



# INTERNATIONAL CASE STUDIES ON PUBLIC COMMUNICATION AND CONSULTATION STRATEGIES FOR LOW EMISSION ZONES AND CONGESTION CHARGING SCHEMES

ANDREW PICKFORD, YING WANG, FEI YE, SHIYONG QIU, AND SU SONG

## 1. EXECUTIVE SUMMARY

### Highlights

- Low Emission Zone (LEZ) and Congestion Charging (CC) policies are usually controversial, and effective public communication is one of the factors contributing to their successful implementation.
- Public communication involves a process of dialogue with different stakeholders and a process to interact with the general public for feedback.
- Successful international experience shows that public communication for LEZ and CC should start as early as possible with a feasibility study and should continue through all stages of scheme design, implementation, operation, and management.
- Public communication should be integrated with the LEZ/CC scheme design so as to allow enough time for scheme changes and for proactive public education.
- Public communication should be integrated with data collection to allow for an informative evaluation process.

### Background

**Public acceptance plays a significant role in the successful implementation of LEZ and CC policies.** LEZ and CC policies have been implemented in many cities worldwide, especially in Europe. These policies have been proven to be effective in congestion mitigation and emissions reduction. Securing public acceptance for LEZ and CC policies requires several

### CONTENTS

1. Executive Summary.....	1
2. Introduction.....	4
3. Stakeholder Consultation and Public Communication Processes.....	5
4. Case Studies.....	12
5. Key Findings.....	47
6. Further Research.....	49
Appendix.....	50
References.....	52
Endnotes.....	53

*Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers may eventually be published in another form and their content may be revised.*

**Suggested Citation:** Andrew Pickford, Ying Wang, Fei Ye, Shiyong Qiu, and Su Song. 2017. "International Case Studies on Public Communication and Consultation Strategies for Low Emission Zones and Congestion Charging Schemes". Working Paper. World Resources Institute, Beijing. Available online at <http://www.wri.org/publication/international-case-studies-public-communication-and-consultation-strategies-low-emissions>.

components, including a statement of initial policy objectives, political will, a deliverable operational strategy, and scheme design scalability (i.e., whether the scheme can be increased in size). With comprehensive references to a variety of international examples, this working paper focuses on stakeholder communication, outreach, and consultation processes as some of the most critical measures to raise awareness and secure support for LEZ and CC schemes.

**The impacts of LEZ and CC are often complex, affecting entrenched habits of commuters, commercial operators, and other businesses.**

Cities adopting a CC policy collect a surcharge on congested sections of road. The policy is an attempt to alleviate congestion through curbing travel demand without increasing infrastructure supply. LEZ refers to a dedicated emissions control area set up to reduce vehicle pollutants with the aim of improving regional air quality. Charging a fee or imposing emissions-based restrictions on vehicles entering a well-defined zone needs to be viewed, not as the outcome of a law-making process, but as a policy that mitigates the effects of widely accepted problems, either increasing congestion or declining air quality.

**The successful delivery of LEZ and CC schemes depends on public communication that includes comprehensive notification, promotion, intensive monitoring of changes in public attitudes and timely adjustment, willingness to change, and prudent decision-making.** Public communication also involves a process of dialogue with relevant stakeholders, known as public consultation. Although necessary, public consultation is not sufficient to make a scheme successful. Political and public acceptance also depends on a policy that mitigates visible problems in a way that satisfies the self-interest of informed users.

## About This Working Paper

**This working paper studies 10 cases from Europe, Asia, and the United States to highlight the variety of social, political, and environmental contexts within which CC and LEZ schemes were planned and implemented.** From the examples studied, two types of consultation process were identified; scientific/professional (such as used in Singapore and Germany) and consultative/political (such as used in New York and Milan). All of the international

case studies highlight how public communication is woven into the policy development process, which itself may be split into two stages: ‘internal’ (to define one or more possible policies in sufficient detail to enable a meaningful stakeholder consultation with a small group of experts and politicians) and ‘external’ (to short-list and refine a single policy to a wider range of stakeholders and/or the public) for a LEZ or CC within an integrated transportation package.

**The working paper will be part of the “Low Emission Zone/Congestion Charge (LEZ/CC) Public Communication Strategies” series of papers.** The series will summarize international best practices in public communication and consultation strategies and show the various ways of communicating with the public in decision-making, preparation, and implementation of LEZ/CC policies. The LEZ/CC Public Communication Strategies series aims to offer a comprehensive package of public communication strategies to safeguard successful implementation. This is the first paper in the series. In later papers, we will focus more on how public communication will be carried out, what measures and tools can be considered in the context of public communication in China, and what various public opinions are and how they change over time.

## The Research Problem

**This paper was developed based on interviews with experts in LEZ/CC communication strategies, observations made during study tours in some of the case study cities, and literature reviews of the studied cities.** This paper identifies typical cases of LEZ/CC public policy communication with both successful and unsuccessful cases analyzed. Telephone interviews and discussion with international experts on public communication of LEZ/CC were also a major channel for information collection. Most of the experts come from the LEZ/CC implementing agencies that were or are heavily involved in the development and operation of public communication schemes.

**This paper is structured to answer the following questions:**

- Who are the key stakeholders for LEZ/CC public communication, and what are the negotiation strategies with stakeholders?
- What are the roles and responsibilities of respective

government departments (including city and state administrations) in public outreach?

- What are the institutional arrangements (e.g., existence of dedicated communications department, government communication liaison, outsourcing commercial companies, and the respective reporting lines) to support the public communication process?
- What are the communication measures, contents, skills, and plans in different phases?
- What public participation and feedback mechanisms are used, and how to respond to negative public feedback?

## Key Findings

Based on observations from the development of sample international cases, recommendations on public communication strategies in the design of China's first CC or LEZ scheme are made as follows:

- **The development and delivery of public communication programs cannot be independent of the context of the intended (or prevailing) scheme but must be integrated within it.** Public communication implies interaction with relevant stakeholders and the public. As various potential scenarios for a CC or LEZ are developed, it is likely that policy objectives and operating strategies need to be refined, not only to demonstrate that the public communication process is meaningful, but to resolve inconsistencies as early as possible and to develop and maintain political and public acceptance.
- **It is important that public communication be carried out as early as possible in the feasibility study process or the policy design process.** Early initiation of public communication leaves more room for modification and can reduce the costs of remedying mistakes and scheme operations stemming from a higher proportion of users that are likely to be noncompliant. Migration from a simple dialogue through public opinion-based decision-making to more complex forms of public participation may not be applicable in China's political and cultural context. Instead, early interactions with the relevant stakeholders and the public will benefit the scheme's execution by illustrating the potential benefits of public acceptance on scheme sustainability, thereby providing flexibility in adapting to feedback gained from stakeholders and the public.
- **Communication of the highest priority policy objectives of the scheme should emphasize that the primary aims are to improve air quality or to mitigate congestion.** Other objectives may be mentioned as nonprimary, such as the expected secondary benefits of improved air quality from CC. Ideally, the names of the policies used to communicate the scheme should reflect its policy objectives and ensure that public communication messages are understandable and therefore more readily acceptable.
- **Public communication needs to be positive and proactive and could be used as an opportunity to inform and educate people.** Public communication is not just a process to present the public with a few facts and leave it at that. It really needs a positive "pro" campaign to allow plenty of time (ideally years) for people to absorb and accept the information, noting that more information is better than less. People also need to be convinced that a CC or LEZ scheme will reduce congestion and harmful emissions, rather than just divert traffic and emissions elsewhere, and they should be informed of alternatives to driving and other travel options that will exist when the CC or LEZ is implemented.
- **Dealing with opposing opinions can be handled through negotiation and the granting of certain exemptions in the consultation process to give all stakeholders confidence that their views are being recorded and potentially used to adapt the scheme design.** As a consultation tool, granting an exemption for a specific category of vehicle type, user category, or usage provides the opportunity for a concession to increase support. However, exemptions make a scheme more expensive to enforce as there are more variables that need to be monitored by the enforcement regime. Too many exemptions can also make the CC or LEZ unworkable or appear to be biased in favor of certain stakeholders. Ideally, consideration should be taken to balance the cost of exemptions with public support.
- **Public communication should be integrated with data collection to allow for an informative evaluation process.** Public communications require surveys as critical tools to inform and measure the development of public opinion on the need for an LEZ or CC scheme and to set expectations on their respective objectives. Interactions with stakeholders and the public provide a cost-effective means of gathering data on travel patterns and preferences, and these data provide the means to assess public

acceptance. Informed feedback also allows operational strategies for potential CC or LEZ schemes to be refined before a scheme is implemented and to maintain sufficient public support. In addition, data gathering also allows for ongoing monitoring, which is required to measure the levels of support and public attitudes.

## Recommendations

**Securing sufficient levels of public support through public communications is important.** Without public support, the necessary development of local regulations may be blocked, operating costs may increase, and the reputation of the implementing authority may even be threatened. On the other hand, when support is obtained and the benefits of CC or LEZ are delivered, this presents the best opportunity to ensure that a scheme is sustainable and regarded as a regional or national precedent. With no LEZ/CC implemented in China, a successful pioneer implementation supported by effective public communication strategies will make it easy to promote the policy elsewhere nationally in the future.

## 2. INTRODUCTION

### 2.1 Background

Since the enactment of the 2013–17 Beijing Clean Air Action Plan, LEZ/CC policies have been studied for several years as measures to reduce traffic congestion and vehicle emissions. Every time news about the LEZ/CC policies appears in public, it leads to a heated and controversial discussion. Facing the various voices from different stakeholders, the government usually chooses to stay silent. However, based on the international experience, effective public communication between the government and the public often results in a better understanding of the policies, which always helps win more public support on LEZ/CC policies.

Cities adopting a CC policy collect a surcharge relating to the use of vehicles on congested sections of road. The policy is an attempt to alleviate congestion through curbing travel demand without increasing infrastructure supply. Congestion charging is aimed at marginal consumers, rather than all travel groups, who do not show strong preferences among travel modes but are keenly sensitive to travel cost. These marginal consumers' attention to travel cost makes it possible to channel their choices on travel modes through the CC policy.

LEZs are dedicated emission control areas set up to limit vehicle pollutants with the aim of improving regional air quality. LEZs are widely implemented globally and have become an important measure to improve air quality.

Some cities, such as Berlin and Singapore, only select one of the LEZ and CC policies to implement, while other cities, such as London and Stockholm, enforce both. Even though LEZ and CC differ because of different objectives in general, both of these policies deal with the popular emerging challenges in the transportation sectors in many cities worldwide and affect road users because of the fees that are imposed. Convincing users to pay for road use or to reduce emissions from road use (e.g. by switching to lower emission vehicles or other measures) may be controversial. Users may not trust the government to use revenues effectively; there may be a historical lack of confidence in local transportation authorities to implement projects successfully; the benefits may not be readily visible (such as reduction of harmful emissions); and for price-based schemes, users may perceive that benefits accrue to others (such as public transportation users); or frustrations may arise because users are offered no other alternative to paying a fee if they use their vehicles within the regulated zones.

Securing sufficient levels of political and public support is therefore important. Without political support, the necessary development of local regulations may be blocked. Lack of public support can also increase operating costs and, in the worst case, can threaten the business case and the reputation of the implementing authority, which could make it difficult to promote the policy again in the same location or elsewhere nationally in the future. On the other hand, when support is secured and the benefits of CC or LEZ are delivered, this presents the best opportunity to ensure that a scheme is sustainable and regarded as a regional or national precedent.

Examples in Berlin, London, Milan, Stockholm, and elsewhere demonstrate that LEZ/CC policies can succeed in cities of widely varying sizes and economic backgrounds. In these cases, public communication faced complex organization structures and conflicting interests that were harnessed (or at least satisfied sufficiently) during the consultation process to bring reduced congestion and vehicle emissions and their related sustained benefits to road users and non-road users, businesses, retailers, and individuals.

Communication is a process of dialogue with relevant stakeholders. The successful LEZ/CC schemes usually depended on public communication that included comprehensive notification, promotion, intensive monitoring of changes in public attitudes and timely adjustment, willingness to change, and prudent decision-making. Based on a detailed review of public communication of LEZ/CC policy cases globally, this working paper aims to advise the decision-makers on



how to properly engage stakeholders in the policy-making process and how to communicate effectively with the public so as to reduce or neutralize possible public objection when introducing such controversial road-charging policies.

The working paper will be part of the “Low Emission Zone/ Congestion Charge (LEZ/CC) Public Communication Strategies” series of papers that summarize international best practices in public communication and consultation strategies and show the various ways of communicating with the public in the decision-making, preparation, and implementation of LEZ and CC policies. The “LEZ/CC Public Communication Strategies” series aims to offer a comprehensive package of public communication strategies to safeguard successful implementation. This is the first paper in the series. In later papers, we will focus more on how communication will be carried out and what measures and tools can be considered in the context of public communication in China.

## 2.2 Scope and Methodology

This working paper studies international practices regarding the public consultation and communication policies for LEZ/CC. Ten case studies from Europe, Asia, and the United States are discussed in the following sections to highlight the variety of social, political, and environmental contexts within which CC and LEZ schemes were planned and implemented. This paper identifies typical cases of LEZ/CC policy public communication through a literature review and expert recommendation, with both successful and unsuccessful cases analyzed. Telephone interviews and discussion with international experts on public communication of LEZ/CC policies were also a major channel for information collection. Most of the experts come from the LEZ/CC implementing agencies that were or are heavily involved in the development and operation of public communication schemes.

Within the limits of confidentiality and completeness of primary and secondary data, each example is described in terms of the following dimensions:

- Identification of key stakeholders and negotiation strategies with stakeholders;
- Role and responsibility of respective government departments (including city and state administrations) in public outreach;
- Institutional arrangements (e.g., existence of dedicated communications department, government communication liaison, outsourcing commercial

companies, and the respective reporting lines), where known;

- Government communication measures, content, skills, and plans in different phases;
- Public participation and feedback mechanism; and
- Response to negative public feedback (measures, key messages).

Several schemes are described highlighting a variety of approaches to communication and outreach that in many cases are aligned with successful scheme implementation. In addition, some examples will highlight failures to get acceptance, invariably stemming from (but not always because of) ineffective communication and consultation as important lessons can be learned from failure. For example, London’s public communication strategy on its 2003 CC policy was assessed in detail, as it was the first major successful scheme of its kind, and its success was largely attributed to a well-planned, multi-phased public communication process. Reference schemes are described, including those that were associated with unsuccessful implementations. Failed cases like Edinburgh, Manchester, and New York were also analyzed through a literature review or direct discussion with related experts. Cases with a Chinese cultural background, such as Singapore and Hong Kong, were also taken into consideration.

Chapter 3 provides the conceptual framework and further details on the process of stakeholder consultation and the critical role of public communication. Chapter 4 is focused on international examples, including successes and failures, to highlight best practices in consultation and communications. Chapter 5 builds on the idealized scope and objectives in the context of international experience to make recommendations that could be relevant to the development and implementation of new CC and LEZ policies. Section 6 provides links to further research relevant to the schemes cited in this working paper.

## 3. STAKEHOLDER CONSULTATION AND PUBLIC COMMUNICATION PROCESSES

### 3.1 Context

A consultation process is usually focused on seeking views on a limited range of topics over a limited time in order for the consultation host to gauge the level of support for key proposals. Communication is where governments want to educate the public, particularly to seek support

of or compliance with policies and goals. Consultation and communication are usually intertwined for policies like LEZ and CC where the public is the largest and most critical stakeholder. Therefore, in most cases shown in this working paper, the communication process is embedded within the consultation process.

A comprehensive consultation process would identify stakeholders to a fine level of granularity to ensure that the most relevant information is communicated to each. Any feedback mechanisms would be provided up to the deadline date of the consultation phase. Following the consultation period, views would need to be analyzed, categorized, summarized and, in some cases, published via the Internet or other media. Of course, the consultation and related communications process may be multi-phased to properly capture stakeholders' views for complex projects or where the period of planning is long and during which stakeholders' views may have changed measurably.

Cities are complex in many dimensions, including their jurisdictional structures, entrenched travel habits, dynamically varying demand, wide variation in land-use patterns, growth limitations caused by natural restrictions (such as rivers or national boundaries), coalitions of interests (e.g., road user associations, residents' cooperatives, and political parties), national regulations on car ownership (such as a first registration tax) and vehicle usage (such as fuel tax, insurance, and parking fees), rivalry among local economic regions, and fierce competition for government resources for other local projects.

The need for policies like LEZ or CC is mainly driven by the transportation and environmental challenges and pressures faced by many cities. Among many issues, the context of stakeholder consultation and communications policy is likely to face one or more of the following challenges:

- Publicly visible transportation-related problems, such as declining air quality, worsening congestion, and increasing journey time variability;
- An identified need for additional road infrastructure and lack of public funds to do so;
- Precedents already established, such as Singapore's Area Licensing System (ALS) that enabled the evolution to Singapore's current ERP policy, or the CC in Stockholm that paved the way for a similar scheme in Gothenburg;
- The existence of proven enforcement processes, based on expert witnesses or automatically captured image-based evidence (as used in all current CC and most LEZ schemes described here);
- The availability (or lack) of
  - Alternative routes for through traffic,
  - Flexibility to change the time of travel to avoid time-based charges (reduced flexibility is often associated with heavy goods vehicle schedules, as observed during the New York CC consultation process, and shift workers, as seen during the development of the London CC scheme), and
  - High quality alternatives to the convenience of driving, such as Bus Rapid Transit (BRT), light rail, or mass transit services; and
- The identified need for a comprehensive regional transportation package, for example, the platform on which Gothenburg's CC scheme was developed.

Stakeholder consultation and related public communications processes aim to build and maintain legitimacy for a LEZ or CC scheme by informing perceptions and developing and maintaining positive stakeholder attitudes. Therefore, consultation for an LEZ or CC depends on cooperative and consultative interactions with several parties including local government departments, political organizations, government authorities (national, regional, and local), road user groups (such as automobile associations and freight transportation operators), local employers (such as hospitals, schools, offices, and factories), residents (such as property owners and residential cooperatives), and other individuals.

## 3.2 Stages

Public communication and consultation should be a process of dialogue and interactions (prompted by structured questions) with selected stakeholders, perhaps prioritized as 'internal' (government) and 'external' (other government departments and the public). Each phase of a consultation process should have a specified start and end date, and it should inform decisions on the objectives, scope, and implementation for the scheme. Consultation should have the effect of encouraging greater involvement from stakeholders and help to refine the policy objectives and scheme operations strategy, among other attributes. Consultation and interaction with the public with communications campaigns is likely to be an ongoing process, not just during the pre-implementation phase, but during piloting and subsequent full-scale implementation.

At this point, it is important to differentiate among three stages of stakeholder interaction (Figure 1):

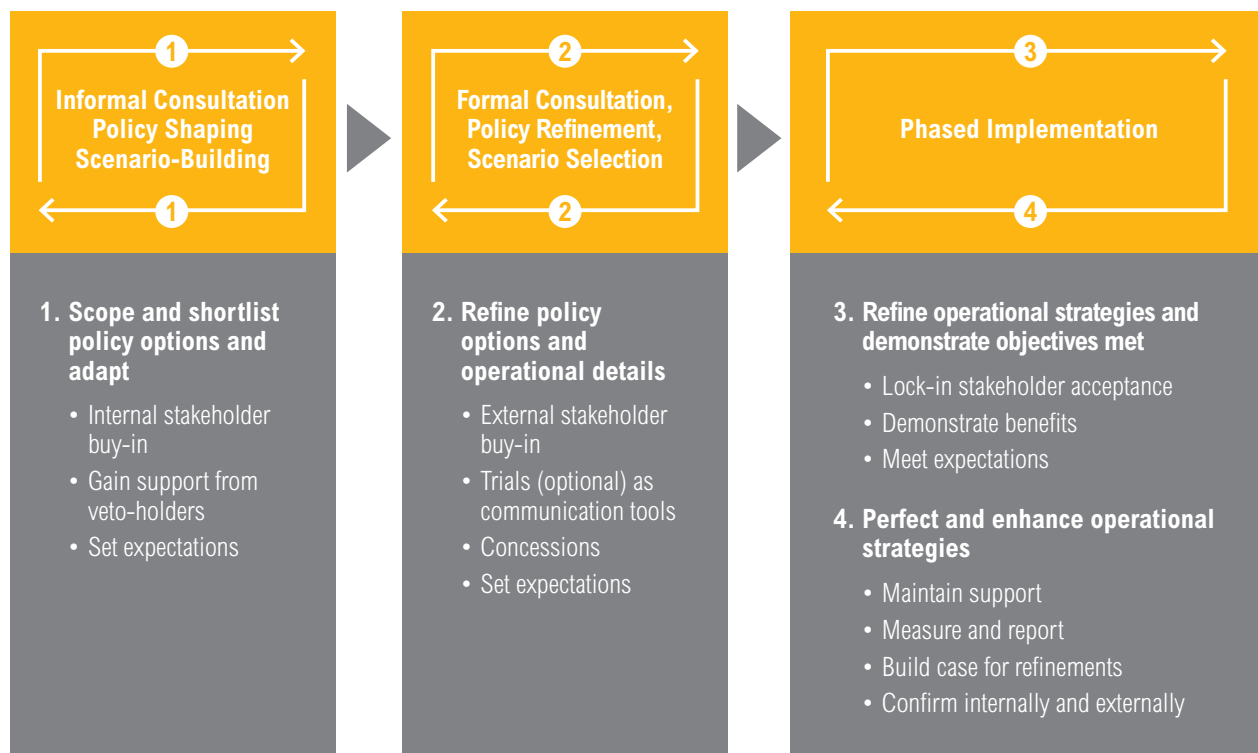
- (a) Informal consultation: to shape policy through dialogue with a limited range of stakeholders (mostly internal);
- (b) Formal consultation: to refine policies in a structured manner, based on informing and securing feedback from other political and public stakeholders and (ideally) gaining sufficient level of support for proposed CC or LEZ schemes, potentially within a larger investment in transportation; and
- (c) Ongoing dialogue during operations: to refine the scheme's operational strategy, confirm achievement of policy objectives, and monitor ongoing acceptance.

The informal consultation process aims to shape policy themes and general policy structure. This stage may be informed by liaison with other international scheme operators, local studies on congestion and emission trends, and technology trials to confirm technical feasibility in a structured off-road environment.

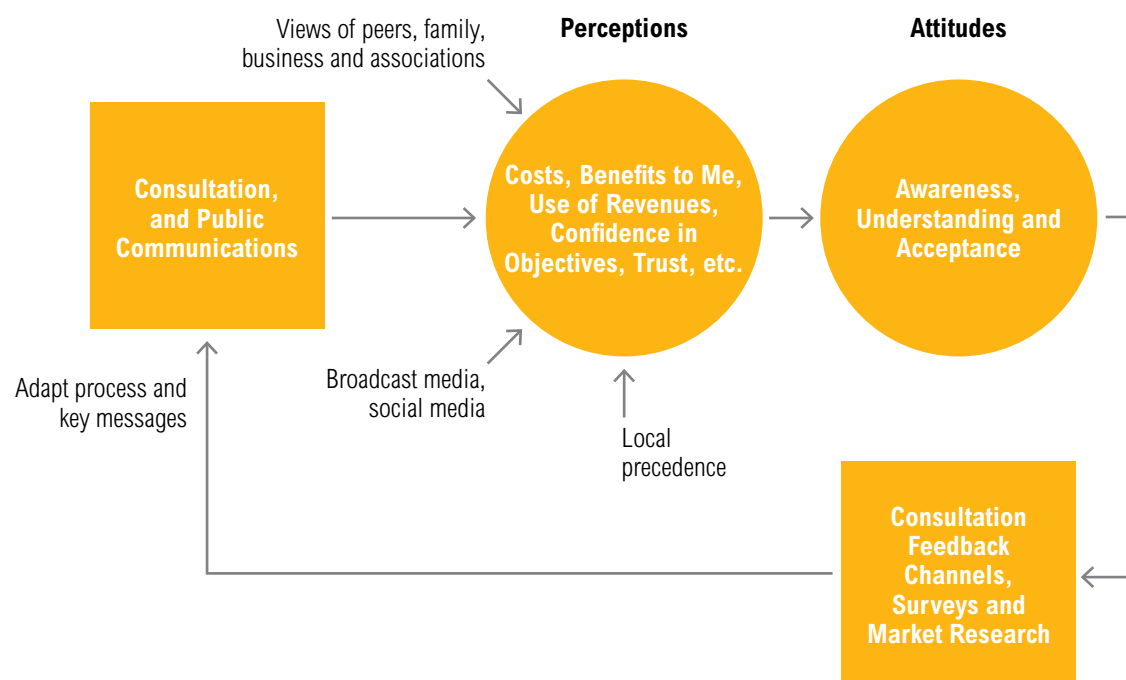
A formal consultation is usually used to define the CC and LEZ policy design and the operational strategy with other stakeholders prior to implementation. Specifically, *formal* consultation aims to

- develop and maintain a channel for dialogue between the sponsoring organization and other stakeholders, including road users and non-road users;
- raise awareness of the potential forms of the scheme and their relative impacts, based on one or more provisional concepts of operations described from the perspective of each stakeholder, including competent authorities and vehicle operators;
- develop an understanding and acceptance of the benefits;
- confirm the scale and scope of the implementation and the sequence by which the scheme could be rolled out over time and by successively including additional vehicle categories;
- confirm the level of adoption or intention to adopt a scheme by road users;

Figure 1 | **General Consultation and Communication Framework**



**Figure 2 | The Role of Formal Stakeholder Consultation, Public Communication, and Attitudinal Measurement as Part of the Development of Policies for CC and LEZ Precedents**



- confirm the potential scope of integration with other stakeholders' initiatives (e.g., public transportation and infrastructure improvements); and
- confirm the approach to governance of the design and implementation of the scheme, potentially including a liaison group that includes key stakeholders.

The roles of formal stakeholder consultation and public communication, including the critical feedback channels, are shown below in Figure 2.

During the operational phase itself, continued public communication, surveys, and performance monitoring are important tools to reassure stakeholders that policy objectives are being met in the context of changing economic and social contexts over the long term.

Public communication is an integral part of the consultation process and is used throughout the development, implementation, and operation of a CC or LEZ. Figure 2 highlights how stakeholders are influenced by their peers (other professionals, family

members, etc.), the local precedence of public-sector initiatives of similar complexity, the media (as well as social media), and the information presented as part of the public communications strategy.

Stakeholder perceptions drive stakeholder attitudes that may be measured through interviews, surveys, panels, and focus groups although it is likely that the media may be regarded as reflecting one dimension of public attitude. As stakeholders develop awareness, understanding, and (ideally) acceptance of a proposed CC or LEZ scheme, the messages that form part of the public communications will need to be adapted. According to the Department for Business, Enterprise and Regulatory Reform (2008) in the UK, "...consultation documents should be clear about the consultation process, what is being proposed, the scope to influence, and the expected costs and benefits of the proposals."

Ideally, high levels of awareness (e.g., mass marketing through leaflets delivered to households) suggest that increased levels of detail may be provided (Section 3.3 below) to develop a high level of understanding of what



the scheme will achieve and how it works. Finally, a high level of understanding (confirmed through structured measurement) provides the basis for acceptance.

Communication methods are generally multichannel such as leaflets, media events/interviews, Internet/social media (e.g. *WeChat*), on-street trials, public hearings, and road shows that provide the following information:

- The underlying rationale and policy objectives (e.g., mitigating congestion, funding complementary measures, reducing harmful emissions, funding new infrastructure, and subsidizing and improving public transportation);
- The initial scheme concept or design and the potential timetable(s) for implementation;
- Potential benefits (and costs) to stakeholders;
- Feedback mechanisms that would permit all stakeholders to express their views and submit enquiries and complaints; and
- How well the scheme meets policy objectives and potential changes to the objectives themselves during the operations phase.

### 3.3 The Dimensions of Stakeholder Consultation

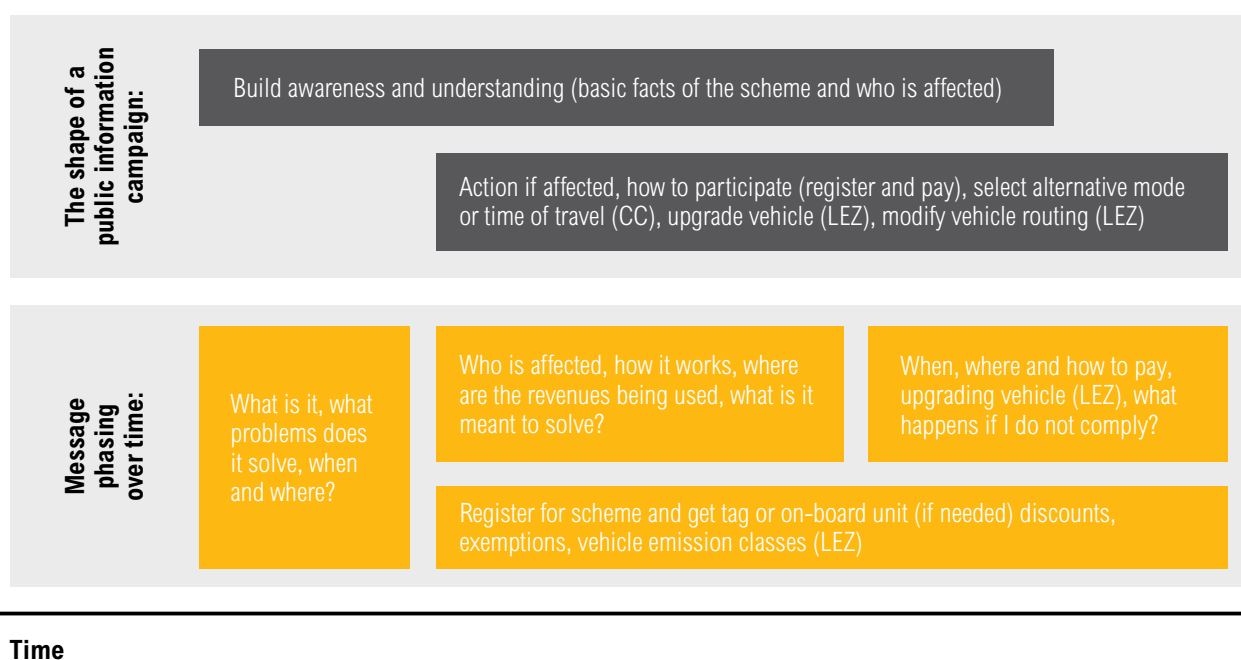
The dimensions of the formal consultation processes are

- duration and phasing;
- development and presentation of relevant information;
- communication with relevant stakeholders;
- the asking of objective questions and the offer of meaningful options;
- management and coordination;
- facilitation of feedback; and
- sustainability, at least to maintain measures of ongoing acceptance and achievement of policy objectives.

#### Duration and phasing

The external stakeholder communication campaign should initially focus on building awareness and an understanding of the basic facts for the scheme and/or the broader transportation package in which the scheme is integrated (Figure 3). The campaign should also address the long-term future and impact of the scheme.

Figure 3 | **The Phases of a Public Communication Campaign Leading up to the “Go Live” (Operations Commencement) Date**



An outline describing the policy (and potential variations) should be prepared that is relevant to each stakeholder group. Each phase (two or three should be sufficient) should have a fixed length of time, and the shortest phase should not be less than 12 weeks, extended by any public holiday periods.

Feedback from the consultation process may require a revision to the outline scheme design, and sufficient time should be allowed for this before commencing the drafting of local regulations based on the design. Misconceptions and misunderstandings should be addressed early, and surveys may be used to gauge the level of awareness and understanding of stakeholders.

Development and communication of relevant information

An outline definition of the scheme (potentially including alternatives) should be prepared that is relevant to each stakeholder group and that has a sufficient level of detail, noting that negative views are more often expressed by individuals who claim that the information they received was too little (Figure 4).

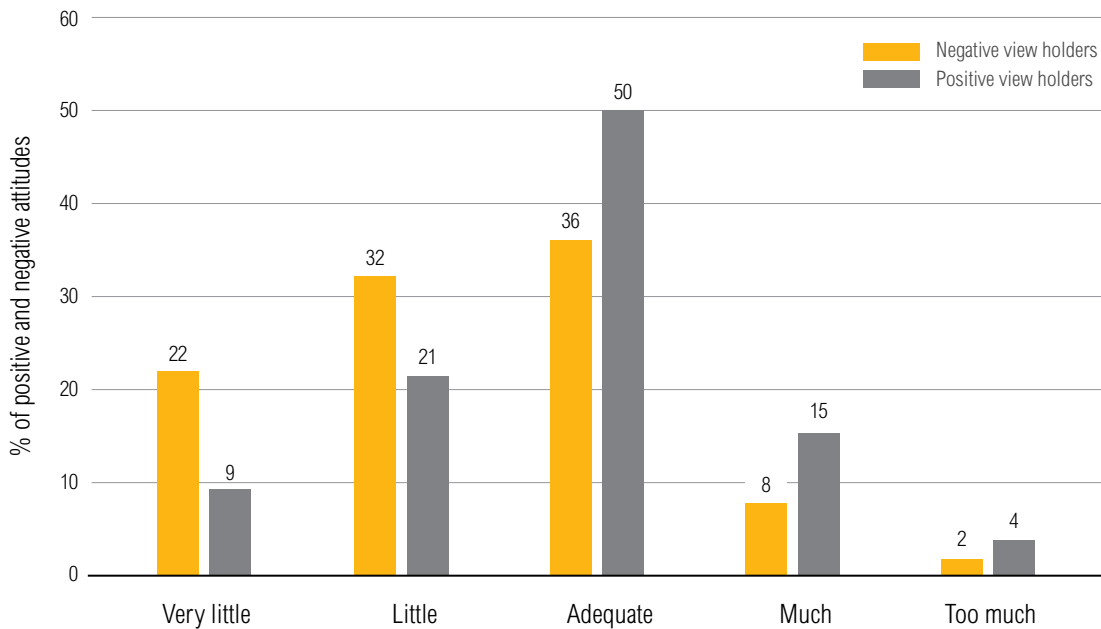
As part of the preparation of the consultation process, one should put oneself in the shoes of the various stakeholders and ask, “What is in it for me?” This might lead to the devel-

opment of a list of statements relevant to each of the stakeholder groups to provide them with some prior thoughts, followed by the simple question, “What do you think about this?” (Ipsos MORI 2008). For example, the outline should explain if the scheme could change anything for the specific stakeholder group with respect to its roles and responsibilities. The outline should also clearly explain the purpose of the consultation process and how feedback will be used.

Several studies have led to complementary conclusions (Odeck and Kjerkriet 2010); marketing the positive benefits before implementation may help develop favorable perceptions and therefore a positive attitude. This suggests that the consultation and public communication process should aim to provide increased (rather than reduced) levels of information to stakeholders.

In the context of the Stockholm CC scheme, the scheme operator (IBM) stated in 2008 that, among the lessons learned, one of the critical success factors in scheme implementation “was [to ensure] an effective marketing/ public information campaign.” In 2014, Sweden’s former Environment Minister Måns Lönnroth declared that four of the six conditions for success were “the [planning and implementation] organization, clear objectives, extensive public communication, and the [potential for] adaptation” (Lönnroth 2014).

Figure 4 | Post-Implementation Survey on Adequacy of Information Provided



## Communication with relevant stakeholders

Suggested stakeholders (i.e., organizations that are most likely to be affected by the costs and benefits of the scheme) were described in Section 3.1. For some stakeholders, it would be most effective to establish a one-on-one dialogue to ensure that their specific perspectives are captured. According to the Department for Business, Enterprise and Regulatory Reform (2008, p10), “Consultation exercises should be designed to be accessible to, and clearly targeted at, those people the exercise is intended to reach.”

Ideally, the sponsoring authority should periodically meet individual members of the public (e.g., a road show or pop-up kiosks in shopping malls) or organize workshops to inform them of travel options and planned improvements.

### The asking of objective questions and the offer of meaningful options

Options should be presented objectively and may include the sequence of roll-out for the scheme, the parties involved in a pilot scheme and the principle of basing a scheme on vehicle type determined by its Gross Vehicle Weight (GVW), its emission class (assuming that these are acceptable to the implementing agency) or other metric. Note that the established vehicle taxation classes and the measurability of these with an automatic enforcement system will influence the choice of vehicle types that are described in the public communications.

Consultation for CC or LEZ is usually based on scenarios or stories that make the scheme more understandable and tangible to consultees.

It is generally good practice to make sure that there is a sufficient variety of communication channels so as to ensure that stakeholders may express their views. Channels may include Internet response forms, road shows, and telephone call centers. Surveys may be conducted by phone (i.e., random selection), on street, or by Internet although the responses for each must reflect the fact that each is likely to have a selection bias:

- Telephone surveys will only capture the views of individuals with a telephone;
- Door-to-door surveys have the benefit of reaching a wide audience but will tend to reflect district-level views;
- On-street surveys will only be able to target shoppers or commuters in defined areas at specific times of the day; and
- Internet surveys generally attract self-selected respondents, often reflecting polarized views.

## Management and coordination

An owner of the consultation process should be designated, as well as the sequence of consultation, aggregation of responses, the target date to produce a summary of feedback, and, finally, the target date for any revisions to the outline scheme definition.

According to the Department for Business, Enterprise and Regulatory Reform (2008, p11), “Keeping the burden of consultation to a minimum is essential if consultations are to be effective and if consultees’ buy-in to the process is to be obtained.”

### Facilitation of feedback

Decide how the findings of the consultation process should be relayed back to selected stakeholders.

According to the Department for Business, Enterprise and Regulatory Reform (2008, p12): “Consultation responses should be analyzed carefully, and clear feedback should be provided to participants following the consultation.” Note that some of the examples cited below highlighted limited feedback (for example, Hong Kong, Milan, and Gothenburg) although it is recommended that sufficient feedback be provided to stakeholders as part of the consultation process to build legitimacy for the proposed policies.

### Sustainability

During the operations phase, it is critical to have a continuous measurement of stakeholder satisfaction and communication of the performance of the scheme. Measurement of satisfaction may suggest policy refinements, and periodic public communication that expected objectives are being achieved serves to reassure stakeholders.

Although outside the scope of this study, the ongoing impact of the London CC scheme was reported in six annual reports, confirming the degree to which policy objectives were met and presenting other impacts (e.g., environmental, social, business/retail, modal split, social costs, and benefits). Significant potential changes, such as the introduction of emissions-based charging and account-

based charging, triggered short-term consultations that resulted in the rejection and adoption respectively of these policy refinements. The scheme sponsors in Italy and Sweden continue to publish periodic performance reports for schemes in their countries.

In addition to periodic reporting, a successful CC or LEZ scheme is likely to continuously generate positive independent news stories that reassure stakeholders and may further reduce dissatisfaction among those who are opposed, and increase satisfaction among those who are in favor, for example, improvement of road safety and speed, reduced travel time and emissions, and perception of improved air quality (Green et al. 2015). Certainly, every attempt should be made to publicize such good news stories.

## 4. CASE STUDIES

### 4.1 Introduction

The international examples described below were selected from Europe, Asia, and the United States to highlight a variety of social, political, and environmental contexts that influenced the planning and implementation of CC or LEZ schemes. Also, since the success of any scheme may be measured in part by the level of public acceptance,

some examples show an evolution of the schemes, each one building on the lessons learned from earlier versions. A broad geographic selection was made from large and small countries and from countries where there was only one scheme to countries where there were two or more. Finally, the examples include schemes that had failed sometime during stakeholder consultation, mostly during the consultation process due to lack of political or public support.

In many of the examples studied, stakeholder consultation and communication processes focused on a transportation policy package that included a combination of entry restrictions, complementary benefits, and other measures within a larger area in which a LEZ or CC scheme exists.

Table 1 below highlights the diversity of schemes short-listed. The first six international examples described exhibited success at some stages of the consultation and implementation process. The last four cases highlighted the lessons where LEZ/CC were not successfully implemented.

An introduction is provided for each project, and the related consultation process for all is described in Sections 4.2 to 4.11. Note that for some examples, complete

Table 1 | International Examples

Territory	Region	Scheme Type	Urban Size (Large >5M, Medium 2-5M, Small <1M)	Implemented
Germany	Berlin	LEZ	Large	Yes
Italy	Milan	LEZ (then CC)	Large	Yes
Singapore	National	ERP	Large	Yes
Sweden	Stockholm	CC	Small	Yes
	Gothenburg	CC	Small	Yes
UK	London	CC and LEZ	Large	Yes
	Manchester	CC	Medium	No
	Edinburgh	CC	Small	No
US	New York	CC	Medium	No <sup>a</sup>
China	Hong Kong SAR	ERP	Large	No <sup>a</sup>
Other	—	Various	Various	In progress

Note: <sup>a</sup> Under consideration again.

## Berlin LEZ



Source: <http://www.stadtentwicklung.berlin.de/umwelt/luftqualitaet/umweltzone/en/gebiet.shtml>

information was not available either through primary or secondary research. In some cases, this was compensated for by interviewing individuals who had been involved directly or indirectly in the scheme implementation.

### 4.2 Berlin Germany: Umweltzone (Environmental Zones)

#### 4.2.1 Background

The Federal Government of Germany transposed the European Commission's Air Quality Framework Directive into national law on September 11, 2002, through the *22 Bundesimmissionsschutzverordnung*, known as the 22. BImSchV, which requires information on air quality (measured by a national network of air quality monitoring stations) to be disseminated to the public. When these stations report  $PM_{10}$  concentration levels that exceed mandated levels on 35 or more days in a year, the relevant city must develop a short-term action plan for the reduction of emissions, complying with a national framework that defines the emission classes and the rules by which any German city may define its own local scheme. As of the first quarter of 2015, almost 75 cities in Germany had chosen to implement a time- and emission-based *umweltzone* (environmental zone) in their respective central business districts (CBDs).

German and foreign-registered vehicles are covered by the regulations and are required to buy a windscreen label that confirms payment of the time-limited access fee and, by its color, the related emissions class according to the vehicle manufacturer's declaration.<sup>1</sup> Manual enforcement is used, which levies fines of EUR 40 (USD 12) and one driving license penalty point for noncompliant vehicles identified within the *umweltzone*. Each city that wishes to implement a scheme is required to develop a marketing and education program to ensure that all road users understand how the scheme works and that sufficient incentives are put into place to encourage the use of public transportation, the purchase of low emission vehicles or upgrades to existing vehicles.

Berlin has a population of 3.5 million and is Europe's second most populous city (after London with 8.3 million). The relatively long (2.5 years) planning and stakeholder consultation period of Berlin's Air Quality Plan ensured sufficient levels of acceptance, reflected the complexities of a larger metropolitan population, the more complex regional jurisdictional structure,<sup>2</sup> and some delays in securing additional funding from the national government to subsidize the installation of particulate traps on diesel vehicles.



During the communication campaigns, it was found that implementation was controversial because of the costs imposed on vehicle owners, particularly commercial fleets. Diesel vehicles can be retrofitted with a particulate matter (PM) reduction system to enable them to be classified in a more favorable (lower) emissions category. Costs range from EUR 2,000 to EUR 7,500 (USD 2,400 to USD 9,000) plus fitting, depending on vehicle type. In one online survey, 91 percent of respondents disapproved of the LEZ due to perceived bureaucracy and little perceived effects on air quality:

- If needed, retrofitting requires the vehicle to be off the road (i.e., incurring time-based costs to a business) during the installation of the particulate trap, and a certificate is needed to demonstrate compliance. All vehicles must apply for a green (or yellow) sticker<sup>3</sup>;
- The mean decrease in PM<sub>10</sub> has been between 0 percent for small schemes of less than 10 km<sup>2</sup> and 15 percent for large schemes (between 50 km<sup>2</sup> and 207 km<sup>2</sup>). Among all cities that implemented an *umweltzone*, a decrease of 9 percent of PM<sub>10</sub> was measured (Wolff 2013).

## 4.2.2 Communication Process

The public communication campaigns for a LEZ in Germany generally have durations of about 18 months. The enabling legislation and increasingly proven approach means that the period needed to define the local policy is usually short. As shown in Figure 5, the public communication process started with defining an explicit target for the program. This was then followed by the stakeholder consultation at the national level, which included the preparation of the enabling

legislation and consultation with each province (*Lands*). Thereafter, whenever each city is required to develop an action plan, the respective public communication is lined up with stakeholder consultation and information dissemination related to the action plan at the city level.

### PROGRAM TARGET DEFINING

Despite the fact that the policy impact of an *umweltzone* is improved air quality, the difficulty in establishing a measurable target, given the multitude of variables (e.g., meteorological conditions and other background contributors, etc.), means that the public communication programs could not make any explicit claims other than attainment of EU limits on PM<sub>10</sub> to avoid penalties (the initial trigger for implementation) being imposed on the city authority. So, to make it explicit, the target for LEZ in Germany is to achieve the EU air quality goals on PM<sub>10</sub>.

### NATIONAL-LEVEL PUBLIC CONSULTATION

In 2004 the Senate Department for Urban Development and the Environment published its draft Air Quality Plan on the Internet and invited comments over a two-month period. Together with this, all responses and feedback from a public hearing were used to inform the development of the final plan before it was adopted by the local parliament. During this process, other government institutions, environmental nongovernmental organizations (NGOs), and business associations were consulted to confirm feasibility, potential implementation costs, and socioeconomic impacts. The main variables were the boundaries of the area, timing of introduction, and emission requirements for compliant vehicles.

Figure 5 | **Germany *Umweltzone* Public Communication Process**



### LOCAL-LEVEL STAKEHOLDER CONSULTATION AND INFORMATION DISSEMINATION

At a local level, in 2008 Berlin established a roundtable that included representatives from the following relevant stakeholders:

- Scientific Advisory Council (specifically established for the *umweltzone* policy and development of its operating strategy);
- Local government parliamentary parties;
- Local district public works departments;
- Chambers of commerce, haulage companies, and trade associations;
- Transportation operators;
- Trade unions, automobile associations, eco-lobby groups, and other NGOs; and
- Urban development and modern education lobby groups.

Based on the baseline air quality plan, the consultation informed the development of the final plan and introduced concessions such as the use of temporary exemptions<sup>4</sup> for commercial fleet operators that were able to demonstrate potential severe economic harm from the implementation of an *umweltzone*. Overall, the scope of the concessions was limited because each one granted could have made enforcement more complex and would have set a precedent that could have hindered consultation for *umweltzone* in other German cities.

Public communication was based on marketing (e.g., extensive use of flyers, newspaper articles, advertisements, and a comprehensive Web-based Internet resource) coupled with seeking feedback (e.g., ad-hoc surveys, meetings with businesses and truck operator associations) to inform the development of Berlin's *umweltzone*.

As an example of best practice in Germany, Berlin had developed (and currently maintains) a comprehensive Web resource (COWI 2013) showing measured emission levels at the individual street level, baseline data files in Excel, a selection of future scenarios that refer to achievable targets, draft plans to further improve air quality for transportation (including improved traffic management, speed limits, tax incentives, etc.), and reduction in harmful emissions from other non-transportation sources. The Web resource was used as part of the marketing of the Air Quality Plan and provided the means to obtain feedback, as well as contact details for the sponsoring agency.

### CONTINUOUS MONITORING AND PROGRAM UPGRADE

Following initial consultation and implementation, the Berlin scheme commenced operation in 2008, followed by a second phase in 2010 based on more stringent emission levels. The migration to the second phase was achieved by a continuous monitoring program and communication with stakeholders (particularly commercial fleet operators) that informed a tightening of regulations to the Euro 4 Emission Standard for all light and heavy diesel vehicles. The natural replacement rate of vehicles and resulting migration toward the Euro 6 Emission Standard and beyond meant that tighter emissions targets could be progressively introduced that required continued monitoring of the mix of the local vehicle population to determine the timing of changes to the regulations.

#### 4.2.3 Highlights from Berlin's LEZ

Enabling legislation, a framework for phased public communications and consultation, proven implementation timetables, and increasing national public acceptance have all contributed to the rapid adoption of *umweltzone* throughout Germany. Many cities adopted Berlin's roundtable approach, supplemented with marketing activities as just described. However, cities that have implemented an *umweltzone* appear to be regionally clustered, and the authors of this working paper hypothesize that this may be due to the different rates of development in the critical mass of political will in each region.

In Berlin, the integration of the marketing and the Web resources showing the emissions data provides an effective means to illustrate the benefit of LEZ schemes to the public, which allows for an informative evaluation process. Moreover, the integration offers informed feedback from the public, which promotes the process of ongoing monitoring and the continuous measurement of public attitudes, which in turn allows for the refinement and update of the LEZ scheme.

## 4.3 Milan Italy: Environmental Zone and Congestion Charging

### 4.3.1 Background

The heavily industrialized *Commune di Milano* (Milan) (pop. 5.2 million) suffers from some of the highest vehicle and motorcycle ownership rates in the world and faced the visible problems of worsening congestion and transportation-related air quality. Milan had acquired the reputation as Europe's most polluted city: the environmental standard for PM<sub>10</sub> was being exceeded on 150 days when the limit was 35 days per year.

To address these air quality problems, the *Commune di Milano* started a short-lived pre-Euro ban in 2007 in a restricted zone. Then the city implemented EcoPass, its first traffic pollution-charging scheme for vehicles traveling within a designated traffic restricted zone, in January 2008 (to coincide with new federal regulations) with a clear aim to reduce  $PM_{10}$  by 30 percent. The EcoPass program was similar to a LEZ and differentiated finely between vehicle emission classes entering the restricted zone, with fees set at EUR 2, EUR 5 and EUR 10. Payments and renewals were handled via the Internet, news agents, garages, and banks.

However, the benefits of EcoPass were gradually offset by the increasing number of exempted vehicles. The EcoPass program was replaced by the Area C program, a combined LEZ and CC program, in 2012. The EcoPass charged vehicles based on their emission classes, while the Area C charges a flat rate for all vehicles and does not allow access for certain polluted vehicles. The number of exempted vehicles fell from 92 percent under EcoPass to 12 percent under Area C, and the number of vehicles entering the zone reduced by a further 34 percent from 2011 levels due to the effect of the charge. In addition, PM reporting was replaced with black carbon (BC) levels (WHO 2011), confirming that BC (and PM) levels were somewhere

between 28 and 40 percent lower than in areas outside the restricted zone. The average speed of public transportation had increased by 4 percent, and accidents were reduced by 52 percent.  $PM_{10}$  emissions were reduced by 19 percent, compared with EcoPass levels, and by 61 percent, compared with 2008 (pre-EcoPass) levels (Martino 2011).

#### 4.3.2 Communication Process

Public communication of Milan's Environmental Zone and Congestion Charging evolved with the scheme changes from traffic restrictions to EcoPass to Area C. The conversion of a pollution charge to a congestion charge with the complexity of the varying objectives, targeted vehicles, and implementation geographies made it a very challenging process for public communication. As shown in Figure 6, public communication involved consultation, negotiation, notifications, surveys, and a referendum, which went through a recurrent process due to policy changes.

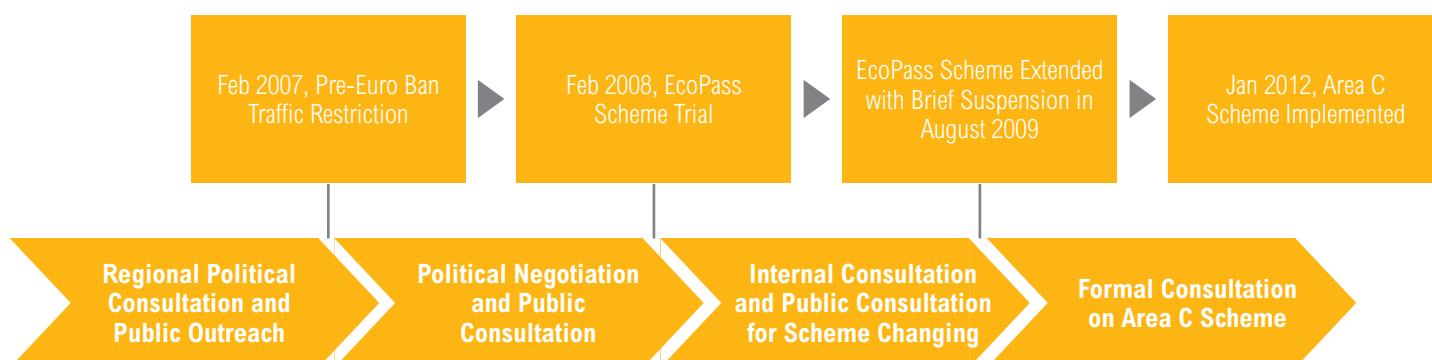
##### REGIONAL POLITICAL CONSULTATION

Dialogue with the public and regional administration on environmental zones to address air pollution started in 2006, and a steering committee was set up to assist with the regional political consultation process. During the fourth quarter of 2006, the committee called

## Milan Area C



Source: [https://upload.wikimedia.org/wikipedia/commons/c/c5/Milan\\_Ecopass\\_area.png](https://upload.wikimedia.org/wikipedia/commons/c/c5/Milan_Ecopass_area.png)

Figure 6 | **Public Consultation Process in Milan**

for a conference of mayors, including the mayor of Milan, Letizia Moratti; the president of the region; the president of the province; and the mayors of 32 regional municipalities. The consensus from the mayors was that any zone entry charges must be linked to improvements in public transportation and other complementary measures.

However, in February 2007, faced with winter smog and intense lobbying campaigns<sup>5</sup> that were requesting the government to take action, the mayor took the unpopular step of banning 170,000 cars and motorcycles manufactured to pre-Euro requirements from being used in a restricted area known as the *Zona a Traffico Limitato* (ZTL). A follow-up survey on the ZTL policy conducted by the mayor's office in late 2007 (and separately by the media) showed a roughly even split of support<sup>6</sup> and opposition to the scheme with a majority agreeing that something needed to be done to improve air quality. In general though, there was a lack of information on the ZTL plans from the beginning, and the media became the main channel for keeping the public informed.

#### **POLITICAL NEGOTIATION AND PUBLIC CONSULTATION**

While the political consultation was going on, the main opposition was to the initial 60 km<sup>2</sup> scheme area, which covered 33 percent of the city area, affecting 77 percent of resident population and 65 percent of nonresidents. Those opposed, mainly from regional, nonmetropolitan administrations, claimed that they had not been included in the consultation process. In the fourth quarter of 2007, the political negotiation that led to the final shape of the LEZ (to be known as EcoPass) included a reduction in area from the initial 60 km<sup>2</sup> to 8.2 km<sup>2</sup> (thereby reducing the complexity of political negotiations from

the region to the city), a residents' discount, and a four-month delay in implementation.

During this period, public consultation was based on a letter campaign to more than 750,000 residents in the urban region (about 10 times the population of the ZTL itself), a press campaign, and public hearings. Italy's prime minister and the provincial (Lombardy) government provided additional political support to the mayor.

Public communication of EcoPass featured a clear aim: a 30 percent reduction in particulate matter. The communications program adopted the slogan "meno traffico = aria più pulita" (less traffic equals cleaner air). The advertising campaign during the trial period was founded on the message that EcoPass was "[a] green light to non-polluting cars," implying that vehicles of the Euro 3 Emission Standard (or better) were non-polluting. Overall, the campaign addressed the public's concern that the entry scheme would improve air quality for everyone, from road users to residents and business, emphasized by the choice of EcoPass as the brand name of the scheme itself.

It is worth mentioning that some ripples of discontent were triggered due to operational failures in the scheme's implementation in the initial stage. Public and media acceptance was undermined by system errors, call center overload, and an incorrect short message service (SMS) notification of scheme suspension. In the first few days of operation 160,000 fines were issued to road users that were unaware of the new regulations, most of whom claimed poor marketing of the regulations by the



*Comune di Milano*. The *Agenzia Mobilità Ambiente e Territorio* (City of Milan Mobility Agency) (AMAT) provided timely ways for the public to make their complaints and to ensure that the public's feedback was heard. At no time did the opponents of EcoPass question the principle of restricting car use in the city center, however. Therefore, among other start-up failures, the overall attitude toward EcoPass was very positive in the major local newspapers.

#### CONTINUOUS PUBLIC CONSULTATION REGARDING SCHEME CHANGES

The initial response to the new restrictions was favorable. An ad-hoc report<sup>7</sup> unscientifically claimed a 5 percent reduction in hospital admissions for respiratory conditions, a reduction in road accidents and increases in public transportation usage. Alongside other ad-hoc reports from other government agencies referenced above, the feedback on the performance of EcoPass was the responsibility of the AMAT. To continuously monitor the program and collect data on public attitudes, the government offered ways for the public to register complaints with AMAT and through their local political representatives.

From the commencement of EcoPass in January 2008, the following two-year period witnessed traffic congestion and harmful emissions returning from a 21 percent reduction in 2008 to close to former levels (similar to the trend experienced in Gothenburg). A survey of 500 citizens in November 2009 that was conducted by *Legambiente* (an Italian environmental association) and *Il Sole 24 Ore* (the most important Italian economic newspaper) showed that concern about traffic was seen as a problem (43 percent) more than environmental pollution (40 percent average) (Balducci et al. 2008).

Apart from a brief suspension in response to a protest that occurred between August 1 and 21, 2009, increasing levels of congestion and emissions were accompanied by an increasing share of exempted vehicles from 50 percent in 2007 to 75 percent in 2008 to 90 percent in 2010 (Mattioli et al. 2012), suggesting a gradual erosion of the benefits. As one commentator noted, "The EcoPass proved [to be] a placebo." Notably, the proportion of vehicles subject to exemptions granted in London and Stockholm during the policy development stage had remained low (about 20 percent or less) and constant since their respective launch dates. Selective reporting by AMAT had been emphasizing that air quality, rather than congestion, remained the problem. However, public feedback led to a rethinking of the EcoPass program.

#### FORMAL CONSULTATION ON THE CONGESTION CHARGING PROGRAM

In 2010 the mayor formed the cross-party *Commissione EcoPass* (EcoPass Commission) comprising members of the main political parties, PDL, Lega, and UdC. After a change of mayor in 2011, a formal consultation on a range of measures commenced, resulting in a financial package worth about EUR 30 billion (USD 36 billion) that included extensions to the metro lines, doubling of inner-city pedestrian areas, doubling of 30km/hour areas, new neighborhood bus services, nighttime subway services, enhanced taxi services, subsidized car-sharing, a 300km cycle network, and upgrades to district heating networks.

A petition led by the *Milano si Muove* (Milan gets Moving) association led to a referendum on June 12, 2011, which asked the question, "Would you support the City of Milan's plan to boost public transportation and mobility, clean alternative[s] to the car, through charging an access fee for all vehicles (excluding those with zero emissions) in a zone that will be progressively enlarged up to the city metro's circle line, with the goal of reducing traffic and pollution by 50 percent?" (translation). The referendum revealed 95 percent support for the package and 79 percent support for the new traffic policies (Mattioli et al. 2012).

The replacement of EcoPass was known as Area C, and the new scheme commenced operation on January 16, 2012. Public communication for Area C was based on flyers; letters to households; road signs; advertisements on radio, TV, and the Internet; and public information meetings. Currently the *Comune di Milano* website ([www.comune-milano.it](http://www.comune-milano.it)) is the main medium for public communications related to Area C.

According to the media, the switch from PM reporting to black carbon reporting remains an elusive measure of air quality, and Area C is no more than CC dressed up as an LEZ. Arguably, the focus on stakeholder communication on a widely acknowledged visible problem (air quality and its related adverse impacts on health) by AMAT on behalf of the *Comune di Milano* city administration and the mayor's office had helped secure support for CC mechanisms also.

#### 4.3.3 Highlights from Milan's Experience

Compared to other cities discussed in this report, the public communication process and strategy in Milan were challenged by scheme changes. The continuous collection



of information about public attitudes and the persistent attention to public feedback ensured a smooth transition between the two schemes.

EcoPass and Area C policies have different primary objectives. EcoPass focused on air pollution reduction, while Area C was targeted to reduce traffic with pollution reduction as a co-benefit. The brand name changes from EcoPass to Area C reflected the shift in objectives. The overall consultation process provided a way of informative mutual communication where stakeholders' views were recorded and policy-related messages were adapted to the scheme design.

The initial ripples in the implementation of Ecopass implied that minor failures in the scheme operation could reduce public acceptance. System errors should be avoided as much and as early as possible so as not to undermine the impact of a structured public communication program.

There were arguments that the performance reports of EcoPass and Area C were strictly limited to improvements in air quality and reduction in traffic flows, and public communication made no reference to the other benefits, such as reduced accident rates nor the increased speed of public transportation within

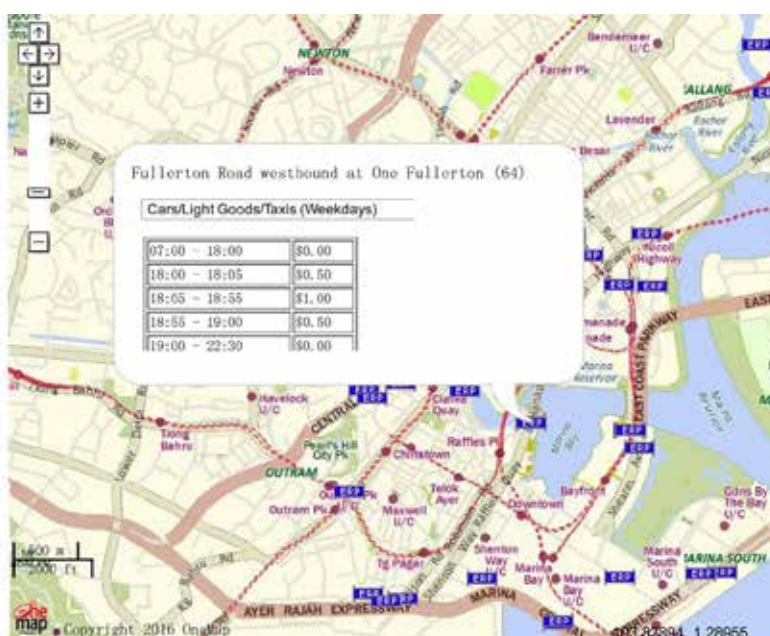
the ZTL and other social impacts. It became clear that performance reporting, which included various variables in addition to road network performance and air quality needed to be integrated into the structured public communication program.

## 4.4 Singapore: Electronic Road Pricing

### 4.4.1 Background

Singapore (pop. 5.4 million) implemented an Area Licensing Scheme (ALS) on June 2, 1975. This required vehicle owners to purchase a period-based paper license to enter the Restricted Zone (RZ), otherwise known as the CBD. Electronic Road Pricing (ERP) replaced the ALS scheme in 1998, and the Land Transport Authority (LTA) is currently developing its next generation system, known informally as ERP 2, which will enable more complex pricing measures and valued-added services. It is anticipated that ERP 2 will be implemented progressively from 2020 with an 18-month switchover period to transit from the current ERP system to the new system. The user-pays ERP regime complements other restrictive vehicle ownership policies, including a vehicle quota scheme, a high first registration tax, and a high annual usage tax. The LTA also regulates the public bus network (recently partly renationalized) and taxis and wholly owns the mass railway transit organization.

## Singapore ERP



Source: Traffic Smart, <https://www.onemotoring.com.sg/content/onemotoring/en/imap.html?param=redirect>

Figure 7 | **Public Communication Process in Singapore**



#### 4.4.2 Communication Process

##### **POLITICAL CONSENSUS AND LEGISLATION ENDORSEMENT**

The consultation process for the first generation ERP scheme was underpinned by political consensus that had already been developed during the operation of the 23-year-old ALS. The ERP regime was aimed at functionally replacing ALS and to allow continued refinement and scalability (a disadvantage of the ALS scheme). The initial stage of internal consultation started with a high-level transportation panel led by First Deputy Prime Minister *Goh Chok Tong*. The planning for ERP took 10 years, and its implementation was led by the LTA as the primary authority and owner of the migration project, which was fully endorsed by the government. Legislation had been enacted to charge for the use of road space, to enforce violations, to define the appeals process, and to apply the charging regime to foreign vehicles.

##### **STRUCTURED COMMUNICATION STARTING WITH A TRIAL PROGRAM**

Initially, limited information was provided to the public on plans for ERP. After an aborted procurement in 1991, a new tender offer led to three consortia being short-listed for trials on a closed road segment near Tuas, and these trials were exploited as the centerpieces of the public consultation program as well as reducing the risk of the operational strategy for multi-lane free flow tolling, an approach that had been commercialized by the 407 Electronic Toll Route in Toronto, Canada, only a few months earlier in October 1997.

Throughout the design, implementation and operations of ERP, the LTA maintained close liaison with local members of Parliament, residents (whether they were car owners or not), road users, city councils, public transportation operators, the vehicle registrar, and infrastructure departments with the aim of ensuring that the aims of ERP and its

implementation schedule were deliverable. The one-year consultation period for ERP was managed simultaneously with the on-road trials, and this led to some improvements in the scheme design (mainly relating to privacy protection). Early on in the consultation, privacy concerns led to the change in requirements to use an anonymous prepaid smart card as the main form of payment.

In addition, the main marketing messages were focused on improved traffic management (rather than revenue generation), reliability (proven during the trial period), flexibility (replacement of a flat charge with a usage-related charge), and usability (no need to apply for daily licenses). Brochures were sent to all motorists before system launch, and the system was switched on weeks ahead of the planned start date to enable motorists to familiarize themselves with the new roadside infrastructure and the operation of the in-vehicle units. Advertisements were placed in the print media and on TV to raise awareness of the new ERP scheme.

The structured outreach program, led by the LTA, included visits to the trial site by schools and universities plus other interested members of the public and businesses. An education program was also set up in schools to teach children about transportation solutions and the benefits of road pricing. The primary message was that ERP would form part of “[the] management of the car population, and at the same time, optimize the use of [the] roads, through a judicious mix of ownership and usage management” (LTA 2009). The marketing program was extended to all motorists entering Singapore from Malaysia.

##### **CONTINUOUS COMMUNICATION TO INCREASE PUBLIC INVOLVEMENT**

Following implementation of the ERP scheme, the LTA confirmed its success by reporting several metrics that matched the original policy expectations, including a

15 percent reduction in traffic volumes on expressways and in the RZ and an increase in average speeds from 35 km/h to 55 km/h. The complex tariff strategy with periodic adjustments meant that the ERP scheme was able to maintain average traffic speeds at optimal levels (as specified by an LTA study and traffic modeling), which was its central operational objective and widely reported via the media during the early phases of implementation. Throughout this period, the LTA also maintained hotline support and provided several customer service centers to further facilitate feedback from road users. Shortly after the commencement of the ERP scheme, the back office contractor CSE Global Ltd. confirmed that one of the critical success factors for ERP was the “publicity and education program.”

Public acceptance was based on the flexibility of ERP to mitigate the potential for an increase in (the already high) ownership charges by levying usage-related charges instead, fairness (charging and enforcement accuracy was critical), privacy, demonstrable reductions in congestion, and the decision to charge only during congestion periods. In addition, vehicle owners received periodic rebates on their annual vehicle taxes, funded by ERP revenues.

#### **INTEGRATING THE COMMUNICATION PROGRAM INTO TECHNICAL TENDERING**

As stated earlier, the LTA is currently developing ERP 2, which is planned to be operational progressively from 2020. The new satellite-based scheme will provide an increased level of pricing complexity, potentially enabling every road segment to be individually priced, although initially (to aid public understanding) the current CBD and strategic route charging policy will be retained. A complex on-board unit (OBU) will also provide an application platform for value-added services that may form a part of the communications program.

As part of the ERP 2 tender, each of the three short-listed consortia was required to propose public communication/marketing subcontractors who will develop a public communication strategy and manage its delivery (and related multilingual marketing collateral and digital media channels) for ERP 2. The scope of delivery does not include consultation on the policy itself. However, in the opinion of the authors of this document and based on the experience from ERP, opinions will be sought from the public on operational details, and on the usability of the newly introduced complex OBU. The LTA had not intended to issue separate tenders for public communication although

the LTA reserved the right to appoint its own contractor at a future date. Although the winning tenderer is required to own the delivery of the communications program, the LTA requires contractors to liaise closely with the LTA at all stages from contract award through to the end of implementation. The LTA may define performance indicators to fine-tune the priorities placed by the contractor on the communication objectives that are initially targeted at vehicle owners/road users rather than the general public.

#### **4.4.3 Highlights from Singapore's Experience**

No big ripples occurred during the public communication process for congestion pricing in Singapore. The history of ALS has prepared Singaporeans with adequate awareness of the policy and served as a positive “pro” campaign to allow plenty of time for people to absorb and accept the information. The upgrade from ALS to ERP basically involved changes in application geography and implementation technology. However, the public's smooth adaptation to the changes is attributable to the structured communication programs led by LTA.

The open of the trial site to the public and the integration of delivery of a public communication plan into the ERP 2 technical tendering have made public involvement an integral part of the design stages. In 2010, the LTA declared, “While a congestion pricing scheme may be justified from a technical perspective and can be rationally argued for, utmost importance must be given to communicating the rationale of the scheme to road users and the communities including the businesses. There is [...] never too much communications and publicity when it comes to road pricing schemes.” (Chin 2010).

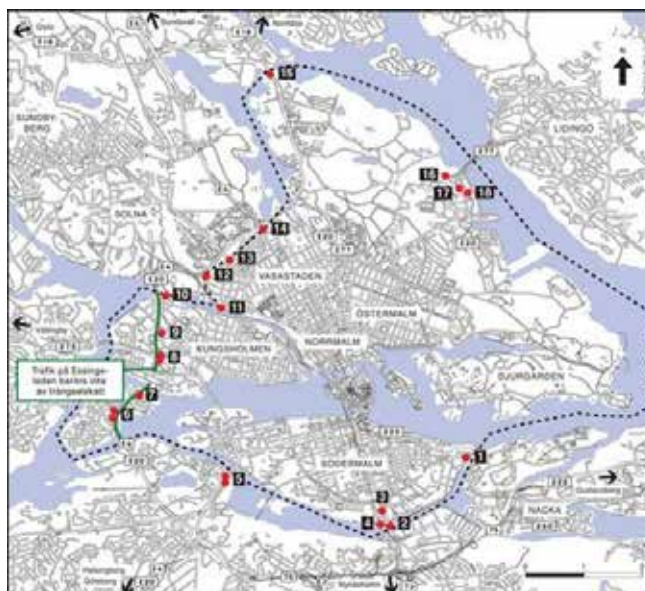
It is critical that public communication be carried out as early as possible in the policy design process. Early interactions with the relevant stakeholders and the public will benefit the scheme's execution by providing flexibility in adapting to feedback. The change in requirements to use an anonymous prepaid smart card as the main form of payment is a successful example.

### **4.5 Stockholm Congestion Charging**

#### **4.5.1 Stockholm Background**

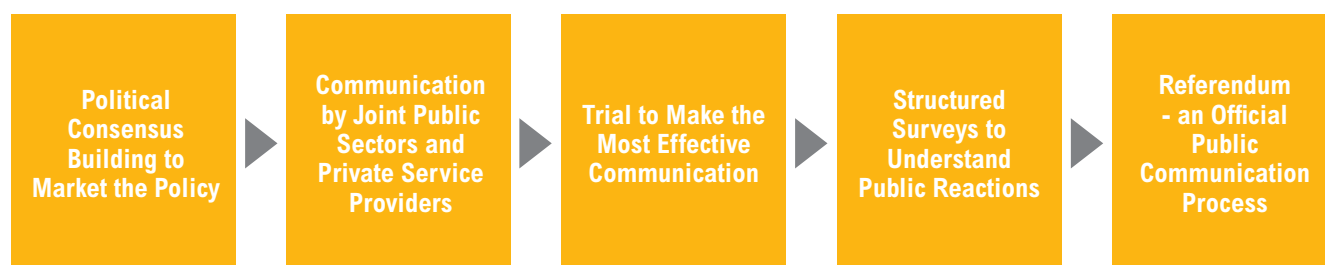
Stockholm County (pop. 1.9 million) includes 26 municipalities that in total contribute to 29 percent of Sweden's GDP, the largest municipality being Stockholm City (pop 0.9 million). In 1992, a comprehensive road investment program known as the Dennis Plan (named

## Stockholm Congestion Charging Area



Source: Jonas Eliasson, 2014

Figure 8 | **Public Communication Process in Stockholm**



after its sponsor Bengt Dennis) was developed that included a road-pricing component. After a period of political consultation, the plan was dropped in 1997, although some of the planned investments in transportation infrastructure were made. The Stockholm CC started with a seven-month trial to assess the costs and benefits, followed by a public referendum, which led to the scheme's permanent implementation.

### 4.5.2 Stockholm Communication Process

**POLITICAL CONSENSUS BUILDING TO MARKET THE POLICY**  
In preparation for the September 2002 local elections in

Stockholm, a political consensus-building process resulted in an agreement between the Social Democrat government and their supporting parties (the Left Party and the Green Party) to plan a congestion charging regime. The debates among the parties were favorable to the marketing of the three policy objectives that were regarded as addressing real problems: reducing congestion, improving air quality, and improving access to Stockholm's CBD.

A political agreement was finally reached in October 2002. This agreement was conditional on a seven-month congestion charging trial to assess the costs and benefits, followed by a public referendum, centered mainly on



residents in the Stockholm urban area. This agreement also provided the basis for developing enabling legislation for a congestion charging regime that was described as an environmental tax that could be applied anywhere in Sweden. To the public, environment and health issues are more important than traffic congestion. Therefore, public support for the policy depended not only on the policy *per se*, but on its objectives.

#### COMMUNICATION BY JOINT PUBLIC SECTORS AND PRIVATE SERVICE PROVIDERS

Based on initial political will at the national and local level and with the support of an interagency project group, a provisional transportation package was developed and communicated by a joint activity planned and executed by Stockholm City Council, *Vägverket*<sup>8</sup> (Swedish Roads Administration) and Stockholm Transport (SL) and involving the public from mid-2005. The activity included flyers, posters, public meetings, advertising on buses and parking meters, a letter campaign, awareness events (i.e., in shopping centers), radio and TV commercials, and a telephone hotline. Stockholm City set up the website <http://www.stockholmsforsoket.se> to provide copies of the evaluation reports and a comprehensive directory of supporting documents. In addition, the three public-sector sponsors implemented a monthly reporting regime to illustrate congestion and air quality levels and to measure public attitudes.

IBM was selected as the main contractor and service provider for the trial, and IBM was required to provide point-of-contact service providers for all users, including news agents (*PressByrå*), convenience stores (7-Eleven), a website and call center operations – all of which helped market the scheme. The service provider, as the scheme designer and implementer, knew all the details about the scheme operations. The service provider's involvement in the communication process ensured that operation details were delivered to affected residents.

#### TRIAL TO MAKE THE MOST EFFECTIVE COMMUNICATION

Financed by the state and operated by the City of Stockholm, *Vägverket*, and SL, the seven-month trial<sup>9</sup> was based on a cordon surrounding Stockholm's CBD and was in operation from January 3 to July 31, 2006. Long before the congestion tax came into force, there were debates over CC for Stockholm, and the best estimates of its actual effects after implementation were only theoretical guesses. The CC trial in Stockholm, the first in history, invited the public to actually experience the system. The main purpose of the communication plan was to familiarize

the residents with the charging system and to convince them that the policy was achieving its goals. The residents' experiences in the trial served as the most effective way for them to witness the effects of the scheme.

Throughout the pre-trial, trial, and post-trial period, the most important source of information was the official website of Stockholm City (<http://international.stockholm.se>) on which periodic reports were published (highlighting positive local, visible, and direct benefits) and the Swedish broadcast media (mainly television, radio, and the press).

#### STRUCTURED SURVEYS TO UNDERSTAND PUBLIC REACTIONS

The public consultation process also featured structured surveys, including a longitudinal travel survey (based on the principles of a panel survey) sponsored by the trial operators and a smaller one-off longitudinal motorists survey sponsored by the University of Groningen (Netherlands) and the Swedish National Road and Transport Research Institute:

- (a) Travel Survey<sup>10</sup> (77,000 individuals): two 14-day periods in September to October 2004 and March 2006

The travel survey was conducted to investigate how travel patterns had been affected by the congestion tax. From the county's 1.5 million population, a stratified sample of 77,000 individuals, ranging in age from 12 to 84, was drawn from eight different geographies in Stockholm County. Of the 77,000 individuals contacted in the first wave, 36,000 responded; of these, 24,000 responded in the second wave (Becker 2008). The survey material included information on the purpose of the questionnaire and data protection provisions. Weights were applied to the samples from each region to reflect gender, age, and sociodemographic groups. The main body of the travel survey questionnaire was divided into two parts:

- Background questionnaire: (age of household members, type of residence, driver licenses of household members, information about car availability, parking capacity at the residence, public transportation ticket availability, household income, type of employment/working schedule, and parking options at the place of work)
- Travel diary questionnaire: (complete address of the origin, starting time, purpose of the trip, address of destination, modes of transportation used)



during the trip, arrival time, type of public transportation ticket (2004 only), use of local bypass, and congestion tax paid (2006 only)

The questions were similar for the 2004 and 2006 waves of the survey. A small telephone survey was conducted after each wave and, in both cases, confirmed that the difference between the response and nonresponse group was not significant. Other effects such as weather, fuel prices, and economic well-being were not taken into account.

(b) Motorists Survey (1,000 individuals): December 2005 and August 2006 (Schuitema 2010)

Of the sample of 1,000 individuals, 444 responded. Holders of driving licenses resident in the city of Stockholm were randomly selected. Pre-trial questions focused on the expectation of weekly charges, modal split (i.e., car, motorized transportation except for private cars, public transportation, non-motorized transportation, and other) and beliefs (based on open questions requesting three negative and three positive expected consequences) and expectations of meeting the three policy objectives.

These longitudinal panel surveys, as part of public consultation program, revealed that users were pessimistic that the intended benefits would be achieved and expected the costs to be higher; the CC had more favorable effects (i.e., reduced congestion, reduced parking problems, and improved air quality) and fewer unfavorable effects (i.e., a reduced increase in travel costs) than expected. The number of vehicle trips reduced by 22 percent (16 percent during morning peak and 24 percent during evening peak). Other impacts included a 6 percent increase in ridership on SL buses, a 2 percent increase on commuter trains, and a 14 percent increase in subway ridership. Harmful emissions decreased by 3 to 5 percent in Stockholm City and 8 to 14 percent in the CBD (Eliasson et al. 2009).

The surveys invited residents to think about how their travel behaviors changed and how the actual results were different from what they expected before the trial. In addition to experiencing the scheme individually, residents were exposed to more overall impacts of the trial by participating in the surveys and getting know the results. The surveys not only assisted in monitoring of the trial operation, but also provided opportunities for better public engagement.

#### REFERENDUM—AN OFFICIAL PUBLIC COMMUNICATION PROCESS

Again, a first in history, the referendum held after the trial asked the question, “Should congestion charging be used in Stockholm?” The answers confirmed that 51 percent of respondents were in favor of reinstating the CC scheme, and 49 percent opposed it (Schuitema 2010). Referenda in Sweden are consultative (i.e., not binding), but the result provided sufficient justification to establish the CC on a permanent basis. Following eight years of continuous operation, according to a KTH Royal Institute of Technology survey conducted in February 2015, 70 percent of people living in Stockholm either liked the CC or had no problem with it.

#### 4.5.3 Highlights from Stockholm’s Experience

It may be concluded that the 2006 trial was an important component of the public consultation process and demonstrated that, in the local social, political, and economic environment, CC was found to be acceptable enough (based on achievement of the policy goals that had been communicated) to be implemented on a permanent basis beginning in August 2007. Up to the time of writing, the benefits had been sustained (including an 18 percent reduction in congestion). With regard to the Stockholm scheme, the former Swedish State Secretary for Environment claimed, “[the] public must be well-informed about the objectives and the practicalities [and] what is to be expected by the public” (Lönnroth 2014). Compared with Helsinki and Lyon, the much higher support rate for CC in central Stockholm was due to the trial period (Hamilton and Eliasson 2012).

The structured surveys in the Stockholm public communication process allowed for an informative evaluation process for the trial program, which provided a cost-effective means of gathering data on travel patterns and preferences that, in turn, offered the means to evaluate system performance and benefits. In addition, the data gathering also allowed for continuous public engagement and maintained the levels of public support by demonstrating positive system effectiveness.

### 4.6 Gothenburg Congestion Charging

#### 4.6.1 Gothenburg Background

Following a local and national parliamentary decision in May 2010, Gothenburg (pop. 540,000) implemented a CC scheme with the aim of reducing peak period congestion, reducing harmful emissions, and cofinancing its 25-year *Västsvenska* (West Sweden) infrastructure development

## Gothenburg Congestion Charging Area



Source: Johansson, 2014

plan (the transportation package) for new roads, bridges, tunnels, and an 8-km railway line, in total worth SEK 14 billion (USD 1.7 billion). Unlike Stockholm, neither a trial nor a public referendum was planned prior to implementing the CC scheme.

The Gothenburg Region (GR) is a formal organization that consists of 13 municipal councils that represent a regional planning authority founded on good governance to achieve consensus and consistency in decision-making based on the common vision of sustainable development, including integrated traffic and land use planning. The national government, regional governments, and the GR were jointly responsible for the development of regional and city development strategy documents, including the *Västsvenska* package, partly funded by revenues from a CC in Gothenburg. Short-term benefits included additional park-and-ride facilities.

### 4.6.2 Gothenburg Public Communication Process

#### **PUBLIC CONSULTATION FOCUSING ON REVENUE RAISING**

After the successful implementation of a CC in Stockholm, the broad political coalition that had been established at the regional and city level had the effect

of reducing the conviction that public opinion should be sought as part of the planned consultation program initially in Gothenburg, thereby resisting calls for a referendum that had been used previously to secure the legitimacy of the Stockholm CC scheme. Following informal consultation on development within the group of governments and the GR between 2002 and 2008, the GR focused on the development of the *Västsvenska* transportation package itself. With the additional participation of the City of Gothenburg, this provided sufficient political support for the implementation of the transportation package.

The public consultation program presented CC as a tax-raising measure to partially fund the 25-year package, and included the new West Link rail line. The package was presented online, via the broadcast media (television, radio, and the press), leaflets, and through public meetings and road shows. However, on November 16, 2012, in response to the unrelated European Commission's consultation on the urban dimension of EU transportation policy, the government reaffirmed the intention of the city to implement CC in Gothenburg, focusing on the congestion-reduction measure: "Congestion on the main arterial roads surrounding the city of Gothenburg is a major problem. Although the traffic flows in the city center

[have] decreased during the last decade, the traffic to and from the suburban regions and neighboring cities has increased significantly. Therefore, the City of Gothenburg is introducing congestion charges in early 2013.” This focus on the revenue-raising potential at the initial stage of public consultation and the swing to the congestion-reduction objective (although a very proactive objective for the public) caused confusion and undermined the environmental benefits that Stockholm’s communication strategy had targeted. This made it more difficult to market the policy and impaired the public confidence that had been built from the Stockholm case.

#### RESIDENTS DEMANDING A REFERENDUM

Seeing the success in Stockholm, Gothenburg’s city council approved the CC in a vote in January 2010, and the Swedish Parliament approved this shortly after. The scheme commenced operation on January 1, 2013. Over the next 12 months, there was sufficient public opposition (mainly from a road users’ association, despite the fact that residents got a first-hand experience of traffic reduction), to prompt a prominent local tabloid to arrange a petition requesting a public referendum on the continuation of CC.

The referendum was conducted in connection with elections to Parliament and local government on September 14, 2014. This non-binding referendum resulted in 43 percent voting to keep the scheme and 57 percent in favor of cancellation (Börjesson et al. 2016).

Overall, the sustainability of the *Västsvenska* package was not in doubt, but instead the economic rationality of the new West Link rail line was questioned in terms of its funding mechanism, which was underpinned by CC. It appeared that loss of public and political acceptance in the latter had degraded public acceptance of the former, as confirmed by the referendum. However, in May 2015, the city council in Gothenburg decided to keep the city’s CC, despite the result of the referendum, in order to protect funding for a new rail tunnel under the city center (Transport and Environment News 2015). With the approach of the 2018 election, the rail line and the charge may be put on the agenda again.

#### 4.6.3 Highlights from Gothenburg’s Experience

Gothenburg was an exceptional case where the referendum was triggered after the official initiation of CC, and a political decision overruled the referendum results and continued the CC. The effectiveness of public

communication in increasing public support may have been undermined for several reasons:

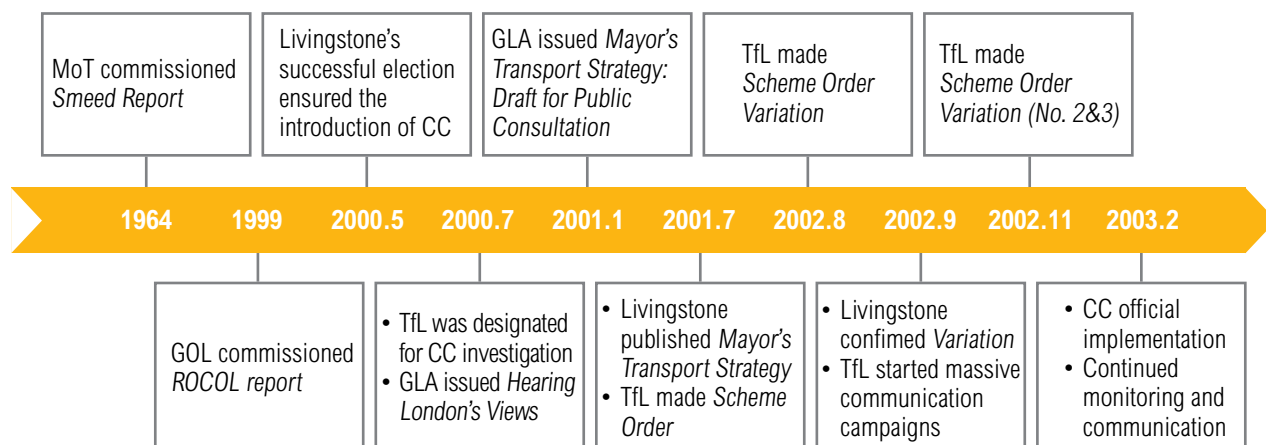
- A public information campaign emphasizing that the role of congestion charging was to generate revenues rather than more visible benefits, such as reduced congestion and improved air quality (as presented in Stockholm);
- Political decisiveness and the short consultation period prior to implementation, which did not fully capture public sentiment nor leave time for adoption of the scope and content of the transportation package; and
- A perceived lack of short-term benefits from the long-term infrastructure measures in the 25-year plan and political disagreements on the economic rationality of the new West Link rail line.

### 4.7 London Congestion Charging and Low Emission Zone

The UK government publishes the Code of Practice on Consultation, the most recent edition being in 2008 (Department for Business, Enterprise, and Regulatory Reform 2008). Although local authorities are not bound by the code, they are encouraged to use it. For example, it would not apply to initial informal policy development or where the scope relates to highly specialized areas. Whenever a government department explicitly adopts the code (as in the case of Manchester below), deviations are permitted.

The code states: “Ongoing dialogue between government and stakeholders is an important part of policymaking... [and]... [w]hen developing a new policy or considering a change to existing policies, processes or practices, it will often be desirable to carry out a formal, time-bound, public, written consultation exercise. This kind of exercise should be open to anyone to respond but should be designed to seek views from those who would be affected by, or those who have a particular interest in, the new policy or change in policy.”

Enabling legislation adopted in England and Wales, and separately in Scotland gave powers for any local authority to include a road user charging scheme on roads for which it is the traffic authority. In chronological order, the UK examples presented here are London (CC and LEZ), Edinburgh (CC), and Manchester (CC), all adopting a highly structured multi-stage stakeholder consultation and public communication process.

Figure 9 | **Milestones in the Public Communication Process in London**

Source: Johansson, 2014

## London Congestion Charging Zone and Low Emission Zone



Source: www.tfl.gov.uk

### 4.7.1 London Background

London (pop. 8.3 million) is the most populous city in Europe. With consistent public and business concerns over road traffic congestion due to a huge increase in car ownership after World War II, a CC policy has been studied and considered for decades as a possible solution for busy road networks in this capital city. Upon the establishment of the Greater London Authority (GLA) and the inauguration of London Mayor Ken Livingstone, who promised a package of transportation solutions that included a CC scheme for central London during the mayoral election, the scheme officially went through a series of necessary stakeholder

consultation and public outreach and finally came into force in February 2003.

### 4.7.2 Communication Process

Figure 9 illustrates the well-planned and implemented communication process for this controversial policy.

#### INFORMAL COMMUNICATION

A wide range of research and publications has provided technical analysis and socioeconomic examination of London's CC scheme. These studies, on the one hand, provided the future Mayor Livingstone and his team with comprehensive understanding of public opinion on this issue



and also justified the introduction of a CC scheme for central London. On the other, the studies served as an informal consultation channel for some selected key stakeholders to express their major concerns and their demands, which were taken into consideration for final suggestions.

### FORMAL STAKEHOLDER CONSULTATION

Transport for London (TfL) was created in 2000 to investigate the implementation of a CC scheme for central London. Meanwhile, the GLA issued a discussion paper, “Hearing London’s Views,” which aimed at seeking the views of key stakeholders in terms of boundaries of the charging area, the level and structure of charges, the hours of operation, exemptions and discounts, etc.

A preliminary consultation was conducted by TfL in June and July 2001 with key stakeholders. Fourteen consultation meetings were held afterwards, explaining additional details of the scheme, and providing a genuine opportunity for stakeholders to raise their concerns.

Based on procedural advice and representations collected through preliminary consultation, TfL drafted The Greater London (Central Zone) Congestion Charging Order 2001 (Scheme Order) on July 23, 2001, and made several variations of that order afterwards by the launch of the scheme to slightly amend the confirmed Scheme Order with the aim of increasing the operational effectiveness of the scheme. Multiple channels had been used to distribute detailed and focused scheme information, and a well-designed feedback mechanism was also employed to collect

and consider representations. The notice was published in local influential newspapers with large circulation and was displayed widely, such as in every street within and at the outskirts of the proposed CC zone. TfL even considered the length of the streets and ensured that there was one notice in place for every 250 meters of road. A rolling inspection program was carried out each week during the whole duration of the consultation to replace damaged or missing street notices. The public could also access the complete information pack at the offices of eight London boroughs that were wholly or partly within the proposed zone, at certain TfL street management offices, and at a public exhibition held in central London for the 10-week duration of the consultation. The whole process exemplified a typical and comprehensive consultation — for the CC scheme for central London. The specific time period spent on each step to shape the policy before its launch is summarized in Table 2 below.

In addition to the general public, key stakeholders were given special attention. An information pack was sent to 500 key stakeholders. A series of consultation meetings with key stakeholders was also held that included participants from 33 London boroughs, the emergency services, motoring organizations, groups representing the interests of disabled persons, residents’ groups, the freight transportation industry, etc. These measures ensured that key stakeholders’ voices were heard and carefully considered.

Other measures of communication were taken to increase public awareness of the scheme details as well. Advertising was used to inform London residents of the consultation on the Scheme Order, such as four-page flyer distributed

Table 2 | **Formal Consultations before CC Implementation**

Document	Issued date	Issued by	Consultation	Report to Mayor
Mayor’s Transportation Strategy: Draft for Public Consultation	January 11, 2001	GLA	Jan. 11–March 30, 2001	July 2001
The Scheme Order	July 23, 2001	TfL	1st round: July 23–Sept. 28, 2001 2nd round: Dec. 10, 2001–Jan. 18, 2002	February 2002
Variation Order 2002	August 5, 2002	TfL	Aug. 5–30, 2002	September 2002
Variation Order (No. 2)	November 7, 2002	TfL	Nov. 7–28, 2002	December 2002
Variation Order (No. 3)	November 20, 2002	TfL	Nov. 20–Dec. 11, 2002	December 2002



in Greater London and its outskirt regions. The notice was also broadcasted on the radio during peak drive-time periods. The TfL Congestion Charging Division held a seven-week public exhibition at two central London venues where detailed panels and information sheets were presented to the public. A form was also provided at the exhibition to enable the public to express their views or ask questions that the exhibition staff were unable to answer.

It is worth noting that, from the beginning, TfL considered this consultation to be a two-way communication, not just passing governmental decisions. Both the notice and the scheme information pack stated clearly how and where people who were interested could get further information and the channels they could use to express their concerns and suggestions, be it email addresses, free phone numbers, details of public exhibition/public meetings, etc. The public information leaflet was made available in multiple languages and had braille and audio cassette versions for disabled residents. Online response forms were also made available and publicized via TfL's Street Management website encouraging replies to be sent to its freepost address.

As responses often implied genuine interest in this issue, TfL deliberately followed up with those who had responded in previous consultations. For example, during the second round of consultation on the Scheme Order between December 2001 and January 2002, TfL contacted the 2,000 stakeholders, other organizations, and individual members of the public who responded in the first-round consultation to seek their comments on the modifications to the Scheme Order by letter or email.

However, a public referendum to share the decision-making power with the public on whether to implement such CC scheme was never held, as many of those in opposition demanded. Through consultation, Londoners were only expected to provide comments and raise concerns to shape the policy, and the mayor's decision to push forward such a scheme in London, as a political commitment during his election, has never been compromised.

#### **PUBLIC OUTREACH AND MARKETING**

The policy went through a series of legal framework changes and several rounds of public and stakeholder consultations before it could be ratified. When the mayor finally made the decision in September 2002 through confirmation of the Variation Order, the advertising and other communication campaigns went out to public from October right through to official implementation

in February 2003. This was to ensure that people knew what they needed to do, how this scheme operated, when and where to pay, and where to find assistance upon implementation. Communication at this stage also aimed at neutralizing the media environment, which always had been hostile on this issue, and trying to encourage some stakeholders to talk positively about the scheme.

To keep track of the progress of people's awareness as the communication campaign continued, TfL conducted regular samples of thousands of Londoners through large quantitative surveys every six to eight weeks, checking whether they sufficiently understood the coming scheme. When the surveys showed that people were confused about the charging zone boundaries, TfL reframed the questionnaires to repeat the details relating to the boundaries of the charging zone in subsequent rounds of communication. In other words, these surveys served as checkpoints for reviewing the actual performance before the communications work moved on and provided valuable suggestions on the detailed implementation mechanism of the scheme.

Several measures were taken to cope with the fierce opposition. First of all, TfL used its own media channel to communicate its messages. According to Kevin Austin, C40 director of initiatives, regions, and events, who used to work in Mayor's Office of London, TfL produced its own leaflets, held exhibitions, and published scheme information in the GLA-owned newspaper *Londoner*, a monthly publication, 30 pages in length, with a circulation of 600,000 copies that was delivered to each household.

TfL also managed to garner support from respected public figures or organizations who supported the scheme and encouraged them to make their opinions public. For instance, TfL's communications team took media editors out to lunch, together with a scheme leader, the head of the transportation authority, and a well-known figure whom the media wanted to interview. After these meetings, TfL received very positive responses from the media to the effect that the meetings helped them understand the scheme clearer, and they began to perceive the scheme with a more positive attitude.

In addition, TfL set up a quick-response mechanism to misleading and possible inquiries from the media. Once stories of false information about the scheme were published, TfL actively contacted the media to explain the mistakes and provided concrete evidence and statistics, earning positive exposure in the media. Once when the media implied that there would be chaos on all roads

on the boundaries of the scheme on the first day of implementation, TfL responded that it had done traffic modeling and would deliberately launch the scheme during a quiet period when schools were off term and people were on holidays so as to significantly reduce the normal traffic on the road.

Last but not least, the communications team was very careful on message positioning. On the one hand, they knew that public awareness must be built on the problems brought by traffic, such as pollution and congestion. For example, TfL did a study to show that some of the roads in central London were as busy as motorways outside of London. TfL communicated these findings to people to help them understand the danger and social and economic cost of congestion. And it also communicated with the public on the use of revenues collected from congestion charging and talked about the benefit of the scheme, transportation improvements, etc. On the other hand, TfL deliberately chose a rational and factual tone, keeping the message very neutral and unemotional so as not to be perceived as overly persuasive. One example illustrates the situation: when CC revenue was generated, it was not used directly to improve things for drivers. The bus network improved because people were likely to move to other transportation means. But the motorists or businesses who paid the charge were not pleased about having to pay something that did not directly benefit them. Therefore, in order not to further inflame already negative public opinion, TfL chose not to position the message as “the scheme is good for London.” Instead, TfL educated Londoners about how much worse the congestion was likely to become without the scheme.

It is worth noting that, along with public outreach, the mayor and TfL devoted a great deal of effort before the implementation of CC to improving the public transportation system inside and outside the charging area. Improving public transportation services, particularly the introduction of new bus routes and increased capacity and frequency on existing routes to provide alternative travel modes to the public, was one of the key strategies that the mayor and TfL employed to communicate with the public and build credibility to win support. Efforts to improve the public transportation system continued even after implementation of the CC policy.

#### COMMUNICATION AFTER OFFICIAL IMPLEMENTATION

The communication work after implementation was mainly to keep the scheme running smoothly. One task was to constantly remind people about how the scheme worked.

According to a TfL quantitative survey on the reasons why people got fines under the scheme, people found it hard to remember the hours of operation and had difficulty recognizing the charge boundaries even with the C-signs. Sometimes, people were not deliberately trying to avoid the charge; they just simply forgot to pay. Based on these findings, TfL suggested a slight revision to the scheme to allow people to pay the following day after they had crossed the zone. The original scheme required that the payment had to be paid before 10 o'clock in the evening of the day that people drove into the zone. After 10 o'clock, the charge would go up to GBP10 (USD 13); after 12 o'clock, the penalty would be GBP 80 (USD 108). But if one paid the fine within 14 days, that person could receive a 50 percent discount and only needed to pay GBP 40 (USD 54). This policy was then replaced by the auto-pay policy so that people no longer needed to worry about passing the boundary of the charging zone without noticing it.

The consultation work with key stakeholders did not stop either, with the largest round occurring between July 21 and August 18, 2003, mainly on proposed revisions to the scheme such as a slight change on a boundary of the charging zone, specific expansion of the residents' discount zone, extension of the SMS text messaging facility, etc. About 120 organizations were consulted, including London Boroughs and London Assembly members, business representative organizations, Blue Badge authorities, freight transportation representative organizations, the Association of London Government, etc. These organizations received a consultation pack consisting of a cover letter, a copy of the Variation Order, a schedule of proposed variations, the consolidated Scheme Order, and a copy of the mayor's guidance. The cover letter was tailored to the individual organization to bring its attention to the relevant variation, although the recipient organizations were given the opportunity to respond to all the variations if they so wished. Residents in the areas of proposed extensions to the residents' discount zone received a consultation pack specifically tailored to that particular variation.

Similar consultations went round after round to continue modifying the original scheme in terms of increasing penalty and enforcement charges, lowering the threshold for the CC fleet schemes, diversifying payment channels, revising the definition of residents' vehicles, etc. Such consultations often lasted for 5 to 12 weeks, mostly with the consultation packet, and with full information on the proposed variation order posted on the TfL website and

deposited at TfL's offices for public inspection. TfL analyzed public, business, and other organization responses and considered those in the suggestions that were provided to the mayor for his final confirmation.

#### 4.7.3 Highlights from London's Experience

Almost all interviewees in our research emphasized the decisive role of London Mayor Ken Livingstone from policy preparation through to successful implementation, and his role was also crucial to the communications work. On the one hand, he provided strong and determined leadership. He made it absolutely clear at all stages that there was no doubt about introducing the CC, as this had been decided by the voters when they elected him as mayor on the clear understanding in his manifesto that he would introduce a CC. He pushed forward the preparation even with mounting media hostility reported to him on weekly basis. He resisted the demand from some London organizations and local authorities to hold a public inquiry, which would take years, not months, and thus could have significantly hindered the policy's implementation. As a welcomed public figure, the mayor was an active advocate of the scheme on various occasions. His influence on this issue was so huge that many people called the scheme Ken's Charge. This determination from leadership was important for winning public support for the scheme. On the other hand, the mayor possessed sufficient flexibility on policy details and was well-prepared to make concessions through long-term and wide consultation, even to delay the implementation of the scheme to allow greater time for consultation. The concerns raised by different interest groups and the general public were well-considered and adopted in the final scheme, as exemplified by a greater number of exemptions, discounts, slightly changed boundaries, and payment cuts, compared with the original plan.

Meanwhile, TfL did a good job of restricting the target audience to a relatively small group, so as not to inflame the whole of London into opposing the government. To achieve this goal, TfL made strenuous efforts to educate Londoners about the scheme operation mechanism, especially the location of the boundaries. Considering that the CC zone was a very small area compared with Greater London, those unlikely to be affected would not be strongly motivated to express their disagreement. TfL also tried to communicate with key stakeholders on a small scale, such as through roundtable meetings, to address their specific needs and concerns. When agreements were reached with key stakeholder groups, TfL would publicize them to better win public support.

A well-organized team and a smooth cooperation mechanism among various departments was also important for effective communication. To avoid bureaucracy and the traditional mind-set of governmental officials who were generally considered as people who usually said "no" to new policies, the mayor appointed those that stand at the final frontier of on the ground implementation to handle the policy, including the communications team in TfL. That team was composed of press officers to handle media relations, stakeholder teams to deal with interest groups' concerns, marketing staff to manage advertising and information campaigns, a data management team to keep quantitative track of focus groups, below-the-line staff to develop leaflets and handle road show activities, etc. A lot of communication expertise was supplemented by commercial consultancy agencies, which provided professional assistance in media monitoring and handling, story creation, stakeholder management, advertising campaigns, opinion research, etc. GLA representatives were deeply involved in the whole marketing and communications package. TfL had weekly phone meetings with GLA to discuss communication strategies, advertising campaigns, and survey results. The mayor's office played a key role in overseeing and direction, as the mayor signed off on the scheme, and primarily looked at things from political perspective. TfL was mainly in charge of delivering the scheme, including the communications work.

#### 4.7.4 Communication for Low Emission Zone Policy

As the largest LEZ in the world, the London LEZ experienced a longer period of policy consultation and the public communication campaign, compared to the CC, even though both shared similar strategies. To deliver compliance with LEZ standards, businesses needed more time to upgrade their fleet composition because of the purchase life cycle of new trucks or lorries. The communications campaign was more focused on informing affected stakeholders about the charging area, which would cover the whole London area, including the area covered by the CC scheme, and delivering the message that paying the congestion fee would not necessarily mean compliance with LEZ.

As with the CC, TfL consulted the public and stakeholders on the LEZ schemes between January and June 2006. As part of the public consultation process, TfL mailed information packages and questionnaires to 80,500 transportation industry businesses across the UK and to the affected road transportation users (TfL 2006). TfL

distributed information leaflets and advertisements at freight ports, motorway service stations, transportation cafes, on buses and bus shelters, and in the press. As indicated by Mandy Courtney from TfL, the purpose of the LEZ was not to charge noncompliant vehicles high fees; rather, it was to encourage owners of affected vehicles to upgrade or install emissions reduction devices. Unlike public communication of the CC, which was targeted more to the general public, TfL mainly focused its LEZ public communication on dialogues with truck and lorry companies and affected stakeholders.

### 4.8 Edinburgh Congestion Charging

#### 4.8.1 Edinburgh Background

In 2002, Edinburgh (pop. 500,000) was suffering from worsening congestion and declining air quality. At that time, it was estimated that air pollution was responsible for the deaths of 600 city residents every year, and it was forecast that safety limits on NO<sub>2</sub> and particulates specified by the European Commission would be breached in six areas of the city when the related UK laws came into effect in 2010. Congestion delays, fueled by the fastest growth in vehicle registrations in the UK, were forecast to double by 2016.

In support of the City of Edinburgh’s objectives to reduce congestion and the environmental impact of travel, the council proposed a CC scheme as part of a package of measures to improve public transportation (e.g., a new tram line) and other infrastructure improvements.

The newly established Transport Initiatives Edinburgh (renamed ‘*tie*’), a nonprofit company wholly owned by the City of Edinburgh Council, had the objective to consult on and manage the delivery of the integrated transportation initiative. The financial model for the CC scheme was redistributive: net funds would be returned to the authority of origin (the City of Edinburgh Council) to improve urban and regional transportation links within a 20-year time horizon. The plan included six park-and-ride sites, new tram lines, public transportation interchange facilities, city center environmental improvements, new and upgraded cycleways, and new 20 mph speed limit zones. Many improvements would be implemented by 2006. Edinburgh City Council declared that net revenue from the proposed charge was forecast to be GBP 761 million (USD 1,027 million) over 20 years, and the money would be used to fund transportation improvements.

#### 4.8.2 Communication Process

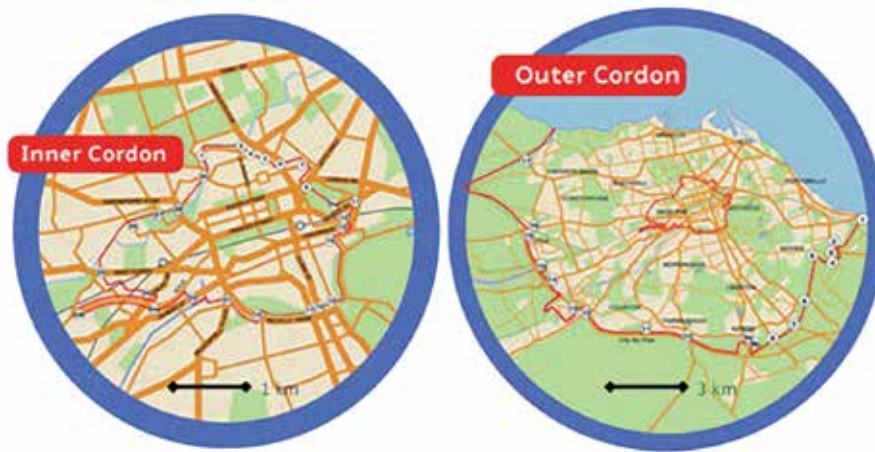
Public and political acceptance were regarded as being critical from the early stages of planning, and this informed the stakeholder consultation and public communication program. In particular, the public consultation program was to be extensive, comprising market research, a public inquiry, scheme design refinement, a broad information campaign, and a referendum. The council had earlier selected the University of Westminster as its consultation partner in 1999, and the university was retained throughout the six-stage process (Table 3), interleaved with a public inquiry and referendum. Operationally, *tie* led consultation phases IV onward with the university as the consultation

Table 3 | **Edinburgh: Phases of Public Consultation and Communication**

Phase/Event	Activity	Scope	Timing
I	“Edinburgh’s Transport Choices” (local transportation strategy consultation)	Consultation and market research (excluding congestion charging scheme)	1999
II	Preparatory market research	Market research	2000
III	Regional market research	Market research	2001
IV	“Have Your Say” (strategic regional consultation)	Consultation and market research	2002
V	Detailed scheme design consultation	Local consultation	2003
Public Inquiry			2004
Referendum			2005
VI	Post implementation market research	Market research	2006



## Proposed Charging Cordon in Edinburgh



Source: Saunders and Lewin 2005

planner and analyst. The total cost of the development stages, including the referendum, was forecast as GBP10 million (USD13.2 million) over five years.

Several lobbying groups formed from 2003 onward, the most prominent pro-package group being “Get Edinburgh Moving” and the most vocal anti-charging groups being “Edinburgh Communities against Tolls” and the “National Alliance Against Tolls.”

### DETAILS REVEALED IN MARKET RESEARCH

Judging from 19,000 responses to a household survey in 1999, the Phase I consultation revealed 62 percent in support of an integrated transportation package that included CC. When the prospect of some form of travel demand management was raised during Phase II, net public support was about 30 percent. A double cordon scheme was introduced as part of Phase III, during which time public support had declined to 13 percent. Phase IV was based on the “Have Your Say” outreach program and a questionnaire that was distributed to 240,000 households in southeast Scotland.

The Phase V consultation in 2003 included a mailing of 600,000 leaflets to households in Edinburgh and surrounding areas; distribution of leaflets to local authorities, libraries, businesses, supermarkets, doctors’ surgeries, and pubs; regional newspaper and radio advertising; advertisements on buses and bus shelters; a dedicated website at [www.ititime.com](http://www.ititime.com) (no longer active); posting of CC regulations at regional local government offices;

and structured meetings with a range of stakeholders and interest groups. The complementary market research process involved 19,500 questionnaires mailed to residents of the city and surrounding areas from which 2,406 responses were received. Overall, there was net opposition of about 62 percent to the proposal: non-car users were in support, and car users were opposed. In response to the statement, “Traffic congestion on Edinburgh’s road network will get worse and it needs to be reduced,” there was clear majority support from both groups although CC ranked eighth as the preferred option, behind improved public transportation, more park-and-ride facilities, lower-cost public transportation, school buses, selected infrastructure upgrades, improved cycling and walking facilities, and car sharing. There were also specific objections to the existence of the outer cordon, and many respondents did not see public transportation as a viable alternative. Despite this, *tie* concluded that a slightly revised CC scheme should be carried forward, including the heavily criticized outer cordon.

### LOW SUPPORT AND LIMITED UNDERSTANDING REVEALED IN REFERENDUM

The public inquiry was conducted by three independent reporters over a 10-week period based on the revised scheme design. Despite 1,462 objections, these reports concluded that “None of the matters raised persuade us that any alternative approach to the charging scheme is realistic [and] we find the two-cordon basis of the scheme to be soundly established.” Following this, the referendum was held by postal ballot between February 7 and 21, 2005. The referendum posed the question: “The leaflet enclosed

with this ballot paper gives information on the Council's transport proposals for Edinburgh. The Council's 'preferred' strategy includes CC and increased transport investment funded by it. Do you support the Council's 'preferred' strategy?" Turnout was 62 percent (comparable to that of national elections), split into 75 percent against and 25 percent for, a ratio of 3:1. The planned investment in the integrated transportation strategy, partially underpinned by revenues from CC, was abandoned.

Gaunt et al. (2007) conducted a postmortem study showing that car use determined voting behavior: car owners strongly opposed the scheme; non-car owners (i.e., public transportation users who would have benefited from the scheme) only weakly supported it.

Limited understanding of the scheme increased the opposing vote:

- The maximum charge was GBP 2 (USD 2.7), but 38 percent of respondents thought it could be higher;
- Twenty percent of respondents' journeys would not have been charged, but respondents thought they would be; and
- Thirty-seven percent of respondents incorrectly thought that outbound traffic would be charged.

### 4.8.3 Lessons Learned from Edinburgh

Limited understanding and misunderstandings of scheme objectives have been claimed as the causes to the failure in introducing CC to Edinburgh, as Gaunt et al. (2007) concluded: "Misconceptions over the applicability of the charge had a greater effect on the referendum result than those concerning the level of the charge."

The congestion charging scheme design was technically robust, it was established that the public perceived that congestion was a problem and that some plan to mitigate this was needed although surveyed support for CC (as the mitigation measure) at the time of the referendum was at its lowest since consultation began. Shortly before the referendum, the investment plan was clearly understood (and communicated), but the public perceived the costs (to them) to be tangible but the benefits of reduced congestion and improved public transportation were abstract possibilities. In addition, there was evidence that people did not understand what was being proposed or why and voted against the package (which included CC) even though they would have benefited from it.

Furthermore, people were not convinced that the scheme would achieve its objectives of reduced congestion and improved public transportation, even though 75 percent thought that congestion was a problem. The conclusion of Allen et al. (2006) was that a simpler, more easily communicated scheme (e.g., single cordon) was needed to convince residents, particularly public transportation users, of the benefits. In addition, measurement of public perceptions and responses needed to be more sophisticated to properly anticipate trends and address them as part of the package design. Furthermore, the results of the public enquiry had not resulted in any substantive changes to the scheme design or consultation process, given the scale of the rejection. Also, delegation of responsibilities to the council and *tie* to promote the package was matched by lack of Scottish ministerial support. There was no obvious champion nor a single implementing party.

Almost exactly 10 years later, a report issued on March 24, 2015, by the independent Committee on Climate Change recommended CC "to reduce greenhouse gas emissions" which received the support of the Scottish government's climate change minister. As an indication of Edinburgh's lack of readiness to reintroduce CC to the policy agenda, the Scottish government rejected the recommendation two days later in an official declaration. The Freight Transport Association (FTA) agreed and stated that "congestion charging is certainly the wrong way to try and deal with carbon emissions—after all, it's a congestion charge, not a carbon charge" (Meczes 2015). The statement reveals ambiguity as to the type of scheme and its claimed objectives.

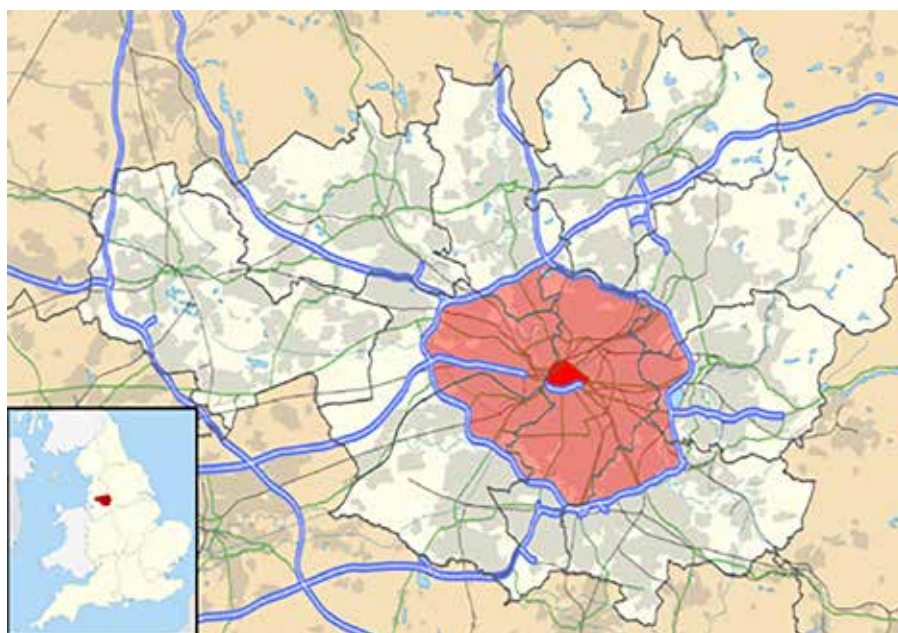
## 4.9 Manchester Congestion Charging

### 4.9.1 Manchester Background

In 2005, the UK government, via the Department for Transport (DfT) announced the creation of the Transport Innovation Fund (TIF) as an incentive for local authorities to bid for a share of GBP9.5 billion (USD 12.5 billion) fund to reduce carbon and other emissions by improving services and reducing road congestion. DfT administered the TIF and looked for proposals that included the principles of travel demand management, improved public transportation, improved traffic management, and schemes that could contribute to increased national productivity in general.

The Association of Greater Manchester Authorities

## Proposed Charging Area in Manchester



Source: [https://en.wikipedia.org/wiki/Greater\\_Manchester\\_congestion\\_charge#/media/File:Manchester\\_Congestion\\_Charge.png](https://en.wikipedia.org/wiki/Greater_Manchester_congestion_charge#/media/File:Manchester_Congestion_Charge.png)

(AGMA) comprised 10 local authorities who acted in coordination in a bid to DfT for a share of the TIF. In total, AGMA had a combined population of 2.2 million, of which Manchester was the largest at 490,000. AGMA's initial (informal) consultation included dialogue with members of AGMA, DfT, local businesses, and economists. In parallel, a survey of 5,000 Greater Manchester residents and 1,000 local businesses showed a slim majority in support of CC (residents being more in favor than businesses were). Overall, the results of the informal round gave sufficient support to AGMA for it to develop a detailed integrated transportation strategy to be partially funded by the TIF (about GBP1.5 billion, USD2.0 billion) and revenues from CC.

The integrated transportation strategy was valued at GBP2.8 billion (USD3.7 billion) and focused on improvement to public transportation, including increased frequency of buses by 10percent, 180 yellow school buses, an integrated ticketing scheme, additional rail carriages, a new local rail station, station improvements, an additional 2,000 park-and-ride spaces, 41 new stops on the MetroLink (regional light rail service), 1,440 additional parking spaces at MetroLink stations, 200 km of cycleways, and general improvements for pedestrian safety.

The CC component of the package was based on two concentric cordons, the largest encompassing 200 km<sup>2</sup> or 15 percent of the Greater Manchester Area, compared with 20 km<sup>2</sup> (1 percent), 28.5 km<sup>2</sup> (7 percent), and 8.2 km<sup>2</sup> (4.5 percent) in London (excluding the WEZ), Stockholm, and Milan respectively. Pricing was limited to peak periods only, initially for morning inbound traffic and evening outbound traffic.

### 4.9.2 Public Communication Process

The public communication process occurred as part of the TIF submissions to DfT, which required a formal consultation and a referendum before the bidding.

#### EXTENSIVE FORMAL CONSULTATION ON CC AS PART OF TIF APPLICATION

The budget for consultation was GBP3 million (USD 4.0 million), about 0.1 percent of the package value, and included a consultation brochure with a response form to 1.2 million households (in 11 languages), a mobile exhibition bus for each of the 10 authorities, public meetings, a telephone inquiry service, a Web inquiry service, updates sent to 30,000 business, a curriculum pack for schools, 65 static exhibitions, and a website.



The stakeholders in the formal consultation included the 10 members of AGMA, each of whom was required to prepare a response (generally in support or not in support) of the package. A TIF consultation scrutiny panel was established (including the chief executives of the four largest local authorities, the Manchester Chamber of Commerce, and the Manchester Airports Group) to report to AGMA on the process and the results of the consultation. The process started on July 7, 2008, ran for 14 weeks, and achieved a high response rate.

Over 50 percent of the budget was spent on advertising and opinion polling (survey, transcoding responses, analysis, and presentation). Simultaneously, groups for and against waged a massive publicity campaign, each having the support of elected local and national politicians. The survey (Ipsos MORI 2008) of the general public (and businesses) showed 15 percent (11 percent businesses) in favor, 30 percent (47 percent businesses) opposed, and 55 percent (42 percent businesses) undecided. According to Ipsos MORI (2008), “Most of those who expressed opposition to the proposals made it clear that their main objection was to the congestion charge,” including the level of the charge, the perception that it was a new tax, and unfairness to low-income earners. The most frequently expressed concern was the existence of the larger outer cordon.

#### **SCHEME CHANGES RESPONDING TO CONSULTATION AND REFERENDUM**

Following the consultation, some variation was made to the original package. Regarding the CC component, a low-income worker discount was introduced, a daily cap (limit) on charges was established, and additional categories were added of users that would be exempt from charges: medical-related trips, recovery vehicles, registered disabled persons, motorcycles, and additional categories of buses. A 50 percent discount was introduced for vehicles traveling to Trafford Park (Manchester’s main industrial and commercial area).

Requests to vary the position of the cordon and limit charges to traffic crossing both cordons in one trip were rejected. It was accepted that the CC for operators of heavy goods vehicles of 3.5 tonnes or over would be suspended for 12 months, pending an assessment of revised freight movements and the establishment of a local partnership to assess long-term plans for freight operators to help reduce congestion and harmful emissions. At this stage, AGMA declared that all of its criteria on the package delivering economic, social, and environmental benefits would be met.

The referendum results showed that 79 percent of eligible voters rejected the package with a turnout of 54 percent (BBC News 2008). Media coverage was almost universally focused on CC, rather than the TIF, potentially demonstrating polarization against the principles of CC, citing potential damage to the local economy despite the significant investment in public transportation and related infrastructure. Economically, the UK was in recession, and motorists were facing high fuel prices. Further analysis revealed the perception that regional commuters would feel the costs (from the outer CC cordon) while the benefits would be localized to Manchester’s CBD. Furthermore, a significant minority of voters did not believe that the funding for the transportation package would be withheld even if the TIF bid did not go ahead.

Following the referendum, AGMA was unable to submit its bid for TIF. Pending bids from other UK authorities, such as Durham, Reading, and Cambridgeshire, were not submitted; and in 2010 the DfT closed down the TIF.

Apart from the failure of the Manchester referendum, the government was undoubtedly influenced by the 1.8 million signatures on a petition against road pricing on the UK prime minister’s website in 2007. This, the largest petition ever, said, “The idea of tracking every vehicle at all times is sinister and wrong. Road pricing is already here with the high level of taxation on fuel. The more you travel—the more tax you pay. It will be an unfair tax on those who live apart from families, and poorer people who will not be able to afford the high monthly costs. Please Mr. Blair—forget about road pricing and concentrate on improving our roads to reduce congestion.” There were other small but vocal opposition groups, such as the Drivers’ Alliance (founded by Peter Roberts, who initiated the petition just mentioned), and the Association of British Drivers. Other entities such as the Royal Automobile Club Foundation<sup>11</sup> have, in general, been supportive of price-based demand measures.

#### **4.9.3 Lessons Learned from Manchester**

Despite its extensive consultation process, it seems clear that Manchester did not learn the lessons of the failed scheme in Edinburgh, most particularly the advice to keep the scheme simple, at least initially. Manchester simply consulted and provided information about the proposed scheme, but was not able, or did not feel able, to campaign aggressively in favor of the scheme, a handicap from which its opponents did not suffer.



Other conclusions are that the consultation and education process should be a long-term affair as it takes time for people to understand and accept the arguments; that referenda should be avoided if possible; and that if they are held, it should be only after people have had the chance to experience the benefits, as they did in Stockholm.

## 4.10 New York Congestion Charging

### 4.10.1 Background

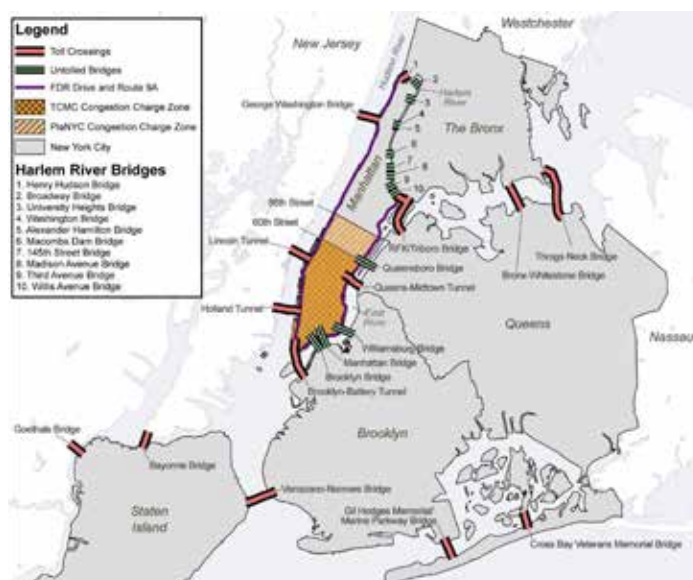
New York City (pop. 8.3 million) is the most populous city in the United States, covering 790 km<sup>2</sup> and consisting of five boroughs within a metropolitan area with a total population of 23.6 million. Most vehicle owners in the region have been familiar with paying tolls to use the bridges since the first was built in 1883 and for many constructed thereafter, even during the Great Depression of the 1930s. New infrastructure and related bridge tolls have continued to be the focus of political controversy, at one stage resulting in the permanent removal of tolls on the East River bridges. Since then, the region's rapid transit system (the New York subway) and bus network were expanded significantly, and in 2009 the modal share of public transportation had reached 55 percent. Radio-frequency identification (RFID)-based electronic toll collection, branded as *E-ZPass*, was introduced in August 1993 following extensive competitive trials, leading to its

use by 25 agencies in 14 states in the Northeast United States, with more than 26 million tags in use.

In December 2006, Michael Bloomberg, the mayor of New York, announced his long-term goals for sustainability of the city through 2030, embracing water, air, energy, land use and transportation while accommodating the expected influx of 1 million new residents over that period. The mayor's plan was shaped through internal informal consultation when the public consultation process began in late 2006 (New York City 2007). Following this, in April 2007, *PlaNYC* (New York City 2007) was unveiled as a comprehensive 25-year sustainability plan to create a "greener, greater New York" through successive mayoral administrations.

Among the 100 proposals within *PlaNYC*, one initiative attracted virtually all public attention: Initiative 10 in the Transportation Chapter that proposed to introduce a three-year congestion pricing pilot within Manhattan and a variation of tolls on bridges and tunnels feeding Manhattan itself. The plan would have charged cars USD 8 and heavy goods vehicles USD 21 during weekdays between 6 a.m. and 6 p.m. within the area having its northern boundary at 86th Street with the aim to mitigate congestion and to fund a new urban transportation authority.

## Proposed Congestion Charging Area in New York



Source: Schaller 2010

Figure 10 | **Public Communication Process in New York**



#### 4.10.2 Communication Process

##### **INTERNAL INFORMAL CONSULTATION ON CC AS PART OF PLANYC DEVELOPMENT**

The CC proposal was developed during internal consultations of the *PlaNYC*. Following the mayor's announcement of sustainability development in December 2006, the Mayor's Office of Long-Term Planning and Sustainability (OLTPS), under the deputy mayor for economic development, conducted an extensive, four-month stakeholder consultation process. OLTPS comprised architects, economists, engineers, lawyers, marketing and communications experts, urban planners, policy analysts and advisors. Over the period, the consultation staff

- Presented a 10-point vision for New York's future to community leaders, public organizations, advocacy groups, and the city's residents, seeking feedback and ideas for implementing the vision;
- Met with more than 100 advocacy groups and organized a total of 11 town hall and neighborhood leader meetings;
- Received more than 3,000 e-mails with comments and suggestions regarding the 10 objectives; and
- Provided updates on progress and other announcements via the consultation website and social media channels, including Twitter, Tumblr, and Flickr.

The advocacy group of CC includes a business coalition (The Partnership for New York City), university-based research centers, elected officials, environmental groups, and the editorial boards of all four major newspapers in

support of the scheme. The CC proposal was aimed at addressing the increasingly adverse effects of congestion, air quality, and funded much-needed improvements to the city's transportation network.

##### **FORMAL CONSULTATION WITH PUBLIC HEARINGS, OUTREACH, AND EDUCATION**

Formal consultation started with reviewing the detailed measures in the *PlaNYC*. The consultation process included 11 well-attended public hearings held from October 2007 to January 2008 to discuss the mayor's plan (and its alternatives) and additionally considered truck restrictions, telecommuting, taxi surcharges, and license plate rationing. Although the public hearings allowed limited questions from the audience (ICLEI-Local Governments for Sustainability USA and City of New York 2010), they were supported by a comprehensive public outreach and education campaign with strong advocacy from the civic community.

In July 2007, a 17-member Traffic Congestion Mitigation Commission (TCMC) was established by state law. The commission, which included the state governor, the New York City mayor, heads of the majority and minority conferences in each house of the legislature, and the city council speaker, undertook a review and study of plans to reduce traffic congestion and other related health and safety issues within the urban area. Seven public hearings were scheduled from September 2007 to January 2008, and members of the public and press were invited to attend. The first meeting included an agenda item on the public consultation process itself. Progressively over the course of successive meetings, different approaches

to congestion mitigation were developed and refined to meet the originally stated aims and were informed throughout by consultation feedback.

On January 31, 2008, the TCMC released a report (Traffic Congestion Mitigation Commission 2008) that described two plans, both including an element of CC, with the claim that either would be easier to implement than the mayor's original scheme:

- (a) an alternate congestion charging plan: a northern border at 60th Street (not 86th Street as originally proposed), no intra-zonal fee (rather than a USD 8 charge), drivers going through the central business district would be charged (rather than no charge); and
- (b) an alternate tolling plan: The East River and Harlem River Toll Plan would have bidirectional tolling all day every day on the East River and Harlem River bridges.

In general, the alternatives were both aimed at simplification in response to public comments on the plan's complexity and fairness, in addition to improvements in equity, cost reduction, and targeted use of revenues. The commission also recommended a residential permit parking program to address potential parking impacts in areas adjacent to the CC zone, a monitoring program, environmental review requirements, and privacy protection mechanisms. The intention was to rapidly respond to stakeholder comments and demonstrate that changes had been made, resulting in the two alternatives just outlined.

#### EXTENSIVE SURVEYS TO INCREASE LEVEL OF SUPPORT

The 12-month stakeholder consultation process included large-scale direct mailing and fact sheets showing how the residents of each council and legislative district of New York would be affected by CC and by the proposed improvements to public transportation. This was accompanied by weekly online polls hosted by OLTPS on different subjects relating to *PlaNYC*. In parallel, seven independent surveys were conducted by Quinnipiac University from January 2007 to March 2008. Over this period, the survey of New York City and New York state residents reflected the expected response to an increasing level of detail and an *evolution* in the wording of the questions asked. In July 2007, the questions focused less on establishing attitudes to CC and more on the

full scope of the policy that would use funds raised by CC to prevent an increase in fares for buses, trains and tolls. This revealed that support for CC had declined by 40 percent but, when used to mitigate increases elsewhere, CC had become steadily more popular. CapitalNewYork.com explained this as, "The more you explain congestion pricing, the less scary it becomes" (Paybarah 2013).

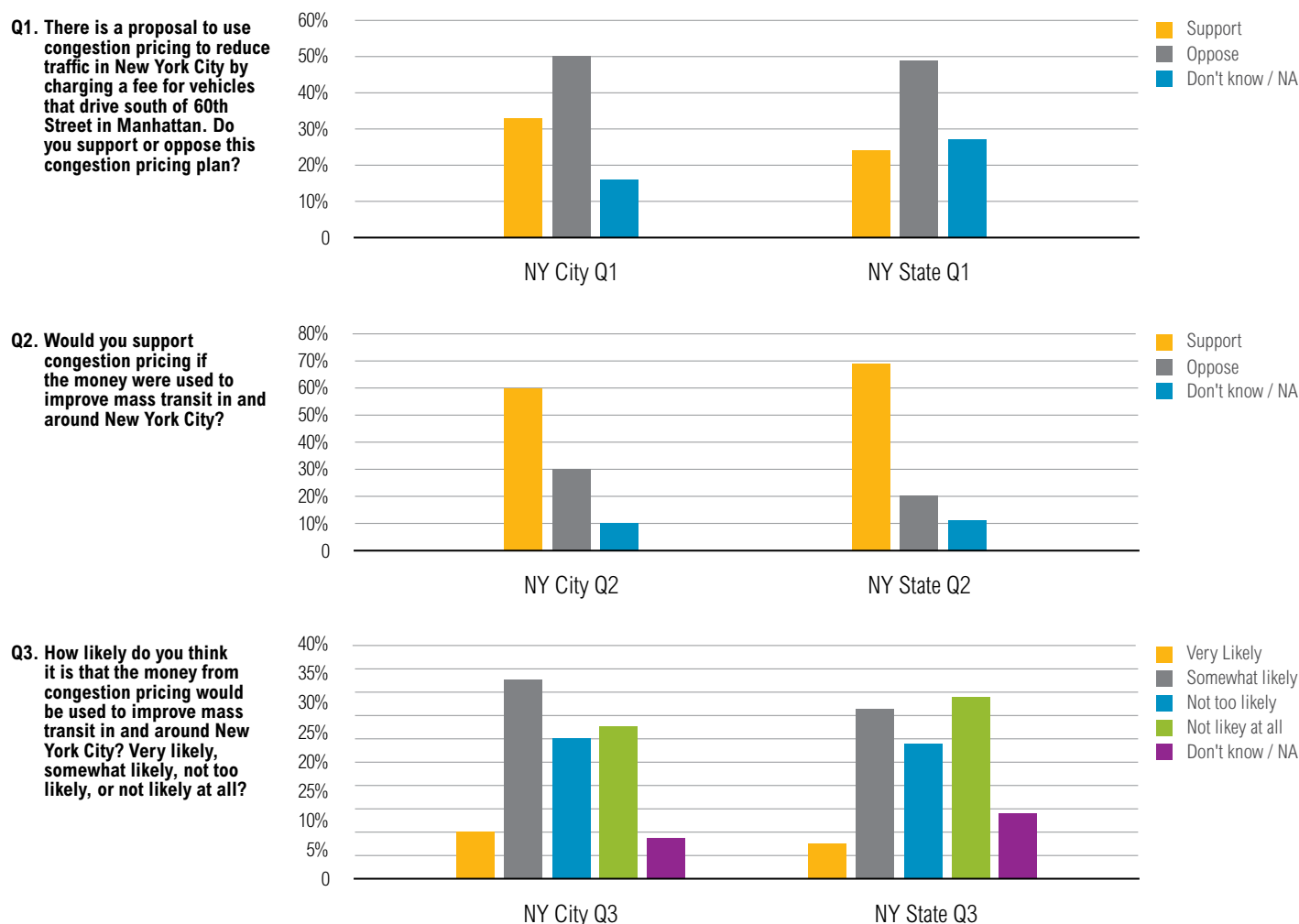
In its final poll (University of Quinnipiac 2008) from March 16 to 18, 2008, one month before planned authorization for the CC element at the State Legislature, the university conducted a survey of 1,528 New York State registered voters on several topics that included three questions related to CC ("congestion pricing"):

- Q1. *There is a proposal to use congestion pricing to reduce traffic in New York City by charging a fee for vehicles that drive south of 60th Street in Manhattan. Do you support or oppose this congestion pricing plan?*
- Q2. *Would you support congestion pricing if the money were used to improve mass transit in and around New York City?*
- Q3. *How likely do you think it is that the money from congestion pricing would be used to improve mass transit in and around New York City? Very likely, somewhat likely, not too likely, or not likely at all?*

The results (Figure 11) showed that 58 percent of voters would oppose congestion pricing (37 percent would support), but 60 percent would support it if "money from the plan [was] used to improve mass transit in and around the city." In general, people in Manhattan were more supportive of the idea than people in the outer boroughs. The consultation process was not without its critics, one describing *PlaNYC* as "...a top-down bureaucratic initiative with little community involvement and "buy-in" [that was] not well-integrated with the rest of city policy making" (Paul 2007).

Regarding CC, the development of political consensus reached in early 2008 included a reduction in the charged area (from 86<sup>th</sup> to 60<sup>th</sup> Street as suggested by the TCMC), removal of zone exit charges, elimination of charges for cars traveling solely within the zone, an additional allocation of revenues to the Metropolitan Transportation Authority (MTA), a nominal surcharge on taxis on trips that started and/or ended within the zone,

Figure 11 | Quinipiac Survey of Public Opinion over Congestion Charging, March 2008



increased on-street parking meter rates and operational simplifications, a monitoring program, environmental review requirements, and privacy protections. Without the provision for use of the funds on public transit, only 40 percent of New York City residents would have supported CC, about the same level as when the mayor introduced the proposal.

#### FAILURE OF STATE LEGISLATION ON CC

The CC component of *PlaNYC* was the only component that had to be approved by the New York State Legislature with financial support from the state. However, despite broad-based public and political support within New York, the enabling legislation that would have introduced CC failed to be adopted when it was turned down by a few Democratic politicians in the state legislature (primarily due to regional equity

concerns). In Albany on April 7, 2008, after a closed-door meeting, the Democratic Conference of the State Assembly decided not to vote on the proposal: “...the opposition was so overwhelming ...that [Sheldon Silver] would not hold an open vote of the full Assembly.” Because the proposal failed to be submitted to a vote, New York missed its deadline to apply for \$354 million of funding from the U.S. Department of Transportation that would have underpinned funding to establish the CC scheme.

#### 4.10.3 Lessons Learned from New York

The publication of *PlaNYC* and the consultation process served to highlight the need to discuss transportation needs for New York, resulting in comprehensive support for sustainable transportation, even among those who opposed CC proposals. In



summary, the eventual rejection was due to a relatively small group of private car owners that perceived that CC was contrary to their self-interest. Surveys showed that no more than 5 percent of employed New York City residents would have paid the congestion fee as part of their daily commute.

Schaller (2010) concluded that, “for most people, congestion pricing needed to make sense on both societal and individual levels to be seen as worthy of support”—i.e., although society might be better off, individual drivers perceived that they would not. This is consistent with the need to align self-interest with policy aims through the consultation process itself. Feedback measured during consultation revealed that those in favor supported the views that CC would reduce congestion, support public transportation funding needs, and improve air quality and were consistent with stated sustainability objectives. Those opposed perceived that charges would hurt those least able to afford it, that transit was not a viable alternative, and that the value of time saved was less than the proposed USD 8 entry fee.

Even the proposal on piloting CC in Manhattan did not get support in the state legislation process, but the overall public communication featured a successful process to win public support. Public surveys were synergized with structured questions to educate people

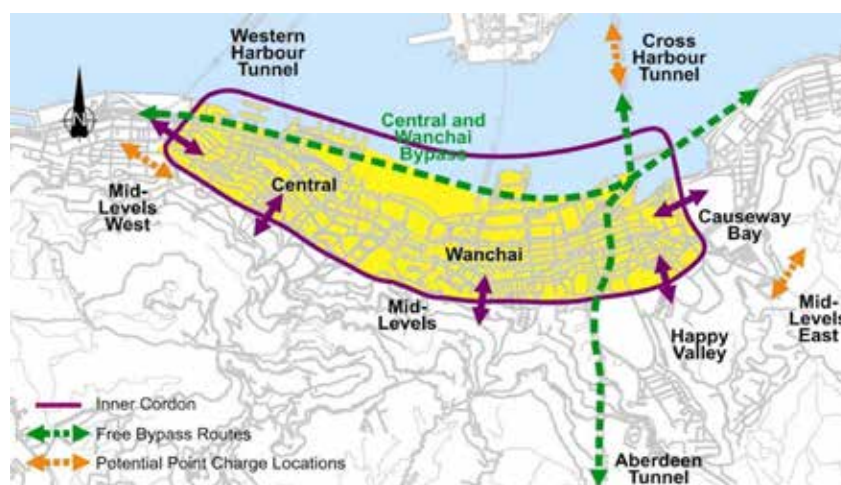
on how funding would have been used to help increase the level of support of Manhattan residents. Surveys can be used as critical tools in the public communications to inform and educate the public in addition to measuring the development of public opinion. Informed feedback from the surveys, in turn, provides a cost-effective means of data collection to highlight the focus on the scheme, which could help maintain a high level of public support.

## 4.11 Hong Kong SAR (China): Electronic Road Pricing

### 4.11.1 Background

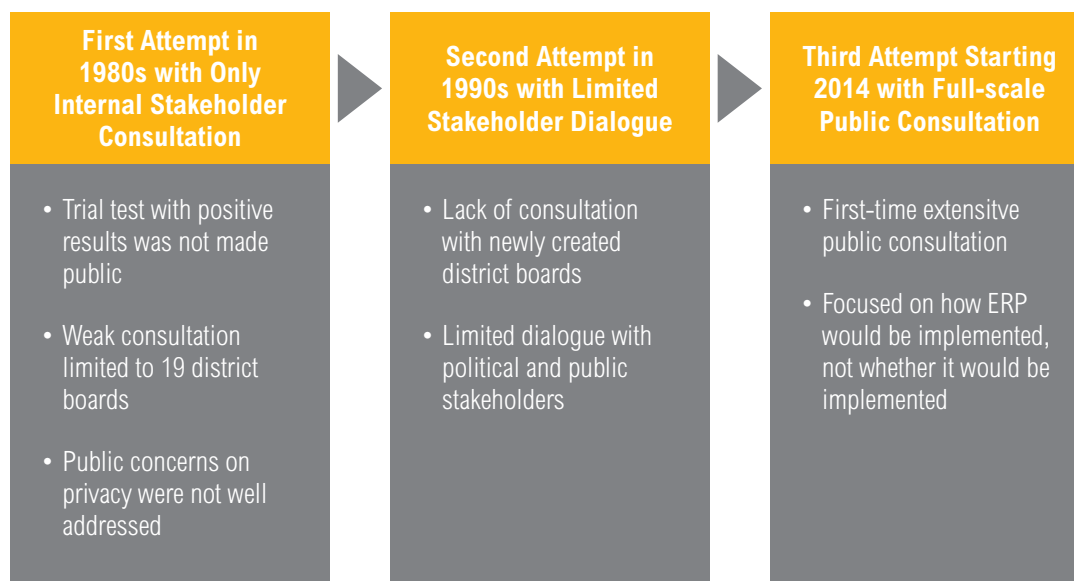
Hong Kong SAR (pop. 7.2 million) has had three rounds of electronic road pricing (ERP) proposals for the past 30 years. In the early 1980s, the first round of proposal on ERP was initiated with a pilot test. The pilot test showed technological maturity. However, the government shelved the proposal due to lack of support. In the 1990s, ERP was again put on the agenda with a competing proposal to build a bypass. The competing proposal was given a green light, leaving ERP a stranded proposal for the second time. In 2014, a third attempt started with a formal public consultation on a proposal allowing motorists to bypass the busiest downtown districts and to avoid paying the tolls if they have no business there.

## Reference Charging Scenario in Hong Kong for 2015 Public Consultation



Source: Fred Brown, 2016

Figure 12 | **Stages for Hong Kong ERP Proposals and Corresponding Communication Elements**



#### 4.11.2 Public Communication Process

The first two rounds of ERP proposals witnessed very limited public communication. Having learned the practices of other cities with successful implementation of CC and seeing the importance of public communication, the third round of ERP proposal started with a strong and comprehensive public consultation process.

##### **1980S PROPOSAL WITH WEAK STAKEHOLDER CONSULTATION**

Hong Kong published its first Comprehensive Transport Study in 1976, the contents of which were endorsed in a government white paper in 1979. The plans included a significant investment in transportation infrastructure, the development of a new subway system, and the use of ERP to restrain the usage of private vehicles in favor of commercial freight and public transportation. Three potential ERP schemes based on cordon charging (i.e., a scheme charging for crossing the designated boundary around a specific area) were outlined and presented to panels of road users to learn their relative preferences. The key strategy was to charge private vehicles and not commercial vehicles or public-service vehicles.

On-road trials were conducted over a period of 21 months between July 1983 and March 1985, using government vehicles and volunteers (in total 2,500 vehicles) to assess usability, gain further feedback from the public, and confirm technical feasibility. Each vehicle was fitted with an Electronic Number

Plate (ENP) read by 130 in-road inductive loop-based roadside systems with camera enforcement. The trials showed that ERP was highly efficient: it could be constructed and operated at low cost, was technically feasible, and was 99 percent reliable.

Following the trial, the government commenced its first formal consultation with the 19 district boards, which had been set up in the 1970s. Only 2 of the 19 district boards endorsed the use of ERP as a traffic restraint measure. The trial results were released in 1985 and used to support extended consultation with the district boards. At this point, the government had made no attempt to modify the policy objectives nor the operational strategy following its first dialogue with the district boards, and this may have contributed to a more comprehensive rejection: nine boards were against, two were in favor, and eight abstained (i.e., they were believed to be neutral or opposed). The results of the trial were not made public and “did not provide practical and understandable illustrations of how much different types of travelers might benefit from the ERP scheme” (Gómez-Ibáñez and Small 1994).

The implementing authority (Transport Branch now known as the Transport Department), transportation experts, and academics regarded the consultation process as weak. Despite visible benefits, including an increase in average travel speeds from 20 km/h in 1978 to 28 km/h in 1984, the public perceived that the identification

equipment installed within vehicles and the roadside enforcement cameras were fallible (even though the trials had proven otherwise) and could be used for tracking, feeling strong concerns about invasion of privacy. The government attempted to respond to the public's concerns on privacy by offering to keep data confidential (and to destroy it in three months) and promised that the location of charges would not be included on bills. Other public concerns were focused on plans to charge private vehicles only.

A survey of vehicle usage at the proposed cordons, conducted by one of Hong Kong's largest car dealerships, provided evidence that private car usage would have to reduce significantly to meet traffic forecasts with ERP in place. This contributed to the perception by private vehicle owners that they were being targeted unfairly. At that time, Hong Kong had no environmental policy. The public, whose confidence was at its lowest levels (because of recent increased motoring taxes, a recession, and lack of consultation on ERP) perceived the trials as no more than a technology test. Toward the end of the consultation process, the government offered a further concession to offset annual license taxation to ensure that ERP would be revenue-neutral although lack of trust by the district boards and the public and criticism in the print media remained. Plans for ERP were dropped shortly afterwards.

#### 1990S PROPOSAL WITH LIMITED STAKEHOLDER DIALOGUES

The second Comprehensive Transport Study was published in 1989 and included a proposed variation on one of the three scheme options that had been presented in the 1985 consultation period. This study also suggested that more categories of vehicles should be charged. The results of the consultation were reflected in a 1990 white paper, including the use of smart cards to resolve privacy fears, the most difficult objection that had been raised in 1985. The study did not result in a further consultation, and plans for ERP did not progress any further.

According to Gómez-Ibáñez and Small (1994), "The most important lesson ... is the need to anticipate and resolve likely objections early in the planning process." The consultation process lacked elements of dialogue with political and public stakeholders, and contemporary reports show that the government's communication of the intentions of ERP did not appear to be matched by government efforts to understand public concerns nor resolve these in a timely manner.

In summary, the lack of acceptance for ERP was influenced by several factors:

- Less urgency to deal with congestion (road infrastructure expansion, the new MTR line, and recession had ameliorated the congestion problem);
- A lack of consultation with the newly created district boards;
- Public opposition to the advent of additional taxes and lack of trust that the government would reduce other road-related taxes that had been promised; and
- Limited communication with public stakeholders on the rationale for ERP and its financial viability, despite the strong evidence of its benefits.

Further studies on the potential for ERP were conducted in the 1990s. The Provisional Legislative Council (PLC) consulted with government departments (primarily relating to transportation and the environment) and conducted a limited public consultation focused on the use of ERP as a tool to reduce congestion. Stated preference surveys were conducted in May 1997, and these confirmed a potential shift in demand to public transportation and a variation in timing of trips and the apparent support for a range of potential ERP scenarios; this provided sufficient confidence for a technical feasibility study that included a trial on the strategic road network and the disused Kai Tak Airport runway, to be led by the Transport Department. However, a public consultation was not part of the initiative defined by the PLC although the study also aimed to define the scope of any future consultation.

#### RECENT PROPOSAL WITH OFFICIAL PUBLIC CONSULTATION PROCESS

Even though Hong Kong started the technology tests with the intention to implement CC back in the 1980s, it has never succeeded in implementing CC as an on-the-ground policy. With growing concerns about traffic congestion and travel speed in recent years, the Hong Kong government decided to put CC on the agenda for the third round. In response to public consultation on Hong Kong's Climate Strategy and Action Agenda in August 2010, one professional institution presented ERP as an option that should be considered again alongside other potential initiatives, such as new road infrastructure and compulsory use of electronic toll collection for all vehicles on tolled tunnels and routes.

In March 2014, the Secretary for Transport and Housing invited the Transport Advisory Committee (TAC), an advisory body to the government, to conduct a study to identify the factors that contribute to the traffic congestion and to provide recommendations to tackle congestion. TAC proposed 12 short-, medium-, and long-term practicable measures following a three-pronged approach of improving transportation infrastructure, expanding the public transportation system, and managing road use. One of the proposed measures was to start planning for a CC pilot scheme. TAC especially suggested that the government fully engage the public as soon as possible to allow ample time for detailed planning. The government took TAC's suggestion and started a public engagement exercise to explain the ERP concept and listen to public views.

In December 2015, the Transport Department officially kicked off a three-month public consultation on how to go about implementing the ERP in the central district and adjacent areas. Public consultation was to figure out how to implement ERP, as clarified by the Secretary for Transport and Housing (Transport and Housing Bureau 2014), not to figure out whether to implement ERP. This gave a clear signal that the government had reached the stage where it was determined to implement a pilot scheme.

The public consultation, which had not been done in the previous rounds, took various forms. The major means was to collect public feedbacks on the specific pilot scheme. Residents could send their feedbacks through emails, fax, post, telephone, dedicated website or via Transport Complaints Unit under the TAC and Public Affairs Forum of the Home Affairs Bureau. Particularly, the Government created a website [www.erphk.hk](http://www.erphk.hk) to introduce concept of ERP and disseminate consultation materials. It should be highlighted that the website also included an interesting test on ERP knowledge that attracted a lot of attention. The other ways of public outreach included media reporting and commercials.

Public consultation concluded in late March 2016. Proposals were submitted in terms of road charges, the level of charges, the period for imposing charges, the exact area, the mechanism for road pricing, or whether there should be some exemptions in particular circumstances. Following public consultation, the government plans to develop concrete proposals, commencing with a feasibility study that started in December 2017 relating to the application of ERP Central and surrounding areas in anticipation of a pilot scheme.

### 4.11.3 Lessons from Hong Kong's Practices

Hong Kong is a very special case in the effort to introduce a CC scheme. Despite the technological maturity and the first two rounds of proposals for ERP begun in the 1980s, ERP had not been communicated publicly as a potential congestion reduction tool until 2014. The two rounds of proposals did not go further, largely because of weak stakeholder dialogues and limited public communication, coupled with unresolved privacy and fairness concerns.

Realizing the importance of public communication, the government began a new round of ERP proposals and made a recommendation to “start planning for a congestion charging pilot scheme by developing a conceptual plan for engagement with the public and relevant stakeholders” (Hong Kong Transport Advisory Committee 2014).

## 4.12 Summary

### 4.12.1 Levels of Interaction and Minimum Requirements

To varying degrees, each of the schemes described in the case studies highlighted a visible problem: the need for road infrastructure, investment in public transportation (or other complementary measures), increasing congestion or worsening air quality or some combination of these, the willingness to change the scheme design in response to feedback, and (mostly) structured internal dialogue followed by some form of interaction with the public. The structure and sequence of each phase, followed by all schemes presented above, started with internal (usually political consultation) and then progressively intensified interaction with the public to inform a detailed scheme design, which was often punctuated by further internal dialogue to confirm and refine political support. The context of the development of the scheme plans and steps toward fulfilling them is given in Appendix.

As a means of comparison, three distinct but non-mutually exclusive levels of interaction with stakeholders were referred to, as described by the Rodrigo and Amo (n.d.), although several similar descriptions exist, including consultation methods prepared by Fife Council (2015)<sup>12</sup> and a resource kit for participation and social assessment.<sup>13</sup> In particular, the Rodrigo and Amo list the following levels of interaction:

- (a) Notification (one-way process of communication of regulatory decisions to the public);
- (b) Consultation (an exchange of information on a one-off or continuing basis to facilitate the drafting of regulation); and



Table 4 | **Levels of Stakeholder Interaction**

Location	Level		
	Notification	Consultation	Participation
Berlin	★ ★ ★ ★	★ ★ ★	★
Milan	★ ★ ★	★ ★	★ ★
Singapore	★ ★ ★	★ ★ <sup>a</sup>	★
Stockholm	★ ★ ★ ★ ★	★ ★ ★ ★ <sup>b</sup>	★ ★ ★ ★ <sup>c</sup>
Gothenburg	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★ <sup>c</sup>
London	★ ★ ★ ★ ★	★ ★ ★ ★	★ ★
Manchester	★ ★ ★ ★ ★	★ ★ ★	★
Edinburgh	★ ★ ★ ★ ★	★ ★ ★ ★	★ ★ <sup>c</sup>
New York	★ ★ ★ ★	★ ★ ★ ★	★ ★ <sup>d</sup>
Hong Kong SAR <sup>e</sup>	★ ★	★ ★	★

Key: ★ low levels of intensity / effort to ★★★★★= high levels of intensity / effort

Notes: <sup>a</sup> Trial used to confirm technical feasibility

<sup>b</sup> Trial used as a core part of consultation

<sup>c</sup> Consultative (non-binding) referendum

<sup>d</sup> Vote required at state level to endorse NYC's application for federal funding

<sup>e</sup> Hong Kong's consultation was aborted prematurely in 1984 and 1990 due to lack of political support.

(c) Participation (active involvement of interest groups in the formulation of regulatory objectives, policies, and approaches or in the drafting of regulatory texts).

Each of the cases studied show elements of *all* levels although weighted differently, as shown in Table 4 above. Note that every case study included internal stakeholder engagement in drafting the necessary legislation (where it did not already exist) and local regulations for the scheme and its enforcement. In three cases, public participation was reflected in the use of public referenda.

The level of stakeholder interaction presented in Table 4 above ignores the acceptability of the scheme design and the social, economic, and environmental context in which it was developed. Therefore, the scope and intensity of stakeholder interaction is unlikely to be a good predictor of the likelihood that a scheme will be implemented or not. Stakeholder engagement is a necessary but not sufficient prerequisite for political and public acceptance.

The minimum requirement for a successful consultation is to achieve high levels of public awareness and a consultation process that is designed to facilitate political and public acceptance. Political and public acceptance is never the objective of the LEZ and CC policies; instead, it is the outcome of such policies.

A secondary benefit to maximizing awareness is that it contributes to high levels of compliance when a scheme is in operation as in London and Singapore. If not, misunderstandings will lead to noncompliance and dissatisfaction by road users who believe that the schemes have been unfairly enforced, and these misunderstandings will introduce an element of risk, as the experiences of Edinburgh, Manchester, and Gothenburg showed.

Overall, successful schemes, even those that faced public opposition to the use of CC or LEZ, depended on public communication that included comprehensive notification,

promotion, intensive monitoring of changes in public attitudes and timely adjustment, willingness to change, and prudent decision-making.

#### 4.12.2 Differences and Similarities

Any analysis of successful schemes in Western Europe, North America, and Asia would only lead to generalizations on the level of stakeholder engagement throughout the consultation process. The case studies from Europe (and the single example from the United States) highlight two distinct styles:

- (a) A scientific/professionally based approach as practiced in Germany and Sweden, where interaction with the public mostly involves notification plus limited consultation to refine the operational strategy; and
- (b) A consultative/political deal-making approach as shown in the UK, Italy, and the United States, where public interaction is used to short-list policy options, followed by increasing dialogue to define operational details, potentially requiring significant changes to the original policy aims.

To varying degrees, the case studies illustrate that structured consultation processes in Europe and the United States were used as an integral part of the development of informed public acceptance. Significant changes in policy were exhibited in Milan; by comparison, a lack of acceptance of the need for a change in policy was evident in Edinburgh (in particular the problematic outer cordon was retained). This demonstrates that the process of consultation and its outcomes are equally important. A focus on one but not the other could compromise the implementation of the CC or LEZ policy.

However, there are few examples from Asia. In Hong Kong and Singapore, the process of scheme development (including the trials) functioned as a type of outcome. Singapore's consultation was mostly internal but did not ignore the value of public feedback in its ERP scheme development during on-road trials to refine its operational strategy. LTA is planning more extensive market communication processes for its migration to ERP2. Consultation processes in pre-1997 Hong Kong were closer to the scientific/professional method, although at that stage they lacked any meaningful public consultation mostly due to plans being abandoned because of lack of initial political support. Up to this time, public consultation had been biased toward notification rather than encouraging structured dialogue.

In general though, consultation on infrastructure projects in Asia tends to focus more on developing coherent government policies and gaining the support from key officials and other key political stakeholders. Public opinion on scheme design is emphasized less, and many projects lack any extensive dialogue. Instead, structured notification is the main form of public engagement.

In China, the engagement of scholars, Local Design Institutes (LDIs) and other experts in the development of intelligent transportation systems reflect a dominant scientific/professional approach, which has also been shown to work in the development of policies toward CC and LEZ in many of the case studies explored. Since 2001, China's legal framework<sup>14</sup> for consultation has been developing to the point where legal justification now exists to consult externally (i.e., with the public) through workshops, forums, and other meetings. At risk of over-generalization, a process of non-confrontational, incremental development of new regulations for CC or LEZ also appears to be dominant in China, and the case studies show that this is more closely aligned with the development of LEZ (compared to CC) and in the professional/scientific approach, rather than by the political/consultation approach. Potentially, the first such scheme in China could be based on enabling legislation (applicable to other provinces and cities, such as that used in Germany, Italy, and the UK) and regulations that are locally applicable. Users should also be aware which regulations apply to them and must be helped to quickly gain this knowledge through effective marketing and structured dissemination (e.g., by leaflets, informing community leaders and through use of the Internet), underpinned by a desire for increased transparency. The alternative is not desirable, though: misunderstandings on the scope and charges for Edinburgh's CC scheme contributed to significant public opposition, as revealed in its referendum and subsequent surveys.

As a guide to suitable analogies where local guidance is nonexistent, it should not be forgotten that CC and LEZ schemes are often perceived to be complex, and their effects may be far-reaching since the aim is to modify the travel behavior of nearly all local road users, often conflicting with entrenched habits or well-defined plans.

Therefore, as the case studies show, the consultation process needs to be highly structured and wholly integrated into the design of CC and LEZ schemes to ensure high levels of awareness, understanding, and ultimately acceptance.

Parallels may be drawn between the development of the Gothenburg and the (aborted) New York CC schemes. Both schemes were packaged within a comprehensive metropolitan-wide sustainability plan, both benefited from extensive public communication, and both packages secured broad political support. In both cases, the intensive interests of smaller groups of stakeholders that were resistant to CC were able to overcome widespread public support for the sustainability packages. In the case of Gothenburg, the post-implementation referendum on CC revealed poor public support (although the scheme continues in operation). In the meantime, the Gothenburg authorities are studying alternative methods of demand management to see if they could be as effective as CC.

In relation to the (failed) New York scheme development, a paper written by a member of the New York City Department of Transportation concluded that “... the process of public comment and modification of the proposal improved the plan and served to build greater support for the commission’s recommendations [but] that gaining approval [for] pricing [would] require changing how motorists view the effect of pricing on them personally ... and not simply society at large,” thus, supporting the importance of addressing the self-interest of stakeholders (Schaller 2010).

#### 4.12.3 The Relevance of a Champion

The importance of a champion is often highlighted as a critical enabler of CC and LEZ. Examples from London, Stockholm, New York, and Milan demonstrate the strength of elected mayors in promoting such policies on a sustained basis. In each case, the mayor was supported by a single-purpose city authority that was able to conduct the consultation and implementation process. However, from the case studies, there is not enough evidence to make any conclusions on whether a city authority itself can also perform the role of champion, and it is likely that an implementing authority would be limited in how much it can market CC or LEZ (a challenge faced in Manchester). Edinburgh’s lack of a political champion was widely regarded as one of the reasons for declining lack of public support during the consultation program and the ultimate failure of the proposal, as reflected in its referendum.

From the examples of Edinburgh and Manchester in particular, it is clear that any proponents of a CC scheme need to be proactive in publicizing its benefits and educating those likely to be affected. The statistics

cited earlier emphasize the need to communicate adequate information to ensure that public support or opposition is based on current and accurate information to minimize misunderstandings and ensure that each affected party is able to understand the costs and benefits for him or herself.

## 5. KEY FINDINGS

TfL’s First Impacts Monitoring Report (2003) on the London CC scheme summarized its approach to public communication: “...direct marketing was used to reinforce the advertising messages and deliver greater detail, and to target discrete subgroups. Public relations were used to ensure the media coverage was accurate and informed, added depth to the understanding of the scheme, and provided highly targeted local advice through local media, or to specific sub-groups...” [Also]...it was important that the necessary infrastructure was in place to receive enquiries from the public that would be prompted at various stages of the campaign.”

The process of stakeholder consultation is an integral part of the process of public communication for an LEZ or CC scheme. With this in mind, the general methodology and international experience suggest that a stakeholder consultation program should adhere to the following principles, split into two parts: design then execution.

### (a) Design

- If not already defined, nominate a roundtable of expertise that will either *manage* or *advise* on the whole consultation and policy design process, including
  - representation from all internal stakeholder groups, including the scheme sponsor, the enforcement authority, and local municipalities;
  - if LDIs are used, assurance that they have adequate technical capacity and knowledge of the end-to-end process, including IT systems architecture, billing, and debt collection; and
  - inclusion of international application experts/practitioners as advisors on design-for-implementation and related risks for the period from design through procurement, implementation, and operations.
- Design the consultation process and state its objectives (i.e., specific levels of congestion reduction and

emissions) and outcomes (i.e., improved economic productivity and health), noting that focusing on the process to the detriment of the objectives or outcomes, or vice versa, could jeopardize public acceptance;

- Define a range of feasible policy scenarios and related descriptions that are likely to meet the stated policy objectives, including modeled traffic impacts, vehicle entry restrictions/charges (as relevant), and qualitative statements on social and economic impacts, to be used for internal consultation;
- Develop public consultation procedures to ensure legitimacy for CC and/or LEZ policies and the development of regulations that will affect other public agencies, transportation service providers, businesses, road users, and residents. The implementation of CC and/or LEZ could be regarded as a type of reform the impact of which is complex;
- Develop a consultation auditing process and use it to audit all stakeholder interactions to ensure that the defined processes have been followed with the connection between feedback and decisions clearly traceable;
- Design and implement surveys that measure the development of attitudes among each stakeholder group at each stage in the process, ensuring statistical relevance and broader validity. Efficiency means that relevant information must be gathered and analyzed as quickly as possible and include hard-to-reach stakeholders; and
- Market the external consultation process to all internal stakeholders to develop internal understanding, set expectations for potential changes to the CC or LEZ policy, and promote the value of public acceptance to ensure high levels of compliance with CC or LEZ regulations.

## (b) Execution

- Explicitly identify the range of stakeholders with whom the sponsor of a CC or LEZ scheme should interact; if any stakeholders are difficult to reach, then specific measures should be developed for reaching them;
- Outline the multi-stage consultation process; focusing initially on internal stakeholders, followed by progressive external roll-out of information in stages, initially to raise awareness and then to progressively reveal more and more detail, adapting to changes throughout;
- Decide which forms of interaction suit the stage of the process (e.g., mass market leaflets, public visits to on-road trial sites, community workshops, one-on-one dialogues with key opinion leaders, etc.) and assume that, despite the risk from self-selected respondents, the Internet can provide a valuable communications and feedback resource;
- Develop and test policy scenarios as part of the internal stakeholder consultation process, emphasizing CC or LEZ, the size of the restricted areas, vehicle/user categorization, exemptions (ideally a limited quantity), complementary measures (e.g., new infrastructure, improvements to public transportation, etc.), and timing; and
- Execute the consultation process itself, checking achievements against key milestones, identifying public acceptance challenges, revising policy themes/operational strategies and budgets while progressively revealing more and more detail and, most importantly, using surveys to check levels of understanding and acceptance to be fed back into the policy design process.

Based on observations from the development of example international schemes, we make the following recommendations to help shape a public communication strategy:

- **The development and delivery of public communication programs cannot be independent of the context of the intended (or prevailing) scheme but must be integrated within it.** Public communication implies interaction with relevant stakeholders and the public. As various potential scenarios for a CC or LEZ are developed, it is likely that policy objectives and operating strategies need to be refined, not only to demonstrate that the public communication process is meaningful but to resolve inconsistencies as early as possible and to develop and maintain political and public acceptance.
- **It is important that public communication be carried out as early as possible in the feasibility study process or the policy design process.** Early start of public communication leaves more room for modification and can reduce the costs of remedying mistakes and scheme operations (since a higher proportion of users would be noncompliant). Migration from a simple dialogue through public opinion-based decision-making to more complex forms of public participation may not be applicable



in China's political and cultural context. Instead, early interactions with the relevant stakeholders and the public will benefit the scheme's execution by illustrating the potential benefits of public acceptance on scheme sustainability in providing flexibility for the scheme's implementers to adapt to feedback gained from the stakeholders and the public.

- **Communicate the highest priority policy objectives of the scheme, emphasizing that the primary aims are to improve air quality or to mitigate congestion.** Other objectives may be mentioned as non-primary, such as the expected secondary benefit of improving air quality from CC. Ideally, the brand names used to communicate the scheme should reflect its policy objectives and ensure that public communication messages are understandable and therefore more readily acceptable.

- **Public communication needs to be positive and proactive and should be used as an opportunity to inform and educate people.**

Public communication is not just a process to present the public with a few facts and leave it at that. It really needs a positive "pro" campaign to allow plenty of time (ideally years) for people to absorb and accept the information, noting that more information is a better than less. People also need to be convinced that a CC or LEZ scheme will reduce congestion and harmful emissions, rather than just divert traffic and emissions elsewhere. People should also be informed of alternatives to driving and other travel options that might exist when CC or LEZ is implemented.

- **Opposition opinion-handling can be dealt with through negotiation and the extension of certain exemptions granted in the consultation process to give all stakeholders confidence that their views are being recorded and potentially used to adapt the scheme's design.**

As a consultation tool, granting an exemption for a specific category of vehicle type, user category, or usage provides the opportunity for a concession to increase support. However, exemptions make a scheme more expensive to enforce as there are more variables that need to be detected by the enforcement regime. Ideally, consideration should be given to balancing the cost of exemption and public support.

- **Public communication should be integrated with data collection to allow for an informative evaluation process.** Public communication requires surveys as critical tools to inform and measure the

development of public opinion on the need for an LEZ or CC scheme and to set expectations on its respective objectives. Interactions with the stakeholders and the public provide a cost-effective means of gathering data on travel patterns and preferences that provide the means to assess the public acceptance. Informed feedback also allows operational strategies for potential CC or LEZ schemes to be refined before a scheme is implemented and to maintain sufficient public support. In addition, data gathering also allows for ongoing monitoring, which is required to measure levels of support and public attitudes.

## 6. FURTHER RESEARCH

This working paper is part of the Low Emission Zone/ Congestion Charging (LEZ/CC) Public Communication Strategies series that summarizes international best practices in public communication and consultation strategies that could contribute to the decision-making, preparation, and implementation of LEZ and CC policies in the context of China. The series aims to offer a comprehensive package of public communication strategies to assist in the decision-making, preparation, and implementation of LEZ/CC policies in China and elsewhere in the world. The recommendations from the international cases examined in this paper may not be directly applicable to China. The recommendations should be built on the analysis of the political, legal, and social economic background; the government institutional setup; and the status of the urban development and transportation systems in China. In the next phase, we will further investigate the communication strategies that fit into China's social, economic, and institutional framework.

Although it is not the focus of this working paper, it is worth mentioning that equity concerns may always be raised among both the public and decision-makers, and this needs further study. Literature review shows that the equity associated with CC has been discussed mainly from four perspectives: horizontal equity (members of the same group are treated the same); vertical equity (members of different groups are treated differently); the cost principle (those who contribute to a social cost pay for doing so); and the benefit principle (those who receive social benefits pay for them) (Ecola and Light 2009). Depending on whether the revenue benefits low-income individuals or all individuals equally, CC could be progressive or regressive. No matter which type of CC is implemented, it is very likely that some individuals will be worse off due to the location

of the charging area, distribution of housing and jobs, etc. Therefore, to promote equitable outcomes, decision-makers and planners should look at measuring and assessing equity early in the planning process. In the scheme feasibility study process, they should conduct more sufficient public communication to residents and affected groups so as to understand if low-income or disadvantaged groups are disproportionately affected, and they should adjust the scheme accordingly.

Apart from the equity issue, transportation governance also has a great impact on how effectively a transportation policy theme can be translated into practice. The implementation ability, whether with respect to CC or LEZ policies, is associated with a well-structured institutional arrangement. Transportation policies like CC and LEZ involve many stakeholders, including transportation authorities, environment authorities, other public authorities, transportation operators, truck companies, road users, residents, visitors, etc. The institutional arrangement defines the key entity or agency that is responsible for public communications such as delivering messages relating to set targets and policy details. A well-structured institutional arrangement makes the information communicated effective and ensures policy delivery. Different countries and cities have various hierarchies of institutional framework. As in London, TfL integrates the authorities or responsibilities of policy scheme design, implementation, enforcement, management, monitoring, and public communication. In China, these responsibilities are devolved to different public agencies with different powers. The institutional setup and interagency collaboration necessary to ensure the delivery of charging-related policies will be further studied in the next stage.

APPENDIX

Summary of Public Consultation and Communication Strategies for Studied Cases

The examples described in Section 4.2 to 4.11 are summarized below, including policy aims, operational status, burden on road users, existence of enabling legislation, and each of the following dimensions in relation to the public consultation process:

Dimension	Scheme						
	Berlin, Germany	Milan, Italy	Singapore	Sweden, incl Stockholm and Gothenburg	UK, incl. London, Manchester and Edinburgh	New York, US	Hong Kong SAR (China)
Policy aims	LEZ (urban)	LEZ (then CC)	ALS, RPS then ERP. ERP2 being procured	Congestion tax	CC (urban)	CC (urban)	ERP
Legal basis	National framework to support local deployment	National framework to support local deployment	National framework	National tax framework to support local deployment	National framework to support local deployment	State laws within a national funding framework	Not defined
Status	Extensive implemented throughout Germany	Extensive use, migrated from LEZ to CC	Extensively used, expanding and scheduled for replacement by ERP2	Implemented in Stockholm and Gothenburg only	Extensively used in London, but aborted following adverse result from referenda in Manchester and Edinburgh	Sufficient local public and political stakeholder support; failed at state legislature	ERP aborted, bridge and tunnel tolls introduced; CC currently being studied
Burden on road users: additional vehicle equipment needed / enforcement	Colored license disc/manually enforced	Various: DSRC (automatically enforced) and paper license (manually enforced)	ALS/RPS colored license (manually enforced), ERP (automatically enforced)	DSRC tag (automatically enforced)	DSRC, ANPR (automatically enforced)	DSRC tag and ANPR (automatically enforced)	OBU (later GNSS) (automatically enforced)
Revenue distribution	Locally collected tax no hypothecation	Locally collected, used to fund local complementary measures	Income returned to Treasury, occasional rebate on annual license fees	Dedicated to local transportation infrastructure provision	Dedicated to funding local transportation infrastructure and public transportation subsidy	Dedicated (a lock box) to funding NY (and outer boroughs) transit improvements	Not defined
Consultation authority(ies) and main scheme sponsor(s)	City governments	Local authorities (Milan: the mayor's office via AMAT)	Singapore government (via the LTA)	Coalition of SNRA (national) and local city administration	Local authorities (TfL, AGMA and Transport Initiatives Edinburgh)	Mayor's office via city transportation authorities (incl. MTA)	HK Government, Transport & Housing Bureau and TD
Consultation phases	National government to develop legislation and (in Berlin) local roundtable	Notification via gazette and media adverts, limited stakeholder consultation	Internal/political, financial mandate to LTA to develop operations strategy, structured multi-phased public notifications	Internal state and city experts, multi-phased consultation, regional and local community consultation	Extensive multi-phased consultation, regional and local community consultation	Extensive multi-phased consultation, regional and local community consultation, state-level consultation	Provisional legislative council, district boards, trial, limited public engagement
Public participation and feedback mechanism(s)	Stakeholder committee and limited consultation with local communities	Stakeholder committee but limited consultation with local communities	Escorted visits to trial sites, community presentations, phased roll-out, surveys	Household surveys, representation via political parties, media survey, feedback from trial	Representation through local political parties and stakeholders, surveys and referendum	Notification, representation via national political parties, surveys, intense media interest	Representation via district boards, media opinion, limited trial feedback
Basis for negative feedback	Equity, cost of vehicle upgrade	Perception that congestion not a problem, exemptions	ERP: privacy, payment options, OBU usability	Cost to outer borough residents	Misunderstanding of policy, equity, Manchester: complexity of double cordon	Equity, cost to outer borough residents, distrust that funds would be spent as promised (transit upgrades)	Privacy, distrust of government (1985)

---

## REFERENCES

- Allen, S., M. Gaunt, and T. Rye. 2006. "An Investigation into the Reasons for the Rejection of Congestion Charging by the Citizens of Edinburgh." *European Transport* 32: 94-113.
- BBC News. 2008. "Voters Reject Congestion Charge." December 12. [http://news.bbc.co.uk/2/hi/uk\\_news/england/manchester/7778110.stm](http://news.bbc.co.uk/2/hi/uk_news/england/manchester/7778110.stm)
- Balducci, A., C. Calvaresi, V. Fedeli, C. Pacchi, E. Valsecchi, and D. Zaroni. 2008. *G-FORS Project Country Case Study: Italy - WP 8*. Milan, Italy: Polytechnic University of Milan. <https://www.hannover.de/content/download/7973/730022>.
- Becker, T. 2008. *Analysis of Behavioral Changes Due to the Stockholm Congestion Charge Trial*. Stockholm, Sweden: Royal Institute of Technology. <http://kth.diva-portal.org/smash/get/diva2:139767/FULLTEXT01.pdf>.
- Börjesson, M., J. Eliasson, and C. Hamilton. 2016. "Why Experience Changes Attitudes to Congestion Pricing: The Case of Gothenburg." *Transportation Research Part A: Policy and Practice* 85: 1-16.
- Brown, F. 2016. "Travel Demand Management." Presentation at the MVA Sysra Group, Hong Kong, March 7.
- Chin, K. 2010. "The Singapore Experience: The Evolution of Technologies, Costs, and Benefits, and Lessons Learnt." Working Paper. Paris: OECD (Organisation for Economic Co-operation and Development) /ITF (International Transport Forum) Joint Transport Research Center. <https://www.econstor.eu/bitstream/10419/68766/1/61896178X.pdf>.
- COWI. 2013. *Results of the Public Consultation "The Urban Dimension of the EU Transport Policy"*. Denmark: European Commission DG Move. <https://ec.europa.eu/transport/sites/transport/files/themes/urban/studies/doc/2013-a032862-urban-mobility-public-consultation-report.pdf>.
- Department for Business, Enterprise, and Regulatory Reform. 2008. *Code of Practice on Consultation*. UK: Department for Business, Enterprise and Regulatory Reform.
- Ecola, L. and T. Light. 2009. *Equity and Congestion Pricing: A Review of the Evidence*. Santa Monica, CA: Rand Corporation. <https://pdfs.semanticscholar.org/2dfc/e7fe3384a49b1707855e13bf94007267a67c.pdf>.
- Eliasson, J., L. Hultkrantz, L. Nerhagen, and L.S. Rosqvist. 2009. "The Stockholm Congestion-Charging Trial 2006: Overview of Effects." *Transportation Research Part A: Policy and Practice* 43(3): 240-250.
- Eliasson, J., 2014. "The Stockholm Congestion Charges." Working Paper. Stockholm, Sweden: Centre for Transport Studies.
- Fife Council. 2015. "Consultation Methods." Section 4. April 5. [http://publications.1fife.org.uk/uploadfiles/publications/c64\\_4ConsultationMethods.pdf](http://publications.1fife.org.uk/uploadfiles/publications/c64_4ConsultationMethods.pdf)
- Gaunt M., T. Rye, and S. Allen. 2007. "Public Acceptability of Road User Charging: The Case of Edinburgh and the 2005 Referendum." *Transport Reviews* 27(1): 85-102.
- Green et al. "Traffic Accidents and the London Congestion Charge," *proc. Royal Economic Society*, March 30 to April 1, 2015.
- Gómez-Ibáñez J. A., and K. A. Small. 1994. *Road Pricing for Congestion Management: A Survey of International Practice*. Washington, DC: National Research Council, Transportation Research Board.
- Hamilton, C., and J. Eliasson. 2012. "Decisive Factors for the Acceptability of Congestion Pricing." In *Implementing Road Pricing: Standards, Institutions, Costs, and Public Acceptance*, doctoral dissertation, edited by C. Hamilton. Stockholm: Centre for Transport Studies, KTH Royal Institute of Technology.
- ICLEI-Local Governments for Sustainability USA, and City of New York. 2010. *The Process behind PlaNYC: How the City of New York Developed its Long-Term Sustainability Plan*. New York: The Mayor's Office of Long-Term Planning and Sustainability, City of New York.
- Ipsos MORI. 2008. *Interim Report—The Greater Manchester Future Transport Consultation*. Manchester, UK: GM (Greater Manchester) Future Transport Consultation.
- Johansson, C. 2014. "Low Emission Zones and Congestion Charging Air Quality and Health Benefits." Paper presented to the Environment and Health Administration, City of Stockholm, May.
- Lönnroth, M. 2014. "Stockholm Air Quality and Transport Emissions." Paper presented to Beijing Low Carbon Transport Study Tour, Stockholm, Sweden. September 5.
- LTA (Land Transport Authority). 2009. *Singapore Transportation Policy and Regulations Handbook*. Washington, DC: USA International Business Publications.
- Martino, A. 2011. "Milano: From Pollution Charge to Congestion Charge." Presentation to Transport & Mobility Leuven NV (TML) and KU Leuven, Leuven, Belgium. December 5. [http://www.tmlleuven.be/expertise/seminar/20111205\\_Milano\\_Martino.pdf](http://www.tmlleuven.be/expertise/seminar/20111205_Milano_Martino.pdf).
- Mattioli, G., M. Boffi, and M. Colleoni. 2012. "Milan's Pollution Charge: Sustainable Transport and the Politics of Evidence." Paper presented at the Berlin Conference on the Human Dimensions of Global Environmental Change — "Evidence for Sustainable Development", Berlin, October 5-6.
- Meczes, R. 2015. "Scottish Government Has 'No Plans to Introduce Road User Charging.'" *Freight in the City*, March 26. <http://freightinthecity.com/2015/03/scottish-government-has-no-plans-to-introduce-road-user-charging/>.
- New York City. 2007. *PlaNYC Full Report*. New York: New York City. [http://www.nyc.gov/html/planyc/downloads/pdf/publications/planyc\\_2011\\_planyc\\_full\\_report.pdf](http://www.nyc.gov/html/planyc/downloads/pdf/publications/planyc_2011_planyc_full_report.pdf)
- Odeck, J., and A. Kjekrø. 2010. "Evidence on User's Attitudes towards Road User Charges—A Cross-Sectional Survey of Six Norwegian toll schemes." *Transport Policy* 17(6): 349-358.
- Paul, B. 2007. "PlaNYC: A Model of Public Participation or Corporate Marketing?" Working Paper. New York: Hunter College, Center for Community Planning & Development. <http://www.hunter.cuny.edu/ccpd/repository/files/planyc-a-model-of-public-participation-or.pdf>.

## ENDNOTES

Paybarah A. 2013. "The More You Explain Congestion Pricing, the Less Scary It Becomes." *PoliticoNewYork*, February 15. <http://www.politico.com/states/new-york/albany/story/2013/02/the-more-you-explain-congestion-pricing-the-less-scary-it-becomes-000000>.

Rodrigo, D. and P.A. Amo. n.d. "Background Document on Public Consultation." Working Paper. Paris, France: Organisation for Economic Co-operation and Development. <https://www.oecd.org/mena/governance/36785341.pdf>.

Saunders, J., and K. Lewin. 2005. "Congestion Charging in Edinburgh—A Gestation with Complications." Paper presented at the PIARC Seminar on Road Pricing with Emphasis on Financing, Regulation and Equity, Cancun, Mexico, April 11-13.

Schaller, Bruce. 2010. "New York City's Congestion Pricing Experience and Implications for Road Pricing Acceptance in the United States." *Transport Policy* 17: 266-273.

Schuitema, G., L. Steg, and S. Forward. 2010. "Explaining Differences in Acceptability before and Acceptance after the Implementation of a Congestion Charge in Stockholm." *Transportation Research Part A: Policy and Practice* 44(2): 99-109.

Traffic Congestion Mitigation Commission. 2008. "Commission Recommendation." January 31.

Transport Advisory Committee (Hong Kong). 2014. *Report on Study of Road Traffic Congestion in Hong Kong*. Hong Kong: Transport Advisory Committee.

*Transport and Environment News*. 2015. "Rail Tunnel Financing Saves Congestion Charge in Gothenburg." May 4. <https://www.transportenvironment.org/news/rail-tunnel-financing-saves-congestion-charge-göteborg> Accessed July 9, 2016.

Transport and Housing Bureau. 2014. "Recommendations for Electronic Road Charging and Increase in Fines by Director of Transport and Housing Bureau." December 11. <http://www.thb.gov.hk/tc/psp/pressreleases/transport/land/2015/20151215b.htm> Accessed July 9, 2016

TfL (Transport for London). 2006. *Low Emission Zone Public Consultation*, by Accent. Consultation report, London. <http://content.tfl.gov.uk/lez-rtm-annex-a-accent.pdf>.

University of Quinipiac. 2008. "State Voters Back NYC Traffic Fee 2-1, If Funds to Transit, Quinipiac University Poll Finds Voters Back Millionaire's Tax 4-1." March 24.

Wolff, H. 2013. "Keep Your Clunker in the Suburbs: Low Emission Zones and Adoption of Green Vehicles." *Economic Journal* 124: 481-512.

WHO (World Health Organization). 2011. *Health Effects of Black Carbon*. Bonn, Germany: Regional Office for Europe.

1. The emission classes are based according to manufacturer-declared Euro ratings or, if the vehicle is upgraded, its new emissions rating.
2. Berlin is a city-state that has its own parliament. The state is divided into 12 boroughs (*Bezirke*) representing 96 localities (*Ortsteile*), each comprising several neighborhoods (*Kiez*).
3. These are different colored emission stickers. There are three colors. A green one certifies that a vehicle meets the highest environmental standards. A yellow one is for less compliant vehicles (usually diesel or older gasoline-powered). A red one is for the lowest level. The yellow and red stickers are only temporary and will eventually be phased out.
4. According to the Berlin state government: "Euro 3 vehicles for which there is no suitable particulate filter for retrofitting and upgrading to a green sticker, and which therefore cannot be retrofitted, may be driven in the environmental zone with a yellow sticker provided a certificate to this effect is obtained from a technical inspection agency and clearly displayed in the vehicle." The exemption expired on December 31, 2014, after which time these Euro 3 vehicles may not enter Berlin's *umweltzone*.
5. Led by pro-cycling, anti-pollution groups, outspoken doctors, and Italy's Green party.
6. For example, in a poll conducted by the *Corriere Della Sera* newspaper in 2006, a majority of citizens (53.9%) were opposed to the scheme.
7. The report was published in July 2008 (independently of the mayor's office) by Milan's councilor for transportation, mobility, and environment and the councilor for health and correlated the launch of EcoPass with a 5% reduction in admissions for five Milan hospitals for respiratory conditions related to air pollution.
8. Following a merger with the *Banverket* (Swedish Rail Administration), the combined agency is now known as *Trafikverket* (Swedish Transport Administration).
9. Practically, the trial was a pilot since the system was in full operation and the tax was levied on all road users and operated to meet all policy and operational objectives with the exception that users knew that the system would be switched off after seven months.
10. Complementary smaller surveys were also conducted to provide additional detail for the larger surveys.
11. Notably, the RAC in the state of Victoria (Australia), known as the RACV continues to be a proponent of congestion fees.
12. Fife Council (Scotland) describes the levels as "informing," "seeking views," and "participation and partnership."
13. Four stages are identified: information sharing (one-way flow), consultation (two-way flow), collaboration (increasing control over decision-making), and empowerment (transfer of control over decisions and resources).
14. Law on Legislation (July 1, 2000) and related bylaws.



## ABOUT THE AUTHORS

**Andrew Pickford**, CEO, Transport Technology Consultants Ltd, Contact: [andrewpickford@ttc-global.com](mailto:andrewpickford@ttc-global.com)

**Ying Wang**, Research Associate, WRI China Office, Contact: [ywang@wri.org](mailto:ywang@wri.org)

**Fei Ye**, Communications Officer, WRI China Office. Contact: [fye@wri.org](mailto:fye@wri.org)

**Shiyong Qiu**, Research Analyst, WRI China Office. Contact: [syqiu@wri.org](mailto:syqiu@wri.org)

**Su Song**, Research Associate, WRI China Office, Contact: [ssong@wri.org](mailto:ssong@wri.org)

## ACKNOWLEDGMENTS

We are pleased to acknowledge our institutional strategic partners, who provide core funding to WRI: Netherlands Ministry of Foreign Affairs, Royal Danish Ministry of Foreign Affairs, and Swedish International Development Cooperation Agency.

We would like to thank many organizations and experts for their support during preparation of this report. We would particularly like to extend our gratitude to Dr. Zhuang Guiyang of the China Academy of Social Sciences, and Dr. Li Lailai of the World Resources Institute for their insightful input to this report, and the following experts and colleagues for their valuable comments and opinions:

Baowen Li	Beijing Jiaotong University
Holger Balkmann	Agora Verkehrswende
John Walker	The John Walker Consultancy
Shirley Rodriguez	The Greater London Authority
Tianyuan Feng	Phoenix TV
Yamin Wang	China Dialogue
Yong Ge	Institute of Environment and Development
Anjali Mahendra	World Resources Institute
Daizong Liu	World Resources Institute
Danieley Votto	World Resources Institute
Kim Lua	World Resources Institute

We would also like to thank the following experts for sharing enlightening experiences concerning LEZ and CC policies and public communications during interviews:

Dave Wetzel	formerly with Transport for London
Elliot Treharne	The Greater London Authority
Luke Blair	formerly with Fishburn Hedges
Mandy Courtney	Transport for London
Matthew Pencharz	formerly with The Greater London Authority

## ABOUT WRI ROSS CENTER FOR SUSTAINABLE CITIES

WRI Ross Center for Sustainable Cities works to make urban sustainability a reality. Global research and on-the-ground experience in Brazil, China, India, Mexico, Turkey and the United States combine to spur action that improves life for millions of people.

Based on longstanding global and local experience in urban planning and mobility, WRI Sustainable Cities uses proven solutions and action-oriented tools to increase building and energy efficiency, manage water risk, encourage effective governance and make the fast-growing urban environment more resilient to new challenges.

Aiming to influence 200 cities with unique research and tools, WRI Sustainable Cities focuses on a deep cross-sector approach in four megacities on two continents, and targeted assistance to 30 more urban areas, bringing economic, environmental and social benefits to people in cities around the globe.

## ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.

## ABOUT TRANSPORT TECHNOLOGY CONSULTANTS LIMITED

Transport Technology Consultants Limited (TTC Ltd) is a leading independent technical advisor, established in 1996 to deliver policy advisory; strategy development; interim management; and scheme design services in the field of Intelligent Transport Systems (ITS). Our clients include public and private sector organizations that wish to exploit ITS and road-user charging policies.

TTC has been providing services to clients globally for over 15 years and since 2010 TTC has been headquartered in Hong Kong.

Maps are for illustrative purposes and do not imply the expression of any opinion on the part of WRI, concerning the legal status of any country or territory or concerning the delimitation of frontiers or boundaries.

WITH SUPPORT FROM:



Copyright 2017 World Resources Institute. This work is licensed under the Creative Commons Attribution 4.0 International License. To view a copy of the license, visit <http://creativecommons.org/licenses/by/4.0/>