

HOW CAN THE NIMBY SYNDROME BE AVOIDED?

The syndrome known as NIMBY (short for *Not In My BackYard*) designates any conflict involving the location of dangerous or nuisance-creating projects in places where local people can be expected to oppose their establishment. In the last few decades we have seen a growth and broadening in this phenomenon of structured opposition, the intensity of which has led many public authorities to suffer from a tendency to stagnate with respect to major projects.



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Cases that come to mind include wind farms, natural gas ports (Rabaska and Gros-Cacouna), electricity transmission lines (Hertel-Des-Cantons), road, rail or marine routes for shipping hazardous materials, and even relatively minor projects (a new casino or snowmobile trails). These structured opposition movements, influenced by highly publicized disasters,¹ stem from more or less realistic perceptions of the risks involved.

A definition of the syndrome and the traditional responses

Reactions of opposition, long focused on projects that are especially polluting or risky, currently affect a surprising number of projects, both public and private. NIMBY-type reactions apply only to some of these projects, which generally have three characteristics in common. First, they create nuisances at the local level (noise from airports, odours from incinerators, visual blight and noise from wind farms, fear and insecurity from prisons, or visual blight and health risks from electricity transmission lines,

refineries or natural gas ports). Second, they are likely to produce sizable advantages, but on a broad scale rather than a local scale. Third, these are often large projects, and their establishment in a given municipality often requires expropriations as well as long-lasting changes in the environment.

Opposition reactions, when pushed to the limit, can result in three downsides for the general well-being of citizens. In terms of the environment, victories by NIMBY activists in one place may create or worsen problems elsewhere. As regards infrastructure or services, the spread of the NIMBY syndrome can lead to delays in fulfilling important needs.² And with respect to land use, obstruction caused by this syndrome may result in projects being moved to unsuitable zones where there happens to be less opposition.

The use of special laws or regulations, including expropriations, to impose final decisions has too often been the preferred solution. Although some people may see this as necessary, it should be noted that is



1. As examples, we can mention the derailment of a train carrying hazardous products in Mississauga, Ontario (1979), the chemical plant incident in Bhopal, India (1984), the nuclear plant explosion at Chernobyl, Ukraine (1986), the oil spill in Alaskan waters with the sinking of the Exxon Valdez (1989), and the explosion of the AZF petrochemical plant in Toulouse, France (2001). Most of these accidents caused heavy loss of life and substantial material damage. See also Nicolas Marchetti, *Les conflits de localisation : le syndrome NIMBY*, CIRANO, May 2005.
2. This brings to mind the much postponed Hertel-Des-Cantons electricity transmission line. Its conflict-ridden erection following the 1998 ice storm crisis caused deep resentment, which persists even today.

leads inevitably to tougher opposition from the citizens concerned. Using political force ends up causing feelings of frustration among local people and rarely settles matters.

The pursuit of new types of project that are safer and less harmful may sometimes be envisaged, but there is a risk that this simply shifts the problem elsewhere. For example, “pro-environment” demonstrators often oppose thermal power plants or even hydroelectric plants and look to “clean” alternatives such as wind farms. It is quite obvious today that these alternatives also pose many problems and are subject to fervent opposition.

Accordingly, the most promising strategy is to set up competitive compensation mechanisms both to respect the citizens concerned and to manage the NIMBY syndrome sustainably.

Market mechanisms to the rescue

Compensation mechanisms developed to overcome opposition from people nearby must take account of the characteristics of the projects at issue. Compensation must be paid by a project’s beneficiaries and must go to its real victims. In a private project, the developers will compensate the neighbours. In a public project, the entire population that benefits from it will have to pay. Moreover, people living near a dangerous or risky project should get compensation mainly if an accident occurs, thereby guaranteeing that those receiving payment have truly suffered direct prejudice. Furthermore, when a nuisance-creating project is built, compensation should begin as soon as the project is in place and should last as long as the nuisances do.

The response to the NIMBY syndrome from public authorities is a result mainly of centralized decision-making. Decision-makers select a site, announce the choice to the public, defend it and undertake the project by force, if necessary. Awareness of the failures linked to this type of procedure has led gradually to mechanisms allowing a greater role for citizens. The participative aspect is important but

insufficient to prevail over the syndrome. The procedure should be competitive and show greater respect toward the preferences of the parties concerned. Both these aspects have been largely cast aside by political leaders. However, economists have developed mechanisms of varying complexity that are participative, competitive and, at the same time, more respectful of the preferences of those most closely involved.

Economic approaches based on market mechanisms aim to be more “decentralized” and, by definition, allow a greater role for the groups concerned. The innovative idea behind this type of mechanism is as follows: considering that a project is likely to provide significant advantages to the general public or to generate substantial profits, and considering also that the nuisances are essentially local, it is possible to picture the citizens or developers who benefit from the project compensating the likely neighbours. This approach is based on the principle that those subjected to the project are the only ones who really know the costs of its eventual advent. With various sites in competition to host (or not host) the project in return for compensation, an incentive will arise to disclose these costs and to volunteer (or not volunteer) in a perspective of mutual gain.³

The decentralized procedures generally proceed in three stages. First, a socioeconomic analysis assesses the scope of a project’s private and public benefits.⁴ Next, with major benefits involved, a multi-criterion technical analysis identifies a limited number of potential sites. Any site under consideration at the end of this stage could, under the traditional approach, have been imposed as the project’s location by public authorities. Finally, a “consultation” mechanism is established to enable representatives⁵ from the various potential sites to “agree” on a given site and on the

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3. These approaches are not unrelated to the theory devised by Ronald Coase (1991 Nobel Prize in Economics), which states that markets will lead to an efficient solution as long as property rights (to particular sites or to the environment) are well defined and transaction costs are sufficiently low.
4. The project may come initially from private or public entities, but the confirmation of the existence and scope of benefits will sometimes be the responsibility of political authorities even in a private project.
5. Representatives of sites (groups or regions) will usually be elected officials with authority over the territory concerned and over the decision to be made. Devising open and transparent procedures may require that the respective roles, powers and responsibilities of the various parties involved be reaffirmed.

size of transfers, compensation and contributions. Potential sites would thus all lie at the heart of the decision-making process and would be used in determining the best location. The first two stages are subject to pitfalls and must be conducted diligently and impartially, but they do not seem to pose serious methodological problems.⁶ We are focusing our remarks here on the third stage.

Three types of decentralized procedure have been suggested: auctions, lotteries and insurance.⁷ Lotteries and insurance present particular difficulties: lotteries leave too much to chance, and insurance leads too often to endless legal disputes when accidents occur. In contrast, auctions merit particular attention; this is the type of mechanism we will analyze here.

Well chosen auction rules must be both transparent and efficient and must rely on competition between several groups, municipalities or regions that, despite initial opposition, can come to show interest in hosting the project at issue under certain conditions. In implementing a new project, it is fundamental to retain a limited but adequate number of potential sites, paying particular attention to the conditions of participation to favour the entry of new “competitors” for hosting the project. The issue of mechanism design is delicate:⁸ it can enable the right solution and the correct level of compensation to be identified, with the true costs of hosting the project being disclosed; it must prevent behaviour based on opportunistic strategies from taking advantage of shortcomings in the mechanism, which could lead to the wrong results.

Economists have suggested various auction mechanisms for overcoming the NIMBY syndrome. The simplest mechanism is the so-called Dutch reverse auction: the developer or government offers a level of compensation to representatives of the various potential sites. If there is no taker for the project, the compensation on offer is increased until a taker is found. Airline companies use this process when too many tickets have been sold aboard a certain flight so as to persuade passengers to give up their seats.

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A second mechanism is the so-called modified low-bid auction:⁹ each group issues, through its representatives, a bid for compensation for hosting the project on its territory; whichever makes the lowest bid hosts the project and gets the compensation that it sought plus a certain percentage; the other groups each pay a “tax” proportionate to their bid for compensation, with the total being equal to the amount to be paid to the winner. Despite having to pay something, these groups all come out as winners in the auction: to avoid hosting the project, they will pay less than hosting it would have cost, based on their own assessments.

A third mechanism is the so-called modified high-bid auction:¹⁰ each group issues a bid for compensation, and whichever makes the lowest bid not only hosts the project but receives, in return for the prejudice suffered, compensation equal to the highest bid for compensation; the other groups each pay a tax proportionate to their respective bids, with the total equal to the amount to be paid to the winner. Thus, none of the groups comes out losing in the auction, with the group hosting the project in effect achieving a net gain compared to its assessment of the cost of hosting it.

To illustrate the spirit of these procedures, let us consider the following hypothetical case¹¹. The City of Montreal wishes to select a location for a garbage incinerator on the island. A technical study has identified the desired characteristics (capacity, layout, number of trucks per day, atmospheric discharges, etc.) and has determined five potential sites in five different boroughs. A call for tenders is launched, leading to five bids for compensation with the costs for each borough estimated respectively at \$1 million, \$1.2 million, \$1.8 million, \$2 million and \$2.6 million. In this instance, the incinerator would be located in borough no. 1. Under a modified low-bid auction, borough no. 1 would receive the compensation it sought plus, for example, 50%, while the other boroughs would have to pay a tax equal to 19.7% of their respective bids (for a total of \$1.5 million). Under a modified high-bid auction, borough no. 1 would receive the highest amount of compensation that any of the participants bid for

6. Some disagreements may persist as to the nature of nuisances, as well as to the costs and the benefits, but these disagreements should focus on empirical measurement of the various elements rather than on the method applied.

7. These potential solutions are not mutually exclusive, and various combinations may be considered.

8. The Nobel Prize in Economics was awarded in 2007 to economists Leonid Hurwicz, Eric Maskin and Roger Myerson specifically for their work on mechanism design.

9. Howard Kunreuther and Paul R. Kleindorfer, “A sealed-bid auction mechanism for siting noxious facilities”, *American Economic Review*, Vol. 76 (1986), No. 2, pp. 295-299.

10. Arthur O’Sullivan, “Voluntary auctions for noxious facilities: incentives to participate and the efficiency of siting decisions”, *Journal of Environmental Economics and Management*, Vol. 25 (1993), No. 1, pp. 12-26.

11. The application of those processes must also take account of the possibility that the participants may have an interest in overestimating their costs and thus their compensation requests, a problem which is not discussed here.

(\$2.6 million), thereby achieving a major gain compared to its original bid, while the other boroughs would have to pay a tax equal to 34.2% of their respective bids for compensation.

These mechanisms ensure, at relatively low cost, true disclosure of a project's costs and location values in the best possible place. Based on context, one of these mechanisms, or a variant, will be most effective in managing the NIMBY syndrome adequately, respecting all parties involved.¹²

Conclusion

Conflicts related to implementing risky or nuisance-creating projects occur often. In most cases, all players involved may say they are dissatisfied: public developers must face local opponents (in consultation procedures or informal protests); political and administrative decision-makers have trouble reconciling the conflicting interests of their constituents; concerned members of the public are too often excluded from discussions and decisions concerning their daily lives.

The main aim of this Note is to draw attention to an economic approach that is likely to limit the emergence of this type of conflict.

Centralized decision-making procedures, such as a location imposed by expropriation or following the report of a commission or bureau, could be rejected in favour of decentralized market mechanisms such as auctions, which can be seriously considered in many actual situations. It is also possible to consider applying the principles used to devise mechanisms in more complex contexts such as networks for shipping hazardous or nuisance-creating goods that affect several municipalities or regions: similar principles and practical details can apply by delineating correctly the various groups concerned and the various options at hand.

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Although research on the characterization of such mechanisms is already quite advanced, actual applications remain held back mainly by lack of awareness of these mechanisms. This lets certain pressure groups that benefit from the NIMBY syndrome acquire disproportionate power. Limits to our imagination form the only real constraint to developing effective auction mechanisms for managing the NIMBY syndrome in full respect of the groups directly concerned and of the general public.



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12. It is possible to adjust the auction to take account of the fact that the sites initially retained may not be of the same quality as regards implementing the project.