Trust and Public Perception:
Insights for Facility Siting in Hong Kong

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Siting locally unwanted land uses (LULUs) is a major policy problem across different societies. The problem is particularly pronounced in Hong Kong because of its small size, high population density and rapid development. The term NIMBY (not in my backyard) is generally used to describe public opposition towards LULUs. The literature highlights the importance of understanding the basis of public objections so as to resolve siting conflicts effectively. Thus, the purpose of this study is to address the NIMBY problem in Hong Kong by unraveling the factors that affect public response to siting, with particular focus on trust, and to suggest a siting strategy that can address public opposition to LULUs. A conceptual framework based on previous studies for understanding public response to LULU siting is developed to guide this study. The framework includes such factors as the perceived need for the facility, perceived risk, fairness, trust in government and certain socio-demographic characteristics, in addition to community siting experience, which has not been sufficiently studied in the past. This framework also includes the attributes that affect the formation of trust.

This research utilizes social surveys to investigate the factors underlying public opposition and in-depth interviews to explore the role of trust from the perspective of stakeholders. Four social surveys were conducted, one across the whole of Hong Kong (1,002 respondents) and the other three in local districts. Over 750 respondents had been surveyed in each district. These surveys were designed to investigate general public perceptions towards LULU siting, the influence of community siting experiences, and the factors that are most influential upon public acceptance/ opposition towards LULUs. Findings of the four social surveys are broadly similar and demonstrate that public have broad interests embracing social, political, environmental, risk and health concerns. The survey findings confirm that the NIMBY problem is prevalent in Hong Kong and that the most unwanted LULUs are those without demonstrated societal need and those which are perceived to be

risky. The public feel that it is unfair to site LULUs in their districts; they think it is fairer to distribute LULUs evenly across districts, or based on local needs. The results also suggest a lack of trust in the government, reflecting a possible breakdown in communication between the planning authority and the public. In addition, comparison of the three local surveys shows that responses from the three communities are broadly similar, but there are some inter-community differences in terms of the magnitude of their responses. Results show that residents from communities with negative siting experiences have a lower degree of acceptance of LULUs, a stronger sense of unfairness about siting LULUs in their districts, and a lower level of trust in the government than do residents of communities without negative experiences. They also tend to be more sensitive to the risks associated with LULUs and to have a stronger preference for more public participation and implementation of effective mitigation and monitoring programs as methods for resolving siting conflicts. Further, results of the binary logistic regression analysis show that people are likely to oppose LULU siting if they have had a negative siting experience, do not perceive the need for the facility, accord a high risk to the facility and have a low level of trust in government. The above results suggest that it is important to understand and address public perceptions so as to resolve siting conflicts effectively. The importance and formation of trust was studied by conducting in-depth interviews with 35 local stakeholders. The respondents confirm the importance of trust in promoting consensus building and collaboration, which are conducive to conflict resolution. The conception of trust is also shown to be relevant to the respondents' evaluation of trust attributes including competence, openness, credibility, accountability, objectivity, fairness and caring. Moreover, the stakeholders require a higher level of trust in proponents involved in siting more risky or polluting LULUs. To enhance trust, the stakeholders recommend that proponents increase public participation and develop effective communications, and improve performance to meet social expectations on matters related to LULU planning and siting.

Based on the overall findings and implications of this study, this dissertation offers a siting strategy for addressing the NIMBY problem. The strategy calls for policy-makers to develop a more collaborative, learning and deliberative engagement process, address public concerns and past negative experiences, and build trust by

enhancing their performance in planning and siting LULUs to meet public expectations. Finally, suggestions for future research are provided.

摘要

替「不受地方歡迎土地利用」(即 locally unwanted land uses 或 LULUs)選址是不同社會的政治難題，尤其是在地少、人口密度高和急速發展的香港。NIMBY (Not In My Backyard，即「不在我的後院」或稱作「鄰避」現象)是指公眾對 LULU 選址的反對態度。文獻指出如能明白公眾反對的根本原因，將有助找出有效的解決選址問題的方案。故此，本研究的目的是應對香港的 NIMBY 問題，主要是透過找出能影響公眾對選址態度的因素，尤其是探討信任的影響，以及提出選址策略去化解公眾對 LULU 的反對。基於文獻回顧，本研究提出一個理論架構去闡明公眾對 LULU 選址的態度，它所包括的因素有：對設施的需要性、設施風險、公平和對政府信任度的觀感和一些社會性人口特徵的因素，以及社區選址的經驗，此因素在過去是缺乏深入探討的。此理論架構亦附加一些能影響信任之建立的屬性。

本研究是利用社會性問卷去調查能影響公眾反對的因素，以及透過深入訪問去探究在持份者眼中信任的角色。此研究共進行了四個社會性問卷調查，包括全港性(受訪人數 1,002 人)和三個有不同選址經驗的地區性問卷調查，每區訪問了超過750名的本地居民。設計這些問卷是爲了調查公眾對 LULU 選址的觀感、社區選址經驗的影響和最能影響公眾接受/反對 LULUs 的因素。這四個社會性問卷調查的結果是大致相近，並顯示出公眾對 LULU 選址問題上具多方面的關注，包括：社會性、政治、環境、風險和健康問題方面。問卷結果證實了 NIMBY 問題在香港是很普遍的，而最不受歡迎的 LULUs 是那些被認爲沒有社會性需要和有較高風險的設施。還有，公眾認爲設置 LULUs 在其社區中是不公平的，較爲公平的做法是平均分佈或按地區的需要。問卷結果亦顯示公眾對政府是缺乏信任，這可反影負責設施規劃的部門與公眾之間可能是欠缺完善的溝通。此外，透過比較三區的問卷調查結果，顯示出三區的回應是大致相近，但三區在反應幅度方面是有差別的。結果顯示，相對沒有負面選址經驗的居民，來自有負面選址經驗的居民對 LULU 的接受程度較低、對選址在其社區中有較不公平的看法和認爲政府是較爲不可信的。此外，他們對與設施相關的風險問題較爲關注，亦較看重增加公眾參予、實行有效的緩解措施和監察作爲解決選址衝突的方

案。還有，二元邏輯迴歸分析法的結果顯示，若公眾有負面選址經驗、看不到設施的需要性、認爲設施有高風險和對政府的信任度低的話，則有較高可能會反對這些設施。綜合而言，以上結果反影如要有效地解決選址衝突，最重要是明白和回應公眾對選址的觀感。另外，透過深入訪問 35 名本地的持份者，探討了信任在選址過程中的重要性及其構成。受訪者肯定了信任的重要性，尤其在促進達成共識和建立合作關係方面是有助解決衝突。結果亦顯示，受訪者對持份者的信任度是關乎於對其能力、開放性、信譽、問責、客觀性、公平和關心之屬性的評價。而且，持份者表示如要替較高風險或污染性較大的設施選址，則需要對項目倡議者有更高的信任度。如要增加信任，持份者建議項目倡議者要增加公眾參與和加强有效的溝通，並要改善表現以符合社會就 LULU 規劃和選址事宜的期望。

基於本研究結果和意涵，此論文提出一個有助解決 NIMBY 問題的選址策略。此策略建議政策制訂者要建立一個講求協作、學習和審議性的參與過程，並回應公衆的疑慮和負面的經驗，還要提升在 LULU 規劃和選址事宜中的表現，以滿足社會的期望來增加信任。最後，本論文亦提出對未來的研究建議。

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Preface

The dissertation presented here is part of a larger research effort under a policy research project, "Siting Locally Unwanted Land Uses: In Your Backyard or in Mine?" (Project No. 4008-PPR20051) funded by the Research Grant Council (RGC) between 2006 and 2008. The author of this dissertation worked on a substantial part of this research project with Prof. K. C. Lam (Principal Investigator) and other team members including Prof. T. Fung, Dr. P. W. Lai and Dr. Joanna Lee. Some of the research publications produced as part of this policy research form the basis of this doctoral dissertation. In particular, the literature review of this dissertation is built on the following two publications.

- Woo, L. Y., Lam, K. C., Fung, T., Lai, P. W. & Lee, W. Y. 胡麗恩、林健枝、馮通、黎邦懷及李慧瑩 (2007). Gong zhong fan dui lin bi she shi zhi wen xian hui gu 公眾反對鄰避設施之文獻回顧 [Understanding public opposition to NIMBY facilities: A Review]. In *Global Chinese Geographers' Conference 2007*, 28-29 April 2007, p. 294-298. Taiwan: National Kaohsiung Normal University.
- Lai, P. W., Woo, L. Y., Lam, K. C., Lee, W. Y. Lee & Fung, T. (2007). *Siting and community response to locally unwanted land uses: A literature review*. Hong Kong: Centre for Environmental Policy and Resource Management, Department of Geography and Resource Management, the Chinese University of Hong Kong.

The review of local siting context is supported by assessment information from the following two research outputs.

- Lam, K. C. & Woo, L. Y. (2008). Does EIA facilitate siting of locally unwanted landuses in compact cities? The case of Hong Kong. *Presentation at the 28th Annual Conference International Association for Impact Assessment*, 4-10 May 2008, Western Australia: Perth.
- Centre of Environmental Policy and Resource Management (CEPRM). (2008). *Managing conflicts arising from the siting of locally unwanted landuses in*

Hong Kong: Strategic Options. Hong Kong: Centre of Environmental Policy and Resource Management, the Chinese University of Hong Kong.

In addition, the following three publications focused on the social survey study laid the foundation for Chapter 5 of this dissertation.

- Lam, K. C. & Woo, L. Y. (2009). Public perception of locally unwanted facilities in Hong Kong: Implications for conflict resolution. *Local Environment*, 14(9), 851-869.
- Woo, L. Y. & Lam, K. C. (2008). Managing siting conflict in Hong Kong: Public perceptions towards siting and the importance of trust. In: *Summer International Symposium and Lectures on Social Policy: Construction and Development of Social Policies in East Asia*, 17-19 July 2008, p. 188-199. Shanghai: Fudan University.
- Lam, K. C., Lee, W. Y., Fung T. & Woo, L. Y. (2007). Challenges of managing NIMBYism in Hong Kong. In: Tung, F., Lam, K.C., Lee, W.Y., Marafa, L. and Woo, L.Y. (eds.), *International conference on siting of locally unwanted facilities: Challenges and issues*, 12-14 December 2007, p. 83-93. Hong Kong: The Chinese University of Hong Kong.

Overall, this research addresses the NIMBY problem in Hong Kong by investigating the factors underlying public opposition, with particular focus on the role of trust in affecting public acceptance of LULUs. Moreover, this study offers a siting strategy that can help resolve siting conflicts. Chapter 2 provides a literature review and a conceptual framework for this study. Chapter 3 describes the local settings to account for the emergence of siting conflicts and presents the problem statement for this research. Chapter 4 describes the overall research approach and the design of social surveys and in-depth interviews for this research. The results are analysed and discussed in Chapters 5 and 6. Based on the overall findings of this study, Chapter 7 provides policy recommendations on developing a siting strategy for siting locally unwanted facilities. It is anticipated that the findings of this study can shed light on how siting conflicts arise and how public opposition to LULUs can be addressed effectively. It will contribute not only to the building of knowledge about LULUs and the NIMBY phenomenon, but also to better environmental

governance and sustainable development.

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Abbreviations

ACE	Advisory Council on the Environment
AFCD	Agriculture, Fisheries and Conservation Department
AFRF	Aviation Fuel Receiving Facility
AIDS	Acquired Immunodeficiency Syndrome
ANOVA	Analysis of Variance
BANANA	Build Absolutely Nothing Anywhere Near Anyone
CAVE	Citizens Against Virtually Everything
CLP	China Light and Power Company Limited
CSD	Census and Statistics Department
DPA	Development Permission Area Plan
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
ETWB	Environment, Transport and Works Bureau
HK	Hong Kong
HK SAR	Hong Kong Special Administrative Region
HKBWS	Hong Kong Bird Watching Society
ISD	Information Services Department
IWMF	Integrated Waste Management Facilities
KCRC	Kowloon Canton Railway Corporation
LegCo	Legislative Council
LIM	Living Island Movement
LNG	Liquefied Natural Gas
LULUs	Locally Unwanted Land Uses
NENT Landfill	North East New Territories Landfill
NGOs	Non-governmental organisations
NIABY	Not In Anybody's Backyard
NIMBY	Not In My Backyard
NOOS	Not On Our Street
NOPE	Not On Planet Earth
OZP	Outline Zoning Plan
SCMP	South China Morning Post

SENT Landfill	South East New Territories Landfill
SHT	Shatin
TKO	Tseung Kwan O
TM	Tuen Mun
TPB	Town Planning Board
TPO	Town Planning Ordinance
US	United States
WENT Landfill	West New Territories Landfill
WWF HK	World Wide Fund For Nature Hong Kong
χ^2 Test	Chi Square test

Chapter 1 Introduction

1.1 Introduction

The siting of locally unwanted land uses (LULUs) and facilities, such as landfills, incinerators, chemical waste treatment facilities and nuclear power plants, has become an increasingly difficult task in many different countries and societies due to strong local opposition. This is a contentious problem because while these facilities are required to meet societal needs, they may at the same time impose environmental, health and social risks on nearby residents. This can cause significant frustration in the government and industrial organizations, as the latter are unable to implement what they perceive to be socially needed facilities. Known as the NIMBY (Not In My Backyard) phenomenon, the problem is particularly intense in dense and compact metropolitan areas such as Hong Kong because of their high population density, rapid rate of development and limited available space. Improper management of the problem can lead to conflicts and social disharmony.

As suggested in the literature, it is essential to understand and respond to public perceptions towards LULU siting if the siting problem is to be effectively resolved (Kasperson, 2005; Schively, 2007). In fact, the emergence of siting conflicts is deeply grounded in public concerns about LULU siting (Kasperson, 2005). Such issues include, for example, the need for the proposed facility, impacts and risks associated with the facility, inequities and lack of trust in the proponent. Schively (2007) also suggests that future research should focus on studying how public perceptions may shape the NIMBY response, as more fully understanding these perceptions would facilitate the design of a better decision making process that can gain public support.

This research aims at addressing the NIMBY problem in Hong Kong through understanding the factors that affect public response to siting, and exploring the role of trust in affecting public acceptance of LULUs. To achieve this goal, the research undertook social surveys across Hong Kong as a whole and also in selected communities with and without NIMBY conflicts to gauge the views of the public.

In addition, in-depth interviews were conducted with key local stakeholders to understand their opinions on the importance and formation of trust in affecting public acceptance towards LULU siting. The social surveys attempted to elucidate the influential factors in affecting public support for or opposition to siting, while the interviews with key local stakeholders aimed at identifying conditions which may enhance or undermine trust in society. Overall, it is anticipated that the findings of this research can shed light on how LULU conflicts arise and provide policy recommendations for conflict resolution.

This introductory chapter provides an overview of the challenges in LULU siting and the context for this research. It emphasizes the need to understand public perceptions affecting the public response to siting, and particularly explores the importance and formation of trust in affecting public acceptance. This overview is followed by a discussion of why this research focuses on the study of environmental-related LULUs in Hong Kong. Then, a discussion of the three major research objectives for this study is provided. Finally, it summarises the conceptual and practical contributions of this study and gives an outline of the organization of this dissertation.

1.2 Research Context

The siting of LULUs is fraught with many problems and challenges. In the course of urban and economic development, a full array of public facilities and land uses is required to meet societal needs. These facilities and land uses will unavoidably impose some adverse impacts on certain sectors or communities of society. With the growing public awareness of environmental and health issues, the siting of these so-called "Locally Unwanted Land Uses" (LULUs), such as landfills, incinerators and power plants, has become increasingly difficult due to local community opposition, and this has emerged as a major public issue in many nations of varying social and political settings like the United States, Canada, Japan, Taiwan and Vietnam (Lai et al., 2007; Quah & Tan, 2002). Indeed, the attempt to impose these unwanted facilities on an unwilling host community is one of the most difficult challenges faced by government today.

The primary cause of the NIMBY (Not In My Backyard) problem is the asymmetric distribution of the costs and benefits involved in LULU siting. The LULU facilities may impose, or be perceived to impose, negative external effects on the host community. Such negative effects include environmental, human health, economic, social and political impacts. However, the benefits from siting tend to go to the whole society or the facility operator. As such, while the LULU projects may be justified from a broader societal perspective, local communities often wish them to be located anywhere but in their neighborhood, resulting in the NIMBY response.

To resolve such siting conflicts, it is imperative to understand how the public, especially the affected community, perceive LULUs, the siting process and the proponent. In a comprehensive review of the literature, Schively (2007) underscored the need to understand the public perception of LULUs and highlighted possible variations in perception with regard to the type of LULUs and the socio-economic characteristics of the host community. Another reason why public perceptions must be unraveled and understood is the narrow technical focus of the authorities involved in planning and providing LULUs (Fiorino, 1989). The literature abounds with examples showing that local communities have much broader interests embodying social, economic, risk and health concerns, which may not be the same as the interests of the technical experts (Reams & Templet, 1996). These public concerns are related to their perception of the need for the facility, risk, equity concern, social trust towards the siting institution, and amplification-driven impacts (Kasperson, 2005). It is thus important to understand the perceptions underlying public opposition towards LULU siting. Only by truly understanding the public concerns and opposition can we solve the siting problem satisfactorily for the benefit of society.

Moreover, the complexity of the NIMBY problem points to the need for high levels of trust in the institutions responsible for siting LULU facilities and managing the risk and equity problems. Nonetheless, it is evident from most siting cases that there is a lack of trust in the experts and agencies involved in the decision-making process (Baxter, et al., 1999). Some suggest that siting controversies are actually

crises of trust (Petts, 1998). The literature suggests that trust is broad-based and multidimensional, and that the building blocks of trust include competence, openness, credibility, reliability, integrity, commitment, consistency, predictability, objectivity, fairness and caring (Kasperson et al., 1992; Metlay 1999; Poortinga & Pidgeon, 2003; Renn & Levine, 1991). Trust may be undermined if the observed performance of the siting institution does not match social expectations (Petts, 1998). It is thus important to understand the building of trust among stakeholders in the siting process.

Therefore, this research aims to examine the factors influencing the public response to LULU siting and particularly to explore the role of trust in affecting public acceptance of LULUs. These findings can provide policy recommendations for developing a better siting strategy that addresses public opposition to LULUs. It is believed that the findings of this study will contribute not only to the building of knowledge about the NIMBY phenomenon and resolving conflicts over siting, but also to better environmental governance and sustainable development.

1.3 Focus of the Study

The overall goal of this study is to address the NIMBY problem by focusing on the siting of environmental-related LULUs in Hong Kong. This specific focus was chosen for several reasons. First, siting conflicts in Hong Kong are particularly severe due to the territory's high population density and limited space. Conflicts are expected to increase in intensity and number in the future when Hong Kong has to identify more sites for LULUs (Lam et al., 2007). The study of the NIMBY problem in Hong Kong can therefore shed light on similar dense and compact cities in other countries dealing with such problems. Second, most of the LULU and NIMBY studies in the literature are from western countries (Tuan & Maclaren, 2005), and very few studies have been done in the unique socio-political context of Asian cities like Hong Kong. Third, as will be elaborated in Chapter 3, most of the siting conflicts in Hong Kong are related to the siting of environmental-related LULUs, the siting of which has aroused considerable public concern in recent years due to their potential impacts on the environment, health and safety (Lai et al., 2007). Whilst

this study will focus on environmental-related LULUs in Hong Kong, the findings will have implications for the development of other types of human or public-service LULUs such as prisons, clinics for infectious diseases, and psychiatric hospitals.

1.4 Research Objectives

This study has three major research objectives with regard to the challenges of LULU siting and the focus of this research. First, the study aims to identify and examine the factors affecting public response to siting in Hong Kong. As I will discuss in Chapter 2, while previous studies have uncovered a large number of factors that influence public response to LULU siting, it is still not completely clear what factors most influence public response to siting. Second, this study aims to explore the role of trust, particularly its formation and importance, in affecting public acceptance of LULUs. There are some theoretical studies on the formation of trust, but there is a lack of empirical information regarding the perception of trust from the stakeholders' perspectives (as reviewed in Chapter 2). Such findings can shed insights on actions that enhance trust building in the siting process. Third, based on the findings of this research, policy recommendations on formulating a siting strategy that can help address public opposition to LULUs will be provided.

1.5 Research Significance

This study is both conceptually and practically important in the field of siting research. The study is conceptually significant in three ways. First, it contributes to the literature by addressing the role of perception in influencing public support or opposition to siting. Second, this is one of the few studies that attempt to examine the effect of community experiences on public perceptions of and attitudes towards LULU siting by undertaking social surveys. This can yield additional knowledge on the effects of siting experiences on residents' perceptions and response to siting. Third, by exploring the importance and formation of trust from the local stakeholders' perspective, this research provides a deeper understanding of the qualitative nature and formation of trust as viewed by the stakeholders. This research is also of practical significance for better policy making in LULU siting. As noted by Schively (2007), there is a lack of study on the linkage between public perception and

resolution strategies to address LULU opposition. The findings of this study will be useful in providing insights for policy makers to help them design a strategy that takes public perceptions into consideration and builds trust among stakeholders to gain public support for both the siting process and the final decision.

1.6 Dissertation Outline

The thesis consists of seven chapters. Following the introduction, Chapter 2 provides the literature review and conceptual framework for this study. It highlights previous studies of factors influencing public response to siting and suggests a framework for explaining public attitudes towards LULU siting. Chapter 3 describes the local settings which provide the backdrop for LULU siting in Hong Kong and highlights the flaws of the existing planning and siting process in engaging and consulting the public. The problem statement for this research is presented with reference to both the conceptual framework and local context. Chapter 4 describes the overall research approach and the design of social surveys and in-depth interviews to address the first and second objectives of this study. The specific research questions subsumed under these two research objectives are addressed in Chapters 5 and 6 correspondingly. Chapter 5 presents the results of four social surveys with samples collected from the whole of Hong Kong and from three communities, some of which have NIMBY issues. This chapter describes the general public perceptions of and attitudes towards siting, examines the inter-community difference in residents' perceptions and response to siting, and assesses the relative importance of different factors upon public attitudes towards siting. Chapter 6 presents the results of the stakeholder interviews on the importance and formation of trust with respect to LULU siting. The findings provide insights for trust building in the siting process. Chapter 7 summarizes the key findings and implications of this research and addresses the third research objective by providing policy recommendations, based on this study, on formulating a siting strategy to address public opposition to LULUs.

Chapter 2 Literature Review and Conceptual Framework

2.1 Introduction

The siting of a LULU facility is often a controversial policy issue, arousing significant public concern and community opposition. In fact, the NIMBY phenomenon is complicated and the public concerns are multidimensional in nature (Wolsink, 2006). Freudenburg and Pastor (1992) suggest that the traditional perspective (viewing LULU opponents as ignorant, irrational or selfish) is no longer appropriate for understanding the NIMBY problem. They suggest using the "public prudence" perspective to understand the differences between citizens and the proponent or specialists, and the factors that create such conflicts in the first place. A review of recent literature also suggests that public opposition to LULUs may be sensible and may serve a broader public interest embodying social, economic, risk and health concerns, which may not be the same as the interests of the administrators or technical experts (Schively, 2007). It is thus important to understand the factors underlying public concerns about the siting of LULUs so as to seek effective methods to address the NIMBY problem.

To date, there has been no research on the LULU and NIMBY phenomenon in Hong Kong. This research is designed to understand the factors affecting public response to siting in local communities and particularly to explore the role of trust in the siting process, so as to suggest policy recommendations for formulating a siting strategy that can help address the NIMBY problem. This chapter first summarizes the literature characterizing the nature of the LULU and NIMBY phenomenon, pointing to the need to understand the factors underlying public opposition to the siting of LULUs. This is followed by a review of the literature on factors affecting public opposition to LULUs, including community siting experience, the perceived need for the facility, risk perception, perceived fairness, trust and certain socio-demographic characteristics. Based on the literature review, a conceptual framework for explaining public opposition to LULUs is proposed.

2.2 LULUs and the NIMBY Phenomenon

Conflicts arising from siting LULUs are common worldwide in both developed and developing countries. With growing public concern about environmental and health protection, the siting of an increasing range of controversial facilities has become a major policy problem in North America, Europe, Australia, Japan, Taiwan, the Republic of Korea, Vietnam and other parts of the world (Lesbirel & Shaw, 2005; Shaw, 1996). These controversial facilities include power plants, waste treatment and disposal facilities, oil refineries, rail lines, airports, cemeteries, psychiatric hospitals and others. These are collectively described as Locally Unwanted Land Uses (LULUs) by Popper (1981).

LULUs can be broadly divided into two different types: (1) environment-related facilities with potential environmental and health impacts and (2) human or public service facilities associated with quality of life or property values (Schively, 2007). The environmental-related LULUs can be further subdivided into energy, waste, transport and industry facilities. They are more intensively studied in the literature than are the human service facilities, a fact which may be related to the environmental and health risks associated with the former type of facility (Lai et al., 2007).

The term NIMBY ("not in my backyard") is generally used to describe the attitude of opponents of LULUs, who may recognize that a facility is needed but are opposed to its siting in their locality. Dear (1992) describes the NIMBY phenomenon as follows:

> In plain language, NIMBY is the motivation of residents who want to protect their turf. More formally, NIMBY refers to the protectionist attitudes of and oppositional tactics adopted by community groups facing an unwelcome development in their neighbourhood. . . . Residents usually concede that these "noxious" facilities are necessary, but not near their homes, hence the term "not in my backyard". (p. 288)

In fact, the LULU and NIMBY phenomena are so common that they are sometimes associated with similar acronyms, all with a relatively negative connotation, including: NOOS (not on our street); NIABY (not in anybody's backyard); NOPE (not on Planet Earth); BANANA (Build Absolutely Nothing Anywhere Near Anyone) and CAVE (citizens against virtually everything) (Schively, 2007). In this research, the term "LULUs" is used for locally unwanted land uses or facilities, whereas the "NIMBY" phenomenon is used to refer to public response to or rejection of such facilities.

The NIMBY phenomenon is caused by the spatial asymmetry of benefits and costs arising from LULU siting. The benefits of LULUs are usually broadly distributed across a whole region or nation, while most of the costs tend to be localized (Armour, 1991). This is often the key public problem posed by LULUs, as described by Wolsink (1994):

> The NIMBY phenomenon arises when, in order to provide a public good, a local facility must be constructed. The disadvantages are all at the local level, and the local residents feel that they are being saddled with the consequences of something that is of benefit to society as a whole. They enjoy few of the benefits, while the costs are concentrated in their own area. NIMBY is the result of a social dilemma characterized by a spatial separation of advantages and disadvantages. (p. 854)

LULUs threaten their surroundings by inflicting, or promising to inflict, negative externalities in the form of negative impacts (Popper, 1981). According to Zeiss (1991), such externalities can be classified into physical and non-physical impacts. Physical impacts refer to environmental, health and safety impacts. Environmental impacts may include air, water and noise pollution, disturbance or damage to ecosystems, visual and landscape impairment, and nuisances from odours, light, vector insects and pests (Al-Yaqout et al., 2002; Rahardyan et al., 2004; Tuan & Maclaren, 2005). Non-physical impacts refer to economic, social and political

impacts. As suggested by Zeiss (1991), there is a consecutive linkage running from physical impacts to beliefs, and finally to attitudes, in that physical impacts can generate non-physical impacts such as economic impacts (for example, decline of property values), social impacts (for example, loss in aesthetic values and community image), and political impacts (for example, lack of fairness and loss of trust in the siting agent).

The real or perceived side effects from LULUs depend on the nature of the LULUs and the perceptions of the public, which are embedded in the societal context. The externalities of a LULU may vary depending on its location, type, number, scale, technology, operation procedures, appearance, etc. (Dear, 1992). Popper (1981) notes that the most prominent LULUs are typically large, based on medium to high technology (for example, nuclear power and chemical waste treatment facilities), built by the public sector, and sited primarily by local governments. Many such LULUs are large in scale and are associated with technological risks that threaten low-probability/ high consequence events and require detailed risk assessment (Popper, 1987). In most cases, it is the most unwanted LULUs that threaten the largest negative externalities as perceived by the public and are the most objectionable to the public (Armour, 1991; Popper, 1987). It is thus important to assess the impacts and risks of a LULU based on sound scientific and technical assessment, while understanding the public perception of the impacts and risks associated with LULUs in order to increase the chance that the public will accept the siting decision.

2.3 The Need for a Positive Perspective for Understanding the LULU and NIMBY Phenomenon

In recent years, there is a new trend of positive assessment of the NIMBY phenomenon, which suggests that the public's position on siting issues may be rational and politically legitimate, and that protests against LULUs allow citizens to express their concerns and provide useful information that is often overlooked by specialists (Burningham, 2000; Kuhn & Ballard, 1998; Wolsink, 2006). In other words, citizens may have a fairly good grasp of the issues and a reasonable concern

for genuine risks to community health and welfare that may be ignored by technical and administrative authorities.

In the literature, as pointed out by Freudenburg and Pastor (1992), three traditional perspectives are used to understand the LULU and NIMBY phenomena. Each one has implications for the research approach to study NIMBY issues. Freudenburg and Pastor (1992) argue that the traditional "ignorant/ irrational" and "selfish" perspectives, which historically have been the most predominant views (Hunter & Leyden, 1995; Inhaber, 1998; Kraft & Clary, 1991), are no longer appropriate for understanding the LULU and NIMBY phenomena. They suggest that the "public prudence" perspective is more positive and useful for understanding the NIMBY response. They suggest that public concerns about siting proposals may not be unreasonable, and that the public are paying more attention to the big picture of the siting proposals than are the scientific specialists, who may focus more on the technical details. This view is supported by the recent literature on LULU siting. For example, Burningham (2000) observes that the explanations for the NIMBY phenomenon have been shifting from individual self-motives to wider legitimate social, economic and environmental concerns related to sustainable development and community democracy. Kuhn and Ballard (1998) consider that the NIMBY phenomenon is a "checking factor" against ineffective decision-making, and that community opposition stems from well-grounded concerns about the impacts of LULUs and the fairness of the siting process. Wolsink (2006) also comments that the NIMBY phenomenon is complicated and that public concerns are multidimensional in nature, making the traditional perspective and approach no longer appropriate for studying NIMBY conflicts.

From this positive perspective, public opposition to LULUs may be sensible and serve a broader public interest embodying social, economic, risk and health concerns, which may not be the same as those of administrators or technical experts (Fiorino, 1989; Lober, 1993; Schively, 2007). It seems important to understand public concerns and the basis of public opposition to LULU siting from the larger social context in which the conflicts emerge. This highlights the need to uncover the

factors affecting public response to siting (the main purpose of this chapter) and to understand the local context in which local siting conflicts occur (to be discussed in the next chapter). Only by understanding the true nature of public opposition can the siting problem be resolved satisfactorily and in the interest of the public.

2.4 A Review of Factors Affecting Public Response to LULU Siting

The following section provides an overview of some key factors that may contribute to public opposition towards LULUs. These factors include community experiences with LULU siting, perceived need for the LULU facility, perceived risks, fairness and trust in those making the decisions, and certain socio-demographic characteristics (see Lai et al., 2007; Woo et al., 2007).

2.4.1 Community Siting Experience

There are few studies being done on the effect of community siting experiences on the public acceptance of locally unwanted facilities. Two relevant studies are described below; both support the argument that an area's historical experience with LULU projects will impact how residents react to other siting projects. As pointed out by Murdock et al. (1998), "negative or positive experiences with projects and developers often 'stain' an area's environmental context relative to siting" (p. 94) and may affect residents' perceptions and response to facility siting.

Murdock et al. (1998) surveyed 1,683 residents from 15 communities in five western US states at various stages of waste facility siting and development (waste operating, waste siting, non-waste development and control stage). They tested the effect of a variety of factors including the characteristics of the residents, the nature of the siting process, the perceived impacts, mitigation or compensation actions, and other factors on residents' attitudes to waste facility siting in their community. Their results show that residents from communities with existing waste developments are generally more willing to accept waste-related types of development. These residents of waste-impacted communities have experienced the reality of such projects, perceive such projects as having had few negative effects, and generally perceive lower levels of risks, and have higher levels of trust in technology and in

management. They may believe that the incentives in terms of job employment and compensation are beneficial if such projects are to be sited in a community. Murdock et al. (1998) concluded that residents' perceptions of risks and economic benefits and the community's experiences with the siting of controversial projects are important factors affecting residents' acceptance of LULUs. The thesis research by Wrigley (1998) is actually part of the Murdock et al. (1998) study, and comes to the same conclusion that a community without prior siting experience has greater opposition to a LULU than another community with such experience, and that the variation in response may be due to the perception of greater economic benefits and less harmful effects from waste facility siting in communities with existing waste-type development.

Another study by Gallagher, Ferreira and Convery (2008) gives supporting evidence that community experiences with LULUs affect community perceptions towards LULU siting. Through public surveys with 501 residents from one potential and one actual host community in Ireland, Gallagher et al. (2008) examine the effects of distance, local authority consultation efforts, community experience and other factors on attitudes towards local landfill development. The results show similarities and differences in attitudes among the potential and actual host communities towards landfill development. Both communities hold a broadly similar opposing attitude towards landfill development in their local area, while the actual host community has a slightly higher level of opposition towards a landfill in its community. However, Gallagher et al. (2008) find that the perceived risks appear statistically higher in the potential host community with little or no experience of landfill development as compared to the actual host community. This indicates that experience with undesirable developments influences individuals' perception of risk. Moreover, in the potential host community, distance is a proxy for expectation of environmental risk, and is key to explaining their rejection of the proposed landfill facilities.

Furthermore, logistic regression analysis of the Gallagher et al. study (2008) shows that public consultation and engagement efforts are influential in gaining local acceptance of landfill developments in both communities. This indicates that no

matter whether the community has the siting experience or not, community consultation by authorities is consistently important and is key to affecting public acceptance of such facilities. Gallagher et al. (2008) suggest that "...selecting the best site through a transparent planning system is likely to generate a greater level of acceptance provided that the required technical information is available, interpreted credibly and disseminated widely" (p.251). They explain that residents from the actual host community may still reject the facility, not because they feel threatened by the risks but because they feel they have served their time by hosting the landfill in their community. Gallagher et al. (2008) suggest that policy makers consult the actual host community thoroughly and adequately to address their concerns before pursuing compensation policies.

In sum, the above studies indicate that community experience with LULU development is an important factor affecting public perceptions and response to siting. In particular, there is not yet sufficient research on the effect of community siting experiences on public perceptions and the intensity of community opposition. It is thus of research interest to fill this knowledge gap and investigate the influence of community siting experiences on public perceptions of and response to siting. More of the conceptual framework will be discussed in Section 2.5.

2.4.2 Need for LULUs

In the siting literature, the notion of need for the facility is described as "the fulcrum upon which all siting process rests" (Laws and Susskind, 1991, p.29), and the perception of need is influential upon public acceptance of LULU facilities. A study by Kunreuther, Fitzgerald & Aarts (1993) shows that host community recognition of need is significantly correlated with facility acceptance by the public. Portney (1991) suggests that increased awareness of the need for facilities leads to a sense of shared interest in the facility's operation and therefore an acceptance of the decision to site and operate a facility. In other words, if people accept the argument that there is a need for a facility, they may also accept some of the responsibility for responding to that need, giving the siting process a chance of succeeding.

In fact, the need for the facility refers to both rational determination and public recognition of the need for a facility (Laws and Susskind, 1991). The Siting Credo (Kunreuther, Susskind & Aarts, 1993) stresses that when planning and building LULUs, every effort should be made to convince the public that the status quo is unacceptable and that the LULU facility is the best solution to address the problem. It is thus necessary for the stakeholders to understand the trade-offs of different options and the consequences of doing nothing not just now but in the future, and to reach consensus on the potential need for the LULU facility in the first place in the whole planning and siting process.

The Alberta case study (Kuhn and Ballard, 1998; McQuaid-Cook, 1992) underscores the importance of recognizing the need from the host community perspective. A hazardous waste facility was seen to address the threat of economic loss and even community extinction in Swan Hills after the oil field recession in 1982, and it was accepted by the public with 79% of voters in support. Therefore, if the facility can be framed so that it addresses existing discrepancies in the community, then the value of the facility to the community is likely to be much improved even before other incentives are added (Zeiss & Lefsrud, 1995). In short, new facilities must respond to real social needs, and the needs should be defined and justified from the community perspective.

2.4.3 Perception of Risk

Siting research has illustrated that public opposition is often stimulated by perceived risks from proposed facilities (Kasperson, Golding & Tuler, 1992). For example, Portney (1991) suggested that perception of risk may be the most important factor in public opposition to the siting of hazardous waste facilities in the United States. Easterling (1992) suggests that the perceived levels of impacts and risks can affect public acceptability of the facility. Similarly, Easterling and Kunreuther (1995) also found that perceptions about facility safety were closely tied to perceptions of the acceptability of a high-level nuclear waste facility. It is thus important to understand public perception of risk in order to improve the understanding of the underlying causes of public opposition.

There is evidence showing that the perception of risk differs between experts and the public. The level of risk perceived by the public is often higher than that of the experts because the public often incorporate social, cultural and political considerations in their evaluation of risks (Slovic, 1987). The lay-expert confrontation on risk perception is due to the fact that they have different definitions of the risk concept. This also causes a conflicting viewpoint on the acceptability of risks between the government or risk experts and the public (Petts, 1997). The public are generally more averse to risk than government or technical experts, and are also motivated to avoid or reduce risk (Slovic, 2000). Yet the siting agency often focuses on probabilistic risk analysis, which may not be sensitive to factors involved in public risk perception. Technical experts employ risk assessment to evaluate hazards, whereas the majority of the public rely on intuitive perceptions and judgments of risks (Slovic, 1987).

For technical risk assessors, there is only one true risk for any given hazard, usually based on the probability and the magnitude of negative outcomes, and it can often be scientifically assessed (Cvetkovich & Earle, 1992). The expression of risk is usually based around the loss of life associated with an adverse event (Breakwell, 2007), for example:

- Mortality rate – the number of people at risk that suffer death per unit time (e.g., number of deaths per year);
- Death per unit measure of activity – the number of people at risk that suffer death within a defined amount of exposure (e.g., number of deaths per 100 million working hours of exposure to a chemical factory); and
- Loss of life expectancy – the years lost that those affected might realistically have expected to have (e.g., average life expectancy of the population would be reduced by about five years if we do not tighten up the air pollution control measures)

However, the quantitative assessment of risk is fraught with uncertainties. There are at least four types of uncertainty (Hance, Chess & Sandman, 1989) that scientists or engineers typically deal with the public about: (1) the uncertainty of science in general, as science is never one hundred percentage certain; (2) the inexactness of the risk assessment process; (3) the incompleteness of the information; and (4) differences of professional opinion related to the implications of the information and optimum risk management options. This indicates that risk cannot be accurately assessed because of uncertainty. Moreover, the feelings of uncertainty may increase the community's disagreements with the government or experts on the risk management required in facility siting.

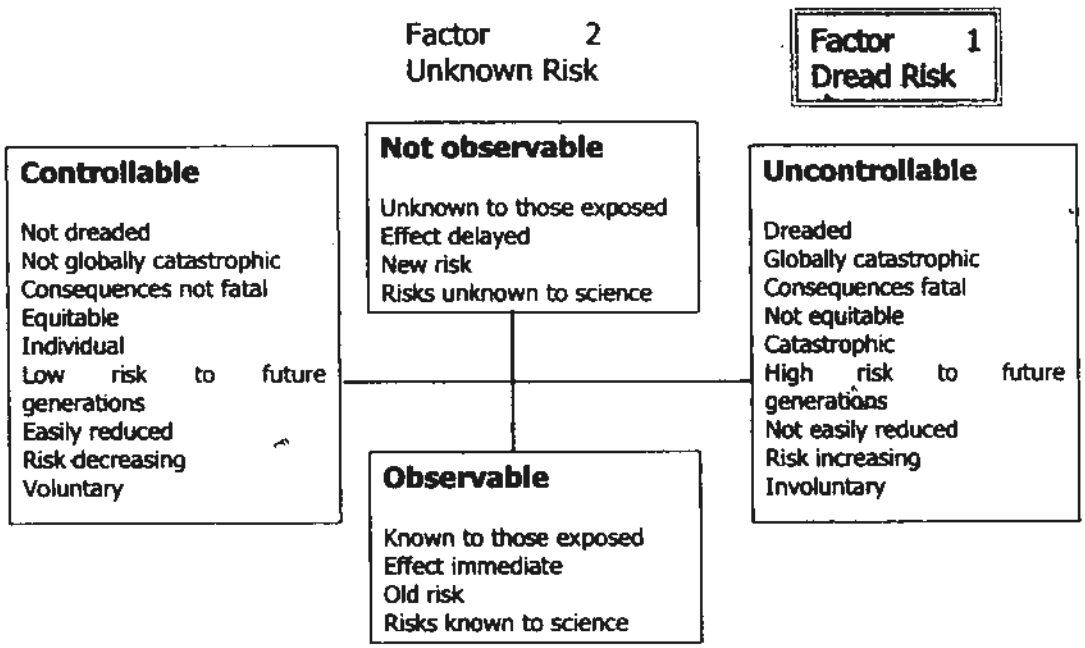
Research has demonstrated that public perception of risk does not rely on statistical measures even when accurate risk estimation is possible (Slovic, Fischhoff & Lichtenstein, 1979). The public perception of risk has been found to be a social construction, influenced by a wide array of psychological, social, institutional and cultural factors (Slovic, 2000). This view is supported by other social scientists who consider environmental risks to be social issues that represent the interaction between physical and psychosocial characteristics, which involves social experience, culture and value judgments (Cvetkovich & Earle, 1992; Kates & Kasperson, 1983). According to Kasperson et al. (1988), the social and cultural context within which the risk occurs, the source of the risk, and the social and economic effects of the risk ("risk ripples") serve to influence public perception of risk. To address public concerns about risk, the design of risk assessment should therefore take into account differences in the risk perception of experts and the lay public, and should consider how the public construct their views of risk (Renn et al., 1992).

Considering that the public perception of risk is socially constructed and affected by many other factors besides scientific data, it is helpful to understand what other factors are involved in public perception and evaluation of risk. Research in the field of risk perception strongly suggests that other factors are at work. Below is a discussion of two studies which show the key factors that underlie public perception of risk. The first one is Slovic's study (1987), which finds that risk perception is

related to two main factors - "dread risk" and "unknown risk" (Figure 2.1) - by using factor analysis to determine correlations among the many characteristics of risk perception. The "dread risk" factor includes risks that are considered uncontrollable, dreaded, globally catastrophic, having fatal consequences, not equitable, posing high risks to future generations, not easily reduced, increasing, and involuntary. Examples include nuclear weapons and nuclear power. The "unknown risk" includes risks which are indeterminate, unknown to those exposed, have a delayed harmful effect, or are even unknown to science. Slovic's psychometric model of risk perception is based on the theoretical frame that people's responses to risks differ depending on the characteristics of the risks, since unique patterns of qualities of each risk can affect people's perception (Slovic, 1987).

In addition to Slovic's model, Covello, McCallum & Pavlova (1989) suggest that people consider many factors in evaluating and judging the acceptability of risks (Table 2.1). These factors include, for example, catastrophic potential, familiarity, uncertainty, controllability, effects on children and future generations, dread, trust in institutions, accident history and equity. According to Hance et al. (1989), "the greater the number and seriousness of these factors, the greater the likelihood of public concern about the risk, regardless of the data" (p. 212). It appears that public concerns about risks are a function of many other factors besides scientific risk data. Risks associated with facility siting are often perceived to be involuntary, not under individual control, unfair, from untrustworthy sources, unfamiliar, uncertain and potentially catastrophic. According to Covello et al. (1989), such risks are perceived to be high by the public. Ignoring these factors that influence public perception is guaranteed to raise the level of hostility between the community and government and hinder a successful resolution of the siting problem.

Figure 2.1 Dread Risk (Factor 1) and Unknown Risk (Factor 2)



(Source: Slovic, 1987)

The above review indicates that in order to address public concerns about risk which affect the public response to facility siting, the government or siting agency should not rely on quantitative risk assessment only, but also address the broader issues of concern to the public such as trust, credibility, competence, control, voluntariness, fairness, caring, and compassion, which influence the level of concern on factors associated with public risk perception (Covello, McCallum & Pavlova, 1989).

Table 2.1 Factors Important in Public Risk Perception and Evaluation

Factor	Conditions associated with increased public concern	Conditions associated with decreased public concern
Catastrophic potential	Fatalities and injuries grouped in time and space	Fatalities and injuries scattered and random
Familiarity	Unfamiliar	Familiar
Understanding	Mechanisms or process not understood	Mechanisms or process understood
Uncertainty	Risks scientifically unknown or uncertain	Risks known to science
Controllability	Uncontrollable	Controllable
Voluntariness of exposure	Involuntary	Voluntary
Effects on children	Children specifically at risk	Children not specifically at risk
Effects on future generations	Risk to future generation	No risk to future generation
Victim identity	Identifiable victims	Statistical victims
Dread	Effects dreaded	Effects not dreaded
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions
Media attention	Much media attention	Little media attention
Accident history	Major and sometimes minor accidents	No major or minor accidents
Equity	Inequitable distribution of risk and benefits	Equitable distribution of risk and benefits
Benefits	Unclear benefits	Clear benefits
Reversibility	Effects irreversible	Effects reversible
Personal stake	Individual personally at risk	Individual not personally at risk
Scientific evidence	Risk estimates based on human evidence	Risk estimates based on animal evidence
Origin	Caused by human actions or failures	Caused by acts of nature or God

(Source: Covello, McCallum & Pavlova, 1989)

2.4.4 Equity

Another aspect of community opposition is concern about fairness or equity in LULU siting. Some studies show that acceptance of LULUs is associated with the perceived level of fairness (Sjöberg and Drottz-Sjöberg, 2001). In fact, the NIMBY phenomenon is a response to an inherent imbalance in the distribution of a facility's benefits and costs. Costs, in terms of human health and environmental and aesthetic impacts, are concentrated in the hosting community, while benefits accrue to the whole community (Mazmanian & Morell, 1990). Residents of the host community may question why a facility should be located in their community, why they should

bear the costs and why they are not involved in the decision-making process for the siting.

The equity problem is of increasing interest in the siting literature (Armour, 1992; Baxter et al., 1999; Greenberg, 1993; Lawrence, 1996; Lober, 1995; Rabe, 1992; Reams & Templet, 1996). Different forms of equity are discussed in the literature. Environmental equity and environmental justice are more general and broader principles, while social, spatial, procedural, intergenerational and cumulative equity are more specific principles (Lawrence, 1996; Baxter et al., 1999; Kasperson, 2005). Environmental equity and environmental justice are closely linked. Environmental equity concerns fairness in the distribution, both socially and spatially, of environmental risk based on certain criteria (e.g., in relation to generators of risks) (Baxter et al., 1999). It is considered to be one of the tractable principles for achieving environmental justice. Environmental justice embraces the broad principle that all people and communities are entitled to equal protection of environmental, health, employment, housing, transportation, and civil right laws (Bullard, 1994).

Within the broad framework of environmental equity and environmental justice, social equity, spatial equity and procedural equity provide more specific and practical principles for guiding the siting process (Lawrence, 1996; Baxter et al., 1999). Social equity addresses the issue of fairness in the distribution of facilities, benefits and costs among stakeholders in the society. Spatial equity considers the fairness of locations and the allocation over space of facilities at the selected sites. Procedural equity is concerned with fairness in the decision making process for locating the facility and the level and kind of input of the local community incorporated into the facility siting process. Intergenerational equity is about fairness of distribution of costs and benefits among different generations, while cumulative inequity refers to problems arising from past siting and other actions that have created a legacy of risk-bearing in the community and region (Kasperson, 2005).

Research studies focused on the distributional and procedural dimensions of equity draw more attention in the literature. The literature suggests that there is no single morally correct way to allocate LULU facilities (Vari, 1996). Which distribution principle ought to be selected depends on personal or cultural preferences and social and political context (Renn, Webler & Kastenholz, 1996). Young (1993) mentions that it is not easy to define distributive fairness in theory and accordingly proposes three basic principles of distributive fairness:

- Principle of parity (egalitarianism): equal distribution of burdens among all constituents; for example, in the case of facility siting, this might mean that all communities (counties, states, etc.) get an equal number of the same kind of LULU facilities;
- Principle of proportionality (proportionality to contribution): distribution of the burden in proportion to certain fairness criteria such as contribution to the problem, vulnerability, and endowment; and
- Principle of priority (distribution rule): distribution of the burden is allocated in whole to one community based on selected criteria, such as technical and geological criteria.

Linnerooth-Bayer (2005) comments that the competing perceptions of fairness are associated with plural world views which are defined primarily by group or social belongings. She suggests that in the siting process, the stakeholders' world views be analysed to understand their positions on equity, and that it is important to pursue negotiation to reach social consensus on how to distribute LULU facilities.

Beyond distributive equity, procedural equity is also considered to be an important issue in siting because discussions of distributive equity cannot answer the question of who has and ought to have the right to make decisions, and according to what procedures or criteria those decisions are to be made. Lake (1996) argues for a broader conception of equity that "entails full democratic participation not only in decisions affecting distributive outcomes but also, and more importantly, in the

gamut of prior decisions affecting the production of costs and benefits to be distributed" (p. 165).

Hunold and Young (1998) also argue that justice in hazardous siting requires democratic decision making in the siting process, as the opportunity to participate in initial discussions and decisions about where to site risky facilities can increase the legitimacy of the siting process. They argue that just siting requires deliberative or communicative democracy. Through public discussion, "citizens often transform their understanding of the problem and proposed solutions, because public communication forces them to take account of the needs and interests of others and may also give them information that changes their perceptions of the problem and alternatives for solving it" (Hunold & Young, 1998, p. 87). They also propose five procedural criteria for democratic discussion and decision making in facility siting, including:

- Inclusiveness: all affected social positions and perspectives are represented in discussion and decision making;
- Consultation over time: the decision making process must allow sufficient time for discussion, and all parties must be able to participate in the agenda setting, formulation, decision, implementation, and evaluation stages of the policy process. Arrangements that provide for brief periods of community consultation as part of a larger decision-making process fall short of this condition because they permit only sporadic public participation;
- Equal resources and access to information: weaker parties should receive informational or economic support to compensate for the imbalance of power and resources;
- Shared decision-making authority: local residents, public officials and the LULU developer share in the authority to make decisions so that nobody may disregard the interests and needs of other parties and make decisions unilaterally; and
- Authoritative decision making: decisions made by the participants in the

decision-making process should be authoritative, that is, they should in fact decide the policy solutions to the siting problem at hand.

In short, to address the public concerns on fairness that affect the public acceptability of LULU facilities, it is important to understand the stakeholders' different world views of fairness and to analyze what people consider "just" or "unjust" with regard to facility siting. Different views of fairness need to be reconciled through a democratic deliberative process to build social consensus on the best siting approach.

2.4.5 Trust

Trust is another important factor affecting the level of opposition to a siting decision. Many studies have shown that local residents may oppose facilities if they do not trust the proponent or the technology. For example, Pijawka and Mushkatel (1991/1992) find that a lack of trust in the Department of Energy is the key factor in the public's opposition to the siting of a high-level nuclear waste repository in Nevada. Ibitayo and Pijawka (1999), based on a national survey of state siting cases, find that low levels of trust in the facility developer are associated with unsuccessful siting outcomes for hazardous waste facilities in the United States. In Asia, it has also been reported (Yoo, 1996) that lack of trust in the government conduced to subsequent rejection of the proposed siting of nuclear power plants in the Republic of Korea. The above studies point to the need for high levels of trust in the institutions and people responsible for siting LULUs and managing impacts and risks. As indicated by Pijawka and Mushkatel (1991/1992), trust is critical for the reduction of risk perception and public acceptability of LULUs.

The concept of trust is widely identified as important to social interactions, but is rarely well defined or characterized (Kasperson, Golding and Tuler, 1992). "Trust is a social construct and an abstraction" (Bradbury, Branch & Focht, 1999, p. 118). It can be defined as "a psychological state comprising the intention to accept vulnerability based upon the behavior of positive expectations of the intentions of or behavior of another" (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 395). Kasperson et al. (1992) define trust as "a person's expectation that other persons and institutions

in a social relationship can be relied upon to act in ways that are competent, predictable, and caring" (p. 169). Renn and Levine (1991) define trust in communication as "the generalized expectancy that a message received is true and reliable and that the communicator demonstrates competence and honesty by conveying accurate, objective, and complete information" (p. 53). To summarise, Kasperson et al. (1992) suggest that the important themes of different definitions of trust include the following:

- Expectations about others and orientations toward the future. Trust allows people to interact and cooperate without full knowledge about others and future uncertainties.
- A notion of chance or risk taking. To trust also implies that one has confidence that others will act voluntarily in a manner that is beneficial, even if not certain.
- Subjective perceptions about others and situations. These include perceptions of the intentions and attributes of others (for example, commitment, competence, consistency, integrity, honesty), their motivations, the performance of institutions, and judgements about the quality of a message (for example, the availability and accuracy of information).

Trust is necessary for the proper functioning of individuals and societies (Govier, 1997). The literature suggests that there are three major functions of trust in our society (Misztal, 1996):

- Reduction of complexity – trust as a communication medium that reduces the complexity of the world;
- Enhancement of cohesion – formation of self-identity and hence the building up of relationships with the wider world; and
- Collaboration – fostering of mutual respect and solidarity among persons with different perspectives, which is a form of social capital that benefits the larger community.

Therefore, the social importance of trust lies in its contribution to cooperative behavior and information flow.

Furthermore, trust is composed of multiple dimensions. Following Lewis and Weigert (1985), Kasperson et al. (1992) conceptualize different types of trust as follows:

- Cognitive trust involves a choice based on reasoning about the available evidence and is based on a degree of cognitive familiarity with the object of trust. Among the cognitive dimensions of trust, expertise, technical competence, neutrality, objectivity, honesty and openness have been empirically identified in the literature as affecting judgements about trust (Bradbury et al., 1999).
- Affective trust is based on emotional bonds between the truster and trustee, their relationship being based on shared values and group identification (social bonds), which is strongest in close primary relationships (e.g., lovers and friends).
- Behavioural trust is a behavioural enactment in social relationships and includes the element of fiduciary responsibility. Behavioural dimensions of trust include, for example, acting in the interests of public, dedication to a commitment, empathy, care and concern (Bradbury et al., 1999).

The different types of trust reflect varying combinations of rationality and emotion (Kasperson et al., 1992). Affective trust is more important in primary group relations (e.g., family, lovers) because of the strong influence of emotional and social bondedness between the trustor and the trustee. However, trust depends more on rationality in secondary group situations (e.g., citizens and government/ institutions) because of the diverse variety of individuals in the structurally complicated social system. It is thus expected that for relationships between community members and government agencies, cognitive and behavioral components of trust are more

important than emotional trust (Kasperson et al., 1992). Overall, the three dimensions of trust are combined in actual human experience and indeed affect the development and loss of trust (Bradbury et al., 1999).

To make the concept of trust more operational, some researchers have tried to identify the major attributes that constitute trust: that is, what kind of evaluative judgments contribute to the creation or destruction of trust in society. The literature shows that the key attributes of trust include: competence, openness, credibility, reliability, integrity, commitment, consistency, predictability, objectivity, fairness and care (Kasperson et al., 1992; Metlay 1999; Poortinga & Pidgeon, 2003; Renn & Levine, 1991). A review of the relevant literature is presented below.

Kasperson et al. (1992) propose four key dimensions of trust that are important in the development and maintenance of trust: commitment, competence, caring, and predictability. Commitment rests on the perception that the trustees are objective and fair throughout the whole decision process and that they provide the public with needed accurate information. Competence is a perception that individuals and institutions are competent in their mandated area of responsibility. Caring is the perception that an institution acts in a way that shows concern for the people who put their trust in it. Predictability is the perception that trust rests on the fulfillment of expectations and faith, that is, people know what they can expect from the organization or individual.

Similarly, Renn and Levine (1991) identify five core components or attributes of trust: perceived competence, which represents the degree of technical expertise of the source; objectivity, which reflects the absence of bias in information; fairness, which refers to the degree to which the source takes into account all relevant points of view; consistency, which is the predictability of arguments and behavior based on past experience and previous communication efforts; and faith, which reflects the perception of the source's "good will".

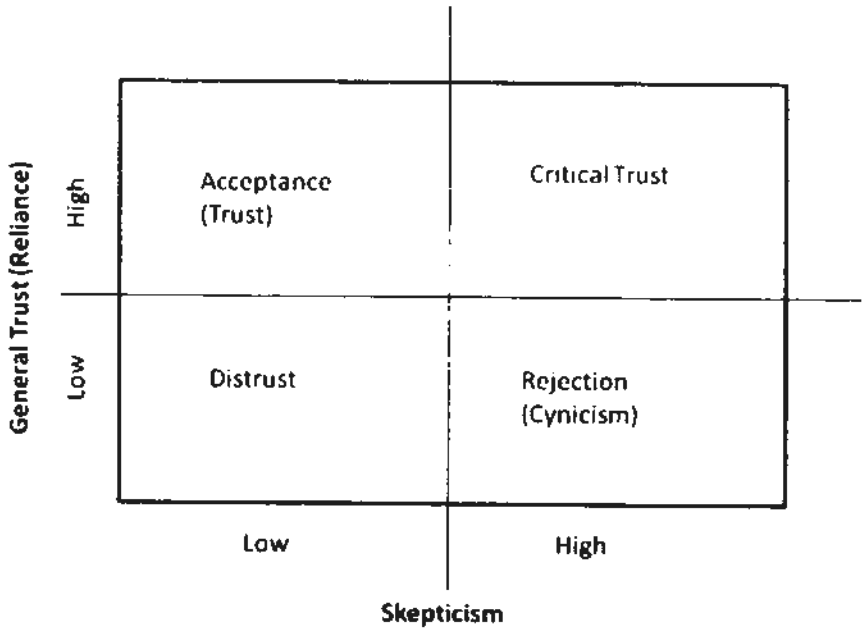
Metlay's (1999) study of judgements of trust in the U.S. Department of Energy suggests that trust is not as complex as other researchers propose, and is based on two distinctive components: (1) affective beliefs about institutional behavior (or "trustworthiness") which include elements of openness, reliability, integrity, credibility, fairness and caring, and (2) perceptions of how competent an institution is.

Poortinga and Pidgeon (2003) analysed eleven trust items regarding trust in the British Government toward risk regulation in five social risk issues: climate change, radiation from mobile phones, radioactive waste, genetically modified food, and human genetic testing. By applying principal component analysis, their results show that various trust items could be described by two dimensions: (1) a general trust dimension, which is related to a wide range of trust-relevant aspects, such as competence, care, fairness, and openness; and (2) a skepticism component including credibility, reliability and integrity that reflects a skeptical view of how risk policies are brought about and enacted. These two factors are found to be the best predictors of trust in the regulation of the five social risk issues. Based on these two dimensions of trust, Poortinga and Pidgeon (2003) propose a typology of trust in government to explain how the trust factors affect people's attitudes toward government (Figure 2.2). Poortinga and Pidgeon (2003) conclude that different policy responses are needed for "critical trust", "distrust" or "cynicism"(rejection) situations. They suggest that more attention should be given to the interaction among institutional structures, agency behavior, and the qualitative properties contributing to the perception of trust.

It appears that different types of trust ranging from acceptance (trust) to rejection (cynicism) are related to how the government performs in terms of the attributes contributing to trust, and whether its performance can meet public social expectations. In other words, trust in government derives from how it performs in handling siting issues, especially public concerns and fears about risks. In particular, it is important that the government's observed or perceived performance

can meet public expectations in terms of competency, objectivity and caring in facility siting in order to gain public trust (Petts, 1998).

Figure 2.2 A Typology of Trust in Government



(Source: Poortinga and Pidgeon, 2003)

Trust is a form of social capital that it is important to nurture within the siting process. Kasperson et al. (1992) makes the point that "trust is probably never completely or permanently attained, but rather requires continuous maintenance and reinforcement" (p. 169). After all, "trust must be learned, not earned" (Uslaner, 2002, p.77). In addition, trust is built over time via the socialization of individuals into the political culture (Putnam, 1993). Slovic (1993) also indicates that trust is easier to destroy than to create, and that negative (trust-destroying) events carry much greater weight than positive events. Once trust is destroyed, it is very difficult to regain trust without extensive changes in the siting process and/or the stakeholders involved (Covello, 1996). Thus, it is important to build or improve trust in the process despite its fragility.

Indeed, the heart of the problems with trust between a siting agency and the public is often linked to the agency's failure to involve the public early or to communicate

effectively (Hance et al., 1998). In particular, public involvement should involve the public earlier in the project development cycle, and should aim to address real public concerns and incorporate their comments and values into siting decision (Kunreuther, Slovic & MacGregor, 1994). Moreover, it is imperative to build trust by conveying an air of care, competence and integrity in all actions and communication with the public. Through such a continuous and interactive communication process, different viewpoints can be taken into account and different stakeholders can be engaged in meaningful discussion and negotiation, contributing to mutual trust and transforming conflict into consensus (Bradbury et al., 1999).

2.4.6 Socio-demographic Characteristics

Evidence for the importance of socio-demographic characteristics is not consistent across the literature. Some prior studies have been done to characterize NIMBY proponents (Bacot et al., 1994; Lober, 1995; Mansfield, Van Houtven and Huber, 2001; Walsh et al., 1993). These studies indicate that an individual's gender, age, and education level may be relevant to the characteristics of people who show a NIMBY attitude. However, the evidence regarding the influence of such characteristics is inconsistent and inconclusive. For example, Bacot et al. (1994) reported that females and lower-income and less-educated groups are more likely to oppose landfill facilities. However, Mansfield et al., (2001) found that opponents of proposed facilities are typically older, more highly educated and wealthier. Moreover, studies by Lober (1995) and Walsh et al. (1993) failed to find any relationship between demographic characteristics and support/ opposition for facility siting. Similarly, Zeiss and Atwater (1987) failed to find a relationship between levels of income or education and support for facility siting. Further, in Cavatassi and Atkinson's (2003) study, none of the socio-economic variables including household income, age, gender and household size are significant in their model of landfill opposition.

Due to inconsistencies in previous work, it is difficult to predict the effect of demographic variables on the overall attitude and behavior of individuals towards

LULU siting. Socio-demographic variables are therefore included in the analysis of this study for exploratory purposes.

2.5 The Role of Public Participation and Social Learning in Facility Siting

In the siting literature, much has been written on the role of public participation in increasing public acceptance of LULU facilities and thus the probability of facility siting success (Armour, 1992; Kraft & Clary, 1991; Kunreuther, Fitzgerald & Aarts, 1993; Petts, 1995 & 2000; Lidskog, 1997; Rabe, 1992). In fact, some consider public participation to be a guiding principle for facility siting, and central to the development of trust and equity in the siting process (Baxter et al., 1999). Many siting case studies highlight unsuccessful siting efforts in which a lack of opportunity for public participation has heightened the level of controversy and public opposition (Davies, 2008; Dawson & Darst, 2006; Kraft and Clary, 1991; Kuhn & Ballard, 1998; Portney, 1991). This happens when the public believe that they are not given the opportunity to participate in public policy decision-making processes, and perhaps find themselves powerless to influence decisions about a locally unwanted development despite their grave concerns about LULUs. It is this feeling of powerlessness and being treated unfairly that nurtures mistrust and outrage toward government agencies, leading to the NIMBY phenomenon. Public participation can therefore be a crucial element for successful facility siting.

Public participation is best understood as a continuum representing degrees of citizen power (Creighton, 2005). Different types of public participation that refer to different levels of involvement are commonly conceptualized as Arnstein's (1969) ladder of participation (see adapted version in Table 2.2). Arnstein (1969) uses a variety of terms to indicate different levels of public power in the decision-making process. Participation at the lower levels is referred to as either non-participation ("Government power") or tokenism ("inform" or "consult 1" level, referring to consultation without any assurance that public concerns and ideas will be taken into account) (see Table 2.2). Meaningful participation comes at a higher level of public involvement in terms of the degree of empowerment to ownership, which is referred to as consultation with consideration of public opinions or "consult 2" level,

Table 2.2 Arnstein's (1969) Ladder of Participation

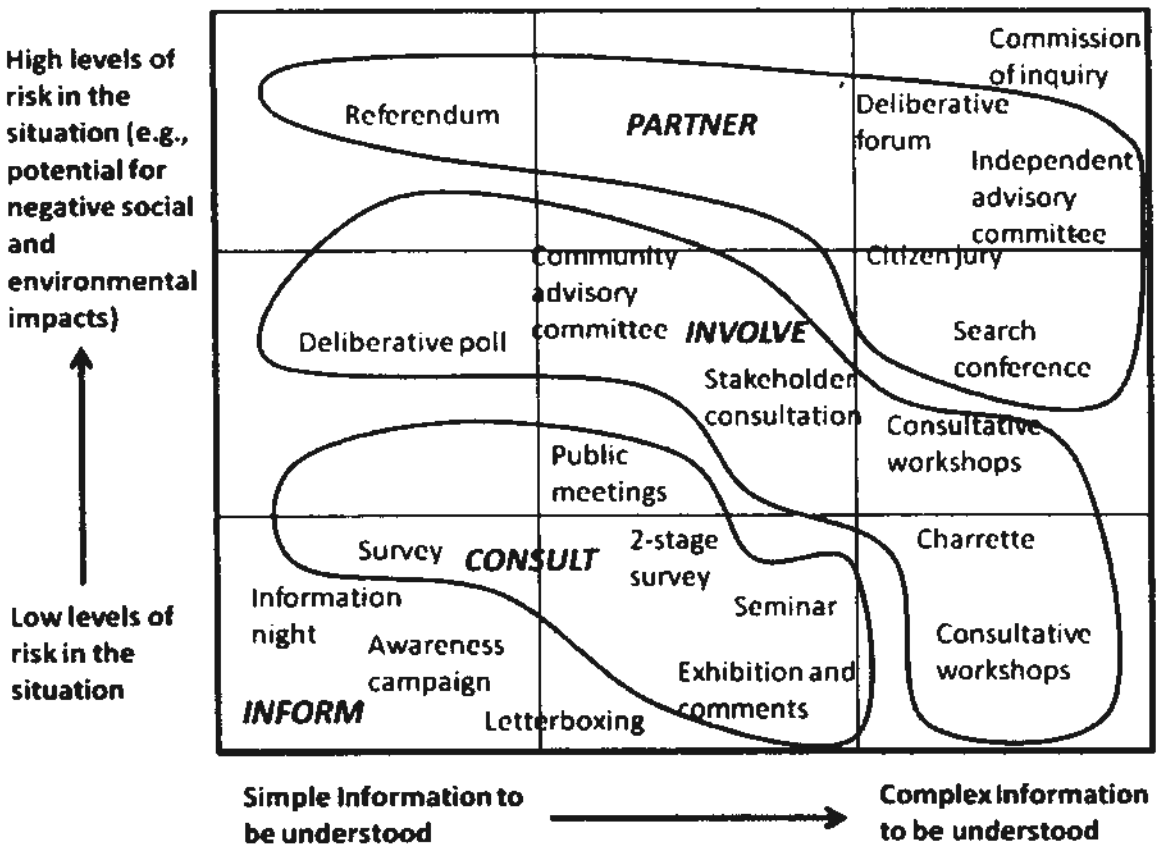
Ladder of public participation	Characteristics	Examples
Citizen Power	**Citizens act without communicating with government**	• Citizen investigation • Citizen development and implementation of programs
Power-sharing	**Citizens and government solve problems together**	• Funding of citizen groups to hire technical consultants and/ or implement projects • Citizen oversight and monitoring • Meetings called jointly by government and citizen groups
Consult 2	**Government asks citizens for meaningful input and intends to listen**	• Citizen advisory committees • Informal meetings • On-going dialogue • Some public hearings
Consult 1	**Government asks citizens for limited input and would prefer not to listen**	• Most public hearings • Most requests for responses to formal proposals • Pro-forma meetings and advisory committees
Inform	**Government talks; citizens listen**	• Some public meetings • Press releases and other informational strategies: newsletters, brochures, etc.
Government Power	**Government acts without communicating with citizens**	• Some investigations • Legal and enforcement actions

(Source: Hance et al., 1989)

"power-sharing or partnership", and "citizen power". Moreover, it is generally believed that public participation at the higher levels increases the capacity for information processing and learning, and increases the capacity to elicit values, which in turn increases the capacity for problem solving and conflict resolution (Robinson, 2002). Furthermore, public participation can also address the issue of public trust in decision making. A research study (Poortinga & Pidgeon, 2003) illustrates that varying levels of trust depend on both the issues being considered and the interactions between the government and the citizens in the participation process. It is thus expected that the greater the level of participation, the greater the level of trust that can be engendered.

Despite the potential benefits of increased levels of public participation in the policy decision-making process, the siting agency can err by giving too little power to the public or placing interactions with the community at lower levels on the "Ladder of Citizen Participation" (Table 2.2) than might be appropriate in many siting cases (Baxter et al., 1999; Hance et al., 1989; Petts, 1997). This may be because the siting agencies are concerned about the additional time and cost it may take to involve communities in decision-making. They may also be afraid that their effort might backfire and create more hostility toward government. Yet if the siting agency fails to involve the public in the siting process early, they can create a variety of forms of public outrage against the siting decision, which may ultimately undermine the efficiency of the policy-making. Many such "efficient" agency decisions end up in court. It is thus more advisable for the agency to spend more time dealing with local public concerns and establishing its credibility in the siting process in order to earn more public trust and support in the process. This is particularly true for the siting of facilities which may impose greater impacts or risks to the public. As suggested by Robinson (2002), engagement methods that correspond to higher levels of public participation are needed for situations such as siting more risky LULUs with a technology scale, entailing high levels of risks and complex information which needs to be understood by the public for informed decision-making to occur (see Figure 2.3).

Figure 2.3 Community Involvement Matrix



(Source: Robinson, 2002)

Furthermore, active involvement of stakeholders and the public at large can facilitate social learning. This is essential for achieving better governance through an adaptive process and political change, which are highly needed to address the strong intermingling of social, technical and political issues involved in facility siting. Social learning is a process in which stakeholders work together, sharing information to identify effective, socially acceptable strategies to mitigate impacts and identify opportunities (Diduck & Mitchell, 2003; Fitzpatrick, 2006; Van den Howe, 2006; Webler et al., 1995). Thus, social learning means not just individuals learning in a social situation, but rather "the process by which changes in the social condition occur – particularly changes in public awareness and changes in how individuals see their private interest linked with the shared interests of their fellow citizens" (Webler et al., 1995, p. 445). It is thus a product of individuals learning how to solve their shared problems in a manner that is responsible to both legal and social responsibilities (Webler et al., 1995). In this perspective, social learning which focuses on adaptive management and political change, and assists with problem solving through stakeholders' contribution of ideas, potential solutions and resources, may provide a collaborative approach to address complex environmental, social and political issues and conflicts arising from facility siting.

Whilst the value of increased public participation and social learning has been recognized in recent years, there is a lack of in-depth research on the process and actual involvement of stakeholders in design activities (Tippett et al., 2005). Mostert et al. (2007) highlight three key elements of social learning that are particularly important in the context of sustainability. First, all stakeholders should be actively engaged and well informed in the process. Second, a form of organization is required to facilitate collaboration and coordinate their actions in a sustained way so that the stakeholders can enter into a long-term working relationship. Third, it is a learning process and requires the development of new knowledge, attitudes, skills, and behaviours to deal with differences constructively, adapt to change, cope with uncertainty and cooperate with others in solving collective problems. Mostert et el. (2007) also identify the factors fostering or hindering social learning based on their 10 case studies of European river-basin

management, including: the role of stakeholder involvement, politics and institutions, opportunities for interaction, motivation and skills of leaders and facilitators, openness and transparency, representativeness, framing and reframing, and adequate resources. These factors can be considered as key elements for meaningful public participation that enhances social learning processes and outcomes.

In summary, the siting literature consistently asserts the importance of public participation in minimizing conflict. Many studies also advocate the need for collaborative resolution of policy and siting conflicts in relation to LULU developments (Kraft, 2000; Lidskog, 1997, 1998 & 2005; Vira, 2006). An emerging literature on democratic approaches to siting controversies suggests that public participation with an emphasis on social learning can provide opportunities for public dialogue and deliberation, enhance public understanding of technical issues and the public's capacity to make decisions, and build trust in the process and in the proponent. In particular, a social learning process can go beyond individual interests and/ or values and create opportunities for a shared understanding and joint action, which are highly needed to address the complexity, uncertainty and conflict-ridden issues involved in facility siting. Obviously, the siting agency and the process need to be highly flexible, able to facilitate interactions among stakeholders, open and attentive to public opinions, and have a strong capability to gather and assess diverse information. Such an adaptive institution needs not only high technical expertise but also strong capabilities in political diagnosis, communications, capacity building and political analysis. It must also be able to work collaboratively and deliberatively with communities, community leaders and other key stakeholders that may enter the siting debate and to generate change in response to the sustainability imperative.

2.6 A Conceptual Framework for Understanding Public Response to LULU Siting

The above literature review illustrates that a number of factors may affect public acceptance of a LULU facility. These factors include community siting experience, perception of need for the facility, perception of risk, perceived fairness, trust, and certain socio-demographic variables. However, the community's experience with siting has not been sufficiently considered in the siting literature (Section 2.4.1), and there are not enough empirical studies on the qualitative role of trust in affecting public acceptance of LULUs (Section 2.4.5). Moreover, the evidence for the effect of socio-demographic characteristics on the residents' attitudes towards siting is mixed and inconclusive (Section 2.4.6).

Many studies have sought to better understand public opposition to LULU siting. However, much of the previous literature has focused on the separate effects of individual factors, and few studies have constructed a framework to integrate different factors in explaining public opposition. For example, Lober (1993) constructs a model of attitudes towards waste facility siting which includes the attitudinal variables: perception of risk, familiarity with technology, trust in government, equity concerns, and perception of need; and the demographic variables. Lober and Green (1994) examine the significance of trust in government, fear of health impacts, and certain socio-demographic factors on public opposition to waste facilities. The studies of both Murdock et al. (1998) and Gallagher et al. (2008) aim to understand public attitudes towards siting by testing the determinant factors across communities at different stages of LULU siting and development. The Murdock et al. (1998) study tests the effect of a variety of factors including the characteristics of the residents, the nature of the siting process, the perceived impacts, mitigation or compensation actions, and certain other factors across different communities at various stages of siting and development (waste operating, waste siting, non-waste development and control stage). Gallagher et al. (2008) examine the effects of distance, local authority consultation efforts, experience and other factors on attitudes towards landfill development in a potential and actual host community.

Overall, a review of these western studies shows that they still do not fully address explanations of residents' support for or opposition to LULU siting.

A framework integrating the previous research findings is therefore proposed to permit an improved understanding of public attitudes towards LULU siting. This framework suggests an integrative perspective for examining the factors that influence the public response to siting, including community siting experience, perceived need for the facility, perceived risk, perceived fairness in the siting approach, trust in government, and certain socio-demographic characteristics (Figure 2.4).

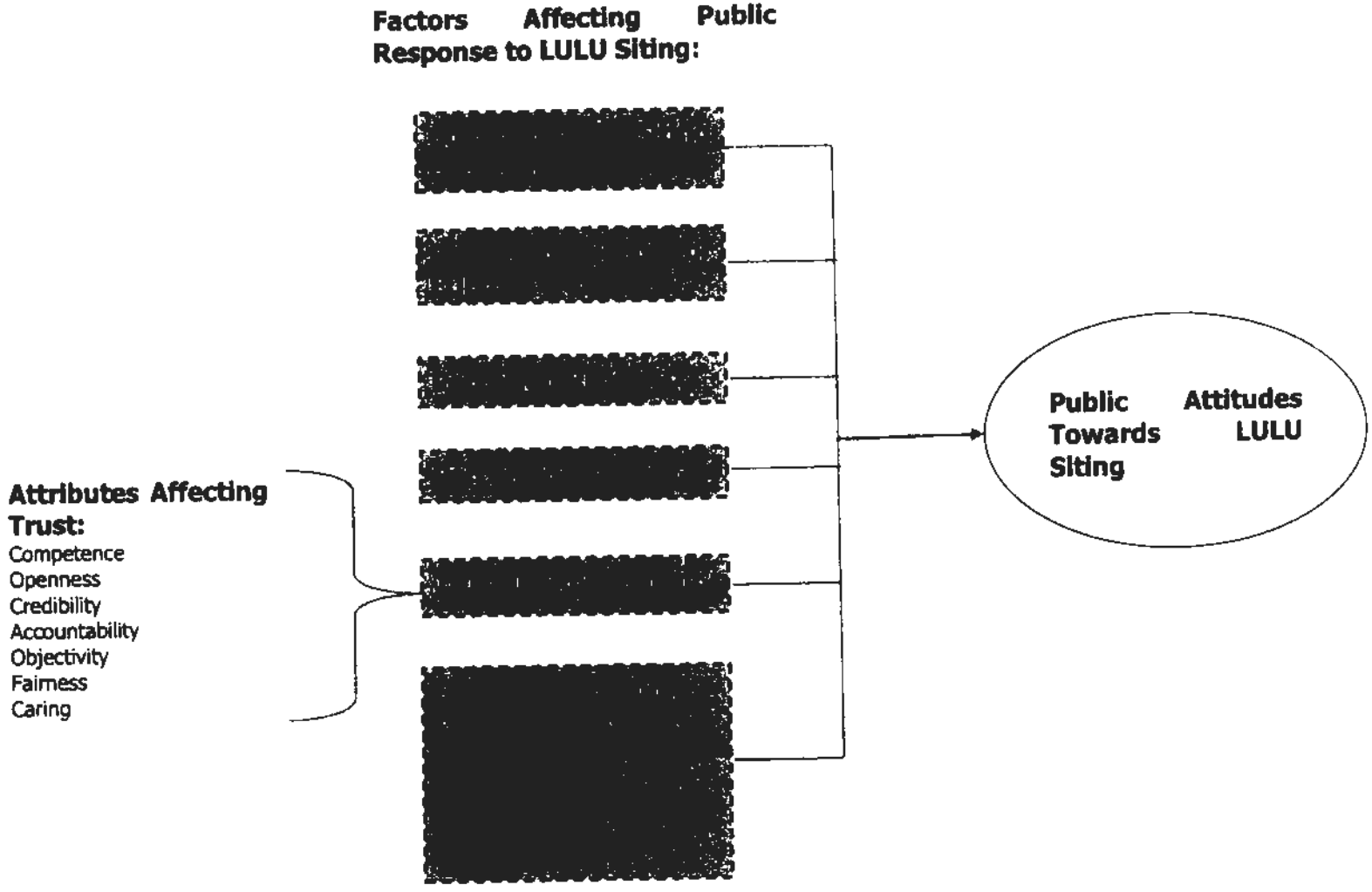
In this proposed framework, public opposition to LULUs is recognized as a function of: (1) negative community experiences in LULU siting; (2) a lack of perceived need for the facility; (3) a high level of associated risk; (4) a feeling that the siting process is unfair; (5) a low level of trust in government; (6) and certain socio-demographic characteristics of local residents. These factors are in turn related to public perceptions of past siting decisions (siting experience), the LULU itself (the perceived need and risk), the siting approach (perceived fairness), and the proponent (trust) underlying public opposition to LULUs. Four of these factors (perceived need for the facility, perceived risk, perceived fairness and trust) are often cited as factors contributing to the NIMBY phenomenon in the literature as reviewed in Section 2.4. The first factor (community siting experience) has not been sufficiently considered in the literature; it is included in this study because it is believed that community siting experience may influence residents' perceptions and acceptance of LULUs. As the effect of socio- demographic characteristics is not consistent in the literature, they are not considered as a key factor in this study, but are included in the analysis for exploratory purposes.

Furthermore, considering the importance of trust in gaining public support for LULU siting as emphasized in the literature (Section 2.4.5), the above framework adds to the qualitative nature of trust by incorporating the attributes that influence trust. The review of literature in Section 2.4.5 shows that trust is influenced by attributes

including: perceived competence, openness, credibility, reliability, commitment, consistency, predictability, objectivity, fairness and caring (for example, Kasperson et al., 1992; Metlay 1999; Renn & Levine, 1991). As such, it is further proposed in the above framework that trust is derived from the perceived competence, openness, credibility, accountability, objectivity, fairness and caring of the organization responsible for siting. Overall, this framework illustrates the complex nature of public response to siting, as these factors are embedded in public perceptions and these perceptions may operate interactively to determine perceptions of siting. It appears that the success of siting will depend on how the public perceptions which are grounded in these factors are dealt with in the siting process.

In summary, this research will be guided by the above conceptual framework in explaining public opposition to LULU siting. The key factors in this framework include community siting experience, perceived need for the facility, perceived risk, perceived fairness in siting approach, trust in government, and certain socio-demographic characteristics. Furthermore, this framework has particularly added to the qualitative nature of trust by including the attributes that may affect trust, including perceived competence, openness, credibility, accountability, objectivity, fairness and caring.

Figure 2.4 A Conceptual framework for Understanding Public Response to LULU Siting



2.7 Summary

The siting of LULUs is consistently a major policy problem in many countries. The fundamental cause of local opposition is the spatial asymmetry in the distribution of costs and benefits arising from LULU siting. The costs, i.e. the negative externalities of the LULU facilities, tend to be localized in the host community, while the benefits are distributed across the whole society. This siting problem often creates a social dilemma and conflicts between citizens and policy makers in a society.

In recent years, the literature on the NIMBY issue suggests that public opposition may be prudent and sensible. Some opponents may have genuine concerns about social, economic, risk and health issues which may have been ignored by technical and administrative authorities. Only by truly understanding the public concerns over LULU siting can the siting problem be resolved satisfactorily and in the interest of the public. It is thus imperative to understand the factors contributing to public opposition, so as to search for effective means to resolve siting conflicts.

This chapter focuses on a review of the literature on factors underlying public opposition to LULUs and provides an integrated framework for understanding the public response to LULU siting. The literature review shows that some factors, such as the perceived need for LULUs, the perceived risks, the perceived fairness, and trust, do influence the public acceptability of LULUs. Based on the above review, an integrated framework for an improved understanding of public response towards LULU siting is proposed. The framework includes the consideration of these potential factors and suggests that public opposition to LULUs is a function of: (1) negative community experiences in LULU siting; (2) a lack of perceived need for the facility; (3) a high level of associated risk; (4) a feeling that the siting process is unfair; (5) a low level of trust in government; and (6) certain socio-demographic characteristics of local residents. Furthermore, considering the importance of trust in relation to LULU siting as highlighted in the literature, this framework has particularly added to the qualitative nature of trust by including the attributes that may affect trust, including perceived competence, openness, credibility, accountability, objectivity, fairness and caring. This can provide a basis for understanding the qualitative role of trust in relation to LULU siting.

In order to get a better understanding of the emergence of siting conflicts in Hong Kong, the next chapter will describe the local context in which decisions on LULU siting are made, which sets the stage for the discussion of different perceptions held by the public and the siting agency and why the current siting approach cannot effectively deal with siting disputes. After reviewing the local context, the problem statement for this research with reference to the literature and conceptual framework will be provided in the final section of Chapter 3.

Chapter 3 LULU Siting in Hong Kong

3.1 Introduction

While NIMBY is a world-wide phenomenon, the mode of its emergence, the dynamics between the key players and the means of resolution are shaped by the local geographical, political/ institutional and socio-economic context. These contextual elements are related to why the siting problem in Hong Kong is serious, why the public have concerns about LULU siting, and why the current siting process cannot resolve such problems. In particular, it is necessary to understand the current planning and siting process in Hong Kong and to examine the effectiveness of the current approach in dealing with public disputes. An understanding of the local context and the planning and siting process will provide a useful starting point for understanding the NIMBY phenomenon in Hong Kong. Thus, this chapter sets the scene for this study and allows an in-depth analysis of the factors which may determine public opposition to LULU siting.

This chapter first introduces the political, physical, environmental, and socio-economic context for studying the NIMBY problem in Hong Kong. Attention is given to a review of the planning and siting process in Hong Kong with a focus on examining the efficacy of the process in embracing public views and responding to their concerns about siting. This is followed by a brief review of the major LULU siting cases in Hong Kong, which reinforces the relevance of the factors identified in the proposed conceptual framework in Section 2.5 of Chapter 2 and documents the emergence of NIMBY conflicts in the local context. Finally, a problem statement which explains the arguments for this research is provided.

3.2 Context of Hong Kong

The problem of LULU siting is deeply connected with the context in which it occurs. The context to be discussed in this section includes the political, physical, environmental and socio-economic settings. Following this, the next section focuses on the institutional process for LULU siting in Hong Kong, with a focus on examining the weaknesses of such a process in dealing with siting disputes.

First, the examination of the NIMBY conflict in Hong Kong requires an understanding of its political context, which sets the scene for the government's approach to making siting decisions and suggests why such an approach is not well received by the local community in particular. Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China, essentially a small city-state that enjoys a high level of autonomy under the "one country-two systems" model (Hong Kong SAR Government [HKSAR Government], 2008). Hong Kong is run by an "administration-led" government including the Chief Executive, the Executive Council, and the policy-making bureaux including the departments and agencies responsible for policy implementation. Indeed, the government's style of policy making is attributed to administrative rationalism by some researchers (Hills & Welford, 2002). It emphasizes the role of experts in the policy process rather than extensive public engagement, and is associated with particular institutional forms such as the use of environmental impact assessment, and reliance on expert advisory bodies to legitimize policy initiatives and decisions (Gouldson, Hills & Welford, 2008; Hills, 2004). The elected legislators and political parties strongly resist this executive-led, top-down approach in policy making and consultation, and they demand that the government be more accountable, transparent and responsive (Bauhinia Foundation Research Centre, 2007).

Under such a top-down administrative approach, decision making is highly centralized, and the power of the local District Council is very limited in the control and direction of local planning and development. This makes the affected community reluctant or resistant to accept decisions imposed on them. Currently, District Councils are only advisory bodies, and their main function is to advise the Government on matters affecting the well-being of the people and on the provision and use of public facilities and services. While members of the District Council can offer views on proposed developments, little power is bestowed upon the local District Councils in planning matters under the "administrative-led" regime, and the final decision rests with the respective government bureaux and departments. This institutional setup has been criticized by some as being too centralized and top-down (Leverett, et al., 2007a), leading local residents to feel alienated from central policy and plan making, and seldom gaining a sense of control over their immediate environment (Ng, 2004).

The difficulty of siting LULUs in Hong Kong is aggravated by the physical terrain and small size of the city. With only 1,104 km^2 of land, Hong Kong is home to 7 million people (HKSAR Government, 2008). Hong Kong's hilly terrain forces urban development to be concentrated on about 22% of the total land area (Environment, Transport and Works Bureau & Agriculture, Fisheries and Conservation Department [ETWB & AFCD], 2003). The areas outside the major urban developments are mostly too hilly and hence costly to develop, and most are designated country parks and water gathering grounds – protected areas where no development is normally permitted. The physical terrain, valley pockets and sea inlets in some parts of Hong Kong are not favourable for the dispersion of air and water pollutants. Therefore, there is very little land in Hong Kong on which LULU facilities can be established without impinging on nearby residents or areas of high conservation value (Environmental Protection Department [EPD], 2003). Moreover, not all of Hong Kong's 18 electoral districts have similar environmental capacities due to the easterly prevailing wind and differences in topography. Hence, it would probably be undesirable, at least from the environmental perspective, to equally distribute environmental LULUs across the 18 districts of Hong Kong.

The socio-economic context of Hong Kong may also exacerbate the difficulty of siting LULUs in local communities. While Hong Kong remains one of the wealthiest economies in the world, there is evidence of a widening social gap between the rich and the poor (Census and Statistics Department [CSD], 2007a). This has nurtured a sense of discontent with the government. Combined with the concentration of LULUs in some districts, social segregation has resulted in a labeling effect of communities and has nurtured grievances, mistrust and a sense of injustice.

Meanwhile, there is an increasing demand for more public involvement and participation in policy making in Hong Kong because the government lacks legitimacy. Local community organisations are becoming more and more vocal in their demand for an open and transparent government and greater social justice (Bauhinia Foundation Research Centre, 2007). The recent controversies over projects such as the reclamation in Victoria Harbour and the demolition of the Star Ferry Pier signify increasing aspiration for a better quality of life and greater

participation in public policy making (Bauhinia Foundation Research Centre, 2007). Apparently, the traditional mode of public consultation is no longer effective in embracing the views of civil society in the policy-making process. If these public demands and expectations cannot be satisfied, more social conflicts will be created, not only in LULU siting but also in other policy matters. Nowadays, the partial democracy in Hong Kong has created a vocal legislature, yet the lack of full democracy has not given the government a clear mandate on policy. The government has to work even harder to gain public trust and achieve a social consensus and political support (Cheung, 2007). Obviously, the broader social conflicts in different policy arenas are fundamentally related to governance, democracy, civic participation, and the lack of trust in government, and these will persist if people have no part in electing the chief executive and his ministers. Thus, all these deep-rooted social contradictions need to be addressed in order to resolve the LULU siting problems satisfactorily.

In sum, an understanding of the above local political, physical, environmental and socio-economic settings may be helpful in explaining why LULU siting is particularly difficult in Hong Kong and why the public or local community may tend to oppose siting decisions made by the government. The question that follows is why the current institutional set-up cannot deal with the public concerns related to LULU siting and what the possible flaws are in the planning and consultation process. The next section, focusing on the local planning and siting process for LULUs, will provide some answers.

3.3 A Review of the Planning and Siting Process in Hong Kong

This section discusses the institutional arrangement for the planning and siting of LULUs in Hong Kong, with a focus on examining the efficacy of the process in engaging and communicating with the public on their concerns. It begins with a general overview of the siting process, followed by a detailed review of the planning and environmental assessment processes in relation to their weaknesses in dealing with the public concerns and disputes in siting, and concluding with a brief summary.

Overview

In Hong Kong, LULU projects are mostly initiated by the government bureaux and

departments responsible for policy implementation. The planning of such projects usually commences with a strategic and feasibility study to ascertain the need for and technical feasibility of the project (Centre of Environmental Policy and Resource Management [CEPRM], 2008). Other related governmental departments, statutory and non-statutory boards, consultative committees, local District Councils and other concerned parties such as environmental groups are consulted during the process. These boards and consultative committees are largely composed of non-official members of the public appointed by the government. The general public can express their views through some of these statutory bodies, such as the Legislative Council and District Councils, but they generally are not directly engaged in discussion on the policy issues related to siting. The Legislative Council, composed of representatives from different political parties and different functional groups, is responsible for examining and approving budgets for public projects, while the District Council, composed of public elected and government-appointed members, can give advice on proposed projects in the local districts. The final decision, however, rests with the respective departments and policy bureaux.

Soon after the technology, scale and proposed location for a LULU are identified in the strategic feasibility study, the responsible bureaux and departments will make a decision and bring the planning and siting process forward. Many such projects have to go through various statutory processes such as the environmental impact assessment (EIA) and planning processes (Lam, 2009). The latter is mandatory if the project entails land use rezoning. The planning and EIA processes related to LULU siting are discussed below.

Planning Process Related to LULU Siting

The planning system in Hong Kong is an executive-led, top-down process (Ng, 2004). The Planning Department is responsible for formulating, monitoring and reviewing land use at the territorial level. The statutory planning system framework is derived from the Town Planning Ordinance[1] (TPO). The TPO provides the legal basis for public participation in the plan preparation process and in the consideration of planning applications for approval of land uses. Hong Kong's planning system

[1] For more information about the Town Planning Ordinance in Hong Kong, please visit the Planning Department's website at http://www.pland.gov.hk/tech_doc/index_e.html

comprises three levels: territorial development strategies, sub-regional development strategies and district/ local level plans (Information Services Department [ISD], 2008). Guiding the preparation of these plans is the Hong Kong Planning Standards and Guidelines[2]. Under the TPO, only the Outline Zoning Plans (OZP) and the Development Permission Area Plans (DPAs) are statutory in nature and allow public involvement at certain stages of the plan-making process (Information Services Department [ISD], 2008).

According to the TPO, the Town Planning Board[3] (TPB) is responsible for statutory planning in Hong Kong, including preparing draft statutory plans, considering representations to such draft plans, and considering applications for planning permission and amendments to plans (Information Services Department [ISD], 2008). The members of TPB are appointed by the Chief Executive and comprise the chairman, the vice-chairman, five government officials and 33 non-official members. The Chairman is traditionally a high ranking civil servant, while the vice-chairman is usually a non-official member. The other non-official members represent a wide range of professions, expertise and community interests.

The plan-making process generally begins with the drafting of the plan, followed by exhibiting the plan for public inspection, hearing representations and comments, deliberation by the TPB, and submitting the draft plans with amendments if necessary to the Chief Executive-in-Council for approval. The whole plan-making process must be completed within nine months of the publication of the draft plan (Figure 3.1).

The different stages of the plan making process are briefly described below. During preparation of the plan, the only statutory consultation undertaken by the government before gazetting the OZP is to present a draft plan to the District Council (Ng, 2004). If the TPB approves the draft plan, the plan will be gazetted and public notices are posted in newspapers to inform the public. The draft plan is then available for the public for a two-month "plan exhibition period" during which they may make

[2] For more details about the Hong Kong Planning Standards and Guidelines, please visit the Planning Department's website at http://www.pland.gov.hk/tech_doc/hkpsg/index_e.html

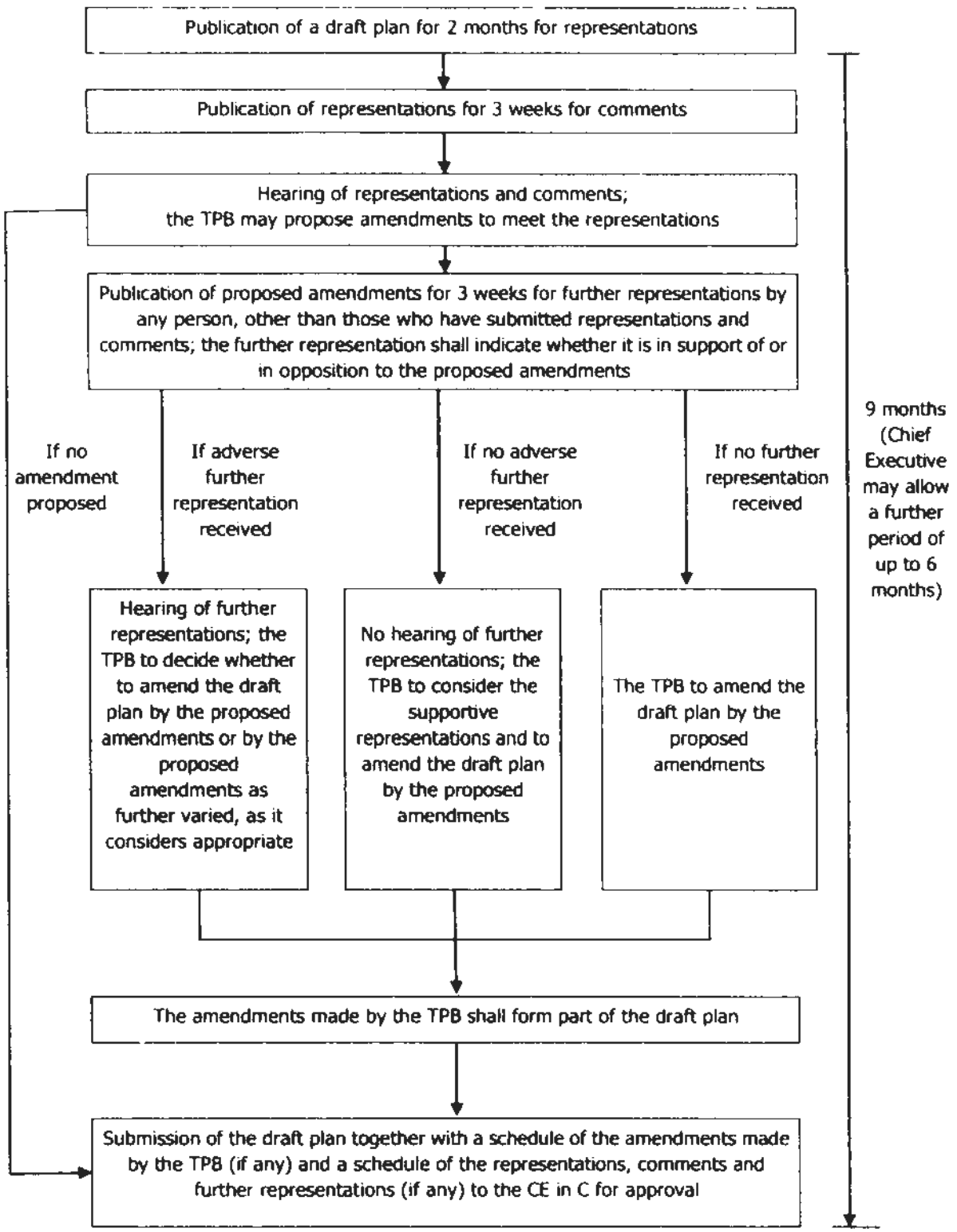
[3] The composition and functions of the Town Planning Board can be viewed at the Town Planning Board's web site at http://www.info.gov.hk/tpb/

representations to the TPB. The TPB must hear views from government departments and the public both supporting and in opposition, and makes a decision based on balancing different interests of the society. This "balancing act" depends on whether the siting of the facility would bring more social benefits than disbenefits. If so, the draft plan will be accepted. However, key issues such as need for the facility, alternative sites, distributive fairness in allocating LULUs among different districts, and possible compensation to the affected community are not among the considerations of the TPB in their decision-making process. Finally, the TPB will decide whether to propose amendments to the draft plan to address the representations and comments. After this process, the draft plan incorporating the amendments, along with representations, comments, and further representations, will be submitted to the Chief Executive-in-Council for approval. Once the Chief-Executive-in-Council approves the plan, a public notice is issued in the gazette and newspapers to inform the public that the plan is now an approved plan.

Nonetheless, the approved statutory plans do not give specific land use zones for LULU facilities. They are usually broadly zoned as "Industrial Use" or "Other Specified Use" in the plans. As such, the public may not fully understand which particular LULU facilities may be sited in their community, even though they may be aware of the published plans.

In short, the planning of LULUs in Hong Kong uses a top-down, technocratic and rational planning approach to satisfy territorial development needs rather than meeting the aspirations of local residents. The process focuses on land use optimality, and the final decision is based on a balancing act. Key public concerns relating to the need for a facility, the consideration of alternative sites, the fair distribution of facilities, and compensation to the host community are not among the issues considered by the TPB. The plan-making process has minimal local inputs and is insensitive to local needs and concerns, thereby reducing the opportunity to deal with public disputes in the planning process.

Figure 3.1 Plan-Making Process in Hong Kong



(Source: Town Planning Board's web site at
http://www.info.gov.hk/tpb/en/plan_making/participate.html#mkp)

Environmental Assessment Process for LULU Projects

The environmental impact assessment (EIA) system has been implemented in Hong Kong for twenty years (Lam, 2000). Refinements introduced over the years were codified in the EIA Ordinance[4], which came into effect on 1 April 1998. This has strengthened the provisions for implementation and enforcement of mitigation measures and the provisions relating to public participation (Wood & Coppell, 1999). The current EIA process is considered effective in preempting pollution problems (Lam & Brown, 1997) and is becoming more transparent and accountable (Leverett et al., 2000b).

In Hong Kong, LULU projects that may cause significant environmental impacts must be scrutinized and approved under the EIA Ordinance (Lam & Woo, 2008). The purpose of the EIA Ordinance is to "avoid, minimize and control the adverse impact on the environment of designated projects through the application of the environmental impact assessment process and the environmental permit system" (Environmental Protection Department [EPD], 1998a, p.1). Schedule 2 of the EIA Ordinance includes a list of designated projects: public or private projects that may have an adverse impact on the environment. The list covers most of the different types of locally unwanted facilities, including waste storage, transfer and disposal facilities, industrial facilities and energy supply facilities. The project proponent must comply with the statutory requirements under the EIA Ordinance and obtain an environmental permit before the project can be implemented. The Director of the Environmental Protection Department is responsible for the enforcement of the provisions of the EIA Ordinance and is guided by the Technical Memorandum on Environmental Impact Assessment Process[5] (Technical Memorandum). The Technical Memorandum covers the criteria and guidelines for evaluating air quality impact, noise impact, water pollution, waste management implications, ecological impact, fisheries impact, visual and landscape impact and hazard to life. Under the Ordinance, there are time limits for the public and the Advisory Council on the Environment (ACE) to comment on the project profile (within 14 days of the exhibition period) and the EIA report (30 days for public inspection and 60 days for

[4] For more information about the EIA Ordinance, please visit EPD's website at http://www.epd.gov.hk/eia/english/legis/index1.html

[5] For more details about the Technical Memorandum on the EIA process, please visit EPD's website at http://www.epd.gov.hk/eia/english/legis/index3.html

ACE comment) (see Figure 3.2). All project profiles and EIA reports are available for public inspection at the EIA Ordinance Register Office and are placed on the EPD website[6] during the exhibition period.

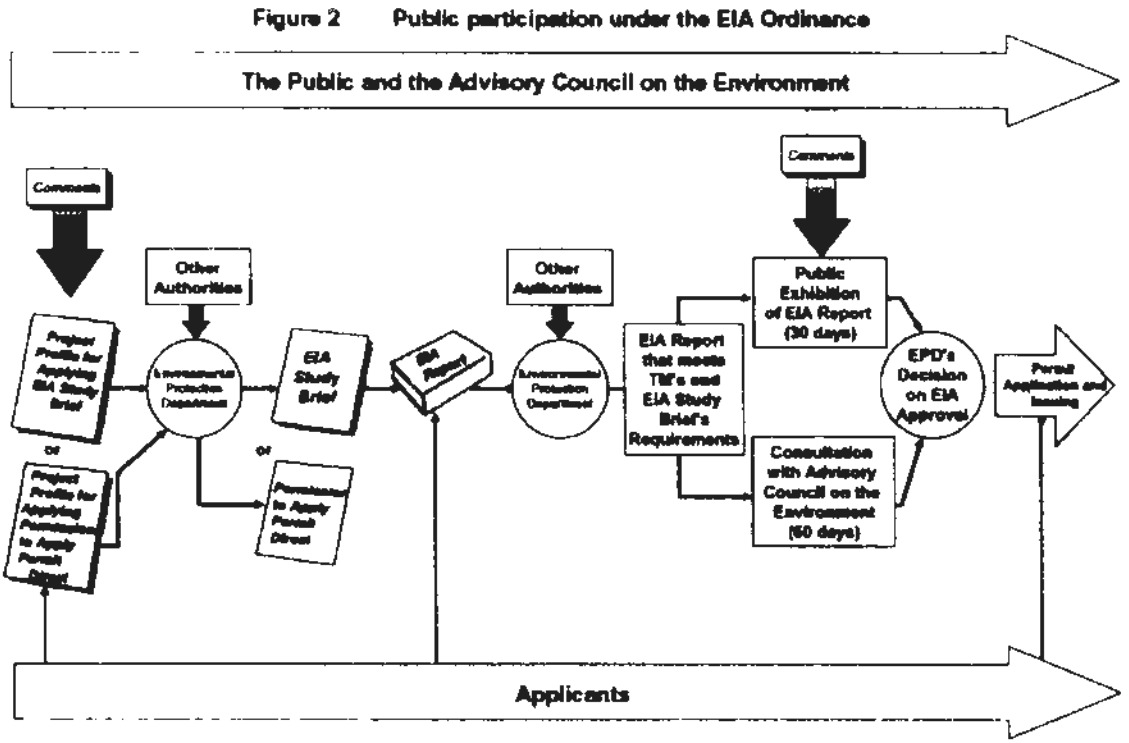
The final decision to approve an EIA report rests with the professional judgement of EPD, taking into consideration comments from both the public and ACE. The ACE is the main consultative body on environmental issues, and the EIA Sub-committee is formed under the ACE to scrutinize the EIA reports of major developments and make recommendations to ACE. ACE members include government officials and non-official representatives; the Council Chair is usually a non-official member. Non-official members are appointed by the Chief Executive and include academics, representatives of business interests and of the major environmental organizations in Hong Kong. Based on the recommendations of the EIA Sub-committee, ACE considers the technical quality of the EIA reports and the environmental acceptability of the proposed project and gives its comments to the EPD. Comments from the ACE and the public are taken into account by the Director of EPD before making a decision to issue the environmental permit. If the project proponent is aggrieved by the decision of the Director of EPD, he may appeal by lodging an appeal to the Appeal Board and the Board may confirm, reverse or vary the decisions made by the Director (Lam, 2000).

More recently, in 2003, the EPD introduced the concept of continuous public involvement[7] for public works projects to allow on-going public participation in the EIA process, so that the project proponent can engage the public early to discuss a wide range of issues throughout all project stages including the conception of the project, site selection, content of the EIA report and issues related to environmental monitoring.

[6] The corresponding website is http://www.epd.gov.hk/eia/index.html

[7] The concept of continuous public involvement was incorporated into the Environment, Transport and Works Bureau's Technical Circular No. 13/2003: "Guidelines and Procedures for Environmental Impact Assessment of Government Projects and Proposals" which can be viewed at http://www.devb-wb.gov.hk/UtilManager/tc/C-2003-13-0-1.pdf. Downloaded on 1 October 2009.

Figure 3.2 Public Participation under the EIA Ordinance

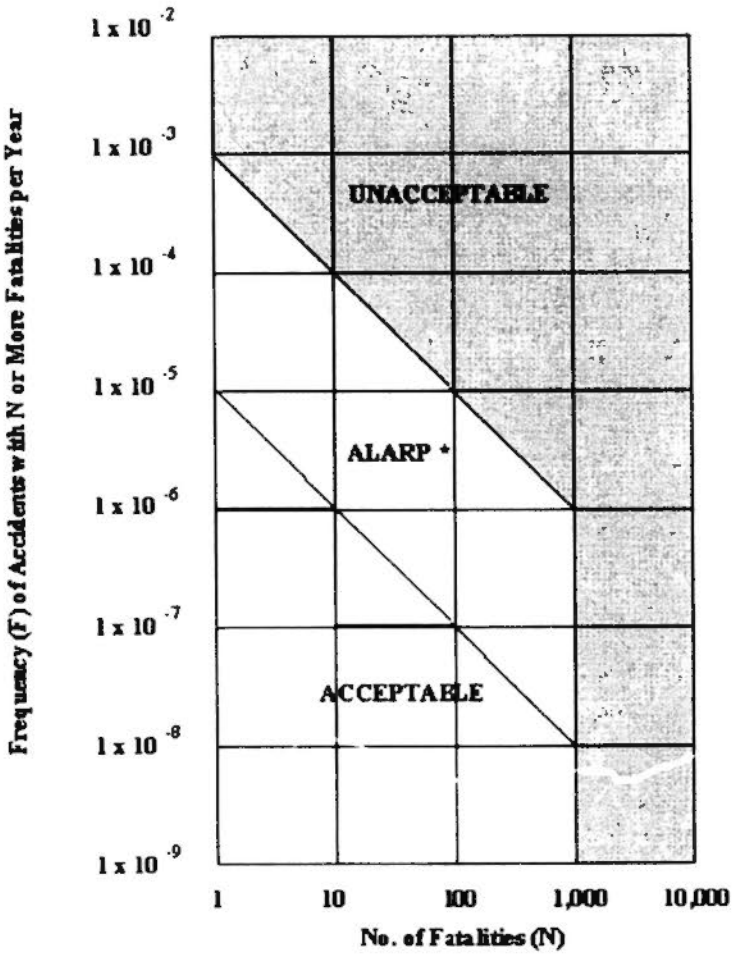


(Source: Environmental Protection Department's website at http://www.epd.gov.hk/eia/english/guid/ordinance/fig2.html)

Overall, the environmental assessment system in Hong Kong is considered open, accountable and efficient (Leverett et al., 2007b). However, it is still deficient in dealing with siting conflicts. First, not all LULUs are considered designated projects because of the specific requirements under the ordinance such as the nature and scale of the project and minimal distance from sensitive areas. Second, there is little consideration within the EIA process of the necessity for the project or alternatives for meeting the need, as these are not required under the ordinance; these issues are, however, often key concerns of the public. Third, the key consideration of the EIA is the environmental acceptability of the project based on technical requirements, which may be different from public concerns over the potential impacts and risks arising from the LULU project. For example, the EIA process makes provision for assessment of hazard to life based on scientific analysis assessing the frequency of accidents and number of fatalities to determine the societally acceptable risk level (Figure 3.3). However, public perception of risk is

different from expert analysis and is more related to societal, political and cultural factors (see Section 2.4.3). As such, the EIA process cannot adequately address public concerns over risk, which are socially constructed rather than simply based on quantitative assessment. Fourth, public participation under the EIA system has only limited influence on the final siting decision. In fact, it is difficult to reverse decisions on sites, designs or the need for the project during the EIA process, which is often undertaken at a late stage when project planning has gained so much political momentum that project decisions can hardly be reversed (Leverett et al., 2007b). Moreover, the mode of public consultation is passive rather than active, and the Director of EPD only needs to consider, but not necessarily follow, the views of the public to make the final decision.

Figure 3.3 Societal Risk Guidelines for Acceptable Risk Levels



Note: ALARP means "As Low As Reasonably Practicable". Risk within the ALARP region should be mitigated to a level as low as reasonably practicable.
(Source: Environmental Protection Department's website at http://www.epd.gov.hk/eia/english/legis/memorandum/annex4.html)

In short, the EIA system in Hong Kong is considered transparent and effective, but it has some flaws in dealing with public disputes over LULU siting. While the focus of the EIA system in Hong Kong is to ensure that major development projects are environmentally acceptable based on the technical standards, little consideration is given to the societal, economic and political impacts of siting. In particular, the EIA process cannot address public concerns over the need for the project, socio-economic impacts, or the issue of fairness in siting, and the risk assessment cannot effectively address the public's risk concerns which are influenced by social and political factors. In addition, the existing EIA process has a limited function for conflict resolution. First, the EIA system does not provide any formal platform or mechanism for the project proponent and the public to have a dialogue or exchange views regarding the LULU proposal; this limits the function of EIA for conflict resolution. Second, the EIA Ordinance does not provide third party right of appeal. The public must make use of legal proceedings to express their discontent regarding the Director's decision. This may result in a lose-lose situation for both the proponent and the opponents.

In summary, as reviewed in this section, Hong Kong adopts an administration-led, rational and technocratic approach to the siting of LULUs, which is scrutinized mainly through the planning and environmental impact assessment processes (Lam & Woo, 2009; Lam, 2009). This approach has merits in terms of the optimality of the site from the environmental and planning perspective; however, social and political considerations are often ignored, and there is little opportunity to address other issues, such as the social need for the project, health and risk concerns, decline in property values, community "labelling", equity and public participation. In fact, members of the public have their own values, beliefs, interests and expectations about how LULUs should be planned and sited. Failure to understand and address the perceptions and values which underlie their opposition will only intensify conflict and galvanize positions, and hinder the resolution of siting conflicts.

The above review and discussion highlights the need to understand public perceptions towards siting and address their concerns through a more effective public engagement process. This would require the administrators responsible for LULU siting to openly, frankly and proactively communicate with the public, especially the

affected community, and respond to their views and genuine concerns on siting issues. To achieve this purpose, the current arrangements for public consultation must be improved in terms of both timing and the dimensions of issues available for public consultation. For example, if the public are allowed to be involved in the early stages of the LULU development process and to discuss and reach consensus on broader issues related to siting (such as the need for the facility, alternative options and their trade-offs, criteria for siting, public risk concerns, the social acceptability of risk, and fairness to the host community), this would preempt many disputes in the EIA or planning process that are often seen in the later stages of project development. The legitimacy of the siting decision would also be increased as a result of the early and increased level of public involvement in the planning and siting process.

Furthermore, the government currently has no mechanism for dealing with public disputes on LULU siting. As proposed by Lam (2000), there may be a need to introduce an arbitration mechanism at the end of the EIA/ planning process to deal with disputes that are not resolved through the process. Currently, members of the public can only resort to the judicial review process should they have strong opposition to a proposed project that has already gone through the necessary EIA and/or planning process. The proposed arbitration mechanism would allow credible and impartial professionals to review a project in question, hear opposing views, and balance diverse interests in an open, transparent and fair manner. This would be better than seeking a court judgment, which may be costly and time consuming.

For this research, I will focus on understanding the factors affecting the public response to siting and the role of trust played in the siting process, which are relevant to addressing public concerns effectively and building trust in the process in order to increase the likelihood of public acceptance. If public perceptions can be understood and addressed fully and trust can be built in the process, the need for a formal mechanism to deal with unresolved disputes (such as the arbitration system proposed above) may be correspondingly diminished. In fact, strategically speaking, it may be more effective to resolve siting disputes by addressing public concerns in the first place and engendering public support for the process than by

handling disputes which may become too difficult and intractable at the end of the process.

3.4 Recent Examples of Siting Controversies in Hong Kong

As discussed previously, the siting problem is intense in Hong Kong because of the territory's high population density, limited available space and rapid urbanization and pace of development. In the past decade or so, a number of LULU facility siting cases in Hong Kong have aroused great public concern or sparked local opposition because of their externalities on either ecologically sensitive areas or nearby communities. Appendix 1 gives a brief synopsis of these cases, with information such as the type of facility, scale of needs/ benefits, impacts and health risk, key problems, the outcome thus far, and conflict resolution methods used.

Several important observations can be drawn from the experiences of the local cases outlined in Appendix 1. First, recent siting controversies arise mostly from the siting of environmental-related LULUs due to the facilities' potential environmental and health impacts. That provides support for the focus of this study on the siting of environmental-related LULUs (as stated in Chapter 1), because they often capture more public attention and seem to be more "problematic" as compared to other types of LULUs.

Second, it appears that local public concerns are broad ranging, such as: doubts about the sustainability of and societal need for waste incinerators and landfills, the nuisance and proximity of a landfill to Tseung Kwan O New Town and the Country Park, the concentration of LULUs of various kinds (sludge incinerator, power plants, mega columbarium and landfill) in Tuen Mun, and fears about the health risk from a chemical treatment plant. The above factors, coupled with increasing public awareness of environmental and health issues and a demand for more participation in the public policy-making process, have intensified these conflicts over time. Moreover, the public concerns related to these siting cases, such as the perceived need, perceived impacts and risks, and the perceived fairness of the siting outcome, are analogous to the factors identified in the conceptual framework for explaining public opposition to LULUs (Chapter 2). This also supports the basis of this research that it is important to understand how the public may perceive LULUs, the

siting process or the proponent, the findings of which will be closely linked to the methods for addressing the siting problem.

Third, public opposition in these siting cases has often been attributed to the lack of public consultation in the LULU planning process. In fact, increased public involvement and communication with the public on their issues of concern has been considered to be the most useful method for conflict resolution in the local cases (see Appendix 1). This observation is consistent with the previous section, suggesting that the existing planning and EIA process, which uses a passive method of consulting the public at the latter stages of a project, cannot effectively deal with public concerns that may be related to broader social, economic and sustainability issues. Some projects, for example the proposed landfill extension in Tseung Kwan O and the sludge incinerator project in Tuen Mun, underwent the EIA process and received approval from the Environmental Protection Department, but are still objected to by the local civic organisations and District Councils (see Appendix 1). Obviously, this requires a new way to engage the public so as to better communicate and respond to their concerns and needs. By so doing, public expectations on LULU siting can be met, and consensus building and collaboration become possible with mutual respect and trust established in the process.

Overall, as evidenced by the recent examples of siting controversies in Hong Kong, it is imperative to understand and address public concerns, which are grounded in their perceptions of LULU siting, through a more effective public engagement process. Only by truly understanding the public concerns underlying their objections can we resolve the siting problem satisfactorily and in the interests of the public.

3.5 Problem Statement for this Research

The siting of LULU facilities is one of the most controversial planning and policy issues in Hong Kong. Like other modern societies, Hong Kong needs a full array of public facilities to provide various services and benefits needed to support societal development. However, these facilities unavoidably impose environmental, health and social risks upon nearby residents. This creates the social dilemma of siting these noxious but necessary infrastructure elements in local communities. Despite the fact that LULU siting is such a controversial problem in Hong Kong, the current

local planning and siting process, which adopts a rational and technical approach, includes little consideration of social and political issues, and there is also little opportunity to address public concerns on these issues (see Section 3.3). As reviewed in Section 3.4, the reasons for local public opposition are related to the public perception of the need for the facility, perceived impacts and risks, perceived fairness in allocating LULUs in one or two districts, trust in the siting agency making the siting decision, and the lack of public involvement throughout the LULU planning process. This illustrates the fact that the rejection of a LULU development is driven by the different perceptions held by the public and the siting agency on various siting issues. Such LULU opposition usually makes for lengthy and expensive siting procedures, which in turn increase the social costs of providing these facilities which are deemed necessary by society. As I introduced in Chapter 1, this study therefore aims to address the NIMBY problem and to search for an effective resolution in the context of Hong Kong.

To study the LULU and NIMBY problem, the literature suggests applying a positive perspective toward public protests against LULUs, and suggests that a more fruitful approach is studying the basis of their opposition in order to resolve siting conflicts fully and effectively (Section 2.2 of Chapter 2). It is thus essential to understand how the public, especially the host community, perceive LULUs, the associated risks, the siting agency and the siting process, so as to better understand and address their concerns. A review of the western literature in Chapter 2 shows that a number of factors can affect public acceptance of a LULU facility. Nevertheless, it is still not completely clear what factors have the most influence on the public response to siting. The possible effects of a community's siting experience on public perceptions and intensity of community opposition are also still not fully known. In particular, very few studies have generated baseline information regarding the public perceptions of and attitudes toward LULU developments in communities with or without NIMBY controversies. Furthermore, the importance of trust upon public acceptance of LULU projects has been emphasized in some literature (see Section 2.4.5), but there are not yet enough empirical studies on the qualitative role of trust and LULU siting. In particular, no local study has been done on the perception of trust from the stakeholder perspective, nor has any study been done on the relevance of attributes including perceived competence, openness, credibility, accountability,

objectivity, fairness and caring, in the formation of trust. Research gaps thus include a lack of study identifying the most important factors affecting public response to siting; a lack of comprehensive empirical testing of the effects of community siting experience on public perceptions and attitudes towards LULU siting; and a lack of empirical studies on the importance and formation of trust in the local siting process.

This study is designed to address the above knowledge gaps. As stated in Chapter 1, this study's first and second objectives are to examine the factors affecting the public response to siting LULUs and to explore the role of trust, particularly its importance and formation, in public acceptance of LULUs in Hong Kong. With reference to the literature and the proposed conceptual framework presented in Section 2.5, the factors to be examined in this study include community siting experience, perceived need for the LULU, perceived risks, perceived fairness, and trust in the government making the siting decision. These factors are also shown to be important in the Hong Kong context. The factor of community siting experience has not been thoroughly studied in the previous studies, but it is believed to be relevant to local siting controversies, and certain socio-demographic characteristics are also included in this study for exploratory purposes. Further, given that trust is important in social interactions and is conducive to conflict resolution, this study attempts to explore the role of trust, particularly its formation and importance, in public acceptance of LULU siting in Hong Kong. In order to achieve greater specificity for this research, some specific questions were developed and listed in Chapters 5 and 6 respectively in response to the above two research objectives.

As I will discuss in Chapter 4, social surveys and in-depth interviews were conducted to address the above research objectives. The social surveys were designed to gauge public views and opinions on siting LULUs, and the results were analysed to investigate the influence of community siting experience on public perceptions and attitudes and examine the most influential factors upon the public response to LULU siting. The in-depth interview contains questions about the importance and formation of trust with a view to exploring the views of key local stakeholders involved in facility siting. More details about the research approach and study design will be presented in Chapter 4, while the research findings of the social

surveys and in-depth interviews will be presented in Chapters 5 and 6 respectively. Finally, based on the overall findings and implications of this study, the last chapter of this dissertation will address the final research objective by suggesting policy recommendations for formulating a siting strategy that can help address public opposition to LULUs.

3.6 Summary

Hong Kong's LULU siting problem is deeply rooted in the context in which the conflict occurs. Due to the territory's physical and environmental constraints, only limited areas are available or suitable for site selection. Moreover, the conventional "administrative-led" and top-down mode of decision making is highly centralized, and the power and influence of the local District Councils over the control and direction of local planning and development are limited. This makes the affected community reluctant or resistant to accept the government's decision. Coupled with citizens' increasing aspiration for quality of life and an increasing demand for more community participation in public policy and projects in recent years, these contextual elements only increase the difficulty of siting LULU facilities.

In addition, the current approach, using planning and environmental assessment practices with limited community participation, does not appear to be adequate to embrace the views of the public and respond to their genuine concerns. A review of the planning and siting process shows that the existing siting approach is too technocratic and rational, and insensitive to local needs. While this approach has merits in terms of the optimality of the site from the environmental perspective, social and political considerations are often ignored.

The brief review of recent siting cases in Hong Kong tends to reinforce the above views and observations. The review of local cases also shows that public concerns are broad ranging but tend to focus on the societal needs for LULUs, impacts and risk concerns, and equity issues. These factors are analogous to those identified in the literature review and the conceptual framework, thus providing further support for the basis of this research. Furthermore, the resolution of the NIMBY problem, as illustrated by the local siting cases, requires a more effective engagement and

communication process so that the public's understanding about LULU siting can be enhanced and their concerns can be addressed more effectively.

Finally, a problem statement which explains the reasons for this study is presented. It links up the arguments and specific research objectives for this study, to examine the factors affecting public response to siting LULUs and to explore the role of trust in LULU siting. In order to achieve greater specificity for this research, some specific questions in response to the above two research objectives are developed and listed in Chapters 5 and 6 correspondingly. Social surveys and stakeholder interviews are the research strategies used for this study. The next chapter will provide more details about the research approach and study design for these strategies. The research findings of the social surveys and in-depth interviews will be presented in Chapters 5 and 6, respectively. Based on the findings of this study, policy recommendations for formulating a siting strategy that can help address public opposition to LULUs will be provided in the last chapter of this dissertation.

Chapter 4 Methodology

4.1 Introduction

This chapter provides an overview of the research methods used to address the first two research objectives for this study, which are about examining the factors affecting public response to siting LULUs and exploring the role of trust in affecting public acceptance of LULUs in Hong Kong. This chapter is divided into three main sections. The first section describes the overall research approach for this study, which utilizes social surveys and stakeholder interviews to address the above research objectives. The purpose of the social surveys is to gauge public perceptions and attitudes towards siting LULUs so as to examine the influence of factors in affecting public response to siting, whereas the purpose of the stakeholder interviews is to understand the importance of trust to stakeholders in LULU siting and the qualitative attributes leading to the emergence of trust in the process. This section is followed by a discussion of the design of the social surveys, with samples collected from across the territory of Hong Kong and from three local communities. The discussion includes the characteristics of the study areas, the design of the questionnaires, data collection and analytical methods. The discussion then turns to the design of the stakeholder interviews, including the selection of the interviewees, design of the interview questions, data collection and analysis.

4.2 Study Approach

As stated in Chapter 1, this study has three major research objectives: (1) to identify and examine the factors affecting public response to siting LULUs; (2) to explore the role of trust in affecting public acceptance of LULUs; and (3) to make recommendations, based on the overall findings of this research, on formulating a siting strategy that can help address public opposition to LULUs. The problem statement relating to these objectives has been discussed in the last section of the previous chapter.

To address these research objectives, a conceptual framework for understanding public response to LULU siting is developed to provide a basis for this study (see Section 2.5). The framework includes the factors that can affect public response to siting including: community siting experience, perceived need for the facility,

perceived risk, perceived fairness in siting approach, trust in government and certain socio-demographic characteristics. This framework also includes the attributes that affect the formation of trust. Overall, the framework serves as a guide to examining the relationships of these factors and public attitudes towards LULU siting, with particular focus on the qualitative role of trust.

With reference to the above proposed framework, this study utilized social surveys and stakeholder interviews to address the first and second research objectives. To respond to the first research objective, two levels of social surveys were undertaken with samples collected both from the whole of Hong Kong and from three local communities with or without NIMBY issues. The four social surveys are broadly similar and contain questions focused on gauging public views and perceptions on issues related to LULU siting, including: public acceptance of LULUs, perceived need for the LULU facilities, the perception of risk, fairness and trust in those making the siting decision, as well as public preference for different conflict resolution methods. The surveys also measured socio-demographic characteristics (e.g., sex, age, marital status, education, monthly family income) that may be associated with public response to siting. By analyzing the key variables in the social surveys, the general public perceptions and attitudes towards siting LULUs can be found through information collected from the whole territory and from local districts, representing the views of the population at large and those of the host communities with or without NIMBY issues. Further, by comparing the results of the three community surveys, the extent to which local community experience with LULU siting affects residents' perceptions and responses towards siting can be explored. Finally, analyzing the combined data set of the three community surveys permits investigation of the determinative effects of community siting experience, a host of perception factors and socio-demographic variables on public attitudes towards siting. To address the second research objective, in-depth interviews were conducted with local stakeholders who are experienced and knowledgeable in local LULU siting issues. The interviews provide an understanding of the importance of trust to stakeholders in LULU siting and the conditions that can contribute to the building of trust in affecting public acceptance of LULUs.

The findings from the social surveys and in-depth interviews allow the perceptions underlying public opposition to LULUs to be better understood from the perspectives of both the public and local key stakeholders. These findings can in turn address the third research objective by providing policy insights for developing a siting strategy that can help address public opposition to LULUs.

4.3 Design of Social Surveys

To address the first research objective, a two-level survey incorporating a total of four social surveys was undertaken to gauge public perceptions related to LULU facilities, the siting process and the government and attitudes towards LULU siting. The first level survey was a territory-wide telephone survey across the whole of Hong Kong, and the second level surveys included three similar questionnaire surveys conducted in three local communities with different experiences in LULU siting. Of the three communities, Tuen Mun and Tseung Kwan O have NIMBY controversies, while Shatin has no significant NIMBY conflict and thus acts as a control. The study areas, design of the questionnaires, data collection and analysis methods are described below.

4.3.1 The Study Areas

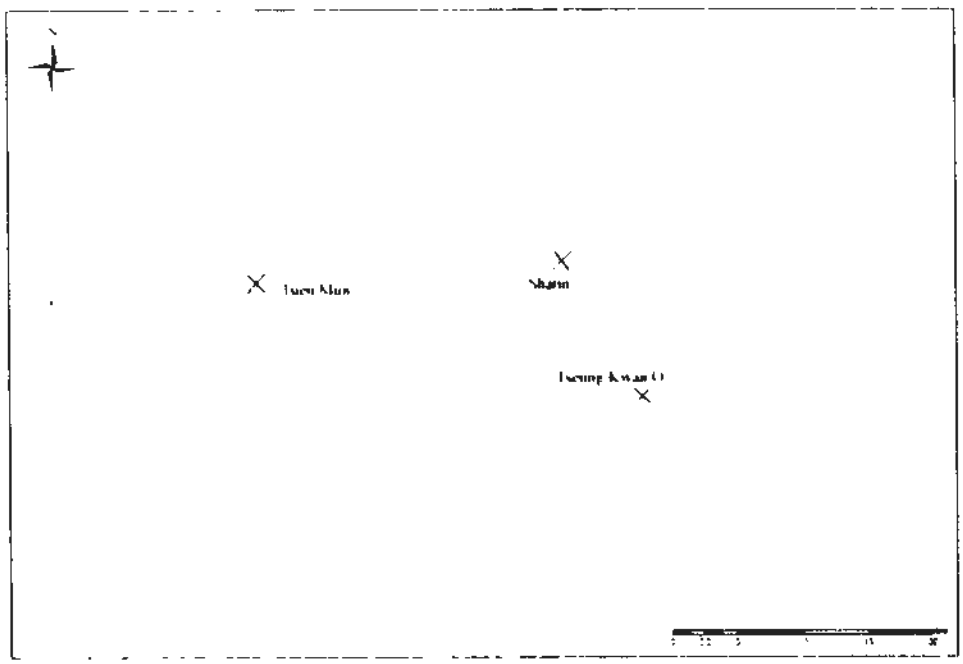
In this study, four areas were selected for the questionnaire interview: the territory of Hong Kong as a whole, and the three local districts of Tuen Mun, Tseung Kwan O and Shatin. The locations of the three districts are shown in Figure 4.1. These three districts were selected to represent both communities that had siting controversies and those that did not. Background information on these study areas is presented below.

The Territory of Hong Kong

As reviewed in Chapter 3, the problem of LULU siting is rooted in the political, physical and environmental, and socio-economic settings of Hong Kong. In particular, the siting problem has become more and more acute because of the shortage of land for development in Hong Kong due to its physical and environmental settings. The physical terrain of Hong Kong, consisting of mountains, valley pockets and semi-enclosed sea inlets, is not favourable for the dispersion of air and water pollutants. Given that the prevailing wind comes mainly

from the east and there are significant differences in topography across Hong Kong, not all of Hong Kong's 18 electoral districts offer suitable sites for major air pollution sources. Due to this diversified physical setting, some areas are deemed more suitable than others to host environmental LULUs. For instance, Tuen Mun has been a favoured site for major air pollution sources because it is on the western part of Hong Kong which is the downwind side of the territory under prevailing wind

Figure 4.1 Locations of the Three Local Study Areas



conditions. Tseung Kwan O, meanwhile, is close to the sea and has undeveloped land to accommodate space-demanding LULUs such as landfills. Topographical and water circulation considerations have also excluded certain districts, such as Shatin, as potential sites for major air and water discharge facilities. In sum, some districts in Hong Kong are likely to face more serious NIMBY conflicts than others. It is thus expected that the views of the respondents from the territory-wide survey represent the average views and responses of the Hong Kong people regarding LULU siting.

Apart from exploring the general views of the public of Hong Kong, the social surveys also explored the views of host communities with or without NIMBY conflicts to ascertain if community siting experiences affected their perceptions of and responses to LULU siting. Of the three districts selected, two (Tuen Mun and

Tseung Kwan O) have NIMBY controversies and one (Shatin) does not. Their characteristics are described in the following paragraphs.

Tuen Mun

Tuen Mun, located on the western extremity of Hong Kong, is one of the early new towns developed in the 1970s and currently has a total population of about 505,200 (Planning Department, 2002a). It is seen as the most appropriate site for major air pollution sources because it is on the downwind side of the territory under prevailing wind conditions. It is home to many of Hong Kong's LULUs, including one of the territory's two power stations, one of its three strategic landfills (the West New Territories Landfill or WENT landfill), Hong Kong's only aviation fuel receiving facility, a steel plant, a cement plant and the waste recycling plant. Most of the current LULUs are either visually blocked by Castle Peak Mountain or located in a special industrial zone, known as Area 38, which is about 1 km from the nearest housing estate. However, Tuen Mun residents may still perceive negative impacts arising from LULUs. For instance, according to the Environmental Protection Department[8], the WENT landfill's waste intake is 6,580 tonnes per day, about 35% of which is currently transported to the landfill by land. This may cause some nuisances (e.g., noise and odour problem from the refuse trucks) to Tuen Mun residents who live close to the main roads.

There are also plans to build a mega columbarium-cum-crematorium and a sewage sludge incinerator in Tuen Mun to serve the rest of Hong Kong. Tuen Mun is also one of the two potential sites for Hong Kong's integrated waste management facilities (IWMF), which would use incineration as the core technology for waste treatment in Hong Kong. In February 2008, the government consulted the Tuen Mun District Council on the short-listed sites for the IWMF facility, which included Tuen Mun. The Tuen Mun District Council considers that it was unfair for Tuen Mun to host so many LULUs for the whole territory. They therefore objected strongly and advocated halting the environmental impact assessment process for the

[8] Personal communication with Mr. Lau, Y.F. from Environmental Protection Department by e-mail on 28 June 2008. As the waste producers or waste collectors make their own arrangements for the delivery of the waste to the WENT landfill by land, EPD has no information about the exact number of waste vehicles passing through the Tuen Mun town centre area.

IWMF project[9]. Currently, the environmental assessment for the IWMF facility is underway for two study sites including Tuen Mun and one other location, Shek Kwu Chau.

Tseung Kwan O

Tseung Kwan O, located on the south-eastern side of Hong Kong, is the seventh new town in Hong Kong. It is in its final phase of development and is developing rapidly. The new town, developed only 15 years ago, is home to 270,000 people (Planning Department, 2002b). It is close to the sea and has undeveloped land to accommodate space-demanding LULUs such as landfills. Three landfill sites were in operation in Tseung Kwan O from the 1970s to the mid-1990s. The South East New Territories (SENT) landfill, one of Hong Kong's three strategic landfills, began operation in 1994 and serves other parts of Hong Kong. It is currently the major environmental LULU in the district. According to EPD[10], the landfill's waste intake is about 5,300 tonnes per day and all wastes are transported to the landfill by land, with an average of about 1,200 refuse trucks passing through the Tseung Kwan O area each day. Starting in 2004-2005, odour and nuisance complaints started to emerge, especially in the Tseung Kwan O South area which is 2-3 km from the landfill. The transfer of sewage sludge to the SENT Landfill for disposal may be a source of malodour in the Tseung Kwan O area. However, until the new proposed sludge incinerator in Tuen Mun is commissioned, the SENT landfill is the only site for disposal of sewage sludge[11]. In other words, Tseung Kwan O residents may still be affected by odour problem due to the refuse trucks passing through the Tseung Kwan O area and the disposal of sewage sludge at the SENT landfill.

Because the SENT landfill in Tseung Kwan O will be filled to capacity in less than 10 years, the government in 2004 announced a plan for landfill extension to address the ever-increasing demand for solid waste disposal[12]. This proposal has attracted

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[9] Pls. refer to the minutes of Tuen Mun District Council meeting dated 28 February 2008 for details. Downloaded on 5 October 2009 from the following weblink: http://www.districtcouncils.gov.hk/tm_d/english/doc/Report%202008/3rd_Report_28Feb2008.doc

[10] Personal communication with Mr. Tang, W.S. from Environmental Protection Department by e-mail on 17 July 2008.

[11] Personal communication with Mr. Tang, W.S. from Environmental Protection Department by e-mail on 17 July 2008.

[12] Project profile for SENT extension exhibited in June 2004 for public inspection. Pls. see EPD's website at http://www.epd.gov.hk/eia/register/profile/latest/esb119.pdf

strong local public opposition. In a March 2008 meeting[13], the Sai Kung District Council objected strongly to the proposed SENT landfill extension in Tseung Kwan O and urged the EPD to investigate and properly manage the odour problem. Despite strong objection from the local community, the EIA report for the proposed SENT landfill extension was approved in May 2008[14]. Under the approval conditions, EPD (the project proponent) is required to set up a community liaison group comprising representatives of potential sensitive receivers before commencing operation of the SENT landfill extension in order to deal with and manage the potential odour problem. In addition, no sewage sludge is to be disposed of at the SENT landfill extension. EPD is also required to submit a restoration and ecological enhancement plan for the SENT landfill extension site before commencement of operation of the SENT landfill extension.

Shatin

Shatin has very few LULUs and was, as early as the 1970s, recognized as an unsuitable area for the siting of major air pollution sources because of its pocket-like topography (Planning Department, 2002c). The only LULUs in Shatin are a sewage treatment plant, a refuse transfer station and a crematorium cum columbarium. There have been relatively few complaints about these LULUs, probably because of their remote location and good management, and there are no known plans to site any new ones in the district. Shatin has been chosen as a reference and a control group for the other two communities.

4.3.2 The Questionnaires

To find out how the public perceive LULU facilities, the LULU siting process and the government and other related stakeholders, four social surveys were undertaken, as previously mentioned, across the whole of Hong Kong and in the three local areas of Tuen Mun, Tseung Kwan O and Shatin. The three local communities have different socio-economic profiles and different experiences with LULU siting. The

[13] Pls. refer to the minutes of Sai Kung District Council meeting dated 8 March 2008 for details (only Chinese version is available). Downloaded on 5 October 2009 from the following weblink: http://www.districtcouncils.gov.hk/sk/chinese/welcome.htm

[14] Pls. see EPD's website at http://www.epd.gov.hk/eia/english/register/aeiara/skd.html for the approval and the approval conditions for the SENT landfill extension project.

questionnaires of the four social surveys are broadly similar; the original and translated versions are provided in Appendices 2 to 5.

To address the first research objective for this study, the four questionnaires contain variables intended to gauge public views and perceptions on issues related to LULU siting. These variables are derived from the questions in which respondents were asked to indicate their perceptions of various issues related to LULU siting covering the following major aspects:

- perceived need for particular LULUs in Hong Kong as a whole and in that particular community;
- level of acceptance of particular LULUs in their own community;
- perceived risks associated with particular LULUs;
- residents' beliefs about risks in the siting of potentially risky LULUs (for the three local surveys only);
- perceived fairness of the current siting approach;
- level of trust in the government and other major stakeholders; and
- willingness to accept certain conflict resolution measures.

To facilitate comparison, "incinerator" is the common example of LULU used in all four questionnaire surveys, while "landfill" and "incinerator" were used as examples of LULUs in the questionnaires for all three local surveys. In response to questions about acceptance, risk, fairness, trust and level of agreement with certain statements, respondents were asked to give a rating on a five-point Likert scale. It is understood that either a five-point or a six-point scale can be used for perception studies; each type of scale has its advantages and disadvantages in social survey design. In this study, because some members of the public may take a half-and-half position, the five-point scale was adopted. Furthermore, the respondents were given the opportunity to choose one of the 5 verbal scales, the meanings of which are all very clear. For the question on the perceived need for particular LULU facilities for the whole of Hong Kong or their own community, respondents were asked to give a "Yes/ No" answer. At the end of the interview, the respondents were also asked to provide some personal particulars including age, sex, marital status, education and monthly family income.

4.3.3 Data Collection

As stated in the beginning of this section, a total of four social surveys were conducted at two different levels: territory-wide and the local level. The territory-wide survey was administered using the telephone survey method and the three local surveys were conducted using the on-the-street survey method. These two data collection methods are described below.

The territory-wide survey was administered by the Telephone Survey Research Laboratory of the Hong Kong Institute of Asia-Pacific Studies of the Chinese University of Hong Kong during the period from 10 to 21 May 2007. The telephone survey used the random digit dialing sampling methodology, in which the computer randomly generates the last two digits of telephone numbers. This gives every residential telephone number an equal probability of being selected for an interview. Once a household was successfully reached, the interview was conducted with a respondent aged 18 years old or above. Of the 10,000 random phone numbers generated, 1,973 calls were answered and a total of 1,002 respondents were successfully interviewed, for a response rate of about 51%.

The three local surveys were conducted using the on-the-street interview survey method. All respondents were required to be local residents aged 18 or above. This method of sampling was chosen rather than the telephone or mailing survey method because the telephone survey method cannot easily identify households of a particular district by the number only. Furthermore, mailing surveys in Hong Kong usually have a low response rate. Further, because of the difficulty in gaining access to private residential buildings, interviews were conducted in major shopping centres, train stations and public transport hubs of the three study areas selected. Trained interviewers were deployed to these sites to administer the survey using a semi-structured questionnaire. A total of 752, 822 and 803 local residents were successfully interviewed in Tuen Mun (during September and October 2007), Tseung Kwan O (during March and April 2008) and Shatin (during July and August 2008), respectively. The response rate was around 75% for the three communities, which is considered high in Hong Kong.

In general, the demographic characteristics of the samples taken in the territory-wide and the three local survey areas (see Appendix 6) are broadly comparable to the government's 2006 by-census profiles for the whole of Hong Kong and for the corresponding districts. The socio-demographic profile of the respondents in the territory-wide survey is comparable to the Hong Kong population profile, as shown by the government's 2006 population by-census information (Census and Statistics Department, 2007b). The major difference is that a higher percentage of the respondents in the telephone survey have a tertiary education level or above (34%) than the Hong Kong average (23%). Moreover, among the three communities, the respondents from Tuen Mun are slightly less educated and have lower family income level than the respondents from Tseung Kwan O and Shatin. This matches the government's by-census information regarding the education and monthly family income level of residents in these three districts. According the government's by-census information (Census and Statistics Department, 2007b), the percentage of the population aged 15 and over having attained post-secondary education is 24.8% and 23.0% for Tseung Kwan O and Shatin areas, respectively, but only 15.8% for Tuen Mun. Similarly, the median monthly domestic household income is HK$21,000 and HK$19,320 for Tseung Kwan O and Shatin but only HK$15,000 for Tuen Mun. The education level and average income of Tuen Mun residents are also slightly lower than the Hong Kong average (Census and Statistics Department, 2007b). Notwithstanding the above, it should be borne in mind that the sampling method was more of a convenience type instead of random for the three community surveys. Any interpretation of the findings should be aware of the limitations of the sampling strategy adopted.

4.3.4 Data Analysis

The data from the four social surveys were analyzed using SPSS Version 16.0. To analyse the findings on general public perceptions and attitudes towards siting, the results of the key variables (e.g., perceived need, risks, fairness, trust and degree of public acceptance of LULUs) from the four social surveys were tabulated and summary statistics in terms of means and percentages were calculated. Moreover, to explore the inter-community difference in public perceptions and attitudes, the results of the three community surveys were compared using ANOVA in cases

where the results are concerned with mean ratings and using the Chi-Square Test in cases where results are given in percentages.

Further, in order to identify factors that influence whether the public opposed a given facility, a bivariate correlation analysis was first undertaken to determine the strength of relationship between the level of acceptance and a host of perception and demographic variables. The strength of the relationship between variables was tested using the Kendall's tau b coefficient, which provides a summary statistic of the degree of association between dependent and independent variables that are measured on ordinal scales[15] (Vaus, 2002). A binary logistic regression analysis was then performed to identify those factors that are most important in affecting public support or opposition (Lam & Woo, 2009). Binary logistic regression was used for this study because it allowed for estimations to be made concerning the probability that a facility siting would be opposed or supported, and analysed the relative effects of the independent variables on the dependent variable. The dependent variable is dichotomous, indicating whether the respondent opposes or does not oppose a certain facility. It was derived by collapsing the LULU acceptance scores on the 5-point scale into two categories, with "oppose" comprising 1 and 2 and "not oppose" comprising 3, 4 and 5. The independent variables[16] include siting experience, perceptions of need, risk, fairness, trust in government and several demographic factors. Siting experience is a dichotomous variable with the value "0" given to Shatin, which is free from siting conflicts, and "1" given to Tuen Mun and Tseung Kwan O, which are involved in recent NIMBY controversies. The dependent and independent variables used in the logistic regression models are presented in Table 4.1. The Forward LR method is used to enter variables one at a time, and likelihood ratio estimates were used to determine which variable is significant and should enter the regression model. The goodness of fit of the logistic regression models is indicated by the pseudo R^2 statistic, which denotes the percentage of variance in the dependent variable explained by the independent variables (Meyers et al., 2006).

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[15] As dichotomous variables can be regarded as being at any level of measurement, the dichotomous variables in this analysis are treated as an ordinal level of measurement and were examined with other ordinal variables using the Kendall's tau b correlation analysis.

[16] Examination of collinearity diagnostics did not reveal collinearity problems between the independent variables.

Table 4.1 Description of Variables Used in the Logistic Regression Models

Variables	Type	Coding
Dependent Variables		
Attitude to LULU (landfill/ incinerator) siting	Categorical	Response was originally expressed on a scale of 1 to 5, 1 being "Most Unwelcomed" and 5 being "Very Welcome". Variable was recoded with values 3, 4 & 5 coded 0 for support to LULU siting and 1 & 2 coded as 1 for opposition to LULU siting.
Independent Variables		
Siting experience	Categorical	0 (Shatin free of siting conflict) vs. 1 (Tuen Mun and Tseung Kwan O with recent NIMBY controversies)
Need for LULU (landfill/ incinerator) in Hong Kong	Categorical	0 (No) vs. 1 (Yes)
Local need for LULU (landfill/ incinerator)	Categorical	0 (No) vs. 1 (Yes)
Perceived risk of LULU (landfill/ incinerator)	Ordinal	1 (no risk at all) to 5 (very high risk)
Perceived fairness of the siting approach	Ordinal	Response to the statement "LULUs have to be sited in your district for the benefit of Hong Kong" with the scale running from 1 (very unfair) to 5 (very fair).
Perceived trust in Government in making the siting decision	Ordinal	1 (very untrustworthy) to 5 (very trustworthy)
Gender	Categorical	Male (0) vs. Female (1)
Marital status	Categorical	Single (0) vs. Married (1)
Age	Ordinal	6 groups ranging from 18 to 60 or above
Education level	Ordinal	4 groups ranging from primary or below to postgraduate level
Monthly family income	Ordinal	8 groups ranging from below HK$5,000 to HK$80,000 or above

4.4 Design of Stakeholder Interviews

The purpose of the stakeholder interview is to address the second research objective by providing in-depth knowledge of the different views or perceptions of key stakeholders regarding the importance and formation of trust relating to public acceptance of LULUs. This section first explains the rationale for the selection of the interviewees, then the design of the interview questions and finally the data collection and analysis.

4.4.1 Selection of Interviewees

The purpose of the stakeholder interviews was to obtain the views and opinions of key local stakeholders on the importance and formation of trust in affecting public acceptance of LULUs. The stakeholder groups are identified and their characteristics are described in Table 4.2. An initial list of 65 potential respondents representing each stakeholder group was drawn up on the basis of the author's best knowledge of local siting issues and personal network in the field of environmental policy. These potential respondents can be regarded as individuals possessing detailed knowledge of and having substantial involvement in local siting issues.

Invitations were first sent out via e-mail to the list of potential respondents in early October 2008. Reminder emails and phone calls were made after a period of about two weeks and one month, respectively. The interviews were conducted between October 2008 and January 2009. The interviews were finally conducted with 35 individuals who agreed to be interviewed during this period; the number of interviewees from each stakeholder group is shown in Table 4.3. The response rate for the stakeholder interview was about 54%. The survey was small-scale in terms of individual participants and is considered a pilot study in terms of number of participants. The results may not be representative of all members of the particular stakeholder groups surveyed. However, their views can be considered to be indicative of the views of people who are active in local siting issues and who can be considered key opinion formers based on their direct observation of and experience in the siting process.

Table 4.2 The Stakeholder Groups Involved in LULU Siting and Their Characteristics

Stakeholder Groups	Characteristics
Government	Government officials involved in implementing siting policies or responsible for LULU siting in Hong Kong
Consultancy Firms	Consultants involved in the engineering or environmental consultancy work for LULU projects and having knowledge or experience in communicating with the public or other stakeholders
District Council	District Councillors from communities with siting experiences who are concerned about siting of LULUs in local districts
Legislative Council	Legislative Councillors who are interested in local siting issues and contribute opinions about siting policies
Local Civic Organisations	Staff or volunteers of local civic organisations who are concerned about LULU siting in their own communities
Environmental NGOs	Chief executive officers or senior staff of major local environmental NGOs who are involved in the siting process
Advisory Council on the Environment (ACE)	Members of ACE who are concerned about LULU siting in Hong Kong and who have experience commenting on EIA reports for LULU projects
Professional bodies	Directors or senior members of professional bodies (e.g. The Hong Kong Institution of Engineers (HKIE), The Hong Kong Institute of Environmental Impact Assessment (HKIEIA), etc.) involved in the provision of services or advice to the government on LULU siting issues
Academics	Staff of local universities involved in environmental or planning research and teaching or independent consultancy works relating to LULU siting
Political Parties	Members of local political parties who are concerned about siting of LULUs in Hong Kong or local districts
Media	Newspaper or television journalists specializing in the reporting of environmental issues, including the siting of environmental LULUs, in local media

Table 4.3 Number of Interviewees for Each Stakeholder Group and the Corresponding Interview Codes

Stakeholder Groups	Number of Interviewees	Code for Stakeholder Interviews
Government	5	GT1-5
Consultancy Firms	3	CF6-8
District Council	4	DC9-12
Legislative Council	3	LC13-15
Local Civic Organisations	3	LO16-18
Environmental NGOs	5	EG19-23
Advisory Council on the Environment (ACE)	3	ACE24-26
Professional bodies	1	PB27
Academics	5	AC28-32
Political Parties	1	PP33
Media	2	ME34-35
Total	**35**	-

4.4.2 The Interview Questions

The interview survey was one of the few attempts in the literature to explore the role of trust in LULU siting from the perspective of key stakeholders. The interview questions were designed to provide general insights on the importance of trust and the conditions that are necessary for trust building in the local siting context.

The questionnaire for the stakeholder interview is provided in Appendix 7. It was structured around the following broad themes related to the importance and formation of trust relating to LULU siting:

- stakeholders' views, perceptions and knowledge about the importance of trust in LULU siting in Hong Kong;
- trust in government and other related stakeholder groups with respect to making a decision on siting a waste incinerator in Hong Kong;
- factors contributing to the emergence or destruction of trust as perceived or experienced by the stakeholders;
- evaluation of trust attributes for the government and related stakeholder groups with respect to making a decision on siting a waste incinerator in Hong Kong;

- evaluation of the importance of different trust attributes with respect to siting different LULUs; and
- stakeholders' suggestions on how trust can be built in the decision making process for LULU siting.

The interviews were semi-structured and in-depth. The survey procedure is described below. At the beginning of the interview, the questionnaire was presented to the interviewees and they were informed of the purpose of the research. Interviewees consented to the use of the interview data for research purposes only. As the nature of this research may be politically sensitive, the interviewees were assured of confidentiality, and no defining characteristics will be cited in this research that would permit any data obtained to be attributed to any particular interviewee. Interviewees were asked to speak about their views, perceptions and knowledge of issues related to trust in the local siting process. They were also asked to evaluate the importance of various attributes of their conception of trust. The trust attributes (i.e., competence, openness, credibility, accountability, objectivity, fairness and caring) used in the questionnaire are not new; they have been used in some previous studies (Kasperson et al., 1992; Metlay 1999; Poortinga & Pidgeon, 2003; Renn & Levine, 1991). In the interviews, the interviewees were allowed to come up with their own understanding of these terms. No meaning of the attributes were given to the respondents so that the interviewees could freely express their views. The interviewees were encouraged to discuss issues that they felt comfortable with and that were relevant to the questions. They were also told that they were free to decline to answer anything they felt uncomfortable talking about. The questions that were asked for each interviewee were kept as constant as possible, but varied slightly depending on the position or affiliation of the interviewee. The interview research was conducted in such a way as to ensure consistency.

4.4.3 Data Collection and Analysis

Of 35 formal interviews conducted, 33 were conducted in person and two were conducted over the telephone. The interviews were recorded with the interviewees' consent. Each interview lasted a minimum of 45 minutes, with many taking longer

than 60 minutes. Detailed notes were taken for each interview and were used as the basis for analysis to capture and interpret the stakeholders' responses to each interview question. To respect confidentiality, the interviewee names were not identified, and all interviews were coded according to the stakeholder group that the interviewee belonged to plus a corresponding number assigned to the interviewee (see Table 4.3). For example, "GT1" refers to the interviewee (Interviewee No. 1) working in the government and "EG19" refers to the interviewee (Interviewee No. 19) from the environmental NGO groups.

Among the nine questions in the questionnaire, five were of the open-ended type and the remaining four were closed questions. Participants were encouraged to give their views on choices for the closed questions. The closed questions required responses in the form of a 1 to 10 score. These scores were attached to descriptors, for example, "No Trust" (1) to "Complete Trust" (10) for question 2 and "Not Important at All" (1) to "Very Important" (10) for question 4; or the questions were supplemented with a simple explanatory note about the evaluation of the scores for questions 5 and 7 in the questionnaire. For closed questions that employed the 1-10 scoring system, simple means were calculated based on the stakeholders' responses to each subject of the question. Because of the small sample size (35) for the survey and the exploratory nature of the research, the mean scores serve an indicative rather than quantitative purpose.

4.5 Summary

In this chapter, the methodology used in the present study is presented. The overall study approach utilized social surveys and stakeholder interviews to address the first and second research objectives for this study.

To address the first research objective relating to the factors affecting public response to siting LULUs, two levels of social surveys were undertaken, with samples collected from the whole of Hong Kong using the telephone survey method and from three local communities with or without NIMBY issues using the on-the-street survey method. The four social surveys are broadly similar and contain questions focused on gauging public views and perceptions on issues related to LULU siting including: public acceptance of LULUs, perceived need for the

LULU facilities, the perception of risk, fairness and trust in those who make the siting decision, and the public preference for different conflict resolution methods. By analyzing the key variables in the social surveys, general public perceptions and attitudes towards siting LULUs can be found through information collected from the territory as a whole and from local districts, representing the views of the population at large and those from host communities with or without NIMBY issues, respectively. Further, comparison will be made to examine the extent to which public perceptions and response to siting may vary among communities with different siting experiences, using ANOVA or the Chi-Square Test. Moreover, in order to identify factors which influence whether or not the public oppose a certain facility, a bivariate correlation analysis was first undertaken to determine the strength of relationship between the level of acceptance and a host of perception and demographic variables in the three local surveys. A binary logistic regression analysis was then performed to identify the determinative effects of community experience, a host of perception factors and socio-demographic variables on public attitudes on LULU siting by analyzing the combined data set of the three community surveys.

To address the second research objective concerning the role of trust played in the siting process, in-depth interviews were conducted with 35 local stakeholders who are experienced and knowledgeable in local LULU siting issues. The interviews provide an understanding of the importance of trust to stakeholders in LULU siting, and particularly the conditions that can contribute to the building of trust in affecting the public acceptance of LULUs. Detailed notes were taken for each interview and were used as the basis for analysis to capture and interpret stakeholders' responses to each interview question. As the interview is small-scale in terms of the number of participants, the interview survey was considered as a pilot study for exploratory purpose. Moreover, to respect confidentiality, the interviewee names were not identified and all interviews were coded according to the stakeholder group that the interviewee belonged to plus a corresponding number assigned to the interviewee.

The findings and implications of the social surveys and stakeholder interviews will be presented in Chapters 5 and 6, respectively. The findings help us better understand the factors which underlie public opposition to LULUs, particularly the

role of trust in affecting public acceptance. Based on the overall results of this study, Chapter 7 will address the third research objective by outlining policy recommendations on formulating a siting strategy that can help address public opposition to LULUs in the local context.

Chapter 5 Factors Influencing Public Response to LULU Siting

5.1 Introduction

This chapter aims to address the first research objective, concerning the factors affecting public response to siting LULUs, by answering three specific research questions. The first research question is what the general perceptions of and attitudes towards siting locally unwanted facilities are in Hong Kong. The second research question is to what extent community siting experience might affect public perceptions of and attitudes towards siting LULUs. The third research question is what factors have the most influence upon public opposition to LULU siting. It is anticipated that the findings of this chapter, integrated with the findings of Chapter 6, will have policy implications for how to address public opposition to LULUs. This will be discussed in Chapter 7.

In this study, the above three specific research questions were answered by conducting a two-level questionnaire survey, the detailed methodology of which is described in Chapter 4. To recap briefly from Section 4.3, the first-level survey was the Hong Kong territory-wide telephone survey undertaken in May 2007, in which a total of 1002 interviews were successfully completed. The respondents were randomly selected from all geographical districts of Hong Kong to reflect the diverse views and opinions of the population at large. Subsequent to the territory-wide survey, the second-level surveys included three similar questionnaire surveys undertaken in the three local communities of Tuen Mun (TM) (n=752), Tseung Kwan O (TKO) (n=822) and Shatin (SHT) (n=803) between September 2007 and August 2008. These three study areas have different experiences with LULU siting, as described in Section 4.3.1. Briefly, Tuen Mun and Tseung Kwan O play host to relatively more LULUs than other districts, and plans have been proposed to site yet more LULUs in these two areas. Shatin, meanwhile, was chosen as a local survey site for comparison purposes because there are no known plans to site new LULUs in the district, and unlike the districts of Tuen Mun and Tseung Kwan O, Shatin has no significant NIMBY controversy. The public response from the Shatin survey can therefore act as a control to compare with the public responses from Tuen Mun and Tseung Kwan O, communities which have negative siting experiences.

In this chapter, the first and second research questions will be answered by examining the results of the two-level questionnaire survey in Section 5.2. The general public perceptions of and attitudes towards siting LULUs will be explored by gauging public views and opinions through the Hong Kong territory-wide survey and the three local community surveys. The territory-wide survey reflects the perceptions and attitudes of the population at large in Hong Kong, whereas the three local surveys reflect public views at the local community level. The second research question is addressed by comparing the results of the three local community surveys. The data obtained can help unravel the differences among different communities and help discern the extent to which local community experiences in LULU siting may affect residents' perceptions of and responses towards siting. The third research question will be answered in Section 5.3 by analyzing the most determinative factors affecting public opposition from the combined data set of the three community surveys. This analysis will investigate the effects of community experience, a host of perception factors and socio-demographic variables on public attitudes towards LULU siting.

A discussion of the overall results will be provided in Section 5.4, addressing how the results may answer the three specific questions mentioned above and what policy implications can be drawn from the research findings.

5.2 Public Perceptions of and Attitudes Towards Siting LULUs as Revealed in the Territory-Wide and Community Surveys

This section presents the results of the Hong Kong territory-wide and three local community surveys on public perceptions and attitudes towards LULU siting. In particular, the responses from the three local community surveys will be compared with respect to the following key aspects: the perceived trust in different institutions making siting decisions, the perceived need for particular LULUs, the perceived fairness of the siting approach, major concerns about siting, the perceived risk associated with particular LULUs and beliefs about risk, the level of public acceptance of particular LULUs, and finally the preference for different methods of conflict resolution. Except for the dichotomous questions on perceived need and major public concerns about siting, respondents were asked to give a rating on a five-point Likert scale in response to the above questions.

5.2.1 Trust Towards Those Involved in Decision-Making

In both the territory-wide and local community surveys, respondents were asked about their level of trust towards different parties involved in siting decisions. Two interesting findings are observed from the data shown in Table 5.1. First, the findings of both the territory-wide and local surveys show similar patterns in the level of trust in the institutions involved in decision making. In particular, there is a general lack of trust in government to make a sound siting decision in the public's view. Table 5.1 shows that in the territory-wide survey, civic organisations are most trusted, followed by the government, while private companies are least trusted. Similarly, the results of the three community surveys show that among the various parties involved in siting decisions, civic organisations (including green groups) and professional bodies are more trusted by the local community than are the government, Legislative Council and District Councils. Political parties and private companies are least trusted. In fact, this pattern of trust is similar to the trust level perceived by some key local stakeholders involved in siting. As will be discussed in Chapter 6, academics, professional bodies, environmental NGOs and the Advisory Council on the Environment (ACE) are more trusted than the government, Legislative Council and District Councils, whereas consultancy firms and political parties are least trusted (see the interview results in Section 6.3).

The lack of trust merits special mention because the government is the initiator of most LULU projects in Hong Kong, and private consultancy firms are commissioned to conduct the engineering and environmental assessment studies for these LULU projects. If the government and their consultants are not trusted by the general public, this increases the difficulty of the siting process. Moreover, the lack of trust in both the Legislative Council and District Councils is worth mentioning, as the funding for public works projects is approved by the Legislative Council and the District Councils are the key parties consulted at the local community level. The lack of public trust in these two entities may be related to the fact that most of the members of the Legislative Council and the District Councils are affiliated with local political parties, which are not considered highly trustworthy according to the survey findings. Lack of public trust in these entities may also limit their potential role as

mediators to resolve conflicts between the government and the public arising from siting.

In fact, the general lack of trust in government is accompanied by a lack of public involvement in and understanding of the LULU planning and siting process. The territory-wide survey shows that only a minority of respondents (13%) agree that the existing channels of public participation in the planning and siting of LULUs are adequate. This is echoed by the findings of the community surveys, in which a majority of respondents from Tuen Mun (86%), Tseung Kwan O (91%) and Shatin (89%) stated that they do not know how LULUs are planned and sited in Hong Kong. Furthermore, over-reliance upon mass media as the major source of information about LULU projects may also be a factor contributing to a lack of trust in the government. The survey findings indicate that over half of the respondents from the Tuen Mun and Tseung Kwan O communities relied on the media, such as newspapers and TV, as their main source of information about LULUs. This is in stark contrast to the mere 2% of respondents from these two communities who reported learning about LULUs through town hall meetings organized by the government. As the media do not cover all aspects of a project, local people may be influenced or biased by the sensational and piece-meal information they receive from the media. These findings suggest that notwithstanding the opportunities for public consultation provided by the current planning and environmental impact assessment processes, many members of the public do not fully comprehend the technicalities of the planning and siting process, or understand why their community has been selected as the site for a LULU project. The lack of involvement in and understanding of the process nurtures a sense that the government is imposing a LULU on the public against their will, without sufficient consultation. The result is that the public do not understand the process and their genuine concerns cannot be adequately addressed under the current rational and technical siting process (as discussed in Chapter 3). This may result in a lack of trust in both the process and the decision made by the government.

In addition to the above, another interesting finding is that there is a pronounced difference among the three communities in the level of trust in certain parties, as shown by the results of the three local community surveys (see Table 5.1). Among

the three communities, Tuen Mun and Tseung Kwan O residents have a slightly higher level of trust in civic organisations ($F=10.141$, $p<0.001$), but a slightly lower level of trust in the government ($F=8.127$, $p<0.001$), the private sector ($F=32.893$, $p<0.001$) and political parties ($F=8.577$, $p<0.001$) in making siting decisions as compared with Shatin residents (see Table 5.1). This is because Tuen Mun and Tseung Kwan O have experienced problems of LULU siting in their communities, and so they are less trustful in the government and the private consultancy companies commissioned by them. They also think that political parties are not highly trustworthy because their involvement in siting may be affected by political factors or dealings. Residents of Tuen Mun and Tseung Kwan O feel that civic organisations are more trustworthy because they show care for their real interests by expressing the residents' needs and concerns to the government. As civic organisations are significantly more trusted in LULU-affected communities, this suggests their potential as mediators between the local community and the government on siting issues.

Table 5.1 Trust Towards Different Parties Involved in Siting Decisions

Trust in Stakeholder Group		**Mean**					**ANOVA of difference among 3 communities**
		HK (n=1002)	TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
Civic Organisations (including Green Groups)	Mean Std. Dev.	3.72 1.080	3.69 0.993	3.71 0.965	3.52 0.764	3.64 0.915	10.141**
Professional Groups	Mean Std. Dev.	-	3.46 0.928	3.49 0.916	3.46 0.743	3.47 0.865	0.455
Legislative Council	Mean Std. Dev.	-	3.03 0.941	3.02 0.892	3.11 0.776	3.06 0.871	2.719
Government	Mean Std. Dev.	2.98 1.011	2.93 1.057	3.04 0.990	3.13 0.851	3.03 0.971	8.127**
District Councils	Mean Std. Dev.	-	2.96 0.962	3.03 0.906	3.01 0.766	3.00 0.880	1.318
Political Parties	Mean Std. Dev.	-	2.48 0.979	2.48 0.954	2.65 0.826	2.54 0.924	8.577**
Private Companies	Mean Std. Dev.	2.21 1.064	2.30 0.950	2.30 0.937	2.62 0.791	2.41 0.907	32.893**

Note:

1. Hong Kong, Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of HK, TM, TKO and SHT.
2. The Mean represents the mean trust score of a particular statement relating to the trustworthiness of the stakeholder group involved in the siting decision, with trust level ranging from 1 (very untrustworthy) to 5 (very trustworthy).
3. The combined mean refers to the average mean trust score calculated from the combined data of the three community surveys for each party involved in siting decisions.

**Significance at < 0.001 level

*Significance at < 0.05 level

- Not applicable

5.2.2 Perceived Need for Particular LULUs

Regarding the need for certain LULUs in the whole of Hong Kong and in their own community, the results of both the territory-wide survey and the three community surveys (Table 5.2) show that while the general public are not unaware of the need to have such facilities in Hong Kong as a whole, they do not acknowledge the need for them in their own community. The discrepancy between the perceived need in Hong Kong as a whole and in their own community is a typical NIMBY (not-in-my-backyard) response, which is evident in both the territory-wide and community surveys. Among the various facilities, the discrepancy between the need for Hong Kong and for the local community is smallest for the sewage treatment plant in Shatin (47.32%) and for the refuse station (72.65%) in the territory-wide survey. This probably indicates that these facilities have caused little nuisance to residents due to the remote location of sewage treatment plants from the residential areas and the confined area and good daily management of refuse stations. The differences between the three local communities are statistically significant according to the χ^2 Test ($p<0.001$). Among the three communities, Tseung Kwan O has a higher percentage of respondents acknowledging the need for landfills and incinerators in Hong Kong as a whole and in their own community (Table 5.2). The territory-wide survey also shows a relatively higher percentage of respondents acknowledging the social and local need for an incinerator. This probably relates to the fact that a larger proportion of respondents in the Tseung Kwan O and territory-wide surveys have a higher level of education (see Appendix 2) and thus a better understanding of the needs of society. A possible reason why Tseung Kwan O respondents do not rate the local need for an incinerator as high as those in the territory-wide survey may be that Tseung Kwan O residents have shared the burden of hosting a strategic landfill serving the whole of Hong Kong for about two decades. This may affect local residents' views on the need for an incinerator, which is perceived as more risky than a landfill in their community.

Table 5.2 Public Perceived Need for Locally Unwanted Facilities in Hong Kong and in Respondents' Neighborhoods

	Landfill		Incinerator		Aviation Fuel Receiving Facility (for TM only)		Explosive Storage Facility (for TKO & SHT)		Chemical Waste Treatment Centre (for HK only)		Sewage Treatment Plant (for SHT only)		Refuse Station (for HK only)	
	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)	Need for HK (%)	Local Need (%)
Hong Kong (HK) (n=1002)	-	-	76.90	17.70	-	-	-	-	85.03	22.90	-	-	89.02	72.65
Tuen Mun (TM) (n=752)	67.95	12.50	51.60	8.91	42.82	5.19	-	-	-	-	-	-	-	-
Tseung Kwan O (TKO) (n=822)	81.14	21.29	67.52	9.37	-	-	39.05	4.38	-	-	-	-	-	-
Shatin (SHT) (n=803)	75.22	9.59	59.90	8.22	-	-	44.33	5.98	-	-	91.41	47.32	-	-
Total Count	1782	346	2195	387	322	39	677	84	852	229	734	380	892	728
Total Percentage	74.97	14.56	64.96	11.45	42.82	5.19	41.66	5.17	85.03	22.90	91.41	47.32	89.02	72.65

Note: Hong Kong, Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of HK, TM, TKO and SHT

5.2.3 Perception of Fairness of LULU Siting

To gauge how the public perceive the fairness of the siting approach, the respondents were asked whether or not they agreed with statements about different siting approaches. In general, the public do not believe that it is fair for some communities in Hong Kong to shoulder the burden of the whole society in hosting LULUs, as reflected by the lowest mean fairness score for this fairness statement in the four surveys (Table 5.3). Among the three local communities, this feeling is significantly stronger in Tuen Mun and Tseung Kwan O than in Shatin ($F=64.894$, $p<0.001$), probably due to the fact that the communities of Tuen Mun and Tseung Kwan O have endured the costs of LULU siting in recent years and thus residents would consider it more unfair to site additional LULUs in their communities. Their negative feelings are also generally stronger than the perception of the population at large, as shown in Table 5.3. In addition, the general public opined that it was only fair if LULUs were assigned to different communities on the basis of need or were evenly distributed amongst all 18 districts in Hong Kong, as reflected by the relatively higher mean fairness scores for the statements describing these siting approaches.

Table 5.3 Perceived Level of Fairness of Different Siting Approaches

Fairness Statement		**Mean**					**ANOVA of difference among 3 communities**
		HK (n=1002)	TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
"Site LULUs in your district for the benefit of Hong Kong"	Mean	2.70	1.81	2.02	2.38	2.06	64.894**
	Std. Dev.	1.171	0.995	1.019	0.796	0.973	
"Evenly distribute LULUs across different districts in Hong Kong"	Mean	3.22	3.42	3.35	3.28	3.35	3.302*
	Std. Dev.	1.202	1.012	1.147	0.848	1.009	
"Distribute LULUs based on the needs of each district"	Mean	3.66	3.69	3.70	3.58	3.65	3.895*
	Std. Dev.	1.131	0.992	1.070	0.752	0.946	

Note:

1. Hong Kong, Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of HK, TM, TKO and SHT.
2. The mean represents the mean fairness score of a particular statement relating to the fairness of the siting approach, with the fairness level ranging from 1 (very unfair) to 5 (very fair).
3. The combined mean refers to the average mean fairness score calculated from the combined data of the three community surveys for each fairness statement.

**Significance at < 0.001 level

*Significance at < 0.05 level

- Not applicable

5.2.4 Major Public Concerns on LULU Siting

The public were asked to name the concerns they had regarding LULUs in their community. In the territory-wide survey, the respondents were asked whether or not they agreed with the impacts associated with particular LULUs. Table 5.4a shows that environmental, health and safety impacts are the major public concerns, as the percentage of respondents who agree that LULUs may have these impacts is higher than the percentage of those who think that LULUs may cause economic or social impacts. Among different LULUs, incinerators are of relatively greater concern to the public, with a higher proportion of people agreeing that an incinerator may cause various impacts than a refuse station or chemical waste treatment centre (Table 5.4a). In both the Tuen Mun and Shatin surveys, residents were asked to name the concerns they had regarding LULUs in their community. In posing this question, residents were prompted to mention as many concerns as they wished and to list them in order of importance. Table 5.4b gives the percentage count of concerns, including those mentioned first and those mentioned in any order. It is evident that the concerns of residents in the two communities are broadly similar: the four top concerns are pollution, health and safety, nuisance and disturbance, and impacts to overall quality of life. Interestingly, factors such as depreciation of property value and the need for the facility were accorded much lower importance. Overall, these results suggest that a majority of the general public in Hong Kong are more concerned about environmental, health and safety impacts, nuisance and disturbance, and impacts to their quality of life than the social and economic impacts associated with environmental-related LULUs.

Table 5.4a Major Public Concerns About Particular LULU Facilities as Revealed in the Territory-Wide Survey

Major public concerns	**LULU facilities**		
	Refuse Station	Incinerator	Chemical Waste Treatment Centre
Economic impacts (%)	26.2	40.0	38.2
Environmental impacts (%)	56.6	75.6	57.7
Social impacts (%)	24.3	41.5	35.2
Health and safety impacts (%)	45.0	67.2	62.7
None of the above (%)	26.6	9.5	14.3

Note: The sample size for the Hong Kong territory-wide survey is 1,002.

Table 5.4b Major Concerns of Tuen Mun and Shatin Residents Towards LULU Facilities

		Pollution	Health & Safety	Nuisance & Disturbance	Quality of Life	Need for the Facility	Benefits to the Community	Property Value	Other	No Comment
Tuen Mun (n=752)	1st named factor (%)	58.78	28.59	3.32	2.26	2.13	1.19	0.80	1.06	2.13
	One of the concerns (%)	87.10	79.92	41.22	43.35	15.69	7.85	9.84	1.33	2.13
Shatin (n=803)	1st named factor (%)	35.99	34.37	4.98	5.73	6.72	2.99	3.36	0.25	4.86
	One of the concerns (%)	70.49	78.21	39.35	50.93	25.78	16.44	15.44	0.75	4.86
Total Count	1st named factor	731	491	65	63	70	33	33	10	55
	One of the concerns	1221	1229	626	735	325	191	198	16	55
Total Percentage	1st named factor (%)	47.01	31.57	4.18	4.05	4.50	2.12	2.12	0.64	3.54
	One of the concerns (%)	78.52	79.04	40.26	47.27	20.90	12.28	12.73	1.03	3.54

5.2.5 Risk Perceptions and Beliefs

In both the territory-wide and the three local surveys, respondents were asked to rate the level of risk associated with particular LULUs. Residents of the three communities were asked to rate the level of risk associated with the two common LULUs (landfills and incinerators) and one or two other LULUs found only in their community. The respondents in the Hong Kong territory-wide survey were asked to rate the level of risk associated with incinerators and two other LULUs. The results in Table 5.5 show that among different LULUs, explosive storage facilities are considered more risky than aviation fuel receiving facilities and chemical waste treatment centres; sewage treatment plants and refuse stations are considered the least risky, significantly less so than incinerators and landfills.

The results also show that the risk levels reported by the public are broadly similar for the common LULUs (Table 5.5), with incinerators being rated as slightly more risky than landfills in all three communities. To ascertain whether or not there are significant differences in perceived risks among the three communities on the two common LULUs (landfills and incinerators), an analysis of variance was performed on the risk ratings of landfills and incinerators by residents of the three communities. The results indicate that the differences among the communities are statistically significant for both landfills ($F=5.44$, $p<0.05$) and incinerators ($F=16.15$, $p<0.001$) (Table 5.6).

In particular, Shatin residents give a slightly higher risk rating to landfills and incinerators than do residents of the other two communities. Similarly, Tseung Kwan O residents give a slightly higher risk rating to incinerators than do residents of Tuen Mun. The slight variation in risk rating is probably related to whether a community has knowledge of or experience with a particular LULU. Currently, there is no landfill being sited or incinerator being planned in Shatin, so Shatin residents have less knowledge of or experience with such facilities and associate a slightly higher risk with them. Likewise, Tseung Kwan O has a landfill sited in the locality, but there is no plan to site an incinerator there. Tseung Kwan O residents are more familiar with landfills than with incinerators and thus perceive the risks of incinerators as higher than do residents of Tuen Mun, who have some knowledge of the risk of incinerators due to the proposed plan to site an incinerator in their area.

This finding concurs with Zeiss's (1991) and Elliott et al.'s (1997) studies that residents have lower levels of risk concerns toward facilities that already exist and pose no significant impacts to local people, compared with unfamiliar facilities of which they have no experience. This shows that a community's experience with particular LULUs may influence how the public perceive the risk level of LULUs.

When the residents were asked about their views regarding the siting of highly risky LULU facilities, the results show that the majority of residents of the three local communities shared similar risk beliefs (Table 5.7). It is a prevalent belief across the communities that accidents may happen and impose catastrophic consequences on present and future generations, and that such impacts are difficult to mitigate. Members of the public clearly do not understand how these risks arise and how they may affect their well-being, which naturally results in fear and dread. On the other hand, the residents of the three communities have the lowest agreement level with the statement that the technology used at the facility may not be reliable. The reason for this may be related to the good track record of similar facilities in Hong Kong, leading residents to perceive that the facilities' technology is generally not unreliable.

Table 5.5 Perceived Risk Level of Different Locally Unwanted Facilities

	Landfill	Incinerator	Aviation Fuel Receiving Facility (for TM only)	Explosive Storage Facility (for TKO & SHT)	Chemical Waste Treatment Centre (for HK only)	Sewage Treatment Plant (for SHT only)	Refuse Station (for HK only)
Hong Kong (HK) (n=1002)							
Very risky (%)	-	18.6	-	-	34.70	-	3.1
Very risky and risky (%)	-	52.1	-	-	61.30	-	7.6
Mean riskiness score	-	3.55	-	-	3.86	-	2.18
Tuen Mun (TM) (n=752)							
Very risky (%)	16.22	22.47	23.27	-	-	-	-
Very risky and risky (%)	40.16	51.99	57.58	-	-	-	-
Mean riskiness score	3.24	3.53	4.01	-	-	-	-
Tseung Kwan O (TKO) (n=822)							
Very risky (%)	10.22	24.09	-	56.93	-	-	-
Very risky and risky (%)	36.50	63.51	-	84.55	-	-	-
Mean riskiness score	3.15	3.76	-	4.39	-	-	-
Shatin (SHT) (n=803)							
Very risky (%)	3.49	13.45	-	38.98	-	0.87	-
Very risky and risky (%)	41.47	69.61	-	85.80	-	17.43	-
Mean riskiness score	3.32	3.79	-	4.25	-	2.69	-
Total Count							
Very risky	234	661	294	781	348	7	31
Very risky and risky	935	1994	526	1384	611	140	76
Total Percentage							
Very risky (%)	9.84	19.56	39.10	48.06	34.70	0.87	3.1
Very risky and risky (%)	39.34	59.01	69.95	85.17	61.30	17.43	7.6

Note:

1. Riskiness score ranges from 1 to 5. The larger the number, the more risky the facility is considered.

- Not applicable

Table 5.6 ANOVA Test of the Perceived Level of Risk of Landfills and Incinerators Among Three Communities

Perceived Risk of LULUs		Mean				ANOVA of difference among 3 communities
		TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
Landfill	Mean	3.24	3.15	3.32	3.24	5.444*
	Std. Dev.	1.147	1.059	0.764	1.003	
Incinerator	Mean	3.53	3.76	3.79	3.69	16.154**
	Std. Dev.	1.122	1.017	0.755	0.981	

Note:

1. Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of TM, TKO and SHT.
2. The mean represents the mean riskiness score of a particular type of LULU in a community, with risk level ranging from 1 (no risk at all) to 5 (very risky).
3. The combined mean refers to the average mean riskiness score calculated from the combined data of the three community surveys for a particular LULU.

**Significance at < 0.001 level.

*Significance at < 0.05 level.

The results also show significant differences in magnitude among the three communities holding the risk beliefs (Table 5.7), and the findings generally suggest that communities that have had negative siting experiences are more likely to be concerned about risk matters. As suggested by the literature (Hance et al., 1989), the greater the number and the agreement level with the factors involved in public risk perception, the more likely the public will be concerned about the risks. It is found that the agreement levels with a majority of the risk belief statements are higher for Tuen Mun and Tseung Kwan O than for Shatin, with the exception of the last statement regarding the reliability of technology. This may be related to the fact that Tuen Mun and Tseung Kwan O have experience with the siting of LULU facilities.

Table 5.7 ANOVA Test of the Risk Belief of Residents from Three Communities

Risk Belief Statement		Mean				ANOVA of difference among 3 communities
		TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
"The facility will cause catastrophic effects if accidents occur"	Mean Std. Dev.	4.34 0.929	4.27 0.883	3.91 0.563	4.17 0.828	64.728**
"Environmental impacts arising from the facility are difficult to reduce and mitigate"	Mean Std. Dev.	4.27 0.899	4.14 0.871	3.78 0.587	4.06 0.824	76.906**
"The facility may impose impacts and risks upon future generations"	Mean Std. Dev.	4.10 1.044	3.96 1.029	3.74 0.775	3.93 0.966	27.187**
"The risks associated with the facility will fill people with fear and dread"	Mean Std. Dev.	3.97 1.087	3.90 1.055	3.67 0.767	3.85 0.987	19.646**
"The public are not familiar with the impacts and risks of the facility"	Mean Std. Dev.	3.89 1.048	3.85 1.011	3.65 0.708	3.79 0.938	13.888**
"The technology of the facility may not be reliable"	Mean Std. Dev.	3.14 1.199	3.33 1.182	3.18 0.878	3.22 1.097	6.030*

Note:

1. Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of TM, TKO and SHT.
2. The mean represents the mean consent score of a particular statement relating to the perception of risk, with consent level ranging from 1 (totally disagree) to 5 (strongly agree).
3. The combined mean refers to the average mean consent score calculated from the combined data of the three community surveys for each risk belief statement.

**Significance at < 0.001 level.

*Significance at < 0.05 level.

These facilities may pose no significant risk or impacts to local people, but residents of these two communities may be more sensitized to risk and therefore tend to agree more with the statements relating to factors affecting the public perception of risk. Tseung Kwan O has the highest agreement level with the statement that the facility's technology may not be reliable. This may be because Tseung Kwan O residents

have been affected by odour problems in recent years, the source of which is suspected to be the landfill in their community. They may therefore have lost confidence in technological mitigation measures (for example, removal of odour by the deodouriser device installed in the landfill).

5.2.6 Degree of Acceptance of LULUs

To ascertain how much the public welcome or do not welcome certain LULUs, the respondents of the territory-wide and local surveys were asked to rate their degree of acceptance of certain LULUs. The results in Table 5.8 show that, with the exception of the sewage treatment plant and refuse station, over 71% of the public do not welcome or strongly do not welcome the named LULUs. The relatively small percentage (37%) of people in Shatin opposing the sewage treatment plant can be ascribed to the buffer distance and good compliance record of the plant. Similarly, the small percentage of people (43%) opposing refuse stations is due to the small scale of these facilities, which may incur less undesirable impacts than the other named LULUs, which are large in scale. As regards the explosive storage facility, the degree of acceptance, as indicated by percentages of those who do not welcome or strongly do not welcome the facility, is relatively low, probably reflecting the higher risk and uncertainty factor associated with this LULU.

The survey findings also show variations both among different LULUs and among the communities. Among the two LULUs common to all three communities (landfills and incinerators), it can be seen in Table 5.8 that residents of all three communities are slightly more reluctant to accept an incinerator than a landfill because of the higher perceived risk associated with the former. The percentages of Shatin residents who do not welcome or strongly do not welcome a landfill or an incinerator are 73.3% and 78.6% respectively, slightly lower than the corresponding figures for Tuen Mun and Tseung Kwan O, where plans have been announced to site such facilities. However, the percentage of Shatin residents who strongly oppose landfills (14%) and incinerators (21%) is markedly smaller than those in the other two communities; 45% to 60% of residents from Tuen Mun and Tseung Kwan O strongly oppose these two LULUs. Indeed, the percentage of Shatin residents (21%) who strongly oppose incinerators is also smaller than the percentage in the territory-wide survey (56%).

To ascertain whether or not there are significant differences in public acceptance among the three communities on the two common LULUs (landfills and incinerators), an analysis of variance was performed on the acceptance levels of landfills and incinerators by residents of the three communities. The results indicate that the differences in the degree of acceptance for landfills ($F=61.111$, $p<0.001$) and incinerators ($F=73.747$, $p<0.001$) among the three communities are statistically significant (Table 5.9). In other words, the three communities are intrinsically opposed to LULUs being sited in their communities, but the opposition is stronger in Tuen Mun and Tseung Kwan O than in Shatin. The stronger LULU opposition in Tuen Mun and Tseung Kwan O is probably related to the siting controversies in these

Table 5.8 Public Acceptance of Different Locally Unwanted Facilities

	Landfill	Incinerator	Aviation Fuel Receiving Facility (for TM only)	Explosive Storage Facility (for TKO & SHT)	Chemical Waste Treatment Centre (for HK only)	Sewage Treatment Plant (for SHT only)	Refuse Station (for HK only)
Hong Kong (HK) (n=1002)							
Most unwelcome (%)	-	56.1	-	-	55.5	-	23.7
Unwelcome and most unwelcome (%)	-	76.9	-	-	71.9	-	42.4
Mean acceptance score	-	1.79	-	-	1.85	-	2.59
Tuen Mun (TM) (n=752)							
Most unwelcome (%)	56.12	60.37	52.66	-	-	-	-
Unwelcome and most unwelcome (%)	77.80	79.39	75.13	-	-	-	-
Mean acceptance score	1.67	1.61	1.71	-	-	-	-
Tseung Kwan O (TKO) (n=822)							
Most unwelcome (%)	45.13	57.42	-	61.80	-	-	-
Unwelcome and most unwelcome (%)	74.57	84.67	-	86.37	-	-	-
Mean acceptance score	1.83	1.58	-	1.49	-	-	-
Shatin (SHT) (n=803)							
Most unwelcome (%)	14.32	20.80	-	24.78	-	6.23	-
Unwelcome and most unwelcome (%)	73.35	78.58	-	78.33	-	36.99	-
Mean acceptance score	2.15	2.02	-	1.96	-	2.88	-
Total Count							
Most unwelcome (n)	908	1655	396	707	556	50	237
Unwelcome and most unwelcome (n)	1787	2694	565	1339	720	297	424
Total Percentage							
Most unwelcome (%)	38.20	48.98	52.66	43.51	55.5	6.23	23.7
Unwelcome and most unwelcome (%)	75.18	79.73	75.13	82.40	71.9	36.99	42.4

Note:

1. The welcoming score ranges from 1 to 5. The larger the number, the more welcome the facility is considered.

- Not applicable

Table 5.9 ANOVA Test of the Degree of Public Acceptance of Landfills and Incinerator Among Three Communities

Acceptance of LULUs		Mean				ANOVA of difference among 3 communities
		TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
Landfill	Mean	1.67	1.83	2.15	1.89	61.111**
	Std. Dev.	0.916	0.926	0.710	0.877	
Incinerator	Mean	1.61	1.58	2.02	1.74	73.747**
	Std. Dev.	0.884	0.822	0.724	0.836	

Note:

1. Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of TM, TKO and SHT.
2. The mean represents the mean acceptance score of a particular type of LULU in a community, with the score ranging from 1 (most unwelcomed) to 5 (very welcome).
3. The combined mean refers to the average mean acceptance score calculated from the combined data of the three community surveys for a particular LULU.

**Significance at < 0.001 level

*Significance at < 0.05 level

two communities; their negative experiences with LULU siting may adversely affect their degree of acceptance of any more LULUs in their communities. In contrast, residents of Shatin, which has no significant negative siting experience, tend to have slightly less opposition than do residents of Tuen Mun and Tseung Kwan O. In terms of percentage of "most unwelcome" responses and mean acceptance score, the Shatin residents' level of opposition is also slightly lower than that of the population at large.

5.2.7 Public Preference for Conflict Resolution Options

Considering that most people oppose LULU facilities, respondents in the four surveys were asked how such siting conflicts can be resolved. The preferences of the general public are broadly similar (Figure 5.10), with the three most preferred options being effective consultation, rigorous monitoring and safety checks, and implementation of mitigation measures. These three resolution options are considered by the public to be the most effective strategies to address their opposition to LULUs. Compensation, on the other hand, in the form of either monetary incentives or community betterment, was a less preferred option in responses from all four surveys.

An ANOVA test was applied to ascertain the difference among the three communities. The results (Table 5.10) show that relatively more people in Tseung Kwan O than in the other two communities prefer the consideration of alternatives, mitigation measures, monitoring and audit as resolution methods. Given the government's recent plan to expand the landfill in Tseung Kwan O, it is natural for local people to ask for alternative waste treatment methods and to request the adoption of effective and rigorous monitoring measures. Likewise, residents of Tuen Mun are more concerned with the public consultation process because they want to have a greater say in the planning and siting process. Interestingly, Shatin received the highest preference score for the compensation option, which probably reflects the fact that they have no adverse siting experience and they are more willing to accept compensation in exchange for hosting LULUs in their community.

Table 5.10 Public Preference for Different Conflict Resolution Methods

Conflict Resolution Method		Mean					ANOVA of difference among 3 communities
		HK (n=1002)	TM (n=752)	TKO (n=822)	SHT (n=803)	Combined	F-value
More consultation with affected community	Mean	3.53	3.81	3.76	3.44	3.67	30.981**
	Std. Dev.	1.085	1.07	1.02	0.83	0.99	
Effective monitoring & audit program	Mean	3.50	3.72	3.84	3.58	3.71	14.104**
	Std. Dev.	1.079	1.10	1.03	0.76	0.98	
Effective mitigation measures	Mean	-	3.49	3.72	3.51	3.58	13.878**
	Std. Dev.		1.07	1.02	0.76	0,96	
Consideration of different options	Mean	-	3.31	3.43	3.20	3.31	8.603**
	Std. Dev.		1.23	1.07	0.87	1.07	
Explanation of the need for the facility	Mean	3.08	3.22	3.26	3.21	3.23	0.432
	Std. Dev.	1.189	1.23	1.18	0.86	1.10	
Provision of community facilities	Mean	-	3.02	3.10	2.96	3.03	2.557
	Std. Dev.		3.02	1.27	1.00	1.23	
Compensation	Mean	2.71	2.73	2.93	3.03	2.90	11.291**
	Std. Dev.	1.260	1.35	1.29	1.00	1.23	

Note:

1. Hong Kong, Tuen Mun, Tseung Kwan O and Shatin are represented by the abbreviations of HK, TM, TKO and SHT.
2. The mean represents the mean effectiveness score of a particular resolution method, with the score ranging from 1 (completely ineffective) to 5 (very effective).
3. The combined mean refers to the average mean effectiveness score calculated from the combined data of the three community surveys for each resolution method.

**Significance at < 0.001 level

*Significance at < 0.05 level

- Not applicable

5.3 Factors Affecting Public Acceptance of LULUs

This section presents the results of the assessment of factors affecting public response to siting. A bivariate correlation was first undertaken to find out the relationship between the level of acceptance of LULUs and a set of perception and demographic variables. To further examine the determinative effect of past siting experience, a binary logistic regression analysis based on the combined data set of the three community surveys is undertaken. The logistic regression can show the unique contribution of each independent factor upon public opposition and can determine the most influential factors affecting public attitudes towards LULU siting.

5.3.1 Factors Correlated with Public Acceptance of LULUs in the Three Communities

To unravel the factors affecting public acceptance of LULUs, a bivariate correlation analysis was undertaken relating the level of acceptance of the LULU to a host of perception and demographic variables. Three observations can be drawn from the results (Table 5.11). Firstly, the perceived local need for the facility and the perceived risk associated with the LULU are, as revealed in the correlation coefficients, the two most important factors affecting public acceptance. The correlation demonstrates that as the needs for LULU facilities are recognized by the public, the level of public acceptance towards these facilities increases. The relationship between the perceived risk level and public acceptance of LULUs is negative: i.e., the greater the perception of risks associated with the LULU facilities, the lower the acceptance levels. Secondly, the perceived trust level in government and the perceived fairness are also moderately correlated with the level of acceptance of LULU facilities. This shows that as the perceived level of fairness or the trust level increases, the level of public acceptance also increases. Thirdly, demographic factors such as income, age, gender, marital status and educational attainment are of lesser importance, as there is no consistent statistically and substantively significant correlation in the three communities.

Table 5.11 Correlation (Kendall's tau b) Between Acceptance of LULUs, Perceptions and Demographic Factors in Different Communities

District	Tuen Mun		Tseung Kwan O		Shatin	
Facility	Landfill	Incinerator	Landfill	Incinerator	Landfill	Incinerator
Need for landfill in Hong Kong	0.173**	---	0.151**	---		---
Need for incinerator in Hong Kong	---	0.252**	---	0.184**	---	0.160**
Local need for landfill	0.302**	---	0.369**	---	0.288**	---
Local need for incinerator	---	0.306**	---	0.369**	---	0.324**
Risk level of landfill	-0.260	---	-0.330**	---	-0.263**	---
Risk level of incinerator	---	-0.277**	---	-0.334**	---	-0.389**
Fairness to local community	0.199**	0.216**	0.211**	0.209**	0.069*	
Trust in Government	0.146**	0.123**	0.107**	0.075*	0.109**	0.143**
Gender	-0.088*	-0.083*	-0.077*			
Marital status		-0.072*	-0.121**			
Age			-0.076*			
Educational attainment	0.079*	0.081*		-0.081*		
Monthly household income						-0.064*

** Significant at the 0.01 level (2-tailed). Blank Insignificant
* Significant at the 0.05 level (2-tailed). --- Not applicable

Note:
1. Need for LULU: 0 (No), 1 (Yes)
2. Rating of perceived risk level: 1 (no risk at all) to 5 (very high risk)
3. Rating of fairness: 1 (very unfair) to 5 (very fair)
4. Rating of trust level: 1 (very untrustworthy) to 5 (very trustworthy)
5. Gender: Male (0), female (1).
6. Marital status: single (0), married (1)
7. Age: 6 groups from 18 to 60 or above
8. Education attainment: 4 groups from primary or below to postgraduate level
9. Monthly household income: 8 groups ranging from below HK$5,000 to HK$80,000 or above
10. Rating of acceptance of LULUs: from 1 (most unwelcomed) to 5 (very welcome)

Although the bivariate relationships examined indicate some potentially important interrelationships, the various independent variables are intercorrelated, which implies that Table 5.11 does not provide an indication of each variable's unique contribution to public acceptance. A multivariate approach is required to find the independent influence of the variables (including community siting experience, residents' perceptions of the need for the facility, the associated risk, equity and trust in government, and some socio-demographic characteristics) upon attitudes toward facility siting. This will be discussed in the following section.

5.3.2 Determinants Affecting Public Opposition/ Non-opposition towards LULU Siting

To assess the unique contribution of each of the variables to public attitudes towards LULU siting, a binary logistic regression analysis was performed for the siting of landfills and incinerators in the three communities with the data pooled together. The dependent variable is the dichotomous variable (oppose or not oppose), as earlier defined in Chapter 4. The independent variables include siting experience, and other perception and demographic variables listed in Table 5.12. The sample size is smaller than the total number of questionnaires successfully completed because of the exclusion of cases with missing data and "don't know" answers.

Table 5.12 shows the regression model, for the landfill and incinerator respectively, incorporating only those significant independent variables based on the -2LL test[17]. The pseudo R^2 indicates that the two binary logistic regression models listed below can account for 21.8% and 30.1% of the total observed variance in public opposition to the siting of landfills and incinerators respectively.

Opposition to Landfill:

$$In\frac{P(Oppose)}{P(Not\ oppose)} = 0.107 - 1.791(Local\ Need) + 0.580(Siting\ Experience) + 0.580(Perceived\ Risk) - 0.183(Trust)$$

Opposition to Incinerator:

$$In\frac{P(Oppose)}{P(Not\ oppose)} = 0.214 - 2.066(Local\ Need) - 0.759(Need\ for\ Hong\ Kong) + 0.737(Perceived\ Risk) + 0.530(Siting\ Experience) - 0.205(Trust)$$

A number of observations can be drawn from the results of the two regression models (Table 5.12). Firstly, most of the independent variables included are the same; they include perceived local need, perceived risk, siting experience, and

[17] Logistic regression measures model estimation fit with the value of -2 times the log of the likelihood value, referred to as -2LL or -2 log likelihood, which evaluates whether or not the set of the independent variables improves prediction of the dependent variable better than chance. The minimum value for -2LL is 0, which corresponds to a perfect fit (likelihood=1 and -2LL is then 0). Thus, the lower the -2LL value, the better fitting the model. For more details about the calculation of -2LL, please see Meyers et al. (2006).

perceived trust in the government. The only difference, in the case of the incinerator, is the addition of one more predictor, namely the perceived need for an incinerator for Hong Kong. The signs for these variables are in the direction expected. Generally speaking, people who do not perceive the need for a facility, who perceive a high risk, who have had a negative siting experience and who have a low level of trust in government are more likely to oppose the facility. The reason why the perceived need for society as a whole is a significant variable for the incinerator is not fully known. It is probably due to the fact that unlike landfills, there is currently no incinerator in any of the communities; the public may wish to ascertain that there is a need for both society as a whole as well as in their community before it is introduced.

Secondly, the relative importance of the independent variables, as measured by the B coefficient and odds ratio in Table 5.12, is broadly similar for both models. The odds ratio is the increase (or decrease if the ratio is less than one) in odds of an attitude of opposition relative to the attitude of non-opposition when the value of the independent variable increases by one unit. The B coefficient is the natural log of the odds ratio and represents the effect of a one-unit change in the independent variable on the natural log of the odds of the opposition attitude for the LULU. The larger the coefficient estimate, the larger is the variable's influence on the dependent variable. It can be seen in both models that the most important independent variable is the perceived local need for a particular facility, followed by the perceived risk of the facility, past siting experience and level of trust in the government. Results of the odds ratio indicate that individuals who perceive the local need for the facility reduce their likelihood of opposing the landfill by 83% (odds ratio=0.167) and the incinerator by 87% (odds ratio=0.127) respectively. Those who perceive the facilities to be more risky increase their likelihood of opposing the landfill by 1.785 times and the incinerator by 2.090 times. Past siting experience is also a significant factor affecting public opposition to both landfill and incineration facilities. Results indicate that communities with prior negative siting experience are 1.786 and 1.698 times more likely to oppose landfills and incinerators respectively than communities without such experience. Finally, having trust in the government to make the siting decision reduces the likelihood of opposing the landfill by 17% (odds ratio=0.833) and the incinerator by 19% (odds ratio=0.814).

Table 5.12 Binary Logistic Regression Analysis of Factors Affecting Opposition to LULU Facilities in All Three Communities

	Landfill		Incinerator	
Variables	B	Odds Ratio	B	Odds Ratio
Siting Experience	0.580***	1.786	0.530**	1.698
Perceptions				
Need for landfill in Hong Kong			---	---
Need for incinerator in Hong Kong	---	---	-0.759***	0.468
Local need for landfill	-1.791***	0.167	---	---
Local need for incinerator	---	---	-2.066***	0.127
Risk level of landfill	0.580***	1.785	---	---
Risk level of incinerator	---	---	0.737***	2.090
Fairness to local community				
Trust in Government	-0.183*	0.833	-0.205*	0.814
Demographics				
Gender				
Marital status				
Age				
Educational Attainment				
Monthly household income				
Constant	0.107	1.113	0.214	1.238
-2LL	1177.9		931.5	
Pseudo R^2	0.218		0.301	
N	1342		1317	

*** p< 0.001
** p< 0.01
* p< 0.05

Blank

Insignificant
Not applicable

Thirdly, none of the demographic variables are significant enough to be included in the regression set. In other words, they are not significant predictors of public attitudes towards LULU siting. The variable relating the perception of fairness is also not significant in the regression analysis. It is possible that this variable does not actually affect public attitudes as revealed by the regression analysis, which shows each variable's unique contribution to the opposing attitude, but rather that it is collinear with some other factors that influence acceptance in the previous bivariate analysis.

5.4 Discussion and Policy Implications

The aim of this chapter is to address the first research objective of this study, that is, to unravel the factors affecting public response to siting LULUs. Three specific research questions are developed from this objective. They are: 1) what are the general perceptions of and attitudes towards siting locally unwanted facilities in Hong Kong? 2) To what extent may community siting experiences affect public perceptions of and attitudes towards siting LULUs? 3) What are the most influential factors affecting the public response to LULU siting? In the following paragraphs, the discussion will focus on the research findings of the two-level questionnaire survey with relevance to the above three questions. In conclusion, some policy insights derived from the above findings will be discussed.

Public Perceptions of and Attitudes Towards LULU Siting

The first research question concerns the general public perceptions of and attitudes towards LULU siting. As revealed by the four surveys undertaken respectively in the whole of Hong Kong and in three local communities, the population at large and the residents of the three local communities share similar views and opinions about LULU siting. As expected, the findings of the four surveys confirmed that the phenomenon of NIMBYism is common among the general public in Hong Kong. The term "NIMBY" was initially coined by Popper (1981) to refer to any LULU that may be regionally or nationally needed but is considered objectionable to the people who live nearby. This was further explained by Wolsink (1994) who observed that "everyone acknowledges the importance of the public good, but not everyone is prepared to make a personal contribution, in this case by co-operating in the construction of an installation in one's neighborhood." This characterisation is evidenced by the findings of the four surveys, which showed that significantly more people envisage the need for a particular LULU for Hong Kong as a whole than for their local district. The perceived local need and public acceptance are also markedly greater for facilities that most people use daily (e.g., refuse station) or for LULUs that have already been sited without causing significant impacts (e.g., the sewage treatment plant in Shatin) than for those that people do not readily associate with everyday use, such as explosive storage facility, aviation fuel receiving facility, chemical waste treatment centre and waste incinerator. In fact, the survey results indicate that the most unwanted LULUs are those that are perceived to be more risky.

This concurs with findings in the literature (Armour, 1991; Popper, 1987) that the most unwanted LULUs are those which threaten the largest negative externalities as perceived by the public and are the most opposed by the local public.

LULUs are well known for imposing externalities involuntarily on the residents of the local community (Quah & Tan, 2002). These externalities may include environmental impacts, health and safety impacts, social and economic impacts. The survey findings show that in both the territory of Hong Kong as a whole and the local districts, members of the public are more concerned about environmental and physical impacts (e.g., health and safety impacts) than social and economic ones (Lam et al., 2007). The relative importance of externalities as perceived by the Hong Kong public is similar to that observed in Japan (Rahardyan et al., 2004) and Vietnam (Tuan & Maclaren, 2005) with respect to waste management and disposal facilities. However, the perceived externalities in Taiwan (Chiou, 2005) are somewhat different; their major concerns over incinerators and power stations include declining property value, negative health impacts and reduced crop productivity. It is thus important to understand the major public fears or concerns and adopt effective mitigation measures to reduce them, so as to resolve public opposition to LULU siting.

Apart from public concerns on impacts incurred from LULUs, public opposition is often stimulated by the perceived risks from proposed facilities (Kasperson, Golding & Tuler, 1992). The public perception of risk has been found to be a social construction and is influenced by a wide array of social, institutional, cultural and political factors (Slovic, 2000). The survey results from the three communities are concordant with the literature and show that the general public are more fearful of LULUs that are not familiar to them and that may inspire dread, carry risks of catastrophic consequences for present and future generations, or cause impacts that are difficult to mitigate. The findings lend support to findings of a previous study (Slovic, 2000) that public risk perception is different from that of experts due to social, cultural and political considerations. Risk experts rely on quantitative risk assessment to assess risks in terms of probability of occurrence and magnitude of impact in terms of morbidity and mortality numbers (Breakwell, 2007). Consistent with the literature (Covello, et al., 1989) on factors affecting public evaluation of risk,

the survey findings show that the public tend to focus more on the qualitative aspects of risks, such as dread, catastrophic potential, uncertainty, familiarity, and equity to present and future generations, rather than on the quantitative aspects such as probability, morbidity and mortality, when constructing their views of risks. Failing to understand how the public construct their views of risks and failing to address their concerns will increase their anxiety and nurture greater opposition to the facility.

Another aspect of community opposition is concern about fairness or equity in LULU siting (Armour, 1991). The results of the four surveys show that the general public consider it unfair to concentrate LULUs in particular districts and feel that it would be fairer to distribute them based on the needs of different districts or to disperse them evenly over space to share the burdens among districts. As pointed out by Vari (1996), there is no single morally correct way to allocate LULU facilities, and the question of which distribution principle ought to be selected depends on the social and political context. However, the survey finding highlights the need to understand the public perceptions on equity in the siting process, and it is important to seek negotiations to reach social consensus on a holistic siting approach that is responsive to social concerns on equity while meeting the technical requirements to find a viable site.

In Hong Kong, the challenge in siting LULUs is further compounded by a lack of trust in the government (Woo & Lam, 2008). Many studies have shown that the public may oppose LULU siting if they do not trust the government in making the siting decision or managing the LULUs (Pijawka & Mushkatel, 1991/1992; Yoo, 1996). As revealed by the territory-wide and local surveys, the public generally has more trust in civic organisations (e.g., environmental non-governmental organizations) and professional bodies than in the government, District Councils and Legislative Council. Political parties and the private sector had the lowest level of public trust among all stakeholders. This low level of trust also signifies a breakdown in communication between the planning authority and the host community. The territory-wide survey shows that the majority of the respondents consider the consultation undertaken by the government regarding LULU siting to be inadequate or ineffective. The local surveys further show that a majority of local

residents from the three communities do not know how LULUs are planned and sited. While public participation is often seen as a way to foster trust (Baxter et al., 1999), these findings call into question the efficacy of the current planning process and public consultation strategy in informing and engaging the public.

Possible solutions to the siting impasse can actually be found in the resolution measures preferred by the public. According to the territory-wide and local social surveys, the public prefer more public consultation and rigorous implementation of mitigation and monitoring measures as means of resolving LULU siting conflicts. Compensation and provision of community facilities are the least preferred options, probably because economic loss and social impacts are not the major public concerns about siting, as discussed previously. This is consistent with previous findings (Jenkins-Smith and Kunreuther 2005) that the mitigation of impacts and reduction of risks are more important than provision of economic benefits. Considering that over 86% of the residents do not know how LULUs are planned by the government, it is only natural that the public mostly prefer more public consultation so that they can understand why their community has been chosen and how their views will be taken into account in the decision-making process. Being fearful of the risks and impacts, local people also prefer effective mitigation measures and monitoring to ensure that their health and safety are not adversely affected. Indeed, greater public participation can be seen as a counter-measure to the lack of trust in the government and the siting process. Effective mitigation and monitoring of risks and impacts, meanwhile, are seen as effective methods to reduce risk.

Finally, the above findings suggest that it is important to understand and fully respond to public perceptions about the need for the facility, its perceived impacts and risks, and positions on equity so as to alleviate their concerns and opposition. All these call for policy-makers to be sensitive to local concerns, to be more proactive in engaging the public in the process, to communicate and to address their concerns effectively so as to foster trust in the process.

Influence of Siting Experience on Public Perceptions of and Attitudes Towards LULU Siting

The second research question concerns the possible influence of community siting experiences upon residents' perceptions and acceptance of LULUs. In fact, this is one of the few studies that attempts to investigate the influence of community experience upon residents' responses by undertaking surveys in both communities that have NIMBY conflicts and those that do not (Lam & Woo, 2009). The findings of the three local community surveys show that the residents' perceptions and attitudes are broadly similar, but there are some inter-community differences in terms of the magnitude of their responses to LULU siting. It has been shown that the three communities, irrespective of their siting experiences and socio-economic profiles, are intrinsically opposed to LULU siting, but that the residents from communities with negative siting experiences more strongly oppose the siting of particular LULUs. Moreover, the residents of these communities also have a stronger feeling that it is unfair to concentrate LULUs in their community for the benefit of society as a whole, and they also tend to show a relatively lower level of trust towards government in making the siting decision than do residents of a community without negative siting experiences. In short, this indicates that residents from communities with siting conflicts have a lower degree of acceptance of LULUs, stronger feelings of unfairness about siting LULUs in their communities, and a lower level of trust in the government, the proponent of the LULU projects.

Moreover, the levels of risks associated with particular LULUs and the agreement levels to factors affecting public risk perception differ among the three communities. The findings show that the community that has experience of or knowledge about particular LULUs may have a slightly lower risk perception than a community without such experience or knowledge. This is probably because the residents are familiar with the LULUs sited in their communities, which have posed no significant risks or impacts to local people, and they thus perceive lower levels of risks associated with these LULUs than with unfamiliar LULUs. In all three communities, residents share similar risk beliefs which are shaped by qualitative factors, such as catastrophic potential, controllability, dread, familiarity and uncertainty, rather than the quantitative factors of probability, morbidity and mortality. But in terms of magnitude of response, residents from communities with

siting controversies tend to have a higher agreement level with the factors affecting their risk perception. In other words, they are generally more sensitive to the risk concerns about LULUs than are residents of a community without NIMBY experiences.

In addition, the overall preference for different conflict resolution methods is broadly similar among the three communities, but there is also inter-community difference in terms of the magnitude of their responses. The questionnaire survey results show that most people desire greater participation in the decision-making process, rigorous monitoring of the actual impacts, and effective implementation of mitigation measures. In particular, residents from communities with negative siting experiences have a stronger preference for these resolution options than do residents of a community without such experience.

Finally, the public generally recognize the need for LULU facilities for society as a whole, but not the local need for their community. This general perception is prevalent across different communities regardless of their siting experiences, but the community which has more highly-educated people seems to better recognize the need for LULU facilities. As suggested by the literature (Matheny & Williams, 1985), this may imply that education might be used to develop the notion of need for LULU facilities to gain public acceptance.

The above results suggest that community experience in LULU siting does have an influence on residents' perceptions of and responses to LULU siting. Generally speaking, residents from communities with NIMBY conflicts have a more negative assessment of LULU projects and have a slightly lower level of trust in the government. They also have a stronger view that greater public participation and implementation of effective mitigation and monitoring are effective measures to resolve the siting disputes. All the above suggests that residents' sentiments that remain from past siting experiences can have consequences for the community's response to future LULU siting proposals. This highlights the need to understand the historical experience of the host community with respect to siting controversial projects and to address the negative feelings of the existing host communities if the government wishes to propose any new siting initiative in these communities.

Determinants Affecting Public Response to LULU Siting

In response to the third research question, this part of the study aims to investigate the relative importance of a number of factors, including community siting experience, perceived need for the facility, perceived risk, perceived fairness in siting approach, trust in government and certain socio-demographic characteristics, in affecting the public response to siting in Hong Kong. In particular, this section will discuss the influence of a community's siting experience on public opposition towards LULUs, which has not been thoroughly studied in the literature.

First, the bivariate correlation analysis provided an initial test of the relationship of these factors with the level of public acceptance of LULUs in the three communities. Several patterns become apparent in the results. Firstly, the perceived local need for the facility and the perceived risk associated with the LULU are the two most important factors affecting public acceptance, followed by the level of trust in the government and the perceived fairness of the siting approach. Secondly, the public acceptance of LULUs will be higher if the residents recognize the need for LULU facilities, perceive a lower level of risks associated with LULUs, trust more in government, and consider it fairer to site LULUs in particular districts. Thirdly, little association was evident between socio-demographic factors such as income, age, gender, marital status and educational attainment and the public acceptance of LULUs. This indicates that public acceptance of LULUs cannot be predicted on the basis of the residents' socio-demographic backgrounds.

To further ascertain the unique contribution of each individual factor to public attitudes towards siting, and particularly investigate the determinant effect of community siting experience, a binary logistic regression analysis was performed for landfill and incinerator siting in the three communities with the data pooled together. According to the results of the binary regression analysis, people are more likely to oppose the siting of a LULU in their community if they do not perceive the need for a facility, if they perceive a high risk, if they have had a negative siting experience and if they have a low level of trust in government. These findings indicate that public perceptions towards the LULU project and the government, and their own community experiences with the siting of LULU projects, are important factors

affecting residents' attitudes towards siting. These findings give support to previous western studies (e.g., Kraft and Clary, 1991; Lober, 1993) which have found that a range of perception factors is important for explaining community opposition including, for example, the perceived need, perception of risks, and level of trust in the government. The findings also give additional support to the determinative effect of community siting experience on the public acceptability of LULU projects. However, the perception of fairness and all the socio-demographic factors are found to be insignificant in the regression analysis. It is possible that, in the bivariate correlation analysis, the fairness perception is collinear with some other factors that influence acceptance and thus is not shown to contribute a significant independent effect upon public attitude when controlling other factors in the regression analysis. This may be due to the fact that people may feel it unfair to site LULUs in their community but accept the decision unwillingly because they feel it is hard for them to change the situation under the current system. Moreover, the above findings also suggest that the underlying reasons for the public NIMBY response are complex and multi-dimensional, with a set of perceptual and community contextual factors which may further reinforce each other. For example, negative community experiences in siting may lead to a lack of trust in the government, which may heighten residents' emotion, increase fear of the perceived risks and a sense of inequity, thereby resulting in opposition. However, it is not possible to pursue this complicated interrelationship between factors in the current study.

In addition, the findings shed light on the actions that the government should take in order to increase the likelihood of public acceptance of LULU projects. First, the need for the facility must be established in the public perspective so that the public, especially the host community, will endorse the proposed facility. The government or proponent needs to convince the public that the facility is the best solution to the problem and is in the interest of the host community. Second, as increased perception of risk is a significant predictor of public opposition, the public risk concerns need to be understood and adequately addressed through effective dialogue and communication. Third, a community's negative siting experience appears to increase the likelihood of opposition, indicating a need to clarify any misunderstandings and resolve conflicts remaining from past siting incidents.

Finally, having trust in the government or proponent leads to a decrease in the NIMBY response, indicating that the proponent must strive to develop trust among those involved in the siting process, the earlier the better.

Generally speaking, given that public perceptions towards siting are critical factors affecting community response to LULUs, if such LULU projects are to be hosted, the siting and planning processes should effectively address the residents' concerns. However, in Hong Kong, the current rational planning approach, with its narrow focus on land use optimality and environmental acceptability, cannot effectively embrace the views of the public or respond to their needs and concerns. The current process has overlooked the perceptual and affective considerations of the affected communities and has nurtured a strong sense of inequality and many grievances (see Chapter 3). Although the current planning and EIA process provides opportunity for public consultation, it is passive and limited in terms of the scope of issues on which the public can comment. The public are now passively consulted about the draft district plan and the technical EIA report rather than being actively engaged to openly discuss societal-based issues, such as the societal and local need for the LULU facility, alternative options to address this need, criteria for designing a fair siting process, the public risk concerns and the social acceptability of risk, and the potential methods for resolving the siting conflicts. This inadequate participation and ineffective communication helps explain why the public have little understanding of the planning and siting process and why they have different perceptions on the need for a facility, the associated risks and sense of fairness as revealed by the social survey findings. Unless the public perceptions and concerns are properly addressed, this will lead to a lack of trust in both the government and the siting process. Past negative siting experiences may reinforce the negative feelings about LULU projects and the government, as indicated by the local survey findings. This subsequently results in siting impasses, conflicts or delay as we see with the problems encountered by most siting cases in Hong Kong today (see Chapter 3).

Also, as reflected by the public preference for different resolution options in the social surveys, one possible solution to resolve the siting conflict is to develop effective engagement and communication with the public, especially local residents. As underscored by Lidskog (1998), a dialogue alone does not necessarily guarantee

that an intended siting will be successful, but the chances of carrying out a successful siting increase if a dialogue takes place. What matters most is to take a more open and participatory approach that can foster trust and enhance mutual understanding by acquiring different perspectives on a siting proposal, and that aims at consensus-building on issues of public concern about LULU siting (Lidskog, 1997). This can increase both the legitimacy of the siting process and public support for the siting outcome. In particular, effective public participation and communication of the risk issues is important in reducing the perceived risk (Ishizaka & Tanaka, 2003). This is because increased participation and communication can help all parties understand what factors are affecting public perception and decide upon appropriate risk mitigation and management measures that are supported by the public. Such an interactive and participatory communication is particularly important for communities that may be more sensitive to risk concerns due to their past experiences.

To accomplish the goal of effective interaction with local residents may call for a new method of public engagement in the planning and siting process in Hong Kong, so that public perceptions can be accounted for and responded to in a more effective way. If such an effective interaction is established, then the introduction of mitigation and compensation efforts may be beneficial in promoting siting acceptability (Gallagher et al., 2008). Above all, the policy makers need to show sensitivity, competence and integrity when interacting and dealing with public concerns if siting is to be successful.

5.5 Summary

In Hong Kong, siting is viewed by government as essentially a technocratic and planning issue, as reviewed in Chapter 3. There is a lack of effective public engagement in the process addressing public concerns on impacts and risks, equity and other social issues such as the need for the facility. Strong public opposition to LULU siting is evident in society, as shown by many local siting cases (see Chapter 3). This is further supported by the social survey findings. As expected, the four social surveys show that the NIMBY phenomenon is prevalent in Hong Kong as a whole and in local districts. Consistent with the literature, the survey findings show that the general public recognize the need for LULUs for society as a whole, but not

in their neighborhoods, and the most unwanted LULUs are the ones that are perceived as more risky or the need for which is not well recognized by the public. The majority of the public are concerned about environmental and health impacts rather than social or economic impacts arising from LULUs. Moreover, the public perceive risks differently from the experts, tending to focus on the qualitative aspects of risk, such as dread, catastrophic potential, uncertainty, familiarity, and equity to present and future generations, rather than quantitative aspects such as probability, morbidity and mortality. They also perceive that it is very unfair to concentrate LULUs in particular districts for the benefit of society as a whole. They think it fairer to distribute LULUs based on the needs of different districts or to disperse them evenly over space. Meanwhile, the results show that there is a lack of trust in the government and a possible breakdown in communications between the planning authority and the host community. The resolution strategies most preferred by the public are greater participation in the planning process and mitigation of risks and impacts, which are seen as counter-measures to the lack of trust in the government and the siting process, and to address public concerns about impacts and risks.

In addition, comparison of the three local surveys shows that responses from the three communities are broadly similar, but there are some inter-community differences in terms of the magnitude of their responses to LULU siting. The inter-community difference is likely to be related to each community's contextual experiences in LULU siting. The findings of the three local surveys show that residents from communities with negative siting experiences oppose LULUs more strongly, perceive it as more unfair to concentrate LULUs in particular districts, and have a lower level of trust in the government than do residents of a community which has no NIMBY conflict. They are generally more sensitive to risk concerns, but may perceive a slightly lower level of risk for particular LULUs which they are familiar with and which pose no significant risks to them. They also have a stronger preference for certain conflict resolution methods, including more participation in the siting process, more rigorous monitoring, and the effective implementation of mitigation measures, than do residents of a community without siting controversies. These residents' more negative assessment of the LULU projects and the government, and their stronger risk beliefs and preference for certain resolution methods, are believed to be related to their negative siting experiences.

The research also seeks to identify the relative importance of different factors upon the public response to siting. The findings of the binary logistic regression suggest that residents' perceptions relative to the need for the facility and its related risks, experiences with the siting of potentially objectionable projects, and trust in the government in implementing the siting policy are determinants affecting residents' attitudes toward siting.

Given that public perceptions towards LULU projects and the government are critical factors affecting community response to LULUs, the results suggest that the institutions for siting should effectively address residents' concerns about LULUs and the siting process and should resolve any issues or problems remaining from previous siting experiences, and that all efforts need to be taken to build trust between the public and the government. However, Hong Kong's current rational planning approach, with a narrow focus on land use optimality and environmental acceptability, has overlooked the perceptual and affective considerations of the affected communities, and few attempts are made to rectify the mistrust through a more open and participatory approach. The above observations suggest that the focus of siting efforts should be on developing a new public engagement strategy in which the public are not merely passively consulted but are actively engaged to openly discuss their issues of concern about LULU siting. The literature also suggests that the chance of carrying out siting successfully increases if there is such a dialogue or communication to increase mutual understanding and foster trust that enhances consensus building. The siting authority and the public should therefore have more open and interactive communications which show the need for the facility, describe options and alternatives, clarify misunderstandings over risk, consider equity in distributing LULUs, and aim at consensus building on various controversial siting issues. Many issues that may lead to siting disputes can be resolved before they become explosive and intractable if such a channel of continuous communication can be established between the two sides. The above conclusion suggests that the siting strategy should move away from the existing rational and technical approach to one which embraces the social, economic and political dimensions if siting is to gain public support.

Moreover, the findings of this chapter indicate that while trust has been identified as an important factor affecting public opposition to LULUs, the public's trust in the government to make a good siting decision is generally low. In order to further investigate the importance and formation of trust, interviews of key stakeholders will be used to seek qualitative evidence as to whether trust is important in the planning and siting process, what factors influence the formation or destruction of trust, and what are the best ways to enhance trust so as to increase the likelihood of public acceptance of LULUs. These research questions will be addressed in the next chapter, which aims to exemplify the important role played by trust in the siting of LULUs in Hong Kong. This is the second research objective of this study.

Chapter 6 Importance and Formation of Trust in LULU Siting

6.1 Introduction

Trust has become an important research subject in the social sciences during the last two decades. In general, trust can be defined as: "a psychological state comprising the intention to accept vulnerability based upon the behavior of positive expectations of the intentions of or behavior of another" (Rousseau et al., 1998, p. 395). Trust helps lubricate social interactions among different parties in society so that society can function smoothly and harmoniously. It is thus considered to be an important element of social capital (Earle & Cvetkovich, 1995). Also, in the field of risk research and facility siting, trust is seen as a prerequisite for effective risk communication (Kasperson et al., 1992) and an important factor affecting public acceptance of LULUs (Kunreuther, Slovic & MacGregor, 1994). Some even suggest that siting controversies are actually crises of trust in the government (or the industry) which arise from public concerns about perceived agency mismanagement, secretive processes, mishandling of information, and lack of meaningful public involvement in the decision-making process (Petts, 1998). This leads some to consider that earning public trust is the most effective way to address public concerns on risk issues arising from siting and to increase the legitimacy of the decision-making process (Cvetkovich & Löfstedt, 1999; Kasperson, et al., 1992; Kunreuther, Slovic & MacGregor, 1994; Slovic, 1993). In fact, the literature suggests that trust is broad-based and multi-dimensional and that it is influenced by factors or attributes including: perceived competence, openness, credibility, reliability, commitment, consistency, predictability, objectivity, fairness and caring (Kasperson et al., 1992; Metlay 1999; Poortinga & Pidgeon, 2003; Renn & Levine, 1991) on the part of the one to be trusted.

This chapter therefore focuses on the role of trust, particularly its importance and formation, in the local siting process, which is related to the second objective of this study. The specific research questions of this chapter are: (1) how important is trust among stakeholders in siting locally unwanted facilities in Hong Kong, (2) what are the factors or attributes influencing trust, (3) how might trust in the government and other related stakeholder groups differ, and is such variation related to the

evaluation of the attributes that influence trust, (4) how important are stakeholder attributes in planning different LULUs, and (5) what recommendations can be made to establish or enhance trust among stakeholders in the planning and siting process in Hong Kong.

The above research questions were addressed by conducting in-depth face-to-face interviews with 35 stakeholders who have considerable experience in local siting issues and are representatives of particular stakeholder groups, including the government (GT1-5), consultancy firms (CF6-8), District Councils (DC9-12), Legislative Council (LC13-15), local civic organisations (LO16-18), environmental NGOs (EG19-13), Advisory Council on the Environment (ACE24-26), professional bodies (PB27), academics (AC28-32), political parties (PP33) and the media (ME34-35) (please refer to Section 4.4.1 for the selection of the interviewees). To respect confidentiality, the interviewee names were not identified, and all interviews were coded according to the stakeholder group that the interviewee belonged to plus a corresponding number assigned to the interviewee. The design and implementation of the stakeholder interview has been described in Chapter 4, and the interview questions are provided in Appendix 7. The trust interview survey was small-scale and is intended as a pilot to explore the role of trust played in the local siting process and to supplement information gathered through surveys. The interview discussion was recorded and analysed, and findings that relate to the above research questions are presented in this chapter.

The following sections present the interview findings, including the interviewees' views of the importance of trust, their opinions of what determines or shapes trust, their evaluation of stakeholders' attributes concerning LULU siting, and their views on how to improve trust in the siting process. Considering the small sample size, the quantitative results are indicative only and are supplemented by the verbal opinions of the interviewees in the presentation of results. The discussion focuses on the relevance of the research findings to answering the above five research questions. Policy insights on LULU siting will be provided based on the overall findings of this chapter.

6.2 Importance of Trust in LULU Siting

To understand how stakeholders perceive the importance of trust in siting locally unwanted facilities in Hong Kong, each interviewee was asked to give his or her views on how important trust is in siting such facilities in Hong Kong. Out of the 35 interviewees, 27 (77% of the total respondents) explicitly said that trust is important in siting LULUs; five had a neutral position, and three said that trust may not be important, as siting occurs no matter whether the government is trustworthy or not. The interview results show a broad consensus that trust among stakeholders is a key factor affecting the success of the siting policy. The few opinions that trust may not be important actually reflect the current situation, in which the government or the process may not be trusted by the public (as evidenced from the public survey results in Section 5.2.1), but siting can still occur as planned. However, the majority of views show that trust is important because without trust, any siting decision made will be doubted and considered illegitimate in the public view, leading to an end result of opposition by the public, as is observed in most local siting cases in Hong Kong (see Section 3.4). To summarise, trust is important in terms of getting public support for the siting agency or the process, which can in turn lead to a socially acceptable solution to LULU siting.

Next, the interviewees were asked to share their views on the functions of trust in siting locally unwanted facilities. A majority of interviewees (about 80% of respondents) agree that trust can help promote consensus-building and collaboration among different stakeholders. As one interviewee (GT4) said, "With trust, it is more likely to foster mutual respect and develop mutual understanding and agreement among the government and the related stakeholders with different perspectives on the siting issues". Another interviewee (DC9) also felt that trust is important in the sense that "different persons can discuss more openly and constructively the LULU project and the environmental assessment results on the basis of trust, and they can work together to find the best siting option which is both technically feasible and socially acceptable". Another function of trust, which is social in nature and was mentioned by most of the interviewees (about 60% of respondents), is that trust can reduce complexity and help the information flow in the siting process. This view is best illustrated by the response of one interviewee (LC13) who pointed out that "the lay public is largely ignorant of the technical or

scientific knowledge and if they have no trust in the government or their consultants, they would not believe in whatever they say about the risk assessment results or the acceptability of risk. The end result would be more suspicion on the LULU project and this may in turn lead to greater tension between public and the government".

In short, the above findings concur with the literature (Misztal, 1996) and suggest that trust is socially important in its contribution to reducing complexity and generating social cooperation. This may also explain why trust is considered important in LULU siting, as it helps bridge the gap between the public and the siting agency on various siting issues (e.g., differences in the perception of risks) and foster consensus or collaboration on the way forward to implement a siting policy that is technically feasible and socially acceptable.

6.3 Factors Influencing the Formation and Destruction of Trust

To understand the factors that influence trust, the interviewees were asked to provide examples of specific incidents or actions in relation to the building or undermining of trust in matters concerning LULU siting in Hong Kong. Table 6.1 presents the range of comments provided by individual respondents from a total of 35 interviewees in relation to the emergence or destruction of trust in different parties involved in the LULU siting process. The comments are categorized in terms of positive and negative trust characteristics, corresponding to the perceived positive or negative effect on trust building.

According to Table 6.1, the building or undermining of trust appears to be related to seven underlying factors or attributes: competence, openness, credibility, accountability, objectivity, fairness and caring, which are implicit in the comments or judgements made by the interviewees. This finding concurs with previous studies (Kasperson et al., 1992; Renn & Levine, 1991), suggesting that trust is influenced by a variety of components and that how the stakeholders feel about government or related groups in the siting process is affected by these underlying factors or attributes of trust. This may further imply that trust will be undermined when an individual or institution is underperforming and not meeting public expectations on, for example, technical competency, degree of openness of the process, or caring about the people affected. Moreover, based on the interview discussion, the

destruction of trust occurs not merely because of the issue or action itself, but also due to the cumulative wearing down of trust from related past issues. For instance, one interviewee (DC9) say that, "I have no more trust in the government in making a fair allocation of LULUs because of the government's past and present decisions to site so many LULUs in [my district] without caring to the local persistent concerns and objections". In fact, this demonstrates that trust can be continuously eroded via a cumulative process if historical siting controversies are left unresolved.

To confirm the above observations, the interviewees were asked explicitly to give a rating for each of the seven trust attributes (i.e., competence, openness, credibility, accountability, objectivity, fairness and caring) in influencing their levels of trust towards other stakeholders in LULU siting. The interviewees determined what was meant by each of these terms. The rating of importance for these attributes ranges from 1 to 10; the higher the number, the greater the importance of the attribute. Based on the responses of 35 interviewees, the average rating is above 8 out of 10 for all seven trust attributes, indicating that all these attributes are considered important by the interviewees in influencing their levels of trust towards other parties involved in siting locally unwanted facilities. In order to further evaluate how these trust attributes may in reality influence their formation of trust towards other stakeholders, we asked them to rate the overall trust level and each of the trust attributes possessed by a particular stakeholder group in making a decision on incinerator siting in Hong Kong. These two sets of results are presented in the next section.

Table 6.1 Summary of Perceived Positive and Negative Trust Characteristics

Positive trust characteristics	Negative trust characteristics
Competence • Apply good knowledge (ACE24)	• Ungrounded reasons (CF6) • Do not have the knowledge (CF8) • Do not undertake good assessments (CF7) • Assessments not consistent and reliable (DC9) • Unable to convince the public that the public consultation is genuine in seeking public opinions (LO16) • Unable to explain the risk information to the public (DC10) • Unable to properly manage existing LULU facilities (DC10) • Incompetent to make sound traffic impact assessment (LC13) • Unable to address public concerns about risks (DC11) • Lack of strategy to resolve the siting conflict (LC14) • Unable to explain the technical information to the public (LO16) • Fail to justify the need for the LULUs (LO18) • Unable to persuade the public that the decisions are impartial and justified (LO18) • Unable to justify the proposed option (EG21) • Do not have the necessary expertise to carry out the assessment (EG22) • Unable to persuade the public about the appropriateness of the siting option (EG22) • Unfounded arguments (ACE25)
Openness • Willing to listen to public opinions (DC9) • Open discussion with stakeholders (ACE24) • Open the whole review process and disclose all the information (AC29) • Open to public views (AC31) • Receptive to public comments (DC11)	• Do not listen to local voices (DC9) • Suppress facts which are regarded as confidential (LO18) • Fail to provide full information (EG21)
Credibility • Position would not be driven by other factors (ACE24) • Really took actions to follow up public comments (AC31)	• Positions influenced by vested interests (CF6) • Not serious about commitments (DC9) • Do not keep promises (LO16) • Consultation is not genuine because outcome is pre-decided (LO18)

(continued)

Accountability	
• Be willing to alter proposals after public comment (EG22)	• Not accountable to site more LULUs in the same community (DC9) • Lack of accountability in addressing public concerns (DC12) • Unable to justify why public assessment and comments are not accepted (EG20)
Objectivity	
• Objective in looking at the pros and cons of a project to society as a whole (GT1) • Judgements based on scientific and objective facts (CF8) • Examine all issues (ACE24) • Objective in examining facts and finding the best technology option (ACE25) • Look seriously at all options (AC31)	• Irrational (CF6) • Consultation has a set agenda and a preferred option (DC12) • Unable to report objectively on the siting option (EG20) • Getting emotional (ACE25)
Fairness	
• Provide incentives to compensate the local people (LC15) • Design and implement a monitoring program that is seen to be impartial and fair to all (AC29)	• Do not make impartial decisions on siting locations (DC9) • The options for site selection are not comparable and the evaluation is not fair (DC9)
Caring	
• Willing to alter proposal after public comment (DC9) • Willing to set up channel to communicate with the public (DC11) • Listen to local voices and respond to their requests (LC15) • Willing to help local people to express their opinions and care about their concerns (LO16) • Maintain dialogue with the local public even though they may disagree with you in the first place (AC29)	• Ignore the interests of the host community (DC9) • Not proactive in reaching out and consulting the affected community (LO16)

Note: The interview codes are provided in brackets in the above table.

6.4 Trust and Evaluation of Trust Attributes in the Government and Related Stakeholder Groups

To explore the genuine effects of the attributes in affecting stakeholders' trust towards other parties, the interviewees were asked to do two separate rating exercises, described below. In the first exercise, they were asked to comment on and rank each stakeholder group in terms of their trust level in that stakeholder group to make a decision on siting a waste incinerator in Hong Kong. Rating of trust level ranged from 1 (no trust) to 10 (complete trust). Table 6.2 shows that academics, professional bodies, the Advisory Council on the Environment (ACE) and environmental NGOs are considered to be most trusted by the interviewees (with mean trust scores ranging between 6.24 and 6.66), followed by government, Legislative Council and local civic organisations (with mean trust scores ranging between 5.25 and 5.31), whereas District Councils, consultancy firms, political parties and media are considered to be least trustworthy (with mean trust scores ranging between 4.62 and 4.84).

Based on the interview discussion, it appears that academics and professional bodies have professional knowledge and are perceived to be more independent. The ACE and environmental NGOs were rated high because they are generally perceived to be dedicated to environmental protection and are quite objective in their assessment. Government was rated medium due to the interviewees' mixed feelings about its performance in meeting public concerns and needs. Legislative Council and the local civic organisations were also rated medium because on the one hand, they may be perceived to be representative of public views, but on the other hand, they are perceived to be incompetent and sometimes swayed by politics. District Councils and political parties were rated even lower, probably because of their political backgrounds and hence lack of impartiality. Consultancy firms were rated the lowest because their operation is perceived to be not very open and independent, and their views are seen to be more slanted to suit their clients. Finally, the media were rated low because they are not perceived to be highly objective in reporting the news.

In general, the ranking pattern of different stakeholder groups is broadly similar to that perceived by the public, as found in the social surveys in Section 5.2.1 of Chapter 5. It is notable, however, that civic organizations are the most trusted in

the social surveys, whereas academics are more trusted than either environmental NGOs or local civic organisations in the stakeholder interviews. This may be because civic organisations usually stand for public interests or positions and are thus more trusted by the general public. However, stakeholders in general consider that academics are more independent and their views are more objective and scientifically based than those of NGOs or civic organisations. Another interesting finding is that trust in the government is not high from either the general public or the stakeholders' point of view. This again shows that lack of trust in the government is a matter of concern for LULU siting as viewed by different members of the society, including the local community and other stakeholders. This calls for action to improve or enhance trust in the government if siting decisions are to gain social acceptance.

In the second rating exercise, the interviewees were asked to rank each stakeholder group in terms of their evaluation of the seven trust attributes that a particular stakeholder group possesses to make a decision on siting a waste incinerator in Hong Kong. The evaluation score for each trust attribute ranges from 1 to 10; the

Table 6.2 Trust in Particular Stakeholder Groups to Make a Decision on Incinerator Siting in Hong Kong

Stakeholder Groups	Mean	Standard Deviation
Academics	6.66	1.845
Professional Bodies (e.g. HKIE, HKIEIA etc.)	6.49	1.869
Advisory Council on the Environment (ACE)	6.25	2.038
Environmental NGOs	6.24	1.558
Government	5.31	2.368
Legislative Council	5.26	1.729
Local Civic Organisations	5.25	1.689
District Council	4.84	1.949
Consultancy Firms	4.62	2.425
Political Parties	4.62	1.596
Media	4.59	1.844

Note: The sample size for the rating of each stakeholder group is 35. The rating of overall trust level ranges from 1 (No Trust) to 10 (Complete Trust).

larger the number, the higher the level of the attribute that the stakeholder group is evaluated as possessing. Table 6.3 shows a summary evaluation for each of the trust attributes and a composite score for each stakeholder group across all seven attributes.

Two interesting observations can be drawn from the results shown in Table 6.3. First, no group seems to possess all attributes completely, and in fact they score quite differently across different attributes. For example, the government has a relatively high evaluation score on competence (6.73) but a low score on openness (4.79), credibility (4.83), caring (4.85) and objectivity (4.91). As explained by some interviewees, the government is said to be "professional" (CF8) and "has the technical expertise" (ACE24) to carry out public policy, and that is why the government in general is considered competent by most interviewees. However, the government's operation is described as "black-box" (DC12), "administrative expediency" (PP33) and it was noted that "the government has often withheld information for government's benefits" (LO18) and they "do not do a decent or credible job in engaging the public meaningfully in the LULU planning or site searching exercise" (AC28). These views may explain why the government received low scores on the attributes of openness and credibility. Some interviewees also pointed out that the government's decisions are "swayed by politics" (EG23) and are not seen "to be in public interests" (DC10); that explains why the government also received low scores on objectivity and caring. Local civic organisations have a relatively high score on caring (6.92) but a low score on competence (4.44) in particular. This is reflected in some interviewees' comments that local civic organisations are generally "supported by the local public because they usually fight for the interests of the local community" (DC9), but that they are "short of resources to make sound assessment" (GT3). In comparison, consultancy firms have a high score on competence (6.82) but a very low score on caring (3.42). As reflected in the views of some interviewees, consultancy firms are usually described as "competent and knowledgeable on technical issues" (CF6), but they are not perceived to be acting in the public interest because they are "just doing business" (EG20) and "defend for their clients" (AC32). Moreover, by looking at each attribute column in Table 6.3, it can be seen that academics are considered to be the most competent (7.18), objective (6.67) and fair (6.24) among all groups; the Legislative Council is considered most open (6.95) and accountable (6.35); environmental NGOs are considered most credible (6.82); and local civic organisations are considered most caring toward the public interest (6.92). Meanwhile, to better understand the extent of variability of each trust attribute across

different groups, a graphical display of the attribute ratings of selected groups is presented in Figure 6.1. For the sake of simplicity, six groups were selected, which are considered to be the most relevant stakeholder groups involved in local siting controversies: the government, consultancy firms, ACE, environmental NGOs, District Councils, and local civic organisations. From Figure 6.1, it is apparent that the polygons representing environmental NGOs and ACE are generally larger in size than other groups, especially consultancy firms and the government, indicating that they have attained the highest ratings for most of the trust attributes. Moreover, the attributes of caring and competence exhibit the largest variability among all the attributes across the six key groups (see Figure 6.1). This shows that the interviewees have widely differing perceptions regarding the attributes of caring and competency possessed by these groups. To further understand whether overall trust is related to the perception and evaluation of these attributes, the results of the two rating exercises were compared. The results are discussed in the following paragraph.

The second observation that can be made from Table 6.3 is that when the mean average scores for all attributes are added across each individual stakeholder group to yield a composite score (Table 6.3), despite slight differentiation in the exact rank order, the general pattern looks broadly similar to the pattern of the overall level of trust in different stakeholder groups as shown in Table 6.2. The groups that achieved the highest composite ratings in Table 6.3 include environmental NGOs, ACE, the Legislative Council, academics, and professional bodies. The same groups, except the Legislative Council, are also rated as the four most trusted groups in Table 6.2. Similarly, political parties, consultancy groups and media achieved relatively lower composite scores, and they are also score lower in the overall trust level rating in Table 6.2. The other groups including the District Councils, local civic organisations and the government are in the middle, in a pattern that is broadly similar to the result shown in Table 6.2. This finding gives additional support to the previous findings (Section 6.3) that the evaluation of trust attributes is relevant to the stakeholder conception of trust in the hypothetical case of siting an incinerator in Hong Kong. The slight differentiation in the ranking order between the two ranking exercises may be due to the fact that all seven trust attributes had to be considered by the interviewees, as they were asked to give a rating on each one so that a composite

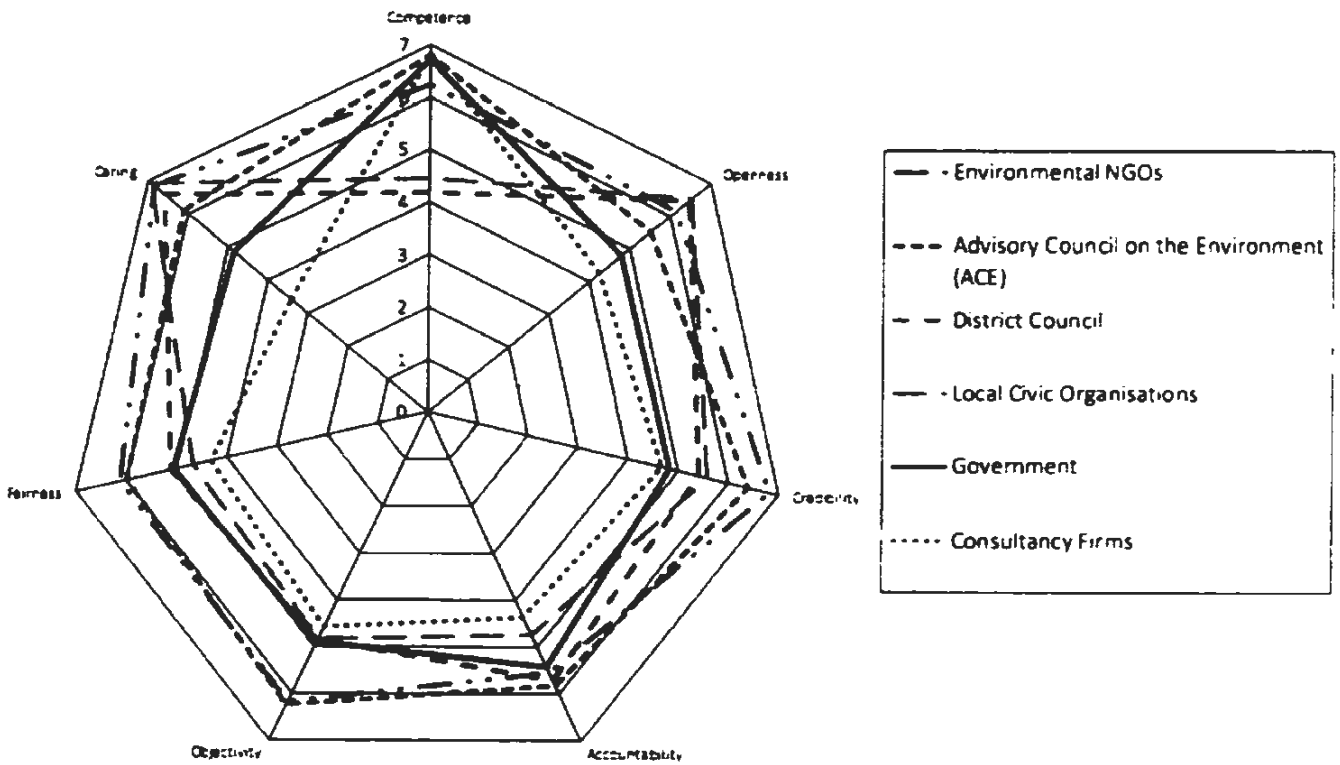
score could be calculated. Such an evaluation method may be not completely identical to the initial conception of trust by the interviewees, who may have only focused on certain attributes when they were first asked to rate the overall trust level of various groups. As such, there might be slight differences in terms of the exact ranking order of each stakeholder group between the two rating exercises.

Table 6.3 Evaluation of the Trust Attributes Possessed by Particular Stakeholder Groups to Make a Decision on Incinerator Siting in Hong Kong

Stakeholder Groups	Competence	Openness	Credibility	Accountability	Objectivity	Fairness	Caring	Composite Score
Environmental NGOs	6.24	6.14	6.82	5.55	6.18	6.12	6.85	43.90
Advisory Council on the Environment (ACE)	6.81	5.51	6.40	5.83	6.25	5.99	6.11	42.90
Legislative Council	5.53	6.95	5.86	6.35	5.50	5.65	6.29	42.13
Academics	7.18	5.32	6.58	4.50	6.67	6.24	5.52	42.01
Professional Bodies	7.09	4.89	6.35	4.98	6.11	5.73	5.11	40.26
District Council	4.17	6.47	5.41	5.71	4.86	5.11	6.59	38.32
Local Civic Organisations	4.44	6.53	5.58	4.74	4.83	4.67	6.92	37.71
Government	6.73	4.79	4.83	5.42	4.91	5.06	4.85	36.59
Political Parties	5.06	5.44	4.91	5.14	4.67	4.89	6.17	36.28
Media	4.58	6.17	4.94	4.33	4.98	4.95	5.95	35.90
Consultancy Firms	6.82	4.25	4.67	4.36	4.58	4.31	3.42	32.41

Note: The sample size for the evaluation of each stakeholder group is 35. Evaluation score for each attribute ranges from 1 to 10. The larger the number, the higher the level of the attribute the stakeholder group is considered to possess.

Figure 6.1 A Graphical Display of Trust Attribute Ratings of the Major Stakeholder Groups to Make a Decision on Incinerator Siting in Hong Kong



Note: Evaluation score for each attribute ranges from 1 to 10. The larger the number, the higher the level of the attribute that the stakeholder group is considered to possess.

6.5 Trust in Relation to Siting Different LULUs

To understand how important the stakeholders' conception of trust is in planning different LULU facilities, the interviewees were asked how important each trust attribute was in leading them to trust that the specific facilities would be properly planned and sited. Table 6.4 gives the results of these evaluations of specific LULUs on each of the seven trust attributes that should be possessed by an organization with the responsibility for siting these LULUs. A composite score is calculated across all attributes for each facility. The interviewees were also asked to explain their views on the above evaluations.

As can be seen from Table 6.4, the seven attributes all fell within a fairly close range across different facilities, with mean importance values between 7.94 and 9.03. This indicates that the interviewees generally felt that high to very high levels of each trust attribute would be required in order for them to trust that the facilities were safe and would not cause environmental and health impacts. Moreover, when the scores on each trust attribute are compared across different facilities, the attributes of competence, credibility, accountability and caring received higher ratings for incinerator, aviation fuel receiving facility and explosive storage facility than they did for landfill and sewage treatment plant. This may reflect the fact that the attributes of competence, credibility, accountability and caring are more valued in an organization with responsibility for siting LULUs which are perceived as more risky or polluting. As explained by one interviewee (ACE25), "the organization responsible for siting the more risky LULUs like explosive storage and aviation fuel receiving facility should be competent to protect public health and safety by ensuring that the technology is reliable and the facility is properly managed. They also have to be sensitive and proactive to respond to public concerns".

In general, most interviewees (25 out of 35, or 71% of respondents) expressed clearly that they need to have a higher level of trust in an organization with responsibility for siting more risky or polluting LULUs, to ensure that the siting of such facilities is properly handled. This view is generally supported by the results shown in Table 6.4. When the importance scores for all attributes are added across the facilities for a composite score, there is about a 2 point spread for the range of composite scores for different facilities. The facilities which are associated with high risk (aviation

fuel receiving facility and explosive storage facility) or which are more likely to impose negative environmental and health impacts (incinerator) are rated slightly higher than the nuisance-type facilities (landfill and sewage treatment facility) in terms of the composite scores (Table 6.4). Despite the slight difference in the composite scores for different facilities, the verbal views expressed by 71% of the interviewees give a strong indication that a higher level of trust in the government is required for siting more controversial LULUs.

Table 6.4 Evaluation of the Importance of the Stakeholder Attributes of Trust with Respect to Planning Different LULU Facilities

LULU Facility	Competence	Openness	Credibility	Accountability	Objectivity	Fairness	Caring	Composite Score
Incinerator	8.91	8.94	8.71	8.86	8.86	8.11	8.34	60.73
Aviation Fuel Receiving Facility	9.00	8.89	8.71	8.86	8.63	8.00	8.23	60.32
Explosive Storage	9.03	8.74	8.71	8.86	8.63	7.94	8.26	60.17
Landfill	8.74	8.83	8.46	8.66	8.80	8.11	8.20	59.80
Sewage Treatment Plant	8.67	8.64	8.47	8.56	8.53	8.01	7.99	58.87

Note: The sample size for the evaluation of each specific LULU is 35. Importance score for each trust attribute ranges from 1 to 10. The larger the number, the more important the stakeholder attribute is in planning the facility properly.

6.6 Recommendations for Trust Building in LULU Siting

The interviewees were asked to provide suggestions on how trust, particularly trust towards government, can be established or enhanced in the process of siting locally unwanted facilities in Hong Kong. From the interview discussion, two themes are categorized in terms of increased public participation and communication and improved performance to meet social expectations on siting. They are described below.

Increased public participation and communication

As pointed out by some researchers (Hance et al., 1998), the heart of the problems with trust between the government and the public is often linked to the government's failure to involve the public early or to communicate effectively. This view is shared by an overwhelming majority of the interviewees (30 out of 35, or 86% of the respondents), who supported the idea that increased public participation and communication is the best strategy to establish or enhance trust among stakeholders in siting LULUs.

First, they opined that the public should be allowed early and genuine participation in planning decisions for LULU siting in Hong Kong if trust is to be restored in both the government and the siting process. They felt that that the public, especially the potential host community, are usually not consulted in the early conceptual stage of a project, and their views have not been seriously taken into consideration in the decision-making process for LULU siting. For example, one interviewee (GT2) commented that "the existing mode of public consultation is not working and the government should use effective methods to engage the stakeholders particularly the affected community and set up more channels for meaningful communication and discussion". Another interviewee (AC30) also highlighted the importance of early participation and said, "The public engagement exercise should begin in the early conceptual stage so that the public and the related stakeholders can understand the problems or issues involved, and by doing so, there may be a better chance to resolve the conflicts before they become too controversial and intractable". In fact, the above stakeholder views concur with the findings of the social surveys that more effective public consultation is one of the most preferred conflict resolution methods and is seen as a counter-measure to the lack of trust in the government (Section 5.2.7). This is borne out by the survey findings (Section 5.2.1) that a majority of the local residents from the three surveyed communities (Tuen Mun, Tseung Kwan O

and Shatin) do not know how LULUs are sited by the government and that a large proportion of respondents in the territory-wide survey consider the consultation undertaken by the government regarding LULU siting to be inadequate or ineffective.

Second, most of the interviewees (over 80% of the respondents) also pointed out that the government should engage in a meaningful dialogue with the public so as to understand and address their genuine concerns. For example, one interviewee (GT4) said, "it is very important to communicate with the public so as to understand their concerns and meanwhile to increase their understanding of the LULU projects. The lack of communication can entail in low levels of trust". This view is echoed by another interviewee (EG21) who said, "trust building is a process and takes time. Two way and high quality communication is important and the government should take the initiative to develop such interaction with the stakeholders. With the common understanding of the issues, there is a higher chance to create consensus".

The above interview results can be summarized to the effect that trust can be established through an open, early and continuous public engagement process in which meaningful and interactive dialogue with the public and stakeholders can take place. Through such a process, different viewpoints can be taken into account and different stakeholders can be engaged in meaningful discussion and negotiation contributing to trust and transforming conflict into consensus (Bradbury et al., 1999). If such effective participation and interaction are established, it is more likely that public perceptions or concerns regarding LULU siting can be better understood and resolved, and there is a higher chance of successfully overcoming the siting problem.

Improved performance to meet social expectations on siting

Apart from the suggestion of increased public participation and communication to enhance trust in the siting process, quite a lot of the interviewees (15 out of 35, or 43% of the respondents) also emphasized the importance of improving the siting agency's performance so as to meet social expectations in different areas related to LULU siting. The key areas of concern mentioned by the interviewees broadly cover the following: perceived technical competence, openness, transparency, credibility, accountability, objectivity, fairness and caring, which are relevant to how the government interacts with the public and how the planning and siting process is conducted.

According to the interview discussion, it appears that there is a mismatch between the expected and observed performance of the government in handling LULU siting in a number of areas, including particularly its openness, credibility and caring in dealing with public concerns. For example, one interviewee (GT2) commented that "the government should be more open and transparent, and let the public know the considerations and rationales for why a site is chosen or not chosen. They should demonstrate to the public the trade-offs of different options including the cost of doing nothing, and the implications on the long-term sustainability of Hong Kong". This view is echoed by another interviewee (DC10) who commented that, "in siting risky LULUs, the transparency of the whole siting process must be increased and all relevant information should be available to the public to ease public concerns or anxieties". One of the interviewees (LC13) made a suggestion on how the government can improve its credibility in particular and said, "To gain trust, the government should set up an independent funding for the affected community to undertake their own assessment. By so doing, the public are empowered and this would increase the credibility of the government in handling public conflicts and also increase the legitimacy of the process". Another interviewee (ACE24) commented that "the government does not pay much attention to the feelings of the host community and it is important that government should not only fully respond to the residents' concerns but also has the responsibility to ensure the community is better off after the siting, for example, by designing some feasible compensations that can help improve the living environment of the local district". The above interview findings indicate that the government's performance, particularly in terms of openness, credibility and caring, is important to the establishment of trust in the planning and siting process. What the government or the proponent should do is to ensure that their performance can satisfy social expectations by meeting the expected performance in those areas of concern that may influence trust and the public acceptability of the LULU projects.

6.7 Discussion and Policy Implications

The second objective of this study is to investigate the importance and formation of trust among key stakeholders concerning LULU siting. Under this research objective, five research questions were developed, as listed in the Introductory paragraph of this Chapter. The following paragraphs will first give a summary of the results in response to these five questions, and then discuss the possible

implications of these findings for addressing the problem of siting environmental LULUs in Hong Kong.

Regarding the first question on the importance of trust, evidence from the stakeholder interview survey demonstrates that trust is important in the local siting process, because trust is seen as essential in social interactions in terms of promoting consensus building, fostering cooperation, and reducing complexity. These results are expected and consistent with the literature (Misztal, 1996). The second and third research questions focus on the factors or attributes influencing trust and how the evaluation of these attributes may explain the variation of trust levels in the government and other related stakeholders. The results support previous studies (Kasperson et al., 1992; Metlay 1999; Poortinga & Pidgeon, 2003; Renn & Levine, 1991), indicating that the building or undermining of trust among local stakeholders is derived from perceptions of various attributes including competence, openness, credibility, accountability, objectivity, fairness and caring. Moreover, the evaluation of these attributes is shown to be relevant to the conception of trust in particular stakeholder groups. It is observed that each stakeholder group has its corresponding strong or weak attributes, and the extent of variability in the attributes of caring and competency is the greatest among all the attributes for the key stakeholder groups. This reaffirms findings in the literature that the perception and variation of trust attributes have an overall effect on the conception of trust towards a given group, and may explain why different stakeholder groups have different overall trust ratings. The fourth question asks about the importance of the stakeholders' conception of trust in planning different LULU facilities. The survey findings show that stakeholders generally require a higher level of trust in an organization responsible for siting more risky or polluting LULUs. In particular, the attributes of competence, accountability, credibility and caring are more valued in an organization for properly planning the siting of such controversial environmental LULUs. The final question concerns recommendations on how to establish or enhance trust in the local siting process. Based on the interviews, increased public participation and communication is certainly an important policy tool to improve trust. In addition, it is equally important to improve the government's or proponent's performance in terms of various trust attributes, particularly openness, credibility and caring, so as to meet social expectations and increase social acceptance of the LULU project.

As mentioned in the Introductory paragraph of this Chapter, the trust interview survey is small in scale, with a total of 35 interviewees. The survey results are thus indicative rather than quantitative or having statistical significance, and may not represent the views of the majority of local stakeholders. Nevertheless, the survey findings have some pragmatic implications that may be valuable for policy makers for planning LULU siting in Hong Kong.

First, the survey findings are consistent with findings in the literature about the social function of trust (Misztal, 1996), in which trust is considered as indispensable in social functioning and ensures smooth and harmonious interaction among different members of society. Importantly, collaboration and consensus building are based on trust, so that a conciliatory approach can be taken among stakeholders within a collaborative form of decision making (Sidaway, 2005). This shows that with trust, stakeholders can reach consensus more easily, as differences in beliefs and interests among stakeholders are recognized and respected and all are working together for mutual benefit in the process. In particular, conflicts in LULU siting, as illustrated by the local cases mentioned in Chapter 3, are compounded by public concerns on issues such as the social need for the facility, perceived impacts and risks from LULUs, or spatial equity in distributing LULUs, and there is frequently disagreement between the policy-makers and the public on these complicated issues (Kasperson et al., 1992). Thus, the role of trust in reducing complexity and enhancing cooperation can help bridge the perception or value gap among stakeholders and transform social conflict into social consensus and collaboration. Therefore, it is critical to build trust in the siting process to promote the successful resolution of siting disputes.

Second, the results support the literature (Kasperson et al., 1992; Renn & Levine, 1991) in showing that trust among local stakeholders derives from perceptions of various attributes such as competence, openness, credibility, accountability, objectivity, fairness and caring. This finding suggests that stakeholders need to concentrate on their weak trust attributes so as to meet social expectations and improve the level of trust. The government, which is the proponent for most LULU projects in Hong Kong, thus clearly needs to improve its performance on the comparatively "weak" attributes of openness, credibility, objectivity and caring (the rating of each of these attributes is below 5 within a range of 1 to 10, as shown in Section 6.4). These are seen as the major areas of concern with regard to government performance in implementing the siting of projects. In particular, the

finding shows that for siting environmental LULUs which may be perceived as more risky or polluting, the attributes of competence, credibility, accountability and caring are most valued in an organization's performance. In this regard, the government may be considered competent and accountable, as it received a relatively high rating among the various groups on these two attributes, but it certainly needs to improve its weak attributes, especially credibility and caring, if it is to gain public trust and support in planning such controversial LULUs. Interestingly, this finding is quite similar to the findings of another local study (Walker et al., 2008) which examines the level and dimensions of trust in government on a number of key environmental policies in Hong Kong. That study found that the level of trust in the government's approach to key environmental policy issues was consistently low over the two-year study period, and that although the government's competence was generally recognized, its credibility, reliability and integrity were of concern to the public. The above also suggests that an understanding of how different parties are viewed or judged is important to improve the perceived performance to meet social expectations and increase the perceived trust. Moreover, perceptions of the government's performance (e.g., credibility) are largely influenced by its track record, and thus it is useful to understand stakeholders' feelings regarding past siting decisions and to take effective steps to overcome the legacy of NIMBY controversies. Notwithstanding the above findings, it should be borne in mind that the respondents' evaluation of trust attributes is not grounded on rationality, and their judgements may also be influenced by broader social contextual issues. Thus, the government should rebuild trust not only in its LULU siting policy but also in the broader current government policies and measures.

Finally, the survey findings indicate that there is a pressing need for increased public participation and effective communication with stakeholders to address their concerns if the government is to enhance trust in LULU siting. In fact, siting conflicts are often related to the failure of the proponent to engage the public early, to communicate effectively, and to address the concerns and needs of the affected community (Petts, 1998). Through open dialogue in a participative process, stakeholders can acquire knowledge of different perspectives and it is thus more possible to clear up misunderstandings and reach agreement (Lidskog, 1997). However, the siting approach in Hong Kong is largely rational and technical, with little consideration of the social, economic or political dimensions as reviewed in Chapter 3. The opportunity for public involvement is limited and the public are

passively consulted on the technical EIA report and land use plans, rather than being openly engaged in discussion on the broader social, economic or sustainability issues that are of most concern to them in LULU siting. The outcome is that the public do not understand how LULUs are planned or sited (Section 5.2.1), and their perceptions or concerns cannot be properly addressed under the current method of public consultation. Trust can scarcely be built up through such a method of communication which is not early, open, continuous, or interactive.

In connection with the above, the interview results shed light on the importance of public participation and communication for gaining trust in the siting process. The interview findings suggest that the government should move away from the current rational and technical approach towards more a participative policy process, which should proactively engage stakeholders even before a site has been selected. Such a participatory process allows for genuine dialogue with exchanges of ideas, views, values or knowledge, and mutual influence via a deliberative discussion process on various issues that are of concern to the public with regard to LULU siting. Such issues should include but should not be limited to the justification of the need for the project, the formulation of fair siting criteria and process, the acceptability of risks to the community, and the possible compensation for the affected community. These issues should be openly discussed, deliberated and justified to increase the legitimacy of and the public support for the decision-making process. The above recommendation, which is based on the stakeholder interview results of the current research, is shared by other local researchers whose study (Walker et al., 2008) examined the levels and meaning of trust in the government in five areas of environmental policies. They suggest that the government needs to embody genuine deliberative and inclusionary methods of public participation into the processes of policy formulation and implementation if it is to address the low level of trust in its ability to address local environmental issues.

To conclude, the overall findings indicate that to improve trust in the government in facility siting, the government must demonstrate competence, openness, credibility, accountability, objectivity, fairness and caring in its performance when conducting the LULU planning and siting process, coupled with a commitment to engaging and responding to public concerns through effective communication via a participatory process. The above recommendations call for broad changes in institutional culture

and behavior in the government. This will be a challenge for the leadership of the policy-makers responsible for LULU siting.

6.8 Summary

The second research objective of this study is to investigate the importance and formation of trust among key stakeholders concerning LULU siting. Five research questions derived from this objective have been addressed in this chapter. In summary, the interview survey demonstrates that trust is important and can help promote consensus-building, foster collaboration, and reduce complexity in the siting process. The results are supported by previous studies and indicate that the building or undermining of trust among local stakeholders is derived from perceptions of various attributes including competence, openness, credibility, accountability, objectivity, fairness and caring. Moreover, the evaluation of these attributes is shown to be relevant to the conception of trust in particular stakeholder groups. The survey findings also show that stakeholders require a higher level of trust in an organization responsible for siting more risky or polluting LULUs, and that the attributes of competence, credibility, accountability and caring are relatively more valued in an organization's performance for properly planning such LULUs. Finally, based on the interview discussion, increased public participation and communication, and improvement in the government's performance to meet social expectations about how LULUs should be planned and sited, are the two broad themes of suggestions to establish or enhance trust in the siting process.

Moreover, some pragmatic insights are discussed with respect to the above research findings. To recap, it is critical to build trust in the siting process because of its role in reducing complexity and enhancing cooperation, which can help bridge the perception or value gap among stakeholders on the complicated issues involved in LULU siting and is conducive for conflict resolution. Moreover, the finding suggests that for stakeholders to improve their level of trust, they need to concentrate on their weak attributes so as to meet social expectations. For example, the government in general needs to improve its performance in openness, credibility, objectivity and caring to gain trust in LULU siting. Further, the interview findings indicate that the government needs to establish a higher level of trust and improves the attributes credibility and caring if it is to gain public trust in siting more risky or polluting LULUs. Finally, the interview findings suggest that the government should move away from the current rational and technical approach towards a more

participative policy process, which should proactively engage stakeholders and the government in a genuine dialogue to exchange views and deliberate on various siting issues with the aim of transforming social conflict into consensus and collaboration.

Based on the overall findings and implications of this study as presented in Chapters 5 and 6 respectively, the next concluding chapter aims to summarize the key findings of this study and to address the third research objective by making recommendations on formulating a siting strategy that can help address public opposition to LULUs.

Chapter 7 Conclusions and Recommendations

7.1 Introduction

The siting of locally unwanted facilities is a major policy problem and challenge in Hong Kong, as it is in other countries. Although there is a recognized need for LULU facilities for society at large, many local residents are not willing to have them located in their neighborhood. In Hong Kong, the NIMBY problem is particularly pronounced because of the territory's small size, high population density and rapid development, making NIMBY a major challenge for local planners and policy makers.

In fact, the NIMBY problem is social and political in nature, and is related to public perceptions about siting (Lidskog, 1998). It is thus important to understand the factors underlying public opposition so as to resolve siting conflicts effectively. The literature review in Chapter 2 shows that while a number of factors have been proposed to explain the NIMBY response, it is still not completely clear what factors most influence public response to siting. In particular, the possible effects of community siting experience on public perceptions and the intensity of community opposition are not yet fully known. In the past, there have not been many empirical studies on the relationship between public trust and LULU siting. This study sought to fill the these knowledge gaps through an investigation of the NIMBY problem in Hong Kong by focusing on three major research objectives: (1) to identify and examine the factors affecting public response to LULU siting; (2) to explore the role of trust, particularly its formation and importance, in affecting public acceptance of LULUs; and (3) to make recommendations, based on the overall findings of this research, on formulating a siting strategy that can help address public opposition to LULUs. To address these research objectives, a conceptual framework for understanding public response to LULU siting has been developed (see Section 2.5 of Chapter 2) to provide a basis for this study. The framework includes such factors as the perceived need for the facility, perceived risk, fairness and trust in government and certain socio-demographic characteristics, as well as community siting experience, which has not been sufficiently considered in the literature. This framework also incorporates the attributes that affect the formation of trust. Overall, the framework serves as a guide for examining or understanding the relationships of these factors and public attitudes towards LULU siting, with particular focus on the role of trust. With reference to the framework developed,

this study utilized social surveys and stakeholder interviews to address the first two research objectives. The results of the social surveys and stakeholder interviews were presented and discussed in Chapters 5 and 6, respectively.

This chapter aims to summarise the research findings with respect to the first two research objectives, and to address the third objective by recommending a siting strategy that can help address public opposition to LULUs. This chapter is subdivided into three sections. The first section presents a summary of the major research findings and implications as presented in the previous two chapters. The second section suggests a siting strategy based on the results of this study. The final section provides suggestions for future research.

7.2 Summary of Major Findings and Implications

The literature review indicates that it is important to identify factors affecting public opposition in order to resolve public disputes in LULU siting (Chapter 2). In particular, the influence of community siting experience and the role of trust in contributing to public acceptance of LULUs have received inadequate attention in previous research. This research addressed these issues in responding to the first two research objectives of this study.

To unravel the factors affecting public response to siting, four social surveys were conducted, one across the whole of Hong Kong and the remaining in three local districts, some with and some without experience of NIMBY conflicts. These surveys were undertaken to gauge public perceptions towards LULU siting; to investigate the influence of community siting experience on residents' perceptions and attitudes; and to determine the factors that are the most influential upon public acceptance/ opposition towards LULUs (Chapter 5). To further understand the role of trust in LULU siting, in-depth interviews were undertaken with 35 local stakeholders to explore their views and opinions on the importance and formation of trust in affecting public acceptance of LULUs (Chapter 6). The major findings and implications of this study with respect to the first two objectives are summarized below.

Public Perceptions of and Attitudes Towards LULU Siting

The findings of the four social surveys are broadly similar with respect to the public's perceptions of and attitudes towards LULU siting. They demonstrate that

the public have broader interests embodying social, political, environmental, risk and health concerns, which are not identical to the technocratic focus of the planning authority. These findings further suggest that it is important to understand public perceptions regarding the need for the LULU facility, impacts and risks, equity concerns and the authority's performance in implementing siting projects, which underlie public opposition towards LULU siting (Lam & Woo, 2009; Woo & Lam, 2008).

As revealed by the survey findings (Section 5.2), while people in Hong Kong are intrinsically opposed to LULUs, they are generally more strongly opposed to those LULUs which do not have a demonstrated societal need and those which are perceived to be risky. The surveys also reveal that people tend to focus more on the qualitative aspects of risks, and that they are more fearful of LULUs that they are not familiar with. The latter may cause feelings of dread, connote risks of catastrophic consequences, and cause impacts which are difficult to mitigate. Moreover, more people are concerned with environmental and health impacts than with social and economic losses. These findings suggest that understanding how the public construct their views of risks, and addressing their environmental and health concerns, would be useful to decrease their anxiety.

The findings of the four surveys also show that the public deem it unfair to concentrate many LULUs in a few districts. They consider it fairer to distribute LULUs based on the needs of different districts or to disperse them evenly across districts. This indicates that it is important to understand public views on equity issues in allocating LULUs and take their opinions into consideration in LULU planning.

The survey results show a lack of trust in the government, reflecting a possible breakdown in communications between the planning authority and the host community. The public generally have more trust in civic organisations and professional bodies than in the government. The general lack of trust in government is accompanied by a lack of public involvement in and understanding of the LULU planning and siting process. A majority of the respondents consider the consultation undertaken by the government to be inadequate or ineffective. Many local residents from the three communities do not know how LULUs are planned and sited. This may be due to the fact that under the current siting procedures, the

public are only passively consulted on the technical EIA report and land use plans in Hong Kong (Chapter 3). Many members of the public may not fully comprehend the technicalities of the planning and siting process, or understand why their community has been selected as the site. The lack of public involvement and communication nurtures a sense of unfairness and undermines trust in the government. These findings call into question the efficacy of the current planning process and public consultation strategy in informing and engaging the public.

Overall, the above survey findings call for policy-makers to be sensitive to local concerns, to be more proactive in engaging public opinions in the process, to communicate and address the public's concerns, and to gain public trust in the process of planning and siting LULUs.

Influence of Community Siting Experiences on Residents' Perceptions and Attitudes

To ascertain the extent to which local community experiences in LULU siting affect residents' perception of and responses towards siting, social surveys were conducted in three communities, two of which (Tuen Mun and Tseung Kwan O) had experienced NIMBY conflicts and one of which (Shatin) had not. Shatin, with no NIMBY issues, acts as a control or reference for the other two communities. The results suggest that community experience in LULU siting does have an influence on residents' perceptions of and responses to LULU siting. Generally speaking, residents of communities with NIMBY conflicts have a lower degree of acceptance of LULUs, a stronger feeling of unfairness, and a lower level of trust in the government. Residents of communities with siting controversies tend to be more sensitive to the risks associated with LULUs. They also have a stronger view that greater public participation and implementation of effective mitigation and monitoring are effective measures for resolving siting disputes. This highlights the need to address the negative feelings of adversely affected residents if any additional LULUs are to be sited in these communities.

Influential Factors Upon Public Response to LULU Siting

The effects of community experience, a host of perception factors, and certain socio-demographic variables upon public attitudes toward LULU siting were investigated through correlation and binary logistic regression analysis. The results show that people are more likely to oppose the siting of a LULU in their community if they do not perceive the need for the facility, if they perceive a high risk, if they

have had a negative siting experience, or if they have a low level of trust in government. The findings suggest that it is important to improve public perceptions of LULU siting. The results also shed light on the actions that the government should take in order to increase the likelihood of public acceptance of LULU projects.

Importance and Formation of Trust in LULU Siting

The role of trust in LULU siting was explored by conducting in-depth interviews with local stakeholders who have considerable experience in local siting issues. The interview survey focused on the stakeholders' views and opinions on the importance and formation of trust in affecting LULU acceptance. The interview survey was small-scale and is considered a pilot to explore the role played by trust in the local siting process. In general, the respondents confirm that trust is important in terms of promoting consensus-building, fostering cooperation and collaboration, and reducing complexity, all of which are considered important for conflict resolution. Further, the conception of trust is relevant to respondents' evaluation of trust attributes including competence, openness, credibility, accountability, objectivity, fairness and caring in particular stakeholder groups. Furthermore, the respondents say they require a higher level of trust in any organisation responsible for siting more risky or polluting LULUs. The attributes of competence, credibility, accountability and caring are most valued in an organization's performance in implementing such controversial LULU projects. In this regard, the government may be considered competent and accountable, as it received a relatively high rating for competency and accountability from the interviewees, but it has relatively low ratings for credibility and caring, which certainly need further improvement if it is to gain public trust in siting more risky or polluting LULUs.

Strategies for Trust Building in LULU Siting

Based on the interview discussions, suggestions have been made on how to build trust in the siting process. First, as opined by a majority of interviewees, trust can be established through an open, early and continuous public engagement process in which meaningful and interactive dialogue with the public and stakeholders can take place. Through such a process, different viewpoints can be taken into account and different stakeholders can be engaged in meaningful discussion and negotiation, contributing to trust and transforming conflict into consensus (Bradbury et al., 1999). Second, most of the interviewees also emphasized the importance of improving the

siting authority's performance in planning and siting LULUs so as to meet social expectations in different areas related to LULU siting. According to the interview discussions, it appears that there is a mismatch between the expected and observed performance of the government in handling LULU siting in a number of areas including particularly its openness, credibility and caring in dealing with public concerns. This suggests that the government should ensure their performance can meet social expectations in those areas that may influence trust and the public acceptability of LULU projects.

Overall, this study particularly identified the importance of community siting experience in affecting public attitudes towards LULU siting. This is a new addition to the siting literature. Moreover, the findings of this study provide valuable insights on a possible siting strategy to resolve the NIMBY problems. The following section will provide policy recommendations, based on the findings of this study, on formulating such a siting strategy to address the NIMBY problem.

7.3 A Recommended Strategy for Siting Locally Unwanted Facilities

The policy relevance of this research includes not only the identification of factors that influence public response to siting and the investigation of the role played by trust in LULU siting, but also provision of a strategy that may enhance public acceptance and support of LULU siting. Development of the strategy is part of the effort to address the third research objective of this study to help address public opposition to LULUs.

The strategy provided in this section is based on the findings from the four social surveys (Chapter 5) and the in-depth interviews with local stakeholders (Chapter 6). More specifically, this study highlights the major issues relating to public perception and trust that stress the need to take into consideration people's values and interests in the decision-making process, including the following major findings of this study:

1. The public do not trust that government is acting in the interest of the society and the host community, as they do not perceive the societal and local needs for LULUs (Section 5.2.2).
2. The public think that government is competent but does not care about their interests (Section 6.4).

3. The public do not trust the government and the government's consultants to make a sound siting decision for the society (Section 5.2.1).
4. The public do not think that the siting process or outcome is fair to them (Section 5.2.3).
5. Public perception is affected by past experience, and those who had previous unpleasant experiences tend to worry more about LULUs proposed in their particular district (Sections 5.3.2 & 6.3).
6. The general public and the government have different perceptions about risk; government's risk assessment is more quantitative and measurable, while the public risk perception is socially constructed and subjective in nature (Section 5.2.5).
7. Public perceptions embody social, environmental and risk concerns (Sections 5.2 & 5.3).
8. The public prefer more public consultation (Section 5.2.7).
9. Economic measures (compensation) are not favoured by the general public (Section 5.2.7).

This study, overall, suggests that public opposition to the siting of LULUs is usually based on values and perceptions. This observation implies that the success of any strategy utilized for the siting of these facilities depends on the extent to which the strategy deals with the above issues including the perceived need for the LULUs, equity, public perceptions of risk, negative feelings from previous siting decisions and public trust. It is hoped the recommended strategy proposed here can address public perceptions and expectations that underlie public opposition to LULUs. The strategy incorporates three important elements: (1) a collaborative, learning and deliberative engagement process; (2) resolution of public concerns and past negative siting experience; and (3) trust building. More specifically, the provision of a collaborative, learning and deliberative process is fundamental to addressing the strong intermingling of social, technical and political issues involved in facility siting and creating opportunities for reaching a socially acceptable siting solution. The resolution of public concerns can change public perceptions of the need for the LULUs and promote risk minimization, while the resolution of negative siting experience can improve the negative feelings of the local residents. The building of trust is also conducive to greater acceptance of the LULU facility, and it is thus essential to acquire viable ways to enhance public trust in LULU siting. Taken together, it is believed that a combination of these three elements would be more

effective for addressing the major perception and trust issues identified in this study. Suggestions for addressing negative siting experiences and trust building in LULU siting in particular have not previously been considered adequately in the literature. The strategy proposed here is not intended as an absolute panacea, but as a more practicable siting approach that addresses public perceptions and enhances trust so as to facilitate the LULU planning and siting process. In the following paragraphs, the three key components of the recommended strategy are described in the context of this research.

(1) Develop a Collaborative, Learning and Deliberative Engagement Process

As indicated by the overall findings of this study, the success of a siting strategy in enhancing the siting process and resolving siting disputes centres around public perceptions. Genuine efforts must be made to solicit public views and incorporate their concerns and inputs in the process of planning and siting LULUs. In particular, the issues relating to trust and public perception have to be properly dealt with in the decision-making process in order for successful siting to occur.

In order to demonstrate that a new public engagement process with an emphasis on social learning is likely to work better than the existing process in addressing public opposition to LULUs, I will first revisit the existing process, which actually promotes differences of perceptions between the public and the government, thereby creating siting conflicts *per se*. Then, I will introduce an improved process focusing on collaboration, learning and deliberation and show how it can work better to incorporate public views and values in the decision making process, and by so doing is more likely to address the major conflict issues and foster trust among the government, key stakeholders and the general public.

As reviewed in Chapter 3, the current siting approach in Hong Kong has been too rational and technocratic, and has paid little attention to the social and political dimensions of siting. As can be inferred from Figure 7.1, consultation with the general public usually is undertaken at the EIA and planning stage, which however is too late in the LULU project development process and has little influence on the decision-making process because the need for, technology and scale of, and even the site of the project are often decided beforehand. Although the responsible government bureau or department consults relevant governmental departments, advisory committees (in which membership is restricted to government-appointed

major stakeholders), District Boards, Legislative Council and other concerned parties such as environmental NGOs for advice at the feasibility and site selection stages, these early stages are not open to input and influence from the lay public, leading the general public to have a poor understanding of the need for LULU development and the criteria for planning LULU development. When LULU projects are brought forward to the EIA and planning processes, public consultation is provided for the general public to comment on the EIA reports and draft plans for the LULU development. EPD and TPB take public comments into consideration, but do not necessarily follow public views, in making the final decisions on endorsement of EIA reports and draft plans. Furthermore, the current public consultation process is passive rather than proactive under the EIA and planning processes, and there is limited scope for public discussion and debate with regard to LULU development such as the fundamental need for the LULU in both the societal and local perspectives, consideration of alternatives and tradeoffs, siting criteria, acceptability of risks, fair distribution of LULUs among districts, and the possibility of community enhancement for the host community. Hence, many public concerns relating to broader social and political issues are left unaddressed under the current process. At the later stage of LULU development including facility design, construction and operation, the government agency traditionally does not engage the public on the design and management of the facility. This may, however, increase the hostility between the host community and the facility, as the public have no idea how the facility will be managed and monitored in the future. Taken together, the current procedures cannot effectively embrace the views of the public or respond to their concerns or needs, and trust can scarcely be built through the current passive mode of public consultation. In other words, the current process cannot address any of the major perception and trust issues identified in this study, except that it may partially address public concerns on environmental and social issues (see Table 7.1). In such a context, the NIMBY phenomenon is prevalent in Hong Kong society, as reflected by the survey findings (Section 5.2.6).

Possible solutions for the siting impasse are also suggested by the findings of this study. The findings of the four social surveys (Section 5.2.7) clearly reveal that the public seek greater public involvement, more understanding and more say in the decision-making process. Key stakeholders interviewed consider public involvement and more effective communication to be fundamental to fostering trust in the siting process (Section 6.6).

What is suggested for Hong Kong is a new public engagement and communication process in which the public are not merely passively consulted but are proactively and collaboratively engaged, actively learning and deliberating on different perspectives in the siting decision-making process. In doing so, the government must go beyond the current rational and technical approach which provides passive and limited public consultation, towards a more effective and meaningful participatory process in which citizens are proactively involved in a mutual and meaningful exchange of views and opinions and meanwhile learning to cooperate with others in solving collective problems. What matters most are early, open and continuous interactions that describe options and alternatives, clarify interests, and aim at consensus-building between the stakeholders and the siting authority (Lam et al., 2007; Lam & Woo, 2009). Such interactions make possible open dialogue with exchange of views, values or knowledge, and mutual influence via a deliberative discussion process on various issues, particularly on justification of the need for the project, socially acceptable siting criteria and the acceptability of risks. These issues should be discussed early and openly, deliberated and justified to increase public understanding of, support for and legitimacy of the decision-making process. In essence, it is through trust, mutual respect and understanding that different perspectives can be

Figure 7.1 The Existing LULU Planning and Siting Decision-making Process in Hong Kong

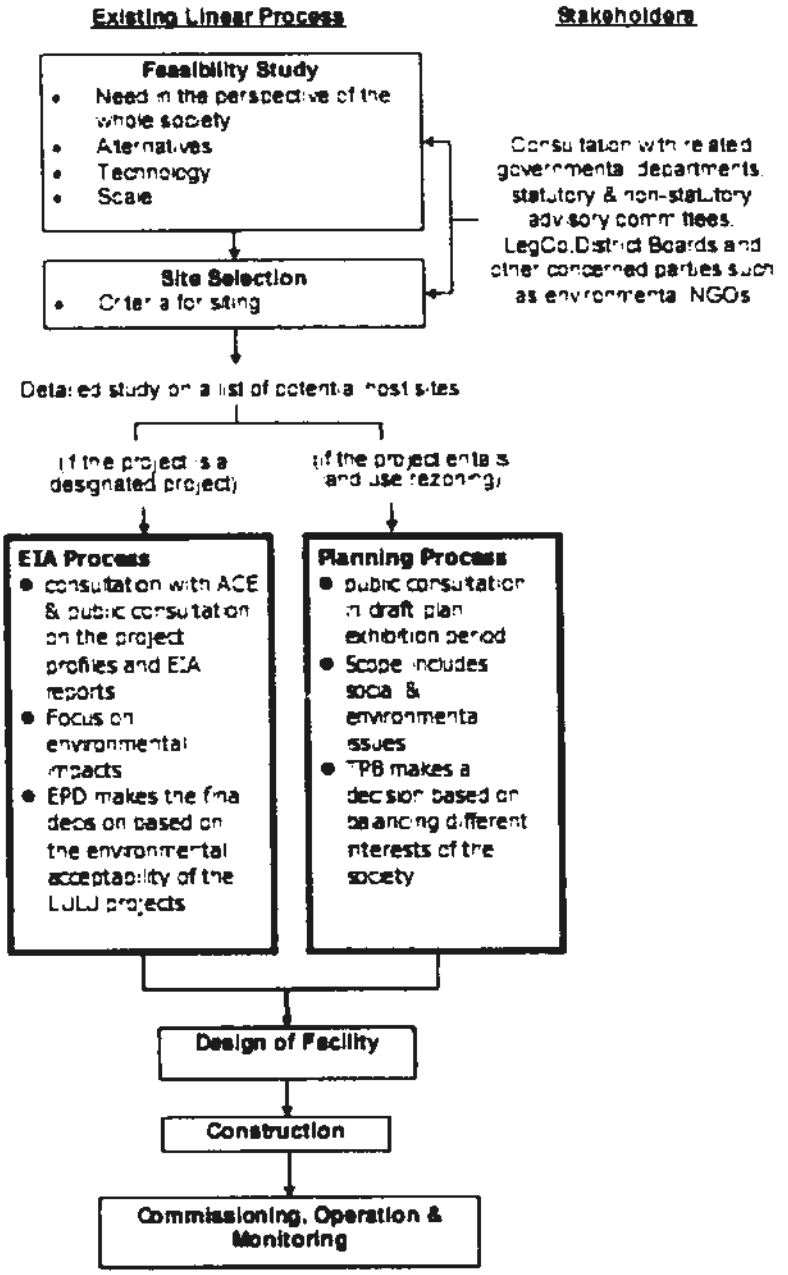


Figure 7.2a Recommended Process for LULU Planning and Siting in Hong Kong

Stage I

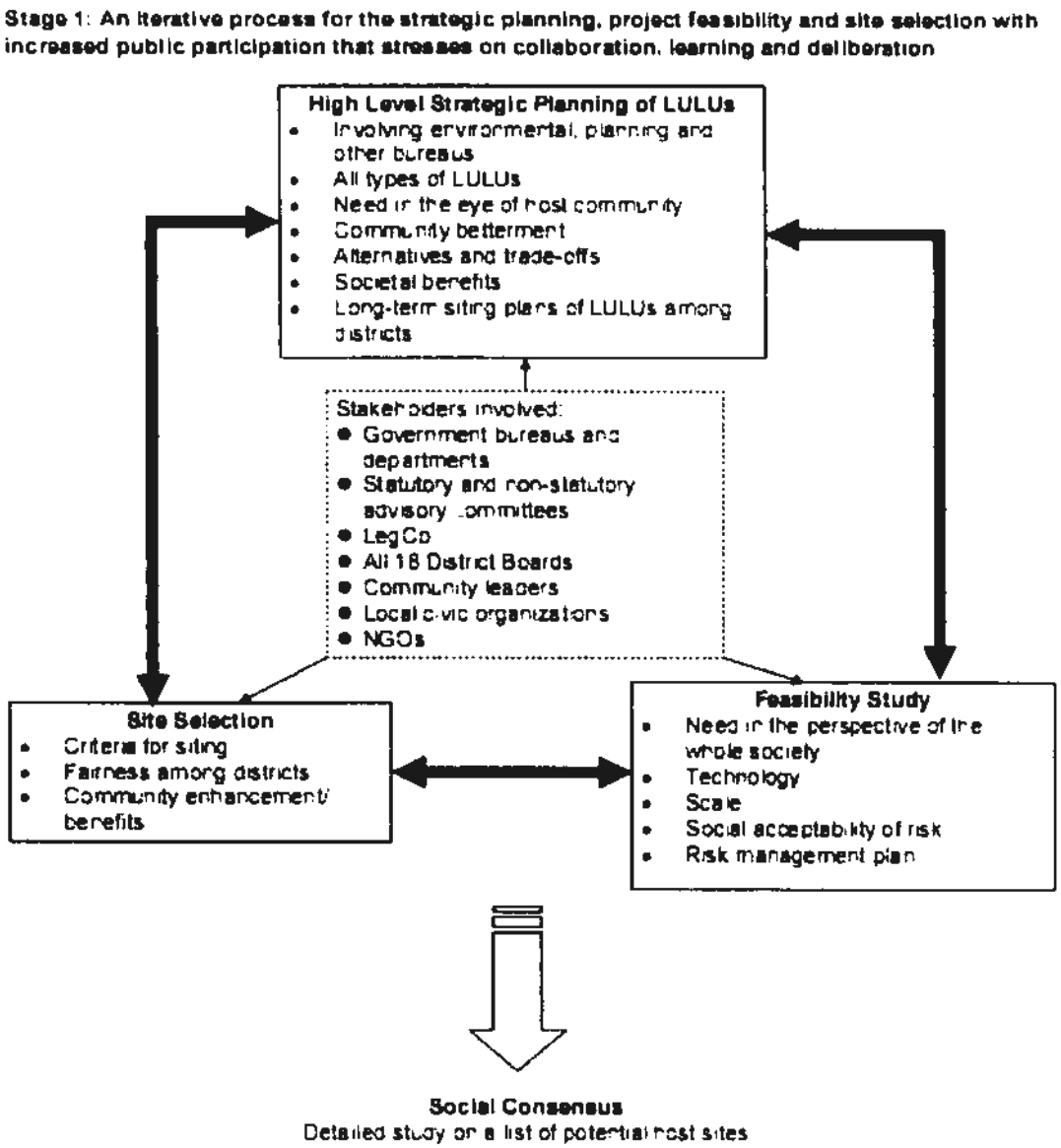


Figure 7.2b Recommended Process for LULU Planning and Siting in Hong Kong Stage II

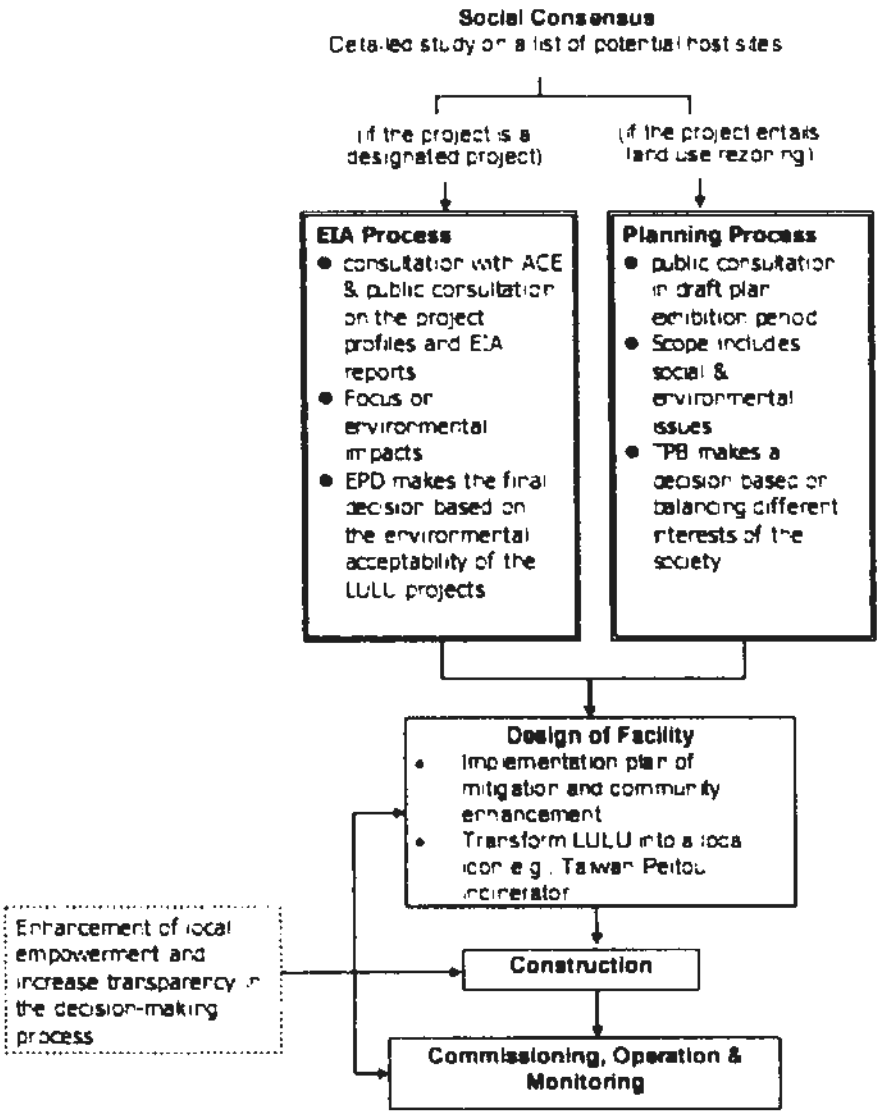


Table 7.1 Summary Evaluation of the Performance of the Existing and Recommended Processes in Dealing with the Major Issues Identified in this Study

Major issues identified in this study	Existing process	Recommended process
1. The public do not trust that government is acting in the interest of the society and the host community, as they do not perceive the societal and local needs for LULUs (Section 5.2.2).	✗ The general public are not engaged in the feasibility stage and the lay public have little understanding on the societal needs for the LULUs. Local need is not particularly considered in the feasibility study.	✓ Provision of more opportunities for involving the public, particularly at the local level, in the discussion and deliberation of both the societal and local needs for LULUs.
2. The public think that government is competent but does not care about their interests (Section 6.4).	✗ Formal public consultation is provided under the EIA and planning processes; however, it is passive, narrowly focused, and cannot fully address public concerns.	✓ Provision of more opportunities for involving the local public in the decision-making process; commitment by the proponent to empower the host community and engage in a long-term relationship with the local community.
3. The public do not trust the government and the government's consultants to make a sound siting decision for the society (Section 5.2.1).	✗ The existing process, with limited opportunity for public consultation, cannot increase mutual understanding or trust between the government or their consultants and the general public.	✓ The decision is made through discussion and collaborative deliberation with the participants and encompasses public values and concerns. The legitimacy of the decision can be increased in the public's view.
4. The public do not think that the siting process or outcome is fair to them (Section 5.2.3).	✗ The general public are not engaged in the site selection, and the lay public have little understanding on the siting criteria and how their community may benefit from such siting through community enhancement.	✓ Siting criteria, fairness among districts and community enhancement are discussed and agreed upon in the site selection process.
5. Public perception is affected by past experience, and those who had previous unpleasant experiences tend to worry more about LULUs proposed in their particular district (Sections 5.3.2 & 6.3).	✗ Currently, there is no long-term strategic siting plan for LULUs among different districts.	✓ Long-term siting plans for LULUs among different districts is discussed and agreed upon in the high level strategic planning stage to ensure that no single district is overburdened with too many LULUs.
6. The general public and the government have different perceptions about risk; government's	✗ There is no consideration of public evaluation and	✓ The feasibility study allows public discussion and

(continued)

risk assessment is more quantitative and measurable, while the public risk perception is socially constructed and subjective in nature (Section 5.2.5).	acceptance of risks in the current process.	deliberation on such issues as the social acceptability of risks and the formulation of a risk management plan. This can help the public understand and assess environmental risks and work toward a risk management plan that is socially acceptable.
7. Public perception social, environmental and risk concerns (Sections 5.2 & 5.3).	# The EIA and planning processes may partially address the environmental and social concerns. For example., EIA can ensure the LULU project is environmentally acceptable and scrutiny under the planning process can ensure land use optimality. However, public risk concerns and negative stigma effects are not addressed.	✓ The recommended process can deal with public concerns canvassing social, environmental and risk concerns, as public values and concerns are fundamental to the decision-making process.
8. The public prefer more public consultation (Section 5.2.7).	✗ The existing process can provide only limited and passive public consultation for the general public.	✓ Both the opportunities for public involvement and the representativeness of the consultation parties in the decision-making process are much enhanced.
9. Economic measures (compensation) are not favoured by the general public (Section 5.2.7).	✗ It is understandable that the public do not prefer compensation as the resolution option, as they think the LULUs are imposed on them. In fact, the possibility of providing non-monetary compensation such as community enhancement is higher if this can be discussed as part of the LULU development plan rather than merely as a mitigation option.	✓ The possibility and forms of community enhancement can be discussed in the project design stage with the involvement of local community leaders and local civic organizations in particular. Thus, with local public inputs, it is more likely to design community enhancement measures that will be accepted by the selected host community.

Note:

1. "✓" means the process can deal with the particular issue.
2. "✗ " means the process cannot deal with the particular issue.
3. " #" means the process can partially deal with the particular issue.

taken into account, new insights gained, ideas created to solve problems, and a commitment made to transform conflicts into consensus.

Therefore, a new public engagement process is recommended, which has two consecutive stages as illustrated in Figures 7.2a & 7.2b. The first stage is an integrative and iterative process linking strategic planning, project feasibility and site selection with the participatory process, with an emphasis on collaboration, learning and deliberation (see Figure 7.2a). Such a process stresses the need for flexibility in the decision context and allows not only technical information but also the explicit input of values, insights and trade-offs so that the authority can understand the public concerns and the public can participate and have a genuine influence on the decision made. Under the integrative and iterative process, the initial problem framing should be open to public input, and the public perspectives on strategic planning, project feasibility or site selection may define or reframe what the problem or issues actually are. In such a collaborative form of participation which promotes open dialogue, social learning and citizenship, people can learn how to cooperate with others in solving collective problems and act for the good of all. As such, in the recommended process, potential decisions can be reached through discussion and deliberation with the participants, based on a combination of technical expertise and societal values, concerns and preferences.

The second stage is a linear process including the EIA, land use planning, facility design, construction and operation (Figure 7.2b). Unlike the existing process, the second stage provides greater opportunities for enhancing public participation, particularly at the local level in the facility design, construction, operation and commissioning. In particular, the facility proponent is committed to engage in a long-term relationship with the host community based on a mutually accepted plan of mitigation and community enhancement with the aim of transforming the LULU's "local bad" image into a source of local pride. It is also important to enhance the local empowerment so as to increase local inputs in all processes relevant to the facility design, construction, operation and monitoring. This can both increase the transparency of the development of LULU projects from the host community's perspective and enhance the relationship between the proponent and the local community.

Overall, a number of improvements are made in the recommended process when compared to the existing process (see Figures 7.2a & 7.2b). First, the representativeness of the stakeholders is increased by involving all 18 district councils, community leaders and local civic organizations in addition to the existing consultation parties. Second, the strategic planning of LULUs is undertaken at a high level, involving all the relevant bureaux and allowing stakeholders to discuss and deliberate on broader issues relating to, for example, local need for LULUs, community betterment, alternatives and the trade-offs, societal benefits and long-term siting plans for LULUs of various types among different districts. This can help preempt public disputes which may become too difficult and intractable at the later stage of the process, as is seen to happen now in local siting conflicts. Third, the feasibility study allows public discussion and deliberation on such issues as the social acceptability of risks and the formulation of risk management plans. The discussion of such issues can help the public understand and assess environmental risks and work toward a risk management plan that is socially acceptable. Fourth, siting criteria, the fairness of LULU distribution among districts, and community enhancement are discussed and agreed upon at the site selection stage so that no single district will feel it is the only one to bear the burden of the whole society. Fifth, the fundamental linkage among the three tiers including strategic planning, project feasibility and site selection with the iterative participatory process allows greater flexibility to improve and facilitate the decision-making process so as to better incorporate the societal values and concerns in the potential decisions. Sixth, the empowerment of the local community through increased local input on facility design, construction and operation can increase transparency and enhance the neighbourhood relationship in the affected community.

To sum up, the recommended process is inclusive and transparent; promotes dialogue, social learning and citizenship; and promotes consensus on reaching decisions which are for the good of all. As explained in the previous paragraphs, the recommended process which focuses on collaboration, social learning and deliberation is more likely to deal successfully with public perceptions and enhance trust-building that leads to social consensus and acceptance. It is thus expected to perform better than the existing process in addressing the major perception and trust issues identified in this study (see Table 7.1). Nevertheless, the effectiveness of the recommended process may be compromised if the current political system and governance do not change to meet social aspirations in political reform and

accountability, which will only intensify the deep-rooted social contradictions in society and further increase the tensions between the government and civil society.

(2) Address Public Concerns and Negative Siting Experiences

The research findings in Chapter 5 (Section 5.3.2) show that it is more likely for a person to oppose LULU siting if he or she does not perceive the need for the facility, accords higher risk to the facility, has had a negative siting experience and has a low level of trust in government. As public opposition to LULUs is grounded in these perceptions and beliefs, it is important to establish the need for the facility, reduce the perceived level of risk, address outstanding issues remaining from previous siting decisions, and foster trust in order to enhance consensus-building and collaboration.

Establishing the Societal and Local Needs for LULUs

As discussed above, it is important to establish the need for LULUs in order to address public concerns about LULU siting (Section 5.3.2). Moreover, the survey results (Section 5.2.2) indicate that the general public may recognize the societal need for LULUs but not the need for them in their own community. It is thus important for the government or the proponent to convince the public that the proposed facility needs to be built not only for societal but also for local reasons.

To justify the societal need for LULUs, the proponent needs to demonstrate that the LULU facility is the best approach to address the societal development need. For this to occur, the underlying societal need for the LULU must be specified accurately and clearly through effective public engagement and communication, allowing for a constructive dialogue with the public on defining the problem, alternative solutions to address the problem, and the social acceptability of the proposed facility. Through such an open, deliberative process, the societal need for the facility can be established with legitimacy and thus engender stronger public support.

Moreover, it is important to demonstrate the local need for the facility. The local need should be established from the local perspective, so as to cater for local residents' specific needs and wants and improve their quality of life. This can help reduce their feelings of being treated unfairly if the proposed LULU is sited in their community. For example, community enhancement may include provision of direct employment for local residents, provision of infrastructure or community facilities that support community development, and making use of LULUs for educational or

ecotourism purposes. The most important thing is that the proponent think and act with the community and be innovative to improve the image of the proposed facility and hopefully turn it into a local icon that can become a source of pride, rather than a stigma, for the host community.

Reducing Perceived Risk

As the perception of risk is a significant predictor of public opposition to LULUs (Section 5.3.2), it is essential to reduce the perceived risks associated with the proposed facility so as to reduce public opposition. As revealed by the survey results (Section 5.2.5), the public tend to focus more on the qualitative aspects of risks such as familiarity, dread, catastrophic consequences, uncertainty and controllability. It is important to pay attention to these factors, which affect public perception and evaluation of risks. For example, visits can be arranged for local residents to similar types of facilities to increase public familiarity with the proposed LULU facilities; more stringent standards and safety monitoring can be suggested for LULUs which may be perceived to have catastrophic potential; and enhancement of community control may be useful to reduce public fear of risks through representation of local residents on the citizens' advisory board to monitor the operation of the facility, and local power may be granted to shut down the facility if there are safety concerns. Importantly, through continuous public participation and mutual communication, all parties can repeatedly exchange information and opinions concerning both technical and non-technical risk issues, risk assessment, and the extent of acceptable risk, with the aim of enhancing the level of mutual understanding and searching for effective risk management measures that are supported by the public (Ishizaka & Tanaka, 2003).

Resolving Negative Feelings from Past Experiences

This research has demonstrated that residents from communities with negative siting experience are more likely to oppose LULU siting (Section 5.3.2). To overcome the negative siting experience of the host communities, the siting authority needs to recognize community values and feelings and take effective steps to address community concerns. Tuen Mun and Tseung Kwan O, the two study areas with NIMBY conflicts in this study, can serve as examples. In the case of Tuen Mun, which is home to many of Hong Kong's LULUs, the government should clarify any misperception about risks associated with previously sited projects, address any issues related to the legitimacy and fairness of the siting process, and enhance the

community's image to counteract the labeling effect associated with the existing facilities. Similarly, in the case of Tseung Kwan O where there is a plan to expand the existing landfill, the government should ensure effective and efficient management of the existing landfill facilities, build the credibility of the facility operator by ensuring a good track record of operation, be more open and accountable to public comments and complaints, and build partnership with the local community in the management of the existing facilities. Overall, it is important to promote productive and ongoing communication between the host community and the siting authority and to address the residents' genuine concerns and needs. It requires both time and commitment to regain trust and enhance the relationship between the facility and its neighbors.

(3) Building Trust in the Process

This research has important policy implications on the importance and formation of trust with respect to LULU siting. The social survey results show that trust in government is one of the determinants affecting public response to siting (Section 5.3.2). Further, the respondents in the stakeholder interviews confirm that trust is important in the local siting process (Section 6.2) and that their evaluation of trust is influenced by the following attributes: competence, openness, credibility, accountability, objectivity, fairness and caring (Section 6.3). Considering that government is the proponent of many LULU projects in Hong Kong, the interview findings (Section 6.4) suggest that it is important for the government to improve trust by demonstrating good performance in terms of openness, credibility, objectivity and caring in order to meet public expectations in LULU siting. In particular, the attributes of competence, credibility, accountability and caring are most valued in the performance of an organization involved in siting more risky or polluting LULUs (Section 6.5). As such, the above findings suggest that the government needs to pay particular attention to improving its credibility and caring, which are seen by stakeholders as relatively low with respect to its performance in planning more risky or polluting LULUs. In fact, the perception of the government's credibility is largely influenced by its own track record in handling the siting process, addressing public concerns or managing existing LULU facilities. It is thus useful for government to take effective steps to overcome negative feelings among the public resulting from their past experience or track record in LULU siting. The perception of caring can be improved by more proactively engaging the public and stakeholders in the process and genuinely responding to their concerns and needs. It is also

important is to ensure that the affected community is better off after siting and that their living environment is improved or enhanced. In short, to improve trust, the government should be aware of the attributes that inspire trust, and it particularly needs to establish its credibility and be more caring about public concerns and interests if it is to gain public trust in planning controversial LULUs in Hong Kong. The emphasis is on striving to meet social expectations by executing LULU projects with sensitivity, competence and integrity in all actions and communications with the public (Lam & Woo, 2009).

Overall, this recommended strategy can nurture mutual understanding and respect among different stakeholders through a collaborative, learning and deliberative process, address public concerns and negative experiences, and foster trust for consensus-building on the best way forward to plan and site LULUs. This strategy is fundamental to designing a good siting policy with a higher chance of gaining public acceptance and support. This will call for considerably broader institutional and mind-set changes in the government and will be a major challenge for policy-makers responsible for LULU siting in Hong Kong.

7.4 Limitations of this Research

There are some potential limitations identified for the present research study. The first limitation of this study is that the convenience sampling method adopted for the social survey of the three communities may contribute some uncertainty to the findings. Given the time and financial resources, the results are probably the best that could be obtained given the constraints. The second limitation is that this study is limited by the sample of communities for investigating the influence of community siting experiences on public perceptions and response to siting. The three communities included in this study represent communities with or without NIMBY conflicts, and theoretically speaking it would be better if a community which had had a successful siting experience could be included for comparison with the other three communities. However, such a prominent successful case has yet to be seen in Hong Kong, limiting the types of community samples available for this study. Finally, given the time constraints and responses from the stakeholders, the interview study was undertaken with thirty-five local stakeholders. The comparatively small sample size may affect the representativeness of the sample views collected for the trust survey. As such, the interview survey should be considered as a pilot study for

a possible future larger study in terms not only of numbers of participants but also representativeness of each of the stakeholder groups.

7.5 Suggestions for Future Research

This research has provided empirical findings on the factors affecting public response to siting and the role played by trust the siting process. In particular, this study verified the influence of community siting experience on public attitudes towards siting and the important role of trust in LULU siting. However, there remains a need for additional research to seek a better understanding of the factors affecting public response to LULU siting and ways to address public opposition to LULUs.

First, the analysis presented in this study focused on both communities that had NIMBY experiences and those that had not. It is recommended that additional work be done to study the difference in perceptions between communities with positive (successful) and negative (unsuccessful) siting experiences. This could provide valuable insights into how to create more effective processes that account for the variation of perceptions among communities with different experiences.

Second, this study identified key factors affecting public response to LULU siting, including the need for the facility, associated risks, trust and past siting experiences. To further improve the results of this research, a much larger study consisting of in-depth interviews would be necessary to fully explore the meaning of these factors as well as other possible factors relevant to understanding the complex NIMBY phenomenon as manifested in Hong Kong.

Third, this study focused on the separate effects of individual perception factors on public acceptance of LULUs, but their inter-relationships have not been clearly understood. Analyzing the inter-relationships between the perception factors may provide additional information on how a perception factor (such as trust) may affect another perception factor (such as risk perception or perceived fairness), and this may help explain the influence of a combination of different perception factors on public opposition.

Fourth, the present research primarily focused on the influence of a host of perception factors on public response to environmental-related LULUs. Additional

work may include studies exploring the factors affecting public acceptance of other LULUs such as human service facilities, which may be associated with quality of life or property value impact rather than environmental and health impacts. In particular, it would be important to devise different strategies for LULUs of different natures and different scales. This will have significant implications on devising a comprehensive siting policy for different types of LULUs.

Fifth, more research is warranted to determine how other conflicts in the society may affect people's perception and acceptance of LULU siting. In particular, it would be interesting to explore how such conflicts may affect public trust in the government and the policy making process.

Sixth, this study has investigated the formation of trust based on the views of a small number of interviewees, but further in-depth study is required to understand the dynamics of the interactions between the government and the public or residents. For example, under what conditions and what forms of interaction between stakeholders and government would the public perceive that the government is competent, open, accountable, credible, objective, fair or sensitive to public concerns, and how might the evaluation of the government's performance in terms of these attributes affect the public's trust? Such an analysis would contribute to the understanding of the social definition of trust attributes and would be useful in establishing a more complete explanation of the formation of trust in terms of the various trust attributes.

Finally, future work is needed to explore how public participation can help resolve conflicts in the facility siting process. In particular, more work is needed to put in operation how to engage the public and to facilitate collaboration, social learning and deliberation among stakeholders. This is an important step to enhance the legitimacy of the siting decision.

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Appendix 1 Recent Examples of Siting Controversies in Hong Kong

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Project	LULU Type	Scale of Needs /benefits	Scale of Impacts	Impact Type	Life & Health Threaten-ing?	Main objectors	Key problems	Outcome/ Possible Solutions	References
Proposed Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities	Energy facility	Territorial Provision of energy facility to secure long-term supply of natural gas for a private power company	Local (Soko Island)	Environmental (Ecological)	No	Green groups	Insufficient justification of needs Equity between impacts and benefits	Outcome: Pledge of funding to improve local ecology and EIA approved in April 2007. However, CLP suddenly announced in September 2008 their intention not to build a LNG terminal on Soko Island as they have secured other gas supply sources from China.	Cheung (2006, 2007); Cheung and Wong (2007); China Light and Power [CLP] (2006a, 2006b, 2008); Environmental Protection Department [EPD] (2007); World Wide Fund For Nature Hong Kong [WWF HK] (2006)
Proposed Sludge Incinerator	Waste Facility	Territorial Provision of a sludge incinerator for Hong Kong	Local (Tuen Mun)	Environmental (Air) Nuisance (Odour)	No	Tuen Mun District Council	Inequity among districts Political and social concerns derived from	Outcome: EIA for this project was approved in February 2009. However, the	EPD (2009); Lam (2009a); Ming Pao (2009, 31 March); Tuen Mun

(continued)

							the community experience in siting	Tuen Mun district council still strongly opposes the project and proposes ten conditions for a trade off to build the facility. Possible Solutions: Better communication of impact assessment and risks Political dealings Provision of local benefits	District Council (2009)
Proposed Integrated Waste Treatment Facilities	Waste Facility	Territorial Provision of an integrated waste management facility with incineration as the core technology for final waste treatment for	Territorial Local (Tuen Mun or Shek Kwu Chau)	Environmental (Air)	Yes	Green groups, civic organisations, Tuen Mun and Islands District Councils	Mistrust of incineration technology Inequity among districts Political and social concerns derived from the community experience in	Outcome: Two sites are proposed for final site selection – Tuen Mun or Shek Kwu Chau. EIA for these two potential sites are still underway. Strong	EPD (2008a); Ming Pao (2008, January 30); South China Morning Post [SCMP] (2008, January 30)

(continued)

		Hong Kong					siting	objections from the Tuen Mun and Islands District Councils to siting the project in their community Possible Solutions: Better communication of impact assessment and risks Political dealings Consideration of alternatives Provision of local benefits	
Upgrading of the Chemical Waste Treatment Centre	Waste Facility	Territorial Treatment of clinical wastes for Hong Kong	Local (Kwai Tsing)	Environmental (Air, chemical contamination)	Yes	Local Community	Inequity among districts Political and social concerns derived from the community experience in siting	Outcome: The project will be upgraded as planned even though some local district councilors are still opposed to the chemical waste treatment facility.	Cai and Mo (2006); EPD (2006); Legislative Council [LegCo] (2006); SCMP (2006, October 9)

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								Possible Solutions: Better communication of impact assessment and risks Political dealings Provisions of local benefits	
Proposed Landfill Expansions	Waste Facility	Territorial Expansion of landfill for waste disposal	Territorial (country parks) Local (Tseung Kwan O)	Environmental (Ecological) Nuisance (Odour)	No	Sai Kung District Council	Justification of need Consideration of alterative options Inequity Existing odour problem not yet resolved Loss of conservation area	Outcome: The EIA report for this project was approved in May 2008 but the local district council members still oppose this project. Possible Solutions: Better communication of benefits and impacts among a wider spectrum of stakeholders Demonstrate competence, accountability	EPD (2008b); Sai Kung District Council (2008); Parwani (2006)

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								and caring to local people in the management of existing landfills Compensate or reinstate the affected countryside areas	
Proposed Central Slaughterhouse	Industrial Facility	Territorial Provision of a central slaughterhouse for Hong Kong	Local (North District, Sheung Shui)	Health and Safety Social Economic	Yes	Local community	Risks of bird flu Decline of property value and development prospects	Outcome: The project was approved and expected to open in 2009. Possible Solutions: Reassurance from Government against risks of bird flu Consideration of alternative sites	Asprey (2006); Moy and Yu (2006); Sun (2006)
Proposed Columbarium and Crematorium Facilities	Human Service Facility	Territorial Provision of resting place for the dead to cater for the increasing	Local (Tuen Mun)	Environmental Social	No	Local community	Inequity among districts Political and social concerns derived from the community	Outcome: Project on hold Possible Solutions: Better communication	Chan (2006); Chan and Chan (2006); Leung (2006)

(continued)

		demand for columbaria					experience in siting	of impact assessment and risks Political dealings Provisions of local benefits	
Proposed Super Prison	Human Service Facility	Territorial Provision of new prison to alleviate the overcrowding problem in existing prisons	Regional (Lantau and outlying islands)	Environmental Social	No	Green groups, local community, politicians	Lack of justification of needs Lack of public consultation	Outcome: Project shelved due to strong opposition	Chan (2004); Cheung (2004); Chok (2004); Gentle (2004); Living Island Movement [LIM] (2006); Security Bureau (2003, 2004)
Sheung Shui to Lok Ma Chau Spur Line	Transport Facility	Territorial Extension of railway to Lok Ma Chau area	Local (Long Valley)	Environmental (Ecological)	No	Green groups	Insufficient consultation with green groups Lack of proper considerations of alternatives	Outcome: Alternative schemes with higher costs and less environmental impacts finally adopted after legal appeal Possible Solutions: Better consultation and cooperation	EPD (2002); Hong Kong Bird Watching Society [HKBWS] (1999); Kowloon Canton Railway Cooperation [KCRC] (2002)

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								with green groups Provision of benefits to improve local ecology and eco-tourism.	
AIDS (Acquired Immunodeficiency Syndrome) Treatment Facilities	Human Service Facility	Territorial Provision of AIDS treatment services for local citizens	Local (Kowloon Bay)	Health and Safety Social	Yes	Local community	Misconceptions and lack of proper communication of risks and consultation	Outcome: Dispute settled following an out-of-court settlement between residents and the Equal Opportunities Commission Possible Solutions: Better communication on impact assessment and risks Better public consultation	Chen (2002)
Relocation of Drug Rehabilitation Centre	Human Service Facility	Territorial Provision of a drug rehabilitation centre for local youth	Local (Mui Wo)	Social Safety	No	Local community	Perceived negative social impacts Perceived inequity	Outcome: Relocation still pending Government supports the relocation plan by Zheng Sheng	Lam (2009b); Yau (2009); Yeung (2009);

(continued)

							Lack of public consultation Lack of response to local needs	College Heung Yee Kuk is involved in mediation between the local community, the College and the government Possible Solutions: Better communication on social impact assessment Better public consultation Provision of local benefits	

(Modified and updated from Lai et al., 2007)

Appendix 2 Questionnaire for Hong Kong Survey

Appendix 2a: Questionnaire for Hong Kong Survey (Chinese Version)

訪問員：	問卷編號：
日期：	

香港不受歡迎設施的選址研究

您好！香港中文大學地理與資源管理學系現進行一項有關本地不受歡迎設施選址的研究。你所提供的意見將有助我們了解公眾對有關設施選址的看法。問卷調查需時約數分鐘，懇請您能幫助我們回答以下問題。謝謝您！

您是否 18 歲或以上的香港居民嗎？□是 □不是 (謝謝您接受訪問，結束訪問。)

I 公眾對不受歡迎設施的看法

1. 你認爲香港及你的社區是否需要下列設施？

	需要（可選多項）			不需要	不知道／很難說
	全港	區域 (如港島東區、新界北區)	你的社區		
垃圾站					
焚化爐					
化學廢物處理設施					

2. 你認爲下列設施會帶來甚麼影響（可選多項）？

	經濟 (如：降低樓價)	環境 (如：空氣污染)	社會 (如：降低生活質素)	健康及安全	不知道／很難說
垃圾站					
焚化爐					
化學廢物處理設施					

3. 你覺得下列設施的風險水平是怎樣？

	風險水平 1 ◄——► 5					
	完全沒有風險				非常高風險	不知道／很難說
垃圾站						
焚化爐						
化學廢物處理設施						

II 不受歡迎設施的選址問題

4. 你會歡迎下列設施設置在你的屋苑附近嗎？

	設置在你的屋苑附近（在 500 米範圍內，即約 10 分鐘的步行距離） 1 ◄——► 5					
	絕對不歡迎				非常歡迎	不知道／很難說
垃圾站						
焚化爐						
化學廢物處理設施						

5. 對於一些高風險及負面影響大的不受歡迎設施(如：化學廢物處理設施、燃煤發電廠等)，你認爲下列的情況公平嗎？

	公平程度 1 ◄——► 5					
	非常不公平				非常公平	很難說／不知道
政府現時選擇地點的方法						
將不受歡迎設施集中於一至兩個地區						
將不受歡迎設施平均分佈於不同地區						
按每個地區的需要來選址						
爲了香港整體的好處，把設施放在你社區內						

6. 在決定設置一些高風險及負面影響大的不受歡迎設施(如：化學廢物處理設施、燃煤發電廠等)時，你對下列各組織的信任程度有多少？

	信任程度 1 ◄——► 5					
	非常不信任				非常信任	很難說／不知道
政府						
私營公司						
公私合營機構						
社會團體(包括環保團體)						

7. 在政府規劃一些高風險及負面影響大的設施選址時，你對公眾參與的過程有甚麼意見？

	認同程度 1 ◄——► 5					
	完全不贊成				完全贊成	很難說／不知道
現時的公眾咨詢渠道足夠						
公眾參與對政府決策是具有影響力						
公開討論有助達致社會上有關選址的共識						

8. 下列措施能有效緩和你對有關設施選址於你家附近的抗拒態度嗎？

	有效程度 1 ◄——► 5					
	絕對沒有效				非常有效	很難說／不知道
向公眾解釋需要設置這個設施的理由						
實行有效的環境監測及定期性的安全檢查						
增加咨詢渠道和廣納民意						
提供賠償						
其他建議：						

III 個人資料

居住地區	香港島 □中西區 □灣仔 □東區 □南區	九龍 □油尖旺 □深水埗 □九龍城 □黃大仙 □觀塘	新界 □葵青 □荃灣 □屯門 □元朗 □北區 □大埔 □沙田 □西貢 □離島
年齡	□18-30 □31-40 □41-50 □51-60 □60 或以上		
性別	□男性 □女性		
教育程度	□小學或以下 □中學 □大專或以上		
婚姻狀況	□單身 □已婚		
子女數目	□沒有 □1 □2 □3 或以上		
行業	□製造業 □建造業 □批發、零售、進出口貿易、飲食及酒店業 □運輸、倉庫及通訊業 □金融、保險、地產及商用服務業 □社區、社會及個人服務業	□其他 （「其他」包括「農業及漁業」、「採礦及採石業」、「電力、燃氣及水務業」等行業，及報稱的行業不能分類或描述不足。）	□失業/待業 □退休人士 □家庭主婦 □學生
總家庭收入	□低於 5000 □5,000-9,999 □10,000-19,999	□20,000-29,999 □30,000-39,999 □40,000-49,999	□50,000 或以上

問卷完，謝謝您寶貴的意見。

Appendix 2b: Questionnaire for Hong Kong Survey (English Translation)

Interviewer：	Questionnaire No.：
Date：	

Public Survey on Locally Unwanted Facilities in Hong Kong

Hello! The Department of Geography and Resource Management of the Chinese University of Hong Kong is conducting a study of locally unwanted facilities in Hong Kong. The information you provide will help us to understand the views of the general public on the siting of such facilities. The questionnaire will require a few minutes to complete. Please answer each question on this questionnaire. Thank you!

Are you a Hong Kong resident aged 18 or above?
□Yes □No (Thank you. End the interview.)

I Public Views on Locally Unwanted Facilities

1. Do you think Hong Kong and your own district need the following facilities?

	Needed (You may select more than one option)			Not Needed	Don't Know／Hard to Say
	Whole Territory	Regional (e.g., Hong Kong East, New Territories North)	Your District		
Refuse Station					
Incinerator					
Chemical Waste Treatment Plant					

2. What impacts do you think the following facilities may cause (you may select more than one option)？

	Economic Impacts (e.g., decline of property prices)	Environmental Impacts (e.g., air pollution)	Social Impacts (e.g, impacts on quality of life)	Health and Safety Impacts	Don't Know／Hard to Say
Refuse Station					
Incinerator					
Chemical Waste Treatment Plant					

3. How do you feel about the risks associated with the following facilities?

	Level of Risk					
	1 ⟷ 5					
	No Risk at All				Very Risky	Don't Know/ Hard to Say
Refuse Station						
Incinerator						
Chemical Waste Treatment Plant						

II Public Views on Facility Siting

4. How much would you welcome the following facilities to be sited in your neighbourhood?

	Facility sited near your neighbourhood (Within 500 m, i.e., about 10 mins. walking distance)					
	1 ⟷ 5					
	Most Unwelcomed				Most Welcomed	Don't Know / Hard to Say
Refuse Station						
Incinerator						
Chemical Waste Treatment Plant						

5. How fair do you think the following arrangements are for siting facilities (e.g., chemical waste treatment plant, coal-fired power plant, etc.) which may be risky and may pose negative impacts to their surroundings?

	Degree of Fairness					
	1 ◄——————————► 5					
	Very Unfair				Very Fair	Don't Know / Hard to Say
The current government siting approach						
Concentrate the facilities in one or two districts						
Evenly distribute the facilities across different districts						
Distribute the facilities based on the needs of each district						
Site locally unwanted facilities in your district for the benefit of Hong Kong						

6. How much would you trust the following stakeholder groups in making decisions on siting facilities (e.g., chemical waste treatment plant, coal-fired power plant, etc.) which may be risky and may pose negative impacts to their surroundings?

	Level of Trust					
	1 ◄——————————► 5					
	Very Untrust-worthy				Very Trust-worthy	Don't Know / Hard to Say
Government						
Private Companies						
Public Private Partnerships						
Civic Organisations (e.g., Environmental NGOs)						

7. What is your opinion on the public involvement process in the government's planning and siting of facilities which may be risky and may pose negative impacts to their surroundings?

	Degree of Agreement 1 ⟷ 5					
	Disagree Strongly				Agree Strongly	Don't Know / Hard to Say
Existing public consultation channels are adequate						
Public involvement has an influence on Government's policy making						
Open discussion helps society reach consensus on issues related to facility siting						

8. How effective would the following resolution options be in reducing your opposition to siting locally unwanted facilities near your home?

	Degree of Effectiveness 1 ⟷ 5					
	Completely Ineffective				Very Effective	Don't Know / Hard to Say
Explaining the need for the facility						
Effective environmental monitoring & safety audit program						
More consultation with affected community						
Compensation						
Other :						

III Personal Information

Residence	<u>Hong Kong Island</u> □Central & Western □Wan Chai □Eastern □Southern	<u>Kowloon</u> □Yau Tsim Mong □Sham Shui Po □Kowloon City □Wong Tai Sin □Kwun Tong	<u>New Territories</u> □Kwai Tsing □Tsuen Wan □Tuen Mun □Yuen Long □North □Tai Po □Shatin □Sai Kung □Islands
Age	□18-30 □31-40	□41-50	□51-60 □60 or above
Sex	□Male	□Female	
Educational Attainment	□Primary or below	□Secondary	□Tertiary or above
Marital Status	□Single	□Married	
Number of Offspring	□None □1	□2	□3 or above
Profession	□Manufacturing □Construction □Wholesale, retail and import/ export trades □Transport, storage & logistics □Financing, insurance, real estate & business services □Community, social & personal services	□Other ("Other" includes such industries as Fishing & agriculture", "Mining & quarrying" and "Electricity, gas & water works" and industrial activities inadequately described or unclassifiable.)	□Unemployed □Retired □Homemaker □Student
Monthly Family Income	□Below 5,000 □5,000-9,999 □10,000-19,999	□20,000-29,999 □30,000-39,999 □40,000-49,999	□50,000 or above

End of Questionnaire. Thank You for Your Information!

Appendix 3 Questionnaire for Tuen Mun Survey

Appendix 3a: Questionnaire for Tuen Mun Survey (Chinese Version)

訪問員：	問卷編號：
日期：	訪問地點：

屯門區內不受歡迎設施之意見調查

您好！香港中文大學環境政策與資源管理研究中心現進行一項有關屯門區內不受歡迎設施的研究。你所提供的意見將有助我們了解居民對有關設施的看法。問卷調查需時約數分鐘，懇請您能幫助我們回答以下問題。謝謝您！

您是否年滿 18 歲或以上的屯門居民嗎？

☐是　(屋苑／屋邨：_____ 居住年期:_____)

☐不是　(謝謝您接受訪問，結束訪問。)

A. 屯門居民對屯門區整體的看法

1. 總體來說，你對屯門區以下方面的滿意程度是怎樣？由 1 分代表『非常不滿意』至 5 分代表『非常滿意』。

	滿意程度 1 ◄——► 5						
	非常不滿意				非常滿意	很難說／不知道	拒答
環境質素							
經濟發展							
社區規劃							
治安情況							
交通運輸							

B. 屯門居民對區內不受歡迎設施的看法

2. 屯門區內現時有甚麼設施是不受歡迎的？

☐ 發電廠　☐ 堆填區　☐ 污水處理廠
☐ 水泥廠　☐ 煉鋼廠　☐ 骨灰甕安置所
☐ 醫院　☐ 廢物回收場　☐ 內河碼頭
☐ 沒有(→第 4 題)　☐ 不知道(→第 4 題)　☐ 其他:_____

3. 請說出你認爲於屯門區內最不受歡迎的設施。

_____

4. 你的屋苑附近有不受歡迎設施嗎？

☐ 有 (請註明：_____)　☐ 沒有

5. *你認爲香港需唔需要以下呢啲設施呢？屯門呢？*

	香港				屯門			
	需要	不需要	很難說／不知道	拒答	需要	不需要	很難說／不知道	拒答
燃煤發電廠								
飛機煤油貯存庫								
堆填區								
焚化爐								

6. 你會歡迎下列設施設置於屯門嗎？由 1 分代表『非常不歡迎』至 5 分代表『非常歡迎』。

	歡迎程度 1 ◄——► 5						
	非常不歡迎				非常歡迎	很難說／不知道	拒答
燃煤發電廠							
飛機煤油貯存庫							
堆填區							
焚化爐							

7. 在考慮是否歡迎有關設施設置在你的屋苑附近時，你覺得下列那些原因是重要的？(按重要性排列，1 爲最重要，如此類推，最多選四項)

☐ 環境污染程度　　☐ 對設施的需要程度
☐ 健康及安全性　　☐ 爲本區帶來的好處
☐ 影響樓價　　☐ 無意見
☐ 滋擾程度　　☐ 拒答
☐ 影響生活質素　　☐ 其他，請註明：_____

8. 當屯門區與其他地區(如荃灣區、新界北區)比較時，你認爲屯門區內的不受歡迎設施是否過多？

☐ 多於其他地區　　☐ 差不多
☐ 少於其他地區　　☐ 不知道

C. 屯門居民對不受歡迎設施之風險的看法

9. 你覺得下列設施的風險水平是怎樣？由 1 分代表『完全沒有風險』至 5 分代表『非常高風險』。【風險水平指會危害公眾的可能性。】

	風險水平 1 ⟷ 5						
	完全沒有風險				非常高風險	不知道／很難說	拒答
燃煤發電廠							
飛機煤油貯存庫							
堆填區							
焚化爐							

10. *對於一些有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、飛機煤油貯存庫等)，你認同下面嘅看法嗎？由 1 分代表『絕對唔認同』至 5 分代表『非常認同』。]*

	認同程度 1 ⟷ 5						
	絕對不認同				非常認同	不知道／很難說	拒答
設施如發生意外，後果會好嚴重							
設施對環境所造成嘅影響喺唔容易減少嘅							
設施嘅風險會令人害怕和擔心							
設施的技術可能喺唔可靠嘅							
市民唔熟悉呢啲設施所帶來的風險和影響							
設施嘅風險可能對你嘅仔女或兒孫輩有影響							

D. 屯門居民對不受歡迎設施選址的看法

11. 你知道政府是如何替不受歡迎設施進行選址的過程嗎？

☐知道，選址的過程是：_____

(→第 12 題)

☐不知道**(→第 13 題)**

12. 你認爲政府現時選擇地點的方法公平嗎？(1 非常公平，5 非常不公平)

_____

13. *對於一啲有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、飛機煤油貯存庫等)，你認爲下列嘅做法公平嗎？由 1 分代表『非常唔公平』至 5 分代表『非常公平』。]*

	公平程度 1 ◄——► 5						
	非常不公平				非常公平	很難說／不知道	拒答
爲咗香港整體社會嘅好處，而將呢啲設施放喺屯門區內							
將呢啲設施平均分佈喺不同地區							
按每個地區嘅需要來擺放呢啲設施							

14. 在決定設置一些高風險及負面影響大的不受歡迎設施(如：燃煤發電廠、飛機煤油貯存庫等)時，你對下列各組織的信任程度有多少？ 由 1 分代表『非常不信任』至 5 分代表『非常信任』。

	信任程度 1 ◄——► 5						
	非常不信任				非常信任	很難說／不知道	拒答
政府							
私營公司							
區議會							
立法會							
政黨							
專業機構/ 團體							
社會團體(包括環保團體)							

15. 你過往是從哪些途徑得知有關在屯門區設置不受歡迎設施(可選多項)？

☐ 諮詢會
☐ 報章報導
☐ 社會團體
☐ 電視節目
☐ 電台節目
☐ 區議員
☐ 立法會議員
☐ 互聯網
☐ 區內鄰居/ 朋友
☐ 其他，請註明：_____

16. 你認爲政府在規劃屯門區內的不受歡迎設施時，現時的公眾咨詢渠道足夠嗎？

☐ 足夠　　(理由：_____)
☐ 不足夠
☐ 不知道/ 很難說

17. 你認爲政府在規劃屯門區內的不受歡迎設施時，有沒有考慮屯門居民的意見？

☐ 有　　(理由：_____)
☐ 沒有
☐ 不知道/ 很難說

18. 在規劃屯門區內的不受歡迎設施時，你認爲怎樣才能提高公衆參與？

_____

19. *如果做下面嘅措施，會唔會令你冇咁抗拒擺放呢啲設施喺你屋企附近？由 1 分代表『絕對冇效』至 5 分代表『非常有效』。]*

	有效程度 1 ⟷ 5						
	絕對沒有效				非常有效	不知道／很難說	拒答
向公眾解釋需要擺放呢個設施嘅理由							
考慮所有可能嘅方案							
實行有效嘅措施去減輕對環境嘅影響							
實行有效嘅環境監測同定期性安全檢查							
增加咨詢渠道同廣納民意							
提供賠償							
提供社區及康樂設施							
其他建議：							

E. 個人資料

年齡	□18-19	□20-29	□30-39	□40-49	□50-59	□60 或以上 □拒答
性別	□男性				□女性	
教育程度	□小學或以下	□中學	□大專／大學	□研究院：碩士或以上		□拒答
婚姻狀況	□單身		□已婚			□拒答
子女數目	□沒有	□1	□2	□3 或以上		
行業	□製造業 □建造業 □批發、零售、進出口貿易 □飲食及酒店業 □運輸、倉庫及物流業 □通訊業 □金融、保險、地產及商用服務業	□教育及有關行業 □醫療及有關行業 □政府部門 □其他社區、社會及個人服務業 □電力、燃氣及水務業 □漁、農業	□失業/待業 □退休人士 □家庭主婦 □學生 □其他 □拒答			
總家庭收入	□5,000 以下 □5,000-10,000 以下 □10,000-20,000 以下	□20,000-30,000 以下 □30,000-40,000 以下 □40,000-50,000 以下	□50,000-80,000 以下 □80,000 或以上 □收入不定／不知道 □拒答			

問卷完，謝謝您寶貴的意見。

Appendix 3b: Questionnaire for Tuen Mun Survey (English Translation)

Interviewer :	Questionnaire No. :
Date :	Interview Location :

Public Survey on Locally Unwanted Facilities in Tuen Mun

Hello! The Department of Geography and Resource Management of the Chinese University of Hong Kong is conducting a study of locally unwanted facilities in Tuen Mun. The information you provide will help us to understand local residents' views about the siting of such facilities. The questionnaire will require a few minutes to complete. Please answer each question on this questionnaire. Thank you!

Are you a Tuen Mun resident aged 18 or above?
□Yes (Building/ Public Estate : _____ Years of residence:_____)
□No (Thank you. End the interview.)

A. Tuen Mun Residents' Feelings Towards Their Own District

1. On a scale from 1, "Very unsatisfied," to 5, "Very satisfied," how satisfied are you overall with the following aspects of Tuen Mun district?

	Degree of Satisfaction 1 ←→ 5						
	Very Unsatisfied				Very Satisfied	Don't Know/ Hard to Comment	No response
Environmental Quality							
Economic Development							
Community Planning							
Security							
Transportation							

B. Tuen Mun Residents' Views on Locally Unwanted Facilities

2. Can you name any existing facility(ies) which is/ are not wanted in Tuen Mun?

□ Power plant □ Landfill □ Sewage treatment plant
□ Cement plant □ Steel works □ Columbarium
□ Hospital □ Recycling plant □ River trade terminal
□ None(→Go to Q.4) □ Don't know(→Go to Q.4)
□ Other:_____

3. Please state which facility is the most unwanted in Tuen Mun.

_____

4. Do you have any unwanted facility located near your home ?

□ Yes (Please specify : _____) □ None

5. Do you think Hong Kong needs the following facilities? What about Tuen Mun?

	Hong Kong				Tuen Mun			
	Needed	Not Needed	Don't Know /Hard to Say	No response	Needed	Not Needed	Don't Know /Hard to Say	No response
Coal-fired power plant								
Aviation fuel receiving facility								
Landfill								
Incinerator								

6. On a scale from 1, "Most unwelcomed," to 5, "Most welcomed," how much would you welcome the following facilities to be sited in Tuen Mun?

	Degree of Acceptance						
	1 ◄——————► 5						
	Most Unwelcomed				Most Welcomed	Don't Know / Hard to Say	No response
Coal-fired power plant							
Aviation fuel receiving facility							
Landfill							
Incinerator							

7. Please indicate how important the following factors are to you in considering whether to accept the siting of such facilities near your residence. (Please choose up to four factors, with 1 representing the most important factor, 2 the second most important, and so on.)

□ Pollution
□ Health & safety
□ Effect on property value
□ Nuisance
□ Quality of life
□ Need for the facility
□ Benefits to the community
□ No opinion
□ No response
□ Other, please specify : _____

8. When comparing Tuen Mun with other districts (e.g., Tsuen Wan, Northern District), do you think there are too many locally unwanted facilities sited in Tuen Mun?

□ More than other districts □ Similar
□ Less than other districts □ Don't know

C. *Tuen Mun Residents' Perception of Risks Associated with Locally Unwanted Facilities*

9. On a scale from 1, "No risk at all," to 5, "Very risky," how do you feel about the risks associated with the following facilities? ["Level of risk" refers to the likelihood of harm or loss to the public.]

	Level of Risk 1 ⟷ 5						
	No Risk at All				Very Risky	Don't Know / Hard to Say	No response
Coal-fired power plant							
Aviation fuel receiving facility							
Landfill							
Incinerator							

10. On a scale from 1, "Strongly disagree," to 5, "Strongly agree," please indicate whether you agree or disagree with the following statements regarding the siting of facilities (e.g., coal-fired power plant, aviation fuel receiving facility, etc.) which may be risky and may pose negative impacts to their surroundings.

	Degree of Agreement 1 ⟷ 5						
	Disagree Strongly				Agree Strongly	Don't Know / Hard to Say	No response
The facility will cause catastrophic effects if accidents occur.							
Environmental impacts arising from the facility are difficult to mitigate.							
The risks associated with the facility will fill people with fear and dread.							
The technology of the facility may not be reliable.							
The public is not familiar with the							

impacts and risks of the facility.							
The facility may impose impacts and risks upon future generations.							

D. Tuen Mun Residents' Views on the Facility Siting Process

11. Do you know how government undertakes the planning and siting process for locally unwanted facilities?
□Yes, the process is: _____
(→Go to Q.12)
□No(→Go to Q.13)

12. On a scale from 1, "Very fair," to 5, "Very unfair," how fair do you think the current siting process is?
_____

13. On a scale from 1, "Very unfair," to 5, "Very Fair," how fair do you think the following arrangements are for siting facilities (e.g., coal-fired power plant, aviation fuel receiving facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Degree of Fairness 1 ⟷ 5						
	Very Unfair				Very Fair	Don't Know / Hard to Say	No response
Site locally unwanted facilities in Tuen Mun district for the benefit of Hong Kong							
Evenly distribute locally unwanted facilities across different districts in Hong Kong							
Distribute locally unwanted facilities based on the needs of each district							

14. On a scale from 1, "Very untrustworthy," to 5, "Very trustworthy,", how much would you trust the following stakeholder groups in making decisions on siting facilities (e.g., coal-fired power plant, aviation fuel receiving facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Level of Trust 1 ◄——► 5						
	Very Untrust-worthy				Very Trust-worthy	Don't Know / Hard to Say	No response
Government							
Private Companies							
District Councils							
Legislative Council							
Political Parties							
Professional Groups							
Civic Organisations (including Green Groups)							

15. How have you gotten information about the siting of locally unwanted facilities in Tuen Mun (you may select more than one option) ?

- □ Consultation meeting
- □ Newspapers
- □ Civic organizations
- □ Television program
- □ Radio program
- □ District councillors
- □ Legislative councillors
- □ Internet
- □ Neighbours/ Friends
- □ Other, please specify : _____

16. Regarding the government's planning and siting of locally unwanted facilities in Tuen Mun, do you think the existing public consultation channels are adequate?

- □ Adequate (Reason : _____)
- □ Inadequate
- □ Don't Know/ Hard to Say

17. Do you feel that the government has considered local opinion when planning facility siting in Tuen Mun ?

- □ Yes (Reason : _____)
- □ No
- □ Don't Know/ Hard to Say

18. Do you have any suggestion on how to increase the level of public participation in the process of planning and siting locally unwanted facilities in Tuen Mun?

_____

19. On a scale from 1, "Completely ineffective," to 5, "Very effective," how effective would the following resolution options be in reducing your opposition to siting locally unwanted facilities near your home?

	Degree of Effectiveness 1 ◄——► 5						
	Completely Ineffective				Very Effective	Don't Know /Hard to Say	No response
Explaining the need for the facility							
Considering all different options							
Effective mitigation measures to reduce environmental impacts							
Effective environmental monitoring & safety audit program							
More consultation with affected community							
Compensation							
Provision of community facilities							
Other :							

E. Personal Information

Age	□18-19	□20-29	□30-39	□40-49	□50-59	□60 or above	□No response
Sex	□Male				□Female		
Educational Attainment	□Primary or below	□Secondary		□Tertiary/ University	□Postgraduate Level		□No response
Marital Status	□Single			□Married		□No response	
Number of offspring	□None		□1		□2		□3 or above
Profession	□Manufacturing □Construction □Wholesale, retail and import/ export trades □Restaurants and hotels □Transport, storage & logistics □Communications □Financing, insurance, real estate & business services		□Education services □Medical services □Government □Community, social & personal services □Electricity, gas and water works □Fishing & agriculture		□Unemployed □Retired □Homemaker □Student □Other □No response		
Monthly Family Income	□below 5,000 □5,000- below 10,000 □10,000- below 20,000		□20,000- below 30,000 □30,000- below 40,000 □40,000 - below 50,000		□50,000- below 80,000 □80,000 or above □Unstable Income/ Don't Know □No response		

End of Questionnaire. Thank You for Your Information!

Appendix 4 Questionnaire for Tseung Kwan O Survey

Appendix 4a: Questionnaire for Tseung Kwan O Survey (Chinese Version)

訪問員：	問卷編號：
日期：	訪問地點：

將軍澳區內不受歡迎設施之意見調查

您好！香港中文大學環境政策與資源管理研究中心現進行一項有關將軍澳區內不受歡迎設施的研究。你所提供的意見將有助我們了解居民對有關設施的看法。問卷調查需時約數分鐘，懇請您能幫助我們回答以下問題。謝謝您！【不受歡迎設施是指不受當區居民歡迎的設施，例如：垃圾站、焚化爐、化學廢物處理中心等。】

您是否年滿 18 歲或以上的將軍澳居民嗎？

☐是　(屋苑／屋邨：_____ 居住年期:_____)

☐不是　(謝謝您接受訪問，結束訪問。)

A. 將軍澳居民對將軍澳區整體的看法

1. 總體來說，你對將軍澳區以下方面的滿意程度是怎樣？由 1 分代表『非常不滿意』至 5 分代表『非常滿意』。

	滿意程度 1 ←→ 5						
	非常不滿意				非常滿意	很難說／不知道	拒答
環境質素							
經濟發展							
社區規劃							
治安情況							
交通運輸							

B. 將軍澳居民對區內不受歡迎設施的看法

2. 將軍澳區內現時有甚麼設施是不受歡迎的？

☐ 堆填區　☐ 污水處理廠　☐ 墳場

☐ 醫院　☐ 工業邨　☐ 爆炸品貯存庫

☐ 沒有(→第 4 題)　☐ 不知道(→第 4 題)　☐ 其他:_____

3. 請說出你認爲於將軍澳區內最不受歡迎的設施。

_____

4. 你的屋苑附近有不受歡迎設施嗎？

[ ] 有 (請註明：_____) [ ] 沒有

5. *你認爲香港需唔需要以下呢啲設施呢？將軍澳呢？*

	香港				將軍澳			
	需要	不需要	不知道／很難說	拒答	需要	不需要	不知道／很難說	拒答
堆填區								
焚化爐								
爆炸品貯存庫								

6. 你會歡迎下列設施設置於將軍澳嗎？由 1 分代表『非常不歡迎』至 5 分代表『非常歡迎』。

	歡迎程度 1 ◄——► 5						
	非常不歡迎				非常歡迎	不知道／很難說	拒答
堆填區							
焚化爐							
爆炸品貯存庫							

C. 將軍澳居民對區內堆填區的看法(*只供第 2 題有回答「堆填區」之受訪者*)

7.你在搬進將軍澳前，是否知道有堆填區？

[ ] 知道 [ ] 不知道 [ ] 拒答

8. 你認爲將軍澳堆填區有沒有對你構成下列影響？

	嚴重程度 1 ◄——► 5						
	完全沒有影響				非常嚴重影響	不知道／很難說	拒答
破壞景觀							
堆填區之臭味							
影響水質							

影響空氣質素							
垃圾運送路線之交通安全及阻塞問題							
垃圾車經過地區產生之噪音							
垃圾車經過地區產生之臭味							
影響身體健康							
安全問題(如沼氣)							
造成房地產價格下降							
生活質素							
社區標籤效認							
其他:							

9. 你對於環保署管理將軍澳堆填區的表現感滿意嗎？(1 非常滿意，5 非常不滿意) ____
滿意或不滿意的理由：_____

10. 你知不知道環保署正計劃擴展將軍澳堆填區嗎？
☐ 知道(→第 11 題) ☐ 不知道(→第 12 題) ☐ 拒答

11. 如知道的話，請回答下列問題？
a. 你會否贊成此計劃？
☐ 會 ☐ 不會 ☐ 拒答
贊成或不贊成的理由：_____

b. 你過往是從哪些途徑得知有關擴展將軍澳堆填區計劃(可選多項)？
☐ 諮詢會 ☐ 區議員
☐ 報章報導 ☐ 立法會議員
☐ 社會團體 ☐ 互聯網
☐ 電視節目 ☐ 區內鄰居/ 朋友
☐ 電台節目 ☐ 其他，請註明：_____

c. 你認爲政府在規劃擴展將軍澳堆填區計劃時，公眾咨詢渠道足夠嗎？
☐ 足夠 (理由：_____)
☐ 不足夠
☐ 不知道/ 很難說

d. 你認爲政府在規劃擴展將軍澳堆填區計劃時，有沒有考慮將軍澳居民的意見？
☐ 有 (理由：_____)
☐ 沒有
☐ 不知道/ 很難說

e. 在規劃擴展將軍澳堆填區時，你認爲怎樣才能提高公眾參與？
_____

D. 將軍澳居民對不受歡迎設施之風險的看法

12. 你覺得下列設施的風險水平是怎樣？由 1 分代表『完全沒有風險』至 5 分代表『非常高風險』。【風險水平指會危害公眾的可能性。】

	風險水平 1 ◄——► 5						
	完全沒有風險				非常高風險	不知道／很難說	拒答
堆填區							
焚化爐							
爆炸品貯存庫							

13. *對於一些有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、爆炸品貯存庫等)，你認同下面嘅看法嗎？由 1 分代表『絕對唔認同』至 5 分代表『非常認同』。]*

	認同程度 1 ◄——► 5						
	絕對不認同				非常認同	不知道／很難說	拒答
設施如發生意外，後果會好嚴重							
設施對環境所造成嘅影響喺唔容易減少嘅							
設施嘅風險會令人害怕和擔心							
設施的技術可能喺唔可靠嘅							
市民唔熟悉呢啲設施所帶來的風險和影響							
設施嘅風險可能對你嘅仔女或兒孫輩有影響							

E. 將軍澳居民對不受歡迎設施選址的看法

14. 你知道政府是如何替不受歡迎設施進行選址的過程嗎？

□知道，選址的過程是：_____

(→第 15 題)

□不知道**(→第 16 題)**

15. 你認爲政府現時選擇地點的方法公平嗎？(1 非常公平，5 非常不公平)

_____

16. *對於一啲有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、爆炸品貯存庫等)，你認爲下列嘅做法公平嗎？由 1 分代表『非常唔公平』至 5 分代表『非常公平』。]*

	公平程度						
	1 ◄——► 5						
	非常不公平				非常公平	很難說／不知道	拒答
爲咗香港整體社會嘅好處，而將呢啲設施放喺將軍澳區內							
將呢啲設施平均分佈喺不同地區							
按每個地區嘅需要來擺放呢啲設施							

17. 在決定設置一些高風險及負面影響大的不受歡迎設施(如：燃煤發電廠、爆炸品貯存庫等)時，你對下列各組織的信任程度有多少？ 由 1 分代表『非常不信任』至 5 分代表『非常信任』。

	信任程度						
	1 ◄——► 5						
	非常不信任				非常信任	很難說／不知道	拒答
政府							
私營公司							
區議會							
立法會							
政黨							
專業機構/ 團體							
社會團體(包括環保團體)							

18. 如果做下面嘅措施，會唔會令你冇咁抗拒擺放呢啲設施喺你屋企附近? 由 1 分代表『絕對冇效』至 5 分代表『非常有效』。]

	有效程度 1 ⟷ 5						
	絕對沒有效				非常有效	很難說／不知道	拒答
向公眾解釋需要擺放呢個設施嘅理由							
考慮所有可能嘅方案							
實行有效嘅措施去減輕對環境嘅影響							
實行有效嘅環境監測同定期性安全檢查							
增加咨詢渠道同廣納民意							
提供賠償							
提供社區及康樂設施							
其他建議：							

E. 個人資料

年齡	□18-19 □20-29 □30-39 □40-49 □50-59 □60 或以上 □拒答		
性別	□男性	□女性	
教育程度	□小學或以下 □中學 □大專／大學 □研究院：碩士或以上 □拒答		
婚姻狀況	□單身	□已婚	□拒答
子女數目	□沒有	□1 □2	□3 或以上
行業	□製造業 □建造業 □批發、零售、進出口貿易 □飲食及酒店業 □運輸、倉庫及物流業 □通訊業 □金融、保險、地產及商用服務業	□教育及有關行業 □醫療及有關行業 □政府部門 □其他社區、社會及個人服務業 □電力、燃氣及水務業 □漁、農業	□失業/待業 □退休人士 □家庭主婦 □學生 □其他 □拒答
總家庭收入	□5,000 以下 □5,000-10,000 以下 □10,000-20,000 以下	□20,000-30,000 以下 □30,000-40,000 以下 □40,000-50,000 以下	□50,000-80,000 以下 □80,000 或以上 □收入不定／不知道 □拒答

問卷完，謝謝您寶貴的意見。

Appendix 4b: Questionnaire for Tseung Kwan O Survey (English Translation)

Interviewer :	Questionnaire No. :
Date :	Interview Location :

Public Survey on Locally Unwanted Facilities in Tseung Kwan O

Hello! The Department of Geography and Resource Management of the Chinese University of Hong Kong is conducting a study of locally unwanted facilities in Tseung Kwan O. The information you provide will help us to understand local residents' views about the siting of such facilities. The questionnaire will require a few minutes to complete. Please answer each question on this questionnaire. Thank you! ["Locally unwanted facilities" refers to facilities that are not welcomed by local residents, such as refuse stations, incinerators, chemical waste treatment plants, etc.]

Are you a Tseung Kwan O resident aged 18 or above?
□Yes (Building/ Public Estate : _____ Years of residence:_____)
□No (Thank you. End the interview.)

A. Tseung Kwan O Residents' Feelings Towards Their Own District

1. On a scale from 1, "Very unsatisfied," to 5, "Very satisfied," how satisfied are you overall with the following aspects of Tseung Kwan O district?

	Degree of Satisfaction 1 ◄——► 5						
	Very Unsatisfied				Very Satisfied	Don't Know/ Hard to Comment	No response
Environmental Quality							
Economic Development							
Community Planning							
Security							
Transportation							

B. Tseung Kwan O Residents' Views on Locally Unwanted Facilities

2. Can you name any existing facility(ies) which is/ are not wanted in Tseung Kwan O?

□ Landfill □ Sewage treatment plant □ Cemetery
□ Hospital □ Industrial estate □Explosive storage facility
□ None(→Go to Q.4) □ Don't Know(→Go to Q.4)
□ Others, please specify: _____

3. Please state which facility is the most unwanted in Tseung Kwan O.

_____

4. Do you have any unwanted facility located near your home ?

□ Yes (Please specify : _____) □ None

5. Do you think Hong Kong needs the following facilities? What about Tseung Kwan O?

	Hong Kong				Tseung Kwan O			
	Needed	Not Needed	Don't Know /Hard to Say	No response	Needed	Not Needed	Don't Know /Hard to Say	No response
Landfill								
Incinerator								
Explosive storage facility								

6. On a scale from 1, "Most unwelcomed," to 5, "Most welcomed," how much would you welcome the following facilities to be sited in Tseung Kwan O?

	Degree of Acceptance						
	1 ◄——————► 5						
	Most Unwelcomed				Most Welcomed	Don't Know / Hard to Say	No response
Landfill							
Incinerator							
Explosive storage facility							

C. Tseung Kwan O Residents' Views about Landfill (This part is for respondents who are aware of landfill in Q.2 only.)

7. Were you aware of the landfill in Tseung Kwan O before you moved here?

□ Yes □ No □ No response

8. Do you feel that the landfill in Tseung Kwan O has affected you in the following ways?

	Degree of Impact 1 ◄——► 5						
	No Impact at All				Very Serious	Don't Know/ Hard to say	No response
Landscape destruction							
Odour							
Impact on water quality							
Impact on air quality							
Safety and transport problems from refuse trucks							
Noise from refuse trucks							
Odour from refuse trucks							
Health impact							
Safety (e.g., methane)							
Decline in property prices							
Quality of life							
Social stigma							
Other							

9. On a scale from 1, "Very satisfied," to 5, "Very unsatisfied," how satisfied are you with the landfill management undertaken by the Environmental Protection Department (EPD)? ____

Reason : _____

10. Do you know that EPD is proposing to expand the landfill in Tseung Kwan O?

□ Yes(→Go to Q.11) □ No(→Go to Q.12) □ No response

11. If you know about the proposed landfill expansion plan, please answer the following questions:

a. Do you agree with this plan ?

□ Yes □ No □ No response

Reason : _____

b. How did you learn about the proposed landfill expansion plan in Tseung Kwan O (you may select more than one option)?

- ☐ Consultation meeting
- ☐ Newspapers
- ☐ Civic organizations
- ☐ Television program
- ☐ Radio program
- ☐ District councillors
- ☐ Legislative councillors
- ☐ Internet
- ☐ Neighbours/ Friends
- ☐ Other, please specify :

c. Regarding the government's proposed landfill expansion in Tseung Kwan O, do you think the existing channels of public consultation are adequate?

- ☐ Adequate (Reason : _____ _____)
- ☐ Inadequate
- ☐ Don't Know/ Hard to Say

d. Do you feel that the government has considered local opinion when planning the landfill expansion ?

- ☐ Yes (Reason : _____)
- ☐ No
- ☐ Don't Know/ Hard to Say

e. Do you have any suggestion on how to increase the level of public participation in the process of planning the landfill expansion in Tseung Kwan O?

_____

C. Tseung Kwan O Residents' Perception of Risks Associated with Locally Unwanted Facilities

12. On a scale from 1, "No risk at all," to 5, "Very risky," how do you feel about the risks associated with the following facilities? ["Level of risk" refers to the likelihood of harm or loss to the public.]

	Level of Risk 1 ◄——► 5						
	No Risk at All				Very Risky	Don't Know / Hard to Say	No response
Landfill							
Incinerator							
Explosive storage facility							

13. On a scale from 1, "Strongly disagree," to 5, "Strongly agree," please indicate whether you agree or disagree with the following statements regarding the siting of facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings.

	Degree of Agreement 1 ◄——► 5						
	Disagree Strongly				Agree Strongly	Don't Know / Hard to Say	No response
The facility will cause catastrophic effects if accidents occur.							
Environmental impacts arising from the facility are difficult to mitigate.							
The risks associated with the facility would fill people with fear and dread.							
The technology of the facility may not be reliable.							
The public is not familiar with the impacts and risks of the facility.							
The facility may impose impacts and risks upon future generations.							

D. Tseung Kwan O Residents' Views on the Facility Siting Process

14. Do you know how government undertakes the planning and siting process for locally unwanted facilities?

□Yes, the process is: _____

(→Go to Q.15)

□No(→Go to Q.16)

15. On a scale from 1, "Very fair," to 5, "Very unfair," how fair do you think the current siting process is?

_____

16. On a scale from 1, "Very unfair," to 5, "Very fair," how fair do you think the following arrangements are for siting facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Degree of Fairness 1 ◄——► 5						
	Very Unfair				Very Fair	Don't Know / Hard to Say	No response
Site locally unwanted facilities in Tseung Kwan O district for the benefit of Hong Kong							
Evenly distribute locally unwanted facilities across different districts in Hong Kong							
Distribute locally unwanted facilities based on the needs of each district							

17. On a scale from 1, "Very untrustworthy," to 5, "Very trustworthy," how much would you trust the following stakeholder groups in making decisions on siting facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Level of Trust 1 ◄——► 5						
	Very Untrust-worthy				Very Trust-worthy	Don't Know / Hard to Say	No response
Government							
Private Companies							
District Councils							
Legislative Council							
Political Parties							
Professional Groups							
Civic Organisations (including Green Groups)							

18. On a scale from 1, "Completely ineffective," to 5, "Very effective," how effective would the following resolution options be in reducing your opposition to siting locally unwanted facilities near your home?

	Degree of Effectiveness 1 ◄——► 5									
	Completely Ineffective							Very Effective	Don't Know / Hard to Say	No response
Explaining the need for the facility										
Considering all different options										
Effective mitigation measures to reduce environmental impacts										
Effective environmental monitoring & safety audit program										
More consultation with affected community										
Compensation										
Provision of community facilities										
Other :										

E. Personal Information

Age	□18-19	□20-29	□30-39	□40-49	□50-59	□60 or above	□No response
Sex	□Male					□Female	
Educational Attainment	□Primary or below	□Secondary		□Tertiary/ University	□Postgraduate Level		□No response
Marital Status	□Single			□Married			□No response
Number of offspring	□None		□1		□2		□3 or above
Profession	□Manufacturing □Construction □Wholesale, retail and import/ export trades □Restaurants and hotels □Transport, storage & logistics □Communications □Financing, insurance, real estate & business services		□Education services □Medical services □Government □Community, social & personal services □Electricity, gas and water works □Fishing & agriculture			□Unemployed □Retired □Homemaker □Student □Other □No response	
Monthly Family Income	□below 5,000 □5,000- below 10,000 □10,000- below 20,000		□20,000- below 30,000 □30,000- below 40,000 □40,000 - below 50,000			□50,000- below 80,000 □80,000 or above □Unstable Income／Don't Know □No response	

End of Questionnaire. Thank You for Your Information!

Appendix 5 Questionnaire for Shatin Survey

Appendix 5a: Questionnaire for Shatin Survey (Chinese Version)

訪問員：	問卷編號：
日期：	訪問地點：

沙田區內不受歡迎設施之意見調查

您好！香港中文大學環境政策與資源管理研究中心現進行一項有關沙田區內不受歡迎設施的研究。你所提供的意見將有助我們了解居民對有關設施的看法。問卷調查需時約數分鐘，懇請您能幫助我們回答以下問題。謝謝您！【不受歡迎設施是指不受當區居民歡迎的設施，例如：垃圾站、焚化爐、化學廢物處理中心等。】

您是否年滿 18 歲或以上的沙田居民嗎？

☐是　(屋苑／屋邨：_____ 居住年期:_____)

☐不是　(謝謝您接受訪問，結束訪問。)

A. 沙田居民對區內不受歡迎設施的看法

1. 沙田區內現時有甚麼設施是不受歡迎的？

☐ 污水處理廠	☐ 濾水廠	☐ 垃圾轉運站
☐ 鐵路維修中心	☐ 巴士廠	☐ 工廠區
☐ 火葬場	☐ 骨灰龕安置所	☐ 醫院
☐ 沒有	☐ 不知道	☐ 其他:_____

2. *你認爲香港需唔需要以下呢啲設施呢？沙田呢？*

	香港				沙田			
	需要	不需要	不知道／很難說	拒答	需要	不需要	不知道／很難說	拒答
污水處理廠								
堆填區								
焚化爐								
爆炸品貯存庫								

3. 你會歡迎下列設施設置於沙田嗎？由 1 分代表『非常不歡迎』至 5 分代表『非常歡迎』。

	歡迎程度 1 ⟷ 5						
	非常不歡迎	不歡迎	一半半	歡迎	非常歡迎	不知道	拒答
污水處理廠							
堆填區							
焚化爐							
爆炸品貯存庫							

4. 在考慮是否歡迎有關設施設置在你的屋苑附近時，你覺得下列那些原因是重要的？(按重要性排列，1 爲最重要，如此類推，最多選四項)

☐ 環境污染程度　　☐ 對設施的需要程度
☐ 健康及安全性　　☐ 爲本區帶來的好處
☐ 影響樓價　　☐ 無意見
☐ 滋擾程度　　☐ 拒答
☐ 影響生活質素　　☐ 其他，請註明：_____

B. 沙田居民對不受歡迎設施之風險的看法

5. 你覺得下列設施的風險水平是怎樣？由 1 分代表『完全沒有風險』至 5 分代表『非常高風險』。【風險水平指會危害公眾的可能性。】

	風險水平 1 ⟷ 5						
	完全沒有風險	沒有風險	一半半	高風險	非常高風險	不知道	拒答
污水處理廠							
堆填區							
焚化爐							
爆炸品貯存庫							

6. *對於一些有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、爆炸品貯存庫等)，你認同下面嘅看法嗎？由 1 分代表『絕對唔認同』至 5 分代表『非常認同』。]*

	認同程度 1 ◄——► 5						
	絕對不認同	不認同	一半一半	認同	非常認同	不知道	拒答
設施如發生意外，後果會好嚴重							
設施對環境所造成嘅影響喺唔容易減少嘅							
設施嘅風險會令人害怕和擔心							
設施的技術可能喺唔可靠嘅							
市民唔熟悉呢啲設施所帶來的風險和影響							
設施嘅風險可能對你嘅仔女或兒孫輩有影響							

C. 沙田居民對不受歡迎設施選址的看法

7. 你知道政府是如何替不受歡迎設施進行選址的過程嗎？

☐ 知道，選址的過程是：_____(→第 8 題)

☐ 不知道(→第 9 題)

8. 你認爲政府現時選擇地點的方法公平嗎？(1 非常公平，5 非常不公平)_____

9. *對於一啲有高風險及唔好嘅影響嘅設施(如：燃煤發電廠、爆炸品貯存庫等)，你認爲下列嘅做法公平嗎？由 1 分代表『非常唔公平』至 5 分代表『非常公平』。]*

	公平程度 1 ◄——► 5						
	非常不公平	不公平	一半一半	公平	非常公平	不知道	拒答
爲咗香港整體社會嘅好處，而將呢啲設施放喺沙田區內							
將呢啲設施平均分佈喺不同地區							
按每個地區嘅需要來擺放呢啲設施							

10. 在決定設置一些高風險及負面影響大的不受歡迎設施(如：燃煤發電廠、爆炸品貯存庫等)時，你對下列各組織的信任程度有多少？ 由 1 分代表『非常不信任』至 5 分代表『非常信任』。

	信任程度 1 ◄——► 5						
	非常不信任	不信任	一半半	信任	非常信任	不知道	拒答
政府							
私營公司							
區議會							
立法會							
政黨							
專業機構/ 團體							
社會團體(包括環保團體)							

11. 你認爲政府在規劃沙田區內的不受歡迎設施時，現時的公眾咨詢渠道足夠嗎？

☐ 足夠 ☐ 不足夠 ☐ 不知道/ 很難說

12. 你認爲政府在規劃沙田區內的不受歡迎設施時，有沒有考慮沙田居民的意見？

☐ 有 ☐ 沒有 ☐ 不知道/ 很難說

13. 如果做下面嘅措施，會唔會令你冇咁抗拒擺放呢啲設施喺你屋企附近? 由 1 分代表『絕對有效』至 5 分代表『非常有效』。]

	有效程度 1 ◄——► 5						
	絕對沒有效	沒有效	一半半	有效	非常有效	不知道	拒答
向公眾解釋需要擺放呢個設施嘅理由							
考慮所有可能嘅方案							
實行有效嘅措施去減輕對環境嘅影響							
實行有效嘅環境監測同定期性安全檢查							
增加咨詢渠道同廣納民意							
提供賠償							
提供社區及康樂設施							
其他建議：							

D. 個人資料

年齡	□18-19	□20-29	□30-39	□40-49	□50-59	□60 或以上	□拒答
性別	□男性			□女性			
教育程度	□小學或以下	□中學	□大專／大學	□研究院：碩士或以上		□拒答	
婚姻狀況	□單身		□已婚		□拒答		
子女數目	□沒有	□1	□2	□3 或以上			
行業	□製造業 □建造業 □批發、零售、進出口貿易 □飲食及酒店業 □運輸、倉庫及物流業 □通訊業 □金融、保險、地產及商用服務業	□教育及有關行業 □醫療及有關行業 □政府部門 □其他社區、社會及個人服務業 □電力、燃氣及水務業 □漁、農業	□失業/待業 □退休人士 □家庭主婦 □學生 □其他 □拒答				
總家庭收入	□5,000 以下 □5,000-10,000 以下 □10,000-20,000 以下	□20,000-30,000 以下 □30,000-40,000 以下 □40,000-50,000 以下	□50,000-80,000 以下 □80,000 或以上 □收入不定／不知道 □拒答				

問卷完，謝謝您寶貴的意見。

Appendix 5b: Questionnaire for Shatin Survey (English Translation)

Interviewer :	Questionnaire No. :
Date :	Interview Location :

Public Survey on Locally Unwanted Facilities in Shatin

Hello! The Department of Geography and Resource Management of the Chinese University of Hong Kong is conducting a study of locally unwanted facilities in Shatin. The information you provide will help us to understand local residents' views about the siting of such facilities. The questionnaire will require a few minutes to complete. Please answer each question on this questionnaire. Thank you! ["Locally unwanted facilities" refers to facilities that are not welcomed by local residents, such as refuse stations, incinerators, chemical waste treatment plants, etc.]

Are you a Shatin resident aged 18 or above?
□Yes (Building/ Public Estate : _____ Years of residence:_____)
□No (Thank you. End the interview.)

A. Shatin Residents' Views on Locally Unwanted Facilities

1. Can you name any existing facility(ies) which is/ are not wanted in Shatin?

□Sewage treatment plant □Water treatment works □ Refuse transfer station
□Railway Depot □Bus Depot □ Industrial area
□Crematorium □Columbarium □ Hospital
□None □Don't Know
□ Others, please specify:_____

2. Do you think Hong Kong needs the following facilities? What about Shatin?

	Hong Kong				Shatin			
	Needed	Not Needed	Don't Know /Hard to Say	No response	Needed	Not Needed	Don't Know /Hard to Say	No response
Sewage Treatment Plant								
Landfill								
Incinerator								
Explosive storage facility								

3. On a scale from 1, "Most unwelcomed," to 5, "Most welcomed," how much would you welcome the following facilities to be sited in Shatin?

	Degree of Acceptance 1 ◄——► 5						
	Most Unwelcomed				Most Welcomed	Don't Know / Hard to Say	No response
Sewage Treatment Plant							
Landfill							
Incinerator							
Explosive storage facility							

4. Please indicate how important the following factors are to you in considering whether to accept the siting of such facilities near your residence. (Please choose up to four factors, with 1 representing the most important factor, 2 the second most important, and so on.)

- □ Pollution
- □ Health & safety
- □ Effect on property value
- □ Nuisance
- □ Quality of life
- □ Need for the facility
- □ Benefits to the community
- □ No opinion
- □ No response
- □ Other, please specify : _____

B. Shatin Residents' Perception of Risks Associated with Locally Unwanted Facilities

5. On a scale from 1, "No risk at all," to 5, "Very risky," how do you feel about the risks associated with the following facilities? ["Level of risk" refers to the likelihood of harm or loss to the public.]

	Level of Risk 1 ◄——► 5						
	No Risk at All				Very Risky	Don't Know / Hard to Say	No response
Sewage treatment plant							
Landfill							
Incinerator							
Explosive storage facility							

6. On a scale from 1, "Strongly disagree," to 5, "Strongly agree," please indicate whether you agree or disagree with the following statements regarding the siting of facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings.

	Degree of Agreement 1 ◄——► 5						
	Disagree Strongly				Agree Strongly	Don't Know / Hard to Say	No response
The facility will cause catastrophic effects if accidents occur.							
Environmental impacts arising from the facility are difficult to mitigate.							
The risks associated with the facility will fill people with fear and dread.							
The technology of the facility may not be reliable.							
The public is not familiar with the impacts and risks of the facility.							
The facility may impose impacts and risks upon future generations.							

C. Shatin Residents' Views on the Facility Siting Process

7. Do you know how government undertakes the planning and siting process for locally unwanted facilities?

□Yes, the process is: _____

(→Go to Q.8)

□No(→Go to Q.9)

8. On a scale from 1, "Very fair," to 5, "Very unfair," how fair do you think the current siting process is?

_____

9. On a scale from 1, "Very unfair," to 5, "Very fair," how fair do you think the following arrangements are for siting facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Degree of Fairness 1 ⟷ 5						
	Very Unfair				Very Fair	Don't Know / Hard to Say	No response
Site locally unwanted facilities in Shatin for the benefit of Hong Kong							
Evenly distribute locally unwanted facilities across different districts in Hong Kong							
Distribute locally unwanted facilities based on the needs of each district							

10. On a scale from 1, "Very untrustworthy," to 5, "Very trustworthy," how much would you trust the following stakeholder groups in making decisions on siting facilities (e.g., coal-fired power plant, explosive storage facility, etc.) which may be risky and may pose negative impacts to their surroundings?

	Level of Trust 1 ⟷ 5						
	Very Untrust-worthy				Very Trust-worthy	Don't Know / Hard to Say	No response
Government							
Private Companies							
District Councils							
Legislative Council							
Political Parties							
Professional Groups							
Civic Organisations (including Green Groups)							

11. Regarding the government's planning and siting of locally unwanted facilities, do you think the existing public consultation channels are adequate?

- ☐ Adequate (Reason : _____)
- ☐ Inadequate
- ☐ Don't Know/ Hard to Say

12. Do you feel that the government has considered local opinion when planning facility siting in Shatin ?

- ☐ Yes (Reason : _____)
- ☐ No
- ☐ Don't Know/ Hard to Say

13. On a scale from 1, "Completely ineffective," to 5, "Very effective," how effective would the following resolution options be in reducing your opposition to siting locally unwanted facilities near your home?

	Degree of Effectiveness 1 ◄——► 5						
	Completely Ineffective				Very Effective	Don't Know / Hard to Say	No response
Explaining the need for the facility							
Considering all different options							
Effective mitigation measures to reduce environmental impacts							
Effective environmental monitoring & safety audit program							
More consultation with affected community							
Compensation							
Provision of community facilities							
Other :							

D. Personal Information

Age	□18-19 □20-29 □30-39 □40-49 □50-59 □60 or above □No response		
Sex	□Male □Female		
Educational Attainment	□Primary or below □Secondary □Tertiary/ University □Postgraduate Level □No response		
Marital Status	□Single □Married □No response		
Number of offspring	□None □1 □2 □3 or above		
Profession	□Manufacturing □Construction □Wholesale, retail and import/ export trades □Restaurants and hotels □Transport, storage & logistics □Communications □Financing, insurance, real estate & business services	□Education services □Medical services □Government □Community, social & personal services □Electricity, gas and water works □Fishing & agriculture	□Unemployed □Retired □Homemaker □Student □Other □No response
Monthly Family Income	□below 5,000 □5,000- below 10,000 □10,000- below 20,000	□20,000- below 30,000 □30,000- below 40,000 □40,000 - below 50,000	□50,000- below 80,000 □80,000 or above □Unstable Income/ Don't Know □No response

End of Questionnaire. Thank You for Your Information!

Appendix 6 Sample Demographics of the Territory Wide and Three Local Surveys

Appendix 6: Sample Demographics of the Territory Wide and Three Local Surveys

	Hong Kong Territory-wide Survey	Three Community Surveys		
District	-	Tuen Mun	Tseung Kwan O	Shatin
Sample Size	1,002	752	822	803
Survey Data (%)				
Gender				
Male	45.5	40.2	44.4	44.6
Female	54.5	59.8	55.6	54.3
Not stated	0	0	0	1.1
Age				
Young (18-29)	26.9	27.1	24.8	23.2
Middle age (30-49)	45.5	43.9	50.6	40.5
Old (50 or above)	26.8	27.7	23.1	35.9
Not stated	0.9	1.3	1.5	0.5
Education				
Primary level or below	8.6	18.4	10.2	15.7
Secondary level	56.3	52.9	48.1	52.7
Tertiary or above	33.7	27.8	40.3	31.0
Not stated	1.4	0.9	1.5	0.6
Martial				
Single	34.3	37.5	35.5	33.1
Married	64.2	61.4	63.3	65.1
Not stated	1.5	1.1	1.2	1.7
Monthly Family Income (HK$)				
Low income (below HK$10,000)	10.6	16.6	8.4	12.2
Middle income (HK$10,000-below HK$30,000)	39.2	47.9	41.8	47.7
High income (above HK$30,000)	30.6	16.8	31.6	23.4
Not stated	19.8	18.8	18.1	16.7

Appendix 7 Interview Questionnaire on the Role of Trust in Siting Locally Unwanted Facilities in Hong Kong

Appendix 7a Interview Questionnaire on the Role of Trust in Siting Locally Unwanted Facilities in Hong Kong(Chinese Version)

信任與香港不受歡迎設施選址之研究

問題：

1. 您能說出有份參與或對規劃香港不受地區歡迎設施(locally unwanted facilities)具影響力的持份者嗎？您認爲各持份者是否相互信任？他們的互信和公衆信任他們的程度會否影響這類設施的選址？爲什麼？

2. 如要就垃圾焚化爐的選址作出決定，您對其他持份者的決定有多信任？ 請圈出最能代表您想法的數字。

持份者	絕對不信任 <----------> 絕對信任									
政府	1	2	3	4	5	6	7	8	9	10
顧問公司	1	2	3	4	5	6	7	8	9	10
區議會	1	2	3	4	5	6	7	8	9	10
立法會	1	2	3	4	5	6	7	8	9	10
地區組織	1	2	3	4	5	6	7	8	9	10
環保團體	1	2	3	4	5	6	7	8	9	10
環境諮詢委員會 (ACE)	1	2	3	4	5	6	7	8	9	10
專業團體(如：香港工程師學會(HKIE)和香港環境影響評估學會(HKIEIA)等)	1	2	3	4	5	6	7	8	9	10
學術人仕	1	2	3	4	5	6	7	8	9	10
政黨	1	2	3	4	5	6	7	8	9	10
傳媒	1	2	3	4	5	6	7	8	9	10

3. 請您解釋一下您有以上評分的原因，並說出您對政府，以及您認爲最值得或最不值得信任的持份者的看法。如有具體案例，請列明。

4. 在爲不受歡迎設施選址的過程中，您認爲以下各方面怎樣影響您對持份者的信任程度？請圈出最能代表您想法的數字。

影響信任程度的因素	完全不重要 <——————————>非常重要									
能力	1	2	3	4	5	6	7	8	9	10
開放性	1	2	3	4	5	6	7	8	9	10
信譽	1	2	3	4	5	6	7	8	9	10
問責	1	2	3	4	5	6	7	8	9	10
客觀性	1	2	3	4	5	6	7	8	9	10
公平	1	2	3	4	5	6	7	8	9	10
關心	1	2	3	4	5	6	7	8	9	10

5. 如各持份者分別就垃圾焚化爐的選址作出決定，您會如何評價他們以下各方面？請寫出最能代表您想法的數字。（注意： 評分從 1 到 10，1 爲最低，10 爲最高。）

	能力	開放性	信譽	問責	客觀性	公平	關心
政府							
顧問公司							
區議會							
立法會							
地區組織							
環保團體							
環境諮詢委員會(ACE)							
專業團體(如：香港工程師學會(HKIE)和香港環境影響評估學會(HKIEIA)等)							
學術人仕							
政黨							
傳媒							

6. 請解釋一下您之所以對各持份者有以上評分的原因，以及它們如何決定您對不同持份者的信任程度。

7. 您認爲持份者的各項能力和表現對規劃以下各項設施來說有多重要？(註：必須確保這些設施不會對居民的安全、生活環境以及健康構成威脅。) 請寫出最能代表您想法的數字。 (注意：評分從 1 到 10，1 爲完全不重要，10 爲非常重要。)

	能力	開放性	信譽	問責	客觀性	公平	關心
垃圾堆填區							
焚化爐							
污水處理廠							
飛機煤油貯存庫							
爆炸品貯存庫							

8. 您認爲可以怎樣增加各持份者相互間的信任，以及公衆對政府的信任？

9. 您對解決香港不受歡迎設施選址的問題有什麼建議？

Appendix 7b
Interview Questionnaire on the Role of Trust in Siting Locally Unwanted Facilities in Hong Kong (English Translation)

Trust and the Siting of Locally Unwanted Facilities in Hong Kong

Questions for Stakeholders:

1. Can you name the stakeholders who take part in or may influence the siting of locally unwanted facilities in Hong Kong? Do you think these stakeholders trust each other? How important is trust among the stakeholders and public perceived trust in these stakeholders in siting these facilities in Hong Kong? Why?

2. How much do you trust each of the following stakeholder groups in making decisions on siting a waste incinerator in Hong Kong? Please circle the number that best reflects your view.

Stakeholder Group	No trust <---------- > Complete trust									
Government	1	2	3	4	5	6	7	8	9	10
Consultancy Firms	1	2	3	4	5	6	7	8	9	10
District Council	1	2	3	4	5	6	7	8	9	10
Legislative Council	1	2	3	4	5	6	7	8	9	10
Local Civic Organisations	1	2	3	4	5	6	7	8	9	10
Environmental NGOs	1	2	3	4	5	6	7	8	9	10
Advisory Council on the Environment (ACE)	1	2	3	4	5	6	7	8	9	10
Professional bodies (e.g. The Hong Kong Institution of Engineers (HKIE), The Hong Kong Institute of Environmental Impact Assessment (HKIEIA), etc.)	1	2	3	4	5	6	7	8	9	10
Academics	1	2	3	4	5	6	7	8	9	10
Political Parties	1	2	3	4	5	6	7	8	9	10
Media	1	2	3	4	5	6	7	8	9	10

3. Please explain the reasons for your level of trust toward different stakeholder groups, particularly your level of trust towards government and towards the stakeholder group that you trust or do not trust most. Please supplement your views with examples if possible.

4. How important do you think the following attributes are in influencing your level of trust towards stakeholders in the siting of locally unwanted facilities? Please circle the number that best reflects your view.

Attribute	Not important at all<----------> Very important									
Competence	1	2	3	4	5	6	7	8	9	10
Openness	1	2	3	4	5	6	7	8	9	10
Credibility	1	2	3	4	5	6	7	8	9	10
Accountability	1	2	3	4	5	6	7	8	9	10
Objectivity	1	2	3	4	5	6	7	8	9	10
Fairness	1	2	3	4	5	6	7	8	9	10
Caring	1	2	3	4	5	6	7	8	9	10

5. How would you score each of the following stakeholder groups on the following attributes in making a decision on siting a waste incinerator? Please write down the number that best reflects your view, on a scale from 1 (possesses little or none of this attribute) to 10 (possesses a high level of this attribute).

	Competence	Openness	Credibility	Accountability	Objectivity	Fairness	Caring
Government							
Consultancy Firms							
District Council							
Legislative Council							
Local Civic Organisations							
Environmental NGOs							
Advisory Council on the Environment (ACE)							
Professional bodies (e.g. The Hong Kong Institution of Engineers (HKIE), The Hong Kong Institute of Environmental Impact Assessment (HKIEIA), etc.)							
Academics							
Political Parties							
Media							

6. Please explain your evaluation of attributes for the different stakeholder groups above, and how this may affect your level of trust towards these stakeholder groups.

7. How important are each of the following stakeholder attributes in planning the types of facility mentioned below? (Note: it is assumed that these facilities would not cause significant safety, environmental or health impacts to residents.) Please write down the number that best reflects your view, on a scale from 1 (not important at all) to 10 (extremely important).

	Competence	Openness	Credibility	Accountability	Objectivity	Fairness	Caring
Landfill							
Incinerator							
Sewage treatment plant							
Aviation fuel receiving facility							
Explosive storage							

8. What would you recommend to establish or enhance trust among stakeholders and particularly the trust towards government in the process of siting locally unwanted facilities in Hong Kong?

9. Do you have any suggestion on how the issues in siting locally unwanted facilities in Hong Kong might be resolved?