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# **Does Global Climate Policy Promote Low-Carbon Cities? Lessons Learnt From The CDM**

Sippel, Maike and Michaelowa, Axel

Centre for Comparative and International Studies, ETH and  
University Zurich

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# Does global climate policy promote low-carbon cities?

## Lessons learnt from the CDM

November 2009

### Abstract

*An increasing proportion of greenhouse gas emissions is produced in urban areas in industrializing and developing countries. Recent research shows that per capita emissions in cities like Bangkok, Cape Town or Shanghai have already reached the level of cities like London, New York or Toronto. Large parts of the building stock and service infrastructure in cities in rapidly developing countries is built in the coming decade or two. Decisions taken in this sector today may therefore lock in a high emissions path.*

*Based upon a survey of projects under the Clean Development Mechanism (CDM) of the Kyoto Protocol, we find that only about 1% of CDM projects have been submitted by municipalities, mostly in the waste management sector. This low participation is probably due to a lack of technical know how to develop CDM projects and an absence of motivation due to the long project cycle and the limited “visibility” of the projects for the electorate. Projects in the buildings and transport sector are rare, mainly due to heavy methodological challenges. A case study of the city network ICLEI and its experience with cities’ participation in the CDM adds insights from the practitioner side.*

*We conclude that CDM reforms may make it easier for municipalities to engage in the CDM, and that new forms of cooperation between municipalities and project developers, potentially facilitated by ICLEI, are required to help to realize the urban CDM potential.*

**Keywords:** CDM, cities, energy, climate policy, mitigation, transport, waste, local authorities

Maike Sippel

Institute of Energy Economics and Rational Energy Use (IER), University of Stuttgart  
Hessbruehlstrasse 49a, 70565 Stuttgart, Germany  
maike.sippel@ier.uni-stuttgart.de and maike.sippel@gmx.de

Axel Michaelowa<sup>1,2</sup>

<sup>1</sup> Center for International and Comparative Studies (CIS), Institute of Political Science,  
University of Zurich

Hirschengraben 56, 8001 Zurich, Switzerland

axel.michaelowa@pw.uzh.ch

<sup>2</sup> Perspectives GmbH

Klosbachstr. 2, 8032 Zurich, Switzerland

michaelowa@perspectives.cc

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# 1. Introduction

## 1.1 *Global climate policy and CDM*

The United Nations Framework Convention on Climate Change (UNFCCC) laid a foundation for international climate policy in 1992. The Kyoto Protocol to the UNFCCC was signed in 1997. It specifies a greenhouse gas emission reduction target of 5.2% below 1990 levels for 38 industrialized countries and countries in transition (so-called Annex B countries) for the first “commitment period” from 2008 to 2012. The Kyoto Protocol came into force in February 2005 and has been ratified by 184 of the world’s 191 states, the most prominent non-ratifier being the United States.

As greenhouse gases are global pollutants, it does not matter where emissions are reduced. In order to achieve cost-effective emission reduction, the Kyoto Protocol introduced the flexible mechanisms International Emissions Trading, Joint Implementation and the Clean Development Mechanism (CDM). The CDM allows Annex B countries to meet their emission reduction targets by purchasing certified emission reductions (CERs) from greenhouse gas emission reduction projects in developing countries. To prevent that the CDM dilutes the environmental effectiveness of the Kyoto Protocol regime, CDM projects have to be additional, that means they would not have occurred without the funds generated by selling the CERs.

Due to the first commitment period ending at the end of 2012, currently a post-2012 climate policy agreement is being negotiated. Cornerstones for such an agreement are: (1) ambitious emission reduction targets for industrialized countries, reaching 25-40% below 1990 levels until 2020 as recommended by the IPCC, (2) commitments of developing countries to limit their emission growth, and (3) commitments from industrialized countries to help financing of emission reductions and adaptation in developing countries. In the context of these negotiations, the reform of the CDM and introduction of new market mechanisms are discussed.

## 1.2 *Climate protection in developing country cities*

While there is a need for global climate policy, the local level is the implementation level of most mitigation activities. Today, half of the world population live in cities (UN Habitat 2008), and emissions from energy use, transport, industrial processes or waste management are often produced in cities. 30 to 80% of global greenhouse gas emissions originates from cities, so far mostly cities in high income countries.<sup>1</sup>

However, as cities in developing countries are starting to ‘catch up’ economically, they are also catching up in terms of greenhouse gas emissions: In Shanghai, per capita emissions have grown from 3.8t in 1985 to 16.7t in 2006 (Dhakal 2009, p1 and figure 3). In terms of per-capita emissions, Shanghai together with Bangkok, Thailand (10.7t) or Cape Town, South Africa (11.6t) have already overtaken Geneva, Switzerland (7.8t), Prague, Czech Republic (9.4t) or London, United Kingdom (9.6t) (Kennedy et al. 2009, table 3). This is far beyond the global per-capita emissions threshold of about 2t which climate scientists are calling for.

The phenomenon of urbanization adds to the dynamic situation in developing country cities. 90% of global urban growth is taking place in developing countries, and the built-up urban areas in developing countries are projected to triple between 2000 and 2030 (Angel et al.

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<sup>1</sup> Depending on whether emission inventories are based on production or consumption (Dodman 2009, p194ff; Satterthwaite 2008, p539).

2005, p1). Decisions on built structure and infrastructure, taken during this period of mass construction, will have long-lasting impacts. New investments can either lock-in vast energy consumption or climate benefits for decades.

Generally, local climate protection activities include a variety of stakeholders, e.g. local governments, local business, citizens and civil society groups, or scientists. This article focuses on local governments as stakeholders in local climate protection and whether and how the CDM does and can enhance local climate governance. Bulkeley and Kern (2006, p2243) have identified different modes of local climate governance. Firstly, local governments ‘govern’ themselves, that means they decide how to operate their buildings or the city’s car fleet. Secondly, local governments can enable and support other local stakeholders, for example by information campaigns on energy saving appliances, establishment of ‘energy round tables’ for local companies, or by offering subsidies for energy efficiency investment. Thirdly, local governments may act as service providers, e.g. for energy supply, waste management or public transport. Last but not least, local governments can govern ‘by authority’, for example by establishing energy efficient building standards, or introducing a fee for motorized travel in the city. Table 1 provides an overview over the different modes of governance, the influence a local authority can take via each mode, and the relevance in terms of potential for emission reductions.

**Table 1: Modes of local climate governance**

<b>Role of Local Authority</b>	<b>Exemplary activities</b>	<b>Influence of local authority</b>	<b>Relevance (amount of CO<sub>2</sub>-emissions)</b>
<b>Self-Governing</b>	Green fleets, municipal buildings energy management, purchasing green energy	++	-
<b>Governing through enabling</b>	Information campaigns, advice and grants for energy efficiency, loan schemes for renewable energies, education campaigns on green transport	o	+
<b>Governing by provision</b>	Energy service providers / energy service companies, public transport service provider, waste management	ownership of operations ?	+
<b>Governing by authority</b>	City-planning to reduce transport generated by settlement patterns, supplementary regulations e.g. for energy efficiency in the building-sector	++	++

*Source: Based on Bulkeley, Kern 2006, p2243, Sippel 2004, p6*

However, developing country cities may have limited interest in implementing climate protection activities, and they may face a number of challenges. Firstly, they have not contributed much to the problem of climate change, as their share of historic emissions is small. Secondly, in many developing country cities, current per-capita emissions are still far below those of comparable cities in industrialized countries. Thirdly, developing country cities often have very limited resources, and other more urgent policy issues to deal with. Furthermore, they have no direct benefits from taking emission reduction action, and their nation states are not obliged to emission reductions under the current Kyoto Protocol. Their motivation to mitigate emissions may therefore be rather limited, and pro-active and long-term local greenhouse gas policies may be rare (Dhakal 2004, p 82).

There is thus a case for measures and instruments that support mitigation activities in developing country cities. This article examines whether the Kyoto Protocol's CDM can promote low-carbon cities. We ask (1) whether the CDM can motivate cities to take climate action or help them to overcome existing barriers for local climate governance, and (2) which obstacles cities face that want to engage in the CDM. We focus on local authorities as the governing level of cities, and CDM projects that involve them. From an analysis of local authorities' participation in CDM project activities registered so far, conclusions are drawn, e.g. which project types are attractive at the city-level, and why other project types are less common. A case study highlights the city network ICLEI and its experiences with the CDM.

The remainder of the article is structured as follows: (2) describes the CDM in more detail and analyses whether the mechanism may address a city's motivation and barriers. (3) analyses city projects among the over 5000 CDM projects submitted to the UNFCCC by November 2009, (4) presents a case study of ICLEI and the CDM, and (5) discusses lessons learnt, including possibilities for CDM reform and new forms of cooperation involving municipalities, ICLEI and project developers.

## **2. Cities and the CDM – the theory**

### **2.1 The CDM**

The main purposes of the CDM are to:

- assist developing countries in achieving sustainable development and in contributing to the ultimate objective of the Convention,
- and to assist industrialised countries in achieving compliance with their quantified greenhouse gases (GHG) emission limitation and reduction commitments under Article 3 of the Kyoto Protocol.

Any potential CDM project needs to be formally registered by the CDM Executive Board (CDM EB), the core international decision making body. A project's compliance with CDM rules is assessed on the basis of the PDD (Project Design Document), which is the key document in the CDM cycle. A PDD consists of numerous chapters that should elucidate different aspects of the project, such as:

- the additionality test. Projects that are economically highly attractive and whose realisation is not facing significant barriers, are not supposed to be registered as CDM projects. Consequently, a transparent and comprehensive description of the project's economic feasibility with and without revenues through CER sales is needed.
- the description of the baseline and the estimation of emission reductions, on the basis of a methodology that has previously been approved by the CDM EB,
- the monitoring plan. This plan determines which parameters of the project should be measured with a certain methodology in which intervals. Furthermore, the Monitoring Plan makes a statement on where and how long the generated data have to be filed. A carefully worked out monitoring plan is an essential instrument for the subsequent efficient and successful development of the monitoring reports – and therefore vital for the successful generation of CERs. And
- the presentation of the public stakeholder consultation, where the local public has to be given the opportunity to express possible doubts concerning the CDM project (e.g. local authorities, households, and local NGOs). This should happen by inviting the local stakeholders to a presentation on CDM and the planned CDM project activity

with subsequent discussion of the project. The outcome of the local stakeholder consultation has to be included in the PDD.

A PDD has to be formally validated regarding compliance with all CDM criteria by so-called Designated Operational Entities (DOEs). During the audit, the statements in the PDD are screened according to their validity and their feasibility. If the validator determines that the requirements for a CDM project have been met then they recommend to the CDM EB that the project be registered. Despite a positive validation report, between 5 and 10% of projects have been rejected by the CDM EB.

After project implementation, the necessary data for calculation of emission reductions is continuously collected and filed according to the Monitoring Plan. If the issuance of CERs is requested for a determined project period, emission reductions have to be verified and certified by a second DOE on the basis of a Monitoring Report.

CERs can be sold in a forward contract or after issuance. The timing of sales has a strong impact on the price that can be achieved.

Given the cumbersome project cycle, initial estimates of developing country potential to supply large amounts of CERs within short time were pessimistic. However, the development of CDM projects became a veritable gold rush exceeding all expectations. Almost 5000 projects have been submitted to DOEs for validation and over 100 baseline methodologies have been approved for a wide range of technologies. The total CER volume of registered projects reaches over 1.6 billion by 2012, whereas projects in the validation pipeline add another 1.2 billion.

After a slow start due to a lack of CER demand from industrialised countries, an increasing number of governments have set up CER acquisition programmes. Moreover, private companies in Europe can use CERs to fulfil their obligations under the EU emissions trading system. Japanese companies have been eager to buy CERs to hedge against future policy requirements. Overall, in late 2009 over 9 billion € had been committed or already spent on CER acquisition.

## ***2.2 Local governments and the CDM***

As elaborated in Table 1, local governments have different possibilities to take climate action, and thus to engage in the CDM. Firstly, they can develop CDM projects which reduce emissions that are produced by a local authority itself. A possible project type would be energy efficiency improvements in municipal buildings. Secondly, local governments can coordinate or facilitate emission reduction activities by local stakeholders. An exemplary project under the CDM could be the distribution of compact fluorescent lamps. Thirdly, local governments may also act as service providers, e.g. managing waste from citizens or infrastructure to be used by citizens. Possible CDM projects in this field include landfill gas projects, renewable energy generation or energy efficiency improvement and public transport projects. Last but not least, local governments can to some degree regulate the behaviour of local stakeholders. However, regulatory activities are not eligible under the CDM. Table 2 illustrates which kind of CDM projects can be implemented under each mode of governance.



**Table 2: Modes of local climate governance – and exemplary CDM projects**

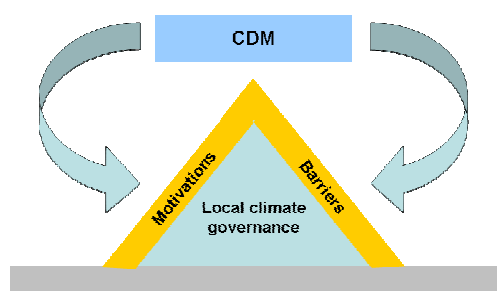
Role of Local Authority	Examples of CDM project types	Examples of CDM project activities	Comments	Suited for CDM
Self-Governing	Energy-efficiency in buildings	“Improvement in Energy Consumption of a Hotel” “Energy efficiency measures in ‘Technopolis’”	Quantitatively not relevant for overall urban emissions – qualitatively important activity; building energy efficiency difficult project type	O
Governing through enabling	Distribution of CFL, greening public transport	“Visakhapatnam (India) OSRAM CFL distribution CDM Project”	Facilitating and coordinating emission reductions by other actors in the city	O
Governing by provision	Landfill gas, greening public transport, renewable energy, power plant efficiency, efficiency in industry	“Bandeirantes landfill gas to energy project” “BRT Bogotá, Colombia: TransMilenio Phase II to IV” and “Installation of Low Green House Gases (GHG) emitting rolling stock cars in metro system” “Beijing 48 MW Guanting Wind Power Project” “Beijing Taiyanggong CCGT Trigeneration Project “ “BBMG Cement WHR for 10.5 MW power generation project in Beijing”	Possibility for concrete CDM projects	+
Governing by authority			Not eligible as CDM activity	--

Source: Categories from Bulkeley, Kern 2006, p2243, CDM projects from UNFCCC 2009b, own evaluation

### 2.3 Can the CDM drive climate action in developing country cities?

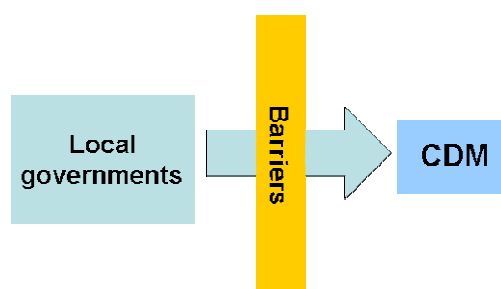
To analyse whether the CDM can drive climate action in developing country cities, two perspectives may be relevant. Firstly, local climate governance is usually motivated by certain drivers, and hindered by certain barriers. To enhance a city’s climate action, the CDM would have to bring ‘positive change’ into this set of motivators and barriers. That is, it should present an (additional) motivation for local governments, and also help them to overcome

**Figure 1: Does the CDM address typical motivations and barriers of local climate governance?**



Source: Own graph

**Figure 2: What deters local governments from engaging in the CDM?**



Source: Own graph

typical barriers for local climate governance. Secondly, if cities consider engaging in the CDM, there are specific obstacles which may constrain their CDM activities. Figure 1 and Figure 2 illustrate these different types of motivation and barriers.

**2.3.1 Does the CDM address motivation and barriers of local climate governance?**

A variety of drivers motivates cities to take climate action, and local climate governance is also constrained by a range of barriers. Motivators and barriers can fall into categories like economic, institutional, or political/cultural. The following explores whether and how the CDM impacts on motivators and barriers for local climate governance. For this exercise, a recent and systematic summary of motivators and barriers is used (Sippel, Jenssen 2009). While this section focuses on motivators and barriers that were identified to be relevant for the uptake of the CDM, a complete list of motivators and challenges is presented in Annex 1. The effect of the CDM may be ambiguous. On the one hand, it may be an incentive for and help to overcome barriers to climate action. On the other hand, CDM project development by local governments may also create new barriers for the rest of a city’s climate action. For example, a CDM project may at the same time help a city to build expertise for climate action (both through additional finances available and experience gathered by staff during CDM project development), but also siphon expertise away from other climate projects, as the CDM project management requires skilled staff. The analysis includes both effects.

The CDM has the double objective to deliver climate protection cost-effectively and to contribute to a host country’s sustainable development. To start with, the CDM may thus have

**Table 3: Economic motivators and barriers for local climate governance, and CDM impact**

		Motivator (M) or Barrier (B)	CDM impact <i>From ‘negative’ (--) to ‘positive’ (++)</i> <sup>2</sup>	How?
Economic	Revenues	M	++	Revenues from selling CERs
	Limited opportunities to generate/access funds	B	++	Revenues from selling CERs = additional funding source
	Costs	B	+	Costs reduced by CER revenues
	Lack of financial and human resources	B	O	CDM involvement may draw resources from other climate action / CDM revenues may increase resources for local climate protection

*Source: Own evaluation, motivators based on Sippel, Jenssen 2009*

both economic impacts and effects on the liveability in a city. By selling CERs, a CDM project generates revenues. As local officials care about the revenues of their government, this may be a motivator for cities to develop climate projects under the CDM. Local governments that are constrained by an unsatisfied need for additional funding for climate action, may benefit as the CDM provides such funding. Revenues generated by the CDM influence the cost-benefit analysis of climate projects. As project costs are an important barrier to local climate action, lower project costs may make the realization of projects more likely. Some evidence for these considerations is provided by Qi et al. (2008), who study CDM and local governments in China. In China, where the largest share of CDM projects have been

<sup>2</sup> Positive impact on barriers meaning: can help local governments to overcome barrier; positive impact for motivators meaning: can motivate local governments.

registered so far, many local governments have engaged in CDM project development. The possibility for financial gains is believed to be one of two key reason for this. Qi et al. explain the particular interest of local governments in China with the profit-seeking culture of Chinese local authorities. The situation in China contrasts with most other countries, where CDM project development is essentially left to the private sector (Qi et al. 2008, p388ff). Qi et al. (2008, p395) shed light on another barrier, which Chinese cities seek to overcome with the help of the CDM: technology availability. Table 3 provides an overview of economic motivators and barriers for local climate governance, and how the CDM affects them. Table 4 continues with other motivators and barriers.

Besides the economic rationale, ‘sustainable development’ is the other core objective of the CDM. Therefore, one could assume, that CDM projects automatically come with local co-benefits like improved air quality, reduced traffic congestion or employment opportunities. A local authority’s hope to realize co-benefits, e.g. by improving social services and infrastructures may be another important motivator (Sharma 2007, p2). According to Schmidt Dubeux and La Rovere (2007), the reduction of local pollutant emissions, the optimization of traffic and transport systems, the reduction of energy consumption costs and the improvement of solid waste and sewage management can represent enormous political gains, and therefore attract cities to participate in the CDM. The opportunity to improve the environment in the Laguna de Bay Basin, Philippines, namely to prevent sedimentation and pollution of the lake, was a key motivation for local authorities in the area to develop a CDM project (Santos-Borja 2007, p11, 40). Ritter identifies the following sectors to hold potential for co-benefits: Wastewater, solid waste, public transport, buildings, metered services, and street lighting (Ritter 2009, p 4). However, many scientists and practitioners criticize the CDM for not fulfilling expectations concerning sustainable development benefits (e.g. Boyd et al. 2010;

**Table 4: Other motivators and barriers for local climate governance and CDM impact**

		Motivator (M) or Barrier (B)	CDM impact <i>From ‘negative’ (++) to ‘positive’ (--)</i>	How?
Liveability	Air quality, reduced traffic, reduced urban warming, social aspects	M	(+)	Possible as contribution to SD
Informational	Lack of expertise	B	O	CDM may draw expertise from other climate action / CDM may create expertise usable for other climate action
Institutional	Cooperation with other stakeholders	B	(+)	CDM may require involvement of local business, and thereby improve cooperation
Political / cultural	Short time-horizons of decision-makers	B	(+)	Long CDM project cycles may lock-in climate action (but may also prevent local government from commitment)
	Reputation	M	(+)	When local governments believe CDM does enhance reputation
Others	Availability and reliability of technologies	B	(+)	In case CDM projects involve technology transfer

Source: Own evaluation, challenges based on Sippel, Jenssen 2009

Olsen 2007; Sutter, Parreno 2007). A CDM project's possible contribution to the liveability of a place is therefore probably no key motivator, as any mitigation project can or cannot realize sustainability effects.

The development of CDM projects is complex and requires expertise. Where local governments start engaging in the CDM, this may absorb skilled staff, which may then no longer be available for other local climate action. The effect may be severe as many local authorities in developing countries already report a lack of human resources and expertise among their staff for climate action. However, the CDM might also improve human capacity for local climate governance, and thereby empower communities (Santos-Borja 2007, p40): Firstly, revenues from the CDM could be used to finance additional staff or train existing staff, and secondly, staff would acquire expertise during CDM project development, which it could then use for other projects, too. Staff who has experience with CDM has frequently entered the private sector due to salary offers that are much higher than the salaries a municipality can provide. The CDM may thus have a mixed effect.

Three further barriers may be affected by the CDM. Firstly, cooperation with local stakeholders is commonly reported to be a challenge for local governments' climate action. As CDM project development may require the involvement of local companies, this may improve a local authority's cooperation with the business sector, and thereby have positive effects on other local climate action, too. Secondly, short time horizons of decision-makers are an important barrier to local climate governance. CDM project cycles are longer than election periods, and may help local authorities to lock in climate-friendly development pathways: Once a CDM project is started, and respective CER sales contracts are signed for the whole CDM project duration, this would require politicians to refrain from changes in the project<sup>3</sup>. However, the requirement for long-term commitments may also be a barrier to CDM project development in the first place (see 2.3.2). Thirdly, local governments may believe they enhance their cities' reputation by engaging in the CDM (Santos-Borja 2007, p40).

To summarize, the CDM may provide incentives for local governments in that it offers financial gains and technology transfer. As improved livability and smart growth are strong motivators for local climate governance, CDM projects that include sustainable development benefits may be especially attractive for local governments. Concerning capacity, local authorities may suffer, if the CDM draws staff and expertise which would otherwise organize other climate action. At the same time, the CDM could help to improve human resources by financing staff and training, and by building capacity during the project cycle. Some positive effects may derive if the CDM leads to climate cooperation with local business and if it locks in climate-friendly development pathways against short-term perspectives.

### **2.3.2 What hinders local governments to engage in the CDM?**

The following presents barriers that local governments face, when they want to engage in CDM project development.

CDM project development may be challenging for local governments. From an economic perspective, CDM projects may still require upfront investments. Furthermore, project development involves significant transaction costs. This is partly due to its project by project approach (Ritter 2009, p6). Both facts may constrain municipalities from involvement in the CDM (Santos-Borja 2007, p38). Institutional problems may be obstacles, too. "Bureaucratic

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<sup>3</sup> Bogotá offers an interesting example, where a newly elected mayor preferred building a metro instead of expanding the Transmilenio bus lane system. This has led to a substantial loss of CER volume from the Transmilenio CDM project. So far, metro construction has not yet been started due to lack of financing. See Guiza (2009).

red tape” in the realization of projects (Santos-Borja 2007, p37) and “weak institutional capacity at city level” to undertake CDM projects, to integrate it into city priorities and to design supporting policies are reported regarding institutions on the local level (Ritter 2009, p6). Uncertainties about the CDM’s future beyond 2012, or changing methodologies are institutional barriers on the global level (Santos-Borja 2007, p37). Furthermore, CDM rules are stringent, and there is a “lack of programmatic approach” (Monroy 2009, p3). Climate protection activities that would be important for the local level may not be feasible as CDM projects. For example, there are few approved methodologies in high priority urban sectors such as transport (Ritter 2009, p6), and CDM projects in the building sector face challenges, too (Cheng et al. 2008, p38ff).

The complexity of the CDM procedure may be another obstacle for local governments. This does not only lead to high transaction costs, as explained above, but it also requires project participants to acquire CDM specific expertise and capacity: A city’s capacity for the CDM is key to realize its benefits (Ritter 2009, p10). However, local governments may lack the necessary manpower, as well as the technical know-how needed for project development, and they may have a slow learning curve for CDM rules (Santos-Borja 2007, p38).

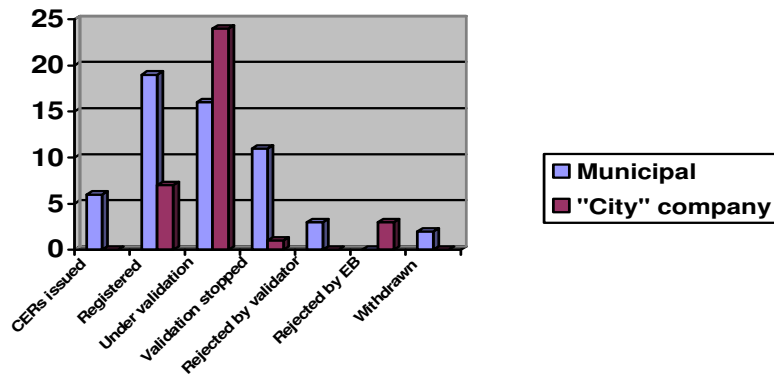
A political obstacle may be the “Incompatibility between [...] the nature of the political process (always a potential change of local government) and very long carbon project cycles” (Monroy 2009, p4). This has been reported to create uncertainty regarding local government staff assigned to a CDM project (Santos-Borja 2007, p38). The problem is worse where political party interests lead to divergent positions on a CDM project. From experience with landfill gas projects, Monroy concludes that a lack of ownership for CDM projects by local officials as opposed to private sector projects or programs is another barrier (Monroy 2009, p3).

### **3. Cities and the CDM – the practical side**

Given the large upswing of the CDM in the last six years, the absence of municipalities that have championed the CDM is striking. There is no municipal government that actively markets its role in implementing or supporting CDM projects. No study has focused on CDM projects implemented in cities. While obviously a substantial share of CDM projects are implemented on the territory of large cities, it seems that this is not due to any coordinated policy of the municipal government of those cities. Generally, CDM consultancies have scouted for project options and mobilized them, with the municipality normally acting more as a barrier than actively supporting the project. An exception seems to be China. According to Qi et al (2008), Longnan city (Gansu province) formed a coordination and leading group for CDM in March 2006. Its emphasis was on hydropower-related projects, of which Longnan has submitted two. The cities of Leshan (Sichuan), Nanyang (Henan) and Baoding (Hebei) have formed governmental organizations for CDM development, with the latter signing a letter of intent for strategic collaboration regarding methane reduction from dairy farms in December 2007. Seven projects have been submitted from Leshan, three from Nanyang, and two from Baoding, but none formally involves the municipal government.

Out of a database of 5,342 CDM projects that had been submitted for validation before November 2009, 57 projects (1.3%) have a municipality or a company formally labelled as municipal company as a project participant. Another 35 projects (0.7%), mostly from China, have a project participant whose name specifies “city”, i.e. which is likely to have some link to the municipality. Figure 3 shows that the municipal projects are much more advanced through the project cycle in both the positive and negative sense than the projects done by “city” companies.

Figure 3: Distribution of projects across the project cycle



Data source: Point Carbon project database

With regards to technology, waste management projects dominate for the municipalities, whereas renewable energy, especially hydro dominates for “city” companies (see Figure 4). Regarding host countries, municipality-related projects have a high degree of geographical distribution, whereas “city” companies are concentrated in China.

### 3.1 Projects that work and do not work

As discussed in the preceding sections CDM projects in sectors managed by the municipality are particularly promising for municipalities. Traditionally, in many countries waste management as well as power generation and distribution for private households are organized by the municipality. Frequently, public transport, too, is operated by a municipal company. Through land use regulation, municipalities have a strong influence on transport and buildings. We also look into water provision given the high energy intensity of water pumping systems.

Figure 4: Preferred project types

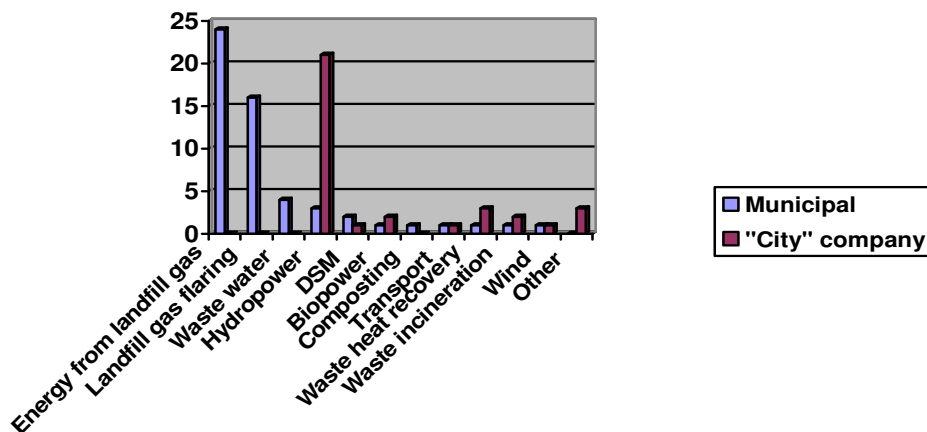
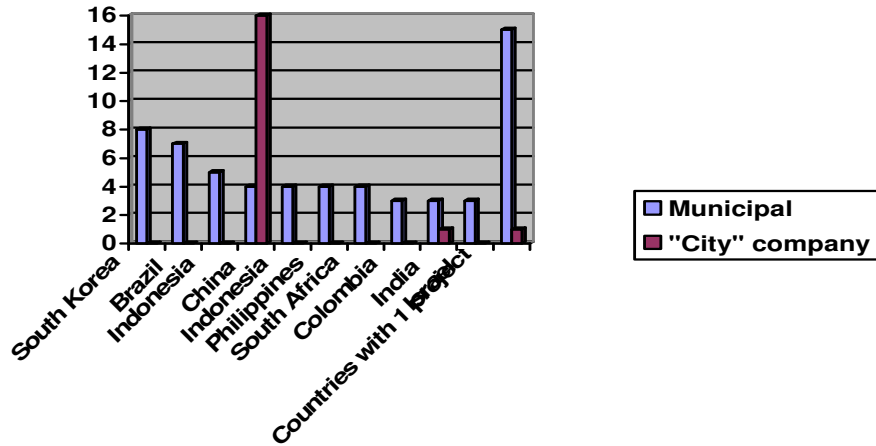


Figure 5: Host countries

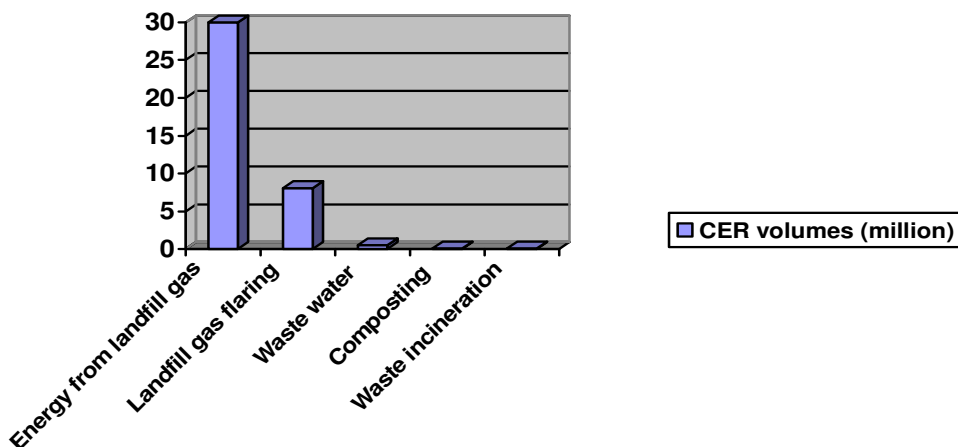


Data source: Point Carbon project database

### 3.1.1. Waste

Waste-related projects dominate in municipal CDM, mainly regarding landfill gas collection. 77 MW of landfill gas power have been submitted under the CDM. Figure 6 shows the forecast CER volume from waste-related projects.

Figure 6: Forecast CER volumes by 2012 from municipal CDM projects in the waste sector



Data source: Point Carbon project database

Landfill gas projects have been suffering from a low level of performance. This is mainly due to wrong estimates regarding the share of organic waste, unprofessional engineering on the landfill site regarding management of leachate and a generic tendency of the model-based estimate of methane generation to overestimate methane generation. The four municipal landfill gas-to-energy projects with issuance have reached a performance of 33 to 82% of the

forecasts made in the PDD. The two landfill flaring projects achieved just 16 and 24% of forecasts.

The city of Sao Paulo has maximized CER revenues from its two large landfill projects by auctioning 1.5 million CERs through the Sao Paulo stock exchange. This procedure prevented losses through brokerage fees and achieved a revenue of 26 million € (C40 Cities 2009). The theoretical potential for methane collection from wastewater is huge in advanced developing countries, whereas composting is attractive in low-income countries.

Generally, CDM companies have complained about the slow decisionmaking and high degree of arbitrary changes in project design and royalties to be paid to municipalities, particularly when city governments changed due to local elections. For example, landfill project developers in Indonesia had to wait for several years before they could actually start their projects.

### **3.1.2 Municipal power**

Surprisingly, municipal power companies have not seriously ventured into the CDM. The only exceptions are Chinese “city” power companies that have invested mainly in hydropower, of which 415 MW have been submitted under the CDM. The main problem seems to be the relatively small size of municipal power plants and the lack of investment budgets for plant refurbishment.

### **3.1.3 Transport**

Transport projects are rare under the CDM, but several bus lane transport projects have been submitted. Often, they are managed by a separate company that is not explicitly labelled as municipal company. The four projects that seem to have a municipal participation forecast 4 million CERs by the end of 2012. The first project with issuance, Transmilenio in Bogotá, achieved 43% of forecasts in its first three issuances.

### **3.1.4 Buildings**

The first municipality who developed a CDM project for energy efficient buildings was Cape Town, with the Kuyasa project in the slum of Khayelitsha planning to retrofit 2300 houses with ceiling insulation, energy-efficient lamps and solar water heaters. The project which had been registered already in August 2005 was stalled for several years, as the CER revenue only covers 30% of project costs, and the rest of the costs remained uncovered. In 2007, just ten pilot houses had been retrofitted. Eventually, the financing gap was closed through a Department of Environmental Affairs and Tourism poverty alleviation grant. By late 2009 more than 1200 houses had been covered. The project provides 76 jobs.

While there are large-scale building energy efficiency projects in the CDM under preparation such as Masdar City in the United Arab Emirates, none of those involves a municipality. All other buildings-related projects are implemented by energy service companies or owners of large commercial buildings and do not involve local authorities.

### **3.1.5 Water companies**

In 2005, a baseline methodology for water pumping improvement was approved by the CDM EB, to which a project addressing several Municipal Water Utilities in Karnataka was attached. Nevertheless, it took four years for the project to be submitted for validation and it has not yet been registered.



### 3.2 Insights on problems with CDM methodologies and incentive structures

Why are municipalities unable to mobilize their substantial technical CDM potential? There are two key reasons. Firstly, the competencies required to write a PDD and accompany a project through the project cycle are not available in municipal administrations. Even if they were available, such skilled staff would be very much in demand and allocated to more urgent tasks. Therefore, specialized CDM consultants always have a competitive advantage compared to a municipality and can get project assignments. Therefore, even for landfill gas projects where a municipality should have a competitive edge, only 14% of projects have a municipality as project participant.

Secondly, municipal officials serve only for short periods. Thus, the incentive from CER revenues does not really reach them, as the long CDM project cycle means that CER generation will occur only years after the officials have left office. For the official, it is much more attractive to engage in a highly visible project which is “fashionable” with the voters. This is why Bogotá’s new mayor preferred the “glitzy” metro to the more mundane, but effective Transmilenio bus system.

## 4. ICLEI’s CCP and the CDM

ICLEI is an international network of local governments working on sustainability issues. With regards to climate change, ICLEI coordinates the Cities for Climate Protection Campaign (CCP), which started in 1993. This section explores the CCP and whether and how it reacted to the CDM. It concludes with lessons learnt from the ICLEI experience.

### 4.1 The Cities for Climate Protection Campaign

The Cities for Climate Protection Campaign’s mission is to be a “worldwide movement of local governments to reduce greenhouse gas emissions, improve air quality, and enhance urban sustainability” (ICLEI 2009a). By October 2009, it had more than 1100 members. CCP work takes place in three fields. These are: (1) a five milestone framework, (2) a network for exchange, and (3) international advocacy (Lindseth 2003, there Waldmann 2002).

#### 4.1.1 Milestone Plan

By joining CCP, local governments commit to reduce greenhouse gas emissions in their cities, following the CCP milestone plan (ICLEI 2009a). Table 5 provides an overview of the milestones, and where the CDM could come in. Step one and two of the plan focus on the preparation of emission inventories and the adoption of reduction targets. In step three and four, cities develop action plans and implement those plans. In step five, cities are to monitor and evaluate their activities. The milestone plan is flexible and allows cities to defer from the plan, for example in that they implement climate action before conducting the emission inventory and deciding on emission targets (Lindseth 2003, there: ICLEI 1997b).

**Table 5: CCP Milestone Plan and CDM**

Milestone	Required Activity	CDM
1	Conduct a baseline emissions inventory and forecast.	
2	Adopt an emissions reduction target for the forecast year.	
3	Develop a Local Action Plan.	X
4	Implement policies and measures.	X
5	Monitor and verify results.	

*Source: Data from ICLEI 2009a, own evaluation*

As part of a city’s action plan, the development of CDM projects could become part of steps and 4 of the milestone plan. Furthermore, the experience cities gather by conducting emission inventories and forecasts, and the monitoring exercise, might add to their understanding of the CDM, as baselines and verification of emission reductions play an important role in CDM project development, too. As the milestone plan includes baseline development and monitoring of a city’s carbon emissions, one might ask whether a city’s entire action plan and its implementation can qualify as a CDM project. This would mean that the combined measures a local government takes to reduce greenhouse gas emissions would have to be bundled into one project. A city’s action plan would probably include a variety of different technological solutions and also support programmes and regulatory activities. Such a mix is not feasible under current CDM rules, which excludes regulatory activities and leaves little room for support programmes (although programmatic CDM may ease the situation). For technological and project-based parts of a city’s action plan, CDM rules require the use of one or several technology-specific methodologies for each CDM project.

**4.1.2 Network of Exchange**

The Cities for Climate Protection Campaign also includes a network of exchange: ICLEI assists cities throughout all stages of the milestone plan, e.g. by provision of software tools and information, training workshops or best-practice databases. As ICLEI participates in the international climate negotiations, it can also break down relevant information from these conferences for CCP member cities. Some of the assistance under CCP requires ICLEI membership. Since cities do not automatically join ICLEI by joining the Cities for Climate Protection Campaign, not all cities can access all the assistance offered. Table 6 provides an overview of activities offered by CCP to member cities, and whether they could be useful in supporting cities to engage in the CDM. It could be relatively easy for ICLEI to spread information on the CDM. This could include case studies of cities that have implemented CDM projects or guidelines on how to develop city-based CDM projects. They could also offer training workshops on cities and the CDM – either with their own staff or by inviting external CDM experts. As CDM project development is a complex task, technical assistance to cities may be more difficult to realize. ICLEI will only be able to offer technical assistance or software tools, if it has successfully built respective capacity and gathered experience among its staff.

**Table 6: CCP Network of Exchange and CDM**

	Activities	CDM
Technical assistance	Inventory assistance, measures identification and quantification assistance	
Software tools	Designed to help with i.a. inventories, quantification of emission reductions (e.g. HEAT)	
Information and policy assistance	Provision of case studies, fact sheets, sample resolutions, model ordinance language, links to key technical information	X
Training workshops		X

*Source: data from ICLEI 2009a, Lindseth 2003, own evaluation*

### 4.1.3 International Advocacy

Besides assisting and supporting cities in reducing their greenhouse gas emissions, the Cities for Climate Protection Campaign also works to give local climate action a voice on the international level (ICLEI 2009a). By lobbying national governments, ICLEI tries to raise awareness for local governments' potential and needs on the national and international level. To give a recent example, ICLEI led the Local Government Climate Roadmap to the UNFCCC Conference of the Parties (COP) in Copenhagen in December 2009.<sup>4</sup> Activities of the Local Government Climate Roadmap include lobbying for a COP decision on cities/local authorities and climate protection, and city-relevant input to the negotiation process on the Copenhagen agreements.

**Table 7: Local Government Climate Roadmap and the CDM**

	Activities	CDM
Negotiation Input	Local Government references in negotiating text, interventions at UNFCCC meetings, draft text for COP decision on Cities	X
Local mobilisation	Commitments by local governments (such as World Mayors & Local Governments Climate Protection Agreement from Bali 2007), information on UNFCCC-process and discussion	
National and regional mobilisation	Interaction with national governments (getting supportive national framework conditions, requesting national governments to support strong global post-2012 agreement)	X

*Source: ICLEI 2009b, own evaluation*

One could imagine such kind of lobbying to include CDM reform, in order to make the CDM more city-friendly. Indeed, there seems to be some interest in this subject, as the June 2009 status report of the Local Government Roadmap includes a page on CDM and CDM reform (ICLEI 2009b, p9).

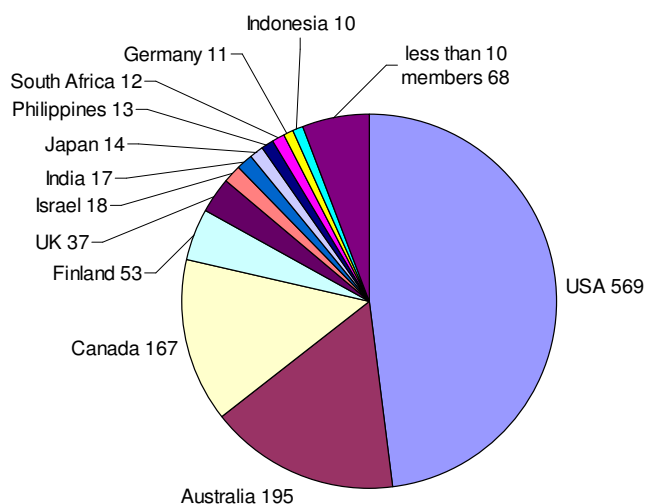
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<sup>4</sup> Other partners of the Local Government Climate Roadmap include: United Cities and Local Governments (UCLG), the C40 Climate Leadership Group (C40), Climate Alliance and Energie-Cités.

#### 4.1.4 Membership structure

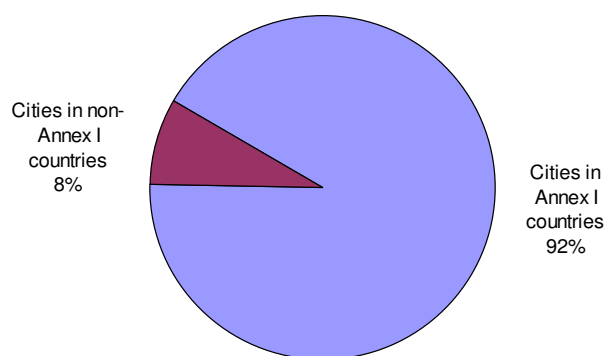
The membership structure of the Cities for Climate Protection Campaign may tell us something about its potential and motivation for CDM project development. CCP has 1185 members in 33 countries (ICLEI 2009a). The overwhelming majority of member cities are located in the global North. More than three quarters of CCP members are located either in

**Figure 7: Membership in ICLEI's Cities for Climate Protection Campaign – according to countries**



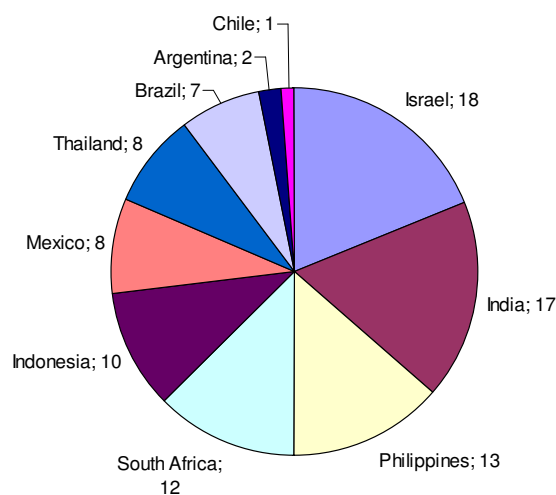
Source: Data from ICLEI 2009a, own graph

**Figure 8: Membership in ICLEI's Cities for Climate Protection Campaign – Annex I / non-Annex I**



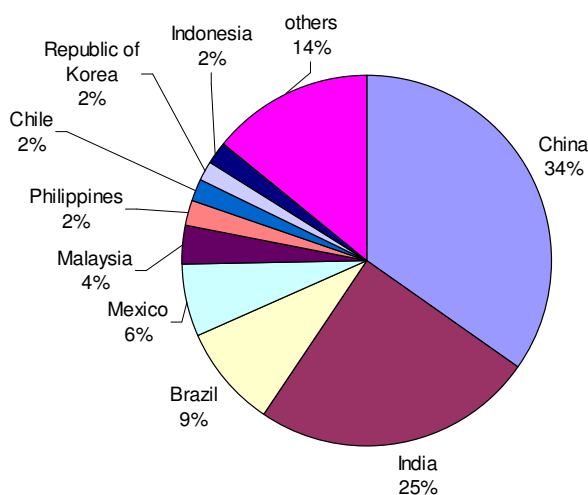
Source: Data from ICLEI 2009a, own graph

**Figure 9: CCP Membership Cities in non-Annex I countries**



Source: Data from ICLEI 2009a, own graph

**Figure 10: CDM projects registered at the UNFCCC (state of 27/10/2009)**



Source: UNFCCC 2009a, own graph

the United States (569), Australia (195), or Canada (167). This may be due to the historic background of CCP: It developed out of ICLEI's Urban CO<sub>2</sub> Reduction Project, which brought together American, Canadian and European local governments (Lindseth 2004, p326). 96 of the 1185 CCP cities are located in non-Annex I countries which are eligible for CDM project development. That means, the

CDM is an option for about 8% of CCP member cities. CCP activities in these cities are coordinated by regional ICLEI offices: ICLEI South Asia is working with member cities in India, Sri Lanka and Nepal, and ICLEI South East Asia with cities in Thailand, Indonesia and the Philippines. ICLEI Mexico and ICLEI LACS (Latin America and Caribbean) work with cities in Argentina, Brasil, Chile and Mexico. ICLEI Africa is working with cities in Cameroon, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

A comparison of Figure 9 and Figure 10 shows that the distribution of CCP cities and CDM projects across countries is far from similar. While most CDM projects take place in China, there is no Chinese city in ICLEI's CCP. Nevertheless, Chinese local governments are quite active in CDM project development. India is prominent both regarding CCP member cities and CDM projects. Indonesia, the Philippines, South Africa and Thailand have a significantly larger share of CCP cities than of CDM projects. It might be interesting to explore, whether these countries can improve their share in CDM projects by CCP activities on the CDM.

#### **4.1.5 CCP interest in the CDM**

ICLEI's interest in the CDM seems to be an economic one. Nancy Skinner, founder and leader of the Cities for Climate Protection Campaign until 2004, explained in a fact sheet for CCP members that the "sale of emission reduction credits [...] can provide capital to cover the costs of municipal projects" (Skinner n.d., p1). Bob Price, Skinner's successor as leader of CCP, also refers to the cost argument. Upon ratification of the Kyoto Protocol, he told Indian CCP member cities that "the ratification of the Protocol means that the carbon reduction projects that you have been developing for many years will soon have real value as the international carbon trading market becomes a legal and practical reality and the Clean Development Mechanism (CDM) begins full operations" (Price 2004, p2). For ICLEI South Asia, Chaturvedula states that the "CDM is one of the financial mechanisms which renders municipal energy efficiency & renewable energy projects more financial viable and attractive" and that "ICLEI SA is helping cities in accessing these carbon funds" (Chaturvedula 2009).

Yunus Arikan, head of ICLEI's Bonn office, states that local governments need "access to both technology and finance" and sees the CDM as one instrument to deliver on these two issues (Arikan 2009, p7). Kishigami, who run a research project for ICLEI Japan on local governments and the CDM, highlights the role of technology transfer, too, and adds the importance of local needs in developing country cities (Kishigami 2009a, p15ff).

#### **4.2 CDM related activities by ICLEI**

The following gives an overview of CDM related activities that have taken place in the ICLEI network. This includes activities that already have qualified as CDM projects, or shall do so at a later stage, and with ICLEI as a project partner. It also includes supporting activities, e.g. support for cities in baseline analysis, in the development of Project Idea Notes (PINs) and Project Design Documents (PDDs), or in identifying project partners (Chaturvedula 2009). The findings are based on an internet research and complemented by information from ICLEI's own CDM experts.

## 4.2.1 CDM projects under CCP

There are several CDM projects or CDM project ideas, for which ICLEI's CCP can be considered to have 'intellectual ownership'.<sup>5</sup> Table 8 gives an overview of CCP's CDM projects.

In a joint effort between ICLEI Japan and ICLEI South East Asia, two CDM projects in Indonesia are developed (Kishigami 2007, 2009). They are pilot projects, resulting from a research project by ICLEI Japan on cities and the CDM, which will be described further below under 4.2.2. The two projects are organized in a city-twinning between the cities of Surabaya (Indonesia) and Kitakyushu (Japan) and between Bogor (Indonesia) and Kyoto (Japan). The Japanese partner cities are expected to support the projects by capacity-building in the areas of waste management and composting methods, and by technical advice on the feasibility of used cooking oil for municipal trucks. As of October 2009, the projects had not been not submitted for public comments at the UNFCCC (UNFCCC 2009b).

Another CDM project is being developed in 14 municipalities in Madya Pradesh, India, including CCP member city Gwalior (Chaturvedula 2009). The project is to improve energy efficiency in the street lighting system, e.g. by replacement of old with new and more efficient bulbs and programmable light adjustment. In a 2007 project description, the project was

**Table 8: CDM projects by CCP**

Project name	Project type	Country	Annual CERs (if known)	Status UNFCCC	Role of ICLEI
Surabaya	Waste management (composting)	Indonesia		Not applied	Twinning with ICLEI Japan city Kitakyushu, project developed from ICLEI Japan Cities&CDM research project
Bogor	Used cooking oil for municipal garbage trucks	Indonesia		Not applied	
Street lighting energy efficiency CDM project of 14 Municipal Corporation of Madya Pradesh	Energy efficiency improvements	India	18,954t	Submitted for host country approval	Developed by ICLEI South Asia, Gwalior CCP member
Cochin, Raipur, Shimla, Varanasi	GTZ explores CDM potential in municipal solid waste management	India		Not applied	ICLEI assists GTZ in the evaluation, Shimla is CCP member

*Sources: Chaturvedula 2009, ICLEI 2009b, ICLEI South Asia 2009a, ICLEI South Asia 2009b, Kishigami 2007, Kishigami 2009a, Sharma 2007, UNFCCC 2009,*

supposed to lead to annual CO<sub>2</sub> emission reductions of 18,954t (Sharma 2007). According to Chaturvedula, a technical expert at ICLEI South Asia, the project is the first CDM project in India for bundled street lighting energy efficiency. It has been submitted for host country approval, and thus entered the road that may lead to UNFCCC registration (Chaturvedula

<sup>5</sup> This does not include CDM projects that are taking place in CCP cities, in which CCP is however not involved.

2009). According to information from the ICLEI South Asia website, and a 2007 project description, the project does also include efficiency in water pumping (ICLEI South Asia 2009b, Sharma 2007).

Another CCP project activity related to the CDM is taking place in the cities of Cochin, Raipur, Shimla and Varanasi in India (ICLEI South Asia 2009a). Though only Shimla is actually a CCP member, CCP assists GTZ in exploring CDM potential in municipal solid waste management in all four cities. So far, ICLEI South Asia has conducted preliminary baseline analysis and estimations for CDM projects in the four cities (Chaturvedula 2009). Accordingly, no CDM projects in waste management in the four cities have been submitted to the UNFCCC yet (UNFCCC 2009b). The cooperation project with GTZ is announced on the CCP South Asia website.

Four CDM project activities have been identified above. None of the projects has passed the whole way down from project development through to UNFCCC registration. However, at least one project has started the process towards UNFCCC registration. Two aspects regarding CCP's CDM project activities may deserve attention.

- Firstly, two projects take place in a twinning relationship between cities in Japan and Indonesia. This includes local governments in developing countries as hosts for the CDM project, and local governments in industrialized countries as trainers or consultants – not for CDM specific expertise, but for technological questions of composting or use of alternative fuels. It will be interesting to see, if these projects are able to overcome a lack of interest and capacity, that an earlier study on CDM in city-partnerships identified, though for German cities (Sippel 2007, p9f.).
- Secondly, in at least two of the four projects, CCP does not only serve as a direct link to a specific CCP city, but also as an expert for municipal project potentials in general. For example, only one out of four participating cities in the cooperation project with GTZ on landfillgas CDM is a CCP member. In the street lighting energy efficiency project again, only one of the fourteen cities involved is a CCP member. The involvement of ICLEI may be motivated by the desire to include ICLEI's expertise regarding municipalities and municipal approaches to climate protection in general. One may conclude, that ICLEI has the potential to be or become an expert for municipal CDM – apart from the involvement of cities which actually participate in the ICLEI network.

There are also CCP cities in which CDM projects are up and running. However, these projects are not highlighted by the CCP. Examples are:

- landfill gas projects in Buenos Aires, Argentina, Sao Paulo, Brazil, Ciudad Juarez, Mexico, Guntur, India, Denpasar, Indonesia,
- the low-cost urban housing project in Kuyasa, Cape Town, South Africa, discussed above
- a sewage treatment project in Makati, Philippines (all: UNFCCC 2009b).

As these projects are not included under CCP reporting, it may be concluded that they take place without CCP involvement.

#### **4.2.2 Support for cities and lobbying**

Besides concrete project activities, ICLEI has also raised awareness and built capacity for the CDM, both among ICLEI staff and among member cities. Furthermore, it has facilitated

contacts between municipalities and other CDM project participants, and engaged in lobbying activities regarding the CDM. Exemplary initiatives are presented in the following.

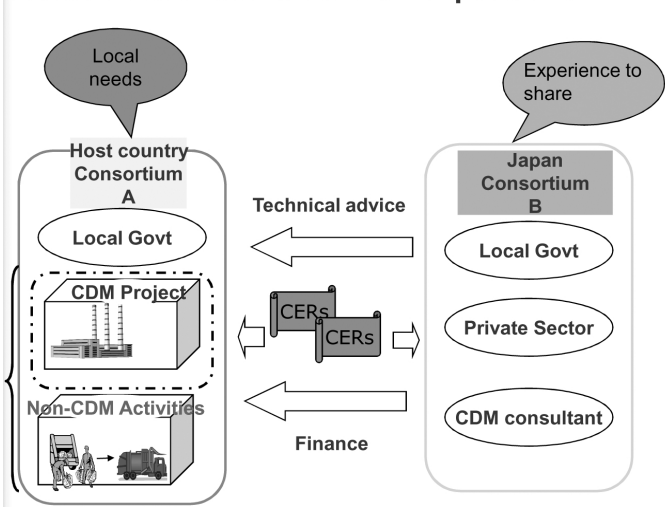
According to Skinner (n.d.), an early activity was the facilitation of “meetings between city officials and the carbon finance community to discuss collaboration on a variety of emission reduction projects.” ICLEI South Asia provides support to Indian local governments during the development of CDM projects. On the one hand, this includes technical support, like help with conducting baseline analysis, and developing Project Design Documents. On the other hand, this includes facilitation in finding project partners, e.g. by helping cities to “identify potential buyers of CERs through various networks” and “engaging technology suppliers, investors, utility companies and buyers on a common platform” (Chaturvedula 2009).

In 2004, ICLEI Latin America laid emphasis on local governments and the CDM during COP10 in Buenos Aires. Before COP10, CCP leader Bob Price announced lobbying activities to strengthen the “role of local governments as preferred implementer of CDM projects.” He continues: “[...] we will urge our national delegations to give credit to local government for policies that they implement and that stimulate market transformation and emission reductions, and to not award carbon offsets solely to the owners of new technology.” (Price 2004). ICLEI Latin America then hosted an international seminar as a side-event at COP10, called ‘CDM opportunities for Local Governments’ (ICLEI 2005, p14). The seminar elaborated both on the international negotiation status and perspectives of the CDM, and on existing projects by local governments in Latin America. This activity included the publication of ICLEI’s guide ‘Climate Change and Clean Development: Opportunities for Local Governments’. While focusing on clean development as a co-benefit of climate protection policies in general, the guide also provides information on “how city administrations may also get funding for climate protection through the CDM” (ICLEI 2005, p4). Advocating for local governments, Laura Valente de Macedo held a statement regarding the ‘Annual Report of the Executive Board of the CDM 2003-2004’ in the COP10 plenary (ICLEI 2005, p28).

In 2007 again, at COP13 in Bali, the ICLEI Japan office organized a parallel event ‘CDM for Local Governments Session’ as part of the ‘Local Government Climate Sessions’. The session provided some case studies of municipal CDM activities and focused on local officials’ experiences and expectations regarding CDM project development (ICLEI 2007).

From 2006 to 2008, ICLEI Japan did a ‘CDM for local governments’ research project, which was supported by the Ministry of the Environment, Japan (Kishigami 2007, p2). A first objective of the project was to examine opportunities and barriers of CDM from the local governments’ point of view. A second objective was to analyse the feasibility of CDM project linking between local governments. The project may have produced interesting results. However, they could not be fully included in this study, as up to now, the detailed project results are available in Japanese, only (Kishigami

**Figure 11: Bilateral cooperation framework under ICLEI Japan’s ‘CDM for local government’ project**



Source: Kishigami 2007, p8



2009b). The CDM-twinning activities between Japanese cities Kitakyushu and Kyoto and Indonesian cities Surabaya and Bogor are a pilot following this research project. For the research project, ICLEI partnered with CDM expert organizations and local governments in Japan and South-East Asia. Figure 11 further illustrates the concept of local government CDM projects under a twinning relationship. CDM experts were involved to provide advice on how to meet CDM rules, develop the PDD, and coordinate with private investors and the national government. The role of local governments in Japan was to transfer know-how and experience, to provide trainings for local environmental management, and to involve local business, citizen's groups and institutions. They were also responsible for the carbon offset. (Kishigami 2007, p7). Interestingly, the CDM project would only be part of the overall project activities in the twinning relationship. This may be due to the fact that twinning relationships may be at least partly motivated by a desire to support the poorer partners social development, and that CDM projects seldom provide a significant contribution to social issues and sustainable development (e.g. Sutter, Parreno 2007).

Another advocacy activity is part of the Local Government Climate Roadmap towards Copenhagen 2009. The June 2009 status report of this initiative dedicates one of twelve pages to the CDM. Key positions include:

- “[...] local governments must have a clear understanding of the financing mechanisms as they develop, and should be given direct access to these.” and
- “Local governments should be pushing hard for a ‘bridging agreement’ for post-2012 CDM projects, or investment will be increasingly pushed towards projects which provide short-term returns at the expense of projects which provide sustainable reductions in the long term.” (ICLEI 2009b)

Interestingly, this position paper does not include a demand for a reform of CDM rules so that they better allow for municipal projects, e.g. in the transport or building sector.

### **4.3 Lessons to learn from the ICLEI experience**

Both ICLEI South Asia and ICLEI Japan have reported from their experience with local governments and the CDM (Chaturvedula 2009, Kishigami 2007). They also offer some ideas on how barriers they have identified could be overcome.

ICLEI's experience with local governments and CDM in South Asia is that cities are very interested in the CDM due to its dual benefit. Cities can develop environmentally sustainable projects with financial benefits from the sale of CERs. ICLEI South Asia identified three key barriers to local governments and the CDM: Firstly, the long drawn and complex process of developing and registering CDM projects is a deterrent. Secondly, local bodies have been found to often lack sufficient understanding and technical expertise to develop CDM projects. Thirdly, the quality of baseline data management and documentation may be insufficient for CDM validation purposes (Chaturvedula 2009).

ICLEI South Asia's ideas on how to overcome barriers are to conduct awareness-raising programmes and capacity-building activities for relevant stakeholders in local governments. In order to ease the access of local governments to carbon funds, they also demand that the UNFCCC registration process be made “less cumbersome”. Furthermore, they envisage the creation of carbon fund programmes by bilateral or multilateral agencies targeted at local governments (Chaturvedula 2009).

Challenges identified in ICLEI Japan's research project on CDM and local governments include the general uncertainty of the CDM after 2012, and the accessibility of the CDM for small local projects. They find more challenges, which are probably specific to the twinning of local governments for the purpose of CDM development: A common interest and local

needs in both partner cities have to be identified, and good governance and cooperation among stakeholders are basic to CDM project development in a twinning relationship. In attempt to ease the access of small projects to carbon funding, Kishigami, ICLEI Japan, asks “Is there a way to make CER more valuable?”. Like Chaturvendula, she sees a need to seek cooperation with ODA flows and international financial agencies (Kishigami 2007, p9).

## 5. Discussion

We face a dilemma: On the one hand, cities in developing countries offer a substantial potential for greenhouse gas emissions reductions. On the other hand, municipalities only rarely engage directly in development of CDM projects, while private consultancies are able to get CDM projects in cities off the ground, often against the opposition of the municipal administration. Even the international environmental initiative ICLEI so far is struggling to mobilize its participating cities to engage in the CDM. And some of its members seem to have engaged in the CDM – however mostly without ICLEI being aware of it.

But the situation is not entirely bleak. In South Korea, CDM consultancy Ecoeye has teamed up with seven municipalities to develop CDM projects. This could be a model for the future. ICLEI could set up a CDM service centre for member municipalities. Table 9 below summarizes the barriers and ways to overcome them.

**Table 9: What hinders local governments to engage in the CDM?**

Type of Barrier	Barrier	Explanation	Possibilities to overcome barriers
Economic	Upfront costs of CDM projects		Multilateral financing facility for municipalities, with payback in CERs after first issuance
Informational	Limited capacity of local bodies		Partnerships between CDM consultants and city governments, ICLEI CDM cell
Institutional	Uncertainty about CDM future post 2012		A good Copenhagen agreement!
Institutional	Limited feasibility of important project types	Lack of programmatic approach, few approved methodologies for transport/buildings/etc.	Top-down development of methodologies for urban sectors
Institutional	Complexity of CDM procedure	Leads to high transaction costs, requires expertise	Partnerships between CDM consultants and city governments, ICLEI CDM cell
Institutional	Length of project cycle	Incompability between nature of political process and project cycles	CDM EB to use part of its surplus to de-bottleneck the CDM process
Political/cultural	Lack of ownership	CDM seen as strange instrument parachuted from industrialized countries	Show in simple but drastic way how CDM can improve the daily life of citizens.

*Source: Arikan 2009, Chaturvendula 2009, Kishigami 2009, Monroy 2009, Ritter 2009, Santos-Borja 2007, UNEP 2008; last column: authors*

While the CDM can certainly not be bent backwards to make it “city-friendly”, there is substantial scope for improvement. A key way forward would be an increased focus on the benefits other than CER revenues that can be harnessed by CDM projects. Enhancing visibility for the local politician and thus his chances to be re-elected can make a CDM project an asset instead of a liability which draws valuable resources in terms of manpower and only brings benefits to the politician’s successor.

However, it is clear that municipalities will only to a limited extent care for profit and thus always be overtaken by private companies solely motivated by profit. But the latter leave aside the more costly and difficult to mobilize “higher-hanging fruit”. Therefore, the challenge will be how to combine private thirst for profit with the policymaker’s aim to show to his electorate how he improves their lives. If these two motives can work in tandem, the future for CDM in cities will be bright.

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# Appendix 1

## Motivators for local climate governance – Overview

Economic	Liveability	Political / Cultural	Informational
Cost savings Revenues Smart growth	Air quality Traffic congestion Urban warming Social aspects	External pressure and trickle down Internal pressure Reputation Trend-setting	Perceived vulnerability

Source: Sippel, Jenssen 2009

## Challenges for local climate governance – Overview

Economic	Informational	Institutional	Political / Cultural
Tragedy of the Commons			
Costs Financial resources Human resources Accessibility of funds Path dependency Realizable benefits	Lack of expertise Public interest and participation Monitoring and evaluation Little localized information	Absence of national mandate Good local governance Internal integration and coordination problems Institutionalization Lack of cooperation Regulatory framework Limited control over utilities	Need for policy entrepreneurs Lack of political support Short time horizons Competitive policy issues Behavioural constraints

Source: Sippel, Jenssen 2009