



Fair Siting Procedures: An Empirical Analysis of Their Importance and Characteristics

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Abstract

This article analyzes the reasons why individuals oppose the siting of nuclear waste repositories close to their hometowns. In a simple model based on survey data, we show that the willingness to accept such facilities largely depends on economic criteria, namely expected economic impacts and risk estimates. However, the predictive power of such a model is improved by focusing not only on the consequences—as economic models typically do—but also on the procedural aspects. We show that acceptable siting rules contribute positively to the willingness of local residents to host a noxious facility. Acceptable rules, it is found, are essentially fair rules.

SITING NOXIOUS FACILITIES

It has become increasingly difficult to site major capital investments such as airports, power plants, nuclear fuel reprocessing facilities, waste incinerators, and freeways. Although most of these projects are beneficial for society as a whole, they negatively impact their immediate neighbors. Hence, the completion of such facilities is often blocked by local opposition.

The economics textbook solution for the problem comes to mind readily: If the host community is compensated for all negative impacts of the noxious facility and is left some profit, it will voluntarily accept the siting decision. Economists have suggested a number of mechanisms based on this approach [O'Hare, 1977; Kunreuther and Kleindorfer, 1986; Kunreuther and Portney, 1991; O'Sullivan, 1993], and indeed, compensation is part of many siting procedures [O'Hare, Bacow, and Sanderson, 1983; Vari, Reagan-Cirincione, and Mumpower, 1993].

Although individuals are willing to accept substantial increases in risk to their health and safety in the workplace if they are properly compensated with higher wages [Jones-Lee, 1989], the success of introducing compensation schemes into siting procedures has been rather modest. We will argue that compensation can play an important role in overcoming opposition to locally

unwanted projects. If benefits packages are coupled with flawed siting procedures, however, they are perceived as bribes and may actually strengthen the local opposition. Furthermore, if monetary compensation is applied to large numbers of locally unwanted projects, it is apt to crowd out the individuals' intrinsic motivation to bear the costs of socially beneficial undertakings [Frey, 1993]. Our research focuses on the importance of siting procedures and their characteristics. Based on empirical analysis, we will show how the acceptability of siting rules influences the acceptance of siting decisions. Acceptable rules, it is found, are essentially fair rules.

In this article, we first discuss how siting procedures enter the individual decision calculus. Theoretical propositions regarding the functions of decision rules are derived. We then use the search for nuclear waste repositories in Switzerland to test the importance of siting procedures empirically. The next section examines the results of our survey. These confirm our proposition that the acceptability of siting rules contributes positively to the acceptance of siting decisions. We follow with a test of the relative acceptability of various siting rules and with an analysis of the determinants of acceptability. Our results point to fairness as the most important influence. As the relevant literature shows [Tobin, 1970; Elster, 1993], perceptions of fairness depend on the specific context. We discuss relevant criteria for a successful siting policy in the concluding section.

FAIR PROCEDURES

Although economic theorists have addressed the question of entitlements and procedures [for a recent discussion, see Sudgen, 1993; Sen, 1994], the latter play virtually no role in the standard analysis of choice. According to traditional economics, citizens living in a prospective host community will support the siting of a noxious facility if its construction and operation improves their discounted lifetime utility. Benefits associated with the siting of a facility include the creation of new jobs, increased tax receipts, and compensation payments. The risk posed by the facility, the negative economic impacts (property values, tourism), and the detrimental environmental changes are amongst the relevant costs. Where changes in the environment are important, not only use-values, but also existence values and bequest motives enter the individual decision calculus [Arrow, Solow, Learner, Portney, Randner, and Schuman, 1993]. The decision to support a planned facility, however, does not depend on the process which led to the selection of the community as a possible site. Economics is the analysis of consequences, not procedures. In this sense, much economic analysis is blind to history.¹

Consider the following siting rule: The location of a noxious facility is decided by a sealed-bid auction amongst prospective host communities. The community demanding the smallest amount of compensation has to host the facility. The compensation is financed by the other communities participating in the auction [Kunreuther and Kleindorfer, 1986]. Assume that a poor community, having turned in the lowest bid, finally has to host the project.

¹ It is not our point that the emergence of the current situation cannot be incorporated, but rather that it is rarely done. Conceptually, state-dependent preferences come very close to the approach suggested here.

From the economic point of view, this outcome is efficient and thus desirable. Given current endowments, siting the facility in a poor community has made all actors better off. Taking the status quo as the natural starting point is characteristic of the economic approach. It earns the discipline a reputation of possessing a realistic view of both human beings and the world. It does not matter why the poor community has limited funds. We will show empirically, that the general population does not share this view. Exploiting an inequitable distribution of wealth is seen to be unacceptable. We contend that neglecting the legitimacy of current endowments seriously limits the predictive power of economic models. Rules of decision specify the criteria upon which choices are based. In our previous example, determinants of the willingness-to-accept value entered the individual decision calculus. Specifically, the initial distribution of wealth played a crucial role. If the siting authority had decided to toss a coin to find a site, the wealth of the communities along with all other individual preferences affecting the willingness-to-pay value would have exercised no influence at all.

Proposition 1. Procedures matter: Procedures define the relevant inputs to decision rules and thereby help to shape an individual's possibility set. Procedures form an essential part of history.

Rational actors are aware that their decisions always take the status quo as the natural starting point. A person, however, can specify the aspects of the real world which ought to count. By choosing a specific decision rule or procedure, an individual opens up the possibility of correcting the state of affairs by means of neglecting those aspects judged to be unacceptable and emphasizing the ones found to be just. We, therefore, expect an individual's choice of procedure to depend on his perceptions of equity and fairness with regard to the status quo.

Proposition 2. Individuals exhibit strong preferences for specific procedures. In order to be found acceptable, siting procedures first have to meet the best technological standard requirement, and second, they must fulfill the criteria of fairness.

If the distribution of wealth is judged to be completely unacceptable, or if individuals refuse to assign risks of death and injury based upon wealth, they will not accept an auction as a means to decide the location for noxious facilities. Instead, they may prefer a lottery as the selection rule. If individual risk perceptions ought to count, however, the public may judge a willingness-to-accept approach acceptable, since these perceptions can easily be expressed [for a related point, see Tobin, 1970]. Following our propositions, we expect individuals to exhibit a higher willingness to accept a nuclear waste repository if they find the decision rule to be acceptable.

The role of fairness criteria in breaking siting impasses has been discussed extensively in the literature [Been, 1993; Lober, 1993; Young, 1994]. Likewise, experimental economics has produced a vast number of studies regarding fair behavior [for surveys, see Ledyard, 1995; Roth, 1995]. In a study similar to ours, on the siting of a high-level nuclear waste repository in Nevada, Easterling [1992] successfully tested for the influence of fairness considerations on the willingness to vote in favor of the facility. Nevada residents, it is reported, considered not only the risk to themselves and to future genera-

tions but also the relative safety of the proposed facility. They were inclined to support the repository if it was perceived to be the least risky among several options. Our research, unlike the Nevada study, is not concerned as much with the perceived fairness of the outcome, as with the procedural fairness. Our main interest is not whether people will look at the outcome of the site selection process as fair. Rather, the question we address can be stated as follows: Given the consequences of a noxious facility built in a specific community, does it make a difference how the site was chosen?

SITING A NUCLEAR WASTE REPOSITORY

In order to empirically test our propositions, we conducted a survey among the general population of Switzerland. In a personal interview, we asked more than 900 respondents about their attitudes regarding the siting of nuclear waste repositories in Switzerland. The interview, conducted at the respondents' homes by a professional survey institute, was comprised of more than 60 questions and lasted about one hour. Fifteen percent of the interviews were cross-checked for accuracy of the recorded answers. The data were found to be of good quality. We controlled the selection of respondents for age, education, and gender to guarantee representativeness of all subsamples.

The Swiss intend to build two types of nuclear waste repositories. The first facility for short-lived low- and mid-level radioactive waste (LLRW) is to be completed during the next decade. It is an underground, unmonitored facility. Its construction is estimated to cost US\$ 450 million, and the operation will create 25 local jobs. A second facility for long-lived high-level radioactive waste (HLRW) will be built around the year 2020. Most likely, it will be situated in northeastern Switzerland, 400 to 1000 meters below the surface. The Swiss hope to start exploratory drilling for this facility in 1996.

The Swiss site characterization and siting decision processes include the following four steps for both repositories [Seiler, 1986]: First, Swiss law holds the nuclear power plants responsible for the safe disposal of nuclear waste. In 1970, the Swiss utilities incorporated NAGRA.² The company is searching for feasible sites primarily according to geological and other technical criteria. Second, NAGRA's choice of a waste repository site is submitted to federal agencies that review the safety reports. Ultimately, the federal parliament must grant the license to construct a repository. In addition to obtaining federal permits, NAGRA also needs the approval of the host community and the host state. On the community level, a town hall meeting decides whether to allow the construction of the waste repository. On the state level, a referendum is held. In the early phases of the Swiss search for a repository, it was unclear whether the state and the host community would have an absolute right to veto the facility. The federal government and the developer regarded the site selection process as being exclusively under federal authority. However, the state amended its constitution to the effect that all underground facilities need a state permit. This amendment was legally challenged, but upheld by the courts. The state and the host community thus enjoy an absolute right to veto the facility.

² NAGRA is the acronym for "Nationale Genossenschaft für die Lagerung radioaktiver Abfälle," i.e., the "National Cooperative for the Storage of Radioactive Waste."

Table 1. Summary of groups differentiated and number of respondents (in parentheses).

Type of repository	General population	Hosts
Low- and mid-level radioactive waste (LLRW)	Cantons Aargau and Berne (206)	Central Switzerland (305)
High-level radioactive waste (HLRW)	Northeastern Switzerland (95)	Region Winterthur /Schaffhausen (307)

NAGRA now recommends building the LLRW repository in Wolfenschiessen, a town in central Switzerland. Federal experts have approved the safety reports, and Wolfenschiessen's town hall meeting agreed to the construction of the facility in mid-1994. At the time of our survey in spring 1993, the choice had been narrowed down to only four communities, including Wolfenschiessen. As for the HLRW facility, the region between the towns of Winterthur and Schaffhausen in northeastern Switzerland had been singled out as having first priority.

Our survey consisted of four subsamples: approximately half the respondents had to answer questions regarding a planned repository for LLRW. The others were asked identical questions regarding a repository for HLRW. Both groups were divided again to test completely different views: the first was asked about general solutions for the problem. These respondents lived in communities that were ruled out as sites (Cantons Aargau and Berne, small towns in northeastern Switzerland). The respondents' views, therefore, reflect the attitudes of people who would not be directly affected by a repository. The second group of respondents were asked what their reactions would be if they actually had to host a nuclear waste repository. These respondents lived in communities that were under consideration as sites (the towns of Wolfenschiessen and Bauen in central Switzerland and the various towns of the first priority region between Winterthur and Schaffhausen). We will call this latter group "Hosts" as opposed to the former which will be referred to as "General Population."³ Table 1 summarizes the groups differentiated in our survey.

The Model

All respondents of the Host samples were asked if they were willing to host a nuclear waste repository in their community. As we have made clear, the choice of their hometown was based on the current Swiss procedure. In our LLRW hosts sample, 50.8 percent of all respondents accepted the choice of

³ The two sets of questions differed as follows: General Population version: "On the whole, how acceptable do you find the possibility of having a commission composed of international experts, independent of the current developer and the federal government, make the siting decision?" As opposed to the Hosts version: "On the whole, how acceptable do you find it to site the nuclear repository in your community because a commission composed of international experts, independent of the current developer and the federal government, has decided so?" The questionnaire was thus designed to explore discrepancies between ex ante (General Population) and ex post (Hosts) considerations of procedural fairness.

their hometown as a site for the LLRW facility, 44.9 percent refused to host such a facility, and 4.3 percent did not care whether their community was chosen. Of the respondents in our HLRW hosts sample, 41 percent were willing to host a HLRW repository, 56.4 percent refused, and to 0.6 percent the choice did not matter.

We expect the willingness to host a nuclear waste repository to depend on the following variables:

- *Risk perceptions.* The riskier a repository is perceived to be, the less we expect respondents to agree to host the project.⁴ Risk perceptions profoundly influence the willingness to tolerate the siting of a noxious facility [Easterling, 1992; Dunlap, Kraft, and Rosa, 1993].
- *Economic impact.* Negative economic impacts will undermine the willingness to accept the facility.⁵
- *Attitude toward nuclear power.* In general, attitudes toward nuclear power influence the willingness to host a repository. There can be no doubt that a fruitless search for safe ways to dispose of nuclear waste would decisively diminish the future prospects of nuclear power. Hence, opposing a waste repository may be seen as one way to oppose the further development of nuclear power. In 1990, a Swiss national referendum regarding the future of nuclear power generation was held ("exit" proposition). The continuous production of nuclear energy was supported by 52.9 percent of the electorate, whereas 47.1 percent voted in favor of dismantling all existing plants. We asked respondents how they would vote today. The indicator variable identifies those who rejected the exit proposition and supported the continuation of nuclear power production. This group, we hypothesize, was inclined to accept a repository.
- *Importance of environment.* In contrast, we expect people who place a high value on the environment to refuse to host a waste repository. The tax variable indicates the respondents' willingness to support an increase in the federal tax rate for environmental purposes.
- *Property value and mobility.* A majority of the Swiss do not own their homes. Lower property values resulting from the construction of a waste repository would only affect a few people. We expect homeowners to exhibit a diminished willingness to accept the facility. Increased mobility, we suppose, increases the probability of acceptance. We used the number of times respondents had moved during the past 10 years as a proxy for mobility.
- *Income, age, education, gender, and political orientation.* Our model contains a number of personal characteristics which could exercise an influence on the willingness to accept a nuclear waste repository. Other studies have previously found that these variables influence voting decisions on environmental quality [Deacon and Shapiro, 1975; Fischel, 1979].

⁴ The wording of the question was as follows: "What is your overall risk estimate for the residents of your community if the nuclear waste repository is built here?" Perceived risk was measured on a scale from "1 = risk very low" to "6 = risk very high."

⁵ "If you think of all the economic impacts discussed so far, positive consequences like job creation and additional tax revenues, negative consequences like fewer tourists, do you expect a nuclear waste repository built in your community to have for you personally: positive economic consequences/no economic consequences/negative economic consequences?"

- *Acceptance of current Swiss procedure.* In line with our propositions, we finally included the participants' acceptance of the current procedure in our model. Increased acceptance reflects approval of the current criteria for site selection. This, in turn, will increase the willingness to accept the burden of hosting a nuclear waste repository.

Empirical Results

Table 2 lists the results of a binary logit analysis. The dependent response is an "accept" answer. Those who did not care about the construction of a nuclear waste repository were omitted from the analysis. The estimated coefficients can be interpreted as the log of odds-ratios for a dichotomous independent variable [Hensher and Johnson, 1981; Hosmer and Lemeshow, 1989]. Since these coefficients are not an intuitively meaningful quantity, we provide derivatives indicating changes in probability of accepting a nuclear waste repository. Holding all independent variables at their mean value (Table 2 was generated by evaluating the derivatives separately for each individual observation in the data set and then computing the mean), these derivatives show the effect of point-for-point changes in a single independent variable on the probability of accepting a nuclear waste repository. Thus, the derivative for the risk estimate variable with a value of -6 percent (LLRW) can be interpreted as follows: If two respondents, A and B, differ only in their risk estimates, A estimating the risk to be 4 points (on a scale of 1 to 6) and B judging it to be 5 points, the probability of accepting a nuclear waste repository is on average 6 percent lower for B than for A. If the only difference between A and B is that the former owned its home while the latter did not, A's probability of accepting a nuclear waste repository would be 10 percent lower than B's (LLRW derivative of -10 percent). If the intervals of the scale-predictors (risk, political orientation, and acceptability of procedure) are not perceived as even steps, the estimation method employed may produce distorted results. To test this possibility, we recoded the responses using a technique known as reference coding. This method creates a series of dummies where 1 corresponds to the different levels of the scale and 0 equals the lowest level (e.g., risk = 1). Reference coding did not affect the signs reported. In very few cases, changes between intervals are not statistically significant. As for the size of the effects, the derivatives reported in Table 2 can be regarded as good approximations of the undistorted values.

The results of the binary logit analysis are largely in line with our theoretical expectations. Higher perceived risk, negative economic impacts, and home ownership all decrease the willingness to host a nuclear waste repository. The probability of accepting a nuclear waste facility in one's hometown decreases by 6 percent (LLRW) and 8 percent (HLRW) with every additional point on the risk scale ("1 = risk very low" to "6 = risk very high"), *ceteris paribus*. Respondents who expect negative economic consequences from the construction of a waste facility exhibit a 14 percent (LLRW) and 18 percent (HLRW) lower probability of accepting it. Personal characteristics, such as income, age, education, gender, and political standing, do not exercise any significant influence. Mobility does not seem to matter, either. We cannot rule out, however, that mobility in the past is a poor proxy for future mobility.

As predicted, general support for the production of nuclear energy increases the willingness to accept the construction of a waste repository in one's

Table 2. Determinants of acceptance to host a nuclear waste repository.

Independent variable	LLRW hosts		HLRW hosts	
	Estimate (SE)	Change in probability of acceptance (t-ratio)	Estimate (SE)	Change in probability of acceptance (t-ratio)
Constant	30.25 (27.50)		-46.60 (26.68)	
Individual risk estimate ("1 = very low" to "6 = very high"; effect of 1-point increase reported)	-0.53 (0.14)	-6%** (-3.72)	-0.64 (0.11)	-8%** (-5.48)
Negative economic impacts expected (indicator, 1 = yes, 0 = otherwise)	-1.30 (0.42)	-14%** (-3.05)	-1.47 (0.39)	-18%** (-3.75)
Exit proposition rejected (indicator, 1 = yes, 0 = otherwise)	1.22 (0.39)	+13%** (3.09)	1.07 (0.37)	+13%** (2.88)
Higher environmental taxes (indicator, 1 = yes, 0 = otherwise)	-0.85 (0.38)	-9%* (-2.22)	0.70 (0.35)	9%* (1.96)
Home ownership (indicator, 1 = yes, 0 = otherwise)	-0.91 (0.41)	-10%** (-2.22)	-0.17 (0.37)	-2% (-0.46)
Number of changes in residency	0.07 (0.17)	+1% (0.40)	-0.24 (0.15)	-3% (-1.56)
Income (Swiss Francs 1000 per month)	-0.01 (0.03)	0% (-0.19)	-0.01 (0.03)	0% (-0.49)
Age in years	-0.01 (0.01)	0% (-1.02)	0.02 (0.01)	0% (1.77)
Education	0.10 (0.22)	0% (0.44)	-0.07 (0.21)	-1% (-0.35)
Gender (effect of being female)	-0.22 (0.38)	-2% (-0.58)	0.01 (0.37)	0% (0.03)
Political orientation ("1 = left" to "6 = right")	0.05 (0.13)	0% (0.40)	-0.05 (0.13)	-1% (-0.42)
Acceptance of current procedure ("1 = not acceptable at all" to "6 = completely acceptable;" effect of 1-point increase reported)	0.67 (0.12)	+7%** (5.52)	0.54 (0.10)	+7%** (5.42)
Prediction success		LLRW hosts		HLRW hosts
McFadden's rho-squared	0.501		0.433	
Correctly predicted answers	78.2%		75.5%	

Likelihood ratio tests of the null hypothesis that all coefficients except the constant are zero reject this hypothesis for both models: LLRW hosts: $2[LL(N)-LL(0)] = 199.404$ with 12 degrees of freedom, chi-square p -value = 0.000; HLRW hosts: $2[LL(N)-LL(0)] = 175.658$ with 12 degrees of freedom, chi-square p -value = 0.000.

* Statistically significant at the 95 percent level.
 ** Statistically significant at the 99 percent level.

hometown by 13 percent. Most importantly, for our discussion, acceptance of the current siting rule increases the likelihood of accepting to host the facility. For each additional point on a scale from "1 = current procedure not acceptable at all" to "6 = current procedure completely acceptable" the probability of accepting the siting decision increases by 7 percent. Thus, we find our first proposition to be confirmed: Independent of consequences, such as risk and economic impact, people's choices systematically depend on the particular siting rule employed.

A good number of social scientists object to the use of attitudes and opinions elicited in surveys; they argue that these are not relevant for behavior [Braden and Kolstad, 1991; Zaller and Feldman, 1992; Neill, Cummings, Ganderton, Harrison, and McGuckin, 1994; for a more favorable review of the contingent valuation method, see Mitchell and Carson, 1989]. In our case, this point does not seem to be valid for two reasons: Comparisons between the results of contingent valuation studies and research on revealed preferences indicate that most individuals answer questions as if they had to bear the consequential costs of their statements [Cummings, Brookshire, and Schulze, 1986; Pommerehne, 1988; Jones-Lee, 1989]. Moreover, in his study of siting decisions for noxious facilities, Hamilton [1993] points to the potential for political protest as the key determinant for location choice. Because the Swiss authorities were about to decide the location of the LLRW facility, participants had real incentives to state their preferences in order to politically influence the siting decision. Another indication that the survey method we used was considered relevant and important were a number of critical and highly emotional reactions from both regions where we conducted the Hosts versions of the survey. These reactions support our claim that our data do not represent arbitrary answers. We cannot rule out the possibility of strategic answers. Based on cross-checks; however, we are convinced that the responses are not strongly biased but represent what the citizens truly believe.

ALTERNATIVE SITING RULES

In order to test the relative acceptability of the current Swiss approach, we proposed a number of alternative siting rules to all respondents. These included: negotiations between the federal government and prospective host communities; a procedure where foreign experts take the siting decision; a national referendum; a lottery; and two procedures based on the price mechanism.⁶ According to the first pricing approach, the facility is built in the community asking for the smallest amount of compensation (willingness to accept). Following the second, the community exhibiting the lowest will-

⁶ Descriptions of the procedures in the survey include:

- Negotiations: "Let us assume that the federal government by parliamentary decree must negotiate with prospective host communities until one of them voluntarily accepts having a nuclear waste facility located on its grounds. Note that the federal government only negotiates with communities which are judged to be safe by NAGRA and by federal experts."
- Current Swiss procedure: "The process then, has two steps: The first involves NAGRA finding a technically suitable location for a storage facility. Before granting a permit to start exploratory drilling, local residents have the right to take exception. Federal agencies will review NAGRA's safety reports. The second step involves the parliament approving this site as a location where a facility may be built."

ingness to pay for not having to host the facility will be forced to accept it. All procedures were to be used to select the host community among a set of technically feasible sites. It was described as NAGRA's task to find technically suitable locations. This description, we believe, added considerably to the realism of the scenarios without distorting our results, because more than 80 percent of all respondents trusted NAGRA to make use of all technical options to guarantee the safety of the facility. Before stating the overall acceptability of each siting rule, participants were asked to rate all procedures in terms of the safety they provided for the host community, the time they consumed, their perceived fairness, and the degree to which they allowed residents of the host community to influence the siting decision.⁷ Overall acceptability was measured on a scale from "1 = not acceptable at all" to "6 = completely acceptable." Table 3 summarizes the acceptability of the various siting rules as perceived by the General Population groups.

As shown in Table 3, respondents of both General Population samples exhibit strong preferences for specific procedures. Mann-Whitney *U* tests comparing the two General Population samples to each other (not reported here) did not yield any significant differences. We now turn to a detailed discussion of these procedures.

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- Expert decision: "Let us imagine another possibility. Suppose a commission composed of international experts, independent of NAGRA and the federal government, were to decide the location of a nuclear storage facility."
 - Referendum: "If NAGRA had selected feasible sites and federal agencies had reviewed their safety reports, one could hold a national referendum to decide the location. In this case, the Swiss citizens decide by vote where to build a nuclear waste repository."
 - Lottery: "If NAGRA had selected feasible sites and federal agencies had reviewed their safety reports, one could decide by lottery which location would be the site for a nuclear waste repository."
 - Willingness to accept: "In Switzerland there are major differences between individual communities. Some of the poorer communities would welcome additional revenue. Such a community could be given a large sum of money in exchange for allowing a facility to be built in its region. The amount would have to be large enough so that the community would readily accept the storage facility. If several communities were willing to accept a nuclear waste repository in exchange for revenue, the community demanding the smallest amount of money would be chosen."
 - Willingness to pay: "On the one hand, no community will be thrilled to be selected as the site for a nuclear waste repository. On the other hand, all communities should help to solve the problems which concern all of Switzerland. One way out of this dilemma is to allow a community, which has been selected as a site, to pay a certain amount of money in exchange for not having to host the facility. . . . If it were the case that all of the selected communities were willing to pay to not have a storage facility, it would be built in the community that paid the smallest amount."

⁷ After describing the procedure itself and before recording overall acceptance for each particular siting rule, respondents had to rate each procedure as follows (we use the example of the current procedure):

- "If NAGRA and the parliament decide, the safety for the host community is . . ." (ranked on a scale from "1 = very low" to "6 = very high"). In what follows, this variable will be called "Safety."
- "If NAGRA and the parliament decide, the decision takes . . ." (ranked on a scale from "1 = a lot of time" to "6 = very little time"). This variable will be called "Time."
- "If NAGRA and the parliament decide, the result is . . ." (ranked on a scale from "1 = very unfair" to "6 = very fair"). This variable will be called "Fairness."
- "If you had to design a good siting procedure, how much importance would you attribute to the following characteristic: It should not be possible to build the facility against the wishes of a majority of the host community's residents." (rated on a scale from "1 = not important to all" to "6 = very important"). In what follows, this variable will be called "Local Influence."

Table 3. Percentage of respondents who rated the following procedures as acceptable.

Procedure	LLRW General Population	HLRW General Population
Negotiations	70.4%	73.7%
Current Swiss procedure	57.8%	51.6%
Expert decision	34.9%	33.7%
Referenda	33.5%	28.4%
Lottery	26.2%	26.3%
Willingness to accept	20.4%	20.0%
Willingness to pay	2.9%	5.3%

Note: An answer is rated as acceptable if the procedure was given 4 points or more on a scale from "1 = not acceptable at all" to "6 = completely acceptable."

Negotiations

Negotiations between the government and the prospective host communities were judged to be the most acceptable of all the procedures proposed here. The respondents apparently found the institutional design of this procedure, which seeks to counterbalance the government's power by granting the host community the right to veto the siting of a noxious facility, the most attractive. In a related question, 51 percent (LLRW) and 46 percent (HLRW) of the respondents decline to give the government the right to force the repository upon a community, even in the case where all negotiations end in a deadlock. The frequent use of mediation in many siting disputes [Renn, 1992] is additional evidence for the popularity of the negotiation approach. Even in cases where scepticism prevails in the beginning, carefully constructed mediation processes can be successful [Renn, Webler, and Kastenholz, 1994]. This may be due, in part, to the openness of the procedure: While all our other siting rules result in predefined outcomes (either to accept or reject a given facility), talks between the government and prospective host communities may result in changes to the technical design of the facility or in the provision of additional safety equipment. The hope that the government addresses the host community's concerns seems to be a cornerstone of acceptability.

Given the popularity of the negotiation approach, it would be interesting to explore a case in which more than one community is willing to accept the facility. Unfortunately, such data are not available. Thus, we cannot exclude the possibility that auctionlike procedures may be more acceptable if negotiations first established the willingness to tolerate the project. On the other hand, we have some evidence that the Host respondents, who were initially opposed to the siting of the facility, would accept it if multiple repositories were built in different regions at a higher cost.⁸ Approximately one fourth of the Host respondents, who were initially opposed to the project, would sup-

⁸ "Would you support the construction of a nuclear waste repository in your home town if NAGRA built several smaller repositories in different regions of the country instead of one large facility? Consider that the construction and the operating costs of several facilities will be higher." This item was presented only to those initially opposed to the siting of a facility.

port the construction of a smaller facility in their hometown if this repository were not the only one. Based on local preferences, it may be advisable to construct several smaller facilities if the negotiation approach would lead to several willing communities.

Pricing Approaches

Procedures based on the price mechanism were judged to be the least fair despite the many essential characteristics they have. For example, a voluntary sealed-bid auction, in which the community with the low bid hosts the facility and receives the high bid in return, is both incentive compatible and will have the community with the lowest environmental cost host the repository [O'Sullivan, 1993]. Outside the economics profession, however, the properties of pricing approaches are not much appreciated. Monetary compensation, as such, is rejected in principle: We asked all General Population participants to state a suitable compensation for a family like their own for accepting a nuclear waste repository. Stating that they objected to monetary compensation in principle, 56.8 percent of the LLRW group and 69.5 percent of the HLRW respondents simply refused to answer this question.

Results from the Host versions of the survey point in the same direction. Under the current siting procedure, 50.8 percent of the LLRW hosts and 41 percent of the HLRW hosts are willing to host a nuclear waste repository. When we asked the same question again, but added that the parliament when granting the construction license would also decide to monetarily compensate the host community, acceptance rates *dropped* to 24.6 percent (LLRW) and 27.4 percent (HLRW), respectively. These results are in line with other empirical studies which also have not found a correlation between additional tax rebates and acceptance of siting decisions [Kunreuther and Easterling, 1992]. Apparently, there are limits to compensating risks of death and injury. In much of the recent research in siting, economists have recognized that unless safety standards are met compensation approaches are unlikely to work.

As one might expect in the face of positive transaction costs, the allocation of property rights exercises a considerable influence on the acceptability of siting procedures [Coase, 1960, 1988]. Granting a community the right not to host any facility contributes positively to the acceptance of the pricing approach. The willingness-to-accept procedure is not rated as poorly as the willingness-to-pay decision process.

Lottery

The impartiality of a lottery was judged to be its key merit. For this reason, lotteries have often been used for socially difficult decisions. In the United States, the draft for the Vietnam War was based on a lottery system, and the canton Zurich selected via lottery the drug addicts for the state provision of illegal drugs. Many social scientists recommend the use of lotteries to reach fair and impartial decisions [Goodwin, 1992; Burnheim, 1985; Elster, 1993; for locally unwanted projects, see Kunreuther and Portney, 1991]. The General Population respondents, however, did not find lotteries to be a very acceptable decision process for siting nuclear waste repositories. We will demonstrate that—contrary to the perceptions of many social scientists—lotteries are not perceived to be very fair. Other empirical studies support

this observation. Linnerooth-Bayer, Dary, Faust, and Fitzgerald [1994] report that only 38 percent of their respondents regarded the use of a lottery to site a hazardous waste facility as fair, even if the communities were "all about equal" on the criteria the respondents had identified as important for siting rules.

Bureaucracy and Referenda

In economics, the degree to which bureaucratic and parliamentary decisions reflect the citizens' preferences is analyzed with much scepticism [Tollison, 1982; Breton and Wintrobe, 1982; Tullock, 1965]. In order to restrict the discretionary power of both politicians and bureaucrats, referenda and initiatives can be introduced into the political process [Frey, 1994]. Bearing this in mind, the acceptability ratings of the current Swiss procedure, the expert decision, and the referenda present a puzzle. Referenda, it would seem, would be attractive to General Population respondents who know they will not receive a nuclear waste repository. Based on the preferences of the whole constituency, socially beneficial projects cannot be blocked by a small minority under a referenda procedure. But both expert-driven procedures, the current approach as well as the siting decision by foreign experts, were judged by the General Population respondents more favorably than referenda. Apparently, the ability of bureaucracies to reach acceptable and impartial decisions is perceived to be greater by the general population than by economic theorists studying rent-seeking behavior. A preference for bureaucratic decision-making has been found in previous studies [Frey and Pommerehne, 1993].

Ex Post Acceptance

To devise a rule applicable to others is one thing, to accept procedures determining one's own fate is another. A siting rule leading to the selection of one's hometown may always be judged unacceptable simply for reasons of outcome. In order to test the stability of preferences for procedures, we presented the current Swiss procedure, the lottery, and referenda to the Host respondents. They had to rate the acceptability of these procedures assuming that all would lead to the selection of their hometown. For reasons of interviewing time, only three procedures could be tested. Table 4 summarizes the results of all samples.

Both General Population and Hosts exhibited preferences for specific siting rules, despite the fact that the latter had to rate these procedures assuming that all would result in the selection of their hometown as the site of the nuclear waste repository. The General Population and Hosts respondents ranked all of the procedures identically. There are, however, marked differences between the perspectives of the General Population and the Hosts. Mann-Whitney *U* tests yield significant differences for referenda and lotteries. Both are judged to be significantly more acceptable by the Hosts.

These differences between the Hosts and the General Population samples may be a result of learning. According to the economic approach to information [Lamberton, 1971], residents living in Wolfenschiessen (the town designated as the site for the LLRW repository), are, on average, better informed than the general population or even than the hosts for the high-level facility planned to be built sometime in the next century. It has been empirically

Table 4. Percentage of respondents who rated the following procedures as acceptable.

Procedure	LLRW		HLRW	
	General Population	Hosts	General Population	Hosts
Current Swiss Procedure	57.8% (32,584)	50.8%	51.6% (14,728)	55.4%
Referenda	33.5%** (25,143)	48.2%	28.4%** (11,371)	47.6%
Lottery	26.2%** (25,752)	35.4%	26.3%** (11,486)	40.7%

Note. An answer is rated as acceptable if the procedure was given 4 points or more on a scale from "1 = not acceptable at all" to "6 = completely acceptable." Values in parentheses correspond to the test statistic of a Mann-Whitney U test. They reflect differences in rank sums between the General Population and the Hosts subsamples.

* Statistically significant at the 95 percent level.
 ** Statistically significant at the 99 percent level.

shown [Oberholzer-Gee and Frey, 1995] that the informational activities of the developer have decisively influenced the risk perceptions of Wolfenschies-sen's residents. The number of LLRW hosts who dismissed the risks associated with the repository as negligible is about two to three times higher than in the other subsamples. Although deep-rooted beliefs about the safety of nuclear technology are the most important determinant for risk perceptions, access to information is another factor that needs to be considered.

As we will discuss in the next section, the poor rating of lotteries is partly explained by their mediocre performance in producing safety. As risk judgments become more optimistic, this shortcoming loses part of its importance. This is one possible, and admittedly somewhat tentative explanation for the better rating of lotteries by the Hosts as compared to the General Population. To gain further insights into the causes of the acceptability, we turn to the empirical analysis of its determinants.

DETERMINANTS OF ACCEPTABILITY

Preferences for specific procedures, or siting rules, represent preferences for the relevant characteristics underlying acceptance choice. Therefore, it is of interest to analyze the determinants of acceptability of various procedures tested in the survey. Table 5 and Table 6 list the results of binary logit analysis with the grouped acceptability judgments of Table 3 as the dependent responsive variable. For reasons of space, only changes in the probability of finding a specific procedure acceptable and t-ratios are reported.

Fairness considerations are by far the most important determinant of acceptability. In most cases, the probability that a specific procedure is rated as acceptable increases by more than 10 percent with every additional point on a fairness scale ranging from "1 = very unfair" to "6 = very fair." Another key factor influencing the acceptability of procedures is the safety they are

Table 5. Determinants of changes in the probability of rating siting procedures for low-level radioactive waste as acceptable (and t-ratios).

	Negotiations, General Population (N = 205)	Current Swiss procedure, General Population (N = 206)	Current Swiss procedure, Hosts (N = 299)	Expert decision, General Population (N = 203)	Referenda, General Population (N = 199)	Referenda, Hosts (N = 300)	Lottery, General Population (N = 202)	Lottery, Hosts (N = 299)	Willingness to accept, General Population (N = 200)	Willingness to pay, General Population (N = 202)
Fairness (effect of 1-point increase)	+11%** (4.93)	+10%** (3.50)	+9%** (5.82)	+15%** (6.03)	+14%** (6.44)	+12%** (7.78)	+10%** (5.90)	+8%** (5.83)	+10%** (6.47)	+1% (0.64)
Security (effect of 1-point increase)	+5%** (2.33)	+7%** (2.59)	+7%** (4.35)	+5%** (2.20)	0% (0.20)	+5%** (3.69)	+1% (0.36)	+5%** (4.25)	+3%** (1.84)	0% (0.01)
Time (effect of 1-point increase)	0% (-0.02)	-3% (-1.29)	-1% (-0.64)	-3% (-1.81)	+2% (1.26)	0% (-0.22)	-4%** (-2.37)	+1% (1.05)	+2% (1.20)	-3% (-1.95)
Local in- fluence (effect of 1-point increase)	+4%* (2.19)	-4%* (-2.27)	-6%** (-4.15)	+2% (1.05)	+1% (0.84)	-2% (-1.11)	-4%** (-2.35)	-6%** (-4.73)	0% (-0.30)	0% (0.52)
Income	0% (-0.17)	-1% (-1.50)	0% (0.63)	+1% (1.34)	0% (-0.97)	0% (0.76)	0% (-0.96)	0% (1.21)	0% (-0.39)	0% (1.17)
Age	0% (-0.52)	-1% (0.17)	0% (0.42)	+1% (-0.17)	0% (1.36)	0% (-1.29)	0% (0.75)	0% (-1.44)	0% (1.40)	0% (0.76)
Gender	+2% (0.28)	+8% (1.32)	-6% (0.18)	+4% (0.78)	-1% (-0.16)	-2% (-0.45)	-5% (-0.90)	+9% (2.04)	+3% (0.71)	0% (0.02)
Correctly predicted	67.5%	62.8%	71.7%	71.4%	71.5%	68.9%	75.1%	71.7%	82.4%	94.4%

* Statistically significant at the 95 percent level.
 ** Statistically significant at the 99 percent level.

Table 6. Determinants of changes in the probability of rating siting procedures for high-level radioactive waste as acceptable (and *t*-ratios).

	Negotiations, General Population (N = 95)	Current Swiss procedure, General Population (N = 94)	Current Swiss procedure, Hosts (N = 305)	Expert decision, General Population (N = 93)	Referenda, General Population (N = 94)	Referenda, Hosts (N = 298)	Lottery, General Population (N = 91)	Lottery, Hosts (N = 297)	Willingness to accept, General Population (N = 95)	Willingness to pay, General Population (N = 89)
Fairness (effect of 1-point increase)	+11%*** (3.82)	+14%*** (3.37)	+13%*** (6.97)	+13%*** (3.76)	+13%*** (4.56)	+11%*** (6.31)	+11%* (3.96)	+8%*** (5.77)	+10%* (3.96)	+4%*** (2.72)
Security (effect of 1-point increase)	+4%*** (1.74)	+1% (0.35)	+2% (1.64)	+3% (1.01)	-1% (-0.25)	+2% (1.42)	+4% (1.54)	+5%*** (3.84)	+4% (1.69)	+2% (1.24)
Time (effect of 1-point increase)	0% (0.01)	0% (0.00)	+1% (0.57)	-3% (-0.95)	0% (0.22)	-1% (-0.73)	-5%* (-1.87)	0% (-0.12)	+3% (0.99)	-2% (-0.56)
Local in- fluence (effect of 1-point increase)	-4%* (-1.50)	-2% (-0.62)	-9%*** (-5.17)	-2% (-0.70)	-1% (-0.50)	-3% (-1.87)	0% (-0.20)	-6%*** (-3.58)	+1% (0.47)	0% (-0.07)
Income	-2%* (-2.11)	+2% (1.60)	+1% (1.41)	-1% (-0.85)	0% (-0.81)	-1% (-1.15)	+1% (1.41)	0% (-0.64)	-1% (-1.04)	0% (-0.19)
Age	0% (-0.19)	-1%* (-2.11)	0% (-0.60)	0% (0.79)	0% (-1.03)	0% (-1.71)	0%* (-1.91)	0% (-1.34)	0% (0.60)	0% (1.34)
Gender	+13% (1.66)	+2% (0.21)	0% (-0.06)	+1% (0.08)	-9% (-1.33)	-6% (-1.23)	-16% (-2.24)	+3% (0.63)	-4% (-0.53)	+2% (0.39)
Correctly predicted	73.0%	66.6%	71.8%	71.8%	80.5%	62.4%	71.3%	66.7%	81.8%	94.1%

* Statistically significant at the 95 percent level.
 ** Statistically significant at the 99 percent level.

Table 7. Rankings of all procedures in terms of safety, fairness, and local influence as perceived by the General Population.

Rank	Safety	Fairness	Local influence
1	Negotiation	Negotiation	Negotiation
2	Current Swiss procedure	Current Swiss procedure	Willingness to accept
3	Expert decision	Expert decision	Current Swiss procedure
4	Referenda	Referenda	Referenda/Willingness to pay
5	Lottery	Lottery	—
6	Willingness to pay	Willingness to accept	Expert decision
7	Willingness to accept	Willingness to pay	Lottery

Note: The siting rules are ranked in accordance with the percentage of respondents who believed a specific procedure would yield high security was fair and would guarantee a high degree of local influence (for all procedures 4 or more points given on 1–6 scales).

perceived to provide for the local residents. Interestingly, safety issues are of more concern to the LLRW hosts than to the other groups. For the former, the probability of finding a siting rule acceptable is typically increased by 5 percent if safety judgments rise by 1 point on a scale from "1 = safety very low" to "6 = safety very high." We conclude that the more imminent the danger of being forced to host a nuclear waste repository is, the more important the safety issues become. For both the General Population respondents (who will never have to host such a facility), as well as for the Hosts of the repository for HLRW (which will not be built during the next 20 years), aspects of fairness far outweigh safety concerns. Based on these results, however, we predict that safety issues will gain considerable importance for all those whose communities will be in the final selection for the HLRW site.

In contrast to fairness and safety concerns, the procedure's duration, although of paramount importance to the developer of a facility, seems to be of no concern to either the General Population or the Hosts. With regard to the covariate "Local Influence," all procedures presented are perceived to partially neglect the host community's interests. Those who find it important that a nuclear waste repository must be built with the consent of the prospect host community (as measured by the variable Local Influence) tend to find all siting procedures unacceptable.

At this point, the analysis allows us to draw some general conclusions: An acceptable siting rule is primarily a fair rule that takes the interests of the prospective host community into account and guarantees its safety. The General Population tended to focus on procedural aspects, namely the characteristics of the proposed siting rules, while the Hosts concentrated on both procedure (fairness) and outcome (safety). The discrepancy between the two groups may be interpreted in terms of self-interest: It is the Hosts who primarily bear the costs of insufficient safety and reap the benefits of a local veto.

Much of the literature on fairness assumes the existence of a trade-off between considerations of equity (fairness) and efficiency (safety). Table 7 reports how the procedures proposed to the General Population fared in terms

Table 8. Rankings of all procedures in terms of safety, fairness, and local influence as perceived by the Hosts.

Rank	Safety	Fairness	Local influence
1	Current Swiss procedure	Current Swiss procedure	Referenda
2	Referenda	Referenda	Current Swiss procedure
3	Lottery	Lottery	Lottery

Note: The siting rules are ranked in accordance with the percentage of respondents who believed a specific procedure would yield high security was fair, and would guarantee a high degree of local influence (for all procedures 4 or more points given on 1-6 scales).

of safety, fairness, and the degree of influence of the local residents. There is no difference between the LLRW and HLRW samples.

Based on our results, a trade-off between safety concerns and fairness considerations did not exist for the General Population respondents. The procedures that were judged to be relatively fair (negotiations, the current Swiss procedure, and a decision by foreign experts), were also perceived to be the ones that fared the best in terms of safety. Interestingly, the procedures based on the price mechanism were not only judged to be unfair—which was to be expected—but they were also seen as the least safe. Respondents, we conclude, did not believe that prospective host communities would adjust their compensation demands for differences in technical and geological feasibility. With regard to local influence, the willingness to accept approach was judged favorably. This seems to indicate that respondents understood the way preferences were accounted for under this approach.

Again, we would like to compare these evaluations with those of the Hosts. Table 8 reports the Hosts' rankings.

Host rankings of safety, fairness, and local influence assessments did not differ from those of the General Population. Perceptions of a trade-off between safety and fairness did not exist. Somewhat surprisingly, Host respondents felt that local influence was best preserved by a national referendum, in which the prospective host communities made-up a small fraction of the electorate. The fact that the Hosts found referenda to be significantly more acceptable than did the General Population suggests a trust on the side of the Hosts that the majority will not misuse the ballot box to dominate minority interests.

FAIR SITING POLICY

According to Aristotle, the fairness principle formally states that "equals should be treated as equals and unequals unequally, in proportion to their relevant similarities and differences" [Isaac, Mathieu, and Zajac, 1991, p. 333]. As we have discussed previously what is found to be relevant depends on the context of the problem at hand. Among other functions, rules of decision serve as filters adjusting the status quo for perceived inequities. The data on fairness judgments in the context of a siting a nuclear waste repository allow

Table 9. Taxonomy of proposed siting rules for a nuclear waste repository.

Procedure	Informational base	Equal inputs	Status quo property rights
Negotiations	Host and government	Arguments in rational discourse	Yes: right not to host the facility
Current Swiss procedure	Experts, federal parliament, host community, and state	Scientific arguments and votes on all levels	Yes: right not to host the facility
Expert decision	Experts	Scientific arguments	No
Referenda	General population and host	Votes	No
Lottery	—	Cases of hosts	No
Willingness to accept	Host	Dollars	Yes: right not to host the facility
Willingness to pay	Host	Dollars	Yes: duty to host the facility

us to analyze the nature of the relevant similarities and differences. Table 9 offers a taxonomy of the proposed procedures; it classifies the decision inputs upon which each procedure relies. The category "informational base" characterizes the group of persons whose judgments the ultimate siting decision is based upon. "Equality in inputs" describes the types of inputs relevant for the procedure and the units which are treated as equals: Referenda, for instance, treat individual votes equally while a compensation scheme regards all dollars as equals. The third criterion, "status quo property rights," states whether actors are given property rights regarding the construction of a nuclear waste repository. Status quo property rights [Isaac et al., 1991] decisively shape the possibility set of individuals.

To start our analysis with the least fair procedures, the willingness-to-accept and willingness-to-pay approaches are based on the same informational base, and both accept monetary statements as equal inputs. The only difference is the assignment of property rights. It is seen as fair if potential sites are given the right not to host the facility. Negotiations and the current Swiss procedure, judged to be the fairest procedures, are the only other siting rules which meet this requirement. Regarding differences in the informational base, we see that procedures relying on experts' opinions are also found to be comparatively fair. The government, which is part of the informational base of negotiations, may also be perceived as an expert driven organization. Attempts to discount the influence of experts or local residents by including the preferences of the general population (referenda) or neglecting preferences altogether (lottery) result in lower levels of perceived fairness.

We conclude that, when devising a fair rule for siting noxious facilities, two criteria are essential: First, the host community's preferences constitute an important input to the decisionmaking process. Potential host communities should thus be given an explicit right not to host any facility. Second, scientific expertise must play a crucial role in the decisionmaking process.

Fair siting procedures help to win the support of residents, but this may

not suffice to break the siting impasse. The opposition to noxious facilities never consists of only local residents. In many cases, national lobbying groups play a decisive role in organizing and financing the resistance. As these players typically pursue more general goals than blocking the siting of a given facility in a specific location, they will use any siting process as a means to frustrate the development of the unwanted project. Although we have shown that the perceived fairness of siting schemes is an important element in any successful siting venture, it is clearly but one of many factors. The vulnerability of siting processes to minority interests is another example of considerations that should accompany the careful design of better siting rules.

CONCLUSIONS

In this article we propose that there is an often neglected, but nonetheless important requirement for successful siting, namely the use of acceptable siting rules. Based on a survey we conducted in Switzerland, we have shown that acceptable siting rules contribute positively to the willingness of local residents to host a noxious facility. The acceptability of siting rules largely depends on their perceived fairness, and—if the construction of the locally unwanted project is imminent—on safety concerns. These two goals, the application of a fair siting rule and the provision of safety for immediate neighbors of nuclear waste repositories, are not perceived to be conflicting aims.

Individually perceived fairness is greatly enhanced if prospective host communities are granted the absolute right not to host any facility at the outset of the process. Under these circumstances, negotiations between the government and potential host communities were judged to be the fairest, safest, and most acceptable siting procedure among those presented in the survey. Expert-driven siting procedures were also found to guarantee fairness and safety.

Our results are supported by other research. Renn [1992] points to fairness and competence as the key characteristics of successful facilitation or mediation in siting disputes. These two criteria, according to our own data, are precisely what determines the acceptability of siting procedures. Kunreuther and Easterling [1992] suggest focusing the search for sites exclusively on communities which voluntarily express an interest in hosting the facility. To accept only voluntary sites amounts to granting a *de facto* right for all communities not to host nuclear waste repositories. This, we suggest, is a step which should precede any promising siting attempt.

Our survey has shown that a larger part of the citizenry finds pricing approaches (the willingness-to-pay and the willingness-to-accept approaches), as well as outright compensation, unacceptable. We have empirically identified four reasons for this reluctance to accept procedures based on the price system (Oberholzer-Gee, Frey, Pommerehne, and Hart, 1995):

- The direct and well visible transfer of money is associated with the notion of bribes which tends to strengthen local opposition.
- Explicit monetary compensation may be taken as a signal for the implied risk of a facility and tends to drive up the necessary payments to unreasonable levels.

- The receipt of a monetary payment is seen as accepting the status quo (i.e., the nuclear production of energy) which citizens would oppose if they find it unfair.
- A community's willingness to accept a site because the citizens feel it to be their social duty is undermined by monetary compensation.

As a consequence of this moral crowding out effect, it is likely that in the future, no community will ever be prepared to accept a site short of substantial monetary compensation. This does not only affect future sites for nuclear waste disposal but all other locally unwanted projects, ranging from hospitals, army quarters, and prisons to freeways and railway tracks.

In our view, this does not completely rule out any role for compensating host communities. Rather, it is to be seen as yet another piece of evidence that money alone will not do the trick; it can even completely disrupt a siting process. However, our analysis clearly identifies perceived risk and negative economic impacts as obstacles in reaching a siting agreement. Risk mitigation and compensation, we conclude, remain essential for successful siting. Only if coupled with acceptable procedures will these measures contribute to overcoming siting problems.

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