ICLEI
Local Governments for Sustainability

CITIES
IN A POST-2012 CLIMATE POLICY FRAMEWORK

Climate Financing for City Development?
Views from Local Governments, Experts and Businesses

ICLEI Global Reports

ANALYSIS CLIMATE

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Foreword

Climate change is the paramount challenge of our times. The way mankind responds to the threat of global warming will have a profound impact on the livelihoods of future generations. While climate change concerns all of us, it is a particular threat for cities in developing countries: not only do they concentrate a large share of those most at risk from the effects of climate change. These cities are also characterized by high vulnerability as many lack the resilience to cope with impacts of climate change such as extreme weather events and rising sea levels.

Since urban centres in developing countries are particularly at risk to be severely affected by climate change, the response at the local level is key. Knowledge and institutional capacity as well as financial and technological resources must be strengthened to protect urban structures and populations, to increase resilience and response capabilities.

This report informs both international policy makers and local practitioners and helps to better understand how the international community can support climate action at the urban and local levels. Thus the report illuminates the ways in which existing financing mechanisms are perceived by city decision-makers, reveals barriers to local government action or understanding and records the tools, technologies and dialogues which have benefited local governments in pursuing mitigation and adaptation activities. The findings of this study were made accessible to stakeholders at the local and the global level through presentation and discussion at an expert meeting in the Local Government Climate Lounge at the UN Climate Conference (COP15) in Copenhagen.

While this event has been a valuable contribution to the debate on local climate action, the future road map needs to be developed further. More research, better policies and increased support are needed to strengthen local governments in their efforts to mitigate and adapt to climate change. ICLEI is well positioned to be an important contributor and facilitator in this process.

Manfred Konukiewitz

Dr. Manfred Konukiewitz
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Introduction

Our planet is increasingly becoming urbanized. Cities have evolved to drive technological innovation and economic prosperity while representing hope of a better life for many of the world's citizens.

Cities, particularly in developing countries, face acute challenges in providing basic services and infrastructure for their citizens. Local governments are now faced with combating climate change – the effects of which are being felt with alarming intensity and frequency. Global warming, rising sea levels, changing precipitation patterns, and more extreme weather events threaten livelihoods, health, infrastructures, physical safety and future progress.

This combination of vulnerabilities demands integrating climate risk and resilience into core development planning while making every investment a step towards a low carbon urban economy.

Discussions with decision makers from the development cooperation community suggested that more light should be shed on municipal decision makers' awareness of opportunities for climate mitigation and adaptation at city level, and especially of financing options, and their preparedness to take action. The report is intended to inform both international policy and local practice, contributing to a greater understanding of how the international community can more effectively support climate action at the urban scale.

I would like to thank all who contributed to the realization of this study: interviewees who generously contributed their time and valuable insights, the German Ministry for Economic Cooperation and Development for their support, the regional secretariats of ICLEI who conducted many of the interviews, the Local Government Climate Roadmap team, as well as the study team at the ICLEI World Secretariat led by Richard Simpson.

We were happy to conduct this cross-sector collaboration engaging policy makers, urban practitioners, and others interested in exploring the future of cities in a post-2012 climate policy framework.

Konrad Otto-Zimmermann
Secretary General
ICLEI – Local Governments for Sustainability

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Acronyms and abbreviations

ADB	Asian Development Bank
AFDB	African Development Bank
AF	Adaptation Fund
AWG-LCA	Ad Hoc Working Group on Long term Cooperative Action under the Convention
AWG-KP	Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
CDM	Clean Development Mechanisms
CER	Certified Emissions Reduction
CIF	Climate Investment Funds
COP	Conference of the Parties
CPA	CDM Programme Activity
CTF	Clean Technology Fund
DNA	Designated National Authority
DOE	Designated Operational Entities
EB	Executive Board
EIA	Environmental Impact Assessment
EBRD	European Bank for Reconstruction and Development
ETS	Emissions Trading Scheme
FAO	Food and Agricultural Organization of the United Nations
FIP	Forest Investment Program
GEF	Global Environment Facility
GHG	Green House Gas emissions
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IDB	Inter-American Development Bank
IEA	International Energy Agency
IFAS	Institute of Food and Agricultural Sciences
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LDCF	Least Developed Countries Fund
MDG	Millenium Development Goals
MIE	Multilateral Implementing Entities
NAMAs	Nationally Appropriate Mitigation Actions
NAPAs	National Adaptation Plans of Action
NCAR	National Center for Atmospheric Research
NIE	National Implementing Entities
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PDD	Project Design Document
PPCR	Pilot Program on Climate Resilience
PoA	Program of Activities
PPRC	Project and Program Review Committee
SCF	Strategic Climate Fund
SCCF	Special Climate Change Fund
SPA	Strategic Priority on Adaptation
SREP	Scaling-Up Renewable Energy in Low Income Countries
TEI	Thailand Environment Institute
UCLG	United Cities and Local Governments
UNCBD	United Nations Convention on Biodiversity
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization

Executive Summary

The economic transformation and land-use change along with the global relocation of industrial activities, is placing many cities in developing countries onto an upward trajectory of total emissions. At the same time, the rate of their development, widespread poverty, lack of infrastructure, pollution, climate and geographical position are placing their people and their success as vibrant and competitive cities at increasing risk from environmental change. The trends of these cities are unmatched in human history and pose both challenges and opportunities to re-direct their pathways of growth towards more sustainable and low carbon urban places.

Already local governments are taking on important and varied roles to make their pathways of development more sustainable. International financing options for climate action in mitigation and adaptation, introduced in relation to the Rio Convention and Kyoto Protocol and discussed under a post-2012 agreement, can offer further opportunities for cities to draw upon funding for sustainable urban development. Such international financing options are funding opportunities to control and reduce global climate change. This study recognizes the views of city decision makers, and integrates these with international climate and urban experts, as well as international business representatives to identify the roles and opportunities of cities in a post-2012 framework.

This study seeks to bridge the global-local debate by building upon 38 interviews. 17 conducted with senior city decision makers in 7 emerging market countries (Brazil, Egypt, India, Indonesia, Mexico, Philippines, and South Africa), 12 with international climate and urban experts, and 9 with multinational business representatives. The interviews focused on three thematic areas: awareness of climate change in cities of emerging market countries, understanding of international financing options for climate action, and potential and practicality for action in cities. Consultation with the Local Government Climate Roadmap took place to account for the UNFCCC negotiations during the second half of 2009 and leading up to COP15.

Key findings of the interviews underscored that cities are aware of and active in climate change mitigation and adaptation, in both direct and indirect ways. However, a communication and information shortage exists around the international financing options for climate action. Senior city decision makers state a lack of awareness of and information concerning these opportunities. They draw upon multiple sources of information that are not necessarily clearly structured. CDM was most often referred to as an established international mechanism. Interviewees maintained that CDM offers potential to support and facilitate the development of an urban economy and infrastructure. CDM can be improved to become more applicable to urban areas through approaches that pool, bridge and mount together CDM into programmatic or regional/territorial approaches.

However, in addition to existing local barriers to adaptation and mitigation action, international financing options for climate action are neither easily accessible nor practical. Interviewees maintained a series of challenges to the practicality of the international financing options for climate action including technical (capacity, knowledge, competing priorities, timeframes), institutional (policy understanding, capacity, regulation, nested within national governments), and financial (access and upfront investments) issues. Contrary to mitigation, international financing options for adaptation are poorly developed. Adaptation funding options do not currently appear to offer the necessary awareness, certainty and clarity for implementation.

International financing options need to take into account and be integrated with existing city actions - actions taken by cities according to local conditions, and national and international regulatory frameworks, comprehensive city planning and procedures, that include climate change criteria along with other sustainability objectives. The international community needs to build upon the first steps and continue to engage the local level in the design of frameworks.

Cities and local governments need to be better and more clearly informed, enhance their awareness, be involved in the design of relevant financing mechanisms, as well as integrate climate change and sustainable development mechanisms into comprehensive city procedures. There is also a need to continue developing exchange of experience, tools and frameworks towards such aims. Local governments have already been active through innovation, network learning, working with research institutions and non-governmental organizations, among other. Such interactions can play a substantial part in learning and building knowledge of the best ways to draw upon international mechanisms for strategic urban development.

1 Introduction

1.1 Cities and Climate Change

Greenhouse gas emissions from cities

Cities are sites of consumption and production. Cities are recognized as core engines of national economies and act as hubs of the global economy[1]. They are hubs of economic, political, and cultural activity and innovation. They concentrate people, goods, capital investments, infrastructure and knowledge. The top 100 urban areas accounted for US$15,247 Billion GDP, near to 25% of global GDP in 2005[2]. In many cases, cities' per capita greenhouse gas emissions are lower than at nation level, which underlines the advantages cities hold to reduce emissions. Data also suggests that some cities in emerging market countries have higher per capita emissions than cities of developed market countries. For example Shanghai (8.1, 1996) versus Tokyo (4.8, 1998) or Stockholm (4, 2005). This can be a result from the geography of measurement, the relocation of industrial activities and the emergence of a service economy, at the global and regional level, as well as the effects of urban density[3]. There is no necessary link between economic wealth and increasing emissions, especially when the greenhouse gas accountancy excludes the consumption of manufactured goods within cities[4].

For the most part cities' greenhouse gas (GHG) emissions are determined by their infrastructure and, in part, how it is used[5]. There remain ongoing discussions on the implications of different methodologies to produce inventories that measure the emissions by city and by sector. The resulting range of world cities' contribution to greenhouse gas emissions vary from 40 to 80 percent[6]. Inventories are discussed in section 3.4 below.

The International Energy Agency's (IEA) World Energy Outlook 2008 illustrates cities' significant role in the world. The report's calculation suggests that world cities accounted for 67% of world primary energy demand and more than 70% of global CO2 emissions in 2006. With continued urbanization and economic growth, energy use in cities is projected to increase to 73% of the global total and CO2 emissions to 76% by 2030 (graph 1). The majority of growth is expected to come from non-OECD countries as they tend to shift to more CO2-intensive energy sources.

The Intergovernmental Panel on Climate Change (IPCC) scoping exercise for the Fifth Assessment Report identifies energy generation from fossil

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1 OECD 2006, *OECD Territorial Reviews: Competitive Cities in the Global Economy*; Sassen, S 2001, *The global city: New York, London, Tokyo*, Princeton University Press, New Jersey; Burdett, R & Sudjic, D 2008, *The Endless City*, Phaidon Press Inc.

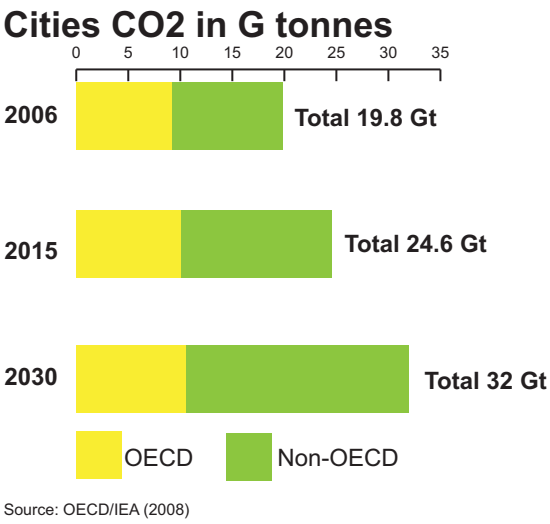
2 City Mayors, Tokyo is number one among the richest cities in the world viewed 25 September 2009, http://www.citymayors.com/statistics/richestcities-gdp-intro.html

3 Dodmann D 2009, 'Blaming Cities for Climate Change? An Analysis of Urban Greenhouse Gas Emissions Inventories', *Environment and Urbanization*, vol. 21, no.1, 185-201; UN-Habitat 2008, State of the World Cities 2008/2009; Kennedy, Ramaswami et al 2009, *Greenhouse Gas Emission Baseline for Global Cities and Metropolitcan Regions.*

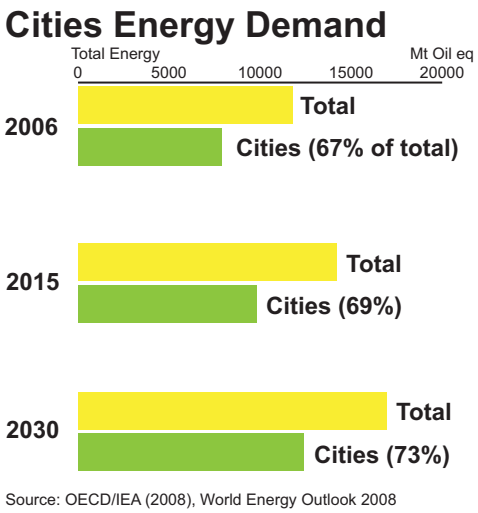
4 Ibid citing Xuemei, B 2007, 'Industrial Ecology and the Global Impacts of Cities' *Journal of Industrial Ecology*, vol.11, no. 2, pp.1-6; Walker, G & King, D 2008, The Hot Topic: how to tackle global warming and still keep the lights on. Bloomsbury Publishers, New York.

5 IPCC 2009, *Concept Paper for an IPCC Expert Meeting on Human Settlement, Water, Energy and Transport Infrastructure – Mitigation and Adaptation Strategies,* Scoping Meeting for the IPCC 5th Assessment Report, Venice, July 13-17 2009, http://www.ipcc.ch/workshops-expertsmeetings-ar5-scoping.htm

6 D. Dodman (2009) Blaming cities for climate? An analysis of urban greenhouse gas emissions inventories, Environment and Urbanization, Vol. 21, No. 1, 185-201. Various local government associations, such as ICLEI – Local Governments for Sustainability, and other organizations are seeking to establish more uniform inventories. See Walraven (2009 unpublished draft) Chapter 3 The impact of cities in terms of climate change, Table 1. Percentages of cities' contribution to climate change in terms of GHG emissions, global energy consumption and CO2 emissions, according to



Source: OECD/IEA (2008)

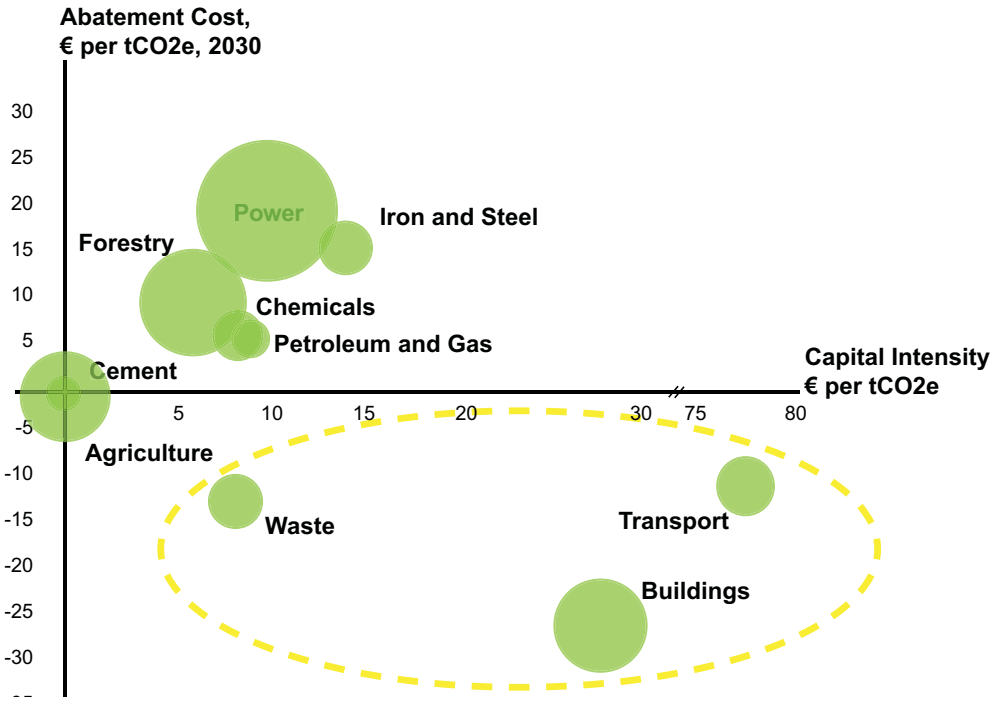


Source: OECD/IEA (2008), World Energy Outlook 2008

Graph 1 Majority of CO2 emissions and energy consumption in cities.

fuels for (residential and non-residential) buildings, vehicle use and industry as the main source of direct emissions from cities. Main sources of indirect emissions come from the generation of electricity for different purposes[7]. These interact with urban density, urban form and the use of transport[8], but also with urbanization through land-use changes (e.g. deforestation), industrial processes (e.g. cement construction), and waste production. The resulting infrastructure assets (buildings, roads, energy

Graph 2 "Low Hanging Fruits" in urban sectors.



different sources.

7 IPCC 2009, *Concept Paper for an IPCC Expert Meeting on Human Settlement, Water, Energy and Transport Infrastructure – Mitigation and Adaptation Strategies,* Scoping Meeting for the IPCC 5th Assessment Report, Venice, July 13-17 2009, http://www.ipcc.ch/workshops-experts-meetings-ar5-scoping.htm

8 UN Habitat 2008, *State of the World's Cities 2008/2009 Harmonious Cities,* Earthscan, London; Angel, SH, Sheppard S, Civco D et al. 2005, *Dynamics of Global Urban Expansion*, World Bank, Washington D.C.

9 Wackernagel MA, 2009, 'Peak Everything: Let's Face it All – and Win', *presentation, ICLEI World Congress,* Edmonton, 17 June, 2009.

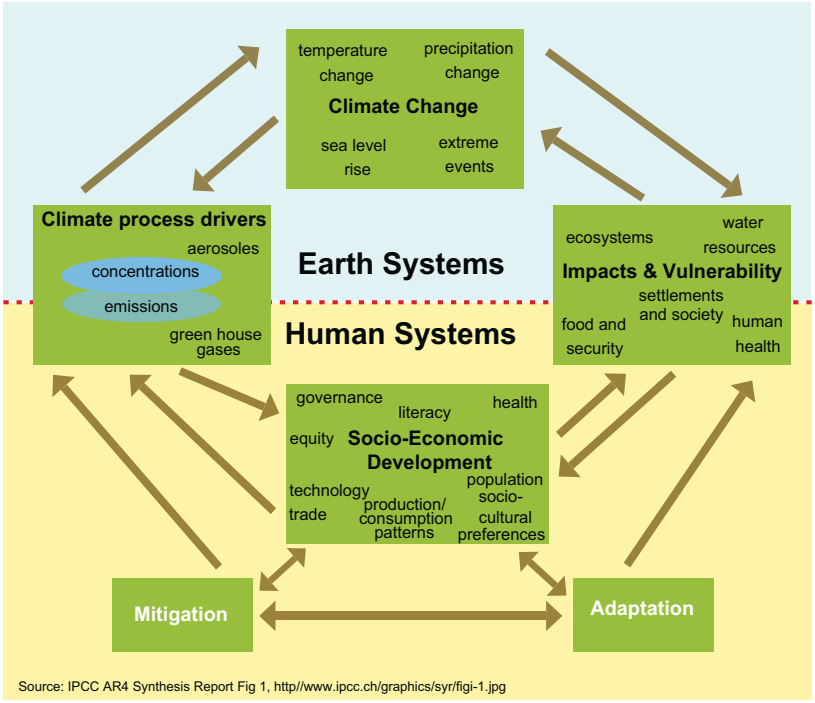
and water networks) have very long life times and subsequently inform future lock-in (e.g. urban sprawl), despite ongoing technical optimization and changes in lifestyle[9].

Greenhouse gas emissions reduction measures in the 'Buildings', 'Waste' and 'Transport' sectors offer substantial urban climate mitigation potential through the implementation of efficiency measures[10]. These urban sectors, also known as the "low hanging fruits", offer greenhouse gas abatement costs that yield long term returns even without their participation in carbon markets (graph 2). Cities and metropolitan regions have a tremendous potential in reducing or stabilizing greenhouse gas emissions, especially in rapidly growing and urbanizing emerging market countries.

Climate change impact and vulnerabilities in cities

The IPCC Fourth Assessment report highlights the impacts of climate change on cities in its seventh chapter *Industry, settlement and society*. Vulnerabilities are mainly related to extreme weather events, their intensity and frequency, rather than solely to gradual climate change. Climate change interacts with other non-climate sources of change and stress. Their impacts need to be considered in a multi-cause context (graph 3). Vulnerabilities to climate change depend upon specific geographic, sectoral and social contexts. Economic and social costs will increase where weather events become more intense and/or more frequent. Here poor communities are especially vulnerable, not least as they concentrate in relatively high-risk areas[11]. Existing and growing cities will be subject to sea level rise[12], infrastructural damage from extreme events, health effects from higher temperatures and/or extreme air pollution, and water and resources availability[13]. Climate change may also influence energy use for heating and cooling, the tourist economy and cultural heritage sites, urban biodiversity, and economic productivity.

Graph 3 Climate change integrated framework.



Source: IPCC AR4 Synthesis Report Fig 1, http//www.ipcc.ch/graphics/syr/figi-1.jpg

Adaptation refers to actions taken to reduce the vulnerability of a system, such as a city, a portion of its population, or individuals, in response to the impacts of climate change[14] and can be extended to the infrastructures, economies and environments that support its inhabitants. Adaptation measures can be grouped into three general categories[15]: actions that climate-proof socio-economic

10 McKinsey & Co (2009) Pathways to a Low Carbon Economy

11 IPCC AR 4 WG 2 Chapter 7, Industry, settlement and society, http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter7.pdf

12 for example China's inter-provincial migration flows between 1995-2000.

13 McGranahan, G, Balk D & Anderson B 2007, 'The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones', *Environment and Urbanization,* vol. 19, no.2, pp. 17-37; McGranahan, G, 'Mapping urban settlement and the risks of climate change: coastal settlements', *presented at UNFCCC Climate Change Talks,* Bonn, 7 April 2009.

14 Bicknell, J, Dodman D & Satterthwaite D 2009, *Adapting Cities to Climate Change,* Earthscan, London.

15 Bicknell, J, Dodman D & Satterthwaite D 2009, *Adapting Cities to Climate Change,* Earthscan, London.

activities by integrating future climate risk; actions that expand the adaptive capacity of socio-economic activities to deal with future climate risks; and actions that are purely aimed at adapting to impacts of climate change and would not otherwise be initiated. The coping capacities of developing countries' cities in dealing with the impacts of climate change are affected by a series of factors including the availability of and access to resources, such as human capital, information, technology and infrastructures.

Perturbation of stress bundles, for example through uncontrolled occupation of complex ecosystems, diversified topography, razing of original rainforests, inadequate waste disposal, industrial location, corruption and political tensions, can make settlements more prone to erosion, landslides, contamination and water shortages, and with this further undermining the coping capacities of inhabitants[16].

In many cases the conditions in cities of emerging market countries are already in precarious shape, as people live in poor housing conditions (e.g. informal settlements, housing situated on slopes or flood plains), rely on economic sectors linked to degrading or overexploited environments (e.g. fisheries, forestry, agriculture), and on infrastructures strained through poor maintenance, rapid growth or simply not installed (e.g. water, waste, connectivity to electricity, markets, and information). Rapid urban growth can then exacerbate the effects of climate change. As population and urban growth outpace existing physical infrastructures, the lack and deficiencies thereof will be exposed to even greater strains and will increase the vulnerabilities to climate change.

Adaptation and development

In recent years the links between climate change adaptation and development have become clearer. It has been suggested, for example, that basic urban infrastructures, especially for the urban poor, such as improved sanitation facilities, water supply, waste disposal, drainage, and access to power and improved healthcare are components of both development and adaptation[17]. Several of the Millennium Development Goals (MDGs) for example refer to basic infrastructure, and can be considered as key components to adaptation to climate change[18].

'Mainstreaming' adaptation aims at climate-proofing development through instruments such as screening development portfolios in order to identify how existing development projects are threatened by climate change, as well as devising methods that explicitly incorporate climate change into future projects and programs. An additional or alternative aspect of mainstreaming is a development-based view of adaptation, which aims to reduce the underlying causes of vulnerability to climate change impacts through a more holistic approach[19].

Climate change and urban governance

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16 Schiller, A., A. D. Sherbinin A & Pulsipher A 2007, 'The Vulnerability of Global Cities to Climate Hazards', *Environment and Urbanization,* vol.19, no.1, pp.39-64.

17 Dodman, D, Hardoy J & Satterthwaite D 2009, 'Urban Development and Intensive and Extensive Risk', *Global Assessment Report on Disaster Risk Reduction,* United Nations International Strategy for Disaster Reduction Secretariat, Bonn.

18 URS 2009, Summary Note: Donor's Meeting at Marseille Urban Research Symposium (URS) Cities and Climate Change, 1 July 2009.

19 Huq, S & Ayers, J 2008, 'Supporting Adaptation to Climate Change: What role for Official Development Assistance?' *presented at DSA Annual Conference 2008 'Development's Invisible Hands:*

An implication of climate change for cities is that they must convert their supply and waste management infrastructures, public or private, to efficient and low risk technologies, in order to maximize the potentials of renewable energy, resources and resiliency. Integrated infrastructureoptimization may require new forms of cooperation.

Cities in developing countries will account for a large proportion of demands for resilient infrastructure and service requirements in the face of climate change[20]. City or local governments play an important role in making decisions on quality, operation and provision of infrastructures, disaster preparedness and disaster response, planning and development. But with uncertainties regarding the frequency and magnitude of extreme weather events such as floods, cyclones or droughts, it is difficult for cities to predict the extent to which they must prepare.

Climate change and urban governance need to be considered within a broader context to take into account, for example, economic restructuring, poverty, socio-spatial segregation, sprawling development, environmental degradation, crime and insecurity, changing international, national and provincial policies, fiscal pressures and infrastructure investments. Environmental degradation is virtually inevitable where urban growth is unplanned. The lack of suitable infrastructure, appropriate regulatory policies, weak municipal institutions, and inadequate financial services for urban development, are major constraints to urban productivity and reduce environmental and economic performance[21].

Inner and outer areas of cities are linked through choices that have to be made by governments to harmonize social, economic, and environmental issues (horizontal challenges). At the same time cities are strongly influenced by municipal, provincial, and national governments and international institutions (vertical challenges). These considerations become most apparent where large infrastructure projects are planned, such as transportation corridors, or the location of waste management facilities or energy production, which serve national or regional interests but are unpopular in locally affected areas. The resulting policy and governance challenges are then vertical and horizontal. Local development strategies significantly impact national or provincial capacities for meeting societal goals, from economic innovation over social cohesion to environmental sustainability[22].

Urban governance involves complex decision making processes and relationships. Significant interplay is needed between relevant actors, such as government, civil society, and the private sector for administration, management, and implementation. Urban governance in various areas of local government administration for example administrative procedures, resource mobilization, political reforms, economic sustainability, environmental preservation, and community participation, are important facets of cities

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Development Futures in a Changing Climate.' Development Studies Association, London.

20 Ayers, J 2009,'International funding to support urban adaptation to climate change,' *Environment and Urbanization,* v.21, no.1, pp. 225-240.

21 UN Habitat 2006, *State of the World's Cities Report 2006/2007,* Earthscan, London; Bradford N 2002, *Why Cities Matter: Policy Research Perspectives for Canada,* Canadian Policy Research Network, Ottawa.

22 Bradford N 2002, *Why Cities Matter: Policy Research Perspectives for Canada*, Canadian Policy Research Network, Ottawa.

along with the ability to delineate and delegate responsibilities to ensure accurate reporting and monitoring[23]. Another are public-private partnerships, where active jointworking arrangements are made in the programs of local governments.

Choices need to be made and urban spaces need to be managed: where and how should investments into human resources or physical infrastructures be made, which fiscal tools and financing mechanisms should be used, what is available to local governments? These processes and challenges can strain the capacities of government.

1.2 International Recognition of Cities and Local Governments

Emerging international city initiatives and programs

International stakeholders are increasingly recognizing the role of cities and their local governments for climate action implementation. For example cities[24] are given further attention in the IPCC's recent scoping for the Fifth Assessment Report following the IPCC's Fourth Assessment Report's (AR4) Chapter 7 *Industry, human settlement and society.* A concept paper submitted by the Working Group III Co-Chairs identifies gaps within the AR4 and proposes an IPCC-expert session on *Human Settlement, Water, Energy and Transport Infrastructure – Mitigation and Adaptation Strategies* to further explore human settlements and infrastructure[25]. The World Bank and the OECD, among others, are also increasingly looking at cities. For example the *Urban and Local Government Strategy*[26] of the World Bank; a city partnership initiative for carbon finance of the World Bank Institute[27]; OECD's *Competitive Cities and Climate Change* conferences and papers[28]; International Energy Agency's last *World Energy Outlook 2008*. Cities are increasingly being recognized as sites for both mitigation and adaptation.

Cities themselves are increasingly proactive in tracking, identifying and reducing greenhouse gas emissions. The availability and application of software tools for accounting and monitoring greenhouse gas emissions underlines this[29]. Over 2000 communities have decided upon CO2-reduction targets for their cities, as listed in the *City Climate Catalogue*[30], or the *Climate Alliance*[31], a European network of more than 1,400 cities committed to the protection of the global climate.

Other initiatives include: the *Local Renewables Initiative*, supported by the

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23 See UN Habitat 1996, *An Urbanizing World: Global Report on Human Settlements,* HS/382/95/E, Oxford University Press, Oxford; UN Habitat 2004, *State of the World's Cities 2004/2005, Globalization and Urban Culture,* HS/726/04E, UNHabitat, Nairobi.

24 Referred to as "human settlements" in the seventh chapter of the Fourth Assessment *Industry, human settlement and society.*

25 IPCC 2009, *Concept Paper for an IPCC Expert Meeting on Human Settlement, Water, Energy and Transport Infrastructure – Mitigation and Adaptation Strategies*, Scoping Meeting for the IPCC 5th Assessment Report, Thirteenth Session, Antalya, 21-23 April 2009, http://www.ipcc.ch/scoping_meeting_ar5/doc16.pdf.

26 World Bank, Urban and Local Government Strategy, http://www.wburbanstrategy.org/urbanstrategy/

27 WBI in Action, Carbon Finance-Assist Program Guides Developing Nations through Complex Mechanisms, http://wbi.worldbank.org/wbi/stories/carbon-finance-assist-program-guides-developing-nations.

28 OECD, *Urban Development*, viewed 5 November 2009, http://www.oecd.org/document/51/0,3343,en_2649_34413_36886003_1_1_1_1,00.html

29 Arikan Y 2009, *Local Climate Mitigation Action: From a Voluntary Initiative to a Global Mainstream Commitment*, ICLEI, Bonn.

30 ICLEI, 2008/2009, *The City Climate Catalogue, The Copenhagen world catalogue of city commitments to combat climate change,* http://www.iclei.org/climate-commitments

31 Climate Alliance 2007, viewed 15 October 2009, http://www.klimabuendnis.org/

German Federal Ministry for Economic Cooperation and Development and the GTZ[32]; the *Climate Neutral Network* of the United Nations Environment Programme (UNEP) for information exchange and networking[33]; United Nations Human Settlements Programme's (UN-HABITAT) *Cities Climate Change Initiative* established in March 2009 as an initial component of the *Sustainable Urban Development Network* (SUD-Net)[34]; the *Urban Research Symposium*[35] supported by the World Bank.

Local governments in the UN climate process

Following two-year intergovernmental negotiations and pursuant to decision 45/212 of the United Nations General Assembly in 1990, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro, 1992, also known as the Earth Summit[36]. The objective of this convention and any related legal instruments is to achieve the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system"[37] and "Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects"[38].

The Kyoto Protocol, adopted in Kyoto (Japan) in 1997, sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas emissions[39]. While the Convention encouraged industrialized countries to stabilize GHG emissions, the signatories of the Protocol commit themselves to reducing GHG emissions. The Kyoto Protocol urges Parties listed in Annex-B[40] to reduce their GHG emissions by a total of five percent from 1990 levels over the five-year period 2008-2012 defined as the first commitment period[41].

However, it took national governments another 4 years to decide on the detailed rules that define the implementation of the Protocol, called the "Marrakesh Accords"[42]. These include specific procedures and provisions on the Flexibility Mechanisms (i.e. Clean Development Mechanism, Joint Implementation, Emissions Trading Scheme), Compliance Regime and Adaptation Fund.

Following the ratification by the Russian Federation the treaty met its conditions to become legally binding and the Kyoto Protocol entered into force on 16 February 2005[43].

The Kyoto Protocol has no specific references to local government or city level actions necessary to meet the Protocol's commitments. A few references are made regarding regional level involvement, with Article 10 taking into account that regional programs may be relevant to improve the quality

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32 ICLEI 2007, *Local Renewables Initiative*, http://www.local-renewables.org/

33 UNEP, *Climate Neutral Network: Cities and Municipalities*, http://www.unep.org/climateneutral/Default.aspx?tabid=349

34 UN Habitat Global Urban Observatory 2004, *Urban Governance Index: Conceptual Foundation and Field Test Report*, viewed 2 November 2009, http://www.unhabitat.org/content.asp?typeid=19&catid=25&cid=2167

35 Urban Research Symposium 2009, *Cities and climate change: responding to an urgent agenda*, viewed, 29 September 2009, http://www.urs2009.net/

36 UN 1997, *UN Briefing Papers, The World Conferences: Developing Priorities for the 21st Century*, viewed 1 November, 2009, http://www.un.org/geninfo/bp/envirp2.html

37 UNFCCC, *Full Text of the Convention, Article 2 Objective*, viewed 1 November 2009, http://unfccc.int/essential_background/convention/background/items/1349.php

38 UNFCCC, *Full Text of the Convention, Article 3 Principles*, viewed 1 November, 2009, http://unfccc.int/essential_background/convention/background/items/1349.php

39 UNFCCC, Kyoto Protocol, http://unfccc.int/kyoto_protocol/items/2830.php.

40 "Annex B in the Kyoto Protocol lists those developed countries that have agreed to a commitment to control their greenhouse gas emissions in the period 2008–12,including those in the OECD, Central and Eastern Europe and the Russian Federation. The list of Annex B countries currently (2007) matches that of Annex I, with the exclusion of Turkey." http://unfcccbali.org/unfccc/component/option,com_glossary/Itemid,99/func,view/catid,31/term,Annex+B+Countries/

41 UNFCCC, *Essential Background: Kyoto Protocol*, viewed 1 November 2009, www.unfccc.int/kyoto_protocol/items/2830.php

of local emission factors, activity data, or models. However, the local level is not featured as an important player in the Kyoto Protocol's measures against climate change.

Despite the fact that neither the UNFCCC nor the Kyoto Protocol envisaged any explicit role for cities or the local government[44], local governments have established and built financial and fiscal incentives, local knowledge and education, and other municipal actions (in their role as procurer, operator, investor in services, demonstrator, facilitator of voluntary codes)[45]. Based on their legal responsibility and jurisdiction, local governments have initiated target setting and regulatory schemes thereby going beyond national and state jurisdictional obligations. The *Global Status Report on Local Renewable Energy Policies* illustrates how cities and local governments "can play a key role in encouraging renewable energy at the local level"[46]. Global initiatives like the Cities for Climate Protection campaign of ICLEI - Local Governments for Sustainability have been active as far back as 1993[47]. Through such initiatives local governments have been showing their leadership through result-based, quantified, concrete local climate actions long before the Convention and Kyoto Protocol for national governments came into force.

Local governments held Municipal Leadership Summits in 1993, 1995, 1997 and 2005 parallel to the official Conference of Parties (COP) meetings of national governments. Thereby the Local Government and Municipal Authority Constituency (LGMA) have built upon their role as one of the first NGO Constituencies acting as observer to the official international climate negotiation process UNFCCC. These interactions have led to an increasing recognition of local governments and authorities, in particular in relation to discussions on reducing emissions from deforestation and forest degradation in developing countries (REDD) 48 and the Nairobi work program on adaptation[49] within the new and emerging concepts of the international climate negotiations.

The UNFCCC is focused on a successor to the climate protection agreement period following 2012. This is also known as the post-Kyoto or post-2012 agreement. Realizing the failure to recognize cities at the international climate negotiations, the Local Government Climate Roadmap, a consortium of global municipal partnerships, has addressed this shortcoming from 2007 onwards. The inclusion of local governments would ensure that the entire chain of government, from national to local, are involved in the implementation of a climate agreement. The current role of local governments in the international climate negotiations is examined further in section 3.6.

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42 UNFCCC, *Essential Background: Kyoto Protocol,* viewed 1 November 2009, http://unfccc.int/kyoto_protocol/items/2830.php

43 Ratified by at least 55 countries and the ratified nations accounting for at least 55% of emissions from the Annex 1 countries.

44 Arikan Y and Van Begin G 2009, Local Government Climate RoadMap: Recognition of role of local government in climate negotiations, ICLEI, Local Governments for Sustainability, viewed 2 November 2009, http://www.iclei.org/fileadmin/user_upload/documents/ANZ/Events/2009/0912-COP15/LG_Climate_RoadMap.pdf

45 See Martinot et al. 2009, Global Status Report on Local Renewable Energy Policies (unpublished draft), Institute for Sustainable Energy Policies, Tokyo.

46 Based upon Martinot et al. 2009, Global Status Report on Local Renewable Energy Policies (unpublished draft), Institute for Sustainable Energy Policies, Tokyo.

47 ICLEI Climate Program, http://www.iclei.org/index.php?id=800, viewed November 2009.

48 UNFCCC, REDD Web Platform, viewed 2 November 2009, http://unfccc.int/methods_science/redd/items/4615.php .

1.3 International Financing Options for Climate Action

Emerging international financing architecture for climate action

The United Nations Framework Convention on Climate Change states in its commitments Article 4.3-4.4 "new and additional financial resources to meet the agreed full costs incurred by developing country Parties…"and "… also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects"[50].

While the how, when and volume is the matter of ongoing negotiations, not least on definitions of "vulnerable" and verifiable distinction between existing ODA (Official Development Assistance) and new and additional sources, several different strands of international financing for climate action have emerged.

On the one hand there are international financing options which have emerged in response to the UNFCCC process. The Kyoto Protocol initiated the Emission Trading Scheme (ETS), Joint Implementation (JI), Clean Development Mechanisms (CDM), and Adaptation Fund (AF) (see appendix 6.3). The UNFCCC commitment Article 11 (and 21) initiated the financial mechanisms of the Global Environment Facility (GEF). The GEF[51] operates as a financing mechanism for implementing international conventions such as on Climate Change, but also Biodiversity, Persistent Organic Pollutants, and the Convention to Combat Desertification.

On the other hand, there are bi- and multi-lateral financing options, such as the Climate Investment Fund of the World Bank or the Cool Earth Partnership of the Government of Japan (see appendix 6.4). These can more or less clearly be separated into mitigation and adaptation funding.

There are also a range of international financing streams in relation to voluntary carbon markets (Chicago Climate Exchange[52], Japanese Voluntary Emission Trading Scheme, among other). These are not addressed here.

Mitigation and adaptation financing created by international conventions

CDM[53] is one of the flexible market mechanisms under the Kyoto Protocol. The CDM allows Annex-I (industrialized) countries to invest in greenhouse gas mitigation projects in Non-Annex-I (developing) countries. The mitigated emissions are quantified and translated into certified emission reduction credits (CERs). CERs can be traded and used by industrialized countries to meet a part of their targets under the Kyoto Protocol while assisting countries to achieve sustainable development through emission reductions[54].

49 UNFCCC, Nairobi work programme on impacts, vulnerability and adaptation to climate change- understanding vulnerability, adapting to climate change, viewed 24 October 2009, http://unfccc.int/adaptation/sbsta_agenda_item_adaptation/items/3633.php .

50 UNFCCC, Full Text of Convention, Article 4: Commitments, http://unfccc.int/essential_background/convention/background/items/1362.php viewed November 2009.

51 The Global Environment Facility (GEF) unites 179 member governments to address global environmental issues in partnership with international institutions, non-governmental organizations, and the private sector.

CDM (registered)		
	Urban	Total
Methane avoidance recover, utilization	(waste, waste to energy) 133	180
Energy efficiency	(households) 8	68
Transport	2	2
Other	n/a	1449
Total	143	1699
Percent of Total (Total)	8.4%	100%
Data Source: GES, Institute for Global Environmental Strategies, Sept 2009.		

Table 1 Number of registered urban CDM projects within the "low hanging fruit" sectors: buildings, waste, transport.

CDM is the only one of the three flexible mechanisms under Kyoto in which a Non-Annex I (developing) country or emerging developing countries can actively participate. Despite the given potential for greenhouse gas emission reductions in the urban sectors of buildings, waste, and transport, the number of urban projects these represent is only around 8.4% of all registered CDM projects (table 1)[55]. It demonstrates the low engagement with this mechanism. Notably, transport makes up only two registered CDM projects, both in urban areas. Methane avoidance and recovery projects comprise the largest share of CDM Projects in urban areas. Key factors that facilitate the feasibility of such projects include: the flexibility of project management due to the point source nature of landfill projects, global availability of technology and methodologies, flexibility of establishing public/private partnerships and the high global warming potential of methane gas. Brazil (36%), China (14%), Mexico (5%) and India (2%) are the main leading countries in the geographical distribution of urban CDM projects[56]. This alludes to a number of challenges that are examined in more detail in section 3.3.

This is not to suggest that other CDM project types, such as Biomass Energy (14%) or Solar (1%) are not urban[57]. While the majority of projects are clearly non-urban types for example Hydro (27%), Wind (17%), Forests (1%), Fugitive (1%), and other subtypes such as Manure (5%), it is more difficult to assess whether other CDM types and sub-types like Biomass Energy, Landfill Gas (6%), Energy Efficiency in Industry (6%) are within the administrative geography of cities. Also city governments mostly have only indirect influence over their operation, as their operation is predominantly in private hands.

The Adaptation Fund (AF) under the administration of the Adaptation Fund Board[58] was established to finance adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from CDM project activities and receive funds from other sources. The share of proceeds amounts to 2% of Certified Emission Reductions (CERs) issued for a CDM project activity, but the AF is not yet operational.

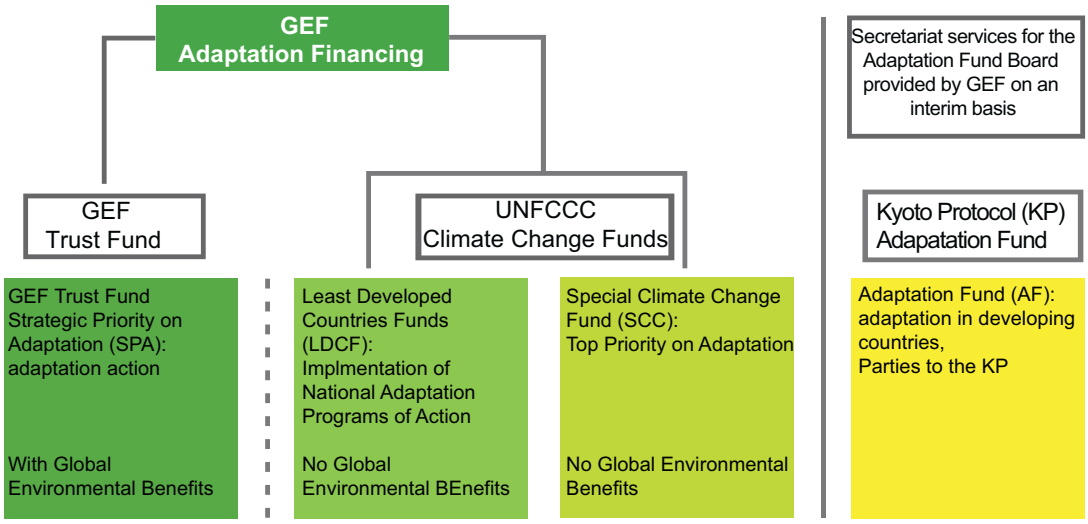
The GEF was established in 1991 and collaborates closely with other treaties and agreements[59]. Under climate change it addresses both mitigation and adaptation through the Strategic Priority on Adaptation (SPA), Least Developed Countries Fund (LDCF) and Special Climate Change Fund

52 CCX, Chicago Climate Exchange, http://www.chicagoclimatex.com/ viewed November 2009.

53 ETS and JI are not applicable to developing countries and have subsequently been excluded.

54 UNFCCC 2008, *Clean Development Mechanism 2008 in brief*, viewed 16 October 2009, http://unfccc.int/resource/docs/publications/08_cdm_in_brief.pdf

55 IGES (01.07.2009) CDM Project Database. Available online: http://www.iges.or.jp/en/cdm/report.html [Accessed 15 July 2009]



Source: Global Environment Facility, 2006 Financing Adaptation Action

Graph 4 Climate change funds created through international conventions.

(SCCF) established in 2001. The GEF was approached to manage these funds, expanding its mandate on adaptation from supporting studies, assessments, and initial pilot projects to financing the implementation of the GEF Trust Fund (graph 4).

The Strategic Priority on Adaptation (SPA) was established in response to the 2001 Marrakech Accords (COP decision 6/CP7), in order to finance pilot and demonstration projects. It may also be integrated into national policy and sustainable development planning to establish strategic priorities. The program was closed in August 2008 upon its completion[60]. GEF agencies[61] assist eligible governments and NGOs in the development implementation and management of GEF projects. The project supports measures that minimize climate change damage, including urban areas, by reducing the risk of the adverse effects of climate change.

For both the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) adaptation to climate change is a priority with each their own rules and procedures. The Least Developed Countries Fund (LDCF) aims to address the urgent and immediate adaptation needs of LDCs (Least Developed Countries), as identified by their National Adaptation Plans of Action (NAPAs). Currently the total number of completed NAPAs is at 41. Projects and preparation grants are approved on a rolling basis with the majority of the funds' resources allocated to concrete adaptation projects[62].

But while National Adaptation Programmes of Action (NAPAs), particularly among low-income countries, have been promoted, there have been few developments regarding adaptation at subnational level. The Special Climate Change Fund (SCCF) adaptation program focuses on water resources, agriculture, health, infrastructure, integrated coastal zone management, and fragile ecosystems, but also on capacity building for preventive measures, planning preparedness, and disaster management related to climate change

56 UNEP Risoe Center, Energy, Climate and Sustainable Development, UNEP Risoe CDM/JI Pipeline Analysis and Database, 1st February 2010, CDM projects, http://cdmpipeline.org/cdm-projects-type.htm

57 Figures refer to the CDM projects in the Pipeline (Feb 2010)

58 Global Environment Facility 2009, *Global Environment Facility, Investing in our planet,* viewed 10 November 2009, http://www.gefweb.org

59 Global Environment Facility 2009, *Financing Adaptation Action*, viewed 11 November 2009, http://www.thegef.org/uploadedFiles/Publications/adaptation-actions.pdf

60 Global Environment Facility 2009, *Report of the GEF to the Fifteenth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change*, United Nations Office,

(e.g. contingency planning for droughts and floods). The SCCF opened in 2005 for submissions[63]. Between the GEF Trust Fund (670), LDCF (83) and SCCF (24) over 770 projects have been approved in the focal area of climate change, of which 277 have been enabling activities, 104 medium sized projects, and 396 full sized projects[64].

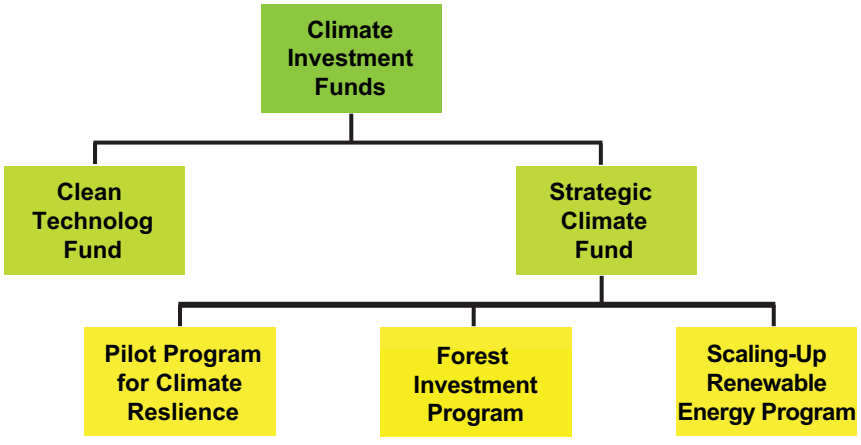
Other multi and bilateral funding for mitigation and adaptation

It is also important to remind that: "The distinction between ODA and non-ODA climate finance is not merely academic; the "new and additional" concept under UNFCCC Article 4.3 […] is central to the negotiating positions of developing countries, and implies a clear and verifiable distinction be made between ODA and non-ODA sources"[65]. An overview of the diversity of international financing options can be found in the appendix 6.4.

In principle there are two streams of ODA (Overseas Development Assistance) that channel finances to developing countries to help them address environmental issues. The first channel is multilateral financing mechanisms of the Rio Convention, specifically GEF, World Bank, but also Asian Development Bank and others[66]. Multilateral institutions can be considered those which have a financial (banking) basis and to which multiple countries contribute funds and share ownership. The second channel is bilateral finance institutions, which vary according to the relationship of each to other institutions in their country of origin. This accounts for key differences in their institutional mandates, types of programs and projects. These have provided aid and investments to developing countries for decades. It has subsequently been suggested that the "integration of climate financing into development activities means they are now a very significant agent in delivering finance for climate change"[67].

In response to the 2005 G-8 Gleneagles Summit, Scotland, the independent role in climate-related funding of the World Bank developed further. In order to accelerate clean energy investments in developing countries, the World Bank established the Clean Energy Investment Framework (CEIF), as a collaborative effort among the Multilateral Development Banks and countries to bridge the gap until a post-2012 agreement comes into place[68]. It identifies investments needed to increase access

Graph 5 Climate Investment Funds.



Source: Climate Investment Funds, http://www.climateinvestmentfunds.org/cif/designprocess

Geneva.

61 Including UNDP, AFDB, ADB, EBRD, IDB, IFAD, FAO, and UNIDO.

62 Global Environment Facility 2009, *Global Environment Facility, Investing in our planet*, viewed 10 November 2009, http://www.gefweb.org

63 Global Environment Facility 2006, *Linking Adaptation to Development*, Global Environment Facility, Washington D.C.

64 Global Environment Facility, *The GEF Project Database,* viewed 12 November 2009, http://www.gefonline.org/

65 A. Atteridge, et. Al. , 2009, Stockholm Environment Institute, working Paper, *Bilateral Finance Institutions and Climate Change: A Mapping of Climate Portfolios.*

66 Porter, G et al. 2009, *New finance for climate change and the Environment,* Heinrich Böll Foundation/WWF, Washington D.C.

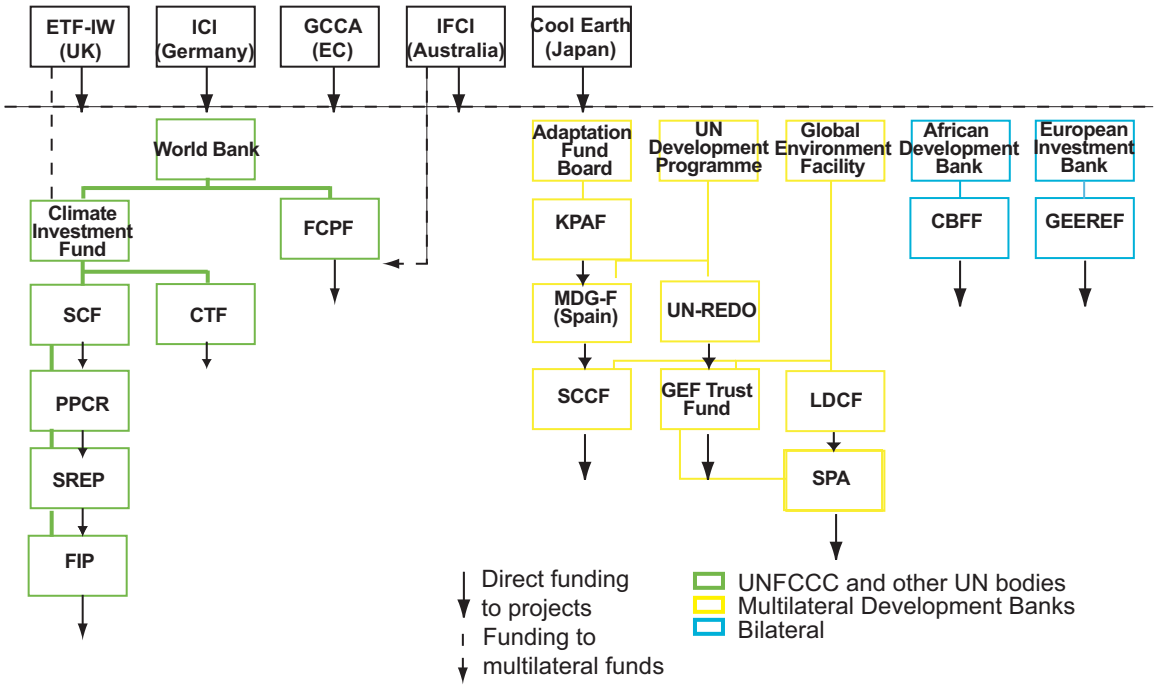
67 Ackerman, F 2009, *Financing the Climate Mitigation and Adaptation Measures in Developing Countries,* WP-US-0910, Stockholm Environment Institute, Stockholm.

to energy, accelerate the transition to a low carbon economy, and support adaptation to climate change. The 2008 established Climate Investment Funds (CIFs) have an initial multi-annual capitalization of just over US$ 6Billion[69], comprising the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF) (graph 5).

The CIF is governed by balanced representation of donors and recipient countries, with observers from the UN, GEF, civil society, and the private sector, among others[70]. The CTF provides financing for demonstration, deployment and transfer of low-carbon programs. The SCF provides finance to pilot new development approaches. Under which the Pilot Program on Climate Resilience (PPCR) with potentially US$ 1Billion in funds[71], geared towards integrating climate risk and resilience into national development planning and assistance in public and private investments in nine pilot regions[72]. The SCF also feeds the Forest Investment Program (FIP) to support efforts to reduce emission from deforestation and forest degradation by providing scaled-up bridge financing for readiness reforms and private investments in developing countries. It also feeds the Program for Scaling-Up Renewable Energy in Low Income Countries (SREP). It has also been suggested that new international climate-related resources are channeled more towards the World Bank than for example the GEF[73].

Graph 6 illustrates its complexity. How this lends itself to efficacy remains open. It is not the purpose of this study to investigate the international institutional landscape of climate change funding and global environmental

Graph 6 Emerging architecture of international climate fund administration (top: bilateral, below: multilateral).



Source: Climate Funds Update, http://www.climatefundsupdate.org/listing/architecture

68 Climate Investment Funds, http://www.climateinvestmentfunds.org/cif/designprocess, viewed 23 November 2009.

69 On September 26, 2008 donors gathered to pledge over US$6.1 billion, http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21916602~pagePK:34370~piPK:34424~theSitePK:4607,00.html

70 http://www.climateinvestmentfunds.org/cif/designprocess

71 Ayers, J 2009, 'International funding to support urban adaptation to climate change', *Environment and Urbanization,* vol. 21, no.1, pp. 225-240

finance. Rather they frame the ramifications for local governments' clarity and accessibility to international financing options to support their local actions in mitigation and adaptation.

Report Structure

International financing options for adaptation in cities can in theory offer relief to some resource constraints and provide opportunities to build climate resilience and stabilize/reduce greenhouse gas emissions, especially when coupled with other sustainable development objectives. But earlier analysis conducted by ICLEI, as far as city development in developing countries (here referring to emerging market countries) is concerned, revealed that many multilateral and bilateral donors and development agencies are widely not sufficiently aware of the development impact of climate change and the role cities can play. Therefore they are not necessarily driving positive solutions for climate change at the local level.

Local governments are considered the closest and the most responsive level of government to the needs of its citizens. According to the principle of subsidiarity, the practice of improved urban governance, not least through the increased capacity of local governments and other stakeholders, is considered pivotal for sustainable urban development[74]. But there are challenges in the vertical and horizontal alignment of climate change, urban development policies and actions.

A global financing architecture for climate change is emerging, but "what role and opportunities for integrated climate action (mitigation and adaptation) exist for cities within the framework of a future global agreement and its related financing options?" How is the international community providing a supportive framework for cities' climate action?

The report will progress in five stages:

- Elaborate the methodological approach,
- Discuss the key findings of the interviews,
- Offer further analysis of the key international financing options for climate change,
- Provide suggestions for improved exchange between the local, national and international level, and
- Conclude with highlighting an opportunity for local governments and the international community to come closer together for climate action.

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72 Climate Investment Funds, *CIF Basics, Funding,* viewed 23 November 2009, http://www.climateinvestmentfunds.org/cif/funding-basics; Ackerman, F 2009, *Financing the Climate Mitigation and Adaptation Measures in Developing Countries*, WP-US-0910, Stockholm Environment Institute, Stockholm.

73 Porter G et al. 2009, *New finance for climate change and the Environment*, Heinrich Boell Foundation/WWF, Washington D.C.

2 Methodology

2.1 Background

Guiding questions

The report sets out that cities and metropolitan regions have a tremendous potential in reducing global greenhouse gas emissions (GHG). However, the international community (Kyoto protocol and post-2012 UNFCCC negotiations) has been reluctant to acknowledge this potential and build it constructively into draft agreements[75]. There is a need to localize the discourse of mitigation and adaptation, especially around international financing options, to the level of cities and communities by hearing the voices of city decision makers, as representatives of local governments.

This necessitates, on the one hand, a "bottom up" understanding of what cities' role and current actions are, and their awareness of climate change, understanding and potential of international financing opportunities for climate action, and their views on the practicality of these. And on the other hand, a "top down" understanding of how the Kyoto protocol and post-2012 agreement integrate cities in their agreements and offer potential for climate action. Views from international climate and urban experts, as well as business representatives have been included to further contextualize this to the international level.

Guiding questions are:

- Which action opportunities for integrated climate mitigation and adaptation exist in cities in developing countries?
- How can this potential be exploited by future legal and market mechanisms under a future climate agreement?
- What must an effective support program look like that can use the potential of inter-city municipality or private sector co-operation for integrated climate action (mitigation and adaptation) of cities in developing countries?

Selection of countries – emerging market countries

The focus is on developing countries, which will require support to comply with their obligations and the cost they incurred in their adaptation action. The focus is narrowed further to emerging markets, due to their rapid upward economic and urban growth trajectories. The following countries were chosen for a global snapshot of the main concerns: Brazil, Egypt, India, Indonesia, the Philippines, Mexico, South Africa (table 2). These countries were chosen due to their wide geographical distribution, their status as emerging or near industrialized market countries, and considered in light of practical considerations, such as access to political leaders of cities. These countries are defined by the UNFCCC as developing countries. These Parties are to receive, in accordance with Article 4.3 of the Convention, new

74 UN Habitat Global Urban Observatory 2004, *Urban Governance Index: Conceptual Foundation and Field Test Report,* viewed 2 November 2009, http://www.unhabitat.org/content.asp?typeid=19&catid=25&cid=2167 ; Bradford N 2002, *Why Cities Matter: Policy Research Perspectives for Canada*, Canadian Policy Research Network, Ottawa.

75 Arikan Y and Van Begin G 2009, *Local Government Climate RoadMap: Recognition of role of local government in climate negotiations*, ICLEI, Local Governments for Sustainability, viewed 2

	Population '000 (2006)[1]	CO_2 emission per capita in metric tons (2006)[2]	GDP per capita, PPP, current int'l $ (2007)[2]	Proportion urban in percent (2010/2050)	Urban sanitation in percent (2006)[4]	Urban population increase[5] (2010-2050)	GDP growth annual % (2007/2010)[6]
Brazil	198,323	2.01	9,684	86.5/93.6	84	1.38	5.7/2.2
Egypt	74,166	1.92	5,042	42.8/62.4	85	2.22	7.1/3.0
India	1,151,751	1.16	2,753	30.1/55.2	52	2.49	9.3/5.6
Indonesia	228,864	1.21	3,711	53.7/79.5	67	1.83	6.3/3.5
Mexico	105,342	4.05	14,104	77.8/87.6	91	1.35	3.3/1.0
Philippines	86,264	.81	3,369	66.4/83.9	81	1.91	7.2/1.0
South Africa	48,282	10.04	9.768	61.7/79.6	66	1.45	5.1/1.9
World	6,592,900	4.48	9,996	50.6/69.6	78	1.83	5.2/1.9

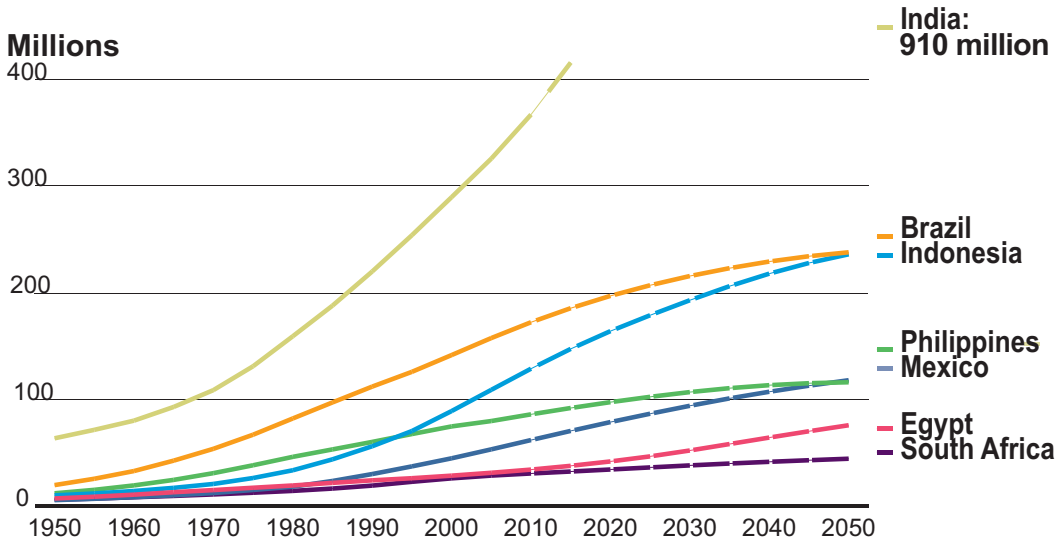
1. United Nations Population Division, World Urbanization Prospects: The 2007 Revision Population Database, 2008.
2. Energy Information Administration, International Energy Annual 2006, Updated August 2009, World Per Capita Dioxide Emissions from the Consumption and Flaring of Fossil Fuels, 1980-2006 in Metric Tons of Carbon Dioxide.
3. World Bank, Data and Statistics, Purchasing Power Parity, http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS [Access 2.11.2009]
4. % of urban population with access to improved sanistatin facilities; World Bank, Stat and Statistics, urban Development [Access 2.11.2009]
5. Times increase (multiplication factor).
6. IMF (2009) World Economic Outlook, Crisis and Recovery, Supplemental Tables: Key Macroeconomic Projections by Region, http://www.imf.org/external/pubs/ft/weo/2009/01/index.htm.

Table 2 Selected countries with brief profile.

and additional resources, to meet the agreed full costs incurred in complying with their obligations under Article 12[76]. Also the 7 selected countries of this study constitute around 43% of urban CDM projects globally.

The world's rapid growth of urban population translates to nearly 4 billion people requiring urban housing in the next 40 years, including those 0.8 billion people that are currently living in urban slums[77]. The rapid urban growth of the selected emerging market countries is illustrated (graph 7).

Graph 7 Urban population growth in selected emerging market countries.



Source: UN (2008), World Urbanization Prospects: The 2007 Revision

November 2009, http://www.iclei.org/fileadmin/user_upload/documents/ANZ/Events/2009/0912-COP15/LG_Climate_RoadMap.pdf

76 UNFCCC 2009, AWG LCA, 'Contact Group on Enhanced Action on Mitigation and its Associated Means of Implementation,' Non-paper no. 20, *Proceedings of the first part of the seventh session, Ad Hoc Working Group on long-term cooperative action under the convention,* UNFCCC, Bangkok, 29 September - 9 October 2009, viewed 28 October 2009, http://unfccc.int/files/meetings/

Selection of cities – "not the usual suspects"

Cities were chosen from the size class 0.5 million to 3 million inhabitants. 33% of the urban population live in urban settlements of 0.5 to 5 million people, near to 1.2 billion people. In comparison only 16% live in urban settlements larger than 5 million inhabitants[78]. In the process of world urbanization, the projected urban population will grow most, in absolute terms, in the small and medium sized urban settlements, in particular urban settlement smaller than 0.5 million. From the thousands of cities those larger than 0.5 million, but smaller than 3 million, were selected, in order to focus on medium sized cities and exclude large and mega-cities.

However, the selection of cities is not representative for this size class. Rather the selection attempts to draw attention to those cities which are gradually or lesser internationally oriented or lesser internationally known. The selection criteria also seeks to reflect a mixed level of industrialization, poverty and geography (see Annex for brief city profiles).

The number of cities selected per country should reflect in broad strokes their population size in relation to the other selected countries. Given practical considerations this translated as: Brazil: 3 cities; Egypt: 2 cities; India: 5 cities; Indonesia: 1 city; Mexico: 2 cities; Philippines: 2 cities; South Africa: 2 cities.

Selection of interviewees – cities, experts and business community

From this group more than 17 city decision makers from 17 cities were interviewed. Relevant senior city decision maker with a relative complete overview of the city were selected, such as the head of environment, planning or similar department, or the city mayor or a councilor. The selection also reflects practical considerations, such as identifying and gaining access to the respective key city decision makers. Taking these criteria into account, the selection of cities was carried out through consultation with the regional offices of ICLEI and GTZ.

The selection criteria for the city-decision-makers is based upon:

- Familiarity with themes and overall understanding of city,
- Familiarity with the city's decision-making apparatus,
- Position at a senior level within the city (e.g. elected position (Mayor) or senior administrative personnel (Head of Department)).

The selection criteria for the international climate and urban experts, and international businesses representatives followed a similar approach. Criteria included:

- Association with relevant international or regional activities,
- Relevant backgrounds in the urban, planning and climate field,
- Recommendations.

Interviewees were decided upon following an initial research and scoping

ad_hoc_working_groups/lca/application/pdf/mitigation1biinp20081009.pdf

77 United Nations Population Division 2008, *World Urbanization Prospects: The 2007 Revision Population Database,* viewed 20 September 2009, http://esa.un.org/unup/; UN Habitat 2006, State of the World's Cities Report 2006/2007, Earthscan, London.

Graph 8 Distribution of interviewees.

exercise. The views expressed do not necessarily reflect those of their organization. Interviews were conducted with a total of 17 city decision makers from 17 cities in 7 emerging market counties, with 12 international urban and climate experts, and with 9 international business representatives (graph 8).

2.2 Design

Components

The report draws upon a nexus of literature, grey literature, interviews with senior city decision makers, international urban and climate experts, business representatives, and the post-2012 UNFCCC negotiations through consultations with the Local Government Climate Roadmap, a consortium representing and advocating on behalf of local governments at UNFCCC negotiations since 2007.

Interviews

The interview design with city decision makers was longer and more in-depth to anchor the discourse in city-level experiences. The interviews with experts were designed for 30-45 minutes and business representatives for up to 30 minutes, respectively. The nature of the questions, openended semi-structured, implies that the interviews are of varying lengths, ranging from 25 to 100 minutes. The questions were open-ended for probing and qualitative analysis. The interviews focused on three thematic areas: awareness of climate in cities of emerging market countries, understanding and potential of international opportunities for climate action in these cities, and

practicality of these financing options for climate action in cities of emerging markets.

City Decision Makers were interviewed on:

- Implications of climate change on their city,
- Necessity of GHG mitigation and adaptation to climate change,
- Understanding and realization of city/municipal/local action opportunities and possible solutions, costs, financing options and barriers (with special focus on integrated solutions),
- Knowledge of current, within the framework of the UN climate change negotiations, suggested approaches and mechanisms, and their relevance for cities as actors,
- Role of cities in Kyoto protocol and possible Post-2012 financing options,
- Potential of these financing options for integrated city development,
- Practicality of financing options for integrated city development.

International Climate and Urban Experts were interviewed on their assessment of:

- Priorities for cities in tackling climate change,
- Understanding and realization of the city/municipal/local action opportunities and possible solutions, costs, financing options and barriers (with special focus on integrated solutions),
- Role of cities in Kyoto protocol and possible Post-2012 financing options,
- Potential of these financing options for integrated city development,
- Practicality of financing options for integrated city development.

International Business Representatives interviewed on their assessment of:

- Priorities for cities in tackling climate change,
- Significance of businesses service provision to cities,
- Potential of these financing options for integrated city development,
- Practicability of these financing options for integrated city development,
- Readiness of the private sector to support cities and municipalities with the planning and development of infrastructure provisions.

Where possible, city decision makers were met in person by the regional interviewer. Interviews with the experts and business representatives were conducted over the telephone. All interviews were conducted in the time period between 1 October 2009 and 9 November 2009. Interviewees consented to use selected quotes in this study, which are distributed in the text to illustrate key points.

2.3 Analysis

Qualitative analysis

Between 20 and 25 hours of interviews were documented for qualitative analysis. The results are discussed in relation to the key international financing options. The city level is further qualified through interviews with international climate and urban experts and international business representatives. The preliminary key findings of the interviews were presented at the Local Government Climate Lounge during COP15 in Copenhagen in December 2009 for review and expert discussion. Through the triangulation with current presentations, literature reviews and consultations the results are transferred to other cities and local governments more in general.

The restricted number of interviews impedes claims on cities of emerging market countries. The selection of interviewees from each city also precludes conclusions on each city. Rather the report seeks to draw attention to the existing patterns with regards to the role cities and local governments can play, and the support offered through the international level, in order to suggest ways forward. For example the counting of the responses are not representative for each city, nor for cities in the emerging market countries, but do allude to a mismatch between the awareness of global climate change as a local issue and the international financing architecture for climate action; aspects which are consequently explored in more depth by examining opportunities and barriers.

3 Roles of and Opportunities for Local Governments in the International Financing Architecture

"If cities are supposed to grow in the near future, we have clear opportunities to redirect their pathways of growth in such a way as to avoid repeating the same mistakes we made with the larger cities."

~ Patricia Romero Lankao, Deputy Director, NCAR.

"Cities are already taking action, at national and global levels, regarding mitigation as well as adaptation. It is very important to cope with climate change, and cities have a very important role to play, which they are willing to play... many of them are already playing that role and I am sure it can be done. It is not that difficult to do, but requires some technology, knowledge and financing- and that is where the international community has to deliver globally."

~ Saleemul Huq, Senior Fellow, Climate Change, IIED.

"Firstly, while climate change is global, the solutions are local. So we have to think globally and act locally. Second, we should not wait any longer. The fact is that climate change is underway, and we know it. We are feeling natural consequences (cyclones, earthquakes) and other effects here in Brazil too, and we all must join together and start working right now. Symposiums are important. Conferences are important. The protocol is important. But we must begin to act."

~ Geraldo Vasconcelos, Environmental Secretary, Environmental Secretariat, Belo Horizonte, Brazil.

"We must have mechanisms, which motivate and engage cities, and empower them to really take on climate change challenges."

~ Günter Meinert, Senior Urban Specialist, Cities Alliance.

3.1 Cities are Important - and their Local Governments too

"I believe all decisions should come from local authorities, as that is where people live, work, build their dreams and experience their troubles. It is unacceptable to forget the micro when considering macro issues. Increasingly, the city should get involved under these terms. In other words, it is city-level that matters and should be increasingly discussed. Today, the system is reverse, the State can make basic regulations, but if each city does not do its part effectively, the rest becomes very difficult."

~ Mr Garcia, Environment Secretary, Porte Alegre, Brazil.

"Cities have lot of influence over how buildings are built, insulated, about how the transport system operates or the way electricity is supplied to citizens."

~ Bert Metz, Fellow, European Climate Foundation, former co-chair IPCC Working Group III.

Cities and metropolitan regions have a tremendous potential in reducing and stabilizing greenhouse gas emissions, especially in rapidly growing and urbanizing emerging market countries, where there are opportunities to re-direct their pathways of growth to more sustainable urban patterns.

Cities greatly differ among each other and are very diverse within their own territorial boundaries. They are not separate entities, but rather are nested and linked to the territories beyond their own territorial jurisdiction through flows of people, goods, information, capital and culture, and are situated within state, regional, national and international laws. Their levels of carbon emissions and the influence upon these greatly vary between cities and depend upon their level of economic development, climate situation, altitude and location in relation with energy sources, demographic structure and dynamics of a city, operation and technology used for energy generation, transportation and buildings, urban function and economic base, urban form, markets and prices, and the wider institutional and governance setting a city operates within[79].

Cities are not unilaterally organized, but made up from a diversity of stake-holders (institutions, organizations, businesses, actors, etc.) with more or less influence on the governance, management and operation of activities within cities. City authorities here, referred to as "local governments," play a pivotal role, albeit within multi-level structures of governance, where redistributions of functions and responsibilities (e.g. decentralization, privatization of urban services and infrastructures) have taken place and are likely to continue over time[80]. Local governments can and do act in varied roles implementing climate action. Examples include awareness raising and piloting, procurement and investment strategies of communal services and infrastructures, arranging voluntary agreements to support among other technological diffusion, implementing and enforcing regulations, setting targets and taking on leadership functions (table 3).

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78 United Nations Population Division, *Demographic and Social Statistics, Demographic Yearbook 2007*, Population Table 6 Total and urban population by sex: 1998-2009, viewed 1 November 2009, http://unstats.un.org/unsd/demographic/products/dyb/dyb2007.htm

79 Romero Lankao P 2009, 'Urban Areas and Carbon/Climate Governance', unpublished paper, National Center for Atmospheric Research, Boulder.

Role of Local Government *(based on Bulkeley and Kern, 2006)*[81]	Local Government Policies/ Activities *(based on Martinot et al, 2009)*[82]	Examples for Mitigation *(from interviews with city decision makers)*[83]	Examples for Adaptation *(from interviews with city decision makers)*
Self-Governing	Operation of [local government] municipal infrastructures	Maintenance: government vehicles e.g. trucks. Investments: energy efficiency in government buildings e.g. lighting.	Planning and management: adapting public buildings to avoid flood damage or ensure sufficient cooling during heat waves.
Governing through enabling	a) Voluntary actions and government serving as role model b) Information promotion, and awareness raising	Advice, grants and loans: e.g. promoting development of solar thermal energy systems and reaching out to lower socio-economic classes. Information, promotion and education: e.g. solar heating and energy systems, metering, using public transport, reduction of trips, better solid waste management.	New procedures: e.g. irrigation systems and sanitation, resiliency of buildings, strengthening water holes and reserves. Information: measurement of prevention of natural disasters, effects of drought, better urban development plan.
Governing by provision	Operation of [consumer] municipal infrastructures	Investments in municipal services (energy, public transport, waste): e.g. public transport: changing the energy matrix, provision of city bus service, more efficient and adequate public transport, waste: improved waste management and biodegradable waste for energy production, energy: renewable or efficient energy use, other: monitoring of air quality.	Service provisions: e.g. warning systems and emergency planning that take climate change and extreme weather events into consideration, increasing budget for flood response. Investments: coastal and flood protection and zone management, waste management and water treatment and capture, green area preservation, re-planting.
Governing by authority	Regulation based on legal responsibilities and jurisdiction	Building: codes, mandates, legislation for renewable energy and efficiencies e.g. insulating housing, green buildings, energy efficiency in buildings. Energy: regulations and new procedures on energy production and consumption, water and basic elements, banning fossil fuel use for stoves or felling trees in city. Plans and master plans: e.g. for street lighting, cluster planning, saving green land, transport, land-use, zoning.	Planning and land-use planning: e.g. avoiding sites vulnerable to flooding, attract developments away from threatened areas, protect and conserve areas, integrated planning , expand green areas.
[Governing by leadership] [added]	Target setting	Target setting: e.g. CO_2 reduction, amount of renewable energy for city, municipal services, homes, public transport, other example seeking to avoid increase in emissions .	e.g. Identification of mid and long term public policies.

Table 3 Framework for roles and activities of local governments in climate action, selected responses.

"In Surat we have energy efficiency cell, operational since 2001, which has been concentrating on building energy efficiency in all our major energy using activities... namely water supply, sewage treatment and of course street lighting. Recently we have also started looking at recycling of energy in a way that creates energy from waste. There are two current projects and one which is generating electricity from a sewage plant with dual benefits of not only reducing the effects of Green House Gases like methane and carbon dioxide from the sewage sludge, but also creates energy for our own requirements, thereby reducing our consumption of energy generated through fossil fuels."

~ S. Aparna, Commissioner, Surat Municipal Corp., India.

"The important decisions we have taken are in implementing rain water harvesting and creating awareness regarding solar heating systems. But the most important among all is change in the building by-laws. We are going for green building and supporting building plans, rules and regulations which help to change energy and water and all basic elements."

~ Dr. Dinesh Brahmabhatt, Commissioner, Rajkot Municipality, India.

80 Ibid citing Bulkeley, H & Betsill, MM 2003, *Cities and Climate Change: Urban Sustainability and Global Environmental Governance*, Routledge, London.

81 Bulkely, H & Kern, K 2006, 'Local government and the governing of climate change in Germany and the UK,' *Urban Studies*, vol.43, no.12, pp.2237-2259. ;Also see Sippel, M & Michaelowa, A 2009, 'Does global climate policy promote low-carbon cities? Lessons learned from the CDM', (draft). ;Also see Alber, G & Kern, K 2008, *Governing Climate Change in Cities: Modes of Urban Climate*

"I think Kochi has integrated both the mitigation and adaptation techniques. A lot of new procedures have been introduced in the energy and agriculture sectors, especially in the irrigation systems and sanitation."

~ P. G. Thomas, Secretary (Commissioner), Kochi Municipality, India.

"We created a municipal Committee on Climate Change and Economic Efficiency by decree in 2006. It has been operating quite well since 2007, and in 2008 and 2009 it worked very well. We have scheduled meetings to deal specifically with sustainable urban mobility, as the city is concerned with, and working on this matter."

~ Geraldo Vasconcelos, Environment Secretary, Belo Horizonte, Brazil.

"Technical meetings in the city are re-active and not pro-active...'What happens if we change the land use in this area?' or ' What happens if...? ' rather than 'Let's do something against climate change!' 'Let's establish public policies against climate change!' While we have just approved some regulations about environmental protection, it is not highlighted in the city agenda, as far as I understand."

~ Marco del Prete, Secretary of Sustainable Development, Queretaro, Mexico.

Local governments take on a diversity of activities and are important for the implementation of a great range of climate actions. The above table (table 3) is a collection of responses from the city decision makers to illustrate the range of climate actions. The interviews highlight that cities in developing countries are active, but debate is needed as to what constitutes a sufficient amount. Scholars have noted that developing country cities may have limited incentives in implementing climate action activities (in particular concerning mitigation), as these have historically not contributed much to the problem of climate change, their per capita emissions are below those in industrialized cities, may have limited resources, and may have more urgent policy issues to attend to.[84]

Governance in Multi-level Systems, OECD, viewed 15 October 2009, http://www.oecd.org/dataoecd/22/7/41449602.pdf .

82 Martinot et al. 2009, *Global Status Report on Local renewable Energy Policies* (Working Draft) Institute for Sustainable Energy Policies, Tokyo.

3.2 Climate Action and Awareness

"People don't yet fully understand how climate change could potentially affect them and how they, in turn, contribute to climate change. We need to clearly define impacts and inform people. Once they know the impact, and the difference they can make, people are enabled to do something about their impact."

~ Elana Keef, Directorate: Public Health, Sub-Directorate: Environmental Management, Nelson Mandela Bay Metropolitan Municipality, South Africa.

"Even before climate change issues got 'popular', we were doing mitigation measures. With the urgency, we will continue to do much more to implement measures – we are excited."

~ Frederika Rentoy, Department Head, and Andrea Po, Division Head, Environmental Protection and Waste Management Department, Quezon City, Philippines.

"There are so many public figures that have been aware of climate change problems, but they don't know how to respond."

~ Boeddy Suharto, City Manager, Surakarta, Indonesia.

Awareness of climate change

Has your City Council ever discussed Climate Change?	
Yes	70%
No	30%

What do you consider the Top 3 Issues?	
City Decision Makers	1. Local Environmental Change (rainfall, sea-level, heat, seasons)
	2. Local Socio-economic Impact (economic sectors, housing, vulnerable groups)
	3. Lack of Awareness and Knowledge (in public, in preparedness, in planning)

Table 4 Awareness and top issues associated with climate change (n=17).

Although not every city council is identical and not every senior city decision maker is necessarily on the council board, its function is to propose, debate, and vote on legislation and motions governing and/or affecting the city. The interviews highlight that climate change as a global phenomenon is relevant to the governance of the local level (table 4). City decision makers underscore that cities are concerned with the resulting environmental and socio-economic impacts of climate change at the local city level. But they also express concern over the lacking awareness and knowledge of climate change, which is important to mobilize support for actions. This also needs to be understood within the context of competing priorities, often of a basic nature.

83 Interview question: What is your city or city government doing to address climate change?

84 Sippel, M & Michaelowa, A 2009, 'Does global climate policy promote low-carbon cities? Lessons learned from the CDM', CIS Working Paper No. 4, Center for Comparative and International Studies, Zurich, citing Dhakal, S 2004, *Urban Energy Use and Greenhouse Gas Emissions in Asian Mega-cities:policies for a sustainable future*, Institute for Global Environmental Strategies (IGES),

Challenges to climate action

> *"Developing countries like Indonesia haven't seen this problem as the main agenda. Which means that the government already know that this matter has become a global issue, but still lack a response. They consider fulfilling the citizens' basic needs as a main priority."*
>
> ~ Boeddy Suharto, City Manager, Surakarta, Indonesia.

Mitigation and adaptation rhetoric does not always imply the implementation of action on the ground. The interviewees' top barriers to adaptation and mitigation action include: poor awareness (political willingness, public support), poor coordination (between institutions and partners), lack of financial incentives and resources (employees, support, funds, capacities, technology, institutional), and lack of enforcement (regulation, legislation, measurement). Integrated climate action is especially unlikely where a lack of professional expertise and technical capacity exists along with poor coordination, public support and awareness. International climate and urban experts also draw attention to insufficient analytical tools and frameworks, especially around scientific and regulatory uncertainty, integration and scale.

The top issues city decision makers associated with climate change, and were further identified by international climate and urban experts, are reflected in the multifaceted challenges connected to climate change[85]:

- Competing local priorities and concerns, and the way they are framed,
- Opportunities afforded by leadership at the individual and organizational level and the disjuncture between their ability to act in terms of government structure, decision-making, enforcement power, and resources, especially in key sectors,
- Vertical and horizontal interactions of governance mechanisms and organizations,
- Knowledge and inertia.

Realizing financial support for their direct and indirect climate actions is then just one piece of a far bigger picture, and city decision makers draw attention to the wide diversity of sources they mobilize in support of their climate actions (graph 9). This does not say anything about the scale or volume of each funding stream, nor whether the national funds are nested within international funds, or other. But it does indicate where the interviewees consider the main funding sources to come from and reminds of the importance of the local and national level.

Mobilizing and aligning support is often a complex process. City decision makers remind that important involvement, interactions and cooperation occurs between partnerships across different government levels (e.g. administrative) and other stakeholders (e.g. communities, businesses, NGOs), in

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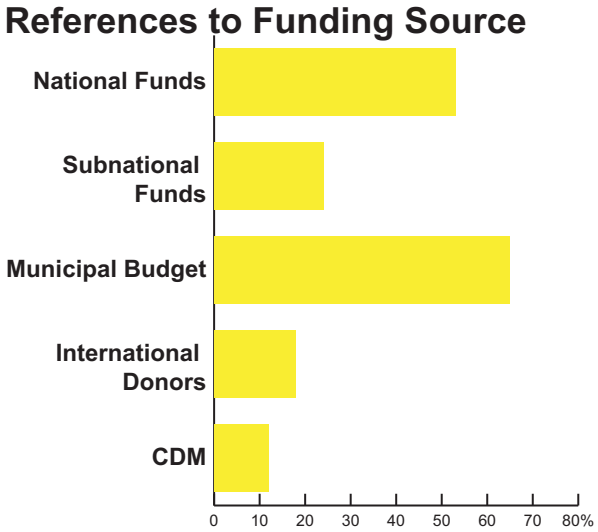
Kangawa.

85 Romero Lankao P 2009, 'Urban Areas and Carbon/Climate Governance', unpublished paper, National Center for Atmospheric Research, Boulder.



Question: You mentioned a number of actions, how did your city gain support for these?

Graph 9 Frequency of references to funding source for climate action (n=17 city decision makers).

order to adopt new methods, enable the participation of the general public, encourage the public, prepare local workshops, and develop planning processes. All are important parts connected in support of actions, especially for sector overarching questions such as climate change.

Awareness of international financing options for climate action

While international financing options for climate action could play a role in providing crucial support to cities' resources for action, the interviewees suggest a low level of awareness of these (table 5). Notably, not all international financing options for climate action are applicable to the selected countries. It does highlight that CDM is the international financing option city decision makers are most aware of. While AF (3 responses, 17%) and GEF are still in the process of emerging, city decision makers are not well aware of these. Subsequently beyond CDM, the awareness picture follows. Local governments are not sufficiently, at a competent level, informed on the international financing options. However, this picture is highly varied[86].

The picture varies according to context and experience of cities and city decision makers. Nonetheless, these results indicate that there is an information and communication shortage. Awareness would probably be higher, if city councils were discussing such financing options for their urban development, or while aligning coalitions. The exchange of such information could raise awareness and fuel debate.

Table 5 Awareness of international financing options for climate action (n=17 city decision makers).

Has your City Council ever discussed Kyoto or Post-2012 financing?	
Yes	12%
No	77%

Are you aware of any Multi-lateral or Bi-lateral or Development Assistance?	
Yes	29%
No	71%

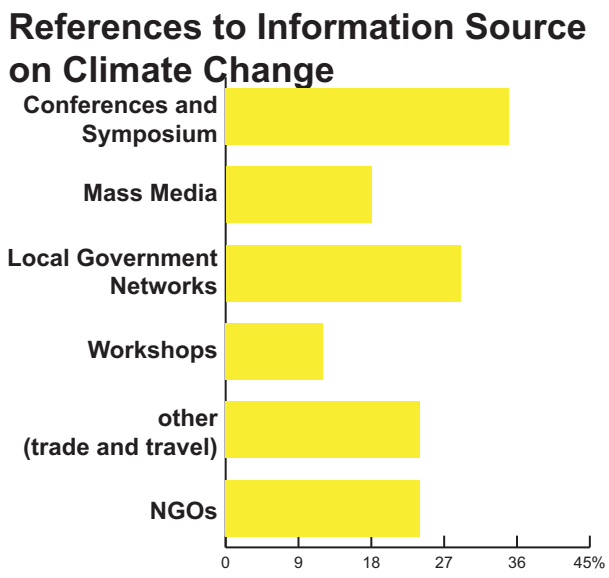
Which of the following have you heard of? (top 3)	
CDM	94%
ETS	47%
GEF	47%

"We have the potential to mitigate, and we need to adapt, because of the populations we support. Funding needs to be a lot more accessible and promoted to raise awareness around these. Not all cities are aware of funding opportunities, and have access to it."

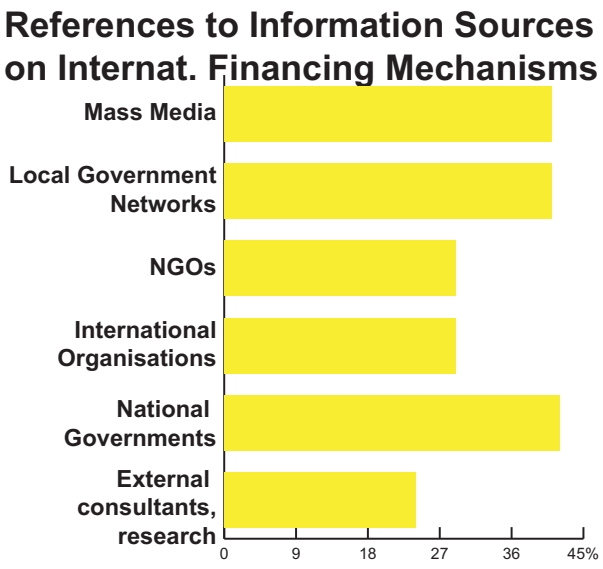
~ Elana Keef, Directorate: Public Health, Sub-Directorate: Environmental Management, Nelson Mandela Bay Metropolitan Municipality, South Africa.

City decision makers and local governments draw upon a great diversity of information sources. Conferences, symposia and workshops are most often referred to by city decision makers, and emerge as an important source from which to learn and exchange information on climate change. It is likely that the organizers of such events are a combination of governmental, inter-governmental and non-governmental organizations among others (graph 10). Local Government Networks are important functionaries in exchanging information.

Information exchange and opportunities for learning are now more important than ever as cities rapidly grow and invest in a great range of infrastructures and activities within the next 5 to 10 years. Discussion on climate change should be encouraged.



Question: How have you or your city government informed yourself [on Climate Change]?



Question: How have you heard about these [financing mechanisms]?

Graph 10 References to sources of information on climate change and international financing options (n=17 city decision makers).

3.3 Opportunities and Challenges to International Financing Options

Opportunities to direct pathways of growth

With mitigation and adaptation likely to increase financing requirements, international financing options offer opportunities to be integrated with local climate action for additional support. Interviewees for example highlighted likely upcoming urban interventions and infrastructures such as development of ports, upgrading of informal settlements, residential and commercial buildings, water and energy supply and management, waste and sanitation management, road and public transport, re-forestation, education and health facilities, and mix of energy usage and lighting.

These offer direct or indirect opportunities to mitigate and adapt to climate change. For example the provision of public transport to manage increasing traffic congestion can also indirectly, without a clearly stated objective or intent, reduce greenhouse gas emissions. They also allow to improve urban sustainable development. So being able to draw upon international financing options for climate action offer opportunities to direct these investments towards lower carbon developments and/or account for climate change resilience.

> *"Funds are far from fully accessible, I have noticed. We have many pilot projects, but not yet in terms of mass. They could be better publicized and more accessible."*
>
> ~ Mr. Garcia, Environment Secretary, Ministry of Environment, Porto Alegre, Brazil.

> *"Funds at international level are difficult to access, because normally NGOs or other governments hardly give loans to local governments. They should change the rules of the international game, give more credit to local authorities."*
>
> ~ Marco del Prete, Secretary of Sustainable Development, Queretaro, Mexico.

Only 18% (3) of the interviewed city decision makers considered access to the international financing options easy. The challenges to accessing such international financing options are therefore important concerns. The interviews, however, also alluded to uncertainties as to how climate change adaptation objectives will influence financing and what financing is available to local governments.

Challenges: example CDM and AF

"If you look at the period it takes for you to get funding, and if you look at our budgeting cycle, which is a year, it is difficult to get around that, given the current financial legislation that we have. A few cities have tried it, but the feedback that we have got from them is not positive; it is sending a lot of shock waves to cities like ourselves."

~ Tumelo Shakwane, (former) Acting Head, Environmental Management, Mangaung, South Africa.

"I have found that it is a fairly long process and a lot of documentation is required, which is of course good, but it takes a lot of time, and I only hope that it becomes a little easier to do in the coming years."

~ S. Aparna, Commissioner, Surat Municipal Corp., India.

"We urgently need new financing mechanisms. Public funds are insufficient, and moreover, we need a much wider vision. Existing mechanisms are still very slow and extremely complex, and that makes it unviable."

~ Blanca Alcala, Municipal President, Puebla, Mexico.

Challenges for existing climate action were already addressed above. But there is a second layer when considering the international financing options as a potential funding source. On the one hand there are external factors: for example city decision makers maintain that direct involvement and approval at the central government level is often required. Procedures are lengthy and difficult for local governments to follow. There are high transaction costs and long time frames involved, which can exceed political or budgeting cycles. On the other hand there are internal factors: for example how environmental issues related to climate change need to be internalized to obtain such funding (e.g. Environmental Impact Assessments identify likely significant environmental effects, but do not necessarily internalize environment measure), which requires overcoming internal inertia by showing interest, motivating and convincing key actors, and involving experts.

There is potential to learn on both ends. At city level: how to engage these options, and on the design end: how to make the options more accessible. For example climate and urban experts remind that CDMs are established and relatively easy to monitor, projects in cities of emerging market countries are eligible in principle, provide a market within a carbon economy, offer a way to support infrastructure investments, and are being developed to offer the possibility for pooling and bridging. CDMs offer potential as an additional funding source for investments, allow participation in international carbon markets and facilitate an urban economy drawing upon international market mechanisms. Yet their experiences need to be examined more carefully, in order to draw attention to their challenges and facilitate further discussions

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86 Question: City decision makers, international urban and climate experts and international business representatives: Do you think (your) local government(s) in emerging market countries are competently informed on the financing options? (1 not informed - 10 expert level informed).

87 Sustainable Energy Technology at Work, http://www.setawork.eu..

on what can be learnt from existing barriers to access CDMs. Potential areas of learning which emerged from the interviews include:

- Technical (capacity and knowledge in terms of awareness, research and expertise required),
- institutional (policy understanding and capacity, and regulation nested within national governments),
- financial (access, upfront investment, high transaction costs and resource commitments)
- cultural or political barriers (competing priorities, budgetary and political timeframes, and public support; see above)

International business representatives underscore that the design of this mechanism remains too strict. It would be better suited within more enabling frameworks and should be in addition to those mechanisms at the local level that city decision makers mentioned above. It is worth looking at CDMs in more detail to further explore the opportunities for cities. CDMs, AF and ODA are examined further as examples of the international financing options for climate action.

Example: CDM for Mitigation in Cities?

"I don't think CDM will remain in the shape it is now... I think it will be replaced by something more programmatic and sector wide."

~ Bert Metz, Fellow, European Climate Foundation, Former Co-Chair IPCC Working Group III.

"Clean development mechanisms are a little better. If they were actually made available to urban places rather than just nations, I think they could be a very effective tool to help create market places within larger urban conurbations. This might allow them to manage emissions and increase funds available for mitigation, as well as adaptation"

~ Gary Lawrence, Urban Strategy Leader, Arup.

"With the rise of market mechanisms that will provide increased stability and predictability to the regulatory environment, some mitigation activities can serve as a revenue-generating profit-center for developers, potentially creating a kind of virtuous 'green engine' that can be reinvested in longer-term adaptation activities."

~ Nancy Tuor, Group President, Sustainability, CH2M Hill.

CDM project cycle

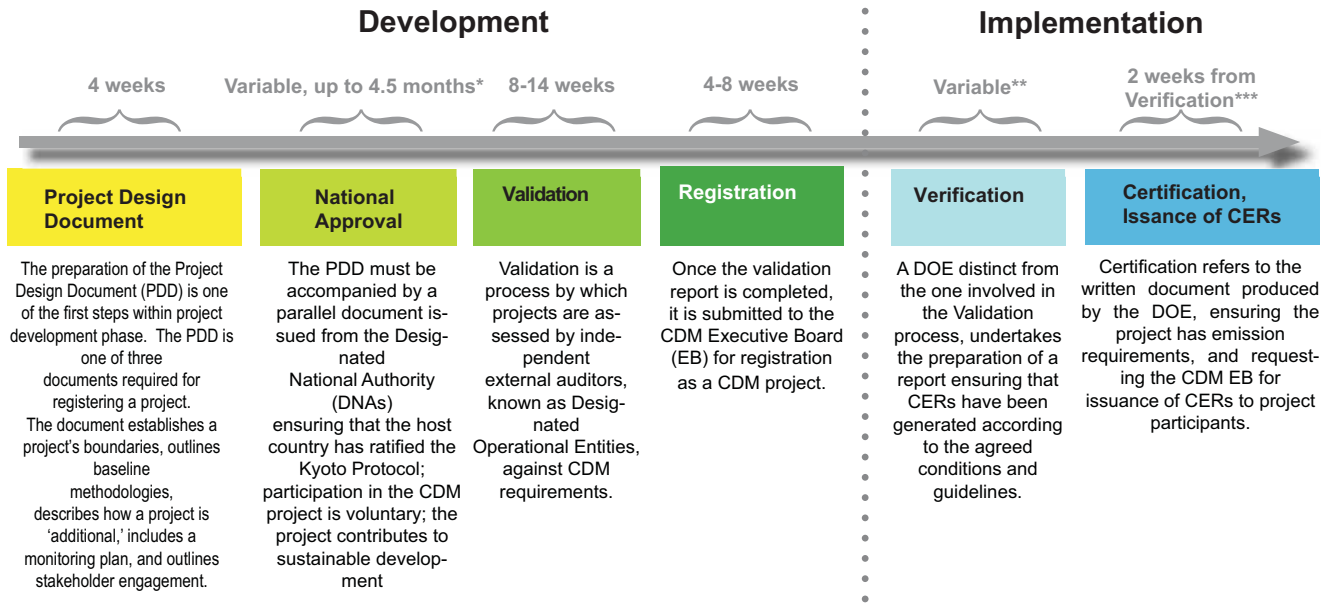
The process of initiating a CDM project entails several distinct stages and actors, including project participants, local stakeholders, investors, who work with Designated National Authorities (DNAs) to formulate a Project

88 Sustainable Development Network

89 See UNFCCC, *Methodologies for CDM Project Activities,* http://cdm.unfccc.int/methodologies/PAmethodologies/index.html

90 Ecosystem Marketplace, *Carbon Finance 2009*, viewed 18 October 2009, http://ecosystemmarketplace.com/documents/cms_documents/Press%20Release_State%20of%20Vol%20Carbon%20Mkts%202009.pdf . Primary CERs are purchases up-front before the project has actually delivered carbon savings. They carry a certain risk of non-delivery of the initially estimated CERs. Secondary

Design Document (PDD). They engage with separate external auditors at various stages of project design and verification, who in turn communicate with the CDM Executive Board throughout the stages of registration and certification/issuance of CERs. CDM can be divided into the two stages, of



* The process of National Approval can be delayed by up to a year in some cases
**Verification various according to a range of factors, such as technical expertise of CDM consultants, equipment
Source: Sustainable Energy Technology at Work, http://www.setatwork.eu/cdm_projects.html; UNEP, 2007, Guidebook to Financing CDM Projects, UNEP Risoe Center.

Graph 11 CDM project cycle.

Project Development and Project Implementation (graph 11)[87].

Frequent barriers preventing and causing short and long-term delays registration and/or validation are varied. Short delays are due to[88]:

- Lack of consistency in PDD,
- deviations from selected calculations and methodology,
- insufficient demonstration of compliance with local legal requirements,
- insufficient information on stakeholder consultation processes.

Longer delays due to:

- Lack of EIA or required permits/approvals,
- insufficient or delayed Letter of Approval (LoA) through DNA. Due to the central role of DNAs, delays and processing times greatly vary depending upon the capacities of each national government, as well as the project applicant.

CERs are not purchases from the project directly, but rather from a company that has purchased a large number of primary CERs. The CERs have actually been delivered, so the investment is risk free and they usually come at a higher price.

91 Several of the CDM examples were mentioned by the interviewees, as selection criteria for this table.

92 Grütter Consulting 2006, *BRT Bogotá, Columbia: TransMilenio Phase II-IV,* TransMilenio, Bogotá. http://cdm.unfccc.int/UserManagement/FileStorage/E6LUMUUAQA83IUZAPO9XWBMS6BTSAB

93 Corporación Andina de Fomento (CAF) acting as intermediary for the benefit of the State of the Netherlands for the purchase of Emission Reductions represented by its Ministry of Housing, Spatial Planning and the Environment

94 UNFCCC, *Project 1853 : Montalban Landfill Methane Recovery and Power Generation Project*, viewed 12 November 2009, http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/323/

Underlying such delays are also the challenges with the technical properties of urban projects in meeting CDM requirements. There is a lack of applied methodologies for baseline and monitoring[89] of urban CDMs. This leaves project participants to either use an existing methodology for baseline and monitoring or develop an appropriate one for their project. Developing a new methodology is however very time-consuming and cost-intensive. The mismatch presents challenges to potential urban project participants. This is best illustrated with urban transport projects or transport systems. CDM projects do not allow to measure such "systems", such projects require a high input, but only yield a low return, the quantification is difficult and additionality (prerequisite for any CDM project) is hard to prove, and current CDM regulations do not indicate to allow for a dynamic baseline.

Current involvement of cities and roles of local governments in CDM

> *"I think that national governments have to play more important roles in helping their local governments to know more about the financial mechanisms available, and to give them information. They also should be encouraged as project participants. But first and foremost, national governments need to inform and communicate with the local governments about funding sources."*
>
> ~ Paul Chamniern, Director, Grassroots Action Program, TEI.

While urban areas offer potential in principle, the role of local governments or municipalities is less straight forward. In this context, increasing attention is being attributed to CDMs for urban areas, albeit gradually. The interviewed city decision makers already referred to the diverse roles cities can play, but of which only a few referred to experiences with CDM in their city. International climate and urban experts consider this international financing option as especially relevant for the urban sectors: electricity and energy production, solid waste, buildings, and possibly transport. It has already been noted that the value of global carbon markets has increased four-fold between 2006 and 2008[90]. Taking current types and sub-types of CDM projects in consideration, local governments already operate or can influence many of the sectors where CDM do or can find application for example from energy production (e.g. waste to energy, geothermal, solar), over conversion (e.g. energy distribution), to consumption (e.g. energy efficiency in households and industry).

Depending upon local and national laws and regulations, local governments can play a role in the approval of a project or development to ensure its compliance with regulations, irrespective whether the development is linked to global carbon markets. Local governments and local communities can also be involved in active consultations as important stakeholders of a particular development. But local governments also take on more active roles, such as directly regulating, planning, managing and controlling a CDM project, even

without being a direct CDM project participant. This does not exclude the local government also being a direct CDM project participant and fulfilling its regulatory, operational and managerial duties. Yet it may also do so together with the private sector in form of public private partnerships (table 6).

Taking their and the local context into account, local governments can take on varied roles in CDM activities including as regulatory framework provider (active and passive), project facilitator and information provider, and as project participant (with/out partnership). Local governments can be key stakeholders to encourage and support urban CDM activities. Within this field more research with the direct experiences is important.

Urban CDM Examples[91]	Involvement in Project Activity (Role)	Role of Local Government	Description of Involvement
TransMilenio, rapid bus system, Municipality of Bogota, Columbia[92] Project participant: TransMilenio S.A. and the Netherlands[93]	Local Regulations and Manager (Regulator, Manager)	Governing by authority (and leadership) as Facilitator and Framework provider	Regulates, plans, manages and controls the BRT system.
Methane recovery and power generation from sewage treatment plant, Surat Municipal Corporation, India Project participant: Surat Municipal Corporation	Project Owner/ Proponent (Project Participant)	Governing by provision as Project Participant	Operator of municipal services.
Montalban Landfill Methane Recovery and Power Generation Project, Municipality of Rodriguez (Metro Manila), Philippines[94] Project participant: Montalban Methane Project Corporation (MMPC), Carbon Capital Markets Ltd.	Consultation (Representation of municipality)	Governing through enabling as Facilitator and Information provider	Representatives of the Municipality and members of the local community participated in the stakeholder consultation.
Quezon City Controlled Disposal Facility Biogas Emission Reduction Project, Quezon City, Philippines[95] Project participant: Quezon City, Pangea Green Energy Philippines, Incorporated	Project Participant (public private partnership)	Governing by provision as Project Participant	Owner and operator of the disposal facility. Local Government Unit responsible of management of disposal facility according to the Philippine laws, rules and regulations, ensure Pangea's uninterrupted implementation of the Project.[96]
Small Thermoelectric Plant at ETE Arrudas Project, Municipality of Sabará, Brazil Project participant: Companhia de Saneamento de Minas Gerais (COPASA MG)	Local regulations (Regulator, local project approver)	Governing by authority as Framework Provider	As stakeholder received letters communicating the CDM project activity. Statement from Sabará Municipality with regards to compliance with local regulations.[97]
Surat Methane recovery and power generation from sewage treatment plant by Surat Municipal Corporation, Gujarat, India[98] Project participant: Surat Municipal Corporation (public entity)	Project Participant	Governing by provision as Project Participant	Operator of municipal services.
Installation of Low Green House Gases (GHG) emitting rolling stock cars in metro system (DMRC), Delhi, India	Local regulations (Delhi Metro Rail Corporation, Japan Carbon Finance, Ltd. (private entities))	Governing by authority as Framework Provider	Policy-making, co-ordination, implementation, monitoring and regulatory functions of all the transport related aspects of National Capital Territory of Delhi.[99]

Table 6 Examples of roles taken by local governments in urban CDM projects.

Opportunities of local governments in CDM

"We have already obtained a host country approval for our sewage/gas-based energy production and we are now in the process of getting the project registered for carbon credits. The state government has also created a pooled facility for ensuring more effective access for carbon credits. We also hope to become a partner in that process."

~ S. Aparna, Commissioner, Surat Municipal Corporation, India.

	Brazil	Egypt	India	Indonesia	Mexico	Phillipines	S. Africa	Total	Total Urban CDM Projects
Methane avoidance, recovery, and utilization in Waste and Waste-to-Energy	26	1	9	4	11	1	4	**56**	**133**
Energy efficiency in Buildings			4				1	**5**	**8**
Transport			1					**1**	**2**
Total	26	1	13	4	11	1	5	**62 (43%)**	**143**

Source: IGES, Institute for Global Environmental Strategies, Sept 2009

Table 7 Distribution of selected urban CDM projects in selected countries.

Montalban%20PDD.pdf

95 UNFCCC, *Project 1258 : Quezon City Controlled Disposal Facility Biogas Emission Reduction Project*, viewed 12 November 2009, http://cdm.unfccc.int/Projects/DB/DNV-CUK1185342160.98/view

96 UNFCCC 2006, *Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03*, Quezon City Controlled Disposal Facility Biogas Emission Reduction Project (QCCDFBERP), viewed 14 November 2009, http://cdm.unfccc.int/UserManagement/FileStorage/U0OCJLIQ3T5HEOQ390W9KMK8J73M0I

"In terms of carbon financing and carbon credits, many of our proposed renewable energy projects will make use of the system. Our BRT system is one of the projects where it was planned to utilize carbon financing for the procurement of some of the buses. In some of the proposed projects carbon financing can provide a different source of funding; current projects largely rely on municipal budgets though."

~ Elana Keef, Directorate: Public Health, Sub- Directorate: Environmental Management, Nelson Mandela Bay Metropolitan Municipality, South Africa.

Local governments as *Project Participants* can obviously use the generated funds when they invest in themselves and their municipal services, and drive investments from these financing options over the long term. This is particularly relevant for existing or expanding municipal services such as waste, sewage, landfill management, local energy production, but also transport and government and non-government buildings. However, this may redirect city policies and financial attention away from other priorities creating another layer of local bureaucracy. National and local legislation would also need to right. Moreover, high transaction costs and high upfront investments are required, which may be prohibitive for some local governments. In this respect public-private partnerships could be drawn upon or other forms of international financing.

Local governments as *Facilitators and Information Providers* could involve numerous functions. Local governments can act, as the examples illustrate, as consultation stakeholders, but also provide crucial information and data on the city. International business representatives in the interviews underlined how important local governments are in providing data and aligning coalitions and how they can act as implementation drivers. Local governments could so also actively encourage CDM activities in their city, bring relevant stakeholders, information and experiences together, and align and mobilize support. In public-private partnerships they may also develop good communication strategies and communicate the urgency for mitigation action through for example viable CDM activities.

Local governments in many cases are already, indirectly or directly, acting as Framework Providers through local legislation and regulations. This can be considered as the most important and basic function of local governments, where they communicate and implement clear targets and develop development strategies. CDM activities should also be included in some form and manner. Local governments would need to find and move issues into regulatory frameworks that make it easier for CDMs to be a part of the urban economy. This may mean that local governments will, under circumstances, need to ensure that national governments negotiate the terms for a supportive framework where this is not provided.

By taking on such roles and driving positive change, local governments

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97 UNFCCC 2006, *Clean Development Mechanism Project Design Document Form (CDM-PDD) Version 03*, COPASA MG Small Thermoelectric Plant at ETE Arrudas Project, viewed 14 November 2009, http://www.munduscarbo.com/arquivos/PDD_COPASA.pdf

98 UNFCCC Project Design Document Form (CDM-SSC-PDD) – Version 03, 22, in effect as of 22 December 2006, http://cdm.unfccc.int/UserManagement/FileStorage/EBVWOX8L251ZI6QTAHSKCJF049P7NR

can actively support the resolution of remaining barriers, but also direct investments that can be part of a strategic urban development plan. Yet the relatively low number of registered urban CDM projects reminds of the barriers listed above.

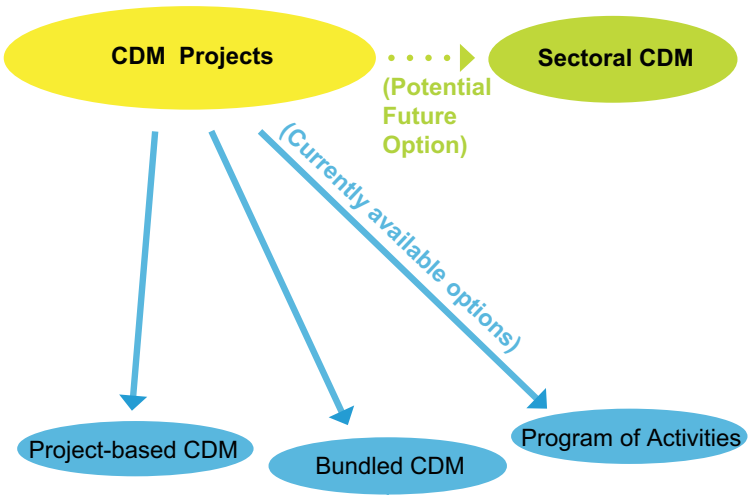
Variants of CDM

There are also other forms of CDM, which seek to go beyond the conventional CDM project, such as Bundled CDM and Program of Activities (PoA) or Programmatic CDM. These offer distinct advantages over conventional Project-based CDMs. The Sectoral CDM approach is being discussed by Parties as a further potential opportunity (see graph 12). In contrast to the single Project-based CDM[100], the Bundled CDM is an arrangement of a number of projects using the same methodology[101] and registered as a single CDM project activity. This simplifies the whole process of verification and certification, as only a single validation and certification report is required. This allows for a faster and more cost-effective procedure[102].

Programme of Activities (PoA) allows a number of potential CDM projects to be bundled, using the same methodology, and placed under a common programmatic framework. Thereby transaction costs are spread over a number of projects. 'Once the PoA is approved by the Executive Board (EB), an unlimited number of individual projects (CPAs) can be added over time without the extra approval by EB'[103].

The particular attributes of programmatic CDM lend themselves to their application for the urban context. A PoA has flexible project boundaries and can contain an unlimited number of smaller subprojects, thus targeting the extremely large number of small yet inefficient and high emitting practices found for example in transport, office buildings and households.

One challenge encountered in PoA is the identification and involvement of a suitable coordinating entity, which is knowledgeable about the project to be implemented, willing to make a commitment for the entire period (up to 28 years) and has the ability to arrange financial support and invest in CDM know-how. So while Programmatic CDM has the potential to reduce GHGs on a wide scale in urban developments, simple practical rules for the users are needed in order to improve the system and achieve that potential.



Source: Roberts et al. 2009, 'Bridging the gap between supply-side and the demand side CDM projects in Asian cities, Proceedings of the Firth Urban Research Symposium, World Bank, Marseilles, 28-30 June 2009.

Graph 12 Variants of CDM.

99 Government of NCT of Delhi, Transport Department, Introduction, http://www.delhi.gov.in/wps/wcm/connect/doit_transport/Transport/Home/General+Information/, viewed November 2009.

100 UNFCCC, *About CDM*, viewed 3 November 2009, http://cdm.unfccc.int/about/index.html

Benefits over project-based CDMs include:

- The distribution of transaction costs across a group of activities,
- flexible project boundaries, allowing to add further projects at any time,
- targets small, yet inefficient and high emitting activities (e.g. transport, office buildings, households).

Remaining barriers include:

- Complexity of programmatic CDM rules and a subsequent long process,
- it is difficult to find a suitable managing or coordinating entity (CME),
- close cooperation between all partners is required and with that the potential for partners to pull out,
- it is difficult to find the up-front funding for the individual project activities (CPA),
- there is potentially a high liability incurred by the DOE, although there is no obligation to verify every single CPA, the DOE has the duty to guarantee the correctness of the inclusion of each CPA under a PoA. These are currently being revised/clarified by the EB.

As of September 2009, only one project has been registered under PoA (public lighting project in Mexico) but several are under validation. The potential for urban projects are high and seven out of the nine projects currently in validation are urban projects (Solar Water Heating (Bangladesh, South Africa, Tunisia), Municipal Waste (Uganda), Public Lighting (Senegal) and Energy Saving (Mexico, South Korea))[104] . The fact that only one project has been approved in two years after including PoA in the guidelines, indicates the complexity of the procedure.

The World Bank is currently looking into the potential of developing a city-specific PoA approach[105]. This kind of programmatic CDM would include a range of methodologies suitable for the different sectors (e.g. transport, waste, energy). Unlike current PoAs where the overall PoAs would be identical across cities, the individual projects would vary from one another. This might represent a promising opportunity for cities to gain access to funding.

Similarly the program by the World Bank Institute on carbon finance for urban areas sets out a number of modules to support cities[106] including: Integrating climate actions into cities' development agenda, working with partners and tapping external resources, and choosing climate actions suitable to local needs. It seeks to match and share knowledge on available and suitable actions for cities with available partners, financing and mechanisms available through carbon markets and carbon finance to enhance local

capacities. Such initiatives offer potential for future urban projects and their experiences could be drawn upon.

Example: AF for Adaptation in Cities?

"In cities within both developed and developing countries, within 50 years there is a whole process of rebuilding that takes place. What we need to do is to make sure that we don't burden developing countries with an agenda to rebuild only 10, 15 or 20 years after investments have been made. If investment is done is such a way that it has to be followed up with reinvestment within a period of a few decades, in order to adapt to climate issues, this is an incredible burden for cities. In one way or another simple urbanization is a challenge and burden to these countries...but to have to re-urbanize within a short time frame in order to adapt to climate change would be a tremendous burden on developing countries."

~ Jeb Brugmann, Urban Strategist, The Next Practice.

"There will have to be multiple sources of funding. There must be new and additional resources of funding; we must utilize public and private partnerships; and explore all other options. On the adaptation side we will, of necessity, need higher levels of direct investment through public sources. With regard to mitigation we have to address the additional investment costs associated with making the transition to low carbon societies."

~ John Scanlon, Principal Advisor to the Executive Director, Policy and Programs, UNEP.

"Financial support from MCII mechanisms could be used for cities but not specifically by cities. In our proposal we see the countries as stake holders and the country has to organize the prevention. They also have to organize and delegate prevention activities to specific regions and cities. They should get the money out of the insurance pool, distribute it, and the cities would benefit from that."

~ Peter Hoeppe, Head of Geo Risks Research, Corporate Climate Center, Munich Re.

"The conditions of major poverty in which low income communities live are extremely sad. So it's the illnesses, and without doubt the devastation in many areas and the high costs associated with this which represent areas in which we can provide solutions (the possibility to solve this). In my country there is a popular verse which says that it is better to prevent than to be sorry, and I think that is exactly what could happen if we don't

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101 Methodology refers to baseline calculation and monitoring.

102 CDM Rulebook, *What is Bundling?* viewed 3 November 2009, http://cdmrulebook.org/158

103 UNFCCC, *Programme of Activities*, viewed 3 November 2009, http://cdm.unfccc.int/ProgrammeOfActivities/index.html

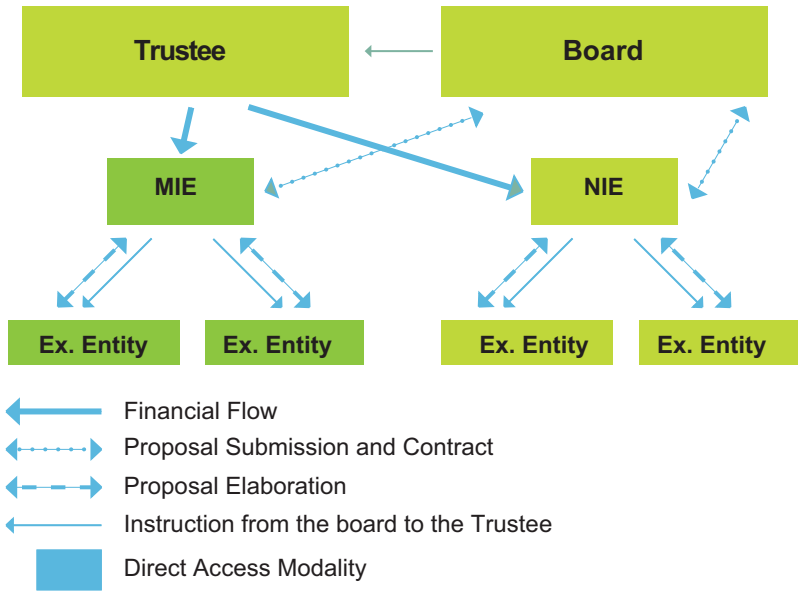
104 Mitsubishi UFJ Securities 2009, 'Beyond Carbon Trading: Policy instruments and corporate strategies for low carbon development in cities', presented at the Carbon Expo, Barcelona, 27-29 May 2009.

implement mechanisms of inversion, to be seen as inversion and not only as expenses."

~ Blanca Alcala, Municipal President, Puebla, Mexico.

Access modalities and project cycle

The Adaptation Fund's (AF) unique feature is the direct access it provides to developing countries. This sets it apart from other international financing mechanisms. The AF supports projects and programs at the community, national, and trans-boundary level, so it remains open to specific needs that one or a group of developing countries require. Vulnerable developing countries can nominate domestic institutions for accreditation as National Implementing Entities (NIEs) or do so via multilateral development agencies and banks (MIE, Multilateral Implementing Entity). These are the key counterparts to the Fund for the implementation of project and program proposals on behalf of a developing country. Project criteria include accounting for relevant national strategies (poverty reduction strategies, national communications programs, and national adaptation programs of actions), political and scientific guidance, and measures for those people most in need. The Board assesses proposals for consistency regarding strategic priorities, economic, social, and environmental benefits, cost-effectiveness, and arrangements for monitoring and evaluation and impact assessment.



Source: Adaptation Fund Board, 2009, Accessing Resources from the Adaptation Fund: The Handbook

Graph 13 The Adaptation Fund's access modalities.

Eligible developing country parties submit proposals to the Secretariat through NIEs or MIEs, which have obtained an endorsement from the government. The Adaptation Fund Secretariat screens proposals and forwards technical reviews to the Project and Programme Review Committee (PPRC). The PPRC then reviews proposals and prepares recommendations for the Board, which decides on the proposals. In case of project approval, the Secretariat processes contracts with the Implementing Entity and the Trustee transfers resources for implementation[107].

It has been noted that the identification of the most "vulnerable" communities is left to the countries. Yet, defining who the "vulnerable" are, is a complex scientific and political question. There is also fear that the AF would primarily fund single projects, rather than moving to programmatic approaches (although the latter ones are part of the AF´s mandate). There is

105 The World Bank 2009, 'Urban Areas and PoA', *presented at PoAs in Cities Context Conference*, Bangkok, 25 September 2009.

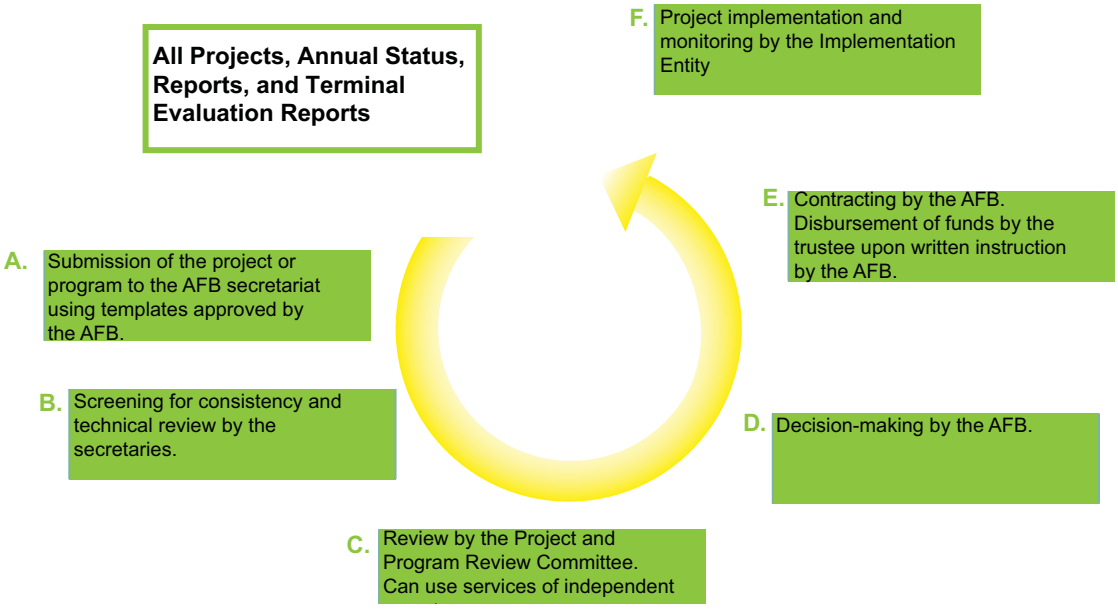
106 World Bank Institute 2008, Development, Design and Implementation of a e-Learning Course on Cities and Climate Change, Terms of Reference (Draft), https://econsult.worldbank.org/suite/public/collaboration/GetDocument.none?doid=219726, viewed December 2009.

107 Adaptation Fund Board 2009, *Accessing Resources from the Adaptation Fund: The Handbook, Adaptation Fund,* Washington D.C., viewed 21 November 2009, http://afboard.org/docs-pubs.html

concern that the resources available are simply insufficient to fund broader programs in developing countries. It has been estimated that developing countries will need 50 billion USD annually and likely substantially more. But as this fund is not yet operational, the Adaptation Fund Trust Fund has been established. As of 30 November 2009 it held USDeq 28.25 US million with 33.71 million from CER sales proceeds since the start of the CER monetization program in May 2009[108]. The AF does not set out to integrate and mainstream adaptation action into sectoral policies and strategies to achieve such aims.

Correspondingly, comprehensive and integrative strategies on adaptation require funding for capacity building and the right institutional setting. This in turn requires certainty in the funding mechanism. AF shares from CDMs would likely need substantial substitution from additional funding, but like this AF could provide more direct access than comparable funds[109].

Graph 14 The Adaptation Fund's project cycle.



Roles and opportunities for local governments

There are very few references to experiences, awareness and availability of international financing options for adaptation. This will inevitably coincide with not all funds being operational, ongoing related international negotiations, and the relatively newness of this agenda. It has been suggested that current funding streams for adaptation are insufficient to meet global adaptation needs[110].

At present, the ability of local governments to leverage funding is largely affected by their interaction with national governments vis-à-vis international funds. But other model ideas exist such as municipal development fund types, which operate as intermediation agents for a group of municipalities through which small and medium sized local authorities might

108 The World Bank 2009, *Financial Status of the Adaptation Fund Trust Fund (as of 30 September 2009)*, Adaptation Fund Board, Bonn, viewed 30 November 2009 http://02a416f.netsolhost.com/images/Doc.AFB.B.8.9_Financial_Status_of_the_AFTF_and_Administrative_TF.pdf

109 Harmeling, S 2009, *The Adaptation Fund in the debate on the post-2012 financial architecture,* Germanwatch, Bonn, viewed 13 November 2009, http://www.germanwatch.org/klima/afpost2012.pdf

110 UNFCCC 2008, Investment and financial flows to address climate change an update, United Nations Office, Geneva, viewed 29 September 2009, http://unfccc.int/resource/docs/2008/tp/07.pdf

access financing on capital markets[112]. Local development corporations within larger cities may also raise financing for infrastructure projects via bank loans, public private partnerships, Build, Operate, Transfer (BOT) or property development approaches[113]. The agenda for adaptation funding at the international level for cities is less advanced for cities compared to mitigation illustrated earlier via CDM. These may provide models to develop appropriate mechanisms in place.

Table 8 Examples of roles potentially taken by local governments in adaptation funding.

Role of Local Government	Local Government Policies/ Activities	Examples for Adaptation (from interviews with city decision makers)	Potential Funding Areas for Adaptation funds
Self-Governing	Operation of [local government] municipal infrastructures	Planning and management: public buildings adapted to avoid flooding or cooling during heat waves.	Assessing and enhancing resiliency of administrative buildings and ser vice functions.
Governing through enabling	a) Voluntary actions and government serving as role model b) Information promotion, and awareness raising	Identifying action to better plan urban development, measurement of prevention of natural disasters, effects of drought, strengthening water holes, reserves. Information campaigns, education, community empowerment, new procedures for irrigation systems and sanitation, research on resiliency of buildings.	Information and education campaigns. Research on future impacts and climate proofing. Planning for climate impacts. Facilitating risk insurances and reliance strengthening micro-finance.
Governing by provision	Operation of [consumer] municipal infrastructures	Investments: coastal and flood protection, water treatment and capture/ prevention of water crisis, green area preservation, re-forestation Service provisions: warning systems and emergency.	Provision of measuring and warning systems. Infrastructure provisions for protection, preservation and emergency relief.
Governing by authority	Regulation based on legal responsibilities and jurisdiction	Urban planning: avoid sites vulnerable to flooding, land-use planning (e.g. plans to attract developments away from threatened areas, installment of systems of protected and conservation areas, shifting economic and development activities away from the coastal areas), integrated planning, building and design codes, expanded green areas, planning that take climate change and extreme weather events into consideration.	Relocating vulnerable activities. Land-use zoning for climate impact considerations. Planning and building codes.
[Governing by leadership] [added]	Target setting	Identification of mid and long term public policies, increasing budget for flood responses and heating.	Developing strategies to adapt to climate change and build resiliency of communities. Building institutional and legal framework to support adaptation actions.

Other challenges to international funds for mitigation and adaptation

"...We should remember that cities rarely receive funding directly from international donors or agencies. It is the national government which initiates funding and distributes it down."

~ Anonymous, Urban Development and Finance Expert.

"At the end of the day what matters is how we, the international community, are going to be able to recognize that direct access of cities to funds is now necessary. Direct access of cities to these funds, and not necessarily through their central authority, can be provided".

~ Fouad Bendimerad, Chairman, EMI.

"We urgently need new financing mechanisms. Public funds are insufficient, and moreover, we need a much wider vision. Existing mechanisms are still very slow and extremely complex, and that makes it unviable."

~ Blanca Alcala, Municipal President, Puebla, Mexico.

111 The "f" in lower case is to indicate that it does not refer to the "Adaptation Fund", but rather more general.

112 Paulais T & Pigey J 2009, 'Adaptation and Mitigation: What financing is available for local government investments in developing countries?' *Proceedings of the Fifth Urban Research Symposium*, World Bank, Marseilles, 28-30 June 2009.

"I would say that unique funding mechanisms can be more programmatic, not just project based. Pragmatically, one may view the city in terms of addressing something as simple as light bulbs, a transport network or building standards. I think to be effective you need mechanisms that are less on a project-by-project basis, treat the city more holistically, and look at how you can transform that city to a lower carbon energy use."

~ John Scanlon, Principal Advisor to the Executive Director, Policy and Programs, UNEP.

"Adaptation or mitigation activities, concerning solid waste, water, transportation, urban greening, building codes etc. are under the responsibility and mandate of local government, and central governments need to strengthen that."

~ Paul Chamniern, Director, Grassroots Action Program, TEI.

Current levels of funding fall far short of levels required for global investment, especially with regards to adaptation[114]. The architecture of available funds privileges the national level, which requires cities to rely on clear operational systems at national level. The criteria outlined by these dedicated climate change funds and financing options clearly specify the priority placed on national governments, dedicated UN bodies, or other implementing organizations as eligible recipients or intermediaries. Where local governments receive funding directly from international donors or agencies, they are in most cases initiated by national governments and can build upon or be constrained by certain agreements and legislations. The structure of the Clean Technology Fund, for example, while dedicated to mitigation, only approves finance investments for local governments with approval from their central governments, and within the context of national programs involving a number of sites[115].

Both national and local governments should be involved. It requires that national and local ministries and departments communicate, coordinate and integrate climate change, urban development and sustainable development both vertically and horizontally into their agenda and draw upon a range of international transfers and streams of finance and exchange. Experts, civil society, associations and municipal partnerships have an important role to play to raise awareness, exchange experiences, and build capacity.

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113 Ibid.

114 UNFCCC 2008, *Investment and financial flows to address climate change an update*, United Nations Office, Geneva, viewed 29 September 2009, http://unfccc.int/resource/docs/2008/tp/07.pdf

"Cities have been neglected in national agendas, in the development world, and in development cooperation. Cities have not been sufficiently seen as actors. The development industry is focusing on national macro-economic policies, or on specific community actions, but I don't think we have sufficiently recognized the challenges that cities are facing, such as the slum development and increased poverty, and we do not call sufficient attention of decision-makers to the local government level for action."

~ Günter Meinert, Senior Urban Specialist, Cities Alliance.

"In most cases, cities in developing countries need basic things like fresh water and power generation... and when they are at that level of survival they will have less interest in the next stage which concerns their environment."

~ Steve Dobbs, Senior Group President, Industrial and Infrastructure Government and Global Services, Flour Corporation.

But while funds channeled through government institutions can be more effective in terms of scale and efficiency, applicable funds require government capacity at national and local level, and would assume willingness to work with local governments and their organizations. There will for example be a need to work with the urban population and workforce in illegal and informal settlements, as part of a pro-poor adaptation strategy.

The integration of international financing implies that the international community and national designated bodies need to determine the best ways for cities to access these funds by consulting with them. The local fiscal situation is often poor, so that leveraging investments from elsewhere, from international financial streams and private financial flows, offer opportunities. But this requires more support and understanding of these financing mechanisms, a comprehensive city government plan which foresees such options, and national and international frameworks and procedures that enable the local level to access the international financing options.

Where this is not possible there is an additional potential to channel funding through civil society organizations with direct access to the indigenous history and knowledge of these populations, relevant private sectors, and community driven grass-root NGOs or local government partnerships. In turn it may be possible to support and strengthen the institutional capacity and accountability at city and sub-city level to reduce gaps between local and national processes[116]. The call for a distinction between ODA and new climate funding does not necessarily help to clarify which funding is

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115 Paulais T & Pigey J 2009, 'Adaptation and Mitigation: What financing is available for local government investments in developing countries?' *Proceedings of the Fifth Urban Research Symposium,* World Bank, Marseilles, 28-30 June 2009.

116 Ayers, J 2009, 'International funding to support urban adaptation to climate change', *Environment and Urbanization,* vol. 21, no.1, pp. 225-240

117 UNFCCC 2006, *The UNFCCC reporting guidelines on annual inventories following incorporation of the provisions of decision 14/CP.11*, UNFCCC, FCCC/SBSTA/2006/9, viewed 16 November 2009, http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf

available for climate action and how best to integrate this into city development and capacity building. Provision of portfolio funding matched against local needs or capacity building to enable access to relevant funding according to local strategic plans would need to be further explored, such as by building upon specific examples or pilots.

3.4 Emission Inventories as Enabling Tools for City Climate Action

"What we have is the measurement of CO2 in two points of the city. But we do not have a total measurement for the city. However, we have it in parts of the city, and it is even reported by the press."

~ Mr. Garcia, Environment Secretary, Ministry of Environment, Porto Alegre, Brazil.

"There may be a particular option that costs more, but then has a long term effect in terms of reduction in green house gases and building better resilience to the inevitable impacts of climate change... so such projects must now be viewed from the right perspective."

~ S. Aparna, Commissioner, Municipal Corporation, India.

Role of city-level greenhouse gas emission inventories

For national attribution, international recognition, and the participation in many of the financing mechanisms, cities need consistent, verifiable and regulated reporting mechanisms of greenhouse gas (GHG) emissions. Cities make up an increasing percentage of the world's population, and have many tools available to mitigate greenhouse gas emissions. Yet baseline estimates of total GHG emissions need to be consistent for example with each country's national inventory, as directed by the UNFCCC. These are important, for example, to facilitate city-to-city and international emissions trading from the project level to the city level. Standardized and credible GHG emission inventories are critical.

The need for accurate knowledge of GHG emissions trends at national level has long been recognized and Annex I Parties to the UNFCCC are required to submit their national inventory as part of their National Reports on an annual basis[117]. These Reports provide information on emissions and removals of direct GHGs (CO2, CH4, N2O, HFCs, PFCs and SF6) from six sectors[118]. The Kyoto Protocol names these six (groups of) gases as the main drivers for climate change. The largest amounts of emissions are constituted by carbon dioxide (CO2). However, the other gases, though emitted in lesser quantities, can contribute significantly to climate change due to their high

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118 Energy, industrial processes, solvents, agriculture, land-use, land-use change and forestry, and waste.

119 Ramaswami, A et al. 2008, 'A Demand-Centered, Hybrid Life-Cycle Methodology for City-Scale Greenhouse Gas Inventories' *Environmental Science & Technology* vol.42, no.17, pp.6455 – 6461.

120 Corfee-Morlot, J et al. 2009, *Cities, Climate Change and Multilevel Governance*, OECD Environmental Working Papers N° 14, OECD, Paris. ; ICLEI South Asia 2009, Energy and Carbon Emissions Profiles of 54 South Asian Cities, British High Commission, New Delhi, http://www.iclei.org/fileadmin/user_upload/documents/Global/Progams/CCP/CCP_Reports/ICLEI_Indian_Cities_2009.pdf

121 ICLEI 2009, *Communities for Climate Protection – New Zealand: Actions Profile 2009,* ICLEI, New Zealand, http://www.iclei.org/fileadmin/user_upload/documents/Global/Progams/CCP/

1	Bilan Carbone
2	Carbon Footprint Assessment and Reduction (C-FAR)
3	CO2 Calculator
4	CO2-Grobilanz
5	ECO2Regionpro
6	ECO2Regionsmart
7	Green Communities Carbon Footprint Tool
8	Greenhouse gas Regional Inventory Tool (G.R.I.P.)
9	Harmonized Emissions Analysis Tool (HEAT)
10	Low Carbon Cities Programme (LCCP)
11	Resource and Energy Analysis Program (REAP)
12	Zero-Footprint Cities Personal Carbon Manager

Table 9 List of selected inventory tools suitable for local governments.

global warming potential. Regular GHG (greenhouse gas) inventories allow for an assessment of the current situation and an analysis of the changes from previous years. This is an essential part of the process of monitoring emissions and achieving the targets agreed under the Kyoto Protocol.

The involvement of local authorities in greenhouse gas emission (GHG) reductions is crucial to the success of reaching national emission reductions and preventing dangerous climate change. Like at national level, the ability of cities to monitor and reduce CO2 emissions and compare performance requires an understanding of the amount of GHG emissions and the respective sources of such emissions. Hence, the development of a local-level GHG inventory is an essential first step in putting in place an appropriate planning system and identifying concrete climate mitigation actions[119].

Local authorities, even more so than national governments, have limitations in their financial and technical resources. It is imperative to carefully allocate these limited resources to the most effective mitigation measures. Local GHG inventories, linked to national inventory methods, present the key decision-making tool for identifying and prioritizing such activities, and developing relevant policies for implementation of the required actions[120].

Comprehensive inventories allow for the effect of individual actions to be measured. The cumulative impact of these actions shows that local governments can make, and indeed, are making an important contribution to reducing the national greenhouse gas emission footprint[121]. Over the past years a number of software tools have been developed to assist carbon accounting for local governments (table 9).

Compared to national and company-level GHG inventories, GHG emissions of cities and urban environments are still only emerging[122], despite the substantial progress that has been made over the past months and years.

Opportunities of tools for cities

Taking national policy targets to a local level and implementing general recommendations for climate mitigation actions would make local governments feel part of a bigger, global movement. However, there is no guarantee that these recommendations include the most appropriate actions for the individual municipality[123]. Numerous local authorities, who do not have the capacity and resources to do their own GHG inventory, have resorted to the implementation of so called no-regret measures[124].

International networks of local authorities and municipalities, such as ICLEI, C40, Eurocities and Climate Alliance, recommend their member cities to create a GHG inventory before developing their local climate change action plans and measures. Increased availability of local climate data and stronger empirical evidence will lead to a better understanding of where and why

CCP_Reports/ICLEI_CCP_NZ_2009.pdf

122 Dhakal, S 2008, 'Importance of urban carbon management and prevailing gaps in scientific understanding and policy discussions', *Proceedings of International Symposium on Urban Energy and Carbon Management: Challenges for Science and Policy,* Tsukuba, 4 February 2008.

local climate change actions are achieving the anticipated emission reductions and "how national policy frameworks enable or constrain performance at sub-national scales"[125].

City-level GHG inventories benefit both local and national authorities by providing an understanding of energy consumption and production patterns, identifying appropriate policies towards a low carbon economy, taking ownership, and enabling access to carbon markets:

- Inventories identify and provide an understanding of the energy consumption and production patterns within a city,
- support the identification of appropriate policies towards low-energy and low-carbon pathways,
- a regularly updated inventory can monitor the effectiveness of policies and programs, and provide further support and incentives for a move towards a low-energy and low-carbon local economy,
- local governments can take ownership of reductions, recognize their own potential and receive recognition for initiatives and actions,
- national governments can recognize the potential of cities' and local governments' contribution towards national emission reduction targets,
- centralized climate data from local governments can support the analysis of "how and why localities differ in their consumption profiles, develop appropriate benchmarks, analyze how different aspects of the urban environment interact with socio-demographic and market factors to shape patterns of energy use, and explore the distributional implications of different emissions-reduction policies"[126],
- inventories might enable cities' and local governments' access to carbon markets as methodologies become increasingly consistent, allowing for comparisons between cities and/or local governments globally; this allows cities and local governments to explore additional source of funding for local climate action[127].

Practical and methodological barriers

Measuring, competing priorities, and financial and human capacity pose practical challenges. Measuring emissions from different sectors and sources is a technical and data-intensive exercise[128]. Local authorities need to juggle competing resource (fiscal, human) priorities in order to develop a complete, accurate and consistent GHG inventory. Formulating an inventory for city-level GHG emissions is a complex task and requires a substantial amount of input in terms of staff time and/or external support. Local authorities have to be able to allocate sufficient resources to this process. This is especially large

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123 Bulkeley, H et al. 2009,'Cities and Climate Change: The role of institutions, governance and urban planning', *Proceedings of the Fifth Urban Research Symposium*, World Bank, Marseilles, 28-30 June 2009 http://www.eci.ox.ac.uk/publications/downloads/bulkeley-schroeder-janda09.pdf

124 Alber, G & Kern, K 2008, 'Governing climate change in cities: modes of urban climate governance in multi-level systems', *Proceedings of Competitive Cities and Climate Change*, 2nd Annual

in the first year of preparing an inventory, as the relevant emission sources need to be initially identified ways of obtaining data explored and in-house capacity built.

Developing internationally recognized and comparable inventories pose technical and methodological challenges. In comparison to national or company GHG inventories, local level GHG accounting is still only just emerging. Unlike carbon accounting at company or product level, there are no international standards or official methodology for inventorying GHGs at the city level. This leaves city representatives without official guidance and makes comparability between cities difficult if not impossible. The main methodological issues for city inventories concern boundaries, scopes, double counting, and choice of emission factors.

Tool	Corporate Emissions	Community Emissions
1	X	X
2	X	
3		X
4		X
5	X	X
6	X	X
7		129
8		X
9	X	X
10	X	130
11		X
12		131

Source: Inventories are being further developed by the Bonn Center for Local Climate Action and Reporting - carbon*n*

Table 10 Boundaries of the selected tools (X indicates measurement area).

City Boundaries

Unlike GHG accounting at the company level, local governments are not limited to government emissions arising from municipal operations ('corporate emissions'), but include 'community emissions' as a whole. Local government emissions from municipal operations are just one part of this. Tools measure either the total overall 'community emissions' or only 'corporate emissions' (see table 10). A local government is able to draw the organizational boundaries of its own municipal operations. However, these 'corporate' emissions are only a small part of the overall 'community' emissions generated by the citizens living within the city (see table 10). Clearly defining the boundaries for these 'community' emissions and what sources to include presents a challenge in itself.

Scopes

Scopes are a further challenge: for example production or consumption can be measured. Emissions generated within the territorial boundaries of a city itself (Scope 1: production emissions) are not representative of overall emissions generated by the demand of the city (Scope 2+3: consumption emissions). In general, emissions generated for the production of electricity consumed by a city's residents are included in a GHG inventory (Scope 2), whereas emissions from imported products and services (Scope 3) are excluded due to the complexity associated with measuring these emissions. However, only a complete GHG inventory including all consumption emissions reveals the citizens' true lifestyles and consumption patterns. This is important to avoid policies that shift emissions "out of boundary"[132].

Meeting of the OECD Roundtable Strategy for Urban Development, Milan, 9-10 October 2008, viewed 2 January 2010, http://www.oecd.org/dataoecd/22/7/41449602.pdf

125 Corfee-Morlot, J et al. 2009, *Cities, Climate Change and Multilevel Governance*, OECD Environmental Working Papers N° 14, OECD, Paris.

126 Parshall, L et al. 2009, 'Energy consumption and CO2 emissions in urban counties in the United States with a case study of the New York Metropolitan Area.' *Proceedings of the Fifth Urban Research*

Double Counting

Double-counting, where emissions are counted more than once, can occur where no official standard is available. Cities follow different methodologies, so that double-counting emissions between different local authorities is possible. For example a city's production emissions (Scope 1) can be easily counted as another city's consumption emissions (Scope 2+3).

Choice of Emission Factors

In most countries national emission factors (multiplication factor) are easily obtained, but might not be the most suitable choice depending on the specific circumstances of the local authority. Furthermore, utilizing national averages prevents cities from accounting for emission reductions made through e.g. the generation of clean energy. However, in many cases local emission factors are not available.

Relevance of Common Standards

Despite the lack of formal standards for city level inventories of GHG emissions, informal rules have been developed, such as ICLEI's International Local Government GHG Emissions Analysis Protocol (IEAP). They set out rules rather than being an accounting tool, such as HEAT. By developing common conventions and a standardized international approach, ICLEI seeks to facilitate comparisons between councils to ensure that tangible reductions in greenhouse gas emissions are achieved[133]. This protocol is used by the 800+ member cities of ICLEI's Cities for Climate Protection (CCP) Campaign, and can be drawn upon as a basis for the development of similar standards.

Tool	CO2	CH4	N2O	SF6	HFC	PFC
1	X	X	X	X	X	X
2	X	X	X			
3	X	X	X			
4	X	X	X			
5	X	X	X	X	X	X
6	X					
7	X					
8	X	X	X	X	X	X
9	X	X	X	X	X	X
10	X					
11	X	X	X	X	X	X
12	X					

Source: Inventories are being further developed by the Bonn Center for Local Climate Action and Reporting - carbon*n*

Table 11 Gases covered by the selected tools (X indicates measurement area).

The lack of a common standard and harmonization hampers the development of local GHG inventories that are consistent between cities, and prevents the necessary rigor in order to access any form of carbon financing.

For example, all inventory-software include different GHGs in their accounting methodology. Most of the tools include a number of additional gases in their measurement; CO2 emissions are accounted for by each inventory software and about half of the inventory software cover all six Kyoto GHGs. The three categories of combinations in the tools are CO2 only, CO2/CH4/N2O or all six Kyoto GHGs (see table 11).

Need for an internationally accepted city protocol

In sum, the advantages of developing city-scale GHG inventories are self-explanatory: cities are able to take ownership of their emissions and reduction actions, understanding of local (energy) consumption patterns, identification of most cost-effective mitigation efforts and required policy developments as well as the potential for access to new sources of funding (carbon market).

Recognizing the huge potential for GHG emission reductions in cities, national governments can support local authorities in creating an institutional foundation and knowledge base to facilitate climate action at local level in order to deliver the targets agreed under the Kyoto Protocol and any future climate agreement[134]. They can provide financial resources and technical guidance on GHG inventories. National governments can help by providing the technical input required to link local GHG inventory methodologies to existing IPCC guidance.

An internationally accepted protocol would enable local authorities to monitor their performance and compare results to other cities in order to identify the cost-effectiveness of mitigation actions. It would allow national authorities to compare and assess local emission reduction efforts to gain an

Symposium, World Bank, Marseilles, 28-30 June 2009, http://www.eci.ox.ac.uk/publications/downloads/bulkeley-schroeder-janda09.pdf

127 Corfee-Morlot, J et al. 2009, Cities, *Climate Change and Multilevel Governance*, OECD Environmental Working Papers N° 14, OECD, Paris.

understanding of the reductions already made by cities and recognize the potential for further contribution to achieving national targets. Finally, it would allow local authorities to assure the scientific rigor needed for MRVable[135] reductions, a prerequisite to access any kind of carbon financing that could ease the financial constraints.

3.5 Strategic Applications for International financing

"A great deal of city-building in developing countries is informal and not done with awareness of water supply, sea level rise, urban heat island effect, disease, or epidemiological predictions. Climate has to be a fundamental dimension of development planning in cities of developing countries, because they can't afford to rebuild urban spaces that will become dysfunctional in environments affected by climate change."

~ Jeb Brugmann, Urban Strategist, The Next Practice.

"I think big cities have a high potential for saving energy more easily than compared to rural areas. For example you can organize transport in a much more efficient way than in many small cities or in rural areas. I see a lot of chances for the big cities, which, however, can only be utilized if the seize and structure of the city is still governable."

~ Peter Hoeppe, Head of Geo Risk research, Corporate Climate Center, Munich Re.

128 ICLEI 2008, *Cities for Climate Protection Australia: Local Government Action on Climate Change,* ICLEI Oceania, Melbourne, http://www.iclei.org/fileadmin/user_upload/documents/Global/Progams/CCP/CCP_Reports/ICLEI_CCP_Australia_2008.pdf

129 Reports personal footprints and corporate emissions.

Local governments and strategic integration of climate action opportunities

"There are local initiatives which contribute in small ways...for example cities that set out to do greening of existing buildings and find interesting ways to finance them, or say to the private sector, 'Could you take over the energy responsibility for this building or this portfolio and manage it for us?.' It would be great if there were many such schemes."

~ Mark Cleverley, Director of Strategy, IBM.

"In most cases, you have a kind of menu, a series of actions, which address both adaptation and mitigation- they are closely intertwined in areas such as urban planning, building design, water management and urban forestry."

~ Raf Tuts, Chief, Urban Environmental Planning Branch, UNHabitat.

A great range and depth of challenges exist to integrate climate change action with sustainable development. Securing financing will be an addition barrier to those top challenges already alluded to above for mitigation and adaptation actions. But the need for additional financing requirements can also reignite, scale-up, and attract new and additional financing streams to urban areas for sustainable urban development.

The interviews with city decision maker interviews highlight a range of actions that can integrate and propel sustainable development at the local level (table 12). The international climate and urban experts interviewed underlined a similar message. They also remind that for an integrated policy,

Table 12 Example roles and actions of local governments for integrated urban development.

Role of Local Government	Local Government Policies/ Activities	Examples of Actions Required *(from interviews with city decision makers)*
Self-Governing	Operation of [local government] municipal infrastructures	- Integrating criteria into local action and investment plans and programs
Governing through enabling	a) Voluntary actions and government serving as role model b) Information promotion, and raising awareness	- Public campaign and education to improve public awareness (e.g. of adaptation)
Governing by provision	Operation of [consumer] municipal infrastructures	- Integrating criteria into local action and investment plans and programs
Governing by authority	Regulation based on legal responsibilities and jurisdiction	- Cross referencing urban planning, plans and programs against carbon emissions, environmental friendly use of construction materials, energy efficiency, adaptation, selection of technology, harmonization with population and involvement of citizen groups - Provision, coordination and enforcement of the institutional and legislative framework, and improvement of compliance with existing laws and regulations
[Governing by leadership] [added]	Target setting	- Setting plans and policies with goals, reduction targets, new technologies and investments

130 Measures only organizational emissions for key stakeholders.

131 Reports personal footprints and corporate emissions.

it is important to take socio-economic policy objectives into account, such as urban poverty, decisionmaking processes and local development, as well as providing good and clean municipal services including electricity, transport, heating, water, among other. These require tools for adaptation and their application to infrastructures, such as by connecting and integrating environment assessments and ecosystem assessments into city planning and operation, as part of a code within a "city DNA".

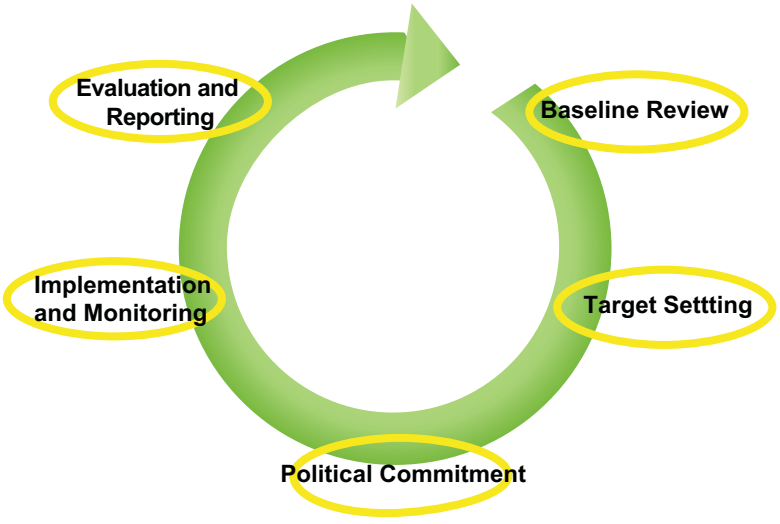
> *"Integrated planning, new technology, and the role of privatization in developing projects...these three elements now require the incorporation of adaptation and mitigation measures."*
>
> ~ S. Aparna, Commissioner, Surat Municipal Corp., India.

The local level can improve and develop plans that integrate international financing options into strategic urban plans, through better organization and identification of procedures, priorities and opportunities. The private sector can play a supporting role in awareness raising and the development of comprehensive city strategies, as well as provide investment, services and technology. Policies and programs can go beyond comprehensive standardized building codes and land development regulations and policies. They can achieve preventative city planning, innovative financing, methodologies for partnering with the private sector, strengthening public communication locally and globally, and development of local climate models. It is important to cross reference and check policies, projects and programs against climate resiliency and neutrality. By establishing and evaluating baselines, targets and commitments, conflicts and synergies of competing priorities can be better aligned towards long term sustainability. This may enable a move away from individual climate actions towards holistic and comprehensive urban strategies, as many cities have already demonstrated.

Setting local action in motion – the urban sustainability cycle

> *"Cities have to take on the responsibility of formulating objectives and improving themselves in the major areas where they have impact, like building, transport, electricity supply and waste management. Cities take that on, and there are good examples in many parts of the world. So cities can make a huge difference. And by showing that they can do things at the municipal level, they can also move their national governments to be more pro-active."*
>
> ~ Bert Metz, Fellow, European Climate Foundation, Former Co-Chair IPCC Working Group III.

Graph 15 The Sustainability Cycle.



Source: ICLEI, Local Sustainability, http://www.localsustainability.eu

132 Kennedy, C et al. 2009, 'Greenhouse gas emissions baselines for global cities and metropolitan regions', *Proceedings of the Fifth Urban Research Symposium,* World Bank, Marseilles, 28-30 June 2009.

133 ICLEI 2009, *Communities for Climate Protection – New Zealand: Actions Profile 2009,* ICLEI Oceania, Melbourne, http://www.iclei.org/fileadmin/user_upload/documents/Global/Progams/CCP/CCP_Reports/ICLEI_CCP_NZ_2009.pdf

"Cities have to start shaping their sustainable development strategies in ways that clearly take climate change considerations into account. Part of this is moving from the initial awareness stage into the systematic implementation stage, where sustainable development becomes a part of every single program. Cities must change their thinking to incorporate sustainability into mainstream action, and this has to start with a clearly designed strategy based on a very well defined diagnosis. These are medium to long-term type solutions that will begin to address some of these issues that cities have right now."

~ Hazem Galal, Partner, Advisory Service, PriceWaterhouseCoopers.

ICLEI's Sustainability Cycle based upon the Aalborg Commitments Implementation Guide[136] underscores how local sustainability management is not a project but a process. "Just as the local budget is set up and controlled every year, targets for the environmental, social and economic development of the city have to be monitored and adjusted in a cyclical manner"[137]. The Sustainability Cycle subsequently supports continuous improvement to ensure sustainability stays on the local agenda. It enables local governments to respond to changing framework conditions, such as technology or societal consensus by updating the targets and actions plans once the next management cycle starts.

It is based on a five step approach (graph 15). First the Baseline Review, where local governments assess the local situation by gathering relevant data and identifying whether the existing organizational conditions allows an efficient and effective management of the local sustainability process. The review produces a report, which allows setting ambitious and achievable measurable targets together with relevant local stakeholders and with timeframes. Based upon the Sustainability Targets, the local council adopts a political decision leading guidelines for local policy-making in the next years. The council's approval establishes Political Commitment of the targets and mandates the local government to work towards their achievement. The fourth step is the Implementation and Monitoring of activities in support of achieving the targets. These activities are coordinated by the local government and may include projects implemented by other stakeholders. In the last step the achievement of the targets are measured and programs assessed through Evaluation and Reporting, and in preparation of the next review.

"It is important to build understanding among the community that climate change is our responsibility... That responsibility also requires funding, which is supported by the government as a

134 Corfee-Morlot, J et al. 2009, *Cities, Climate Change and Multilevel Governance*, OECD Environmental Working Papers N° 14, OECD, Paris.

135 Measurable, reportable and verifiable.

stimulant, so the community is inspired to participate."

~ Boeddy Suharto, Sekretaris Daerah (City Manager), Surakarta, Indonesia.

City decision makers confirm that the roles and functions of local governments start from each person (e.g. sustainable behavior and lifestyle) and extend to operative systems (e.g. municipal services) and frameworks (e.g. regulatory). They play an important role in increasing the awareness of people, managing populations through local operative systems, defining local priorities, mobilizing local resources, implementing actions from local, sub-national and national direction (e.g. policies under direction and continuation of national government, local action plans, managing utilities (energy, trees), land planning, regulation and legislation).

"Adaptation or mitigation activities, concerning solid waste, water, transportation, urban greening, building codes etc. are under the responsibility and mandate of local government, and central governments need to strengthen that."

~ Paul Chamniern, Director, Grassroots Action Program, TEI.

National governments are seen as important for defining the framework (defining and making public policies and the regulatory framework, and super-structures (e.g. transport), embedding local decisions), linking cities and country up with the international level for information sharing, and capacitating local governments with resources.

The international community plays an important role in providing and sharing knowledge, technical expertise, financial support, and coordinating, cooperating and partnering, for example through networking, sharing best practices, building technical capacity, funding, linking the developed and developing world (e.g. Kyoto Protocol), synergizing efforts, and issuing guidelines for local bodies.

Correspondingly, the sub-national, national and international level can play a role in coordinating and advancing local governments' concerns. Cities and local governments need coordination with their national designated bodies to be informed of and gain access to the international level. Access to implementing agencies for actions in their respective country is pivotal for implementation and for reviews of the project cycles both up and downstream.

Creating an enabling framework

In other words, international financing options need to become local government friendly, so that they can be brought and mounted together for scaled-up action, rather than separated and isolated. This would necessitate and could build upon public-private partnerships, dialogues with civil society and municipal partnerships.

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136 The Sustainability Cycle, http://www.localsustainability.eu/fileadmin/template/projects/localsustainability_eu/files/ACTOR-Guide_english.pdf, viewed November 2009.

137 The Sustainability Cycle, http://www.localsustainability.eu/index.php?id=4269, viewed November 2009.

	Government Funds	Potential Funding Sources	Examples of funding sources named by interviewees	Examples of Climate Action named by interviewees
Domestically Sourced	Local government	- Public municipal budget	Municipal budget, selling land, self financing schemes, public private partnerships, municipal taxes, debt	Solid waste, waste to energy facility, park, environmental education centre, water, solid waste, transport infrastructure, solar energy development program, landfills, shore protection, port development, state subsidies for domestic consumption of electricity and ban on fossil fuels
	Sub-national and national government	- State and Federal funds and transfers	State funds and transfers, Infrastructure Restructuring Fund, PAC, Accelerate Growth Program, JNNURM	
Internationally Sourced	International climate conventions	- GEF/UNFCCC Climate Change Funds - GEF Trust Fund - Flexibility Mechanisms - Adaptation Fund	GEF CDM	Landfill, biogas facility, sewage gas treatment, renewable energy projects
	Other multi and bi-lateral funding	- WB (CTF, SCF) - ODA (Appendix 6.4)	World Bank, USAID, IDB, BNDES, European Development Bank, ADB, IDB Inter American Development Bank	Infrastructure, modernizing site, urban mass transport program, waste-water segment
	Post-2012 Climate Convention?	- GEF? - Copenhagen Green Fund? - Technology Mechanisms?		

Table 13 Potential pool of financing tools for local governments for climate action in developing countries (excluding private sector and civil society).

"Cities, organized into their own organizations - like local authority associations - can be given a higher role in terms of being brokers on behalf of cities for funding...so instead of dealing with potentially thousands of cities, there can be intermediate brokers who do that."

~ Fouad Bendimerad, Chairman, EMI.

"I think the governance issue will move up the scale and the major role cities have to play is not in what they can do directly, but in setting the right framework in terms of regulations, setting the right incentives for citizens to act. The awareness for that will increase and move up the scale."

~ Stefan Denig, Department Head, Issue Management, Siemens.

A financial intermediation agent could obtain or support financing for a group of municipalities, to diversify, link, or mix various sources[138]. Any urban investment will necessarily interact with other sectors than the investment was made for, which may become an integrated approach or rather aligning consideration[139].

A way forward could be further research, piloting, and programs on what kind of financing mechanisms would suit local governments and how they

138 see Paulais T & Pigey J 2009, 'Adaptation and Mitigation: What financing is available for local government investments in developing countries?' *Proceedings of the Fifth Urban Research Symposium*, World Bank, Marseilles, 28-30 June 2009.

139 Ibid

can be made operational at the local level through their integration into urban development strategies against clear targets. For example international financing for climate change could be integrated into "systems in which strengthened local authorities manage to secure resources for themselves locally"[140] from local, national and international sources depending upon best available financing to achieve their targets.

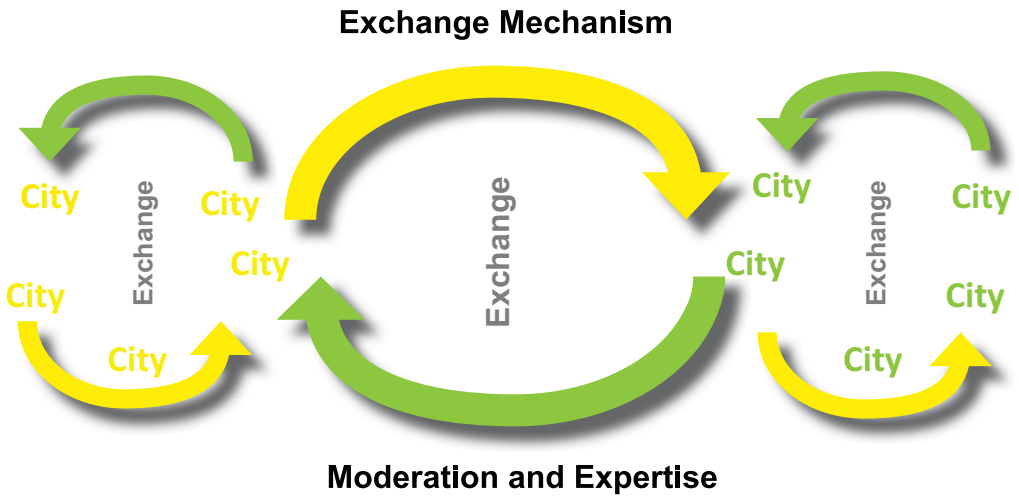
Already a great range of financing mechanisms exist and are applied including loans, grants, revolving funds, guarantee funds, microcredit, mesocredit, lending to operators, cooperatives, output based aid, credit enhancement, build-operate-transfer, etc. These could be utilized and bundled for strategic urban development in more coordinated manners against strategic objectives, if not already, and be made more readily available to local governments. Alternatively, donors could work with sub-sovereign markets directly.

But donors are also likely to expect more stringent accountability, allocation, and assurance of effectiveness. Subsequently, there is a need to develop clear accountability measures and absorption mechanisms such as third-party verifiable indicators, and practical investment plans for cities to ensure large allocations of and new climate change funds[141]. The development and standardization of greenhouse gas inventory tools for cities certainly provides an example of measuring the progress, success and effectiveness of mitigation actions. The development of comparable benchmarks in urban sustainability is another. This stands in contrast to the expressed requirements for clearer and simpler transfer mechanisms and assured flows on the recipients, unless coupled with enabling training and capacity building, which may be joined with steps in the aforementioned sustainability cycle.

> *"One of the things that is constantly surprising is the absence of cities in any form of international policy-making forums"*
>
> ~ Ramesh Ramanathan, Director, Janaagraha Center for Citizenship and Democracy.

Mitigation funding accessible in a post-2012 framework subsequently includes discussions around Nationally Appropriate Mitigation Actions (NAMAs), with the intent to focus on the most urgent and immediate needs for adaptation measures in developing countries; on support for mitigation through finance, technology, and capacity development, and on discussions of adaptation support, especially for the most vulnerable least developed countries[142]. Many questions are still to be determined around whether NAMAs are planned/implemented actions, national/sectoral/programme/projects, voluntary, unilateral or with support and whether they can generate carbon credits.

In principle there are 3 types of NAMAs under discussion:



Source: ICLEI - Local Governments for Sustainability (2008)

Graph 16 Moderation of municipal development cooperation and inter-municipal partnership (North-South, North-North, South-South).

- Unilateral: The developing country implements carbon emission reduction activities without receiving support from Annex I countries.
- Supported: The developing country implements carbon emission reduction activities with support from Annex I country.
- Credited: The developing country implements carbon emission reduction activities, which can be funded by the sale of the associated carbon reduction units in the global carbon market.

Scaling-up and network learning: role of dialogues and exchange

"Local governments face the challenge of how to generate major roll-out of investments required for district heating systems or the whole retrofit of tens of squares of miles of building stocks, large- scale projects that require sophisticated project design and financing. I don't think that local governments in their current capacity, and consider the range of what they have to deal with, can get enough attention to do this well."

~ Jeb Brugmann, Urban Strategist, The Next Practice.

"It is absolutely critical that interactions and dialogues happen at the city level, and happen across cities so there is solution sharing. Those are the two levels, and they are very important because we believe the public-private dialogue is the only way we are going to be able to come up with creative ways to address the issue. What is not helpful is for it to remain as a public sector issue which doesn't engage the other necessary stakeholders."

~ Alex Wong, Senior Director, Global Industries, World Economic Forum.

Not only can the design and mechanisms of international financing and local strategic capacity be improved, but the awareness of action opportunities and experiences can be shared (graph 16). Structured dialogues are an

important approach to propel exchange for vertical and horizontal integration. Among local governments it should involve cities from north and south to facilitate the breadth and depth of experiences.

But the exchange should not be restricted to these stakeholders. Open dialogues supported by scientific results, such as research on climate change actions to ground activities for analysis and discussion are considered also important.

> *"Cities contain many actors, such as a Mayor, city governments, ministers and others like NGOs, community groups and national government...cities have to be proactive in bringing these actors together to facilitate sharing of information across them."*
>
> ~ Saleemul Huq, Senior Fellow, IIED.

They can be geared towards joint generation of policies, co-participation or governance, and facilitated by participative decision making towards the same objectives. They can include civil society, private actors and local governments to understand each other's roles, discuss funding opportunities, formulate priorities and objectives, define long-term certainties and clarify local responsibilities. Structured dialogues and policy formulations around long-term planning could include experts, depending upon the issue, international agencies, and ensure that solutions sought are resounded locally.

> *"I think we should have interactive group discussions, seminars etc. and exposure visits for people who are dealing with this subject. These would go a long way in actually training these people."*
>
> ~ Amarnath Sharma, Commissioner, Shimla Municipal Corporation, India.

Training various stakeholders for project development in mitigation and adaptation increases awareness as well as capacity building. For example ICLEI's CCP campaign initiated in the early 2000s in Latin America, South Asia and Africa has supported the development of baseline inventories and capacity building in these parts of the world, an essential first step towards access to carbon markets[143]. The experience and capacity developed through ICLEI and other local government climate protection campaigns and projects might have provided an background for facilitation of these countries in the global Urban CDM portfolio. Certifying trainings and professionals and providing them with access to information is similarly beneficial. But capacity

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[140] Ibid.

[141] The World Bank Urban Unit 2009, 'Sustainable Cities Partnership, Cities and Climate Change – A Global Diagnostic', *Proceedings of A Dialogue on Cities and Climate Change Conference*, The World Bank, Washington D.C, September 2009.

building efforts need to include stakeholders from urban areas accordingly.

It is important and necessary to raise the awareness of international conventions and mechanisms in such a way that urban areas can realize their opportunities: for example by fostering exchange and mainstreaming these mechanisms into urban development strategies. Networks to share latest developments and specific technologies are useful to highlight these and facilitate information exchange, on for example, international financing options, but also the practical needs of stakeholders, such as the international community.

> *"It is not easy to localize mitigation and adaptation if best practices are not shared in cities of developing countries. As the developed countries are the bigger emitters, and developing countries the recipient of impacts, developed countries must help cities of the developing countries."*
>
> ~ Frederika Rentoy, Department Head, and Andrea Po, Division Head, Environmental Protection and Waste Management, Quezon City, Philippines.

> *"A lot of development assistance input and assistance is required in this process. The city would benefit from the shared experience and knowledge that is maybe available from the similar efforts made in comparable situation. I believe sharing between cities should be facilitated so that each of us are not reinventing the wheel...so it becomes more enriched... Perhaps one has a larger range of options to choose from if there is a forum and if a system by which we can learn from each other. That helps cities to learn about best practices."*
>
> ~ S. Aparna, Commissioner, Surat Municipal Corp., India.

Neutral platforms, where business groups, developers, or professionals can meet with government officials and politicians, can facilitate the exchange and identification of viable solutions. For example dialogues on policy measures, where private sectors can contribute to the development of solutions, could encourage a framework conducive to investments in renewable energy or overcome uncertainties for investments in adaptation measures.

Core messages from cities

But at one level there is cooperation and at another there is not. For such dialogues, positive spaces, group seminars, discussions and platforms for various kinds of exchange can be created, which raise awareness, build interactions towards synergies and cooperation across sectors, in order to build commitment to an agenda. Education, inspiration and information action are important considerations to motivate political willingness. Succinct analysis of what the problem is can also create coalitions of change, acting

as catalyst, and alert to new analysis and understanding of opportunities.

"We know how to (do it) implement changes, but this means substantial resources and initiative in strategic areas where significant impact can be achieved. We have developed a city plan and identified priority areas, which are moreover very attractive for their high density of population; nevertheless, the carrying out of the plan is based on the resources and mechanisms of implementation."

~ Blanca Alcala, Municipal President, Puebla, Mexico.

Messages of the Interviewees to the international community

"Cites have been effectively pushing a very constructive agenda to show what practical measures can be taken at local and sub-national levels today. That voice has come through, although whether it affects the negotiations, I'm not sure."

~ John Scanlon, Principal Advisor to the Executive Director, Policy and Programs, UNEP.

"I believe that the international community has to make a major effort to demonstrate that they are concerned with the topics of daily life, which is what local governments are interested in."

~ Blanca Alcala, Municipal President, Puebla, Mexico.

"The national government is concerned with policy, regulation, direction of implementation. That is what they will bring to the negotiation table. Local governments bring localized concerns, experiences, actual measures, and execution. So the suggestions that we can give to the agreement are very vital/ grounded. Even smaller cities have a role to play in mitigation and adaptation. The national government will not be able to raise local government concerns as they are coming from a different place."

~ Frederika Rentoy, Department Head, and Andrea Po, Division Head, Environmental Protection and Waste Management, Quezon City, Philippines.

"More people are moving to cities, as industries and business are situated around cities. Cities are economic hubs, so inevitably that's where development takes place. City governments don't have any excuse not to be part of it any more. The decisions taken at these conferences, and the major international discussions and/or negotiations, eventually filter down to actions required by cities. If cities don't have input into these decisions, what's the use? It is vital for cities to be involved."

~ Elana Keef, Directorate: Public Health, Sub-Directorate: Environmental Management, Nelson Mandela Bay Metropolitan Municipality, South Africa.

The core message from city decision makers to the international community is that cities' roles need to be recognized. The significance of cities needs to be acknowledged, recognized and local knowledge and experience integrated. Cities are incubators of innovation as well as distinct places.

A second core message they highlight is international cooperation and global-local interaction. There is a common understanding that national and local efforts should not act in dis-juncture. Only collectively can the necessary results in mitigation and adaptation can be achieved. The direction of national policy should go hand in hand with a growth in knowledge and skills.

As a third point, science, research and development, along education, awareness raising and behavior are important at the city level. Other important messages were the urgency to come to agreement, enforce regulation, and implement any agreement with action, but also a need for technical and financial mechanisms to support the design and implementation of solutions for environmental problems. International climate and urban experts also highlighted the range of challenges for cities from resources, regulation, over diversity of emissions, to the complexity of urban energy systems such as transport.

Within this context international climate and urban experts subsequently identify the top priorities of any post-2012 agreement as recognizing the role of cities by looking at the sub-national level, its functions and learning bottom up; setting targets or binding agreements for clarity on the way forward that informs action; and designing appropriate financing and mechanisms.

Unanimously the cities decision makers interviewed agreed that they should participate in the international negotiations process of the UNFCCC. They explained that the national level is often unaware of the situation of local governments. Local governments need to be heard at all levels: cities are very diverse and their diversity should be represented, allowing them to bring local experience and knowledge to the discussions. They are at a level which addresses local issues and have a direct link to citizens and their economic abilities. Local policy needs to be joined-up with decisions at all levels to combine efforts.

> *"Cities have to influence member states, because only member states are members of the United Nations, and that is where the negotiation forum takes place. So cities have to inform their national governments of the sorts of outcomes that are going to be important to them. I wouldn't try dis-aggregate the city from the state because a city's power is nestled within and expressed through the state."*
>
> ~ John Scanlon, Principal Advisor to the Executive Director, Policy and Programs, UNEP.

However, the interviewees also highlighted that climate negotiations are the issues of national governments, and that city participation should be possible but not in the same way as national governments. National governments should support cities and cities should feed into the collective view. National governments are concerned with policy, regulation, direction of implementation and local governments should bring in localized concerns, experiences, and actual measures. They consider input from the ground as vital. In turn international experts underscored that city governments need to be heard through formal channels i.e. national party delegations, who also represent other voices such as rural positions, whereas others also point out that cities are not making their claims sufficiently heard at the national level, procedures are flawed in this regard, or states are not sufficiently listening or engaging cities.

3.6 Local Governments in the Post-2012 Negotiations

Local governments in the long term Bali Action Plan towards 2012 and beyond

Since the first commitment period of the Kyoto Protocol will expire in 2012, national governments are considering a successor to this climate regime for the post-2012 period. The current discussions focus on scope (e.g. incorporating new elements like adaptation, financing and technology transfer to mitigation by developed countries) and political coverage (i.e. integrating non-Kyoto Annex-I Parties into a new binding regime and introducing new roles and responsibilities for developing countries).

The national governments commenced with the assessment and review in 2005 in accordance with Article 3.9 and Article 9 of the Protocol[144]. The negotiations at the UNFCCC level officially commenced at COP13 in Bali in 2007, through the adoption of the Bali Action Plan. The Bali Action Plan defines a long-term cooperative action under the main building blocks: shared vision, mitigation (in form of commitments of developed country actions and actions of developing countries), adaptation, finance and technology transfer, up to and beyond 2012.

In the negotiations local governments sought their involvement in a shared vision, adaptation, mitigation, finance, technology and capacity building. A shared vision sees the participation of all stakeholders, including sub-national and local governments, and non-governmental, private businesses and civil society, allowing local governments along other relevant stakeholder to be integrated in mitigation and adaptation actions. With regards to mitigation, local governments support a science-driven approach that recognizes that global warming should not exceed 2 degrees Celsius above the pre-industrial level. The impacts of climate change will be felt worst at the local

142 Climate Funds Update, *Climate Funds,* viewed 18 October 2009, http://www.climatefundsupdate.org/listing

143 Further details at http://www.iclei.org/index.php?id=800 ;Also see Sippel/Michaelowa paper: "Does global climate policy promote low-carbon cities? Lessons learnt from the CDM.

144 UNFCCC, Kyoto Protocol to the United Nations Framework Convention on Climate Change, viewed 23 October 2009, http://unfccc.int/resource/docs/convkp/kpeng.html

145 A declaration by Mayors and other elected leaders from local governments around the world. The Agreement calls for a number of actions, including the reduction of greenhouse gas emissions by 60%

level. For *adaptation*, local governments require that they and cities have the appropriate abilities, capacities and resources to take necessary action at a local level to adapt to climate change.

At the 13th Conference of Parties in Bali in 2007, local government networks, namely ICLEI – Local Governments for Sustainability, United Cities and Local Governments (UCLG), Metropolis, the C40 Climate Leadership Group, and the World Mayors Council on Climate Change, initiated a mode of advocacy work beyond municipal summits. The so-called *Local Government Climate Roadmap Process* built upon the experiences from previous COP processes and is recognized as the most comprehensive advocacy effort by the local government networks and their partners in response to Bali Action Plan. The *Local Government Climate Roadmap* Process aimed to cover a 2-year intensive, international and multilateral negotiation process, advocating for a strong, global, comprehensive post-2012 climate agreement, where the crucial role of cities and local governments in climate protection is emphasized.

The key elements of the *Local Government Climate Roadmap Process* included:

- Call for Global Action:
  A *World Mayors and Local Governments Climate Protection Agreement*[145] was drafted and opened for signatures of local leaders globally in Bali in 2007. Inviting the international community to commit reduction of developed country GHG emissions by 80% and global GHG emissions by 60% compared to 1990 levels in 2050 was one of the key features of the agreement, which can be considered as the most ambitious call for global action by the time of adoption. At the end of the Roadmap Process, more than 100 mayors globally signed up to the agreement[146]. The agreement was also supported by numerous regional initiatives like the US Conference of Mayors Climate Protection Agreement[147], EU Covenant of Mayors[148], Hamburg Declaration[149] and Copenhagen Communique[150]. The City Climate Catalogue[151], developed by ICLEI and the City of Copenhagen represented more than 3000 commitments of local governments for GHG emission reductions globally and provided a strong basis for advocacy by local governments for a more ambitious global climate deal in Copenhagen.
- National-Local Dialogues at the National and Regional Level:
  Held in Africa[152], Japan, Australia, India, Latin America[153], and Europe, these meetings enabled national negotiators and local government representative to meet and exchange their ideas before and after the official negotiation sessions at the UNFCCC and KP process[154].

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from 1990 levels worldwide and by 80% from 1990 levels in industrialized countries by 2050, http://www.globalclimateagreement.org/.

146 World Mayors & Local Governments Climate Protection Agreement, http://www.globalclimateagreement.org/index.php?id=10374

147 U.S. Conference of Mayors Climate Protection Agreement, http://usmayors.org/climateprotection/agreement.htm

- Local Government Climate Events at the UNFCCC Meetings: The Local Government Climate Sessions at COP13 in Bali in 2007[155] and at COP14 in Poznan in 2008[156], side events in Bonn[157] and Barcelona throughout 2009[158], Local Government Climate Lounge at COP15 in Copenhagen in 2009[159] and Copenhagen Climate Summit for Mayors[160] were milestone events that provided a global platform for exchange of information and experience among local government leaders and with their stakeholders.
- Negotiation Meetings with Parties at the UNFCCC Meetings: Within the scope of the AWG-LCA and AWG-KP Processes, throughout 2009, local government representatives directly presented and negotiated their proposals with the government delegations or negotiation groups of the UNFCCC. Such meetings were held at the mayor-ministers-ambassador level specifically during COP15 in Copenhagen[161].
- Local Government Proposals for the Copenhagen Outcome: The local government networks have both developed their specific proposal as "Draft COP Decision for Role of Cities and Local Governments in Climate Change" and proposed their contribution in the draft texts of negotiation processes at the UNFCCC (Ad Hoc Working Group on Long Term Cooperative action – AWG-LCA)[162] and at the Kyoto Protocol (Ad Hoc Working Group on Article 3.9 of the KP – AWG-KP), which aimed to achieve a new international climate regime in the post-2012 period[163].

Local government positions and evolution of negotiations related to Copenhagen

In addition to achieving a strong, global, comprehensive post-2012 international climate regime, the Local Government Climate Roadmap Process primarily requests national governments to:

- Support strong local climate practices,
- provide enabling regulations and conditions,
- empower cities – provide capacities and resources,
- recognize local action in national climate strategies,
- strengthen local action through easier access to funding.

The first concrete action to ensure achievement of the above positions,

148 Covenant of Mayors, European Commission, http://www.eumayors.eu/

149 Declaration of the Hamburg City Climate Conference 2009, 7 Facts, 7 Commitments and 7 Calls for a low-carbon future, http://www.city-climate-conference.de/contentblob/1880400/data/hamburg-city-climate-conference-09-declaration.pdf

150 Local Government Climate Roadmap, Newsletter #5, 28 October 2009, http://www.iclei.org/fileadmin/template/project_templates/climate-roadmap/files/Newsletter/__5_-_LG_CR_-_Newsletter_2.pdf

151 The City Climate Catalogue, http://www.iclei-europe.org/index.php?id=6860

152 Local Government Climate Roadmap, African Local Government Climate Roadmap Pre-Copenhagen Summit, 29-31 July 2009, City of Tshwane, South Africa, http://www.iclei.org/index.php?id=9765

153 Local Government Roadmap, Round Table – Towards Copenhagen, 24 June, Brasilia, Brazil, http://www.iclei.org/index.php?id=10071

154 Local Government Roadmap, LG Climate Roadmap, http://www.iclei.org/index.php?id=10578

155 UNFCCC, COP 13/CMP 3 Press conference schedule, 2-15 December 2007, http://unfccc.int/meetings/cop_13/press/items/4099.php

Roadmap partners developed a "*Draft Text for a UNFCCC COP Decision*" which was officially submitted to the AWG-LCA (Ad Hoc Working Group on Long-term Cooperative Action under the Convention) by ICLEI - Local Governments for Sustainability on 9 December 2008 at COP14 in Poznan.

This approach was inspired by and based upon: first, the achievement of Chapter 28 of Agenda 21 of the Earth Summit in 1992, which officially recognized the role of local governments in the implementation of sustainable development. Second, Decision IX/28 of the 9th Conference of the Parties to the UN Convention on Biodiversity (UNCBD), which recognizes the interplay between cities, local authorities and biodiversity.

The fact that the Parties to the UNFCCC entered into a full negotiation phase from the beginning of 2009, the Roadmap partners started intensive dialogues with the delegations of national governments regarding their submissions on Paragraph 1 of the Bali Action Plan.

An analysis of the submission by the Parties in April 2009[164] revealed that at the beginning of AWG-LCA and AWG-KP (Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol) negotiations, a number of Parties from developed and developing countries considered a potential role for cities and local governments in adaptation, and partly on REDD, whereas there were no references in sections related to *shared vision, mitigation, capacity building, technology transfer and financing.*

Meanwhile, prior to the release of the official negotiating text, Senegal, followed by Uruguay and Argentina, were the pioneering countries who officially proposed AWG-LCA to recognize the need for collaboration and cooperation among all levels of governments globally.

In the second submission by ICLEI - Local Governments for Sustainability on 24 April 2009 to both AWG-LCA and AWG-KP, local governments rephrased their proposals for a negotiating text, while welcoming submission from Senegal and informal consultations with a number of other delegations like the EU, Mexico, Switzerland and Australia. The submission also contained initial elements on specific negotiation agenda items, such as the potential of local commitments for emissions reduction, involving local capacities in the formulation of Nationally Adaptation Plan of Actions (NAPA) and Nationally Appropriate Mitigation Actions (NAMAs), Technology Needs Assessment (TNA) and as well as facilitating access of cities to carbon finance options.

Upon the release of the Chair´s Negotiating Text on 19 May 2009, contained in document FCCC/AWGLCA/2009/8, local government networks improved their key positions through intensive consultations with relevant stakeholders, representatives of sub-national governments and like-minded national government representatives. As a result, specific proposals for revision of the Chair´s Negotiating Text were presented jointly by local and sub-national governments on 10 June 2009.

156 http://unfccc.int/resource/docs/2008/cop14/od09.pdf

157 UNFCCC, Brochure for 30 March – 7 April 2009, Side Events, http://unfccc.int/files/meetings/intersessional/bonn_09/application/pdf/awg_march_09_see_brochure_.pdf

158 UNFCCC, Barcelona Climate Change Talks 2009, Events, Side Events and exhibits Brochure, http://unfccc.int/files/meetings/intersessional/barcelona_09/application/pdf/see_brochure_bcn.pdf

159 UNFCCC, COP 15 and CMP 5, Copenhagen, 7-18 December 2009, Monday 7 December 2009 No 1. Daily Programme, Part Two, http://unfccc.int/resource/docs/2009/cop15/od01p02.pdf ;Local

In August 2009, the UNFCCC Secretariat released the document FCCC/AWGLCA/2009/INF.1 Part I-II, which involved submissions from Parties to the Chair`s Negotiating Text with their specific attributions. This new text involved a number of new entry points including important references to the role of stakeholders in the shared vision, enhanced role of local governments in adaptation, mitigation actions in cities within the scope NAMAs for developing countries and city-to-city twinning for Technology Transfer and Finance. Such submissions are based upon a wide variety of developed and developing countries submissions from a number of Negotiation Groups not limited to the Senegal, African Group, Mexico, South Korea, Switzerland, China, India, Australia, Norway, EU, USA, Small Island States, and a large number of Latin American Countries. This implies that the recognition of local and sub-national governments was one of the very few negotiation topics that both developed and developing countries have shared a common position on.

Meanwhile, within the scope of proposals on project-based mechanisms, local governments were following the agenda items in relation to the definition of co-benefits of CDM projects, which involved reference to environmental services such as air pollution reduction, improvement of water quality, proper treatment and reduction of waste, conservation of biodiversity and management of hydrological resources, all of which are strongly related to projects at the city, local and subnational level.

In October 2009, in addition to the African Group, the European Union and the Environmental Integrity Group, (EIG) involving Switzerland, South Korea, Mexico, Lichtenstein and Monaco confirmed their support to local governments as major negotiation groups. The Council of Environment Ministers of the European Union adopted a position that recognizes the role of local authorities in a Copenhagen agreement, referring to their role in implementing mitigation and adaptation actions. Similarly, on behalf of other EIG member countries, Switzerland has delivered the first official submission to the UNFCCC Secretariat, which is specifically relates to cities and climate change.

By October-November 2009, national governments started to focus on consolidating the negotiation texts through developing Non-Papers so that a suitable text for negotiating a binding agreement could be made available to heads of state in Copenhagen in December 2009.

Within the scope of narrowing down around 2000 bracketed paragraphs of the negotiation text, it was also expected that more than 100 references to local and sub-national governments would be reduced and rephrased to an appropriate scope. Additionally, by November 2009, negotiators had already started to discuss the possibility that Copenhagen could end up with a political outcome where the majority of technical details would have to be finalized in a post-Copenhagen process.

Therefore, it is essential to have a clear understanding of the level of

Government Climate Lounge, Lounge Program – Overview, http://www.iclei.org/index.php?id=10557

160 The Copenhagen Climate Summit for Mayors, http://www.climatesummitformayors.dk/

161 Local Government Climate Lounge, Program Overview, http://www.iclei.org/fileadmin/user_upload/documents/LACS/Portugues/Programas/Cidades_pela_protecao_climatica/LGC-Lounge_Program_small_30_Nov_09.pdf ;ICLEI Europe, COP15 News, http://www.iclei-europe.org/index.php?id=7601

Agenda Item	Key Paraphrases
Shared vision	Clear reference to the key role played by local and sub-national governments, referred to as governmental stakeholders.
Adaptation	Recognition of urban vulnerable groups or areas of high urban atmospheric pollution.
	Supporting implementation of adaptation at local and sub-national level.
	Integration of adaptation in local development plans.
Mitigation	Measures that support mitigation actions al local and sub-national level, by all countries.
	Domestically funded mitigation actions in developing countries (Nationally Appropriate Mitigation Actions – NAMAs).
	Mitigation actions at the sub-national or local level, in particular in cities and rural communities, as part of NAMAs.
	Buildings and urban planning, as one of the sectors.
	Sub-national accounting in REDD.
Financial resources and investment	Financing actions at the local and sub-national level.
Development and transfer of technology	Sub-national and city-to-city cooperation.
Capacity building	Strengthening institutions at all levels.

Table 14 Key paraphrases relevant to local and sub-national governments

recognition that local and subnational governments have reached in the negotiations of the Bali Action Plan (table 14).

At COP15, the Local Government Climate Lounge provided an advocacy base of approximately 1500 registered local government representatives, including more than 250 Mayors. Through more than 80 events including Mayor-Ministerial negotiation meetings with more than 20 countries, high-level interviews, regional/national panel/workshop sessions, media-launches and daily briefings, the Lounge resulted in the largest and longest presence of local governments during any COP event[165].

The Copenhagen Climate Summit for Mayors (organized by the City of Copenhagen in collaboration with ICLEI and C40) provided further opportunities for a selected number of Mayors to exchange key ideas and experiences on local climate actions. During COP15, five new local municipal organizations worldwide joined the Local Government Municipal Authorities (LGMA) constituency increasing the total number to 8.

Outcomes of COP15 in Copenhagen

COP15 in December 2009 was considered the final stage of a series of meetings extending over more than 4 years with over 100 heads of state and government coming together in the last round in Copenhagen. Despite the unmatched attention this multilateral environmental agreement received, it is widely considered that Copenhagen "did not deliver the full agreement the world needs to address the collective climate change challenge"[166]. Important official results of the Copenhagen Summit include:

162 UNFCCC 2008 'Submission from ICLEI-Local Governments for Sustainability for the Ideas and Proposals on paragraph 1 of the Bali Action Plan Item 3 (a–e) of the provisional agenda. For mandate see FCCC/CP/2007/6/Add.1, decision 1/CP.13 and FCCC/AWGLCA/2008/3, paragraph 23', Proceedings of the Ad-hoc Working Group on Long Term Cooperative Action under the Convention AWG-LCA Fourth Session, 1-10 December, Poznan, 2008.http://unfccc.int/resource/docs/2008/smsn/ngo/073.pdf; UNFCCC 2009, Local Government Climate Roadmap, Submission of ICLEI for inclusion in the negotiating text of the Long-Term Cooperative Action under the Convention 24 April 2009, http://unfccc.int/resource/docs/2009/smsn/ngo/149.pdf

163 UNFCCC 2008, 'Submission from ICLEI-Local Governments for Sustainability for the Ideas and Proposals on paragraph 1 of the Bali Action Plan Item 3 (a–e) of the provisional agenda. For

- "Copenhagen Accord": This non-binding instrument, which was taken note of by the Conference of Parties, envisions that Annex-I and Non-Annex-I countries announce their mitigation and action pledges respectively for 2020. New and additional resources will be provided by developed countries of USD 30 billion for the period 2010-2012 with balanced allocation between adaptation and mitigation. The Copenhagen Green Climate Fund shall be established as an operating entity of the financial mechanism and a review of the process by 2015 will take place[167]. However, there have been conflicting views on the follow-up and implementation of the Accord. Also this Accord is not legally binding and does not replace the existing UNFCCC track negotiations for a post-2012 agreement. The Accord does not involve any ambitious mitigation commitments recommended by IPCC, nor does it provide any clarity in financing and governance mechanisms for further action.
- The mandates of negotiation bodies at the UNFCCC level (AWG-LCA) and Kyoto Protocol level (AWG-KP) are extended until COP16 in Mexico in December 2010, but no clear timetable and working methodology has been defined. The 'twin tracks' negotiations over Kyoto Protocol and a post-2012 agreement were neither merged nor concluded[168].
- A number of technical decisions regarding the implementation of UNFCCC and Kyoto Protocol have been adopted by the Conference of Parties (COP) and Meeting of Parties (CMP) respectively.

But the conceptual shift of the negotiations from a purely environmental orientation to more comprehensive concepts like energy and security, the unprecedented number of heads of state and governments attending, and the enormous pressure from the global community simply turned Copenhagen Conference into "an event that is too big to fail", as referred to by H.E. Michael Zummit Cutajar, Chair of AWGLCA at the opening of the AWGLCA Sessions in Copenhagen.

The discussion points have become more complex, especially through the involvement of international politics, and solutions at the technical or negotiator level have become harder. This created extremely difficult conditions for climate negotiators to show the flexibility in reaching a consensus and postponing the final decision to a follow-up conference, which might have been called COP15bis, as was the case with COP6 in 2000 and COP6bis in 2001.

The new multi-track climate negotiations offer new opportunities for multi lateral agreements, but may also make it more difficult to follow and be

mandate see FCCC/CP/2007/6/Add.1, decision 1/CP.13 and FCCC/AWGLCA/2008/3, paragraph 23', Proceedings of the Ad-hoc Working Group on Long Term Cooperative Action under the Convention AWG-LCA Fourth Session, 1-10 December, Poznan, 2008. http://unfccc.int/resource/docs/2008/smsn/ngo/073.pdf ;UNFCCC, Submissions by non-governmental organisations, viewed 10 October 2009, http://unfccc.int/parties_observers/ngo/submissions/items/3689.php

164 UNFCCC, Submissions by Parties, viewed 10 October 2009, http://unfccc.int/meetings/ad_hoc_working_groups/lca/items/4578.php

involved in both formal and informal international climate negotiations for mitigation and adaptation action.

With relevance to the local governments, the official outcomes of the Copenhagen conference can be considered as follows:

- "Copenhagen Accord": does not contain any reference to recognition of roles, responsibilities and opportunities of local governments,
- AWG-LCA: Among the draft decisions the local governments were officially referred to in the shared vision (….further recognizing that stakeholders needs to be engaged….be they governmental, sub-national or local government…..) and weakly addressed in adaptation and capacity building agendas. Since the definition of NAMAs has been completely deleted from the final draft text, reference to mitigation in cities within the scope of NAMAs has also been deleted.
- CDM: within the scope of further guidance, as part of the officially adopted decisions of the Kyoto Protocol, national governments decided to request the UNFCCC Secretariat to enhance its support to designated national authorities and the Designated National Authorities Forum by, inter alia, developing and making publicly available studies on the potential of the Clean Development Mechanism in the countries identified in paragraph 47 above (i.e. countries having less than 10 CDM projects), working in close cooperation with local authorities.

165 Local Government Climate Lounge, LG Climate Lounge – Program overview.

4 Conclusion

"First we need to generate consciousness about the existence of the climate change and that it is up to the municipalities, central governments and the citizenship to counteract it. Second, international co-operation is needed to confront the climate change. One single municipality, one single unit can't do it alone, and the third would be that public policies have to be generated in order to achieve this change."

~ Marco del Prete, Secretary of Sustainable Development, Queretaro, Mexico.

"A great deal of city-building in developing countries is informal and not done with awareness of water supply, sea level rise, urban heat island effect, disease, or epidemiological predictions. Climate has to be a fundamental dimension of development planning in cities of developing countries, because they can't afford to rebuild urban spaces that will become dysfunctional in environments affected by climate change."

~Jeb Brugmann, Urban Strategist, The Next Practice.

"In order to make climate change an integral part of how cities think or develop, focus on funding sources for adaptation and mitigation need to get woven into these conversations. Either in terms of system transfers, or in terms of incentives for developing countries."

~ Ramesh Ramanathan Director, Janaagraha Center for Citizenship and Democracy.

"There is going to have to be multiple sources of funding. On the adaptation fund it will be a bit more complicated because there you will need higher levels of direct investment through public sources to address some, but not all, adaptation needs. This must involve funds coming from multiple sources. There must be public and private partnership and other options, as well as new and additional resources. They are not going to cover full costs, but they have to start covering incremental costs, particularly with regard to mitigation. Adaptation is a bit more complicated."

~ John Scanlon, Principal Advisor to the Executive Director, Policy and Programs, UNEP.

Opportunities for local governments

A lack of trust and political leadership among the nations, throughout the process since Bali or even beyond, can be considered as factors contributing to the failure of the Copenhagen Conference. It is very likely that it will take at least one more year, until COP16 in Mexico, for national governments to determine and decide upon a collective way forward for a post-2012 period.

But both scientific evidence and market forces urge for clarity on a climate agreement and action. The *Stern Review* made clear in 2005 that "if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever"[169]. But many business representatives have also been asking for ambitious and clear mitigation targets in order to guide, inform and benefit from business opportunities of investing in low-carbon technologies. The market already responded to the outcome of COP15 by a drastic drop in the value of carbon.

Local governments, both in urban and rural spaces, find themselves in a situation where they are compelled to act in order to avert the impacts of climate change, respond to the needs and desires of their citizens, and continuously show their commitment to building livable and sustainable places. Local governments are already active in improving their sustainability as far as their local conditions allow. They are showing leadership in voluntary mitigation actions dating back to 1993, before nations have agreed to the Kyoto Protocol. Local actions in the Kyoto era have supported a mind shift of many federal governments in terms of which role the local level can play, and how they can support national governments in identifying and realizing their climate action to avert dangerous climate change.

Especially in urban areas, buildings, transport and waste are primary sectors where benefits can exceed upfront investments in comparison with conventional approaches. Many of the reductions in these areas can be realized with appropriate local regulations, local investment, enforcement and monitoring, which can simply be improved by awareness raising, capacity building and development. There exists a huge potential for local governments to reduce their emissions through their own municipal actions and budgets which at the end can improve minimizing fuel or operation costs.

Local governments have taken significant steps in terms of accounting and harmonizing their GHG emissions reduction as well. The International Local Government GHG Emissions Analysis Protocol (IEAP) was developed by ICLEI - Local Governments for Sustainability in October 2009. Extension of this capacity throughout the local authorities can help a better analysis of real GHG emissions reductions. ICLEI and United Nations Environment Programme (UNEP) have launched a new initiative at COP15 in Copenhagen, the *Bonn Center for Local Climate Action and Reporting* (carbonn). It will provide a key role in facilitating local GHG emissions accounting and reporting, working closely with the UNFCCC and relevant stakeholders on the subject.

166 Press briefing on Copenhagen outcome, Podcast, Yvo de Boer, http://unfccc.int/2860.php viewed January 28, 2010.

167 http://unfccc.int/2860.php

International financial framework offers little to cities but the context is changing

The emerging international financing architecture for climate action is diverse and complex, and not primarily designed for local governments. Local governments are confronted with technical, institutional, financial and cultural or political challenges. They are interwoven with the national level and also require national capacity and coordination. Local governments' access depends on the involvement of their national governments and the capacities of their designated authorities for the successful completion of applications.

Local governments can approach their national governments to consider their potential action areas as part of their nationally appropriate mitigation actions ("urban" NAMAs) in terms of planning, implementation and monitoring and be a support to their national governments. But many questions still need to be determined[170].

The recent decision of national governments to request to the UNFCCC secretariat to work in close collaboration with local authorities to analyze the potential of CDM in eligible countries with less than 10 CDM projects illustrates the shift towards the local level. If local governments can convince that urban actions can magnify the potential of CDM projects, it might also be possible to revise and improve current practices of CDM so that they can reach to urban projects more easily.

But the local level involvement is only gradually emerging and local governments will still require to be informed beyond "the usual suspects" on the options available to them and equipped to draw upon these in strategic ways. At the local level challenges exist with regards to climate action in terms of competing priorities, capacity and resources, but also in terms of aligning and mobilizing support dependent upon local knowledge and awareness of climate change.

Any investment in urban areas interacts with sectors other than that in which the investment is made, and therefore needs to be part of an integrated approach. In most cases, climate change investments overlap with environmental and urban policy issues, and with the city's economic and social life. A strictly technical "climate change" approach to the situation is then not automatically beneficial. This underscores how a sector-based approach and vertical funding are not well suited to urban projects in urban areas. It draws more attention to transversal and territorial approaches[171] or strategic urban development. The local level can improve and develop plans that integrate international financing options into strategic urban plans, through better organization and identification of procedures, priorities and opportunities, an area research can facilitate.

So while the context is changing through the increasing involvement of local governments at the international level and the growing recognition of cities

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168 Earthcast WebPresentation, Michael Grubb, University of Cambridge, UK, January 27, 2010.

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and urban areas among the international community (e.g. IPCC), business community, and international climate negotiations, the current international financing architecture is only gradually emerging and maybe still convoluted, and primarily designed for national governments.

For rapid climate action to take place, the design of respective international mechanisms as well as the improvement of local knowledge and capacity are important steps that would need to be taken in coordination with national governments.

Capacity building and network learning

Exchange for vertical and horizontal integration is important. For example the exchange on methods, strategies and practices of local and regional adaptation is especially important as there is currently no forum for the local level (the *World Congress on Resilient Cities* in Bonn in 2010 will provide an opportunity for exchange) and there remain no operational mechanism for local governments' could directly apply to (AF is still being made operational).

Exchange can be geared towards joint generation of policies, co-participation or governance, and facilitated by participative decision making towards same objectives across levels. Local governments set targets, formulate strategies and share these within city networks, taking on leadership/opportunities. The private sector can play an investing or supporting role. But there are existing barriers to climate action including poor professional expertise and technical capacity, shortage of coordination and public support, along with a lack of awareness of the international financing options available for action. These are particularly important considerations for climate actions to be integrated along with sustainable development efforts.

By strengthening the framework conditions, local governments existing functions and roles can also be strengthened and vice-versa. Given the right tools, capacities and frameworks, the new international financing opportunities can support existing actions and provide new opportunities.

Adaptation Action Immediacy

Further research and investigation into adaptation made clear that while a great diversity of actors are looking into adaptation as an important issue, there remains a shortcoming on the exchange of its implications in urban development. NGOs, academia, local governments, businesses, development institutions, and other governmental and non-governmental organizations are increasingly investigating the impacts of climate change, but still relatively isolated.

The complexity and diversity of actors in urban areas requires bringing these together, especially with the crosscutting issue 'climate change' and impacts at the local level. Urban development subsequently needs to account for the impacts of climate change along the many other factors. In response to this identified shortage and building upon initial ideas, ICLEI

is conducting the first World Congress on Cities and Adaptation to Climate Change Resilient Cities 2010.

This is the first edition of an annual convention to share latest scientific findings, effective approaches, and state-of-the-art programs on climate change adaptation and resilience building in cities and urban areas. Such exchange seeks to inform urban development by exploring, identifying and determining conflicts and synergies between development, mitigation, adaptation and other socio-economic and environmental objectives.

The following themes were identified: vulnerability and risk assessment; social and economic dimensions of climate change; policy integration and mainstreaming of adaptation; municipal adaptation planning; financing; and technology. Case examples of local adaptation practice on these themes will illustrate approaches and experiences.

More specifically it addresses methods and tools, socio-economic and institutional dimensions, strategy, policy integration and mainstreaming, urban adaptation planning and practice, costs and financing of urban climate change adaptation, and technologies for adaptation of settlements and infrastructures.

The congress will precede the UN Climate Talks in Bonn and is organized by ICLEI – Local Governments for Sustainability, together with the City of Bonn and the World Mayors Council on Climate Change, in cooperation with many other partner organizations. Through the sharing of knowledge and experiences, this congress will enhance exchange, learning, networking, debate and policy development on approaches and solutions to climate change adaptation for cities and municipalities. It subsequently seeks to inform the future planning and investment at the local level and attempts to realize many of the conclusions set out above.The following themes were identified: vulnerability and risk assessment; social and economic dimensions of climate change; policy integration and mainstreaming of adaptation; municipal adaptation planning; financing; and technology. Case examples of local adaptation practice on these themes will illustrate approaches and experiences.

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6 Appendix

6.1 List of Interviewees

International Business Representatives

Gary Lawrence	Urban Strategy Leader	Arup
Nancy Tuor	Group President, Executive Sponsor, Sustainability	CH2M Hill
Steve Dobbs	Senior Group President, Industrial & Infrastructure Government and Global Services	Fluor Corporation
Peter Evans	Director, Global Strategy and Planning	General Electric
Mark Cleverley	Director of Strategy, Global Government Industry	IBM
Dr. Peter Hoeppe	Head of Geo Risks Research, Corporate Climate Center	Munich Re
Hazem Galal	Partner Advisory Services	PriceWaterhouseCoopers
Stefan Denig	Head of Issue Management, Corporate Communications and Government Affairs	Siemens
Alex Wong	Senior Director, Center of Global Industries	World Economic Forum

International Climate and Urban Experts

Taffy Adler		
Günter Meinert	Senior Urban Specialist	Cities Alliance
Fouad Bendimerad	Chairman, Risk Management	EMI
Bert Metz	Fellow (Former co-chair IPCC Working Group III)	European Climate Foundation
Saleemul Huq	Senior Fellow, Climate	IIED
Patricia Romero Lankao	Deputy Director	Institute for the Study of Society and Environment
Ramesh Ramanathan	Director	Janaagraha Center for Citizenship and Democracy
Swati Ramanathan	Co-Founder	Janaagraha Center for Citizenship and Democracy
Anonymous	Urban Development and Finance Expert	Multi-lateral Organization
Paul Chamniern	Director, Grassroots Action Program	Thailand Environment Institute
Jeb Brugmann	Urban Strategist, Founding Partner	The Next Practice
Rafael Tuts	Chief, Urban Environmental Planning Branch	UN Habitat
John Scanlon	Principal Advisor to the Executive Director, Policy and Programs	UNEP

Senior City Decision Makers *(not all listed participated in the interview)*

Anonymous	Senior City Decision Maker	Alexandria, Egypt
Geraldo Vasconcelos	Environment Secretary, Environmental Secretariat	Belo Horizonte, Brazil
Nestor Archival	City Councilor	Cebu City, Philippines
Anonymous	Senior City Decision Maker	Dammieta, Egypt
P G Thomas	Secretary (Commissioner)	Kochi Municipality, India
Tumelo Shakwane	Acting Head, Environmental Management, Economic Development and Planning Department	Mangaung Local Municipality, South Africa
Luis Lopey Amaya	Director of Municipal Ecology	Municipality of Queretaro, Mexico
Marco Del Prete	Secretary of Sustainable Development	Municipality of Queretaro, Mexico
Elana Keef	Directorate: Public Health, Sub-Directorate: Environmental Management	Nelson Mandela Bay Metropolitan Municipality, South Africa
Mr Garcia	Environment Secretary	Porto Alegre, Brazil
Blanca Alcalá	Municipal President	Puebla, Mexico
Blas Villegas Lara	General Director, Agency for Environmental Protection and Sustainable Development	Puebla, Mexico
Carlos Cruz Villanueva	Coordinator of the Follow Up and Evaluation Unit of the Agency for Environmental Protection and Sustainable Development	Puebla, Mexico
Claudia Iglesias	Subdirector of the Agency for Environmental Protection and Sustainable Development	Puebla, Mexico
Andrea Po	Head, Plans and Programs Division	Quezon City, Philippines
Frederika Rentoy	Environmental Protection and Waste Management	Quezon City, Philippines
Dr. Dinesh Brahmabhatt	Commissioner (IAS)	Rajkot Municipality, India
Robert Tokusumi	Director, SEMASA	Santo André, Brazil
Amar Nath Sharma	Commissioner (IPS)	Shimla Municipality, India
Boeddy Suharto	Sekretaris Daerah (City Manager)	Surakarta (Solo City), Indonesia
S. Aparna	Commissioner (IAS)	Surat Municipal Corporation, India
T. T. Balsamy	Commissioner	Thiruchirapalli Municipality, India

6.2 Selected Cities with Brief Profile

City (Country)	Profile
Santo André (Brazil)	**Population 669,600 (2005)** Santo André is situated in the south west of the state of São Paulo, and is one of 39 municipal districts in the São Paulo Metropolitan area. Since the 1990's the district has experienced a shift away from industrial land use toward those associated with commerce and the service sectors. Santo André lies along the Tamanduatei River and sits approximately 743 meters above sea level. Sixty percent of the municipality is located in reserve areas created with the intent of preserving watersheds, green areas and natural parks.
Belo Horizonte (Brazil)	**Population 2,452,617 (2009)** Belo Horizonte is the third largest metropolitan region in Brazil supporting a wider population of 5.4 million inhabitants at a density of 6,900 inhabitants/km_. 85% of the GDP generated in Belo Horizonte comes from the service sector, supplemented by metallurgical and mineral extraction-based industries. From 1990 to 2000 the city population grew at an annual rate of 1.1 % . Belo Horizonte is situated in the mountainous region of Brazil in the state of Minas Gerais. Nearly 95% of the municipal area is already urbanised, causing concern over water provision.
Porto Alegré (Brazil)	**Population: 1,420,667 (2007)** Porto Alegré is the second largest city in southern Brazil, and the capital of the State of Rio Grande do Sul. With 497 km_ Porto Alegré is located within the larger metropolitan region, consisting of 31 municipalities, with a population of 3.5 million. Porto Alegré has a GDP per capita of 23.534 Reais (2007) or USD$ 12,745 (2009) has a poverty rate of 23.7% and GINI of 0.45 (2003)[172]. The economy is dominated by the service sector (64%), followed by commerce (33%) and industry (3%). Porto Alegré sits on the banks of Guaiba Lake has a very hilly topography and an average elevation of 45 meters above sea level. The lakes host a unique ecosystem and the city environs are home to 28 percent of the native flora of the state[173].
Alexandria (Egypt)	**Population: 4,000,000 (2005)** Alexandria, Egypt stretches over 2,500 km_ with a population density of 1,739 individuals per km2. The modern city of Alexandria is divided into six districts. These six districts, in addition to two independent cities, fall under the jurisdiction of the Alexandria Governate. The city is bordered by the Mediterranean to the North. Lake Mariout to the South, Lake Edco and Abu Keer Bay to the East, and to the West, the vast Western Desert. The city has a coastline of 70 kilometers, and operates as a key industrial hub within Egypt's economy, supporting 40% of Egypts's industrial firms, which include port activities, textile, chemical, fuel, metal and tobacco industries[174]. Tourism is also one of the strongest elements of Alexandria's economy. Roughly 30% of the city's population live in informal squatter settlements, and only 25% of the city is active in the labor market, despite formal unemployment figures of 7-10%. Unemployment is particularly high for 15-29 year olds[175].
Dammieta (Egypt)	**Population: 953,430 (1999)** Dammieta is located between the Mediterranean Sea and the Nile, just 1 meter above sea level[176]. Dammieta depends upon revenue from summer tourism, industry, fisheries and agriculture. Industry employs 35 percent of the labor force (in areas such as woodworking, food processing, petrochemicals and fishing), while agriculture employs 25 percent[177]. Dammieta's economy was ranked the 5th wealthiest Governorate in Egypt (2000) and was the wealthiest of the Lower Egypt Governorates in terms of GDP per capita (E£5,980).
Rajkot (India)	**Population: 1,335,397 (2008)** Rajkot is the 4th largest city in the state of Gujarat and the 28th largest urban agglomeration in India. It is ranked 22nd in the world's fastest growing cities and urban areas from 2006 to 2020. Heavy and small scale industries comprise the main economic sectors of the city, although growth is also planned for the real estate sector. Rajkot is located on the banks of the Aji River and Niari River at an elevation of 134 meters (439 feet) above sea level.
Shimla (India)	**Population: 1,250,000 (2001)** Shimla is the capital city of the state of Himachal Pradesh. The municipality is designated as an Agro-Economic Zone for apples, and is a major collection and distribution center of horticultural goods, making it reliant on the resources provided by its hinterland. Located in north-west Himalayas at an altitude of 2,202 meters above sea level[178] and spread across a ridge, the city is located in a high damage risk zone (earthquakes). The nearest river is 13 miles away. Changing rain patterns are a risk for Shimla's urban housing, much of which is situated on slopes, as well as potable water supply.
Tiruchirappalli (India)	**Population: 7,52,066 (2001)** Tiruchirappalli (Trichy) is situated on the banks of the river Cauvery towards the southern tip of India in the state of Tamil Nadu. The economy of the city is made up of a combination of mechanized and cottage industries focused on electrical and locomotive construction workshops. Situated at an average elevation of 78 meters above sea level, the city is largely flat. The city is to host an international conference on climate change and bioresource in 2010.
Surat (India)	**Population: 2,876,374 (2001)** At an elevation of 13 meters above sea level, the city is situated 14 miles from the mouth of the Tapti River. The economic bases of the city lie in textile manufacturing, diamond cutting and polishing industries, chemical industries and the petrochemical and natural gas based industries. Surat has enjoyed one of the highest annualized GDP growth rates in India at 11.5% from 2001-2008.[179]
Kochi (India)	**Population: 600,000 (2001)** Kochi is the largest and fastest growing city in the Indian state of Kerala. Its extended metropolitan area supports a population of 1.5 million. In the decade between 1991 and 2001 Kochi City's metropolitan area has grown by 10.79%[180]. The strength of Kochi's economy lies in the service sector, which comprises 33.8%, followed by trade and commerce (22.3%) transport and communication (19.6%) manufacturing and processing (15.9%) and construction (7.9%). It is a port city, situated on the northern end of a peninsula, bordered to the West by the Arabian sea, and by estuaries to the east. The majority of Kochi lies at sea level. Given its low-lying elevation and surrounding estuaries, the city is highly vulnerable to marine changes resulting from climate change, from tides, waves, to the influx of saline water threatening potable drinking sources, such as the Periyar River, the main water source for the city.
Surakarta (Indonesia)	**Population of 600,400 (2009)** Surakarta (Solo City) is located in the province of Central Java, at an elevation of 109 meters above sea level. The city is comprised of an area of 44 km_ and is divided into five sub-districts. Bordered to the East by the Bengawon Solo River, the longest river on Java, the city is prone to severe flooding, which threatens the urban poor who reside along its banks[181].
Puebla (Mexico)	**Population: 1,485, 941 (2005)** Puebla is the metropolitan area ranked 11th in terms of GDP. Metal, textile, chemicals and electrical industries are placed in the peripheries of the city, and account for approximately 80% of the local economy. The GDP per capita of Puebla is $9,544 (2000).
Queretaro (Mexico)	**Population: 734,139 (2005)** Queretaro is the capital of the eponymous state in which it sits. The population of the city itself stands at 596,450 (2005) while the wider Metropolitan area, the 11th largest in Mexico, stands at 918,100 (2005). The annual population growth of the city is 1.8% (2007).[182] The bulk of Queretaro's economy is generated through manufacturing (32%), while trade is a secondary economic strength (19%) followed by services (18%) transport (11%) finance and insurance (11%). Manufacturing continues to grow at 6.4% per annum (2007).[183] Queretaro is located in an agricultural region of central Mexico, situated 3,360 meters above sea level.[184] The climate varies greatly, with the northern area most susceptible to shortfalls in precipitation.
Quezon City (Philippines)	**Population: 2,679,450 (2007)** Quezon City is constructed on rolling topography, with slopes ranging from 8-15%. The highest point of the city sits at 121 meters above sea level, while the lowest is only 3 meters above sea level. From 2000-2007, the annual population growth rate was 1.45%.[185] Rising sea level, changing precipitation pattern and increasing number of typhoons of increasing intensity are likely growing challenges with climate change.
Cebu City (Philippines)	**Population: 798,809 (2007)** The topography of Cebu City, on the eastern part of Cebu Province, is rugged and mountainous, with elevations reaching up to 900 meters above sea level. It is located on an island at the center of the Visayas in Southern Philippines and is 215 km long and 35 km at its widest. The city's population represents more than 50 percent of metropolitan Cebu with 1.3 million inhabitants (2008) and 4 percent of the country's population. The population of the city has grown at the relatively low rate of 1.6 percent for the last five years in comparison to national averages[186]. As an island, Cebu City is threatened by rising sea levels, not least because of the low-lying nature of most inhabited land, but also due to the intrusion of salt water into coastal aquifers[187, 188].
Mangaung (South Africa)	Population: 850,000 (2009) Mangaung municipality is the capital city of the Freestate province, and supports roughly 24% of the provincial population[189]. Community Services (36%) finance (18%) trade (16%) and transport (13%) represent the strongest sectors of Mangaung's economy. Located on the southern edge of the Highveld at an elevation of 1,400 metres, Mangaung borders the semi-arid region of the Karoo.
Nelson Mandela Bay (South Africa)	Population: 1, 122, 312 (2009) Nelson Mandela Bay experienced a growth rate fluctuating from 1.78% to 1.76% between 1997 and 2007. Manufacturing (26.3%) business and finance (23.5%) and transport and communication (23.5%) comprise the main economic activities of the city[190]. Flooding remains one of the greatest climate-related risks to the city[191 192] .

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6.3 Financing Mechanisms Established under the Kyoto Protocol

Aimed at	Name of Instruments	Description	Relevance to cities in developing countries
Mitigation	Emissions Trading	Countries with commitments under the Kyoto Protocol (Annex I Parties) have been allocated a certain "assigned amount units" (AAUs), which quantifies the allowances of GHG emissions for each individual country. Emissions trading allows countries that have AAUs spare to sell the excess capacity to countries that are over their targets. The European Union's ETS is currently the world's largest Greenhouse Gas Emission Trading System.	Emissions trading schemes may be established as climate policy instruments at national level and regional levels. Under such schemes, governments set emissions obligations to be reached by the participating entities. However, firstly, Emissions Trading only applies to Annex I (developed) countries, and secondly, local governments are not participating entities. Therefore Emissions Trading is not **relevant** for this study.
	Joint Implementation (JI)	The JI mechanism allows a country with an emission reduction or limitation commitment under the Kyoto Protocol (Annex I Party) to earn emission reduction units from a project in another Annex I Party, which can be counted towards meeting the first county's Kyoto target.	Joint Implementation only applies to countries with a commitment under the Kyoto Protocol: Annex I (developed) countries. JI is not **relevant** to cities in developing countries.
	Clean Development Mechanism (CDM)	The CDM allows projects in developing countries to earn certified emission reduction credits. These can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol.	CDM projects take place in Non-Annex I (developing) countries. Despite a number of barriers, cities in developing countries are in principle eligible as **project participants** in CDM.
Adaptation	Adaptation Fund (AF)	The Adaptation Fund was established to finance concrete adaptation projects and programs in developing countries that are Parties to the Kyoto Protocol. It is financed through a 2% levy on CDM projects.	Projects details are still being discussed. However, it is expected that access to the Adaptation Fund will be country-driven.

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191 Nelson Mandela Bay Desktop Economic Profile 2008

192 Nelson Mandela Bay Department of Disaster Planning http://www.weathersa.co.za/RSMCarchive/PDF/Nelson%20Mandela%20Bay%20Disaster%20Management.pdf

193 The information in section is mainly drawn from Climate Funds Update, http://www.climatefundsupdate.org/

194 Pledges to the Fund have been made by Australia, France, Germany, Japan, Norway, Spain, Sweden, and the United States. Pledges represent a donor's expression of interest to make a contribution and are not legally binding.

195 Pledges to the Fund have been made by Australia, Canada, Germany, Japan, Netherlands, Norway, Switzerland and the UK. Pledges represent a donor's expression of interest to make a contribution and are not legally binding.

6.4 Climate Funds as Part of ODA

Aimed at	Name	Administration	Description [193]	Size of funding (in USD): Pledged / Deposited (in order of size)
Adaptation / Mitigation	Cool Earth Partnership	Government of Japan	Proposed in Jan 2008. Assists developing countries already involved in GHG mitigation efforts to achieve economic growth in a sustainable way; assist developing countries suffering severe adverse impacts as a result of climate change.	10 bn / 0
Mitigation	Clean Technology Fund (CTF)	World Bank – Climate Investment Fund	Proposed in Feb 2008, approved in July 2008.[193] Promotion of programs in the power, transport and energy efficiency sectors through scaled-up financing for demonstration, deployment and transfer of low-carbon technologies. Countries access the funds although projects can be sub-national focusing on a particular province/state/municipality. Discussions are underway with over 15 countries.	4.97 bn / 0.48 bn
Adaptation / Mitigation	Strategic Climate Fund (SCF)	World Bank – Climate Investment Fund	Proposed in Feb 2008, approved in July 2008.[194] Piloting of new approaches or scaling up activities at specific climate change challenges or sectoral responses. There are three funds under the SCF framework: the Pilot Program for Climate Resilience (PPCR), the Forest Investment Program (FIP) (for REDD) and the Scaling Up Renewable Energy in Low Income Countries Program (SREP). Pilot Programme for Climate Resilience (PPCR), will provide incentives for scaled-up action and transformation change in integrating consideration of climate resilience in national development planning consistent with poverty reduction and sustainable development goals. Up Renewable Energy Program for Low Income Countries (SREP)[195], criteria for eligibility of recipient countries is being established with the principle objective to help low income countries make a transformation to low carbon energy pathways by optimally exploiting their renewable energy potential to offset fossil-based energy supply.	1.19 bn / 0.19 bn
Adaptation / Mitigation (general & REDD)	Amazon Fund	Brazilian Development Bank (BNDES)	Created in Aug 2008. reservation of forests through finance of projects contributing to the prevention and combat against deforestation, as well as to the preservation and sustainable use of the Amazon biome.	1 bn / 0.11 bn
Adaptation / Mitigation	International Climate Initiative (ICI)	Government of Germany	Proposed in Dec 2007, operational end of 2008. Funding of climate change mitigation, adaptation and biodiversity projects with climate relevance. It includes implementation of selected parts of national and regional programs on adaptation to climate change, development and testing of insurance solutions and assumption of the additional costs arising from the climate proofing of vulnerable infrastructure and development projects.	0.36 bn / 0.36 bn
Mitigation (REDD)	International Forest Carbon Initiative (IFCI)	Government of Australia	Proposed in March 2007, operational in 2007. To facilitate capacity building and provide momentum to support inclusion of REDD in a post-2012 global climate change agreement; increasing international forest carbon monitoring and accounting capacity in developing countries, in particular Indonesia and Papua New Guinea.	0.18 bn / 0.06 bn
Adaptation	Least Developed Countries Fund (LDCF)	Global Environmental Facility (GEF) – UNFCCC Climate Change Fund	Proposed in Nov 2001, operational in Oct 2002. Targets the 48 Least Developed Countries and their needs to adapt to climate change including preparing and implementing National Adaptation Programmes of Action (NAPAs).	0.18 bn / 0.14 bn
Mitigation	The Global Energy Efficiency and Renewable Energy Fund (GEEREF)	The European Commission	Proposed in Oct 2006, operational in Nov 2008. Private-Public Partnership (PPP) arrangement investing in energy efficiency and renewable energy projects in developing countries and economies in transition, and designed to maximize the leverage of public funds.	0.17 bn / 0.03 bn
Adaptation / Mitigation (general & REDD)	Global Climate Change Alliance (GCCA)	The European Commission	Proposed in Sept 2007, operational in 2008. Intends to build new cooperation between the EU and poor developing countries, most affected by and least capable of dealing with climate change, through integration of development of climate change strategies, and promotion of mitigation activities that contribute to poverty reduction.	0.14 bn / 0.17 bn
Adaptation	Special Climate Change Fund (SCCF)	Global Environmental Facility (GEF) – UNFCCC Climate Change Fund	Proposed in Nov 2001, operational in Oct 2002. Implementation long-term adaptation measures that increase the resilience of national development sectors to the impacts of climate change.	0.12 bn / 0.11 bn
Mitigation (REDD)	Forest Carbon Partnership Facility (FCPF)	World Bank	Proposed in March 2007, operational in June 2008 World Bank programme to assist a selected group of developing countries in their efforts to reduce emissions from deforestation and land degradation (REDD) (financed through the Readiness Fund), and to remunerate a small group of countries in accordance with contracts for verifiable reductions in emissions from deforestation and land degradation beyond the reference scenario (financed through the Carbon Fund).	0.11 bn / 0.05 bn
Mitigation (REDD)	Congo Basin Forest Fund (CBFF)	African Development Bank	Proposed and operational in June 2008. Supports projects aimed at reducing poverty and address climate change through capacity development of local people to enable them to manage their forests, help local communities find livelihoods that are consistent with the conservation of forests, and reduce the rate of deforestation.	0.1 bn / 0.1 bn
Adaptation/ Mitigation	MDG Achievement Fund (MDG-F)	United Nations Development Programme (UNDP)	Proposed in Dec 2006, operational in beginning of 2007.[197] 'Environment and Climate Change' is one of eight thematic areas supported by the MDG-F. Facilitates poverty and vulnerability in eligible countries by supporting interventions that improve environmental management and service delivery at the national and local level, increase access to new financing mechanisms and enhance capacity to adapt to climate change.	0.09 bn / 0.09 bn
Adaptation	Strategic Priority on Adaptation (SPA)	Global Environmental Facility (GEF) – GEF Trust Fund	Proposed in Nov 2003, operational in July 2004. Three-year pilot programme aimed to show how adaptation planning and assessment could be practically translated into full-scale projects. Addresses local adaptation needs and generate global environmental benefits in the focal areas (one of them being climate change).	- / 0.05 bn

196 Pledges to the Fund have been made by the Netherlands, the UK and Switzerland. The Fund is still accepting and still needs more pledges. Pledges represent a donor's expression of interest to make a contribution and are not legally binding.

197 *Global Climate Change Update*, Global Climate Change Alliance, viewed 20 November 2009,

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Acknowledgements in support of the study

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The study was prepared with the support of the German Ministry for Economic Cooperation and Development (BMZ) via the sector project 'Policy Advisory Services for Urban and Municipal Development' of the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

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