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Including climate change considerations in Latin American urban transport practices and policy agendas

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In this research we sought to understand how actors in urban transportation adopt climate change considerations into their work, including the techniques they use to address it, such as planning, design, analysis and advocacy in project planning and implementation. Through interviews with transportation practitioners at the World Bank, working in Latin America, we found that efforts to include climate change mitigation in the urban transportation policy agenda encountered major challenges such as lack of support for interventions that slow motorisation. In response, these transportation practitioners used relationships, expertise, advocacy and analysis to modify their practices to climate change concerns.

Keywords: climate change; transportation policy; transportation planning; urban mass transit; policy practice

1. Introduction

In the transportation sector a common approach to climate change policy is to frame global warming as a technical problem to be solved by matching efficient and equitable funding strategies to the proper technologies and countries (Sierra 2006, Miller 2008). In this model, sustainable transportation includes strategies such as using cleaner vehicles and fuels; achieving efficiencies in traffic flows; shifting to less polluting modes; and leveraging pricing, regulation and other economic instruments, to achieve such changes (WBCSD 2004, OECD 2006, Sperling and Cannon 2007). Although these technical approaches may be a necessary part of moving toward sustainable transportation, they represent only one dimension of the political economy developing around climate change. One missing piece is recognising that climate change interventions in the transportation sector also depend on processes of social and political change that shape ideas about what policies and technologies are desirable.

Rational policy analysis has been the norm in transportation (Wachs 1985), but understanding the social and political processes of changing transportation systems

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requires a different type of investigation. Over the past several decades, social science has sought a better understanding of policy by focusing on the actual practice of decision making, because such an approach can more fully represent its political, economic and technological complexities (Lindblom 1959, Allison 1971, Cohen *et al.* 1972, Forester 1989, Jasanoff 1994, Flyvbjerg 1998, Fischer 2003, Hajer and Wagenaar 2003, Kingdon 2003).

We use a practice-based approach in this research to contribute to knowledge of climate change policy making in the transportation sector, specifically the development of climate change mitigation policy in urban transportation in Latin America. Our analysis centres on the work of one key actor, the World Bank and its operations work in urban transportation in Latin American cities.

Literature on international organisations such as the World Bank has discussed how states and NGOs shape international organisations' policy agendas at a high level (Finnemore 1996, Goldman 2001, Bebbington *et al.* 2004, Park 2005, Sarfaty 2005), and how international organisations have considerable power and autonomy in guiding state and global policies (Reinalda and Berbeek 1998) – an issue for which the World Bank is often criticised (Weller and Yi-chong, 2009). In addition to contributing to the literature on climate change policy making, this current research contributes to knowledge about the World Bank, because we investigate how its operations staff members – essentially 'street level bureaucrats' (Lipsky 1980) – negotiate the Bank's climate change agenda as it relates to urban transport. Centring this research on the World Bank's operational work in the transportation sector offers a unique perspective on how planning for climate change shapes cities and metropolitan regions.

Despite the World Bank's unique position as an international organisation, we believe that lessons drawn from its experience are relevant to the broader experience of carrying out a climate change agenda in transportation. Specifically, three themes arise in this current research that extend beyond the case of the World Bank: (1) Using grants, science-based analysis, institutional development – as the World Bank does – to advocate for policy positions that are not supported by the prevailing political context; (2) leveraging cities as a locus for climate change mitigation; and (3) making trade-offs in transportation system design to meet a range of social, political and economic objectives, instead of focusing narrowly on system performance.

In this research, we sought to understand the politics, policy discourses and technologies of climate change mitigation through the World Bank's work in Latin America with the following research questions:

- (1) How do World Bank operations staff members working on urban transportation in Latin America align the World Bank's climate change mitigation agenda with the policy concerns of its clients through the selection, design and implementation of projects and technical assistance work (we acknowledge the importance of the efforts made to adapt to a changing climate, but here we focus only on issues related to reducing emissions of greenhouse gases)?
- (2) What are the potential synergies and conflicts between climate change considerations and other traditional transportation goals?
- (3) How do institutional and technical factors, such as the structure of financial instruments and the design of transportation systems, affect the integration of climate change considerations into World Bank-funded projects?

The significance of studying climate change mitigation policy in the transportation sector in Latin America is threefold. First, carbon emissions per capita from the transportation sector in Latin America are increasing at a faster rate than the rest of the world; and most of these emissions come from light-duty vehicles operating in urban areas. Furthermore, car use in the region is expected to grow by 300% by 2030, outpacing the effects of green transportation technologies that could reduce emissions per kilometre by about 30% (Schipper *et al.* 2009). These trends reinforce the need for the transportation sector (as well as other factors in urban development, such as land use planning and regulation, economic development, etc.) to address global warming concerns with a diverse set of strategies, including, but not limited to, cleaner vehicles and fuels, and interventions that reduce vehicle-kilometres of travel.

This is not to say that all urban transport projects that address climate change, or that all large urban mass transit projects, are desirable. Many of these projects are politically contentious because they restructure transport labour markets, reconfigure urban transport service, and place constraints on the use of public spaces (e.g. regulating informal vendors). This is precisely why we should have a better understanding of how investment decisions are made, how projects are selected and evaluated, and how actors in the process view their roles.

2. Methods

This research developed from a project carried out in co-operation with the World Bank in 2008–2009 that analysed the inclusion of climate change objectives in the World Bank's financing of urban transportation projects in the Latin American and Caribbean (LAC) region (Schipper *et al.* 2009, McAndrews *et al.* 2010). In this current paper, we address the questions presented above using data collected through interviews with World Bank operations staff members. People in operations work directly with the World Bank's clients, often in the field while 'on mission', and have interesting perspectives on climate change policy issues because they are liaisons between the World Bank's agenda and those of the partner countries.

We conducted 23 interviews with 24 individuals: 19 with World Bank staff members; two with consultants to the World Bank; and three with transportation planners who do not work for the World Bank, but who have worked on transportation projects in Latin America that received funding from the World Bank.

The interviewees included both men and women at different stages in their careers and with various backgrounds, including engineering, environmental science, planning and economics. Most of the interviewees were from Latin American countries, with careers, education and social ties there. Only a few were from Europe, the US or other regions.

Interviewees were selected based on their experience working with climate change issues in the urban transportation sector in Latin America. The limiting factors were interviewees' availability and the period of time that researchers were in Washington DC (eight weeks). A possible bias in the sample is that we did not reach individuals outside of the urban transportation sector whose work may influence transportation decision making. In addition, because we focused on people with specialised knowledge of climate change our sample does not represent the general experience of urban transportation practitioners who may not work directly with this policy issue.

The interviews with individuals working in Washington DC were conducted in person. Interviews with individuals who were working outside of Washington DC were conducted by phone or by videoconference. World Bank staff associated with the project accompanied the researchers to most of the interviews, and although interviews were designed and conducted by the research team, sometimes the World Bank staff asked additional questions that related to the research effort.

We structured the interviews to cover four topics: (1) the significance of climate change in the interviewees' work; (2) interviewees' experiences integrating climate change considerations into projects; (3) interviewees' experiences working with financial instruments relating to climate change; and (4) the role of transportation and land use planning institutions (e.g. land use plans, transportation plans, integrated transportation and land use models) in interviewees' work. Beyond these four specific topics, we aimed to have free-flowing conversations. The interviews were not recorded, and one of the researchers used a computer to type the content of the conversation as close to verbatim as possible. After the interview, on the same day, the researcher who did the typing cleaned the notes from the interview and shared the notes with the research team for comment and additional information.

The researchers also participated in four meetings and workshops about climate change in urban transportation with a mix of World Bank staff and others who participate in urban transportation policy making in Latin America. The notes from these events have informed the findings of this research.

3. Background

The World Bank includes 30 countries in its definition of the LAC region. The majority of these are upper-middle income countries that are signatories of the Kyoto Protocol (yet exempt because they are considered developing countries under Kyoto) (see Table 1). Virtually all of the countries in the region have environmental laws that include environmental impact assessment, with the majority of countries having developed these laws before 2000.

Despite environmental activism in the region and development of institutions to protect the environment, most countries in LAC are not creating climate change mitigation policies (Mexico is a notable exception). Both popular and political opinion in the region hold that more advanced economies such as the US are responsible for global warming, and that climate change mitigation is not a problem that should be addressed by low- and middle-income countries in Latin America.

In 2006, the world average emissions per capita was 4.3 metric tonnes, while Latin America's carbon emissions per capita were only 2.5 metric tonnes, or about 60% of the world average. Even by 2020, emissions per capita in Latin America will be small compared to those of the US or EU (Schipper *et al.* 2009). Thus, despite the accelerating greenhouse gas emissions from the region, climate change is not a top agenda item for most Latin American countries.

3.1. Operations processes in the World Bank

Although there is controversy around the World Bank's role as an agent of policy change in low- and middle-income countries, World Bank policy documents make it clear that it sees its role as a policy advocate in its partner countries. The World Bank's documentation of its urban transportation operations states that, in addition

Table 1. Countries included in the World Bank's definition of the Latin American and Caribbean Region (LAC).

Country	Income status	Kyoto signatory	Environmental impact assessment laws
Antigua and Barbuda	Upper-middle	Yes	Yes
Argentina	Upper-middle	Yes	Yes
Belize	Lower-middle	No	Yes
Bolivia	Lower-middle	Yes	Yes
Brazil	Upper-middle	Yes	Yes
Chile	Upper-middle	Yes	Yes
Colombia	Upper-middle	No	Yes
Costa Rica	Upper-middle	Yes	Yes
Cuba	Upper-middle	Yes	Yes
Dominica	Upper-middle	No	Yes
Dominican Republic	Upper-middle	No	Yes
Ecuador	Upper-middle	Yes	Yes
El Salvador	Lower-middle	Yes	Yes
Grenada	Upper-middle	No	Yes
Guatemala	Lower-middle	Yes	Yes
Guyana	Lower-middle	No	Yes
Haiti	Low-income	No	Yes
Honduras	Lower-middle	Yes	Yes
Jamaica	Upper-middle	No	Yes
Mexico	Upper-middle	Yes	Yes
Nicaragua	Lower-middle	Yes	Yes
Panama	Upper-middle	Yes	Yes
Paraguay	Lower-middle	Yes	Yes
Peru	Upper-middle	Yes	Yes
St. Kitts and Nevis	Upper-middle	No	Yes
St. Lucia	Upper-middle	Yes	Yes
St. Vincent and the Grenadines	Upper-middle	Yes	No
Suriname	Upper-middle	No	No
Uruguay	Upper-middle	Yes	Yes
Venezuela, RB	Upper-middle	Yes	Yes

Sources: UNFCCC (2012), Brito and Verocai (1999).

Notes: None of the LAC countries are included in Annex 1 of the Kyoto Protocol (i.e. all are considered developing countries and are exempt).

to creating an investment programme, the World Bank's role is to develop policy and institutional change through the selection of partners, bridging different policy sectors and designing financial instruments (Mitric and Zimmerman 2008, Saghir and Juhel 2008). The interviews that we conducted with World Bank staff and other professionals provide insight and detail into how this policy making happens in practice.

Lending is the foundation of urban transportation operations at the World Bank (World Bank 1992, Shihata 1995). The World Bank's Investment Loans support discrete infrastructure projects and capacity-building activities (e.g. building metros, giving seminars) and they are generally implemented for a period of five to 10 years. The World Bank has another type of loan, the Development Policy Loan (also called an adjustment loan) to support more general policy and institutional reforms, such as deregulation and other structural changes. Development Policy Loans are usually implemented for a period of one to three years.

Although lending is central to the World Bank, grants play an important role in advancing the climate change agenda. Grants are disbursed from trust funds that are pooled funds donated by external entities and the World Bank. In FY2011, the World Bank operated over 1000 trust funds (World Bank 2012a). For example, the Global Environmental Facility (GEF) started in 1991 to address global issues such as biodiversity and climate change, and is one of the most important sources of funding for climate change work in urban transportation. Since 1991 it has provided \$7.4 billion in grants, and had \$ 3.13 billion to fund operations between 2006 and 2010 (Global Environmental Facility 2008).

Based on the World Bank internal project database, which does not include projects funded with trust funds, Investment Loans accounted for 85% of all transportation lending in the LAC region between January 2000 and June 2008. Only about 13% of the lending took the form of Development Policy Loans, and in about 2% of cases the finance mechanism was not specified.

The World Bank and partner countries (usually represented by the Finance Ministry and other government agencies) make investment decisions through a formal project planning process that the World Bank calls the Project Cycle. However, before projects are identified through the Project Cycle, the World Bank and the partner country create an overarching policy strategy document, the Country Partnership Strategy (CPS). The CPS is sometimes called a Country Assistance Strategy (CAS), and is prepared every four years and updated every two years. Projects that are identified and implemented through the Project Cycle need to be consistent with the CPS. Yet the CPS is also a flexible planning document: in some instances projects will not be derived from the CPS, but will be justified by some other source of policy. In these cases the CPS is effectively updated by the project, and the CPS may be rewritten to reflect this.

Within the framework of the CPS, the World Bank and partner countries work together to identify fundable projects. Through the Project Cycle, leaders in government ministries and World Bank staff identify key elements of a potential project, such as the responsible agencies, key stakeholders, intended beneficiaries, project components, proposed timetables and expected outcomes. Early phases of the Project Cycle produce a Project Concept Note (PCN), which is not a publicly available document. If the project is using World Bank resources, it is at this stage that an official record is created in the World Bank operations database.

Following the completion of the PCN, the partner country and World Bank operationalise the concepts outlined in the PCN. During this phase, the Bank and partner country work in the country to: conduct feasibility studies; assess environmental and social impacts (per the World Bank's own policies, as well as the country's own laws); identify and mitigate risks to the project; agree on institutional arrangements for the project; and make a work plan.

After the preparation of the analyses for the project, it receives a more formal appraisal that can take an additional several months to a year. The appraisal phase produces a public document, the Project Appraisal Document (PAD) that assesses and confirms the findings of the project preparation phase, and sets forth the justification for the project, performance indicators, as well as environmental management plans and resettlement plans.

The approval of the project creates a loan agreement between the country's government and the World Bank. Following this, the project is implemented and ongoing work involves monitoring the project's implementation (e.g. a mid-project

review). When a project is complete, the World Bank reviews the project's performance and produces a publicly available document, the Implementation Completion Report (ICR) that compares the project's outcomes to the expected results. The ICR also identifies lessons learned, reviews institutional arrangements, assesses the changes in institutional capacity and evaluates compliance with operating policies. The ICR is produced in addition to a country's own evaluations.

3.2. *Climate change projects in transportation and their assessment*

As part of the larger project we analysed what urban transportation projects the World Bank has funded, and reviewed how the economic and environmental impacts of those projects had been assessed (McAndrews *et al.* 2010). Based on a dataset of 10 years of urban transportation projects funded by the World Bank ($n = 41$), not including funding for rural roads, we found that 75% of projects and 90% of lending went to five countries: Argentina, Brazil, Chile, Colombia and Mexico. This is not surprising, as these countries are among the most urbanised in Latin America and all are considered upper-middle income. Thirty-nine per cent of the lending for urban transportation in the region supported urban mass transit projects; 31% supported urban road building; 14% was allocated toward building a mix of infrastructure; 8% was for municipal improvements, such as public works related to both transportation and water; and 6% was allocated toward structural policy issues.

Only three of the 41 projects addressed climate change mitigation officially. The details of the official climate change projects suggest that they were essentially the same in nature and scope as the large urban mass transit projects, which included funding for institutional reorganisation of a city's urban transport sector, mass transport infrastructure and operations, and facilities for non-motorised modes of travel.

All projects funded by the World Bank receive formal economic and environmental review, which may involve several stages of analysis depending on their complexity and potential risks and impacts. When the partner city or country does not have the capacity to carry out the environmental and economic assessments, the World Bank conducts institutional strengthening in this area supported with grant funding that the project manager must secure separately.

World Bank environmental reviews screen a project's potential short-, medium- and long-run positive and negative environmental impacts (focusing on local impacts, but not precluding analysis of global environmental impacts such as climate change), assess alternatives, and make recommendations for the project. In the set of projects that we analysed, only the projects that received funding related to climate change objectives (e.g. carbon finance, Global Environmental Facility grants) analysed their potential carbon savings.

The projects that received climate change mitigation funding also included carbon emissions reductions as a benefit in the economic assessment. The carbon calculations were made using an analysis based on activity estimates, mode share analysis, fuel intensity and fuel type (an ASIF analysis). The calculations did not account for potential changes in land use or trip generation rates that could result from the project.

3.3. *The planning context within individual countries and cities*

The urban transportation projects in Latin American cities that receive loans from the World Bank are generally large and complex. In addition to introducing new

technologies and building new infrastructure – activities that would be complicated as standalone projects – World Bank-funded urban transportation projects often involve a reorganisation of the existing transportation system (e.g. integrating multiple public transit modes and operators into a single system). These reorganisation projects usually have multiple aims, which contribute to their complexity. In the projects that we reviewed, the multiple objectives included improving mobility for the poor, reducing air pollution, regulating informality in the transportation system, and changing the business model for operating public transport.

Thus, given the complexity of the urban transportation projects and their ambitious aims, the local planning processes occur over several years, involve numerous existing government agencies and civil society organisations, require additional training and capacity building for participants in the process, and often lead to the creation of new institutions and organisations.

For example, metropolitan planning for transport modernisation in Lima, Peru, funded partly by the World Bank, started in the middle 1990s and extended into the 2000s. The project centred on creating high-capacity bus corridors with a system of feeder routes through poor areas at the urban edge. In addition, the project sought to create a new public-private partnership for governing and operating the public transit system. Furthermore, the project received additional funding through the GEF for climate change components to reduce greenhouse gas emissions, such as retiring old buses, reducing travel times by public transit, managing traffic and reducing congestion, building a bikeway, and carrying out institutional strengthening (World Bank 2003). Such a mixture of objectives and project components is typical of the large public transport reorganisation projects.

It is also characteristic for the project to have a planning process that includes numerous public agencies and governments. In this particular case, participants included the provinces of Lima and Callao, the municipality of Lima, the Municipal Directorate for Urban Transport, the Municipal Enterprise for the Management of Lima, the Special Metropolitan Project for Non-Motorised Transport, the Special Project for the Metropolitan Area Environmental Recovery, Municipal Directorate for City Services, and the Metropolitan Planning Institute, among others. The planning process also created a new organisation – the Transport Council for Lima and Callao. In addition, groups such as the Japan International Cooperation Agency and the National Ministry of Transportation and Communication funded supporting technical reports (World Bank 2003, Barbero 2006).

Other World Bank-funded urban transportation projects share similar characteristics. For example, World Bank supported Transantiago, the integrated public transit system in Santiago, Chile. Transantiago emerged from a much broader planning effort, the 10-year 2000–2010 Santiago Urban Transportation Plan (*Plan de Transporte Urbano para Santiago*, PTUS), which originally aimed to address inequalities in access and quality of life in Santiago. The PTUS developed into the plan for Transantiago, which had a narrower scope, yet still an ambitious aim to modernise public transportation in the region (Jirón 2007).

Participants in the planning and design of Transantiago viewed it as technical, involving formal institutions and experts, with virtually no role for public input and no process for public participation (Muñoz and Gschwender 2008). Modernising the transportation system involved: integrating the bus and metro systems; redesigning the network and corresponding operations strategies; purchasing new buses; changing the business model for the provision of bus operations; opening the bus

operations provider market to foreign operators; eliminating cash fare payment and introducing smart fare cards; and designing new segregated bus corridors and bus stations (the segregated busways were not actually implemented).

The modernisation did not happen as planned, and the mobility and political consequences were negative. Initially there was a decrease in the quality of transit service for passengers, an operating deficit for the system, media scrutiny and political trouble (Muñoz and Gschwender 2008). However, similar public transit integration projects in other cities, such as the Interligado system in Sao Paulo, have performed much better (Hidalgo 2009).

The plans for urban transport modernisation in Lima and Santiago are examples of the types of project that planners, engineers and policy makers in Latin American cities have been using to achieve both climate change objectives and a range of other goals related to sustainability. The projects tend to be comprehensive, complex and institutionally demanding, which affects how they can be used as a platform for the climate change agenda. Our interviews with World Bank staff members, former staff members and consultants discussed a number of challenges to integrating climate change considerations ‘explicitly’ into these projects (i.e. including climate change goals in loan documentation, as well as project design).

4. Analysis of interviews

Climate change has been discussed within the World Bank since the 1990s, but it did not take an official position on preventing climate change until its former president, Paul Wolfowitz, left the organisation (Pasternak 2007). At the time we conducted this study, World Bank staff perceived that “internal funding at the World Bank [was] being driven by the climate change agenda”. Interviewees cited the new finance mechanisms and trust funds that were being launched to address climate change as indicators of this trend. Interviewees also said that internal World Bank policies to support climate change mitigation had increased their own interest in using climate change-related financial instruments, particularly grants, in their projects.

The Bank board of directors has a clear policy agenda for climate change . . . if you want your voice to be heard, then you say, ‘. . . and this project also addresses climate change’.

Indeed, one of the reasons the World Bank was motivated to carry out this current study was to develop a framework for including climate change considerations into their urban transportation practice.

In our interviews and World Bank policy documents, people emphasised two main ‘tensions’ that emerge because the World Bank has adopted a climate change agenda. First, there is the tension in the World Bank between having an operations programme focused on individual countries, whereas climate change is a global problem. Thinking globally about local projects could reshape traditional decision criteria for investment, or locally-focused criteria could limit the inclusion of projects that have positive regional and global benefits.

The second tension is that the World Bank has a global role that includes the interests of both higher- and lower-income countries, whereas its mission focuses on development in lower-income countries. As mentioned before, lower-income countries resist being the location of interventions to solve rich countries’ problems

(Independent Evaluation Group 2009). The interviews with World Bank operations staff clarify how they navigate these tensions.

4.1. Locally generated ideas for lending projects do not include climate change

Because the World Bank adopted climate change as one of its organisational priorities, it has needed to translate this objective into its lending operations. National and local governments in the borrowing countries have been reluctant to borrow for climate change goals. Policy makers in the Latin American region look toward the US as the first place to start reducing emissions, paraphrased by World Bankers as saying, “We don’t want to reduce our CO₂ emissions so that people in Houston, TX can continue to drive SUVs”.

Interviewees explained that political leaders in the client countries are ‘very savvy’ about climate change with “so many institutions [going] there to offer them help”, yet they do not have popular support for climate change mitigation.

Decision makers might be easy to convince with the long-run planning scenario, but in [some cities] you need to convince civil society. There are particular people who have a lot of influence and they don’t believe that climate change is relevant except maybe for its impacts.

Because of the lack of support for climate change policy in the region, interviewees at the World Bank expressed uncertainty about what their role would be, saying, “There is a lot of [climate change] advocacy with respect to the [Latin American and Caribbean] region, but there are questions about how this fits into country programs”. “In the moment, in these contexts, it’s like a first-world thing pushing poor countries to take climate change into account”.

In addition, while recognising the importance of the climate change issue, some staff members also questioned prioritising it ahead of other ‘traditional’ transportation goals, including mobility, safety, health and air quality, and affordable transport for the poor. As one interviewee explained, “Even emissions are down the line in these countries where . . . poor people don’t have access to public transport. The first thing is to make public transport accessible to areas, to have a minimum dignity for people . . .”. Because climate change mitigation can be at odds with local political agendas it is difficult, and sometimes undesirable, for operations staff to pursue it directly while accomplishing these other objectives. An interviewee explained how accomplishing sustainable transportation goals is about trade-offs and the larger political perspective: “When we do a transportation project we have many objectives, not one . . . You have tradeoffs . . . you have to consider them together. Weighting them is a political issue, not a technical issue”.

Staff members who said that they would like to see more inclusion of climate change mitigation in World Bank-funded projects expressed a sense of constraint because urban transportation projects are mostly locally generated, rather than initiated by World Bank operations staff. It is not that World Bank operations staff members do not have a role in defining projects, but it is increasingly the case that the proposals, particularly for projects funded by loans, are well defined when they are put forward to the World Bank for consideration. As a result many Bank staff see their role in shaping projects as limited to ‘reacting’ to the country’s proposal, rather than shaping it. World Bank operations staff attributed the increasing detail in proposed projects to the increasing depth and sophistication of local technical

capacity. If climate change is not already a priority for those who define the projects, then World Bank staff members see themselves as having few and limited opportunities to include carbon emissions mitigation as an explicit objective, or even to adjust the project to be less carbon intensive.

These perspectives are contrary to most research that focuses on the World Bank's autonomy in policy development, yet they make sense in this case for two reasons. Many interviewees acknowledged that the countries they work with have other choices for financing transportation projects, and that the World Bank's loans are relatively expensive because of their conditions. As countries move into higher income levels they have access to funds from their own resources, as well as other market lenders (see Table 2). This competition among banks presents a situation where the borrowing countries are in a stronger position to define the conditions under which they contract with the World Bank. This is consistent with other research describing borrowing countries' influence over the World Bank, particularly middle-income countries that have other options and growing technical capacity (Weaver 2007).

One interviewee described the competition in this way:

... one thing [the other bank does] well is carbon finance ... they are very serious ... but the cities have confidence in the Bank, and this might keep their interest in the Bank ... managers know us ... we have very trusting relations, and this is part of the advantage we have.

Although the CDM market is not currently strong for funding transportation projects, the World Bankers are anticipating future scenarios, and have already begun to demonstrate their climate change policy expertise to gain the trust of potential partners.

4.2. Grants, loans, and carbon markets for climate change mitigation

Whereas loans may work against including climate change explicitly in World Bank-funded projects, other World Bank financial instruments, such as grants, can make it easier to include climate change mitigation goals in transportation projects. Using grants is consistent with the perspectives of World Bank staff members who have personal and professional opinions that, in general, countries in Latin America should not use loans to pay for climate change mitigation projects because loans should be used for local priorities.

In contrast to the loans, another attractive feature of the grants is that World Bank staff members have more flexibility to use them for policy design and development, planning processes, institutional design, data collection, studies for project preparation, training, information exchange (including peer group networking), and other technical assistance activities. This is consistent with other research that has showed how World Bank technical assistance grants shaped policy agendas in South Africa, even though it did not pursue a lending programme with the Bank (Smith 2008).

In addition to their flexibility, grants are an important tool for maintaining regular contact with partner countries through technical assistance projects. According to our interviews, this is one tool the World Bank uses to maintain long-term engagements' with clients – relationships that may influence the projects

Table 2. Development assistance to LAC countries, 1970–2008.

Country or region	Income status	Average net official development assistance as a % of gross national income
Antigua and Barbuda	Upper-middle	1.99
Argentina	Upper-middle	0.07
Belize	Lower-middle	6.29
Bolivia	Lower-middle	6.47
Brazil	Upper-middle	0.07
Chile	Upper-middle	0.20
Colombia	Upper-middle	0.47
Costa Rica	Upper-middle	1.62
Cuba	Upper-middle	0.16
Dominica	Upper-middle	11.56
Dominican Republic	Upper-middle	1.10
Ecuador	Upper-middle	1.13
El Salvador	Lower-middle	3.75
Grenada	Upper-middle	5.41
Guatemala	Lower-middle	1.44
Guyana	Lower-middle	14.28
Haiti	Low-income	12.45
Honduras	Lower-middle	6.65
Jamaica	Upper-middle	2.74
Mexico	Upper-middle	0.07
Nicaragua	Lower-middle	14.90
Panama	Upper-middle	0.95
Paraguay	Lower-middle	1.56
Peru	Upper-middle	1.00
St. Kitts and Nevis	Upper-middle	4.50
St. Lucia	Upper-middle	4.13
St. Vincent and the Grenadines	Upper-middle	7.35
Suriname	Upper-middle	7.54
Uruguay	Upper-middle	0.28
Venezuela, RB	Upper-middle	0.05
High-income countries		0.01
High-income countries (non OECD)		0.20
Upper-middle income countries		0.23
Lower-middle income countries		1.95
Low-income countries		7.60
LAC (all)		0.35

Source: World Bank (2012b).

that partner countries eventually propose. This pattern of using grants to maintain relationships is consistent with other research on the World Bank's role in local policy-making processes. In Mexico, policy elite and Bank officials have spent decades building close working relationships in which Mexico carefully manages and limits the World Bank's influence, while Bank officials are regular participants in policy dialogues and provide ongoing advice and financial support with grants and occasionally loans (Teichman 2004).

Although the development of new grant instruments, such as the new Clean Technology Fund, provide incentives for including climate change concerns in local projects, World Bank staff members regard grants as 'special efforts', rather than an ongoing part of the planning process. One reason that grants are treated as a special

effort is that they require demonstrating the carbon savings of a project, which in turn requires special data collection and analysis. This is particularly challenging when the relevant data and models are not available, or when collecting and analysing the data would require significant extra resources.

Several interviewees believed that resource constraints work against the consideration of CO₂ emissions impacts in many projects. Analyses are costly, and making an explicit link to climate change in a project is sometimes seen as a lower-priority use for scarce project resources, and even one that could delay or destroy the project. “Technical resources are scarce on this project. The team has four people. If one starts to work on certifying emissions, then giving up that one person kills the project”. Introducing climate change mitigation components into existing projects would be resisted by the borrowers, and by the project managers, too, if the additional work would be a large hassle for only a minor piece of a project. Thus, funding climate change mitigation is not only a matter of directing resources to the capital requirements of projects, there are also important labour constraints that limit the capacity to do climate change work.

World Bank staff expressed a similar opinion about using carbon finance to support urban transportation projects. As one interviewee said:

Related to CDM ... the carbon market ... a lot of the changes [advances] that have taken place ... depend on where the carbon market is operative. So, if you can get credits for landfills and clean coal – that’s where the investments are going to go. I don’t know for transport. It’s not very high. It’s like that with forests. No one wants to invest because they don’t know what the market will be. The market needs to be functioning.

As with grants, the benefits of using carbon finance on a project are not usually financial, and instead are symbolic. As one interviewee said, “... it’s not about the money, it’s more the reputation”.

4.3. Including climate change in projects is a transportation planning problem

In addition to the politics of advocating for a climate change agenda in Latin America, interviewees focused on many of the technical planning issues that they face when combining these agendas. Most of the issues they raised are not unique to reducing greenhouse gas emissions, and echo the experience of including other environmental considerations into urban transportation planning.

The main message is that achieving reductions in greenhouse gas emissions through planning and implementing large, complex urban transportation projects is difficult, because it requires aligning and managing multiple objectives; working within uncertain local political environments; selecting appropriate transportation technologies; and considering the effects of multi-level economic, social and natural systems. Accounting for greenhouse gas emissions, saved or generated through a project, may be a necessary step toward reducing greenhouse gas emissions, but in this case it is not sufficient because actually reducing emissions depends on successfully implementing these complex projects.

Interviewees described many sources of uncertainty or constraint in designing urban transportation systems that reduce greenhouse gas emissions. They mentioned specific examples, such as how the project may create long-run changes in urban form and growth (e.g. simultaneous densification and dispersion within cities), which creates uncertainty for estimating changes in emissions. Another example is that

transport projects are influenced by exogenous factors, such as national energy policies and resource endowments (e.g. whether a country has abundant hydro power or whether they have clean diesel fuel standards), that constrain project development. The most common source of uncertainty that interviewees mentioned was the development of institutional frameworks for new regulations and policies for the transportation sector, such as new environmental laws, norms around enforcing environmental laws, systems for privatising some transportation services, and developing institutions to regulate and manage private participation in the system.

In addition to the macro-level sources of uncertainty, the micro-level design details are a challenge and interviewees want to consider them with rigour. For example, one issue that needs rigorous planning and design attention is improving access and mobility through pedestrian and bicycle improvements. As one interviewee said:

Originally, the bikeways component [of the project] intended to rehabilitate an existing bikeway system that wasn't a system; it was a fragmented set of bikeways. The approach to planning in this case did not focus on the bike system and its connectivity, and this contributed to its failure.

World Bank practitioners are saying that achieving the emissions reductions depends on careful, thoughtful design for transit, urban design and other aspects of transportation systems that may be indirectly related to new technologies that reduce emissions, but are critical to the larger system and should be counted as important technological changes.

4.4. Strategic use of data and information

Collecting appropriate data to demonstrate the potential carbon savings of a project is also an issue for World Bankers, because these data may be scarce or costly to collect. The outcomes of the important technical, planning and design aspects of projects discussed above are also often frustratingly difficult to measure, yet most interviewees realised that the strategic use of data and information is one of the primary methods that they can use to promote climate change mitigation in their work.

Several interviewees talked about the role of the World Bank in influencing policies by providing expertise. In their view, the World Bank shapes the design and selection of projects through policy discourse, both by providing expert opinion that can influence decision makers and by providing data and analyses that decision makers can use to reach their own conclusions. As one interviewee explained, "We [World Bankers] have an important role: to introduce the topic [of climate change] into the discussion".

Interviewees had different views on how climate change expertise might be introduced. Some talked of using a "champion to convince key stakeholders" with evidence and then following-up with grants to support the development of projects, i.e. expertise was associated with persuasion. Others emphasised providing technical data and analysis to support the policy process, while remaining 'outside' of the ultimate decision-making process. Regardless of whether interviewees viewed their policy roles as technologists or advocates, most placed a very high value on quantitative indicators and evidence, even though many acknowledged that some of the most important outcomes of their work are not measurable quantitatively. One particular anecdote stands out:

I come from environment where for years we were trying to do environmental projects and no one saw [them as important] and it took an enormous amount of analytical work to go to the minister and provide the numbers . . . That's what you have to do. You have to present [climate change] in ways where people say, 'Ah!'.

It follows, then, that evidence of local benefits are important means of influencing local stakeholder proposals and actions, and they are necessary for demonstrating the merits of projects to the boards that award grants (e.g. the Global Environmental Facility, internal management and external evaluators). In addition, interviewees cautioned that another crucial point is to convince local stakeholders that local benefits can accompany strategies that reduce greenhouse gas emissions:

I don't think that approaching people with a climate plan is going to fly. I think that dealing with the proposals in a way that presents climate change in terms of local benefits for people [will work better].

4.5. *Considering the systems effects of climate change mitigation policies*

Many interviewees spoke about the fragmentation and idiosyncrasies that emerge from a project-based strategy to address complex policy issues, such as air quality or greenhouse gas emissions, noting that a single project is too limited in scope to tackle these issues fully.

For example, a country's energy sources influence the choice of mass transit technology and fuels, and for each city or country context there can be real differences and real advantages of some technologies over others. As one interviewee explained, "Electric trains make more sense in countries with hydro power. You need to look at total energy and emissions along the chain . . ." Ultimately, "... it depends on the city to make the decision", yet national interests and private sector lobbyists influence the decision making.

Most of the interviewees thought that more integration or urban systems planning would benefit their project work. On the other hand, staff members also think that increasing the complexity of an already complex (and resource constrained) project, by working across sectors and disciplines, is a risk to projects that are already challenging to implement. For example, competition between the goals of the different sectors may lead to compromises that result in decisions that, from a single-sector point of view, would be considered sub-optimal. Some interviewees also said that the project focus is beneficial, because it allows project managers to move forward expeditiously and to demonstrate key results.

One particular cross-sectoral theme stood out in the interviews. Several saw the World Bank's expertise in air quality as an opportunity to introduce climate change mitigation into the discourse in the Latin American region; and Mexico City is a good example of a case in which this has happened. Mexico City has had significant experience working on air pollution problems. According to interviewees, the work on air quality there dates back to the 1960s, but became more urgent after the earthquake in 1985. At that time, there was popular and political support for a number of urban reforms, including air quality improvements. As a result – and as an example of the need for cross-sectoral approaches – Mexico City developed the institutional and technical capacity across its environmental, energy, health and transport sectors to improve air quality. This capacity has been a bridge between transportation, urban development and climate change. Mexico is the only Latin

American country to address climate change mitigation in its Country Partnership Strategy document, and it has developed a reputation for greenhouse gas emissions reductions.

The World Bank is working on scaling up the cross-sector approach that was successful in Mexico City through a four-year GEF-funded project to create a regional framework for climate change policy in LAC, the Sustainable Transport and Air Quality project (STAQ). Its aims are to create a regional, cross-sectoral policy dialogue about transportation and climate change that includes: fostering a network of practitioners; sharing lessons learned; creating sustainable transportation and air quality components in local transportation projects; training in methods to quantify carbon emissions; and carrying out pilot projects, such as bikeways, busways and street infrastructure improvements in LAC cities (World Bank 2008).

4.6. Critical issues need more attention: land use, active transportation, and motorisation

Finally, World Bank staff members recognise land use as a principal factor in the development of sustainable transportation, but most lamented the difficulty of including robust land use planning in transportation projects. In cases where land use was explicitly part of a project, these components were generally studies of the interaction between transportation infrastructure and changes in land value. Land use and transportation planning are often funded through institutional strengthening and technical assistance, but these are regarded as auxiliary components of projects. One interviewee explained that he recognised that land use is important, but it is, in his opinion, an institutional issue, which is difficult to quantify and to combine with projects that focus on the technical aspects of urban mass transit reorganisation.

For similar reasons, active transportation modes, such as walking and cycling, are also sidelined from certain projects because it is difficult to quantify the carbon emissions reductions that would result from infrastructure improvements or promotional campaigns. In fact, interviewees said that they no longer apply for GEF grants to cover such investments because they are outside of the GEF's core technical approaches, that centre on vehicle technologies and fuels. As such, the relative difficulty of working with land use and active transportation modes means that the 'third leg' of the carbon emissions reduction stool, VMT reductions, is the weakest.

Although interviewees considered increasing motorisation and use of the private automobile important trends that, in many ways, work against gains in sustainable transport, they also believed that curbing motorisation or rationalising the use of the automobile are not feasible areas for intervention, lamentably. The general sentiment was, "We can't tell Latin American countries that they can't have cars". Instead, World Bank staff focus on the re-organisation of urban mass transportation systems to create more efficient service delivery and encourage a modal shift from private vehicles to transit. The carbon co-benefits of such strategies are probably positive, yet these comprehensive reorganisations of public transportation sectors – rationalising the 'chaotic' bus systems and introducing market-oriented mechanisms, through institutional changes – promote a controversial model of the provision of public services, albeit one that could be effective (Gilbert 1990 2007).

The challenge of working on VMT reductions in the region is compounded by the fact that demand management strategies, such as pricing policies that manage automobile use, can be viewed as limiting motorisation, which is associated with

limiting development. Overall, interviewees did not view addressing motorisation directly as a feasible approach. In general, interviewees viewed upstream, supply-side interventions such as fuel standards and reorganising the public transportation sector, as well as infrastructure interventions, as the most feasible strategies.

4.7. Perspectives from other experts

The work of other experts in Latin America, working primarily in Brazil and Mexico, echoed the perspectives of the World Bank staff, and expanded some of the themes raised in the first round of interviews.

As a policy issue in Latin America, climate change is more important at the national level than at the local level, although it is not a high priority now. Usually, when climate change is a priority, it is a priority for the environmentalists, or it is seen as a policy of the energy sector. Thus, transportation is not viewed as the sector through which a country, or city, will address climate change. When climate change is linked with transportation and urbanisation, organisations tend to make plans based on what they are doing already. At the local level, few cities have the capacity to do this type of planning and policy work, and those that do usually have existing capacity in environmental policy.

A major challenge to sustainable transportation projects of all types is the need for rapid execution of projects, because of the turnover of elected officials. In many cases mayors have only two years to deliver projects, thus, projects need to happen immediately. Sometimes, government agencies also deal with other issues, such as corruption, before they can turn to the development agenda. Another hindrance is a lack of institutional capacity and memory. Interviewees described the difficulty in continuing a policy issue from one administration to the next.

The integration of land use and transportation planning is also a serious institutional consideration. Cities, even those with relatively less capacity, tend to have land use plans, but they are usually not followed. Robust transportation plans are more rare than land use plans. Meanwhile, urban development is often driven by relationships between developers and elected officials. Subdivision laws often require that developers provide the services such as utilities, schools and transportation, but after the subdivision is complete, and the elected officials' term limits are up, no one is accountable.

Finally, interviewees described the role of transportation business interests, such as vehicle designers and manufacturers, in influencing transportation planning and policy in Latin American cities. Decisions about urban mass transit projects are influenced by the lobbying of these groups, signalling the important role of politics and economic considerations in projects that also have significant technical considerations.

5. Discussion and conclusions

In this current research, we set out to learn how practitioners working with the World Bank on urban transportation in Latin America include climate change considerations in the projects they develop in partner countries, and how they align the World Bank's agenda with local agendas on this policy issue.

Through interviews with World Bank staff members, we found that the World Bank faces resistance to its advocacy for climate change mitigation in the urban

transportation policy sector in Latin America. According to the interviewees, practitioners in the World Bank's transportation groups aim to shape the region's larger agendas through science and advice targeted to elected officials, civil servants and professionals. Despite their advocacy, public opinion is not changing very much.

Another approach that these practitioners take is to use World Bank-funded urban transportation modernisation projects (e.g. new vehicle fleets, routes, operations and management) as a platform for climate change mitigation interventions. The modernisation projects are venues for climate change mitigation, because they centre on accepted local goals, not on climate change. Climate change mitigation strategies are added as extra project components, which the partner country does not pay for directly because they are funded with grants or carbon finance mechanisms, instead of loans. Interviewees regarded using grants instead of loans as an acceptable way to introduce climate change considerations into a project when the political agenda in a country, or city, does not explicitly address climate change mitigation.

These two strategies – using transit restructuring as a platform for climate change interventions and paying for them with grants – are theoretically and practically important for two reasons. First, it illustrates how World Bank financial instruments such as grants play an important role in increasing attention to climate change concerns. Second, it shows that modifying the physical and technological environments of cities is a mechanism of political change in climate change mitigation policy. Rather than seeing local policy agendas shape cities and transportation systems such that they are less carbon intensive, this model uses the city and its transportation system to shape political agendas.

World Bank staff members described these transit modernisation projects as large, complex, and technically and institutionally challenging. This is because the projects have ambitious aims to re-make urban transportation systems in cities, and they involve numerous policy objectives and stakeholders. Interviewees talked about how participants in the process use transportation system design and engineering to address trade-offs between multiple policy objectives, sometimes compromising certain objectives to support others. This can be a threat to climate change considerations, because they typically have a lower priority relative to other aims. Although World Bank operations staff members are included in the project design process, they have a limited role in making design decisions, and thus cannot unilaterally shape projects to include climate change concerns.

World Bank operations staff members have the most direct role in shaping climate change mitigation through technical assistance, which they use as a complement to pursuing climate change mitigation through urban transit projects. Technical assistance aims to inform people about strategies to reduce greenhouse gas emissions and to build professional skills in sustainable transportation planning and evaluation. The hope is that building capacity will lead to greater consideration of climate change in future projects. Interviewees viewed this approach as having less risk than including climate change mitigation in transit system reorganisation, as well as having the direct benefit of maintaining long term relationships with potential clients.

In practice, project resource constraints may work against the consideration of carbon emissions impacts in many projects, especially if doing so is resource intensive. Making carbon emissions analysis a standard evaluation element for all

projects, and investing in analytical tools that have multiple applications, may reduce the resistance. The World Bank is already headed in this direction (Block 2009).

Transit modernisation projects may be important investments for mitigating climate change if they achieve the desired reductions in greenhouse gas emissions compared to what would happen without them. Thus, using them as a platform for climate change mitigation interventions is not a poor strategy if they create positive changes in access, mobility, health, equity and environmental outcomes. If comprehensive restructuring of cities' public transport sectors becomes a primary strategy for reducing carbon emissions from transportation, which this analysis and our previous study suggest, then future work needs to verify the efficacy of the model with respect to positive and negative outcomes and their distribution.

A couple of issues with major transit system restructuring need highlighting. First, from historic experience with modernist transportation planning, aiming for systemic change through a top-down transportation planning process creates a predictable set of problems. For example, the bureaucratic tendency to limit risk by narrowing the scope of such projects means that they are less likely to include: (1) multiple policy sectors; (2) non-professional stakeholders and members of civil society; (3) the development of forums for deliberating goals; and (4) explicit consideration of land use, land use planning and non-motorised modes of transportation. Data from our interviews confirms that excluding these elements from the planning process in transportation works against climate change mitigation objectives in two ways. First, it makes it difficult for climate change advocates to shape agendas without access to forums, multiple stakeholders (e.g. the energy and environmental policy sectors), and civil society. Second, implementing new transportation technologies (e.g. a complete Bus Rapid Transit system) in a complex urban system depends on land use and urban design, not just roads, fuels and vehicles.

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