk-management decisions poses strong challenges to the facility siting problem, largely because the process of communication shifts from a didactic, one-way process to a shared process in which the form of a project may change in light of public values. Those concerned with finding a home for a new facility need to be aware of how public values about technology are framed, their perceptions of institutional credibility and trust, the agendas of the different interested parties that motivate their participation in siting debates, and the uncertainties that surround the effectiveness of different participation processes.[4]

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2 F. N. Laird, *The Decline of Deference: The Political Context of Risk Communication,* 9 Risk Anal. 543 (1989).

3 Bradley Whitehead, *Who Gave You the Right? Property Rights and the Potential for Locally Binding Referenda in the Siting of Hazardous Waste Facilities* unpublished (1991).

The inability to find successful hazardous waste sites is part of a larger trend that encompasses many other facilities that benefit society as a whole but have undesirable impacts on the local region (e.g. AIDs treatments centers, prisons and recycling plants); Resolving Locational Conflict (R. Lake ed. 1987).

4 Roger E. Kasperson, *Six Propositions on Public Participation and Their Relevance for Risk Communication,* 6 Risk Anal. 275 (1986).

Improving the Process: The Facility Siting Credo

At a National Workshop on Facility Siting in 1990, a group of practitioners and researchers developed a set of guidelines for siting noxious and/or hazardous facilities. These guidelines, formalized in a Facility Siting Credo, are focused on the development of a workable and fair procedure for locating a facility as well as an outcome which satisfied distributional (equity) and benefit-cost (efficiency) considerations.[5]

The Credo makes a distinction between a set of procedural steps that help create a participatory environment conducive to the development of trust and consensus building, and a set of desired outcomes that identify the goal states the procedures should be directed toward. Table 1 summarizes the principal elements of the Credo.

Table 1
Principal Elements of the Facility-Siting Credo

Procedural Steps	Desired Outcomes
• Institute a broad-based participatory process	• Achieve agreement that the status quo is unacceptable
• Seek consensus	• Choose the solution that best addresses the problem
• Work to develop trust	• Guarantee that stringent safety standards will be met
• Seek acceptable sites through a volunteer process	• Fully address all negative aspects of the facility
• Consider a competitive siting process	• Make the host community better off
• Set realistic timetables	• Use contingent agreements
• Keep multiple options open at all times	• Work for geographic fairness

A study of 29 waste facility siting cases, both successful and unsuccessful, across the United States and Canada revealed that successful sitings were characterized by an atmosphere of trust between the proponent and the host community. By examining those factors which led to the actual construction of a facility, two features stood out: having a broad-based public participation process and the perception by host community residents that the facility was the best

5 Howard Kunreuther, Kevin Fitzgerald & Thomas D. Aarts, *Siting Noxious Facilities: A Test of the Facility Siting Credo,* 13 Risk Anal. 301 (1993).

solution to their waste problem.[6] Both of these elements should be considered in designing a siting process.

Relationship to Current Procedures

The Facility Siting Credo most closely reflects the *local rights approach* to siting discussed by Linnerooth et al. in describing procedures that have characterized the European and North American landscape.[7] This approach is best illustrated by recent successes in Alberta, Canada,[8] Eagle, New York[9] and Switzerland.[10]

In each case, the siting process was voluntary with some type of locally binding referendum to determine whether the community would accept the project. Compensation was provided so that the host community felt that it was at least as well off with the new facility than without it. Public participation was essential to the process, so that trust could be established between the concerned citizens and the other interested parties. Finally a set of design conditions as well as monitoring and control measures were established so that the facility was perceived to be acceptably safe today and over time.

As an illustration of the *local rights approach* consider the process of locating a hazardous waste disposal facility in Alberta, Canada. Fourteen communities were initially interested in serving as a host with nine of them subsequently eliminated on either environmental grounds or because of vocal public opposition. Planning grants were given to the communities that expressed an interest in hosting the facility. These funds were used for feasibility studies, public information efforts and other public outreach efforts. The acceptance of a grant did not imply a commitment to accept the facility. Rather the funds were designed to initiate a process so that the community or region was involved from

6 *Id.*

7 Joanne Linnerooth & Benjamin Davy, **Hazardous Waste Cleanup and Facility Siting in Central Europe: The Austrian Case** (IIASA 1994) (The four approaches considered are technical, local rights, economic welfare and distributive justice.)

8 Barry G. Rabe, **Beyond NIMBY: Hazardous Waste Siting in Canada and the United States** (1994).

9 Personal communication between Howard Kunreuther and Philip Angell, Browning-Ferris Industries, Inc., April 1993.

10 Bruno S. Frey & Felix Oberholzer-Gee, *Fair Siting Procedures: An Empirical Analysis of Their Importance and Characteristics*, **J. Pub. Pol. Anal. Management** (in press).

the outset and can specify conditions, including compensation arrangements, that would make the site acceptable.

Although Alberta did not actually have communities compete against each other there were two towns which both expressed an interest in having the facility. Swan Hills was chosen by the province to site the facility because they did not have fierce opposition from the surrounding rural population. The hazardous waste treatment center in Swan Hills promised 55 new jobs and convinced town leaders that other new developments such as a new hospital would now be feasible. The other town, Ryley, was disappointed with the outcome and placed a newspaper ad indicating that they should have won.[11]

Incorporating Fairness Issues

One of the key features of the Siting Credo is the importance of having an outcome that is perceived to be fair by the different interested parties. Young has suggested the four P's as principles of fairness which should be considered in making allocation decisions: parity, priority, proportionality and progressively.[12]

In the context of siting, *parity* would imply that the community that obtains the facility would be at least as well off by hosting it as the other communities that were not "lucky" enough to have it located in their backyard. Compensation or benefit-sharing plays an important role in helping to obtain parity with those who benefit from having the facility providing the funds to the host community.

Another way of achieving parity is to restrict potential siting locations to areas which do not have noxious facilities in their backyard. To the extent that minority populations, those in poor health, and other vulnerable groups live in poor areas, the process may be viewed as a breach of environmental justice since there will be a predominance of hazardous and otherwise undesirable facilities close to these groups.[13] Poor communities are the ones most likely to house these facilities today.[14] If the parity principle was applied in this way, these locations

11 Howard Kunreuther, Joanne Linnerooth-Bayer & Kevin Fitzgerald, *Siting Hazardous Facilities: Lessons from North America and Europe* in Energy Environment and the Economy: Asian Perspectives (P. Kleindorfer, H. Kunreuther & D. Hong, eds. 1996). For more details on the Alberta case, *see* Rabe, *supra* note 8.

12 H. Peyton Young, Equity in Theory and Practice (1994).

13 Robert D. Bullard, *Waste and Racism: A Stacked Deck?* Forum for Applied Research and Public Policy, Spring 1993, at 35.

would be excluded from consideration even if they would have an interest in hosting another facility.

Priority implies that the community that has the greatest claim to the facility should obtain it. Technical feasibility and cost considerations (i.e. construction and permitting costs, transportation costs) would play a role in determining which communities should have priority for hosting the facility. Communities that generate the most waste would be prime candidates for hosting a disposal facility.

The concept of *proportionality* implies that the benefits to the host community should be determined by the magnitude of the perceived costs and risks from the facility. The magnitude of the compensation should be proportional to the perceived negative impact of the facility. In addressing this fairness issue one sees the importance of designing a facility that is perceived to be safe by the affected public. Unless the community residents feel that they are protected by stringent standards and appropriate monitoring and control procedures, the costs of the facility will be so high that no amount of compensation will lead them to accept it.

Finally the concept of *progressivity* implies that the siting of a facility should help the disadvantaged more than those who are well off in much the way that a progressive income tax places more of a burden on wealthier individuals. If compensation were not provided to the host community, then facilities would be placed in areas with the highest income levels. If some type of benefits package were an integral part of a siting agreement then more generous compensation would be given to those areas who have lower per capita income levels. Such a compensation structure, coupled with the siting of new facilities in poorer communities, would lead to a more equitable distribution of wealth across the population than we currently have.[15]

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[14] V. Been, *Locally Undesirable Land Uses in Minority Neighborhoods,* 103 Yale L. J. 1383 (1993).

Hamilton has shown that private firms are most successful in finding homes for hazardous waste facilities in communities or regions which generate the least political opposition; J. T. Hamilton, *Politics and Social Costs: Estimating the Impact of Collective Action on Hazardous Waste Facilities* 24 RAND J. Econ. 101 (1993).

[15] This argument as to where to site facilities leads to the opposite conclusion than an environmental equity or justice argument which gave lower priority to communities with less wealth than to more advantaged areas.

Addressing Risk Perception Issues

Several Credo principles are designed to address risk concerns the public is likely to have. In this connection, one of the most important elements in the Credo is "Achieving Agreement that the Status Quo is Unacceptable." In other words, the status quo (e.g. the current disposal of wastes) becomes a relevant reference point from which one can determine the change in the associated risks by having a new facility. Gregory et al. have shown the importance of focusing on specific reference points in changing people's preferences for different policy alternatives with respect to environmental risk problems.[16]

The Credo also emphasizes the importance of "Guaranteeing that stringent safety standards will be met." In particular it emphasizes the need for monitoring and control procedures to allay public concerns regarding future risks. In developing safety standards it is important to let the public know the degree of uncertainty associated with the risk and how it can protect itself if something goes wrong.

Well-specified standards coupled with insurance may be two effective policy tools for dealing with this issue. The facility needs to be designed with features that addresses the concerns of scientific experts and the affected public regarding health and safety risks. Insurance can serve as a signal to the public that the facility is considered to be safe enough for an insurer to be willing to offer coverage against adverse impacts in the future.

Creating Trust

The Credo is designed to engender trust among interested parties in several different ways. Two of its key principles are "Institute a broad-based participatory process" and "Seek consensus." The experience in Alberta as well as European countries such as Sweden, the Netherlands and Austria have shown that effective programs of public participation and involvement can be designed to improve the public's knowledge of technical issues.[17]

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16 Robin Gregory, Sarah Lichtenstein & D. MacGregor, *The Role of Past States in Determining Reference Points for Policy Decisions,* 55 Org. Behav. Human Dec. Process. 195 (1993).

17 M. E. Kraft & B. B. Clary, *Citizen Participation and the NIMBY Syndrome: Public Responses to Radioactive Waste Disposal,* 44 W. Political Q. 299 (1991).

In seeking (but not necessarily achieving) consensus, value differences between the interested parties needs to be appreciated. Recently, Gregory and Keeney described a process for involving relevant stakeholders affected by the choice and then structuring their objectives to elicit these values. They point out that it is critically important to cast the decision context broadly enough that all interested parties agree on the set of alternatives. In the context of siting, there is a need to focus on the status quo, default options if no facility is found, as well as a set of candidate sites and technologies.

Certain types of compensation arrangements between the developer and the host community can also engender trust between them. For example, property value guarantees should a resident want to sell their house relieve anxieties regarding the potential negative economic impact that a facility is likely to have. Several companies such as Kodak and Champion International Corp. have established such programs so that residents who sell their homes can receive a fair price.[18]

Using a voluntary siting process with some type of formal referendum also helps to establish trust. Browning Ferris Inc. (Bfi) used this process in its Community Partnership Program in locating a New York solid waste landfill. One community expressed serious interest in hosting it, but the proposal was narrowly defeated in a referendum. When the neighboring community of Eagle discovered that Bfi was willing to leave the community without any protest or resistance, they expressed interest in hosting the landfill because they trusted the voluntary process used by Bfi. After considerable discussion and public participation, the community voted positively to host the facility.[19]

General Conclusions and Recommendations

Risk managers and risk-management institutions are faced with an ever-increasing set of challenges to fostering good relationships with the public as illustrated by the conflicts that exist in trying to site new facilities. The following conclusions and recommendations point toward ways that the social context may be changed to establish trust

18 Paul Kleindorfer & Howard Kunreuther, *Siting of Hazardous Facilities,* Ch. 11 in Handbook of Operations Research (S. Pollack, A. Barnett & M. Rothkopf eds. 1994).

19 *See supra* note 9.

among the different interested parties concerned with a particular risk management problem.

Earlier Involvement of the Public

Very often, the difficulties that siting proponents face in the public arena are brought about because those impacted by a project are among the last to know of its existence. Project development is a complex and risky process. For project developers, the road that leads from an idea to a construction permit or operating license is a long and hazardous one. Only a very small number of the projects that are considered actually make it to the point of filing an application with a regulatory or licensing agency.

Usually by the time an application is filed, many decisions have been made that are very difficult to reverse, making it difficult, if not impossible, for a proponent to incorporate the public's input. Project proponents need better advice on how to involve the public earlier in the development cycle. And, risk-management institutions need better guidance on how they can give that advice in a responsible way that is sensitive both to the needs of the public and to the constraints and problems faced by the proponents.

Increase Public Trust

We are currently at an important junction in the evolution of socially accountable risk management. All the research to date on the failures of risk management point strongly to the erosion of trust both in government and in many of our social institutions as an important causal factor in the conflicts that exist between the community of risk experts and the public.[20]

At this juncture, we need to move forward in one of two directions. One path that has been advocated by a number of researchers is to work toward increasing public trust in risk management. While it is much too soon to express either optimism or pessimism about the likely success of this strategy, it is a significantly challenging problem that at the moment appears to have no easy answers.

A second path leads in the direction of developing risk-management processes that don't rely on trust, or rely on it only

20 Paul Slovic, James Flynn & M. Layman, *Perceived Risk, Trust, and the Politics of Nuclear Waste,* 254 Science 1603 (1991); and Paul Slovic et al., The Dynamics of Trust in Situations of Risk (Decision Research 1993).

minimally. Although it is seldom acknowledged explicitly, many of the steps currently being taken by government and industry to involve the public through community advisory panels and the like are, in effect, establishing layers of oversight such that the checks-and-balances principles inherent in democratic governments are instituted within technological risk management. This may be a fruitful avenue to pursue, and research along these lines is certainly needed.