



Not-in-my-backyard but let's talk: Explaining public opposition to facility siting in urban China

Zhilin Liu^a, Lu Liao^b, Ciqi Mei^{a,*}

^a School of Public Policy and Management, Tsinghua University, Beijing, China

^b Department of City and Regional Planning, Cornell University, Ithaca, NY, USA



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ABSTRACT

This paper examines determinants of public attitudes toward the siting of two hypothetical projects with similar environmental consequences but different developmental implications, i.e., a waste disposal facility and a large chemical plant. It addresses the ongoing debate whether public opposition is driven by the NIMBY syndrome or rather reflects the rise of rights consciousness among citizens in the empirical context of developing economies, using data from a 2014 questionnaire survey of 2500 residents in four Chinese cities. Statistical results show that self-interest concerns have only mild relevance predicting opposition to waste disposal facilities and no influence in large chemical plants. In contrast, deprivation of participation emerges as the primary reason for opposition to large chemical plants, a project with strong developmental implications. Interestingly, environmental knowledge tends to mitigate public opposition to waste disposal plants. Theoretical and policy implications are discussed in the conclusion.

1. Introduction

Neighborhood-based activism against the siting of undesired land uses is a global phenomenon that challenges national and local governments. Previous literature labeled such public activism as the “not-in-my-backyard” (NIMBY) syndrome that protects localized interests at the expense of broad societal benefits (Dear, 1992; Krause et al., 2014). However, scholars quickly recognized the complex underlying factors of public opposition embedded in the socio-political context of policy making and public participation and, thus challenged the NIMBY thesis for its simplified account of public attitudes toward facility siting (Lake, 1993; Wolsink, 1994; Michaud et al., 2008; Johnson and Scicchitano, 2012).

Since the infamous incident of city-wide protests against a proposed paraxylene (PX)¹ plant in Xiamen, Fujian Province, in 2007, China has witnessed the rise of public protests against the siting of government-proposed facilities (Lang and Xu, 2013; Wong, 2016). Sometimes protests led to lengthy confrontation between residents and government, even pushing the government to eventually terminate, cancel, or

relocate the proposed projects. Yet, even though recent literature from Western contexts have revealed the multi-faceted determinants of public opposition to facility siting, the public discourse in China quickly labeled these protest incidents as the rise of NIMBYism in Chinese cities (Zhu, 2012; Gu, 2016), attributing public protests to citizens' concern of decreased property values and health and safety consequences of the proposed facilities (Li et al., 2012; Huang et al., 2015).

However, the rise of public opposition to large projects cannot be separated from the wake of democratic values emerging in China. Scholars have observed that local residents in China have become increasingly *rule-conscious* and *right-conscious* in that they are consciously demanding the opportunities to participate in the process of rule-enforcing and rule-making (O'Brien and Li, 2006; Li, 2010). Anecdotal evidence has suggested that the breakout of public protests against facility siting results at least in part from the lack of transparency and public participation during the decision-making process (Johnson, 2010; Li et al., 2012; Lang and Xu, 2013; Sun et al., 2016; Wong, 2016). These studies have largely relied on a small-N case study approach to explore the stakeholders, politics, and outcomes of neighborhood-based

* Corresponding author at: Room 513, School of Public Policy and Management, Tsinghua University, Beijing 100084, China.

E-mail addresses: zhilinliu@tsinghua.edu.cn (Z. Liu), ll743@cornell.edu (L. Liao), cmei@tsinghua.edu.cn (C. Mei).

¹ Paraxylene is a hydrocarbon (C₆H₄(CH₃)₂) of the aromatic series obtained as a colorless liquid by the distillation of camphor with zinc chloride. It is one of the three metamers of xylene. It is a chemical essential to the process of manufacturing plastic and polyester clothing. Most chemists agree that PX is not particularly toxic. A news reports found at the website of the Royal Society of Chemistry cites a chemistry professor's comment that PX is no more toxic than alcohol. (<https://www.chemistryworld.com/news/para-xylene-plants-face-uphill-struggle-for-acceptance-in-china/7275.article>). NIH provides lab experiment results of human exposure to various dosage of PX. In general, the impairment could be summarized as mild and transient (<https://pubchem.ncbi.nlm.nih.gov/compound/p-xylene#section=Toxicity-Summary>). However, the public is rational to second guess the possible hazard caused by inadequate management of PX plants especially after explosion happened to a Zhangzhou PX project in 2013.

public protests against public facilities while focusing on incidents that successfully pushed the government to backtrack from the original siting plans. To date, little research has been done to reveal, through a large-N survey-based research design, the underlying determinants of oppositional attitudes among Chinese urban residents.

In this paper, we take advantage of data from a large-scale questionnaire survey to investigate whether public opposition to facility siting in Chinese cities is more driven by the fear of losing self-interest, as predicted by the NIMBY thesis, or a sense of urgency to protect the environment, or rather motivated the public's pursuit of political rights to participate in the decision process. Our research contributes to the international literature on two fronts. First, the debate over the NIMBY thesis has largely drawn from empirical evidence in Western countries, whereas scholarly knowledge of public attitudes toward facility siting is rather limited in the context of developing countries such as China (Lang and Xu, 2013). Our research directly contributes to this ongoing debate in the international literature with an empirical focus on China, where environmentalism and democratic values have started gaining ground in the past decade. In particular, we seek to echo the criticisms over the NIMBY thesis by demonstrating the importance of pursuit of political participation when citizens form their opinions toward public facilities and projects even in a developing country context.

Second, public opposition to facility siting in China takes place in a context where developmentalism remains dominant in both policy agendas and public discourse. The current Chinese state has enjoyed performance legitimacy through economic development and job creation since the reform started in 1970s (Zhao, 2009). Public opinion still lends strong support to the state's developmental agenda (Lewis-Beck et al., 2014; Zeng, 2014). A few recent studies, both in Chinese and international contexts, have found that, at least in the case of energy facilities, citizens may choose to support the siting decision if they perceive positive benefits to local economic development and job creation (Slattery et al., 2012; Krause et al., 2014; Guo et al., 2015). Yet, the exiting literature on public acceptance has stressed only the negative environmental impacts of facility siting, without sufficient attention to whether and how public opposition and its determinants may differ by the developmental implication of a proposed facility.

The empirical analysis uses data derived from a questionnaire survey of 2500 residents in four Chinese cities, in which respondents were asked about their attitudes toward the hypothetical siting of various government-proposed facilities near their neighborhoods. We compare and contrast two types of facilities with similarly strong environmental risks but different implications for economic development, both considered typical NIMBY facilities in China whose siting decisions are the main sources of recent neighborhood-based public protests in Chinese cities (Johnson, 2010; Li et al., 2012; Lang and Xu, 2013). Waste disposal facilities² – including incinerators and landfills – are part of the basic infrastructure serving the city's public interests in waste management but provide little direct contribution to the local developmental agenda (Huang et al., 2015). Large chemical plants (e.g., paraxylene plants) are typical developmental projects that local governments deem critical for generating jobs, investment, and GDP growth. We compare public attitudes toward these two facilities to investigate how a project's developmental implication may shift the formation and determinants of public attitudes toward its siting decision.

The remainder of this paper proceeds as follows. In the literature review section, we first discuss the NIMBY thesis and its critiques in order to summarize key theoretical debates over the motivations for public opposition to facility siting, followed by a discussion of the

Chinese context of neighborhood-based public protests. Upon introducing the survey design and variable measurement in the methodology section, we present the empirical findings from multinomial logistic regression analysis in section four and conclude with a discussion of policy implications in the last section.

2. Literature review

2.1. Beyond the NIMBY thesis: determinants of public opposition

Conventionally, public opposition to the siting of locally unwanted land uses (LULUs) is characterized as the NIMBY syndrome, in which citizens, out of a desire to “protect their turf” (Dear, 1992), oppose the siting of a facility near their homes (“backyard”) although that facility is necessary to serve the broader societal good. These personal concerns involve the devaluation of property; environmental, health and safety risks; the decline in neighborhood amenities and quality of life; and damage to the image and aesthetic status of the community (Schively, 2007; Krause et al., 2014). Citizens may in principle support the adoption of these facilities but oppose them when the construction occurs near their “backyard” (Kraft and Clary, 1991; Dear, 1992). However, empirical evidence remains mixed regarding the association between proximity to the facility and stronger opposition. For instance, Johnson and Scicchitano (2012) found that in Florida, USA, residents living closer to existing or proposed facilities did not perceive the facility more negatively than other residents. Michaud et al. (2008) found that in California, USA, residents were no more opposed to offshore oil drilling if they lived near the coast or near the drilling sites.

In fact, the NIMBY thesis has received wide criticisms as an oversimplified characterization of public opposition that cannot capture the full essence of such public attitudes (Lake, 1993; Hunter and Leyden, 1995; Michaud et al., 2008; Johnson and Scicchitano, 2012; Devine-Wright, 2014). Rather than selfishness, scholars argued that the worldwide environmentalism movement contributes to the rise of opposition and protests against the so-called “NIMBY” facilities (Wolsink, 1994; Michaud et al., 2008; Johnson, 2010). Because of the rise of public environmental concern, opposition to LULU siting may arise beyond the neighborhood scale if citizens perceive broad impacts on the natural environment. Citizens with strong environmentalist orientations may oppose any development in anyone's backyard (not-in-anyone's-backyard, or NIABY) that could potentially damage the natural environment (Schively, 2007). In that case, stronger protest incidences near the facility site may result more from the fact that the site is a natural place of attention for environmental protesters, government, media, and other parties, who may or may not come from the local community (Michaud et al., 2008).

Scholars from the risk perception perspective, however, do not see NIMBYism and environmentalism as completely separated from one another, but rather intertwined with one's risk perception of a proposed facility (Kasperson et al., 1988; Kunreuther et al., 1996; Hung and Wang, 2011). Risk perception reflects the interaction of psychological bias, economic interests, and cultural values, which translates to one's acceptance and opposition for a specific technology or facility (Slovic, 1987; Sjöberg, 2000). Instead of simply being selfish, citizens form their attitudes toward a siting decision in a rational process of cost-benefit calculations based on how they perceive the potential health, safety, and environmental risks of the proposed facility in the social, cultural, and political context (Slovic et al., 1982; Kasperson et al., 1992; Johnson and Scicchitano, 2012). An environmentalist may be more informed of potential health and safety risks of a proposed facility, which may prompt him or her to object to the siting plan. Yet at the same time, an environmentalist who is concerned with protecting the broad environment may come to appreciate the value of such a facility and consider its siting to be necessary self-sacrifice for broader environmental purposes. In this case, pro-environmental orientation may not necessarily trigger opposition to a facility siting decision.

² As compared to PX plant, the environmental concern over waste incineration plant is less at dispute. Even without knowing the actual health risk caused by the Nitrous Oxide and Sulphur Dioxide emitted from the plant, the average citizens could feel threatened by the foul smell and fluid from the plants that are not well managed.

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