**Transfer of Innovative Policies Between Cities to Promote
Sustainability: Case Study Evidence**

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This paper describes how cities approach the challenging task of identifying, considering, and adopting innovative transport policies. Drawing on political science literature, the paper begins by establishing a framework for analyzing the process of policy transfer and policy learning. Cities were selected on the basis of their reputation for having adopted innovative policies. Data were collected from project reports and in-depth interviews with 40 professionals comprising planners, consultants, and operators in 11 cities across North America and northern Europe. This paper presents the findings from three key innovations: congestion charging, compact growth and transport planning, and carsharing. Each of these innovations was implemented at several sites, and there was evidence of learning across the sites studied. The case studies present a discussion of each policy alongside indications of its positive and negative impacts and then examine how the different cities approached the task of learning about how to introduce it and the issues that they faced. The paper identifies conditions that appear to support effective learning: reliance on strong networks of personal and professional contacts, drawing lessons from multiple sites, and financial and institutional support to facilitate the uptake of risky or technologically immature innovations.

New policy initiatives that challenge or change the way that people travel can be difficult to implement. Building political consensus for potentially risky policies, developing local understanding of policy impacts, developing the necessary skills base to implement a project, and making any formal legal or institutional change can all act as serious barriers. It is therefore critical, when cities attempt to introduce such initiatives, that other cities learn from them. Several approaches have been developed to try to help facilitate the spread of these new practices, including guidebooks, web-based communities of practice, and scanning visits, yet the pace of transfer seems to be slow, given the urgency of issues such as climate change, road safety, and congestion.

This paper reports on the process of adopting transportation policy interventions in North American and northern European cities. It draws on evidence from interviews with 40 practitioners in 11 cities. The paper is organized around the adoption of three key innovations that were identified to be key policies at several sites:

- Congestion charging,
- Compact growth and transport planning, and
- Carsharing.

The paper begins by presenting the methodological approach to studying policy transfer and describes the city sample. Each of the three innovations is then described and the process of policy learning and adoption is discussed. The paper concludes by looking for generic conditions that support the identification, evaluation, and implementation of these policies in the cities studied.

METHODS AND DATA

Policy transfer is a process and therefore requires investigation with agents involved in any particular transfer process (*1*). The focus of this research was city-to-city transfer, as the most serious transport problems are typically clustered in major urban areas. The research design focused on cities in northern Europe and North America with core populations of over 250,000 and a wider metropolitan area of at least half a million. The literature suggests that one enabler to adopting new policies may be the personnel and resource capacity within an organization, which would be expected to be found in cities of at least this size (*2*). The cities chosen were also the central cities of their regions. Within that sample, the cities selected were those that were identified as having tried and succeeded with some leading edge transport policies. The focus was not solely on success stories, as the cities selected have also experienced some policy failures over time, and lessons from the failures are equally valuable. The literature suggests that policy innovations are most likely to be adjusted and tailored more specifically to local needs by early adopters or pioneer cities that take a more proactive role in the policy learning process (*3*). More detailed consideration of the transfer process was therefore likely to be evident in these cities. Site selection was made by the research team on the basis of the available databases of policy innovations and judgment based on experience within the given context. Eleven cities (seven in northern Europe and four in North America) were studied, and the sites are listed in Table 1.

Data were collected for each city through interviews and document review. The interviews were conducted by use of a semistructured approach that allowed issues not considered by the research team to be

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TABLE 1   Case Study Cities

Site	Population City (thousands)	Metropolitan Area (millions)	Innovations Known at Time of Site Selection
Lyon, France	415	1.78	Highly integrated public transport system with bus, trolley bus, metro, and rail; advanced information systems and ticketing; early adopter of driverless metro system; rent-a-bike system and school travel initiatives; home of research institute CERTU
Nancy, France	260	0.5	Rubber-tired tram, integrated fares policy
Edinburgh, Scotland	450	0.78	Held a referendum on congestion charging; early adopter of high priority bus corridors; planning a tram implementation project; United Kingdom leading car club city
Leeds, England	443	1.5	Early adopter of HOV lanes, home zones, and safe routes to school; major hub for commercial car share; involved in several road pricing studies; recent failed tram proposal with trolley bus system now under consideration
Bremen, Germany	546	2.37	Participant in multicity project with carsharing, introduction of some CNG stations, environmentally friendly delivery vehicles, tram–bus integration, and environmental residential zones
Stockholm, Sweden	744	1.95	Active adopter of sustainable travel measures such as cleaner bus fleet (ethanol buses), smartcards, carsharing, safe routes to school; one of few cities adopting congestion charging; environmental restrictions around central area and a freight consolidation center
Copenhagen, Denmark	656	1.6	High levels of cycle use, public cycle rental, and evidence of policy transfer to other cities; urban rail, bus, and metro system; famous finger-plan land use approach; host of Walk 21 conference and major pedestrianization; adoption of high-quality bus corridors
Seattle, Washington	582	3.9	High-quality transit service and transit information, early visioning process for multiple dense centers (1970s and 1980s), creative use of density bonuses for transit, use of highway shoulders for bus lanes
Dallas, Texas	1,230	6.15	Healthy core downtown with high-rise buildings, free market transit-oriented development sites along light rail
San Francisco, California	765	7.3	Congestion pricing proposals, multimodal transit and pedestrian/bicycle planning and issues, parking management, carsharing; complex institutional dynamics due to numerous cities and transportation agencies in the metropolitan area
Vancouver, Canada	600	2.5	Significant transit service, high-quality design for buildings and overall sites, long-term strategies for high-density urban development/infill coordinated with transit and to build markets for transit, traffic calming, busways

NOTE: CERTU = Le Centre d'Etudes sur les Réseaux, les Transports, l'Urbanisme et les Constructions Publiques (part of the Environment Roundtable of the French Government); CNG = compressed natural gas; HOV = high-occupancy vehicle.

raised. The research is qualitative in nature, and the interview process allows rich insights into the processes involved. However, some important limitations need to be acknowledged:

• The cities were purposively sampled, as described above, and extrapolations to cities with significantly different contexts would be risky (4).

• The research team identified the key innovations to be discussed. The cities, for practical reasons, determined who would be interviewed, to a large degree. The authors experienced few difficulties in accessing individuals important to the implementation process. However, the answers obtained will, to some extent, be dependent on the selection of interviewees.

• Policies can be considered and adopted in a matter of weeks (e.g., behavioral change campaigns) or over many decades (e.g., the London congestion charge). The study described here was conducted over a 6-month period, in late 2008 and early 2009, and relied on the recollections of individuals over sometimes significant time spans.

Qualitative comparisons of the strength of occurrence of specific findings in each city were recorded, and key quotations and comments are used to support and challenge the overall findings. The full project report and analysis can be found elsewhere (5, 6). This paper illustrates the insights that the study of policy transfer has provided through three implementation case studies.

CONGESTION CHARGING

Background

Congestion charging has long been discussed as an economically efficient way of charging drivers for the external congestion costs that they impose on other road users in urban areas (7, 8). Although congestion charging strategies are attractive to cities as a result of the dual congestion reduction and revenue-raising potential that they hold, public acceptability issues have limited their introduction. Although various road tolling systems have been in operation for some time, the only major urban implementation of a congestion-based scheme was, until 2003, in Singapore.

In 2003, London introduced an area-based charging system, which charged motorists £5 ($7.50) per day for traveling within the central area of 21 km^2. The scheme is reported to have achieved a 30% reduction in congestion initially with increases in bus patronage and improvements in service reliability (9). The strategy has now been extended to the west part of the city, and the charge increased to $12. Interestingly, the congestion benefits have eroded over time and are now similar to the precharge levels of 2002, even with the higher fee. This is thought to be the result of road works and the reallocation of road space to public transport, pedestrians, and cyclists (9).

In 2006, Stockholm, Sweden, introduced a 6-month cordon-based charging pilot scheme covering an area of central Stockholm of

30 km^2. Drivers pay a sliding scale of up to $2.25 each time they cross the cordon during the day (up to a maximum charge of $6.75). After a public referendum, the charge was introduced on a permanent basis in August 2007 (*10*). The results of the Stockholm charging trial suggest that traffic was reduced by 20% to 25%, accompanied by the associated increases in reliability on links into and within the area (*10*).

The schemes used in London and Stockholm can be seen as examples of innovation in delivering this complex and controversial policy into a political environment quite different from that in Singapore. Other cities are looking to see whether this solution might also be an option. The selection of cities in the sample for this study allowed this to be considered from the following perspectives:

1. Stockholm as an implementer was able to describe how it had approached the implementation and what it had learned from London.

2. Edinburgh, Scotland, proposed a two-cordon charging project to tackle rising congestion and to help fund an ambitious future public transport expansion. The proposal was developed up to the design stage, and then in 2005, the city held a public referendum on it. The voters rejected the proposal that led to its abandonment by the city council, which, by law, had to demonstrate public support for the proposal (*11*). Edinburgh was able to describe how it had approached the design of congestion pricing and why it had failed.

3. San Francisco, California, and Copenhagen, Denmark, are actively researching the potential for the implementation of congestion pricing and were able to describe what they are learning from London and Stockholm and elsewhere.

Approaches to Learning

Stockholm had been debating the introduction of a congestion charge since the 1970s, although it was stated in the interviews that there were no active plans in 2002, when the national political parties agreed to propose cordon pricing for the city of Stockholm. The proposal came before London's congestion pricing project was introduced, and there appeared to be little direct contact between London and Stockholm at that stage. The implementation of congestion pricing in Stockholm was initially planned for 2004 (although that was subsequently delayed to 2006), and this required an intensive planning process. The experience in London clearly provided an opportunity from which to learn. There has been good information exchange between the two cities, yet little direct transfer of London's technology appears to have occurred. The London scheme was implemented over a short timescale and tracked movements within the charged area as well as across a cordon. Technological advances were made in the period between the London and Stockholm implementations, such that the number plate recognition software adopted in Stockholm was an improvement on that used in London. Stockholm adopted some evaluation approaches found in London (e.g., identifying the need for a clear business impacts assessment, which had not initially been included in the London evaluation but which was subsequently required). The staff of the two cities also discussed some operational concerns, such as the length of time necessary to see the true impacts of the project. Stockholm also wished to adopt an approach to payment similar to that used in London, whereby motorists had the immediate feeling of having to pay the charge. Another feature of the London scheme that has been adopted in Stockholm is the exemption for clean vehicles, which comprise 12% of the cars crossing the cordon.

The Edinburgh congestion charging proposal developed over a period of about 10 years, from the time of its first discussion in a regional transport strategy. Unlike the Stockholm system, in which the primary mandate was political (at the national level), the Edinburgh interviewees believed that the main momentum for the congestion charge came from the local staff. Although local politicians provided some support for the scheme, the lack of political lead on the charge was part of the reason for its failure to win public support. Edinburgh was involved in European projects that included London and Stockholm and that helped to facilitate visits and the exchange of knowledge. The officials learned a lot about the back-office management of a congestion charge. Ultimately, however, the different political process that was adopted to seek approval for the project in Edinburgh meant that the learning was not put into practice. At the time of the interviews in Edinburgh, Manchester, United Kingdom, was also holding a public referendum on its congestion pricing proposal. Officials from Manchester had not visited Edinburgh to discuss the reasons for the failure of its scheme or to discuss how this might affect the development of a proposal to the public. The Manchester scheme was rejected by a similarly large proportion of voters (*12*).

San Francisco has been pursuing congestion pricing to address increasing traffic congestion and improve transit service. In 2005, the city received $1 million in federal funds to develop a cordon pricing plan for its downtown. As part of a larger regional grant from the U.S. Department of Transportation, it was also set to receive federal funds for a congestion pricing experiment on a major city facility, Doyle Drive, which connects the Golden Gate Bridge to San Francisco. At the time of the interview, San Francisco was exploring options for pricing the Doyle Drive corridor and developing an aggressive study approach for cordon-based congestion pricing. However, as of this writing, pricing in the Doyle Drive corridor has been shelved because the region achieved consensus on an alternative funding plan for Doyle Drive and agreement that San Francisco would not pursue congestion pricing for the North Bay–Doyle Drive corridor unless it forms part of a citywide pricing system design.

A San Francisco interviewee stated that the London and Stockholm pricing examples were viewed as relevant because western democracies implemented them (as opposed to the case in Singapore). Importantly, Stockholm's use of an initial pilot scheme was appealing. According to an interviewee, "pilots are less threatening," and these can be monitored and evaluated before the city commits to long-term implementation. San Francisco's pricing materials (PowerPoint presentations, reports, fact sheets) also feature European examples to demonstrate to the public and key stakeholders that pricing is not a new concept and has succeeded in the real world. Key elected and senior officials in San Francisco also conducted a study tour to meet with their counterparts in London.

Copenhagen is currently considering the implementation of a congestion charging scheme (*13*). Its motivation is the forecast growth in vehicular traffic (20% to 35% over the next decade), which comes on the back of about 20 years of almost zero growth (because of the combination of good planning, high vehicle taxes, and low rates of economic growth). The central area of Copenhagen has a high-quality urban environment and little space to expand vehicular capacity. There would need to be a change in national law to make a charge possible. Hence, the city is at the stage of conducting a feasibility study of different designs with surrounding local authorities to develop a case to present to the national government. As there has been no significant congestion pressure in the past 20 years, congestion charging was not seriously considered before now. Officials in Copenhagen

reported good contacts with officials in London and Stockholm and noted that the technology suppliers were also keen (for obvious reasons) to demonstrate their experiences in the two cities. The local officials involved in the charge investigation suggested that the design of the cordons, operation times, and exemptions were locally specific matters and that the amount of knowledge learned from others was likely to be limited. The main opportunities for learning were in back-office operations, as congestion charging schemes are, in their view, complex information technology (IT) projects. So, for example, Copenhagen was learning from Stockholm about how it managed the contracts with the system suppliers and what it would do differently.

Although the interaction among staff members is important, Stockholm officials reported that interactions with elected politicians have also been frequent, as they look to evaluate whether this controversial policy might work for them. Since 2007, Stockholm has hosted the mayor of Copenhagen; the leaders of New York and Chicago, Illinois; a cabinet member from Montreal, Quebec, Canada; the leader of the Manchester City Council; and elected politicians from Gothenburg, Sweden; Prague, Czech Republic; and Berlin. It was suggested that these top-level contacts were important in establishing trust among the visiting politicians in the technical presentations that they subsequently received (i.e., they had the opportunity to quiz the people in their positions about the realities).

COMPACT GROWTH AND TRANSPORT PLANNING

Background

Cities and regions throughout the world are grappling with how to coordinate transportation and land use planning in the face of climate change. Much research has examined smart growth and transit-oriented development (*14*); and the U.S. federal government recently launched a major sustainability initiative to coordinate federal transportation, housing, and environmental policies (*15*). Far less is known of how knowledge of such planning efforts is transferred between local areas (*16*). The research described here focused on innovative planning in Dallas, Texas; Seattle, Washington; and Vancouver, British Columbia, Canada, and examined the extent to which information is sought, transferred, and disseminated. A major focus in these plans is on compact development, sustainability and livability, and substantially enhanced pedestrian and bicycle networks. According to the interviewees, all three cities were motivated to discourage dispersed low-density development, in which solo driving would be necessitated. This example of disenchantment with auto-oriented cities is an important part of a city's motivation for improvement and city-to-city learning.

The City of Dallas adopted a new plan called "forwardDallas!" in 2006. An interviewee stated that the plan "marked a milestone for change." Before adoption of the plan, urban development projects were approved and built on a case-by-case basis, and many of them were entirely auto dependent. The city had been growing so fast that "it had never been a problem to attract growth, but we had no long-term strategy to position the city," stated an interviewee. However, some developer-driven projects of a notably different type were built: higher-density mixed-use projects adjacent to rail stations. These projects demonstrated to the planning community and the broader public that a market for such projects existed. With this backdrop, the City of Dallas adopted the forwardDallas! plan. It makes a clear public statement that transit-oriented and sustainable neighborhoods and development are a priority of the Dallas City Council. In addition, the Dallas Area Rapid Transit District recently adopted a transit-oriented development (TOD) policy to institutionalize TOD as an agency activity.

Whereas Dallas is at the beginning stages of comprehensive planning, Vancouver has undergone a major transformation because of its city planning efforts over the last two decades. The city has focused on substantial intensification of residential and mixed-use development; the provision of inviting public spaces; and transportation improvements to encourage travel by transit, walking, and bicycling. In 1991, the City of Vancouver adopted the Central Area Plan, which set "living first" in downtown as a major priority. As a result, the plan limited zoning for commercial development to one-third of the original area and encouraged high-density housing, mixed-use development, and pedestrian amenities, particularly along the waterfront. From 1991 to 2001, the population of downtown residents increased by 60% to 76,000 (*17*).

The city later adopted the 1997 Vancouver Transportation Plan. The plan had two main policies: (*a*) any growth in travel was to be accommodated by alternative transportation modes (transit, walking, and bicycling) and not the auto and (*b*) road capacity was not to increase. "Every day, every staff member is acutely aware [of these two policies]," commented an interviewee. Key themes are integration of transit modes, extensive walking and bicycling network improvements, and parking management. The approach is also integrated into activities such as street maintenance so that opportunities to improve options for nonautomobile travel are not missed. Over the past decade, walking trips have increased by 44%, bike trips by 180%, and transit by 20%. Furthermore, vehicle trips have declined by 10% and are only 10% of all trips within downtown (*18*).

Also motivated to counter auto-oriented travel and development, the city of Seattle recently developed a comprehensive plan with designated compact urban villages and supportive alternative transportation mode strategies. A recent funding program assists with implementation of the related land use and transport plans. Adopted in 2006, the 9-year funding program is called Bridging the Gap and provides $544 million to fund transportation projects and programs. Approximately $365 million is generated from a transportation levy (a property tax that costs $36 per $100,000 in the assessed value, or $144 on a $400,000 house). The balance comes from $127.5 million from a commercial parking tax and $51.5 million from a business tax. In conjunction with other city dollars, the program funds capital projects, street and bridge maintenance and repair, transit service, and projects in the city's pedestrian and bicycle plan. Funds also are designated for street tree planting and maintenance and to provide safe routes to schools (*19*). According to an interviewee, this program has allowed the city of Seattle to move forward on its livable community and transit-oriented development goals of directing growth to its downtown and key urban centers.

Approaches to Learning

The policy board in each case study city has made choices about the city's future because of increasing concerns over the impacts of auto-oriented development. As a result, city officials look for new innovations from a different vantage point:

- Dallas was moving toward the adoption of new planning policies because of growing traffic congestion and recognition of an

emerging TOD market. Dallas looked to the practices of other cities combined.

• Vancouver has been successful at achieving compact growth and the use of alternative transport modes, and staff are motivated to search for innovative strategies from elsewhere to continue its success.

• Seattle was interested in strengthening its downtown and other core areas. Similar to Vancouver, it is often looked to as a model, but staff seek to learn from other cities about specific issues such as parking management and bicycle network design.

The interviewees reported that they look to the experiences of other cities to identify policies, practices, and outcomes on compact development and alternative transport. The process by which they do so typically begins with staff research, which was described as often being "quick and dirty" and which follows two general approaches: (a) articles and reports published by the American Planning Association, TRB (including TCRP and NCHRP), and the Urban Land Institute are scanned; and (b) informal e-mails are sent to associates at other organizations, especially individuals in leading cities and transportation agencies, to see if they have recommendations on staff or cities to contact.

Much learning is done through formal or informal professional networks. For example, the interviewees noted that Seattle and Vancouver are often looked to for best practices on planning for pedestrian and bicycle modes of travel and that staff in both cities contact each other to exchange information. In Dallas, staff looked to the literature for examples of TOD policies that have been adopted, that could be used to generate ideas, and that could potentially be the basis for policy. They also contacted others known informally through a national committee e-mail list. This then led to e-mail exchanges on potential policies and processes. The San Francisco Bay Area Rapid Transit District's joint development policies were discovered in this way and were used as a key example.

Learning also occurs through consultancy and university assistance. Outside experts are often consulted to provide information on other cities, particularly on best practices. The reason is twofold, according to several interviewees: (a) staff levels are lean and mean (i.e., there are not that many staff, and they do not have the time to do the research), and (b) the outside experts providing recommendations on policy change are sometimes taken more seriously by policy makers. An interviewee observed that policy makers are more willing to consider criticisms and recommendations from outside experts than from in-house staff. University researchers are also seen as independent as well as authoritative. In some cases, one interviewee said, "We could do it [the analysis] ourselves, but it could be seen as suspect." In Dallas, the lead consultant team for the forward-Dallas! plan had vast experience in compact development and TOD policies and practices in Denver, Colorado, and Portland, Oregon, and was able to draw from this background for the Dallas plan.

In addition, learning is achieved through face time and dialogue at conferences or participation in study tours, site visits, or specific organized meetings. For example, Seattle staff members visited Copenhagen to examine its extensive bicycle network. Vancouver and Seattle interviewees stated that staff from other cities are invited to meet to discuss the practical aspects of potential projects. In Vancouver, some staff also use their vacation time to attend conferences or travel to cities with interesting policies and projects. They then return to their offices and share the information that they have obtained.

Finally, and perhaps most importantly, the organizational context sets the stage for policy transfer. Comments and observations made during the interviews suggest that public officials and senior managers highly value staff for their knowledge and creativity. There appeared to be an organizational culture that encourages and supports learning and the dissemination of knowledge by actively participating at conferences and on professional committees, thereby cultivating professional networks.

CARSHARING

Background

Carsharing (sometimes referred to as "city car clubs") provides people with access to a car without the need to own a vehicle. Individuals typically register to join a club and then prebook and pay for use of the vehicle (by hourly rates, distance charges, or access plans) (20). In a review of the worldwide growth of carsharing, Shaheen and Cohen note that although carsharing of one form or another has been in operation since the 1940s, it has only really taken off since the 1990s (21). In 2006, it was estimated that there were more than 348,000 members of car clubs in 600 cities worldwide (21). There is rapid growth in the market at the moment. In the United Kingdom, for example, the carsharing membership doubled between 2007 and 2008 to 64,000 (22), although few of the schemes currently operate at a profit.

Carsharing is thought to offer several advantages for transport demand management (23). First, carsharing reduces the need to own vehicles, although the size of the reduction is dependent on the extent to which a supporting public transport network is available. Studies suggest that each carshare vehicle reduces the number of vehicles owned by between 6 and 23 in the U.S. and Canadian contexts (20), whereas in the United Kingdom, this number is estimated to be 14 vehicles (22).

Carsharing exists in many cities, and more standardized operating models and technologies have now emerged. It is an innovation that is moving beyond niche status, yet it is still limited in its application in most cities that do have it and many cities have yet to adopt such systems.

Interviews were conducted with individuals responsible for two successful carsharing programs in Europe (Bremen, Germany, and Edinburgh, United Kingdom). The interviews allowed an exploration of how Edinburgh learned from Bremen and how the systems have evolved over time. The lessons particularly relate to the issue of early adoption, and not all lessons would apply in the same way to those selecting the more mature corporate solutions available today. Briefly, the natures of the Bremen and Edinburgh schemes are as follows:

• StadtAuto carsharing in Bremen began in 1990 with 28 participants. This grew to 1,100 participants accessing 57 vehicles in 1997. By 2002, the numbers had grown to 2,455 and by 2005 to 3,512. About 100 vehicles are now available.

• The City Car Club in Edinburgh was initially launched in 1999, was withdrawn for 6 months because of problems with the initial operator, and then resumed with a new operator in 2000. Outside London, Edinburgh has the largest number of members of any carsharing scheme in the United Kingdom (2,200 in 2008) and has a vehicle utilization rate of about 25%.

Approaches to Learning

Edinburgh first learned about carsharing through a joint European project that involved Bremen. A local official found out about the

scheme on a visit to Bremen and after discussions with colleagues believed that it had a good policy fit for Edinburgh (Edinburgh has large amounts of relatively high density development in the central city areas with limited on-street parking). The initial identification of the scheme was in 1994, and it was not until 1999 that a project was implemented in Edinburgh.

The system that was operational in Bremen predated the Internet and relied on advanced telephone bookings. The keys to the vehicles were left in a safe box near the vehicles on the street. Records of vehicle use were recorded on paper. It was believed that such a scheme would not work in Edinburgh because of the likelihood of vandalism of the safe box and a lack of trust in the paper-based system as a means of tracking use. Crucial to the Edinburgh scheme was the availability of a grant of over £100,000 ($150,000) from the central government to support technical innovations to promote more sustainable travel. This led to the development of a computerized booking and access system and also allowed market research to be conducted to target the introduction of the scheme to the right areas of the city. Edinburgh adopted assumptions about likely car club use using the demographics of early adopters of the scheme in Bremen (younger people tending to hold university-level education). The interviewees believed that the scheme would not have received local political approval without the technological developments. The elected officials would have seen the risk of the scheme not functioning to be too great, so direct emulation was not feasible.

The Edinburgh program suffered a temporary failure in 2000 when the operator (Budget Car Rental) withdrew from the contract. The key individual within Budget who had been taking the project forward had left, and the official at the Edinburgh City Council believed that there was no corporate champion within Budget to deliver the scheme (which was also facing some operational difficulties with the IT systems). The current contractor is a dedicated carsharing scheme company. The IT systems that are now in operation are based on those that were developed in Bremen as that city updated its program. Bremen's influence stretches farther afield, with the Bremen program running the back-office functions for a scheme in Ireland. Bremen has also tried new ideas, such as placing carsharing sites at intermediate transport interchanges in suburban areas and integrating the smart card ticketing system with public transport ticketing. These elements have not transferred to Edinburgh.

Within the United Kingdom, Edinburgh's carsharing program has the highest utilization rate, and the carsharing organization running the operation suggests that it is the only carsharing program in the United Kingdom to be making a profit. Much of this is because the city council is a major corporate user (employees use the carsharing program for business travel) and also because the inclusion of spaces for carsharing vehicles at new land use developments and developer provision of incentives to residents to join the program (such as free membership in Year 1) are ensured.

Contrasting the approaches to promoting carsharing in Bremen and Edinburgh provides interesting findings. Bremen has been proactive and influential in the carsharing debate in Europe, and the city continues to try new activities (described above). These elements have not transferred to Edinburgh. Also, despite the profitability of its carsharing program, Edinburgh has only recently begun to communicate its success through the organization of a conference to celebrate 10 years of carsharing. The leading carsharing official in Bremen was a keynote speaker at the conference. In discussions with the officers in both cities, it was apparent that there were different elements to be learned from each (e.g., Edinburgh had a more developed approach to integration in the planning system and Bremen had a more developed approach to integration with public transport), yet the main European good practice information portals would point authorities considering such a system to Bremen.

IMPLICATIONS

The three case studies presented here provide an opportunity to synthesize some key lessons about the innovation process. In drawing the implications together, common themes have been identified and these have been related to the literature, when it exists. The interpretations have not been validated with practitioners and remain those of the research team.

Among the cities in the sample there is an active process of seeking to learn about new policies that could transfer from one city to another. The innovations that are adopted typically involve a combination of lessons gleaned from a few comparator sites, together with local adaptations to the program or project design, plus adjustments to local policies. Innovation may therefore be new and progressive in the context of a particular city, even if it is not the first time that a proposal has been made or the first implementation of it. Innovation may also take the form of a new combination of pre-existing policy elements and actions (24). The actual project design is likely to be significantly influenced by the local context. For example, the congestion charge cordon location was largely constrained by geography in Stockholm and by desires to protect the urban core in Copenhagen. The procedural aspects of the implementations may be easier to learn from others. Such aspects include back-office system design and contract arrangements (Copenhagen learning from Stockholm), evaluation procedures (Stockholm and San Francisco learning from London), and marketing and implementation procedures (e.g., selecting the target market for carsharing in Edinburgh and considering the potential perceived impacts to businesses and residents, for which San Francisco looked to London). Some technological designs (e.g., the latest carsharing booking technology) have been transferred, too, but this seems to be most likely to happen as the systems mature. The expertise of local officials is important to determine what to transfer and what must be adapted to local conditions.

The initial search for lessons is fairly informal and was described by those who were interviewed as "quick and dirty," "ad hoc," and "unsystematic." The ad hoc nature of this search was seen to be inevitable, and monitoring new developments was seen to be an interesting part of the job. Interviewees described the difficulty that the expanding information age has created in providing too much information. Beyond the general description of the system, the information found often was not seen to provide enough practical details on project implementation, such as staffing, sample policy documents, project costs, and technical and political feasibility.

Interested individuals therefore emerged as being critical to both searching for and directing others to new solutions, particularly for implementation lessons. Although the Internet, professional magazines, and good practice guides provide windows into the explicit knowledge base available, it appears that the most trusted and effective sources of the transfer of knowledge are personal and professional networks. The importance of human interactions in providing a validation of experiences is well understood in the organizational learning literature (25, 26). Shared working experiences engendered

through working groups or technical committees of TRB, APTA, ITE, and AASHTO in the United States and the Civitas cities program in Europe were noted to be important routes to broadening the network of contacts beyond obvious neighboring authorities.

Resource limitations (both time and financial) and cultural barriers (the view that learning from cities overseas or other national cities that "aren't like us" might be wasteful) were important constraints in some of the cities studied, and these constraints have also emerged in other studies (*27, 28*). The presence of a supportive organizational environment that encourages the search for lessons from elsewhere seems to be an important factor in the extent, or at least the speed, with which innovations are considered.

Risk is clearly an important part of any innovation process. Technological advances occur rapidly, and not being the first mover has distinct advantages (*27*), as experienced with the technological advances trialed in the Edinburgh carsharing system. Some authorities preferred to wait to see how policies were working elsewhere before adopting them. Funding support for innovations, particularly from the central government, is important in encouraging cities to overcome the costs and risks of being an early adopter (as in the case of the San Francisco congestion pricing studies, the national funding of the initial 6-month-long Stockholm congestion charging trial, and the Edinburgh carsharing system).

One issue that emerges through observation and that was raised by two practitioners is the tendency to focus visits on successful implementations. Although this has clear logic, lessons can be drawn from failures to a similar extent. It is interesting, for example, that Manchester did not visit Edinburgh to discuss its failed bid for a road pricing scheme before launching its public consultation and referendum. There is a reporting bias toward project successes and a tendency to gloss over negative or unsuccessful aspects of those in operation because of local political or personal sensitivities. Rose recommends that visits to cities to learn about new policies should include discussions with skeptics about the project as well as advocates of the project (*29*). It is possible that the publicly available evaluation evidence base is biased, which may explain the importance of personal contacts in getting to the real story behind a project.

In conclusion, the key lessons for cities seeking to adopt innovative transport policies are as follows:

1. Adoption requires the development of a culture of learning in which learning from outside the organization is positively supported.

2. Investing in networks and networking are keys to unlocking a more robust understanding about the policies in action elsewhere.

3. The learning task should be approached with a healthy sense of skepticism about the full scale and transferability of the benefits. Since one size (often) does not fit all, lessons may be gleaned from several cities and then combined to produce a locally feasible strategy or program approach.

4. All aspects of the implementation should be fully considered, as lessons may range from the macro concept to the micro implementation level.

5. Researchers could play a greater role in developing detailed case studies of both implemented and unsuccessful projects. They could interpret the implications of the findings from a policy perspective, discuss how the research may be transferable to other areas, and consider more practical issues associated with project implementation (e.g., staffing needs, costs, revenues, discussion of the city processes required for implementation, and critiquing of sample ordinances).

6. Federal and state governments should continue to provide financial and institutional support to those areas seeking to deploy innovative policies and projects to overcome the risks associated with them.

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