



Integrating  
**Climate Change**  
into City Development Strategies (CDS)

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**Climate Change**  
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# INTEGRATING CLIMATE CHANGE INTO CITY DEVELOPMENT STRATEGIES (CDS)

## Climate Change and Strategic Planning

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## Foreword

Today, more than half of the people on the planet live in urban areas and this proportion is expected to increase significantly over the coming decades. Meanwhile urban areas account for between 37 and 49 per cent of global GHG emissions (IPCC 2014) and are heavily vulnerable to the impacts of climate change. Cities, particularly in developing countries, are especially vulnerable to climate change due to the large concentration of populations and their role as national economic hubs. In addition, many urban areas are located on the coast, making them susceptible to rising sea levels. Within cities, the urban poor are among the most vulnerable.

At the same time, cities are growing, especially in the developing world. Urbanization is a source and driver for socio-economic development. Strategically guiding city development and enabling sustainable urbanization is one of the key aspirations of City Development Strategies, and the related methodology advocated by Cities Alliance and its members. This publication attempts to provide a modest input into the effort of unifying both thematic areas, Climate Change and City Development Strategies. This attempt of climate

proofing city development strategies is an ongoing process and requires additional effort by governments, academia, and city development partners worldwide. One of those coalitions has been formed under the umbrella of Cities Alliance.

The World Bank, the United Nations Human Settlement Programme (UN-Habitat) and the United Nations Environment Programme (UNEP) collaborated in a Joint Work Programme (JWP) to help cities address challenges related to climate change, aiming to facilitate a coordinated, focused effort targeting cities and climate change. The JWP captured current knowledge, and supported local and national decision-makers incorporate climate change adaptation and mitigation into their urban planning policies and practices. A number of deliverables have been produced during this collaboration, including: an online catalogue to facilitate access to knowledge on cities and climate change, various tools for incorporating climate change into urban policies and practices, analytic and assessment guides, handbook for mayors on climate change adaptation and mitigation in cities.



# 1



Coastal protection around Cape Town. © Sean Wilson, 2009

## INTRODUCTION, BACKGROUND & METHODS

### 1.1. Who should use this guide

The guide is intended to be of particular benefit for the following groups:

- Planners working in local governments cities in low- and middle-income countries that are developing a City Development Strategy, have some knowledge of climate change and want to integrate this aspect.
- City planners working in local governments who have developed a City Development Strategy and have integrated climate change but want to review or refine the process with specific regards to climate change aspects.
- City planners working in local governments who have no previous experience in developing a City Development Strategy but who are planning to do so in the future, have basic knowledge of climate change and are actively seeking ways to integrate this aspect.

This guide may also be useful for professionals in the urban development field in cities where local governments lack specific personnel working on town planning.

### 1.2. How to use this guide

This guide takes as a starting reference the three phases of the City Development Strategy process as highlighted in the Cities Alliance conceptual framework (Cities Alliance, 2011) and, for each phase, details the relevant steps to undertake in order to ensure that climate change concerns are streamlined in the process. At each stage it incorporates important messages and, where appropriate, suggests principles to guide city planners and also showcases existing decision-making tools from a variety of sources<sup>4</sup>. At the end of Phase A and B, summary graphs show the steps that need to be taken to move the process on.

Throughout the report we present:

**Light green-coloured boxes** that illustrate evidence of good or bad practices found in seven case study cities

<sup>4</sup> In this guide, we do not want to re-invent the wheel, hence, the decision-making tools proposed here are heavily based on the substantial work done by UN-Habitat and presented in the 2014 report *Planning for Climate Change: A Strategic, Value-based Approach for Urban Planners (Guide and Toolkit)*. Other resources are added where appropriate.

researched for this project or coming from a review of relevant literature.

**Orange-coloured boxes** to present in more depth definitions or concepts presented in the main text.

**Yellow signposts** to highlights process steps that are particularly important for communication with community members and larger stakeholders and their participation in the planning for climate change process.

### 1.3. Methodology

This guideline was composed using desk-study research, extensive literature review of the linkages between the City Development Strategy thematic areas and climate change and of existing climate change planning tools and guidelines for cities. Specifically, the methodology builds upon the lessons learned from the empirical review of experiences from seven case study cities investigated by city-based researchers selected for this occasion. The choice of the seven cities was based on a pre-selection of 38 cities in 21 countries across Asia, Africa and Latin America<sup>5</sup>.

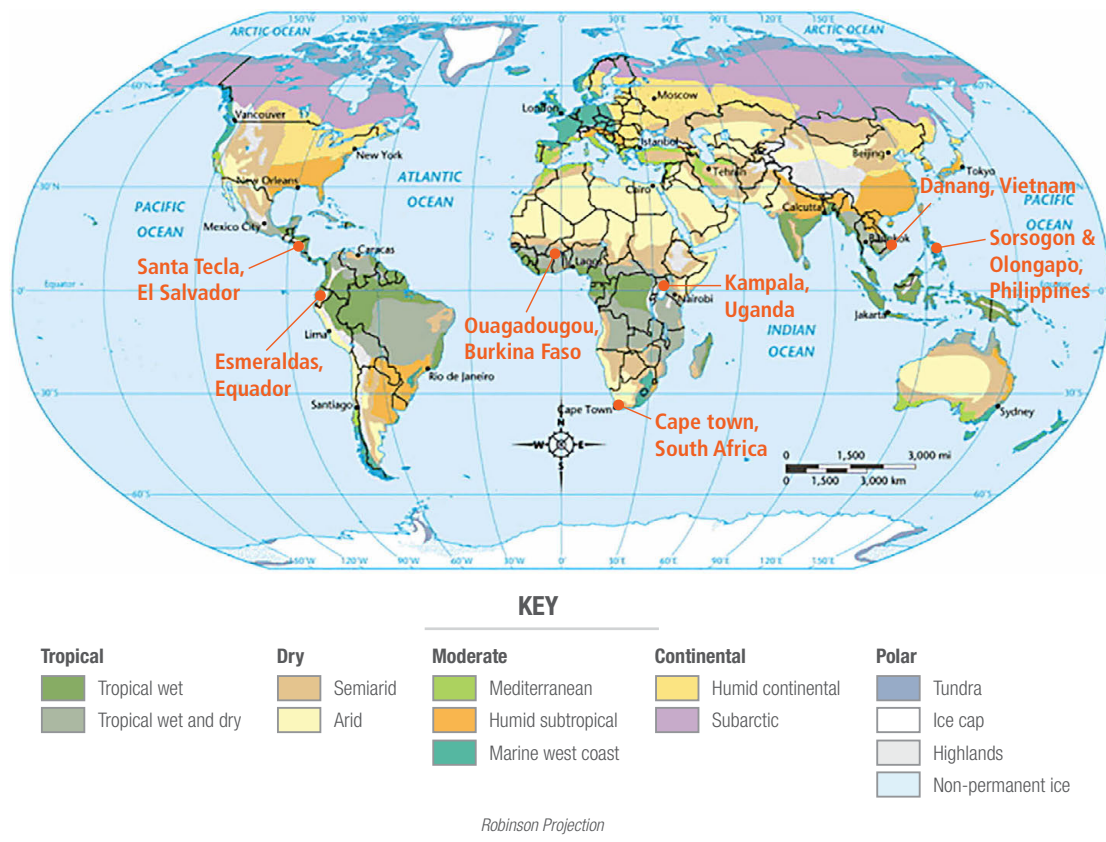
The selected cities are presented in Figure 1 and are: **Kampala** (Uganda), **Ouagadougou** (Burkina Faso), **Da Nang** (Vietnam), **Cape Town** (South Africa), **Sorsogon** (as primary focus in the Philippines and complemented with a quick assessment of **Olongapo**), **Santa Tecla** (El Salvador) and **Esmeraldas** (Ecuador).

A case study protocol to increase the understanding about climate change integration in strategic planning and City Development Strategy processes was prepared and administered in aforementioned cities. The variables for the case study protocol were developed around the thematic focus areas and process steps of the City Development Strategy.

<sup>5</sup> The seven cities were identified, in consultation with the UN-Habitat and the Cities Alliance Secretariat. The criteria for selection were as follows: 1) Climate Change had to be considered at least to some degree in the City Development Strategy/strategic planning process; 2) The strategic planning process was generally perceived to be satisfactory; 3) Regional balance: two to three cities per region and selected by sub-region; 4) A significant presence of UN-Habitat or other partners able to support local review; 5) A balance between ongoing and concluded City Development Strategy processes; 6) At least one city where Cities Alliance and UNEP are already working to ensure synergy in JWP's work; 7) A city in Latin America with a fully-developed strategic planning process.



**Figure 1** Case Study Cities



In addition, an online forum and video discussion was organized among the city-based researchers and UN-Habitat partners. The literature review, case studies and online fora had the following objectives:

- Identify key climate change related issues (planning issues), analytical approaches, action oriented approaches and funding mechanisms deployed in implementation
- Identify to what extent and where climate change issues have been introduced in the City Development Strategy process
- Identify lessons learnt, as well as gaps and opportunities for a climate change-conscious City Development Strategy approach

The preliminary list of cities, the case study protocol and detailed findings are included in a separate report, while most significant case study findings are used to illustrate and support the process of integrating climate change in City Development Strategy proposed in this guideline.

#### 1.4. Case study cities profiles

In this section a brief profile of the case study cities is presented. The profile includes information about the cities' demographics and main climatic threats. Table 1 presents a cross comparison of cities' socio-economic indicators.

## Esmeraldas (Ecuador)



**Night time cityscape in the center of Esmeraldas, Ecuador.**  
© UN-Habitat/Francois Laso

**Location and Demographics:** Esmeraldas is a medium-sized coastal Ecuadorian city. Its social and economic indicators are comparable to other cities of similar size. The population estimate for Esmeraldas Canton for 2010 is 188,694, with 66 per cent living in an urban situation. This is up from 162,225 in 2001, an increase of 16 per cent in nine years.

**Climate Hazards:** Esmeraldas is a coastal city with a high percentage of poor people and where urban growth is mainly associated with illegal occupation of land around the consolidated city. For this reason, poor people are usually located in disaster-prone areas, where the natural vegetation and tropical mangrove forest has been largely removed, and with a high level of industrial activity related to petroleum refining and production of thermo electrical energy.

By 2007, almost 60 per cent of the population lived in areas with medium to high risk of floods or landslides. An estimated 66 per cent had medium to high exposure to climate-related risks. Based on the city's vulnerability assessment the variability and uncertainties associated with the climate change projections for the Esmeraldas River Basin are consistent with those observed for Ecuador as a whole.

Five models and nine emissions scenarios consistently project increases in temperatures of approximately 2°C to 3°C for the Basin. For the coastal region in and around Esmeraldas, however, precipitation projections vary from +30 per cent to +50 per cent, to -30 per cent to -50 per cent (mm/day). There are several small and isolated watersheds in this area that would be affected severely by either extreme.

Under climate change scenarios predicting a path towards hotter and more humid climates, Esmeraldas would face even greater and more frequent disasters, requiring more complex planning and management scenarios. Increased precipitation would certainly cause additional loss of life and property.

In this respect, one of the key challenges is how to improve controlling the ongoing expansion of informal settlements along the flood zones. Under scenarios predicting hotter and drier climates, Esmeraldas could experience lower risks of flooding and lower stress on their water delivery systems but stakeholders consider water shortages and price increases a major concern. In both climate transition paths, energy demands are expected to increase drastically, not only because of higher temperatures and larger populations but also increased consumption levels (UN-Habitat, 2011)

## Santa Tecla (El Salvador)



**Church of Our Lady of Carmen in Santa Tecla, El Salvador.**  
© Wikipedia

**Location and Demographics:** Santa Tecla is the capital of the department of La Libertad in the western portion of the central valley of El Salvador and has a population of 152,723 (2007 est). The growth of Santa Tecla city occurs in the metropolitan area of the capital, San Salvador, a major urban centre with great influence over its peripheral cities. Much of the urban extension of Santa Tecla took place in the restricted nature areas established by the master plan producing a great impact on the environment of the foothills of the San Salvador volcano. Now, 92 per cent of the population lives in the urban area of Santa Tecla, with 8 per cent of those living in marginalized areas. In all, 89.4% of the population has access to basic water and sewers.

**Climate Hazards:** According to a national study on climate scenarios for El Salvador (Centella et al. 2000b), the annual mean temperature is expected to increase 0.8 to 1.1°C by 2020 and 2.5 to 3.7°C by 2100. For precipitation, the results are less certain and include ranges of between -11.3 and 3.5 per cent by 2020 and -36.6 to 11.1 per cent by 2100. Although magnitude changes are observed, the projected monthly rainfall pattern is similar to that in the baseline period. A relative reduction of the total volume of rainfall in July and August is expected, which would be associated with the yearly occurrence of midsummer droughts. With regards to the sea level rise (SLR), a national study (Monterrosa 2000), which has been quoted in other climate reports (IPCC 2007), projected and assessed a rise of 13 to 110 cm using incremental scenarios, which would have adverse impacts on the people and coastal systems of the Salvadoran coastal plain in the future.

A detailed vulnerability assessment of Santa Tecla is missing but some impacts are being recorded. In 2001, the southeastern part of the city of Santa Tecla, one of the cities in the metropolitan area, was affected by a landslide in one of the hillsides of El Balsamo mountain range, which caused at least 500 deaths and erased a residential sector in just a few minutes. As a consequence of the saturation and degradation of flat areas, the upper classes have migrated to hills taking advantage of the privileged view and isolation that these elevations represent (Bonilla, 2007).

## Kampala (Uganda)



**Flooding in Kalerwe, Kampala.**

© UN Habitat/Nicholas Kajoba

**Location and Demographics:** Kampala is the capital and main city of Uganda, with its 1,659,600 inhabitants making up 39.6 per cent of the national urban population (2011 estimate). It is situated on the northern shores of Lake Victoria - a region with evidence of increased precipitation - where the challenge of surface run-off, coupled with fragile drainage systems, has increased the vulnerability of infrastructure, housing, social services and livelihoods. Since 1970, Kampala has experienced exponential population growth, going from 330,000 to 1.5 million in 2009. UN-Habitat assessed the slum area of Kampala City to be 21 per cent of the total city area, housing 39 per cent of the total city population in 2002. Large parts of the recent growth in residential areas consist of informal houses that are constructed by poor immigrants in wetland areas and run counter to environmental planning standards in the city.

**Climate Hazards:** There are two scenarios of the climate risks in Uganda with implications for urban vulnerability. The first is the increase or reduction in rainfall and the second is the warming of temperatures. The first scenario of increased precipitation implies that there will be more rainfall runoff with an increased risk of flooding settlements. The increased runoff requires more robust



drainage systems for managing storm water in order to cause less disruption to other urban sectors such as public transportation. Severe flash floods are already making urban infrastructure of roads, culverts, bridges and drainage systems vulnerable. Climate change effects are accentuating the problem of sanitation in the Kampala region because most settlements are in flood-prone areas, which have high water tables and where the use of pit latrines is widespread. The overflow of human waste during extreme rainfalls will increase the population's vulnerability to sickness and disease and direct health expenditure already amounts to 15 per cent of household income. Waste is also a source of greenhouse gases from landfill, especially Methane and leachates, with reported inadequate management of the facility, exposing neighbouring population to health risks. Finally, uncollected garbage in the city remains scattered around in heaps and much of it finds its way into the surface drainage system.

Reduced rainfall may exacerbate the effects of existing water availability in water-stressed urban areas of Uganda where there is already evidence of reduced precipitation. Most of these urban areas draw on water from wetland areas for treatment and storage before distribution. A reduction in precipitation will have an impact on the water pumping systems, which have to be adapted to the variations and/or changes related to this scenario. Coupled with changes in the amount of precipitation in the country, the increased extremes of weather, especially violent storms, add to urban vulnerabilities. As well as making urban infrastructure susceptible to destruction, storms have also affected housing, social services and the livelihoods of urban dwellers. For example the extended rains and floods of December 2006-February 2007 caused serious damage to housing and schools and disrupted livelihoods in addition to cutting off neighbourhoods from towns in eastern Uganda.

The second scenario is that of increasing temperatures. Uganda recorded variation in average temperatures that correlates with an estimated increase of 1.5 °C in the next 20 years and by up to 4.3°C by the 2080s, although recent scientific studies indicate the globe could warm by 4°C by 2050 (UN-Habitat, 2011).

Significant observed changes in rainfall patterns and temperature continue to create vulnerabilities in urban areas in Uganda. This has implications for water-stressed areas by potential for high evapotranspiration, which will exacerbate existing scarcity.

### Ouagadougou (Burkina Faso)



Ouagadougou. © UN-Habitat

**Location and Demographics:** It is the capital of Burkina Faso and the administrative, communications, cultural and economic centre of the nation. It is also the country's largest city, with a population of 1,475,223 (as of 2006). It extends over 520 km<sup>2</sup>, of which 217.5 km<sup>2</sup> are urbanized and has five districts, 30 sectors and 17 villages. Some 70 per cent of the industrial activities of the country are concentrated in the capital. In 2020 the capital is expected to reach 3.4 million inhabitants, making it one of the most rapidly-growing cities in the region. Ouagadougou faces several urban challenges; among them is poverty as 50 per cent of the population lives in poor conditions. Women are particularly exposed, with less access to education, employment and land.

**Climate Hazards:** These were identified within the European programme 'Climate change and Urban Vulnerability in Africa' (CLUVA). Analysis of extreme rainfall events, based on climate projections data until 2050, suggests that the intensity of these events is

expected to decrease, although an increase of the frequency is anticipated. However, the extension of flood prone areas in Ouagadougou is large due to its flat topography. In 2009 Ouagadougou experienced its worst flooding in the past 50 years and an estimated 109.000 people were left homeless. The map of flood prone areas for Ouagadougou has been calibrated based on the actual flood extent as a result of the 2009 event.

Droughts and heat waves are fundamental hazards in the city. The analysis of the monthly average rainfall clearly shows that the current condition is extremely dry. Analysis based on climate projections reveals that this condition is expected to continue for the next 40 years with an increase of the duration of dry periods. Analysis of climate projections for Ouagadougou reveals a strict correlation between heatwave duration and the number of hot days. The length of heatwave episodes shows a mean value increasing from six to 17 days. The frequency distribution plot of hot day's duration for four separate bi-decadal periods shows the temporal change of heatwave characteristics. This distribution has become longer tailed with time. For example, the number of events with a maximum length of five days could increase from three to 34 over 100 years (from 1950-70 to 2030-2050). The expected persistence of long-lived heatwaves lasting approximately 1.5-two weeks is clearly longer with respect to the climatological period (1961-1990).

It is evident that the national health service needs to develop strategies for the mitigation of the heatwave effects to enhance the resilience of the population, particularly the elder people.

## Cape Town (South Africa)



**Aerial View of Cape Town - South Africa.**

© Shutterstock/Mark Van Overmeire

**Location and Demographics:** Cape Town is the second-most populous city in South Africa and extends to a total area of 2,461 km<sup>2</sup>. Currently, the population of Cape Town is 3.860.589 (annual growth rate of 2.6 per cent) and is expected to grow to 4.20 million by 2022, and to 4.46 million people by 2032. According to statistics of 2012, 35.7 per cent of households live below the poverty line, while 7.9% per cent have no access to safe drinking water on site.

**Climate Hazards:** The city and surrounding communities are seeing higher average temperatures, increasing frequency of heatwaves, droughts and fires but also an increase in heavy downpours resulting in flash floods and rising sea levels in coastal areas. The greater Cape Town area has been identified by the Department of Water Affairs and Forestry (DWAF) as the first major urban region in South Africa where the demand for water will exceed the total potential yield for the area if the economic and population growth scenarios are realized or the expected impact of projected climate change becomes reality.

During the past 20 years, most of Southern Africa has experienced extensive droughts, the last four being in 1986–1988, 1991–1992, 2000–2001 and

2004–2005. Another threat is bushfires, which normally occur, on average, every 15 years or so. The dominant warm, dry summers are conducive to fires, which are common between November and March each year, especially when hot, dry, windy conditions prevail for several days. These fires, while necessary for the regeneration of some plant species, sometimes get out of control and cause damage to urban infrastructure. The frequency and intensity of wildfires is expected to increase substantially due to lower rainfall (reducing the moisture content of fuels), lower relative humidity, longer droughts and higher wind speeds. High fire risk conditions are projected to almost triple in the west of the province putting plantations and buildings at risk.

The Western Cape has also experienced severe damage during the floods of March 2003 and April 2005. Sand from the Cape Flats is often blown into drains during dry summer months and then clogs them during the rainy winter season. Leafs also cause blockages and drains to overflow and in the Cape Flats, where most informal settlements are located, drainage infrastructure is not in place, exposing lower-income people's livelihoods to flooding risks. Finally, sea level rise is a threat to coastal Cape Town, with its sandy coasts prone to erosion and where development has taken place too close to the water line. Comprehensive and more accurate estimates for sea level rise date back to 1992 and are limited to certain areas (Tadross and Johnston, 2012).

## Sorsogon (The Philippines)



Sorsogon, Philippines. © Flickr/Andy Nelson

**Location and Demographics:** Sorsogon City is 600 kilometres southeast of Manila at the southernmost tip of Luzon. It is surrounded by the ocean on two sides and it has a land area of 313 square kilometres with a population of 151,454 (2007), spread across 64 barangays (district subdivisions), which is growing at a rate of 1.78 per cent annually. It is the largest city in Bicol Region in terms of land area and one of the region's leading cities in terms of urbanization. It is also one of the most populous cities in Bicol region. Its economy is based mainly on agriculture, fishing, trade and services.

**Climate Hazards:** The vulnerability and adaptation assessment revealed that the city's geographical location make it sensitive to climate changes in extreme situations, such as tropical cyclones, storm surges and heavy rainfall. It is also affected by other circumstances, such as increased temperature, increased precipitation and sea level rise. With sea level rise projected to accelerate, the built-up areas near the coast are the most vulnerable because they have the highest concentration of people, especially informal settlers, living in inadequate structures. These areas are also the hub of economic activities (accounting for 60 per cent of the local economy) and the location of



basic infrastructure such as water, electricity and basic service facilities. Around 36.6 per cent of the total population or 55,452 people are vulnerable to flooding. A total of 35,621 people from nine coastal villages are threatened by sea level rise and storm surge, 22,000 of whom are women.

### Olongapo (The Philippines)



**Philippines Fishing Boat on the Coast, Olongapo City.**

© Shutterstock/GNNick

**Location and Demographics:** Olongapo is a highly-urbanized city located in the province of Zambales, 125km west of Manila, facing Subic Bay. The city has an average growth rate of 1.68 per cent and between 2000 and 2010 the population increased from 194,000 to 221,170. The city's total land area of 185 square kilometres is distributed among its 17 barangays or villages. Olongapo is a service-based economy with almost 50 per cent of its income sources derived from wholesale and retailing business and services. One of the main contributors to the city's economic growth is its tourism industry. There is no sewerage system in the city although 98.13 per cent of the total households have sanitary toilets.

**Climate Hazards:** Olongapo is susceptible to seven of the nine natural hazards in the Philippines: flood/flash flood; rain-induced landslide; earthquake-induced landslide; liquefaction; ground shaking; tsunami and storm surge

(Nierras. 2012). The riverbeds are heavily silted due to sand deposits in the mountain slopes attributable to Mount Pinatubo's eruption in 1991 and this causes flooding. In this regard, Olongapo's ecological profile focuses mostly on hydrometeorological disasters or the immediate impacts from floods and landslides. In 2011, Typhoon Pedring dropped 401.2mm of rain in the city which displaced 304 families, or about 1,225 individuals, due to flooding. As the Philippines experiences roughly 20 typhoons per year, the city has a high chance of experiencing storms or other hazards again but with worse consequences.

### Da Nang (Vietnam)



**View from the Marble mountains, Da Nang, Vietnam.**

© Shutterstock/Salajejan

**Location and Demographics:** with a population of 973,800 (2012 est.), Da Nang City is a major port city on the coast of the South China Sea in the South Central Coast Region of Vietnam. It is one of Vietnam's five independent municipalities and has an annual population growth rate of approximately 1.3 per cent. In the 16th Century Da Nang was a small port for goods in transit and ship repair. It gradually developed into a commercial port in the early 18th Century and quickly became the largest commercial port in the central region. The local small-scale industries, including shipbuilding, preliminary processing of agricultural, forestry and fishery products and trade prospered accordingly.

In 1975, after Vietnam gained complete independence, Da Nang began to overcome the war's severe consequences. (Alluvium) coastal plains are suitable for rice, vegetable and flower cultivation while basaltic land in mountainous areas is used for long-term cash crops, special crops, medicinal plants, and cattle-raising and is sufficiently stable for construction. Land use is changing in Da Nang with many new residential areas and industrial zones under development since 1997. The city government has developed large areas of unused land and levelled some hilly areas to provide land for new developments.

**Climatic Hazards:** Due to its geographical location, Da Nang is one of the cities in Vietnam most affected by natural disasters (typhoon, flood, drought, erosion, saline intrusion and so on) and extreme weather events such as extremely hot spells and heavy rains. There is an annual average of one or two typhoons and two or three floods of Level 3 or higher hitting the city. Among the three climate-related factors (change in precipitation, sea level rise and temperature increase), change in precipitation is producing the largest impacts, followed by sea level rise and increase in temperature. Currently, the most challenging impact due to changes in precipitation rates is flooding. The municipality is actively trying to reduce flooding impacts with projects such as the *Water Drainage and Environmental Sanitation Project* (WDESP). It is claimed that, through the project, the number of flooding points in Da Nang city was reduced from 83 in 2010 to 71 points in 2012. Rises in temperature will lead to increased drought and the spread of diseases, impacting upon the country's ecosystems, farming seasons, agricultural crops, and human health.

### 1.5. Brief background of the study

Under the facilitation of the Cities Alliance, the Joint Work Programme (JWP) Cities and Climate Change, is a partnership between the World Bank, UN-Habitat and UNEP, who have joined forces to coordinate efforts in the area of climate change and city development and jointly develop methodologies and approaches building on their respective experiences. The goal is to incorporate climate change as a cross-cutting issue within the

general focus areas of the City Development Strategy (CDS) framework: livelihood, environmental quality, service delivery and energy efficiency; spatial form and infrastructure; financial resources and governance.

A City Development Strategy is a strategic urban planning tool developed from the experience of international organizations engaged in supporting urban development planning. The methodology builds on the experience of the global movement on strategic planning and on the experience of global programmes supporting cities' development and planning needs, such as the Urban Management Programme, a joint undertaking of UNDP, UN-Habitat and the World Bank; the Sustainable Cities Programme, a joint UN-Habitat and UNEP effort, and the Localising Agenda 21 (LA21), a UN-Habitat initiative which partnered with UNEP and UNDP's Public Private Partnership for the Urban Environment. Beside the ones supported by the Cities Alliance, many other City Development Strategy processes have been implemented at city level through other mechanisms or by cities themselves.

This guide wants to build on aforementioned efforts by systematically linking each step of the City Development Strategy approach to existing practices of streamlining climate change concerns into city planning. The guide takes as key source the already existing guide *Planning for Climate Change* (UN-Habitat, 2014) and adds recommendations from the case studies, where appropriate.

### 1.6. Cities and Climate Change – The need for mainstreaming

Cities are often blamed for climate change but can also offer opportunities to reduce greenhouse gas emissions. At the same time cities are centres of creativity and experimentation where innovative ideas on implementing low carbon economic growth are being developed (Corfee-Morlot, Kamal-Chaoui, Donovan, Cochran, & Alexis Robert, 2009; Kamal-Chaoui, Robert, & (eds.), 2009).

Cities in developing countries face particular challenges with respect to climate change as environmental hazards cause ill health and mortality, mainly amongst

the urban poor. UN-Habitat refers to this as the 'urban penalty', where undernourished urban poor suffer heavily since environment-related infections and parasitic diseases thrive in areas without proper and clean drinking water, sanitation and drainage and with air pollution (UN-HABITAT, UN-HABITAT state of the world's cities 2006/7- The Urban Penalty Pollution & Sustainability, 2006a; UN-HABITAT, State of the World Cities 2006/7- The Urban Penalty: The Poor die Young, 2006b). Other risks resulting from climate change that typically affect the cities include exacerbation of the urban heat island effect; increased demand for cooling; greater stress on water resources; wider geographical incidence of vector-borne disease; increased disruption to transport from snow or ice, flooding, strong winds and landslides; withdrawal of risk coverage in vulnerable areas by private insurers, commerce, and economic activity; land degradation; lower agricultural yields and increased risk of food shortages. Cities in developing countries, however, have also the opportunity of leapfrogging by creating low carbon and resource efficient energy infrastructure. This cannot be done without integrated urban policy and plans that incorporate a climate change focus, addressing basic infrastructure and daily needs of citizens and accounting for specific vulnerable groups on one hand and, on the other, by strengthening local community efforts at copying and adapting and planning for the extra investments required to 'climate proof' infrastructure (UN HABITAT, 2011a).

Significant and quicker improvement in urban areas can be made if all stakeholders work together under a well-defined strategy with buy-in from a variety of stakeholders, and if national urbanization policies complement, rather than conflict, with local urban strategies. In addition, cities that integrate climate change into strategic planning do so for the following reasons:

- If done well, mainstreaming climate change will plug into the planning cycle, budgets and planning hierarchy
- It will be more likely that clear and existing responsibilities of plan implementation are respected and institutionally anchored
- For necessity, in cases where there is a legal

requirement for climate change to be integrated in development plans, land-use plans and other sectoral plans and policies

- To ensure that climate change is not treated as a separate issue – avoids creation of a climate change silo

### 1.7. Key Principles and Terms

Throughout this guide we adopt terms already used by UN-Habitat and mostly based on the definitions used by the Intergovernmental Panel on Climate Change (IPCC). These definitions are considered the key principles and planning terms for responding to climate change in cities:

- **Adaptation:** The adjustment of human and city systems in response to actual or expected climatic changes or their effects to reduce and/or moderate the negative impacts of them. Adaptation does not mean that the negative impacts will be avoided, only that they will be less severe than if no planning had occurred.
- **Adaptive capacity:** A system's ability and efforts in both physical elements (infrastructure, material wealth, and technology) and social/institutional elements (human capital, governance, and institutional strength) to adapt to climate change impacts.
- **Climate change:** Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), which defines 'climate change' as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'.
- **Climate variability:** Climate variability refers to variations in the mean state and other statistics (such as standard deviations, statistics of extremes and so on) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).

**Table 1** Socio-Economic Background of case study cities (figures expressed as percentages)

CITY	LABOUR AND EMPLOYMENT		EDUCATION	
	LABOUR FORCE PARTICIPATION RATE, BOTH SEXES (WHEN AVAILABLE) IN PERCENTAGES	UNEMPLOYMENT RATE, BOTH SEXES (WHEN AVAILABLE)	PERCENTAGE OF WOMEN/MEN (WHEN AVAILABLE) BY SCHOOLING COMPLETED	FUNCTIONAL LITERACY RATE, BOTH SEXES (WHEN AVAILABLE)
ESMERALDAS	Male: 62.69, Female: 41.27 (1)	Male: 3.08, Female: 4.87 (1)	Primary: 25.6 Secondary: 21.23 Higher: 17.1 (1)	95.96 (1)
SANTA TECLA	53.06 (2)	13 (2)	<b>Primav:</b> Male:97.6, Female: 97.8 <b>Secondary:</b> Male:79, Female: 75.1 (3) <b>Higher:</b> Male: 37, Female: 26.65 (2)	Male (15+ yrs): 94.8, Female(15+ yrs): 91.4 (3)
KAMPALA	Male: 78.2 , Female: 60 (4)	Male: 7.1 , Female: 22, Total: 13.7 (4)	Primary: 77.4 Secondary: 29.0 Higher: n.a. (5)	(10+ yrs) Male: 95.4 Female: 92.2 (5)
OUAGADOUGOU	Male: 75, Female: 59.5 (7)	Male 8.6%, Female 5.4% (7)	<b>Primary:</b> Male: 8.3 , Female: 7.2 <b>Secondary:</b> Male: 2.7, Female: 2.2 <b>Higher:</b> Male: 12.5, Female: 6.2 (7)	Male: 71.3, Female: 57.2 (7)
CAPE TOWN	65.29 (9)	23.88 (9)	Primary: 4.6 Secondary: 30.2 Higher: 16.2 (9)	97.7 (20+ yrs) (10)
SORSOGON	64.1 (12)	6.1 (12)	<b>Primary:</b> Male: 46.6, Female: 42 <b>Secondary:</b> Male: 32.7, Female: 34.9 <b>Higher:</b> Male: 5.3, Female: 7.4 (13)	Male: 76.2, Female: 83.8 (14)
OLONGAPO	62.2 (16)	8.3 (16)	<b>Primary:</b> Male: 23.8, Female: 23.5 <b>Secondary:</b> Male: 41.1, Female: 41.2 <b>Higher:</b> Male: 10.9, Female: 12.5 (17)	Male: 90.4, Female: 93.8 (18)
DA NANG	53.14 (20)	2.9 (20)	Primary: 28.6, Secondary: 25.9, Higher: 19.1 (21)	98.1% (15+ years) (20)

CITY	HEALTH AND SANITATION			HOUSING AND HOUSEHOLD CONVENIENCE		INCOME
	PERCENTAGE OF HOUSEHOLDS WITH SANITARY TYPE OF TOILET FACILITIES	PERCENTAGE OF HOUSEHOLDS WITH SAFE MAIN SOURCE OF DRINKING WATER	PERCENTAGE OF HOUSEHOLDS WITH OWNED/RENTED OR SHARED HOUSE AND/OR LOT	PERCENTAGE OF HOUSEHOLDS WITH HOUSE MADE OF DURABLE MATERIALS	PERCENTAGE OF HOUSEHOLDS WITH ELECTRICITY CONNECTION	AVERAGE FAMILY INCOME
ESMERALDAS	93.94 (1)	96.41 (1)	Owned (fully or still paid, given, donated, inherited): 64.06 Rented: 22.09 Occupied rent-free: 12.46 (1)	55.59 (1)	95.26 (1)	USD 981.8 (1)
SANTA TECLA	90.9 (3)	92.3 (3)	Own: 71.76 Occupied rent-free: 4.76 Rented: 21.81 (2)	88.02 (2)	97.1 (3)	n.a.
KAMPALA	93.7 (5)	98 (5)	Owned: 21.8 Rented: 69.2 Occupied rent-free: 8.3 (5)	75 (5)	53.9 (5)	963442.56 UGX=333.12 USD (6)
OuAGADOUGOU	57.1 (7)	98.6 (7)	n.a.	n.a.	53.7 (7)	37914.90 XOF=64.72 USD (8)
CAPE TOWN	91.4 (9)	87.3 (9)	Owned: 54.1 Rented: 29.9 Occupied rent-free: 13 (9)	58.3 (10)	94.5 (10)	13645.50 ZAR=1170.2 USD (11)
SORSOGON	78.2 (15)	75.6 (15)	Owned: 55.9 Rented: 5,27 Occupied rent-free: n.a.(13)	50.6 (13)	78.4 (15)	13470.62 PHP=305.5 USD (12)
OLONGAPO	98.13 (19)	92 (19)	Owned: 56.1% Rented: 29.51 Occupied rent-free: n.a.(17)	96.3 (17)	94.7 (19)	21536.24 PHP=488.42 USD (16)
DA NANG	54 (22)	Public/Private tap 24.1 Well access: 60.3 Other: 6.5 (22)	n.a.	99.3 (22)	100 (22)	1.505.000 VND =70.7 USD (22)

**Sources:** (1) National Institute of Statistics and Censuses, Ecuador; (2) VI Censo De Poblacion y V De Vivienda 2007, Dirección General de Estadística, Encuestas y Censos (DGEEC), Republic of El Salvador; (3) PNUD (2009). *Almanaque 262: Estado del desarrollo humano en los municipios de El Salvador*; (4) URBAN LABOUR FORCE SURVEY, 2009; (5) Uganda Population and Housing Census- Kampala District Report, 2002; (6) Uganda Bureau of Statistics, Uganda National Household Survey Findings 2009/2010; (7) Health and Demographic Surveillance System in Ouagadougou (HDSS), ISSP (Institut Supérieur des Sciences de la Population); (8) Urban Labor Markets in Sub-Saharan Africa, Philippe De Vreyer and Francois Roubaud (Editors), The World Bank; (9) City of Cape Town - 2011 Census, Cape Town; (10) GHS: 2006 General Household Survey Analysis for Cape Town; (11) Census 2011, Municipal Report, Western Cape; (12) Quickstat, Philippine Statistic Authority – National Statistic Office; (13) 2010 Census of Population and Housing, National Statistic Office; (14) FLEMMS: 2008 Functional Literacy, Education and Mass Media Survey; (15) Philippine Institute for Development Studies, Bicol Region 2009; (16) Quickstat, National Statistic Office; (17) 2010 Census of Population and Housing, National Statistic Office; (16) FLEMMS: 2008 Functional Literacy, Education and Mass Media Survey; (17) Asia Urban Information Center of Kobe (AUICK); (18) General Statistics Office of Vietnam, 2013 (regional level); (19) Vietnam Population and Housing Census, 2009; (20) General Statistics Office of Vietnam, 2012 (regional level).

- **Exposure:** Is a measure describing the external stress brought about by climate change threats (sea level rise, change in temperature, change in precipitation and extreme weather events and so on) in relation to population, resources and property.
- **Impact:** An effect of climate change on the structure or function of a city or town.
- **Integration:** An approach to climate change planning that considers larger and related sustainability issues such as economic, social, governance and environmental. Integrated planning and action can deliver efficiency and effectiveness by adding value through policies, programs, plans and actions that support, rather than undercut, each other. See 'Mainstreaming'.
- **Mitigation:** Mitigation activities help to reduce the rate and/or magnitude of climate change by helping reduce human-generated greenhouse gas emissions.
- **Mainstreaming:** The process by which climate risks to city plans, programmes, activities and policies are considered and adjusted to address these risks. Mainstreaming assumes that other projects such as poverty reduction and urban sustainability can be enhanced and their benefits increased by integrating climate planning with them. Mainstreaming helps ensure that a city's plans and policies are not at odds with climate risks now and in the future.
- **Resilience:** The inherent ability of a city or town and its citizens to withstand impacts and rebuild or reorganize itself when necessary.
- **Sensitivity:** Describes the degree to which a system is affected by the biophysical impact of climate change. It considers the socioeconomic context of the system being assessed.
- **Strategic planning:** A systematic, transparent and objective decision-making process that provides a process to determine priorities, make wise choices and allocate scarce resources such as time, money and skills to achieve agreed-upon objectives.
- **Participatory planning:** A community-based planning approach that works to involve all sectors of a community with a stake in climate planning, including local governments, the private sector, voluntary agencies and civil society.
- **Vulnerability:** The degree to which a group of people in a city such as the urban poor is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, as well as the sensitivity and adaptive capacity of that system. (UN-Habitat, 2011, pp. 16,18)



# 2



View of Da Nang city centre, Vietnam. Da Nang is the third largest city of Vietnam. © Shutterstock/Arseniy Krasnevsky

## MAINSTREAMING CLIMATE CHANGE INTO A CITY DEVELOPMENT STRATEGY, STEP-BY-STEP

## 2.1. City Development Strategy Methodology and Planning for Climate Change Framework

The City Development Strategy methodology promoted by Cities Alliance and its partners has been adopted and adapted by cities in different contexts as mentioned above, and with different emphasis. In cities that did not follow the City Development Strategy methodology other (often similar) approaches are used, that are also based on strategic planning principles and use participatory mechanisms. For the purposes of this study, the definition of City Development Strategy has not been considered in a narrow way, and similar urban strategic and development planning processes have also been considered for review.

At its best a City Development Strategy is a tool that helps a city harness the potential of urbanization. It also enables a city to develop a coordinated, institutional framework to make the most of opportunities. A City Development Strategy helps a city:

- **Allocate resources strategically.** By focusing on at most five key strategic thrusts, a City Development Strategy helps a city allocate limited resources in areas where they will make the most impact.
- **Attract capital and discipline its use.** Developing cities needs discipline to most effectively use their limited financial and human resources to achieve targets. In addition, the capital available flows to cities that show potential and have well-thought-out urban futures. A City Development Strategy can both attract capital and help the city use that capital in a disciplined way.
- **Clarify the vision for its future.** A City Development Strategy is designed to shock the system under controlled conditions and catalyze new thinking about the city's future. An effective City Development Strategy assesses a city frankly and objectively, enabling it to see its future more clearly and identify the best ways forward.
- **Build necessary partnerships.** Although they are critical to the process, local governments alone cannot turn a city around. A City Development Strategy helps local authorities work in partnership with national governments, private interests and civil society to change a city's developmental direction.

- **Anticipate future shocks.** A good City Development Strategy can help a city anticipate future shocks and rapidly changing risk environments. It can also increase understanding of how stakeholders would respond under various scenarios.
- **Plan for growth.** A City Development Strategy helps a city anticipate the rate, type and physical direction of growth and develop infrastructure ahead of that growth.<sup>4</sup>

It is clear that a City Development Strategy is already a process that structures priorities in terms of development and growth; it is in this context climate change should not be considered a separate issue because it is recognized that good city planning practices are also climate smart practices (UN-Habitat, 2014). A city that provides its citizens with good infrastructure, affordable and adequate housing and economic opportunities and minimizes disaster risks is already in a good position in terms of adaptation. Future climate variability and extremes, however, may require cities to make some extra efforts to maintain their resilience.

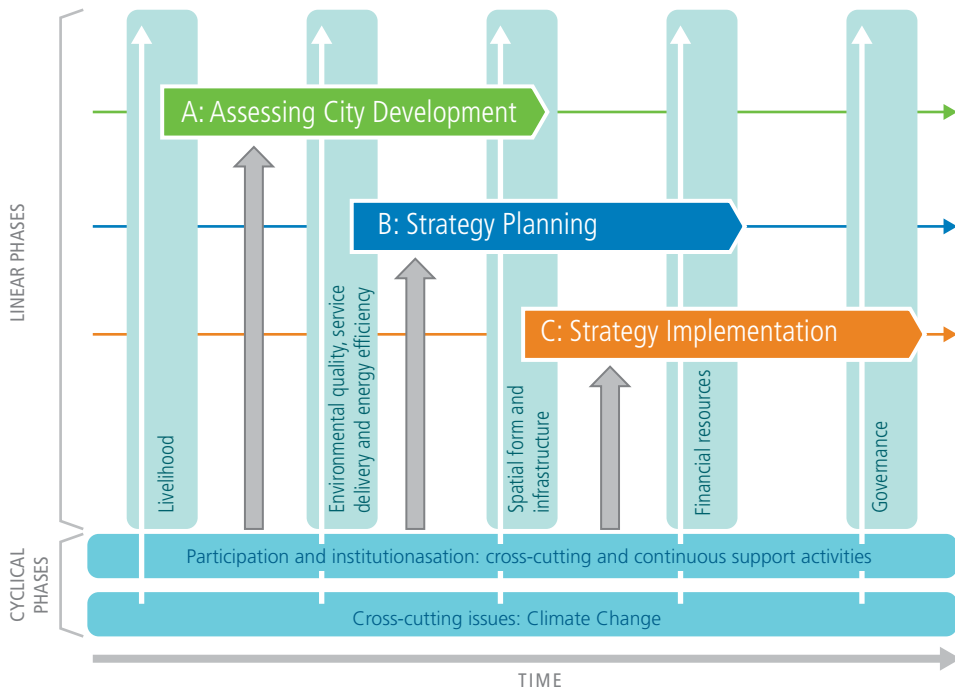
The conceptual framework of Cities Alliance (2011) is a generalization about the City Development Strategy process, not a template; a common way of looking at different aspects of the process, not a manual and, finally, acknowledges that actual City Development Strategy implementation is iterative and cyclical with cross-cutting tasks and activities taking place simultaneously and a conceptual frame cannot give a sequential representation of the application. This process is defined by three interrelated phases:

- a. Assessing city development opportunities and capacities
- b. Strategy planning
- c. Strategy implementation

It furthermore identifies that some elements either need continuous support or are cross-cutting such as Participation and Institutionalization. The City Development Strategy process mentions climate change assessment only in Phase A, Step A.4-vi but for climate

<sup>4</sup> From the Cities Alliance website

**Figure 2** Revised CDS Conceptual Framework (Adapted from Cities Alliance, 2011)



change to be given the attention it deserves in city planning, the mainstreaming of specific climate related steps should start from the beginning of Phase A. The revised City Development Strategy Framework based on this principle is presented in Figure 1. To do this we build on UN-Habitat’s experience and tools developed over many years of work in Southeast Asia through the Cities and Climate Change Initiative (CCCI). In what follows each step of the City Development Strategy process is presented and ways through which climate change concerns can be integrated into each process step articulated.

## 2.2 PHASE A: Assessing City Development Opportunities and Capacities

The integration of climate change concerns should start immediately in the first City Development Strategy stage. This phase is about assessing a city’s availability of data in a number of sectors and socio-economic categories to understand its condition and needs. To include climate change considerations city officials

must also address data availability and concerned city departments from this perspective.

### A.1 Get organized: Frame the issue, Map key stakeholders, Form Technical Team and Plan the process

The first task is to understand why a City Development Strategy should include climate change, in other words city planners should identify **what is the triggering event and how is it connected to planning systems** (Tool 1- A, UN-Habitat, 2014). The triggering event may be connected to a city experiencing increased flooding, drought, heat wave and dust storms events (as in the case of Ouagadougou) or by concerns over growing population rates which exacerbate existing food, energy and water security (as in Cape Town).

In some cases, the trigger may come from local governments realizing that climate change is not just a global or national issue but that instead local action is needed to address its localized impacts as in the case of Sorsogon where, in 2008, the city

launched a climate change initiative championed by the mayor.

While framing the triggering issues city developers should understand how introducing climate change concerns can support the City Development Strategy as a strategic planning process that enables planners to anticipate future shocks and address limited resources where they are most needed. At the same time, the Strategy can play an active role in raising political awareness and support for climate-aware planning. Some case study cities identified climate change threats initially utilizing a SWOT analysis, including Da Nang, Sorsogon and Esmeraldas, but only to a shallow extent.

In this phase it is crucial to **define who is going to lead the effort** (Tool 1-B UN-Habitat, 2014). Many City Development Strategies are strategically anchored to local government departments and specific expertise is sought through the involvement of other relevant departments and external consultants. In cities that do not follow a City Development Strategy but other related strategic planning processes such as Development or Territorial Plans, the integration of climate concerns may be led by external donor agencies. The UN-Habitat Cities and Climate Change Initiative is a prime case in point. The parties should then agree on the specific mandate of the external organization and what is the role and responsibility of the city in this process.

Based on the experience of cities which developed a City Development Strategy that includes climate concerns we suggest that those planning to undertake such a process should scope for a shortlist of key actors in the government and local area to **form a Technical Team or core planning team** to provide specific input, build relationship and linkages to important stakeholder groups. Alternatively, if the city planners in charge of the City Development Strategy process already have some knowledge of planning for climate change, ad hoc input and expertise can be sought from other departments and external consultancies when required. In this case it may be a wise solution to enlist one staff member, already involved in the City

Development Strategy, to coordinate inputs from other departments or external consultancies to the host.

When a Technical Team is established, its own capacities to implement the process should be assessed in liaison with staff members leading the City Development Strategy.

Many of the considerations made for the process steps of a City Development Strategy are valid for the integration of climatic concerns, including scope and expectation. Cities that develop a City Development Strategy have to **decide the spatial extent of their plan**, whether it will be the city as a whole or if the focus is on the city's main districts. When integrating climate change, one has to define whether to take it through the whole planning process, which will determine specific climate actions, or if the effort is of more modest size and geared to support critical steps such as Vulnerability Assessment Report. The scope of the project can evolve as the City Development Strategy proceeds but having an idea of what to expect at the beginning of the process should help manage expectations.

## A.2 Institutional Capacity Assessment

During a City Development Strategy process, **capacities of local planning** and other relevant organizations is tested. This effort should include the assessment of the technical team's capacities, if the team is established.

During this phase, the technical team should conduct **relevant policy, regulatory, financial, governance and legal scans** for anchoring climate change in city planning. For instance, the purpose of a policy, regulatory and legal scan is to provide an analytical synthesis of development policies across sectors, which will include agriculture, industry, mining, forestry, energy, water, urban development, transport and infrastructure and employment. These scans include relevant public policy tools; pertinent legislative, regulatory, and fiscal instruments and applicable budgetary and planning cycle constraints.

During such scans it is of vital importance to identify the linkages between key development plans and their climate change features (see Table 1). Equally

important is to consider if there are higher government programmes for climate change planning that could be used to support the integration. The scans should also consider economic and demographic cycles. In addition, assessing historical, present and future development and resource use tendencies should help to inform decision-making on low-emission pathways.

A financial scan, however, examines the current financial status of the government, its budget, sources of revenues and spending responsibilities and evaluates their applicability to climate change and the outlook for financing projects and accessing funds. Depending on the needs and ambition of the city planners, a full climate expenditure and institutional review could be conducted at the onset of the planning process (See Annex 2).

A governance scan can be done in tandem with stakeholder mapping (See Annex 3) and helps to identify the government ministries, departments and agencies at different levels that should be involved in providing climate-relevant inputs. The UNDP Government Assessment Portal (<http://www.gaportal.org/>) provides tools and resources for conducting a governance scan. Depending on the city's resources, external help may be sought at this stage using the External Assistance Assessment (Tool 1-C, UN-Habitat, 2014)

### **A.3 Plan the City Development Strategy Process with Climate change considerations**

In this stage of the City Development Strategy the process of phase A.2 should be consolidated. This means that institutional roles and responsibilities of identified key actors/agents, of core planning or of the technical team should be clarified.

The findings resulting from the policy, regulatory, legal, governance and financial scans should be discussed by the core members of the technical team and the following questions answered in order to identify existing issues and problem solving:

- Is there organizational and political leadership to support the integration of climate change into the

City Development Strategy process?

- Is there commitment to complete and implement the plan or project?
- Has a core planning team or Technical Team to guide the integration of climate change issues been formed and/or individuals responsible identified?
- Has organizational capacity been accounted for?
- Is outside expertise required and if so has it been secured?
- Are needed resources likely to be obtained – funding, time or human resources?
- Is the project scope established?

### **A.4 Rapid Participatory City Vulnerability Appraisal**

The core of this phase is about carefully planning the broader stakeholder involvement beyond city staff, departments and decision-makers and to embed a vulnerability assessment into the rapid-city appraisal (*refers to City Development Strategy steps A.4 i*).

A City Vulnerability Appraisal is a data intensive exercise but it should not be considered separate from the rapid participatory city appraisal. For instance, in Olongapo, the appraisal of its vulnerability to climate was integrated in the city's Ecological Profile following the steps highlighted below.

#### Identification of Stakeholders

To engage in a meaningful way with a broader community of stakeholders will help the technical team and the success of the City Development Strategy process in many ways. Local communities can act as ambassadors for the project: they can report back information about the project to their network or organizations, they can play a crucial role in sharing their knowledge on the kind of impacts that climate change is having in their community and publicize the process.



*Engaging with a broad segment of people is not only helpful to ensure that the most vulnerable are taken into account but it also helps in securing the implementation of the resulting climate actions.*

**Table 2** City/town Plans and Climate Change (UN-HABITAT, 2014)

TYPE OF PLAN	GENERAL PURPOSE	POTENTIAL CLIMATE CHANGE FEATURES
Town Plan City Plan Physical Land Use Plan	<ul style="list-style-type: none"> <li>- Identifies areas (zones) for different types of development</li> <li>- Identifies development hazard areas</li> <li>-- Provides long-term policy direction on land use and development, transport and overall community development</li> </ul>	<ul style="list-style-type: none"> <li>- Highlights development hot spots or no development areas where climate change impacts are likely to be most severe</li> <li>- Sets policy direction on climate friendly or climate resilient infrastructure and servicing</li> <li>- Formally recognizes climate change and highlights related impacts</li> <li>- Land capability, suitability and the feasibility of different development alternatives are analyzed to determine appropriate spatial relationships that form the basis of generalized future land use maps</li> </ul>
Storm Water Management Plan	Improves storm water management, including drainage and infrastructure	<ul style="list-style-type: none"> <li>- Identifies climate change-related storm water or flooding hazard areas</li> <li>- Directs new infrastructure to safer areas not as exposed to climate change impacts. In other words, can attract or pull development to serviced areas)</li> <li>- Accelerates investment in existing coastal and river flood defence programs to protect existing development in flood prone areas</li> <li>- Identifies options to increase permeability of paved areas in drought prone and flood affected areas</li> </ul>
Transport Plan	Improves road, pedestrian, transit and bicycle connections and infrastructure	<ul style="list-style-type: none"> <li>Identifies and improves weak links in transport networks that are threatened by climate change impacts</li> <li>- Identifies and designates emergency transportation networks - roads and transport links that could be used during a climate change impact event to transport people, supplies and any required relief supplies</li> <li>- Prioritizes transportation network improvements that improve transportation connections for climate vulnerable groups</li> <li>- Supports climate change mitigation through reduced traffic congestion, prioritizing non-motorized transportation</li> </ul>
Local Economic Development Plan or Strategy	<ul style="list-style-type: none"> <li>- Identifies and prioritizes economic sectors and opportunities</li> <li>- Identifies economic development priorities</li> </ul>	<ul style="list-style-type: none"> <li>- Reduces urban poverty levels for key climate change vulnerable groups such as women, children and the urban poor</li> <li>- Promotes climate friendly and/or green development opportunities</li> </ul>
Informal Settlement Upgrade Plans	<ul style="list-style-type: none"> <li>- Develops policies and plans to improve services, infrastructure and sanitation</li> <li>- Formalizes property ownership</li> </ul>	<ul style="list-style-type: none"> <li>Identifies potential climate change impact risks and responses to them</li> <li>-- Identifies and relocates housing from high hazard areas and/or develops planned retreat or relocation strategy</li> </ul>

Therefore the technical team should organize the following:

- Identify a stakeholder advisory group that will have continued involvement during the process: The composition of the stakeholder advisory group can comprise of representatives of community groups,

minorities and vulnerable groups such as the elderly, women, and children), NGO representatives, community-based organizations, educational and academic institutions with expertise in climate change. Because climate change may have cross-boundary impacts, such as occurring in flooding



from upper to lower riverine basins, it is important to get regional governmental representatives on board, too. Neighbouring municipalities should also be engaged when feasible and if there are individuals that represent the country at global climate change talks then those should also be engaged. For this task the Stakeholder Identification worksheet can be used (See Tool 2-A, UN-Habitat, 2014). Alternatively the Stakeholder Analysis Matrix (already used to identify the core planning team in phase A.2) may also be re-utilized.

- Identify a broad community involvement (essential for Phase B) (refers to City Development Strategy steps A.4 i): while we recognize that stakeholder engagement can be time and energy consuming it is important for the stakeholder advisory committee to set the rules of broader citizens' involvement in the climate planning process. The stakeholder advisory group will play a key buffer role between the core technical team and the broader community; hence it is important to identify project champions within the stakeholder group. This is vital for confirming critical information on climate change impacts, risks, priorities and actions in a coordinated way. This can be achieved through different methods, such as focus groups discussions and smaller and informal meetings with those groups who are already disenfranchised and may not be comfortable with joining more formal meetings. In this process it is important to set a calendar of engagements and to report back to the community to maintain project transparency.

In establishing the stakeholder group committee it is important to set clear procedures for engagement and efficient functioning of the group. Terms of reference (TOR) should be formally agreed by the members of the stakeholder group; UN-Habitat recommends answering the following questions to ensure that adequate TOR is drawn:

- What is the group empowered to do (for example, give advice and make recommendations)?
- What process resources does the group have - what is the budget for renting space, group administration, and technical support?
- What implementation resources does the group have, or might have, to work with - are there local or

- national government funds, donor funds and so on?
- Are there time constraints?
- What are the reporting procedures?
- What are the roles and responsibilities of each member of the group?
- Can new members join part way through? If so, what is the process?

### Identifying Project Champions

When identifying a stakeholder group it is good to point out possible project champions. Project champions are individuals whose communication skills, sensibility, network and community presence can help to initiate and sustain the process of community engagement. In many cases project champions play a leading role in approaching the community first hand, sharing information and in supporting the project cause. A project champion may be a politically powerful person with the ability and capacity to canalize change and mobilize community action. It can also be a community leader who can motivate and educate vulnerable and disenfranchised communities. It may also be a motivated planner willing to put extra effort in securing the success of the planning process.

After the stakeholder group and the larger community engagement are established it is a good time to start what the City Development Strategy process calls the 'Review of local data sources (including maps)' (*refers to City Development Strategy steps A.4 ii*). This review must be done also for data that will be useful for conducting a vulnerability assessment and a Greenhouse gas emissions inventory. A **Climate Vulnerability Assessment** is normally considered the first step of the planning for climate change process and it should not be seen as separate from the Rapid City Appraisal in the CDS. There exist many approaches to conduct a vulnerability assessment (see Annex 2).

The majority of cities reviewed (5 out of 8) conducted Climate Vulnerability Assessments outside the City Development Strategy process supported by climate-specific donor agencies programmes. Many cities conducted Risk Assessments that were used to inform spatial master planning. Risk assessments, however, do not take into consideration future climate projections. The technical team should review the availability of

specific data to undertake the vulnerability assessment; a vulnerability assessment tells four things:

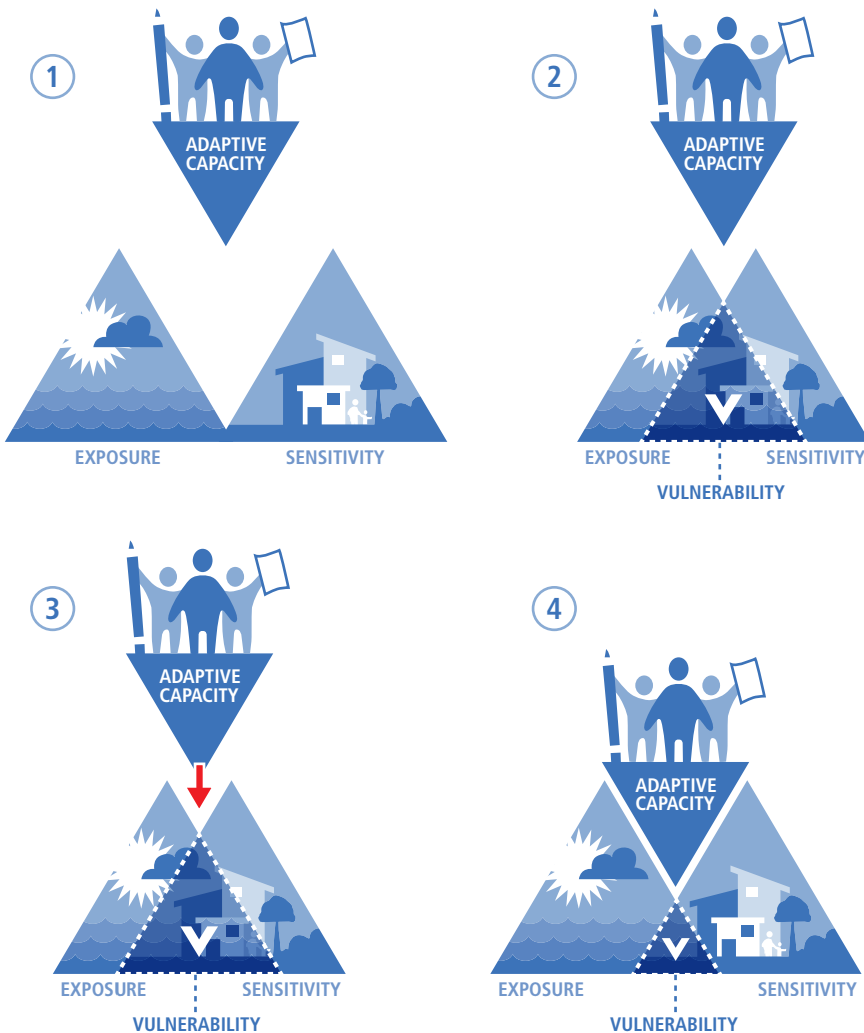
- How exposed your city is to current and long-term climate conditions and hazards, including variations in mean temperature, rainfall, moisture, sea level rise and the frequency and intensity of weather events (**Exposure Analysis**)
- To what degree people, places and institutions are affected by climate-change related hazards (**Sensitivity Analysis**)
- The current ability of your city's people, places and institutions to adapt to current and future climatic stress (**Adaptive Capacity Analysis**)

- Who or what is most vulnerable to current and future climatic stress (see Box 1)

Vulnerability is a function of exposure, sensitivity and adaptive capacity (see framework in Figure 2). Written as a basic formula,  $Vulnerability = (Exposure + Sensitivity) - Adaptive Capacity$ . To reduce vulnerability, the exposure to climate change should be reduced while adaptive capacity of cities and communities should be strengthened.

Basic stakeholder orientation on climate change and key vulnerability processes is important. The technical

**Figure 4** Vulnerability Framework (UN-HABITAT, 2014)



team should understand the framework and be able to explain the steps of the vulnerability assessment to the stakeholder advisory committee and key departments who will be involved in the process of objective data gathering. The framework and its terminology should be understandable to all.

#### Information gathering and validation

Data called for in this assessment is also crucial for a vulnerability assessment. For instance, demographic analysis, local economic development status and potential, poverty context and situation, natural resources assessments and priority topics such as housing, land, basic services and gender are all needed in the Sensitivity Analysis (Table 3). Assessments of municipal and private finances are also useful to determine the Adaptive Capacity of a city with the

addition of other adaptive capacity determinants, such as access to technology, human resource capacity and social capital (Table 4). Information which might not be easy to find locally are those related to analysis of exposure to climate change. In the following sections we give recommendations for information gathering during a Climate Vulnerability Assessment by looking at each vulnerability component.

**Exposure Analysis:** Different exposure units experience threats in different ways and, in this sense, vulnerability changes according to each exposure unit and to the type of environmental- or climate related-hazard. As a result, it is difficult to achieve a single exposure index that reflects the aggregate of all exposure units and all potential threats. Similarly, an assessment of vulnerability that does not take into account the differential impact of

#### **Box 1** Climate Change and Livelihoods in case study cities

A livelihood is sustainable when it enables people to cope with and recover from shocks and stresses, such as natural disasters and economic or social upheavals, and enhance their wellbeing and that of future generations without undermining the natural environment or resource base (IFRC, 2011). In this context, livelihood assets (socio-political, human, physical, natural and financial) determine much about how livelihoods work, and, in particular, are the basis for understanding how people respond to climate-induced vulnerabilities. Knowledge of assets should therefore be the basis for the development of adaptation strategies. Vulnerability assessments in case study cities highlighted most vulnerable groups in terms of their exposure and impacts, for instance in Sorsogon, farmers and fishermen were identified as the most vulnerable livelihoods. The former live in areas where flooding often occurs destroying their fields and the latter live in at risk coastal zones.

Livelihood issues are addressed as a priority area of concern in all reviewed case studies but the connection between livelihoods and climate threats is not always explicitly addressed. In Cape Town significant attention is paid to improving access to various forms of capital, focusing on income generation through public work programmes and supporting entrepreneurship and small and medium enterprises but with a view to increase competitiveness. Interestingly, the public work programme has been expanded to include green initiatives such as restoring rivers, maintaining beaches and sand dunes and installing solar water heaters.

In other cities, livelihoods are supported with an issue specific focus. For instance, in Esmeraldas the housing sector is particularly addressed through a Housing for Climate Change programme, where “housing prototypes are designed with social and groupings interest in mind, and are related to geographic, natural, and climatic conditions, along with the inclusion of traditional technologies” (Ministerio de Desarrollo Urbano y Vivienda, 2011).

Issue-specific projects can also arise from severe disaster events as in Santa Tecla, where a community was isolated for several days without food or supplies, raising the issue of food-security to top priority and triggering training programmes to reduce the risk of isolation during extreme events. This could include establishing new canopy pathways across creeks and storing extra supplies in community silos).

In Sorsogon and Kampala similar ad hoc approaches are suggested to increase access to education, in some cases connected to waste reduction while, in others, to awareness of disaster risks and impacts, or by supporting income-generating activities as a means for diversification or by helping vulnerable groups that lost their jobs during disasters to quickly access job pools for reconstruction. A case in point for awareness is, for instance, Kampala’s Integrated Flood Management Project implemented under the Cities and Climate Change Initiative where school children in Bwaise, a low-income and flood prone area, are learning how to collect meteorological data as a means for awareness creation on issues of climate change and facilitate the institutionalizing of weather stations in various public facilities.

**Table 3** Climate Change Exposure (current and future) - Information Sources

DATA NEED	PURPOSE	POTENTIAL SOURCE(S)
Past weather and climate data such as seasons, local climate type/ zone, temperature, precipitation and extreme weather events	Show trends and the existing weather and climate data used by the city in planning and this information will possibly indicate how climate change is occurring locally	Government weather stations and agencies Environment ministry or department (state/provincial, national, local) Meteorological department (state/provincial, national, local) Climate change office (or equivalent) City/municipality profiles Other studies (neighbouring local governments)
Climate scenario/projections (local/national/ global)	Climate scenario/projections (local/national/ global)	National, state/provincial government (Environment ministry/department) IPCC global projections Academic Institutions
Impact reports of previous climate related disasters	Identify potential climate-related hazards and their impacts such as storm surge flooding	Disaster management centre (or equivalent – national, state, local) Social service department /ministry or equivalent

climate hazards on social groups will result in adaptation options and policies that are gender-blind, poor-averse and unaware of age variance.

Exposure analysis requires a multitude of data sources. As seen in Table 4, data is likely to come from community members such as through community-based knowledge on local weather and climate, and scientific data, reports and expert knowledge. Both sources of data are required. Climate change scenarios are made at global level and academic institutes or national governments are tasked with downscaling<sup>4</sup> these scenarios to regional levels. When this happens scientific observations on climate will likely be at regional level, therefore it is appropriate to validate these findings with local observations from community members. Moreover climate change scenarios may be difficult to develop locally and external help, in terms of funding and technical support, should be sought. UN-Habitat has developed a range of tools to guide the Exposure Analysis (Tool 3-A to 3-D, UN-Habitat, 2014).

**Sensitivity Analysis:** Natural hazards by themselves do not cause disasters – it is the combination of an

exposed, vulnerable and ill-prepared population or community with a hazard event that results in a disaster. By conducting a socio-economic sensitivity analysis you will understand how exposure to climatic hazards is likely to be different in different parts of the city, depending on demographics, housing conditions, levels of production and investment (see Table 5). This means that the outcomes of the exposure analysis should be coupled with city socio-economic data to provide better understanding of who or what is potentially sensitive and where.

Policy decisions concerning livelihoods, environmental quality, service delivery and energy efficiency and urban spatial form and infrastructure, in present and future plans, should embed climate change considerations coming from city vulnerability analysis. City planners for example, should ask themselves what type of land use interventions can be put in place to protect those who are most vulnerable to climate change.

Box 1 and 2 highlight the kind of considerations that case study cities took to integrate spatial form and infrastructure and livelihoods with climate change. UN-Habitat has also developed a range of tools to guide to guide the Sensitivity Analysis (Tool 3-F to 3-K, UN-Habitat, 2014)

<sup>4</sup> Downscaling climate data is a strategy for generating locally relevant data from Global Circulation Models. The overarching strategy is to connect global scale predictions and regional dynamics to generate regionally specific forecasts.

**Table 4** Socio-economic sensitivity considerations and variables (UN-HABITAT, 2014)

DATA NEED	VARIABLES	POTENTIAL SOURCE (S)
Demographics	Gender Proportion of children and elderly Household literacy Education levels Proportion of economically active Household members	National censuses Available household survey information collected by non-governmental groups and community organizations City profile (if available) Economic Development Strategy
Housing	Materials Condition Number of occupants	Available household survey information collected by non-governmental groups and community organizations Field assessments and visual surveys City Planning Department
Welfare and human development	Average income (per capita or household) Life expectancy at birth Literacy rates (as proxy measure) Poverty rates Human Development Index	Health Department or equivalent Social Service Department/ Ministry or equivalent National, state/provincial government
Production and investment	Land use areas – residential, commercial, industrial, commercial Infrastructure Land values	City profile (if available) Economic Development Strategy City Planning Department Chamber of Commerce or equivalent

### Box 2 Spatial Form and Infrastructure in case study cities

Sorsogon, Esmeraldas and Santa Tecla mapped their vulnerability to disasters and impacts from climate change and linked the results to a number of spatial strategies. More specifically, Sorsogon identified four policy zones that were determined based on topography, land use and level of risk. These zones are: coastal / built-up/hazard-prone; inland /agriculture/low-risk; upland/agri-forest/medium-risk and upland/protected forest /high risk. Each zone is given its own development strategy and objectives to help the city develop in consideration to the constraints set by climate change. Each zone is further classified into infrastructure, settlement, production and protection areas. Significantly the new classifications were not determined from the CCCI and MDGF-1656 project but prescribed by the Department of Interior and Local Government's Rationalized Planning System. Climate concerns and objectives are mainstreamed in the content and policies of all zones and areas. For instance, the settlement regulation in coastal/built-up/hazard-prone zones develops strategies to improve site and building requirements for new development and retrofitting existing development.

In Da Nang, the issue of spatial development and urban form is addressed through clear objectives and supported by a number of strategies that address environmental as well as, to some extent, climate-related risks. For instance, the objective 'Establish green and open space network as foundation of spatial development' is supported by strategies such as establishing environmental zoning provided with adequate legal basis; de-veloping green and open space network involving, among others, forests, ecosystems, water bodies, hazard areas, heritages, park and gardens, beaches, which provide foundation of urban development; preserving waterfront space, both from disaster management and landscape viewpoints and, finally, establishing coor-dinated mechanism to manage the environment network to enhance its quality and appropriate utilization

There are a number of useful tools and references (see Annex 4) that have been developed to assist planners in linking vulnerability assessment, spatial planning and development options.

**Adaptive Capacity:** For this task much of the work already done in phase A.2 can be used. For instance, through the policy scan the technical team should have already reviewed local and national level plans, reports and policies that are important to understand adaptive capacity. Adaptive capacity is a measure of many factors that are key for an adequate urban development that satisfies the needs of its citizens such as economic wealth, access to information and technology, access to material resources among others (see table 6).

**COMMUNICATION & PARTICIPATION**

*At this stage vulnerability and adaptation workshops with the core planning team and/or stakeholder advisory committee should also be scheduled where a discussion is held on how individuals and households, communities, and governments have traditionally responded to extreme climate events and disasters such as flooding, droughts and major storms.*

UN-Habitat has developed a range of tools to guide to the Adaptive Capacity Analysis (Tool 3-L to 3-N).

Review and consolidate the findings of the vulnerability assessment

At this stage it is useful for the technical team to organize a meeting with the stakeholder advisory group to review and consolidate the findings of the vulnerability assessment and make sure that citizens' observations and needs are represented in the outcomes of Phase A.3.

The results from all the steps of the vulnerability assessments are compiled into a Summary Vulnerable Population Rating Matrix (Tool 3-O, UN-Habitat, 2014). A city vulnerability assessment report should be compiled (Tool 3-Q UN-Habitat, 2014) and used as an input into the City Development Strategy process in various ways. For instance, in Olongapo, the Climate

**Table 6** Local and National Agencies involved

DETERMINANT	DESCRIPTION	RELATION TO CLIMATE PLANNING
Economic wealth and financial capital	Municipal financial resources, resident incomes and wealth distribution, economic marginalization and fiscal incentives for climate risk management	Climate change adaptation actions require internal funding and, sometimes, external support. Climate change vulnerability, and the level of adaption required, can be reduced in communities with less urban poverty and economic marginalization.
Access to information and technology	Communication networks, computing tools, freedom of expression, technology transfer and data exchange	Climate change vulnerability and risk assessments are facilitated and improved by good technical data, data modeling capability and the ability to share and distribute this information widely, freely and clearly
Material resources and infrastructure	Transport, water infrastructure, buildings, sanitation and energy supply and management.	Well-designed, constructed, sited, and managed infrastructure and services tend to be more adaptable or easier to adapt to climate change impacts and risks than poor re-sources and infrastructure
Human resources and capacity	Knowledge (scientific, local, technical and political), education levels and labour	Climate change vulnerability and risk assessments are facilitated and improved by a scientific understanding and knowledge of climate change, combined with good local knowledge, and the human resources to undertake climate change planning work
Organizational and social capital	<ul style="list-style-type: none"> <li>- State-civil society relations, non-governmental and community-based organizations, relationships between institutions</li> <li>- Modes of governance, leadership, participation, decision and management capacity</li> </ul>	<ul style="list-style-type: none"> <li>- Climate change policy development, implementation and enforcement are further improved in a collaborative, cooperative environment where climate change stakeholders are able to work well together</li> <li>- Effective, efficient and community-supported climate change actions require a functioning local government that is capable and willing to enforce municipal laws, plans and regulations</li> </ul>



Vulnerability Assessment was an integral part of the city ecological profile. The ecoprofile contains information that can serve as a form of reality check when formulating a vision for the city and can also serve as one of the bases in integrating climate change concerns in the City Land-Use Planning and City Development Plan.

These steps should be implemented by an ad hoc multi-stakeholder body composed of local public, private and non-government institutions working together with national government institutions. For instance in Olongapo, the process was led by the City Planning and Development Office as the convener agency and was supported by the following local and national agencies:

COMMUNICATION & PARTICIPATION

*It is also important to organize inter-sectoral meetings with city authority staff involved in the process to **communicate the findings**. The communication of uncertainty is important while defining actions and taking adaptation decisions. A decision can still be robust if it is based on the best available evidence, even though that evidence may be incomplete or uncertain. Understanding the uncertainties, supported by effective communication, should permit better and more flexible responses.*

Conducting a greenhouse gas emissions

The vulnerability assessment is a tool that addresses climate adaptation planning. When identifying actions to respond to current and future vulnerability it is important to take into account options to reduce greenhouse gas emissions. Making an inventory of these emissions is the first step to understanding where and how urban areas generate them, track emission trends, establish a baseline for developing action plans and track progress in reducing emissions. Local governments are uniquely positioned to carry out this process as they own many of the processes and operations that emit these gases

**Table 6** Local and National Agencies involved

LOCAL OFFICES/ ORGANIZATIONS	NATIONAL GOVERNMENT OFFICES
Olongapo City's Departments	National Government Agencies
City Planning and Development Office	(Participating Agencies)
City Disaster Risk Reduction and Management Office	Subic Bay Metropolitan Authority
City Engineering Office	Ecology Office
City Budget Office	Planning Office
Environmental and Sanitation Management Office	Department of Environment and Natural Resources
City Health Office	Department of Interior and Local Government
City Social Welfare and Development Office	Department of Science and Technology
Business Permit and Licensing Office	Philippine Atmospheric, Geophysical and Astronomical Services Administration
City Assessor's Office	Subic Bay International Airport
Olongapo Traffic Management and Public Safety Office	Department of Trade and Industry
City Agriculture Office	Bureau of Fire Protection of the Philippines
Barangay Government Units	Philippine National Police
Other Local Actors	Department of Education
JLG Memorial Hospital	
City College	
Subic Water & Sewerage Co., Inc.	
Non-Government Organizations	
Business Organizations	

**Box 3** Kampala greenhouse gas emission inventory

Kampala city conducted an emission inventory using 2012 as the base year. The inventory was conducted using the Global Protocol for Community-Scale Greenhouse Gas Emissions. Emissions data was acquired from national statistical databases, agency databases, survey databases for the city and city-region as well as field-based interviews for a selected sample of informal activities in the city. Emission factors for the different categories of the fuels and sources are utilized to calculate disaggregated emissions of Kampala city and the city-region. The city-region is the geographic extent as defined in the Kampala Physical Development Plan where recent surveys on transportation and energy use have been conducted. Emissions estimates are based on both consumption and production activities with accounting taking into considerations required adjustments for non-double counting. The inclusion in activity data of community-scale emission sources enabled the collection of informal activity data on sector-based activities of production and service provision in economic zones of the city including small-medium-large scale industrial-commercial areas within and out of the city adjusted to the base year estimates.

*Greenhouse Gas Emissions Inventory for Kampala City and Metropolitan Region (2013) Shuaib Lwasa*

and are in the position to collect those produced at the community level as well such as residential, commercial, utilities, transport and so on. The technical team, in parallel with phase A.4, can initiate this task. Over the years a few organizations have prepared guidelines and procedures on how to undertake such assessments that, for instance, Kampala made use of to produce its inventory (Box 3):

1. Global Protocol for Community Scale greenhouse gas emissions (WRI, C40, ICLEI, 2012)
2. International Local Government greenhouse gas emissions Emissions Analysis Protocol (ICLEI, 2009)
3. Guidelines for National greenhouse gas Inventories (IPCC, 2006)

**4. A.5 Strengthening Data and Information Management**

Phase A.4 is heavily dependent on the quality and quantity of vulnerability and emissions data along with demographic and socio-economic information. Findings from the case study cities revealed critical issues in relation to collection and maintenance, specifically:

- Even when climate change related scenarios are formulated, cities find it hard to use findings to inform interventions because the climate science's broad scale and long time frames are difficult to reconcile with local impacts.
- The limited ability to quantify losses and derive costs of disasters challenges opportunities for re-directing investments where most needed

**Uncertainty**

Climate. Although the broad view that the Earth is warming and that this it will have significant impacts on the climate, environment and society is clear and well established, the partially chaotic (non-linear, unpredictable) nature of the climate system, difficulties in estimating future emissions and the characteristics of climate models, result in deep uncertainties about the precise nature and timing of climatic changes, particularly at a regional and local scale.

Social and economic developments are intrinsically dynamic and are in many ways more deeply uncertain than projected changes in climate.

*(Source: UKCIP, 2011)*

Although decision-makers work with uncertain information every day (for example, making investments, buying products, taking up new opportunities, making investments, using weather forecasts) they may not describe it as such. Adaptation shows at least two challenges in relation to uncertainty: climate and socio-economic uncertainty (See box on uncertainty).

Where governments are actively supporting the process of data collection and maintenance, as in the case of Kampala where this is subsidized, cities seem to be more successful in gathering, interpreting, updating vulnerability and greenhouse gas emissions information.

It should be also noted that cities take actions even in the absence of climate projections and in the recognition that such projections, even when in place, will change. Urban leaders are learning to work with the information they have now but work with uncertainty in mind. Cities such as Sorsogon, Esmeraldas and Cape Town overcame some data constraints by effectively engaging and forming stronger ties with local academic institutions and systematically collecting community level information through participatory approaches that rely on community members’ knowledge and past disasters experiences. Rather than just bringing in external consultants, building local ties is providing an ongoing exchange between those who are doing the science and those who need the data.

To support long-term strategy for data and information management it may be relevant for cities to include specific data related capacity building and strengthening interventions as strategic choices during phase B.3

### A.6 Mobilization of Expertise

As seen throughout phase A and B, mobilizing and managing a wide range of expertise is considered essential for understanding and planning climate change related actions. Often times establishing formal partnerships between and among climate scientists, modelers of non-climate phenomena (such as agricultural commodity prices or soil moisture) and government or private sector decision makers is the single most determinant factor for successful climate risk management (Patt et al, 2007). Similarly, it is also important to map relevant expertise in other cities or organize cross-country exchanges to share experiences and lessons learned. The choice of cities and countries with which to initiate such a dialogue is important and should follow the principle of similarity in terms of climate change dynamics and challenges.

**Table 7** Da Nang city mainstreaming of climate change and disaster risk into the environmental section of the CDS

OBJECTIVES	STRATEGIES
(i) Establish an effective system to remove and prevent pollutions	<ul style="list-style-type: none"> <li>• Attend to hotspots urgently</li> <li>• Provide anti-pollution measures</li> <li>• Establish effective monitoring systems</li> </ul>
(ii) Preserve ecosystem and develop eco-tourism	<ul style="list-style-type: none"> <li>• Designate ecosystems for preservation</li> <li>• Establish environmental zoning</li> <li>• Expand eco-tourism in further integration with environmental management</li> </ul>
(iii) Strengthening of disaster preparedness and prevention measures	<ul style="list-style-type: none"> <li>• Improve drainage system</li> <li>• Develop flood free urban lands</li> <li>• Establish early warning system</li> </ul>
(iv) Commitment to global climate change	<ul style="list-style-type: none"> <li>• Promote reducing carbon dioxide in all related sub-sectors</li> <li>• Prepare for the impact of global warming such as rise in sea level and frequent flooding and so on</li> </ul>
(v) Enhance social awareness and knowledge on environmental issues	<ul style="list-style-type: none"> <li>• Incorporate environment issues in curriculum of primary / secondary education</li> <li>• Conduct adequate campaigns and public information</li> <li>• Facilitate access by stakeholders to necessary information</li> </ul>
(vi) Develop institutional and organizational systems to manage the environment sustainably	<ul style="list-style-type: none"> <li>• Establish adequate institutions to oversee and promote environmental activities</li> <li>• Strengthen inter-sectoral and inter-department coordination</li> </ul>

In summary the following results to be achieved at the end of Phase A as a precondition for starting Phase B are as follows:

- **Clear identification of climate change threats**
- **Mapping of key stakeholders**
- **Establishment of a technical team leading the process with clear roles and responsibilities**
- **Assessment of relevant policy, regulatory, financial, governance and legal aspects**
- **Analysis of linkages between climate change and existing development plans**
- **Completion of vulnerability assessment**

### 2.3 PHASE B: Strategy Planning

The integration of climate change issues into the City Development Strategy process is further consolidated during the second phase of ‘strategy planning’. This represents the core of the City Development Strategy, with a strong involvement by all stakeholders to ensure a holistic and multi-sectoral approach that takes into consideration climate change priorities.

As reported in the section 2.1 of the key findings, to a large extent case study cities addressed climate change by **mainstreaming disaster risk, adaptation or mitigation into ongoing work and programs**, specifically in Environmental Management Divisions or Water and Environment Ministries. A good starting point would be the objectives and strategies proposed under the Environmental Management Division of Da Nang city shown below. Environmental issues are reportedly widely discussed across sub-sectors in Da Nang and also appear in the form of strategies in the infrastructure, livelihood and spatial form cross-cutting themes.

In contrast, **incorporating into sector plans** refers to initiatives to integrate climate into one or more sector plans, often in the context of creating a new or updated sector plan. For instance, the Sorsogon City Strategy for Climate Change Resilience informed the updated Comprehensive Land Use Plan (CLUP) and the Comprehensive Development Plan (CDP) and resulted in the formulation of Climate Change demonstration projects to improve livelihoods, housing conditions, reduce CO<sub>2</sub> emissions and disaster risk reduction (refer to Box 1, 2, 6).

Some of the cities that mainstreamed climate concerns into Environmental Management Divisions or Water and Environment also **established specific Climate Change Units**, as in the case of Kampala, Da Nang and Santa Tecla. These units are seen beneficial in creating cross-departmental awareness and communication about climate change.

When developing an adaptation program, cities need to account for projected climate impacts and attend to local politics, political agendas, goals, institutional structures and resource constraints. Accordingly, cities need to advance adaptation programmes into the City Development Strategy in ways that are practical and respective of the local political, social, and economic context.

For mainstreaming to be effective, however, the City Development Strategy approaches should be more strongly anchored into cities’ statutory planning (as shown in section 2.3) to encourage horizontal coordination across sectors; where national governments demonstrate a commitment to local adaptation planning through the careful drafting of mandates, policies, laws that promote action and coordination there is a higher chance that vertical mainstreaming will be effective.

#### B.1 Building a Participatory Strategy Development process and Visioning and Building Consensus

This task consists of building up a participatory strategy development process as well as building consensus on the key strategy elements. Broadly speaking, it is necessary to organize inputs and strategic decisions to be developed with stakeholders, to integrate the available analytical studies into the process, to develop awareness-building to support the strategy development process, to develop participatory consensus on key focus and topics for the vision and to build consensus on strategic directions and choices. These are all preconditions for the development of the vision into concrete strategic options and choices characterized by a broad support among stakeholders.

Evidence from case study cities suggest (see Box 4) that a strong and diverse stakeholder-base involvement is important to consolidating city information on vulnerability, to ensure that citizens voices are heard, and that key city departments are aware of their role in planning for climate in coordination with national government levels and other local level agencies. For instance, Sorsogon's Technical Unit formed **issue-based working groups** composed of a broad range of national and local government bodies, academic institutions, community-based organizations and private and non-government organizations. In Cape Town, extensive participatory processes were established, involving focus groups, in-depth interviews and mobile workshops during City Council meetings at different planning phases.

The technical team or unit becomes the steering body of the participatory strategy and, together with the stakeholder advisory group, should review findings of Phase A.3 and early outreach conducted in Phase A.2. Based on the outcomes of the assessments conducted during Phase A. 4, the objectives should be refined and/or confirmed with the core technical team and stakeholder advisory group. Furthermore, the relevance of the identified objectives to climate change should be explicitly identified. Cities with multiple city plans and strategies may find that more specific climate change objectives have been omitted. The technical team and/or advisory committee should review gaps with the concerned local government departments and city leaders and where possible modify the initial objectives to include the ones related to climate change which have been overlooked.

#### Box 4

#### Building a Participatory Strategy Development process and Visioning and Building Consensus in case study cities

##### Sorsogon, The Philippines

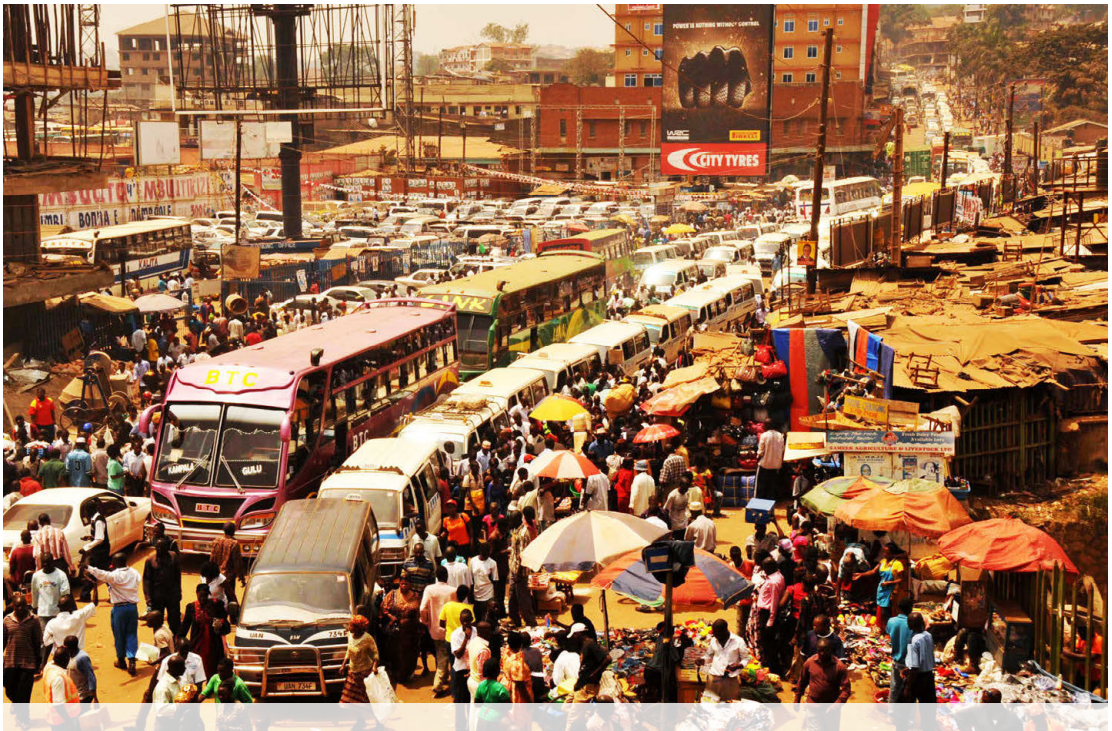
Sorsogon used UN-Habitat's Cities and Climate Change Initiative (CCCI) project to link climate change to strategic planning and used an issue-based working groups approach. The planning process began with the assessment phase which helped identify four key thematic focus areas: 1) livelihood; 2) environmental management; 3) climate risk reduction/ disaster risk reduction and 4) housing and basic infrastructure. Multi-stakeholder working groups were formed for each of these thematic areas. These groups are composed of a broad range of national and local government bodies, academic institutions, community-based organizations and private and non-government organizations based in the City of Sorsogon. As an example, the climate/disaster risk reduction group is composed of:

- City Disaster Coordinating Council
- Department of Public Works and Highways
- Philippine National Police
- Bureau of Fire Protection
- City Engineering Office
- United Architects of the Philippines
- Sorsogon State College
- Department of Science and Technology
- Department of Environment and Natural Resources
- Barangay Officials (Sirangan, Cabid-an, Talisay and Bitan-o, Sampaloc)

##### Cape Town, South Africa

In Cape Town there was a particularly strong emphasis on the engagement of stakeholders,' including governmental actors and awareness creation. After the participatory assessment phase the Executive Mayoral Councilor for Economic, Environmental and Spatial Planning in Cape Town developed a process plan and engaged a consultant for the strategy development phase. The process included establishing communication of the City Development Strategy process with stakeholders via print and online media (including social media); the visioning process involving extensive stakeholder engagement (business, academia, citizens and special interest groups); translating the vision into strategy, defining goals and sub-goals; the alignment of the City Development Strategy and OneCape 2040 and the development of the implementation plan and finally the adaptation of the City Development Strategy and OneCape 2040. Climate change emerged early in the City Development Strategy process as one of the focus areas and it remained important during strategy development.





**Traffic congestion on Namirembe Road in Kampala.** © UN-Habitat/Nicholas Kajoba

Tools 4-A, 4-B and 4-C (UN-Habitat 2014) can be utilized at this stage. Tool 4-A helps to identify stakeholders' issues and then organize them into general themes and issue categories. It is the first step in identifying community objectives for use in the climate change planning process. Once the issues are organized into general categories, tool 4-B will then help to convert them into objectives that can be used to guide the rest of the planning process. Objectives are used to help generate climate action options and to assess and prioritize them (see Phase B.3). Once objectives have been identified and organized, the next step is to assess their relevance through tool 4-C.

Cities that have conducted a City Development Strategy process or related planning processes may have already identified local issues and characterized them as plan objectives. In this step, objectives should be reviewed and re-assessed in the light of climate change so that climate change issues become intrinsically connected to the plan objectives. These objectives will be used later in phase B.3 to generate climate action options and as

evaluation criteria to assess and prioritize the options. By contrast, in the case of cities that did not conduct a City Development Strategy or where cities had one but this was characterized by limited data availability or unclear objectives or top-down processes, climate change and development issues should be refined, confirmed and translated into objectives.

In order to build consensus on strategic directions, at the end of this phase it is important to organize a workshop led by the technical team as well as community workshops with the stakeholder advisory committee to confirm objectives and identify possible gaps.

## **B.2 Strategic Choices and Prioritization**

The purpose of this task is to develop the vision into strategic options and choices that encompasses climate change dimensions. As a preparation for this task, it is important to clarify the legal and political framework, to assess the financing framework (assets and budget sources of investments) and to analyze

implementation capacities and instruments. This is to guarantee that the strategic options and choices selected are embedded within the local legal, political, financial and organizational frameworks so to maximize their chances of being eventually implemented.

In all cities strategic planning processes reviewed the prioritization and decision making process received significant attention, however significant gaps remain embedding strategic options within legal, political and financial frameworks and in understanding what prioritization methodologies were used in each city (See Box 5).

Many cities used Strength Weaknesses and Opportunities and Threats (SWOT) to understand the resources and capacities base of cities in terms of sectoral strengths and weaknesses and how the city can be impacted by external events (opportunities and threats). In Da Nang, Sorsogon and Esmeraldas climate change was identified in the SWOT analysis as a threat and was studied more in depth through a vulnerability assessment. In some cases, such as Da Nang, the SWOT analysis was also used to carry out a comprehensive financial analysis (see Box 10) and suggest core strategies to achieve funding leverage.

In the other cities the issue of climate change was not addressed explicitly in the SWOT analysis. All cities organized participatory meetings to support decision-making and prioritization of actions. For instance, in Esmeraldas the SWOT analysis conducted as part of the CCCI initiative led to five strategic lines for actions chosen through workshops led by the Catholic Universidad, the Municipality and a technical team from the UN-Habitat. This led commitments from the Local and National government to invest on specific lines but prioritization and costing are pending.

In Cape Town, extensive participatory processes were established involving focus groups, in-depth interviews and mobile workshops during City Council meetings. In the planning phase this involved a wide array of City officials, councilors, city experts/professors from academia, the private sector and the civic alliance. In the drafting phase this was extended to much broader consultations with residents, representatives from

neighbouring municipalities and special interest groups such as tourism, transport, financial services and creative industries. Consultants hired to facilitate the stakeholder engagement process synthesized findings, while the City of Cape Town advisory reference group and the City Development Strategy drafting team deliberated over the final selection. The strategic plan identifies 59 interventions, clustered under the six goals and supporting mechanisms and the city is now working on the prioritization and costing. The latter was intended as part of Phase 2 of the City Development Strategy process but this was postponed as the mandate for leading on this has shifted to the new Strategic Policy Unit set up by the Mayor.

#### COMMUNICATION & PARTICIPATION

*Based on these findings, the technical team established to lead the City Development Strategy process should organize workshops involving key city staff from multiple departments, researchers and consultants with sectoral expertise to generate a possible list of adaptation and mitigation options (See Table 7 for possible actions) and should follow a clear and documented prioritization methodology (see Box 5).*

Making strategic choices and prioritizing issues is a challenging process. On the one hand, various stakeholders and interested parties may exert an influence and result in decisions that do not necessarily represent the preferred choices of the array of actors involved. On the other hand, limited financial resources may lead local governments into inaction when faced with the uncertainty of climate change, other development priorities and the task of deciding over mitigation and adaptation projects to undertake. There are many decision support instruments that can aid planners on this task; the choice of the right decision-making tool should be made by understanding instruments' technical capacity needs, data requirements, time and costs involved in carrying out the analysis and stakeholder participation needs. Ultimately the choice of adaptation actions will be specific to each city's climate risks, and will not be sustainable if the poor and disadvantaged as well as if existing policy gaps are not factored in the decision-making process.

**Box 5** Prioritizing climate change actions and projects

Once adaptation actions have been identified, they need to be prioritized. One method of evaluating which actions might be pursued first is multi-criteria analysis. This allows options to be evaluated using a range of criteria that include the analysis of unquantifiable factors, especially when distributional implications need to be considered. The purpose of using this type of analysis is to aid decision-making rather than to evaluate options on monetary terms. It is useful in assessing options for adapting to climate change, as there are many factors that need to be considered, including equity, efficiency, short- or long-term benefits as well as many other non-monetary factors. Tools such as cost-benefit analysis and social accounting matrices are useful when determining the financial implications of an intervention, in terms of both cost and benefit to society. With social accounting matrices issues such as the impact on GDP and employment can be assessed. If the benefits of adaptation options can be quantified but not expressed in monetary terms whilst costs can be quantified in monetary terms, a cost-effectiveness Analysis would be preferred. Useful questions that city planners should ask themselves would be which method should be used and when. Figure 4 illustrates the decision making process with regard to this question. At the same time, the limitations of these methods should be addressed. For example, although multi-criteria analysis might enable non-cost factors to be assessed, the stakeholders defining and evaluating the criteria may have biases. More flexible methods can therefore also be explored for choosing priority adaptation actions. Effective guidelines to conduct a multi-criteria analysis process were produced by UN-Habitat in 2014 (See tools 5-A to 5-D and 6-A to 6-D).

Figure 4 Selecting the appropriate economic approach for assessing climate change adaptation options (GIZ, 2013 based on UNFCC, 2002)

Mainstreaming opportunities should be defined based on scores obtained during phase A2 and the possibility of quick win actions should actively be sought, as demonstrated in Sorsogon (See Box 6). It is also important to discuss and analyze trade-offs between options and within options to achieve a final list that better supports all objectives. Although the climate change mitigation agenda is not the first priority, and should not be, investing in high emission solutions to achieve energy security is likely to commit many cities to higher fuel cost in a world where fossil-fuel may be constrained and oil prices uncertain. Therefore, it makes sense to look for mitigation benefits when designing development strategies. For instance, investing in modern and affordable fuel sources for cooking can serve to reduce household greenhouse gas emissions while, at the same time, generate adaptation benefits by reducing health problems caused by cooking fumes and reduce charcoal of wood logging needs. Similarly, according to the Cities Alliance (2009:5) "For city governments under pressure to address more immediate needs – improve education, health care, security, water and sanitation, and attract new investment – climate change might seem less pressing, a problem for the future. But cities can invest in protection against floods and sea level rise in ways

that have strong "**co-benefits**" with development, as this improves the homes and neighbourhoods of low-income groups".

The process that leads to the final list of options should be iterative and should be based on a continuous refinement aimed at assessing, among others whether different options can be merged, whether there are uncertainties that affect options' assessment, and the planning constraints that certain options may face.

**Box 6****Kampala greenhouse gas emission inventory**

Sorsogon's local stakeholders and city authorities agreed on priority initiatives that were viewed to be attainable and realistic – quick wins - in the achievement of climate change objectives in a sustainable way. The actions seek to address issues concerning the poor as well as policy gaps, which need to be targeted in order to sustain and initiate climate actions on the ground. The four themes and strategic actions are presented below..

Figure 5 Sorsogon City Climate Action Plan priorities and quick-win demonstration projects (Button et al., 2013)

**Table 8** Potential climate change adaptation options (UN-Habitat 2014)

CLIMATE CHANGE IMPACT	OPTIONS - POLICIES, PROGRAMMES, PROJECTS AND OTHER ACTIONS
Groundwater depletion	<ul style="list-style-type: none"> <li>- Research underlying causes (e.g. increased runoff due to deforestation or other land use changes)</li> <li>- Groundwater recharging</li> <li>- “Low regrets” infrastructure upgrades and repair (e.g. ground water recharge/ impoundment areas)</li> <li>- Disaster Risk Reduction Plan</li> </ul>
Water shortages	<ul style="list-style-type: none"> <li>- Water management plan</li> <li>- Water conservation and awareness programme</li> <li>- Rainwater harvesting, groundwater recharge and improved infiltration</li> <li>- Engage with UN-Habitat’s Global Water Operator Partnership building the resilience of water utilities</li> <li>- Minimize system leaks and other water loss (e.g. surface reservoir evaporation)</li> <li>- Expanded or new reservoir capacity</li> <li>- “Low regrets” infrastructure upgrades and repair (e.g. reservoirs, water supply network)</li> </ul>
Salt water intrusion into groundwater supplies in coastal areas	<ul style="list-style-type: none"> <li>- Rehabilitation of coastal zone ecosystem and habitats (e.g. mangroves, dunes)</li> <li>- Water management plan</li> <li>- Water conservation and awareness programme</li> </ul>
Increased riparian flooding and erosion	<ul style="list-style-type: none"> <li>- Flood risk prediction and mapping</li> <li>- Rehabilitate urban wetlands and floodplains</li> <li>- Upstream rehabilitation of ecosystems</li> <li>- “Low regrets” infrastructure upgrades and repair (e.g. dikes, diversion channels, reservoirs)</li> <li>- Climate proofing vulnerable infrastructure in flood hazard areas (e.g. water, power, medical facilities)</li> </ul>
Increased coastal flooding and erosion	<ul style="list-style-type: none"> <li>- Coastal flooding risk prediction and mapping</li> <li>- Rehabilitation/protection of coastal ecosystems (dunes, mangroves)</li> <li>- “Low regrets” infrastructure upgrades and repair (e.g. dikes, diversion channels, reservoirs)</li> <li>- Climate proofing vulnerable infrastructure in hazard areas (e.g., water, power, medical facilities)</li> <li>- Improved, “climate safe” building codes for new development</li> <li>- Early warning system and evacuation plan for disaster events</li> </ul>
Increased flash floods	<ul style="list-style-type: none"> <li>- Clean and repair existing drainage</li> <li>- Rehabilitate urban wetlands and floodplains</li> <li>- Rainwater harvesting, groundwater recharge and improved infiltration</li> </ul>
Increased storm surge hazard	<ul style="list-style-type: none"> <li>- Risk prediction and mapping</li> <li>- Land use plan</li> <li>- Disaster response plan - relief aid</li> </ul>

**Table 8** Potential climate change adaptation options (UN-Habitat 2014) Cont'd

CLIMATE CHANGE IMPACT	OPTIONS - POLICIES, PROGRAMMES, PROJECTS AND OTHER ACTIONS
Increased risk of landslides or mudslides on hazard slopes	<ul style="list-style-type: none"> <li>- "Low regrets" infrastructure upgrades and repair (e.g. sewage, water supply, drainage systems)</li> <li>- Land use plan to identify and better manage development in hazard areas</li> <li>- Community awareness programme</li> </ul>
Displacement and population movement from informal settlements vulnerable to climate change impacts	<ul style="list-style-type: none"> <li>- Disaster response plan - relief aid</li> <li>- Land use plan for city extensions</li> <li>- Community awareness and education programme</li> </ul>
Distress migration to cities/towns due to droughts in rural areas	<ul style="list-style-type: none"> <li>- Land use plan for city extensions</li> <li>- Integrate climate change concerns into local economic development plan</li> <li>- Disaster response plan - relief aid</li> </ul>
Damage to infrastructure not designed to withstand climate change impacts being experienced	<ul style="list-style-type: none"> <li>- Risk prediction and mapping</li> <li>- Improved, "climate safe" building codes for new development and renovations</li> <li>- Climate proofing vulnerable infrastructure (e.g., existing building stock, water, power, medical facilities)</li> </ul>
Exaggerated urban heat island effect	<ul style="list-style-type: none"> <li>- Tree planting programme</li> <li>- Building code to support sun shades, building openings, green roofs, white roofs etc. to reduce building temperatures</li> <li>- Awareness programme to support the adoption and use of different materials (e.g., white roofs, green roofs)</li> <li>- Increasing urban water bodies by maintaining, restoring and creating suitable bodies of water in the city environment</li> <li>- Development of urban wind corridors to improve air circulation and remove the heat from an urban area</li> </ul>
Interruption of food supply networks and higher food prices	<ul style="list-style-type: none"> <li>- Urban agriculture programme</li> <li>- Improved rural-urban linkages</li> <li>- Integration of food security into land use plans and other relevant city plans and strategies (e.g. local economic development strategy)</li> </ul>
More favourable breeding grounds for pathogens (e.g. mosquitoes and malaria)	<ul style="list-style-type: none"> <li>- Health promotion activities (e.g., awareness programme, community clean-up campaigns of drainage systems and other breeding grounds)</li> <li>- Improved training in health sector</li> <li>- Improved health infrastructure</li> </ul>

### B.3 Establishing Process for Continuous Strategy Development

The objective of this task is to establish a continuous strategy development process with the relevant institutions and actors so that the integration of climate change issues into the strategic choices of the city becomes ongoing and iterative. The idea is to ensure that

there are institutional and organizational arrangements in place that foster and support the continuous refinement of the strategy developed and implemented. This involves allocating tasks and responsibilities for implementation, strengthening the mechanisms for monitoring and providing feedback, integrating when necessary new studies and information, and formalizing procedures for periodic review and assessment. It is



**Box 7****Establishing Process for Continuous Strategy Development in case study cities****Da Nang, Vietnam**

The case of Da Nang illustrates that the City Development Strategy was eventually integrated in the plans and formalized, but held no institutional power. The Strategy is used as reference for city's leaders' decision making as well as input for the 2030 Spatial Master Plan prepared by Da Nang Urban Planning Institute.

Ouagadougou, Burkina Faso

After approval of the plan subsequent adjustments proved difficult. Even though the strategic planning process aims to be flexible, the Ouagadougou City Development Strategy was not changed to explicitly address the issue of climate change after the flooding in 2009.

**Sorsogon, The Philippines**

Sorsogon's Comprehensive Land Use Plan and City Development Strategy were changed to integrate the new insights that emerged from the assessments undertaken within the CCCI framework. Nevertheless, the 'quick win' projects identified under this programme were implemented before the revision of the CLUP and Comprehensive Development Plan was finalized and financed through a UN-Habitat grant. Therefore, projects were not crucially integrated in the Comprehensive Development Plan and linked to the local investment programme and eventually to the local budget, potentially acting as impediment in the process of approving future projects.

**Kampala, Uganda**

In Kampala there is a strong link between institutional strengthening of the KCCA, which focuses on internal strategic interventions based on achieving excellence, integrity, innovativeness, teamwork and client care, and the goal to improve the development of city itself into an economically empowered, healthy, safe, aesthetic and attractive city. Linking the two goals is crucial for establishing the process of continuous strategy development and the process of assuring that the institutional responsibilities for further detailing and implementing plans are clear and well defined. In terms of assuring that climate change also has a prominent position in the process, a number of observed challenges include the low capacity of city officials and stakeholders to handle climate change issues and the lack of laws and policies to address issues of climate change in Uganda in general and Kampala in particular.

essential to involve all stakeholders in this ongoing process and to minimize the risk of actors dropping out because of lack of time, resources, interest, and incentives. The focus on climate change issues should be maintained and if possible institutionalized in the process by creating ad hoc mechanisms that guarantee that climate change objectives remain prominent in the City Development Strategy process.

To some degree all the cities investigated established a process for continuous strategy development and for clarifying and strengthening institutional roles and responsibilities in the process of action planning, project development, fund mobilization and preparation for implementation, however many gaps and challenges remain. As discussed in the findings section 2.2 of this report, the degree of City Development Strategy institutionalization varied across municipalities, and in some cases

institutionalization did not result in better positioning of the Strategy into city planning.

Institutionalizing City Development Strategy within other planning processes is necessary to avoid it remaining a mere exercise and, at the same time, is key to achieving alignments with other climate plans at different government levels. In five out of the eight countries reviewed there is a National Adaptation Plan for Action (NAPA) in place but only one city City Development Strategy or strategic plan (Kampala), makes explicit linkages to it, through national guidelines on mainstreaming climate change in sectors and local government, while other cities the linkage with NAPAs is unclear or missing. In cities where climate strategies were developed under other programmes (ACCRN, CCCI), the linkage to local City Development Strategy and other plans is intended but not clearly guided (as in the case of Da Nang, Esmeraldas, and Santa Tecla).

In terms of assuring that climate change also has a prominent position in the City Development Strategy process, a number of observed challenges include the low capacity of city officials to obtain and interpret climate information and the lack of laws and policies to address issues of climate change. Where specific climate laws are in place, such as in Sorsogon, specific knowledge and experience in implementing adaptation and mitigation actions is low and challenged by public acceptance of certain options and technological needs. For example, the proposal to switch from 4 stroke engines to 2 stroke engines will likely meet resistance from drivers because of the investment required, and the absence of industries that manufacture 4 stroke engines in Sorsogon or surrounding areas. As reported in Phase C.2 most City Development Strategies poorly addressed budgetary concerns for climate actions and, even when costs were considered, they were not integrated in local investment programmes. A good practice in this case is the financial review conducted by the city of Da Nang (See Box 10).

#### **B.4 Strategy Planning and Institutions**

The developed strategy should be translated into concrete action plans by establishing institutional roles for the relevant stakeholders, by developing investment programmes for the various priorities identified, by establishing timelines, milestones and targets, by strengthening measurement, analysis and feedback systems, and by establishing participatory systems for monitoring the action plans. By way of illustration, Da Nang has developed a Green Growth City Development Strategy based on an integrated approach that replaces sectoral plans and programs, with the aim to develop a strategic planning framework for mainstreaming green growth into the city overall urban development plan. The strategy focuses on the effective use of local assets, adaptive capacity and community resilience in order to maximize green growth impacts while improving the quality of life of urban residents. It has an important role to play in terms of strengthening links among different urban development plans such as the eco-city plan, the construction master plan, and the socio-economic development plan. The cross-cutting and multi-sectoral strategy aims not

only at environmental management but also at high-value added development while increasing economic competitiveness for Da Nang. It is expected to bring civil society, business, and government together to formulate innovative programs and create business opportunities dealing with interlinked urbanization issues with synergy effects for green growth.

In general, the action plans should detail the tasks required to implement each of them, as well as the institutions involved, which actor should play to role of project leader and have the ultimate responsibility for implementation, the level and type of resources required for each specific task and the budget and funding sources. Depending on the type of action, it may be appropriate to differentiate between the implementation of short-term actions (options to be carried out in one to two years), medium-term actions (three to five years) and long-term actions (six plus years). The list of action plans must be clear in terms of what is required from different stakeholders or external agencies during the implementation phase. The final plan will not only communicate the rationale for the selection of actions, but it will also be used to help document progress. Tool 7-B and 7-C (UN-Habitat 2014) can help develop and structure this task.

#### **B.5 Promoting the Strategy**

The overall strategy and the action plans should be adequately promoted and communicated with a particular focus on linkages to national priorities and National Adaptation Plans for Action (NAPAs) and with international donor and technical assistance programmes. The information and communication activities should ensure the prominence of climate change issues and their links to other development objectives. Communicating a plan that proposes climate change actions will need special care in getting across the uncertainty involved. The European CLIMATE-ADAPT platform suggests the following key lessons in communicating uncertainty linked to climate change, which we report here:

- Understand the audience and the information they need

- People deal with uncertainty all the time (economic growth, technological change) and uncertainty around future climate change is extensively described
- Avoid complex or obscure language. Explain the meaning of descriptions or phrases where they have a particular application, especially if they have alternative or everyday interpretations.
- Make scenarios locally relevant – stories, examples and case studies bring adaptation planning to life
- People have different ways of learning new information. Explore new tools such as visualizations to provide a range of opportunities for audiences.
- Support people in their adaptation journey: provision of data alone will not stimulate action.

The critical role of municipal leadership in championing awareness should not be underestimated. A case in point is the efforts of the municipality of Santa Tecla in taking a pro-active role in several aspects related to climate change. The city's 2008 budget had a percentage for environmental awareness and projects, and the permanent campaign Santa Tecla for Life was launched with a strong focus on environmental conservation, education, waste separation and disasters. In January of 2009, the Municipal Policy for Strategic Management of Disaster Risks was formulated, which turned the municipality into a reference beyond the country. In 2011, the UN nominated Santa Tecla as a Resilient City, due to its work after the earthquakes. The latter recognition made Santa Tecla a Latin American leader for the 2010-2015 campaign Developing Resilient Cities: My city is getting ready, part of the Hyogo 2005-2015 protocol.

Often, awareness-building components are prioritized as adaptation options in the plan itself (see the cases of Esmeraldas and Sorsogon). In summary the following results to be achieved at the end of Phase B as a precondition for starting Phase C:

- Stakeholders consensus on strategy development process and objectives
- Agreed upon list of choices based on participatory prioritization process
- Structures and processes in place for ongoing strategy development
- Clear linkages between strategy and other planning and development processes
- Detailed action plans to implement the strategy
- Strategy promotion and communication plan

## 2.4 PHASE C: Strategy Implementation

As mentioned above under task B.5, the developed strategy should be translated into concrete action plans which, among others, establish the roles and responsibilities of all relevant stakeholders as well as the timelines, milestones and targets, and also the level and type of resources needed.

### C.1 Implementation of Strategic Plan

In relation to strategic plans focusing on climate change, it may be advisable to differentiate between climate change mitigation and adaptation plans, even though there may be overlap between them and both may generate broader developmental co-benefits. The implementation of the strategic plan should be supported by institutional reforms aimed at facilitating the process of turning the plan into concrete outputs and outcomes. This means that before the implementation phase starts, the institutional and governance context should be re-assessed to work around potential political and mainstreaming deadlock (Tool 7-A, 7-B, 7-C in UN-Habitat, 2014 can be used for this purpose).

In addition, it is essential to confirm the assignment of responsibilities to relevant government units and departments as they may have veto powers, including the possible identification of a lead department or agency. Similarly, ad hoc legal, regulatory and policy instruments to support the strategy should be identified and, if absent, developed. Strong public-private partnerships may be an important vehicle to enhance climate resilience and at the same time, create business opportunities, as is the case with the collection and

**Box 8****Awareness building for climate change in the City Development Strategies of Esmeraldas and Sorsogon**

Under the City Development Strategy in Esmeraldas (Ecuador) a Training, Networks and Education Action Line was established with the following agenda to promote: the Young people network against climate change; actions in which citizens have access to comprehensible information on climate change; open calls and public events to let the population know about the actions that can be taken at home to contribute to mitigate climate change; the creation of spaces for the training of specialists in climate change and non-formal education spaces for leaders of the civil society.

In Sorsogon (The Philippines) an awareness-building component focusing entirely on climate change was included within the process of the CCCI and MDGF-1656. Groups addressed the challenge of low public awareness and support for climate change efforts by developing Information, Education and Communication plans focused on the four City Development Strategy priority issues. Various forms of media were tapped into to enhance knowledge and public participation on climate change, namely radio and television broadcasts, printed media, and group activities such as lectures, orientation and forums.

use of climate data and deployment of early warning system technologies. The private sector role may vary by sector and could take many different forms, from simply serving as a provider of technology to working in partnership with governments to the assumption of primary responsibility for the delivery of mitigation or adaptation services.

**Governance**, and particularly the interplay between various administrative levels, is crucial when it comes to climate change integration in strategic planning. City planning takes place in the context of a national planning framework that dictates the type of plans that cities need to prepare. In order to integrate climate change to strategic planning successfully it is important that:

- The decentralization process is enhanced in the sense that cities that have more responsibilities also need more capacity and resources and this requires a continuous investment at the local level
- Strategic planning and climate change departments need to enhance further the integration and cooperation with other governmental departments and agencies at horizontal (between other departments and agencies operating at city level) and vertical level (between other departments and agencies operating at higher and possibly lower governmental level)
- Use local entry points: a climate change focus needs to be linked to and integrated in the local system of a city that has its own funding streams and political

support mechanisms

- Address the issue of ownership in terms of ownership over the strategic planning process and ownership over the climate change agenda, especially when City Development Strategies were promoted by external actors (See point 2.2 and Table 2)

## **C.2 Mobilizing Financial Resources**

The mobilization of financial resources is an essential element of the strategy implementation. Securing the necessary resources is a near-universal challenge for city authorities. In many countries, budget allocations from central governments to cities are under pressure. In countries with more devolved funding models, cities can generate revenue directly, collecting municipal income taxes, property taxes and business rates. However, public funds available are often limited and therefore, even if public resources are committed, they should be complemented through the establishment of mechanisms for the mobilization of private sector finance. Mobilizing private sector investment requires targeted public support that improves the risk-reward calculus of private organizations.

The private sector seeks markets that exhibit attractive returns relative to associated risks over an appropriate investment timeframe as well as adequate size, liquidity and transparency. These conditions are often absent. To improve the risk-reward calculus of investments, arguably the most fundamental barrier to leveraging private capital, the public sector can provide support with, for example,

**Box 9****Aligning different city development and climate plans in Sorsogon and Cape Town**

The national government of the Philippines has clearly decentralized development and land use planning as well as climate change planning. It has also institutionalized the linkages between the three, allowing local governments to mainstream climate change fully in the sectors that most need it. Further experiences from pioneer cities are currently being replicated in others. The experience in Sorsogon City is used as national inspiration to further streamlining the local planning process in other cities. The vulnerability and adaptation assessment (V&AAA) process in Olongapo City is based entirely on the lessons from Sorsogon City. While the planning process in Olongapo City is still at its early stages, the Sorsogon experience is used to anticipate challenges such as data gaps and institutional constraints, and is used to improve the overall planning process there. The City Government of Olongapo collaborates with the UN-Habitat in this process and Olongapo's V&AAA has been more structured and targeted to the development of a Climate-proof Eco-profile that will form the input for a comprehensive development plan.

South Africa has also institutionalized planning process that prescribes that cities make an Integrated Development Plan to guide (local) investments. Cape Town smartly used the City Development Strategy process to prepare a long-term vision for its new Integrated Development Plan and made sure to align this vision with the provincial vision of the West Cape (see Table 6).

Seven interventions are proposed for the 2012-13 period. Three out of seven have an adaptation and/or mitigation dimension, namely define a strategy to engage with state-owned enterprises on key development issues in Cape Town (including the national electricity and transportation providers); expand (community) public works programme and undertake key interventions around food, energy and water scarcity such as scoping and feasibility studies and research (City of Cape Town, 2012). Each of the interventions is assigned to an existing Strategic Cluster for oversight and an Executive Management Committee or Working Group for administering. One of the initial thrusts of the implementation phase noted in the City Development Strategy is a communication drive, to inform city staff, politicians and external stakeholders of the details put forward in final version.

direct finance that manages political and technological risks. With public-private sector collaboration being one of the most effective approaches to funding cities' strategies and actions, cities have to operate differently and change their approach in order to be able to understand the private sector approach to doing business.

In most case study cities a variety of local financial sources are indicated (See Box 10) but amounts are not always stated (Kampala) or plans are not developed far enough (Santa Tecla) but in general all state being dependent to various degrees on external donor agency funding and ties with budgetary lines of statutory plans intended but not effectively undertaken, as in the case of Sorsogon. Da Nang is the only city to have conducted a financial review to understand existing conditions. In such review the following are considered: Da Nang State Revenue and Municipal Account; Comparison of Municipal Financial Structure of Da Nang and Municipal Finance issues. Financial resources and forecasts are also addressed in the Investment Plan.

Certainty in policy and legal regulation and long-term planning are essential to attracting investment and

creating joint working approaches. Besides involving the private sector, cities must be more and more innovative with how they raise finance: where domestic financial markets are insufficient, international finance often needs to be found. Da Nang's scenarios for Gross Regional Domestic Product are a good case in point. Investment, therefore, may come not only from domestic banks, institutions and capital markets but also from overseas sovereign wealth, pension funds and bilateral and multilateral institutions (See Table 9). It should also be pointed out that, depending on the focus of the strategy and related actions plans, specific climate change financing mechanisms and opportunities should be identified. It may also help to link the strategy and action plans with central and regional government programs and projects as this may create synergies also from a funding point of view.

### **C.3 Mobilizing Expertise and Support for Implementation**

This task involves adopting a number of actions to mobilize expertise and provide support to the implementation of the strategy and plans. Firstly, links with other cities in the same region and country that



**Box 10 Mobilizing Financial Resources in case study cities**

The Kampala Climate Change Adaptation (KCCA) Strategic Plan 2013/2014-2017/2018 displays a table titled Financing the Strategic Plan over the 5 year period which lists possible sources of funding such as the national government, KCCA's own local revenue collections, and development partners. However, the estimated amount from each specified source is not stated.

In Ouagadougou the City Development Strategy mentions that the city is responsible for the mobilization of funds for enhancing environmental protection in the period 2011-2019. The municipality relies on sources such as Cities Alliance, Un-Habitat, UNDP, UNPE, FDA, World Bank, and the national government to mobilize these funds. The distributions of the financial resources that are needed for project implementation are also indicated: at least 10 per cent of the actions should be supported by the municipal budget, 50 per cent by identified partners and 40 per cent should be raised within the projects itself.

In Sorsogon, Da Nang and Cape Town the implementation and resource mobilization is intended to take place through ties with budgetary lines of statutory plans. For instance, the demonstration projects in Sorsogon were financed with grant assistance by UN-Habitat for a total amount of 9.5M (USD 210,000) to support pilot projects implementation. The grant assistance was provided in tranches. The city's budget covered the input cost of services and assistance by officers amounting to about 4.4M. The grant support was divided into two major parts where the first is for the coordination and capacity development activity support and the second for the actual implementation. Even if demonstration projects were tied to costs, one weakness of the Sorsogon case is that, while these programmes and projects are integrated in the Comprehensive Development Plan, they are still not linked with the city's investment programme and budget and this leaves their implementation uncertain.

To date in Cape Town, progress on the climate agenda was very much tied to external funding. However, the rules specified by the Municipal Financial Management Act, or the interpretation thereof, that govern local government spending, make it very difficult and cumbersome to effectively leverage external this funding. The City Development Strategy does not explicitly financial resources for the suggested projects and the mechanism for doing so is the increasing integration of priorities and interventions identified in the Strategy into the Integrated Development Plan, which guides the allocation of the city's budget.

Much of Cape Town's current work on climate change and environmental sustainability more broadly is targeted at fiscal reform, aimed at achieving a strong position to access and put to good use the national and international climate change funding that is increasingly becoming available. An important revenue stream for the City of Cape Town is the sale of electricity, a model that is currently being called into question, since electricity savings reduce the City's income and disincentive its financial managers.

Da Nang's comprehensive financial analysis and costing identified that not all projects could be implemented by 2025 through governmental budget along with utilizing PFI schemes and private sector investment. In addition, through a set of 3 scenarios for Gross Regional Domestic Product (GRDP) the following problems were identified: the GRDP may not increase as much as projected; the proportion of capital investment to the GRDP may not reach the level projected and political and environmental changes may bring about the necessity for early project implementation even for those not identified as priority projects in this analysis. It is in these cases that central governmental subsidies and ODA funds were identified as possible funding avenues to increase the budget envelope for the city.

have already undergone or are undergoing a similar process should be established so that experiences can be exchanged and learning promoted. Secondly, additional resources should be mobilized to be able to access skills and expertise related to project finance, particularly in the field of climate change mitigation and adaptation. Local and national universities, research centres, think tanks and transnational networks are regarded as especially critical for cities in the Global South and should be identified and contacted.

Cooperation should also be established with local and national training and professional centres as these may be necessary to build the capacity of the actors in charge of implementation.

The presence of influential scientists together with dedicated climate networks can help a great deal in establishing climate change on the political agenda, but may not be enough to overcome institutional barriers and resources availability (Romero, 2007). Cape Town

**Table 9** Potential sources of external funding (UN-Habitat, 2014)

<p><b>Higher-level government support/transfers:</b> Provincial/national funds trust funds made available for local adaptation actions. Access to this may have specific requirements that have to be reviewed beforehand.</p>
<p><b>Multilateral and bilateral financing:</b> Designed for the implementation of national strategies and programmes, access to these funds will likely go through, and be coordinated with, national governments and subnational authorities.</p>
<p><b>Grants and loans:</b> Regional and international financial organizations, like the World Bank and the Asian Development Bank operate loan and grant programmes, some of which can be accessed by city governments.</p>
<p><b>Foundations, charities and non-profit organizations:</b> Many large, international philanthropic foundations and charities (e.g., Oxfam, Care International), non-profit organizations (e.g., ICLEI) operate grant programmes. While many are linked to associated climate change planning support programmes, there are some opportunities to fund smaller-scale actions.</p>
<p><b>Private sector and public-private partnerships:</b> In some cases, privately owned companies provide infrastructure services, like water treatment or public transportation, for cities. Some services and infrastructure are also developed and operated through public-private partnerships where the private sector builds and operates the facility for a fee charged to users. Both options provide financing possibilities for infrastructure-related adaptation options.</p>
<p><b>Carbon finance:</b> Where climate actions include a greenhouse gas mitigation benefit (e.g. waste management that captures methane), some cities are exploring how emerging carbon markets can be used to leverage private and public funding.</p>

was able to implement greenhouse gas emission-mitigating measures through collaboration with ICLEI – Local Governments for Sustainability, while the lack of institutional capacity and fragmentation prevented the same from happening in Johannesburg. Conversely, limited awareness and political support for climate change have prevented Da Nang and Ouagadougou to engage expertise and support actively. In contrast, Kampala, Sorsogon and Esmeraldas have been able to mobilize climate change expertise locally and internationally.

#### C.4 Evaluation of Monitoring Programme

The monitoring and evaluation of the strategy implies assessing the overall progress of the implementation phase to ensure it is having the anticipated impact and that stakeholders are doing what they agreed,

and also defining how new information should be incorporated into the existing strategy and action plans to complete a feedback loop. Cities, however, should not be asked to create entirely new systems to report on adaptation, because that takes away the capacity for doing the work itself. Most important is the explicit commitment local officials make, [for instance] in policy statements, public discussions and local newspaper interviews. Emphasizing that adaptation is important goes a long way for credibility.

Indeed, monitoring and evaluation of climate-related projects is virtually absent in case study cities and even where general sector indicators are identified by specific departments, they are vague and difficult to measure (Da Nang). Monitoring and evaluation is often limited to defining the roles of various actors and organizational units within the City Council and Administration in such process, the strategic alignment and operational implementation of the City Development Strategy (Cape Town). This seems to be mostly due to lack of capacity to handle the monitoring and evaluation process for the City Development Strategy overall, let alone for climate actions.

A good starting point is KCCA’s Corporate Scorecard. The scorecard describes set of indicators and targets for the interventions described in the strategic plan. A Balanced Scorecard is instead used to provide a link between the citizens scorecard, used to evince baselines, and the Corporate Scorecard through a value generation chain (See Box 11). The scorecard includes a few parameters on risk preparedness and management such as the proportion of disaster mitigation strategies implemented, response time to a disaster), waste generation and citizens’ safety and percentage of neighbourhood plans implemented (including slum upgrading projects) which are key for climate change monitoring and evaluation.

The first steps consist of defining and refining indicators in line with Tool 8-A and Tool 8-B (UN-Habitat 2014). These serve as the starting framework for monitoring the implementation of the strategy and action plans and should include both process and outcome indicators. The monitoring framework and

programme will help determine what gets monitored, how, when and by whom. It will also identify how this information is shared with stakeholders, including partner agencies and organizations assisting with implementing certain actions, and the broader community. Monitoring is conducted to ensure accountability and should be considered as an adaptive management tool for improving plan outcomes. When conducted regularly, monitoring provides timely and reliable information for adjusting and modifying the strategy and the related action plans. Within the context of climate change focused strategies and action plans, effective monitoring should take into account internal and external circumstances, including climate change vulnerability, exposure or sensitivity, specific climate-related challenges (Table 9) and also any deviation from the original implementation activities and the reasons.

Evaluation analyses the information generated by the monitoring programme at selected times to determine, among other matters, if the strategy and action plans are meeting their stated objectives efficiently and effectively, and if there are opportunities for improvement by refining actions, introducing new ones, or involving new stakeholders and partners. Unlike monitoring, evaluation is not a continuous and ongoing process. Instead, it occurs at strategic points during the implementation process. Typically, it should be coordinated with project phases, so that a formal evaluation is conducted at the end of the short-term project cycle (2 years) and the medium-term action project cycle (5 years). Given the dynamic nature of both climate change and urban areas, a full, comprehensive evaluation should be conducted at least every five to six years. Tool 8-C and Tool 8-D (UN-Habitat 2014) can help support the development of the evaluation framework.

**Table 10** Table 9 Specific M&E challenges (UNFCC, 2010)

<b>Uncertainty</b>	Uncertainty surrounding climate change impacts, including the frequency and intensity of extreme events and the long-term repercussions of climate change effects.
<b>Indirect effects</b>	Indirect effects of climate change impacts, such as on health issues.
<b>Co-benefits</b>	Consideration for the mitigation implications of adaptation options as well as sustainable development synergies.
<b>Infrequent events</b>	For projects designed to reduce vulnerability to infrequent (extreme) events, the project or activity can be evaluated only if the foreseen event occurs before evaluation of the project. If such an event does not occur, it may be difficult to determine if the project or activity was properly implemented.
<b>Time scales</b>	Significant time lags may exist between interventions and measurable impacts. Furthermore, particularly in the case of projects focusing on long-term time frames, their success will not be apparent for years after the end of the project lifetime. Monitoring and evaluation of interventions designed to deliver long-term benefits must be based on assessments of proxy measures.
<b>Reverse logic</b>	The adaptation measure is by default successful when no climate-related events occur, thereby rendering the effectiveness of the measure difficult to judge.
<b>Level of risk</b>	Difficulty of defining a long-term vision of the effects of adaptation and agreeing on levels of acceptable risk.
<b>Shifting baseline</b>	Adaptation takes place against a backdrop of evolving climate hazards, which may become more frequent and severe, resulting in climate-related losses, or become less pronounced over the timescale of a project. The impacts of adaptation projects must be assessed against changing hazard profiles, meaning that it is not necessarily sufficient to compare losses or damages before and after adaptation interventions. Where trends in climate hazards occur over periods during which assessment of project impacts are taking place, indicators of loss or damage must be 'normalized' to account for changing hazards.
<b>Agreed metrics</b>	Unlike in climate change mitigation, where carbon dioxide equivalence can be used as a common metric, adaptation lacks an agreed metric to determine effectiveness.

# 3



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## MAINSTREAMING CLIMATE CHANGE INTO A CITY DEVELOPMENT STRATEGY, KEY FINDINGS AND RECOMMENDATIONS

### 3.1 Key Findings on Mainstreaming Climate Change into City Development Strategy

This chapter reports the findings of the case study review and the fast talk. It starts by providing a summary and commentary about case study cities approaches to mainstreaming climate change into City Development Strategy. Then it provides recommendations for cities that approaches for each such process step and proposes examples as to how cities have related climate change to the Strategy's thematic focus areas.

### 3.2 Cities climate planning and governance approaches: mainstreaming versus plan

Table 11 summarizes how case study cities approached the issue of mainstreaming climate concerns into a City Development Strategy. It is immediately clear that, in many cities, climate change was not yet recognized as an urban concern when the Strategy was implemented; despite this fact many cities have integrated some concerns either into existing programmes or into sectoral plans. It is also evident that, once the urgency of climate change came to the fore, many cities attracted investments from donor agencies programmes that specifically targeted the need for climate mainstreaming such as UN-Habitat's Cities and Climate Change Initiative and Rockefeller Foundation's Asian Cities Climate Change Resilience Network.

For instance, the city of Da Nang conducted a strategic environmental assessment early on, as part of the City Development Strategy process. Separately, in 2009, the city conducted a hazard, capacity and vulnerability assessment with the use of projections supported by the Asian Cities Climate Change Resilience Network programme and, in 2011, under the same programme, the Da Nang City Climate Change Resilience Action Plan was prepared. Five out of the eight cities reviewed conducted a climate vulnerability assessment outside of the City Development Strategy process and in doing so were supported by climate-specific donor agencies programmes. These processes have led, in some instances, to the drafting of local climate change strategies (in Sorsogon) and local resilience plans (in Da Nang).

Four of the eight cities reviewed **mainstreamed climate concerns** (disaster risk, adaptation or mitigation) **into ongoing work and programmes**, specifically in Environmental Management Divisions or Water and Environment Ministries. For instance, Da Nang's City Development Strategy mainstreamed climate concerns within the environmental sector and detailed a series of objectives and connected strategies with a primary emphasis on disaster risk reduction and secondarily to climate change (refer to the Strategic Planning phase). Other cities, such as Cape Town, included climate concerns across a variety sectors and themes of relevance for the City Development Strategy. In contrast, **incorporating into sector plans** refers to initiatives to integrate climate into one or more sector plans, often in the context of creating a new or updated sector plan. For instance, the Sorsogon City Strategy for Climate Change Resilience informed the updated Comprehensive Land Use Plan (CLUP) and the Comprehensive Development Plan (CDP) and resulted in the formulation of Climate Change demonstration projects to improve livelihoods, housing conditions, reduce CO<sub>2</sub> emissions and disaster risk reduction (refer to Box 1 and 2).

In three of the eight cities, the process of mainstreaming into policies and sectors is intended but still pending. For instance, in 2013, the municipality of Santa Tecla, incorporated a Division for Disaster Risk Reduction and Climate Change within the Environmental Management Division. This reflects recent efforts (May 2013) at drafting the first National Strategy of Climate Change rather than a conscious decision to amend the existing Participatory Strategic Plan (a document with the same functions of a City Development Strategy) to include climate concerns. Pending a coherent plan at National level, San Salvador Metropolitan Bureau of Planning, which includes Santa Tecla, is yet to produce a climate change strategy.

Some of the cities that mainstreamed climate concerns into Environmental Management Divisions or Water and Environment also **established specific Climate Change Units**, as in the case of Kampala, Da Nang and Santa Tecla. In some cases, these units are seen beneficial in creating cross-departmental awareness



**Table 11** Approaches to the integration of climate change into CDS

	TYPE OF CITY WIDE ASSESSMENT		LOCAL CLIMATE CHANGE OR RESILIENCE PLAN	APPROACH TO INTEGRATION OF CLIMATE IN CDS OR OTHER PLANNING DOCUMENTS	
	Hazard Assessment	Vulnerability Assessment		Mainstream into Policies or Sectors	Incorporate into Sector Plan(s)
Da Nang	X Natural Calamities, Droughts, and Flood Assessment	X ACCCRN (2009)	X (ACCCRN, 2011)	X Environmental Management Division	
Sorsogon		X CCCI (2009)	Strategy in place (CCCI 2010-2011) Plan pending	X Intended Comprehensive Development Plan	X Intended Comprehensive Land-use Plan
Olongapo		X CCCI	Pending	Intended	
Esmeraldas		X CCCI (2012)	Strategy in place (CCCI 2012) Plan pending	Intended	
Santa Tecla	X Risk Assessment	Pending	Pending	Intended Environmental Management Division	
Kampala		X CCCI (2011)	Pending	X Ministry of Water and Environment	
Ouagadougou	X Risk Assessment	Pending	Pending	Intended	
Cape Town		X	Pending	X Cross-sectoral integration	

**Legend:** a blue X indicates conducted within a City Development Strategy process; a red X indicates conducted outside a City Development Strategy process

and communication about climate change. For instance, in Kampala the Meteorological Department was the focal point for climate concerns. Due to resource constraints, this was replaced by the Climate Change Unit established under the Cities and Climate Change Initiative. The two departments now work together to reduce the gap between scientific data on climate and its translation into information that is relevant for city planning.

In Da Nang’s case a Climate Change Coordination Office was created in 2011 under the City’s People Committee to take ownership of the City Development Strategy report funded by donor JICA, and manage it through the City Steering Committee for Climate Change. The Office is also supposed to work cross-sectoral as it is formed by a Head, Deputy Chief and 11 members from related departments. Creating these ad hoc units is only the first step; knowledge and effective coordination are the most difficult task. Currently, in

both Kampala's Unit and Da Nang's Office, skills and knowledge of risk and climate change and coordination are lacking or still being built.

### 3.3 City planning approach, ownership and linkages to other plans

The cities reviewed adopted a **variety of complementary city planning approaches** (see Table 2). Reflecting the national planning frameworks Sorsogon and Olongapo adopt Comprehensive Development Plans Esmeraldas and Santa Tecla relies on Strategic Plans. Other cities like Da Nang, Ouagadougou, Cape Town and Kampala, followed a traditional City Development Strategy approach, however without a clear (legally and formally agreed) position in the (spatial) planning system. For example, Da Nang's City Development Strategy has no formal status and it is not approved by city officials or referred to in formal communications. In other cities, such as Ouagadougou, city officials legally approved the City Development Strategy; however, it has not been elevated to an institutional position in the municipality and hence no clear ownership and alignment with other planning processes.

Successful examples of institutionalization are Kampala and Cape Town where both City Development Strategy are legally approved documents and are institutionalized within local city authorities. In Cape Town this was the result of, on one hand, the national level government stimulating the development of City Development Strategy in a number of South African cities and, on the other, with local support from a Strategic Policy Unit, set up by the Mayor, to integrate the document within statutory planning processes. The City Development Strategy is aligned with the provincial development plan and it is expected to inform the local five-year Integrated Development Plan.

**Institutionalizing a City Development Strategy within other planning processes is necessary to avoid it remaining a mere exercise** and, at the same time, **key to achieve alignments with other climate plans at different government levels.** In five of the eight countries reviewed there is a National Adaptation Plan for Action in place but only Kampala and Sorsogon

have a City Development Strategy or strategic plan which makes explicit linkages to it, through national guidelines on mainstreaming climate change in sectors and local government, while other cities the linkage with National Adaptation Plan of Action (NAPA) is unclear or missing. In cities where climate strategies were developed under other programmes, the linkage to a local City Development Strategy and other plans is intended but not clearly guided (as in the case of Da Nang, Esmeraldas and Santa Tecla).

### 3.4 Recommendations

Based on the findings the following recommendations are suggested for city planners that are currently pursuing integration of climate concerns in City Development Strategy.

- The decision between a Stand alone versus Integrated Climate Plan is specific to the local city planning context

The initial decision of whether to address climate change in cities can be both influenced by national level planning (through National Adaptation Plans for Actions or Nationally Appropriate Mitigation Actions), or by changes in local priorities dictated by urgencies (such as a particularly strong disaster event or less intense disasters that resonate strongly through the media and local population), by the planning system or by the sudden availability of money from donor agencies. Case study cities are currently treating climate change as a stand alone issue by preparing a specific climate or resilience plans, or they include climate concerns into specific sectoral plans or, again, they integrate it into specific policies or sectors. Local (political) decisions may lead to a stand alone climate change action plan in cities where the issue of climate change is urgent and where there are strong local leadership and commitment to do so. In other cities this might not be the case and specific actions and considerations may be spread across several sectoral plans, where the Environmental Management Sectors appears to be a natural entry point. With or without a separate climate change action plan, when a city starts a strategic planning process and if climate change is likely to impact the development of the city, then planning should include climate change in its scope.

**Table 12** City planning approaches, ownership and linkages to other plans

CITY	CITY PLANNING APPROACH	CITY DEVELOPMENT STRATEGY OWNERSHIP AND LEGAL STATUS	CITY DEVELOPMENT STRATEGY CDS LINKAGES TO OTHER PLANS (E.G. NATIONAL ADAPTATION PLAN FOR ACTION)
Cape Town	City Development Strategy(2012-2020)	Strategic Policy Unit, Executive Mayor Legally approved	NAPA pending; No direct / explicit link to the National Climate Response Strategy Intended linkage with the local five-year Integrated Development Plan (IDP)
Kampala	City Development Strategy/ Strategic Plan (2002-2009/2013-2018)	Kampala Capital City Authority (KCCA) Formally approved internal document	NAPA (2007) in place and linked and pending linkage to Uganda National Climate Change Policy
Ouagadougou	CDS	City Development Strategy committee under the Mayor is legally approved	NAPA (2007) in place but no explicit link made with City Development Strategy. The Strategy is linked to the National scheme of territory management (SNAT) and the National policy of urban development.
Da Nang	City Development Strategy	City People's Committee/ Jica No legal approval/ formal position	National Target Programme to Respond to Climate Change in place but no explicit link to Da Nang City Climate Change Resilience Action Plan and
1. Sorsogon City 2. Olongapo City	Strategic Plan (CDP/CLUP under approval)	City governments/ UN-Habitat Legally approved	1. NAPA (2009) in place, achieved linkage between Sorsogon City Strategy for Climate Change Resilience and CDP/CLUP by means of laws (RA 9729, RA 10121) 2. Idem
Esmeraldas	Strategic Plan (PD/ POT 2012-2022)	The municipality of Esmeraldas, Legally approved	NAPA pending, intended linkages between Adaptation and Mitigation Strategy for Climate Change and strategic plan
Santa Tecla	Strategic Plan (2012-2022)	Mayor and municipal council Legally approved	NAPA Pending, and no explicit linkages with the National Strategy of Climate Change and the local strategic plan

- Setting guidelines for legal frameworks for a City Development Strategy and securing local ownership will ensure better climate concerns/actions mainstreaming, cross-departmental coordination, budgeting and implementation

The function that a City Development Strategy ideally fulfils is that of aligning other city local plans in a way that can enhance development and attract investments. To achieve this goal effectively, levels of coordination between departments need to be strengthened and maintained. Where appropriate, urban leaders should set guidelines to secure legal frameworks for a City Development Strategy within their cities statutory planning. There is scope for this to encourage horizontal coordination across sectors, and where national governments demonstrate a commitment to local adaptation planning through the careful drafting of mandates, policies, laws that

promote action and coordination there is a higher chance that vertical mainstreaming will also be more effective. The reviewed City Development Strategy addressed poorly the budgetary concerns for climate actions and, even when costs were considered, they were not integrated in local investment programme. Setting such guidelines should also facilitate the mobilization of investments, which usually follow the existence of clearly defined budget lines in the statutory planning process.

- Encourage climate responsive planning in a City Development Strategy with key cross-cutting themes

Although the entry point for climate change is often the environmental sector, urban leaders need to encourage the climate responsive planning also in other City Development Strategy key cross-cutting themes (livelihoods, spatial form and infrastructure,

environmental management, services and energy, finance and governance) by, for instance, systematically investigating possible climate threats and impacts on livelihoods as a basis for identifying possible adaptation actions and assess possible mitigation co-benefits. For instance, livelihoods can be integrated through an issue-specific focus. such as in the city of **Esmeraldas** where the housing sector is particularly addressed through a 'Housing for Climate Change' programme, where housing prototypes are designed with different social groups' interests in mind, and are related to geographic, natural, and climatic conditions, along with the inclusion of traditional technologies. Issue specific projects can also arise from severe disaster events as in **Santa Tecla**, where a community was isolated for several days without food or supplies, raising the issue of food security.

- Setting up specific Climate Change Units is effective only when accompanied by capacity building activities

Many cities also decided to set up Climate Change Units, which are seen beneficial in creating cross-departmental awareness and communication about climate change but should be also seen as a crucial evolution of Technical Units - which were initially put in place to lead vulnerability assessments and stakeholder engagement process. In some cases, such units also retain ownership of the City Development Strategy when this is prepared through donor agency. Such units, however, are often under staffed and lack financial and technical resources to operate. The technical capacity issue should be addressed not by simply seeking external funding but by linking with local research and universities' institutions that can provide capacity building on climate issues through, for instance, offering local researchers 'secondment positions' in local government offices.

- Lack of climate change projections and uncertainties should not discourage action

Cities take actions even in the absence of climate projections and in the recognition that such projections, even when in place, will change. Urban leaders are



**Students of Outspan Primary School in Kampala collecting rainfall data.** @ UN-Habitat

learning to work with the information they have now, but work with uncertainty in mind. Many cities such as Sorsogon, Esmeraldas and Cape Town overcame some data constraints by effectively engaging and forming stronger ties with local academic institutions and systematically collecting community level information through participatory approaches that rely on community members' knowledge and past disasters experiences. Rather than just bringing in external consultants, building local ties is providing an ongoing exchange between those who are doing the science and those who need the data.

- A strong stakeholder-base makes for strong consensus building

Evidence from case study cities suggest that a strong and diverse stakeholder-base involvement is important to consolidating city information on vulnerability, to ensure that citizens' voices are heard and that key city departments are aware of their role in planning for climate in coordination with national government levels and other local level agencies. Consensus can

be reached by setting up issue-based working groups composed of a broad range of national and local government bodies, academic institutions, community-based organizations and private and non-government organizations.

- The choice of the decision support method should be guided by considerations data and capacity needs and requirements

There is not enough evidence in this study to suggest which tools are used by case study cities to prioritize actions; this should therefore be addressed in future research. Studies on climate actions prioritization suggest that making strategic choices and prioritizing issues is a challenging process. On the one hand, various stakes and interests may exert an influence and result in decisions that do not necessarily represent the preferred choices of the array of actors involved. On the other, limited financial resources may lead local governments into inaction when faced with the uncertainty of climate change, other development priorities and the task of deciding over mitigation and adaptation projects to undertake. There are many decision support instruments that can aid planners on this task; the choice of the right decision-making tool should be made by understanding instruments' technical capacity needs, data requirements, time and costs involved in carrying out the analysis and stakeholder participation needs. Guidelines to achieve this are provided in this document.

- Finance mobilization in City Development Strategy remains the greatest challenge

In most case study cities a variety of local financial sources are indicated but amounts are not always stated or plans are not yet developed to include the financial stage. Overall cities state being to various degrees dependent on external donor agency funding to implement the projects in the City Development Strategy. There is not enough evidence of private sector engagement to suggest specific strategies for other cities and this should be addressed in future research. Generally, it can be stated that, in countries with more devolved funding models, cities can generate

revenue directly, collecting municipal income taxes, property taxes and business rates. However, public funds available are often limited and therefore often even if public resources are committed they should be complemented through the establishment of mechanisms for the mobilization of private sector finance. Mobilizing private sector investment requires targeted public support that improves the risk-reward calculus of private organizations. In other words, the private sector seeks markets that exhibit attractive returns relative to associated risks over an appropriate investment timeframe as well as adequate size, liquidity and transparency. These conditions are often absent. To improve the risk-reward calculus of investments, arguably the most fundamental barrier to leveraging private capital, the public sector can provide support - for example with direct finance that manages political and technological risks.

Besides involving the private sector, cities must be more and more innovative with how they raise finance and where domestic financial markets are insufficient, international finance often needs to be found. Da Nang's scenarios for Gross Regional Domestic Product are a good case in point. Investment, therefore, may come not only from domestic banks, institutions and capital markets but also from overseas sovereign wealth, pension funds and bilateral and multilateral institutions.

- Timely and clear communication and urban leadership ensure a strategy's promotion and framing in the city's political arena

Climate vulnerability findings and climate adaptation and mitigation actions need to be widely communicated avoiding specialist language and by targeting different learning abilities by, for instance, using visualizations. Skilled municipal leaders play a critical role in championing awareness and generating local political support by championing environmental awareness first but also by linking it to specific municipal policies on disaster risk, acting as a reference beyond the city and by signing up to key international frameworks, such as the Hyogo Framework for Action.



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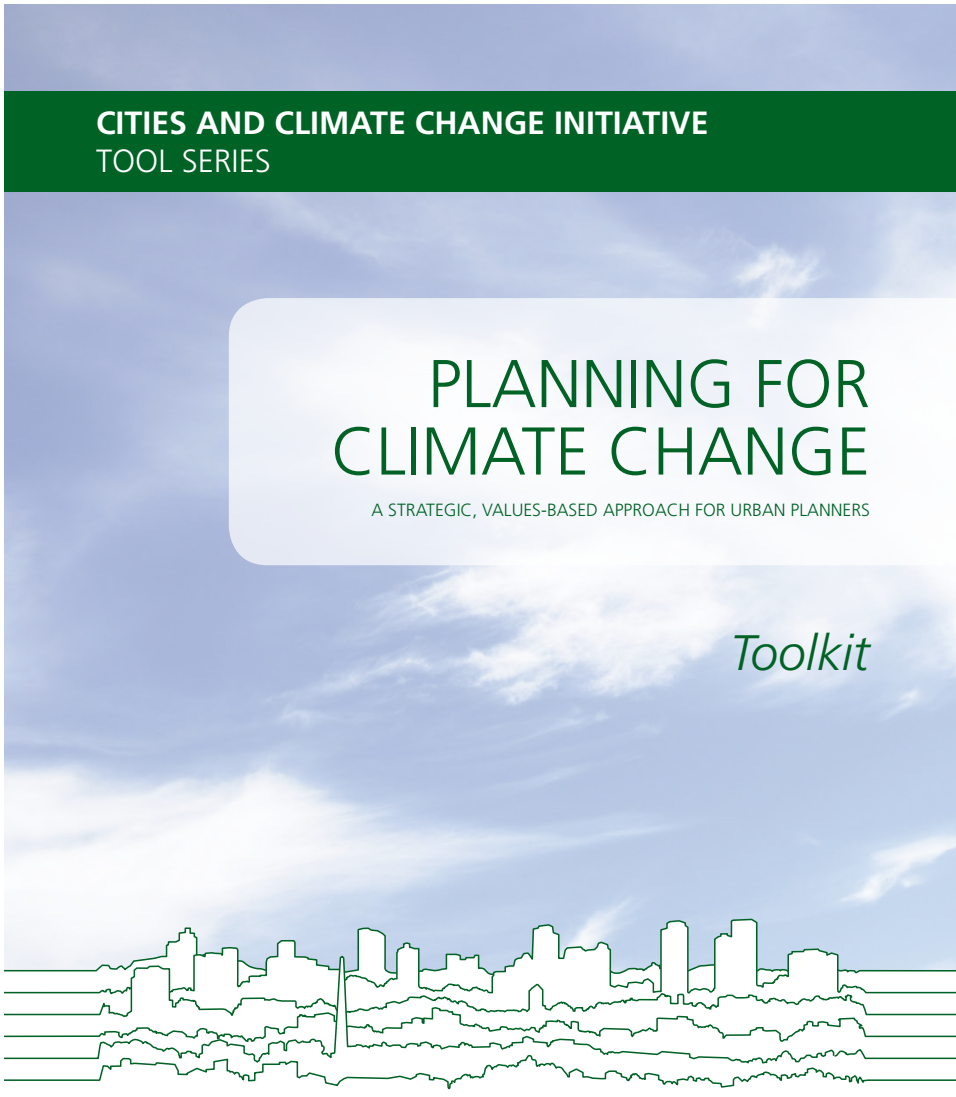
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# Annex

## Annex 1: UN-Habitat Tools

Most tools presented throughout this guideline can be found in the document Planning for climate change: a strategic, values-based approach for urban planners – Toolkit 'United Nations Human Settlements Programme (UN-Habitat), 2014



Annex 2: **Community-Based Vulnerability Assessment Tools**

TOOL	LIVELIHOOD AND CLIMATE CHANGE FOCUS	REFERENCE
CRiSTAL Community-based Risk Screening Tool- Adaptation and Livelihoods	<p>Project planning and management tool for integrating risk reduction and climate change adaptation in community-level work</p> <p>Focus areas:</p> <ul style="list-style-type: none"> <li>• How climate-related hazards affect local livelihoods</li> <li>• How people cope with impacts</li> <li>• Most affected livelihood resources -Most important livelihood resources for coping</li> <li>• How to influence access critical livelihood resources</li> </ul>	<p><a href="http://www.iisd.org/cristaltool/download.aspx">http://www.iisd.org/cristaltool/download.aspx</a></p>
CARE Climate Vulnerability and Capacity Assessment (CVCA) Handbook	<p>CARE's approach to climate change adaptation based on the principles:</p> <ul style="list-style-type: none"> <li>• People must be empowered to transform and secure their rights and livelihoods</li> <li>• Critical role for governance; local and national institutions, as well as public policies, play critical role in shaping people's adaptive capacity.</li> </ul> <p>The CVCA methodology helps to understand:</p> <ul style="list-style-type: none"> <li>• Implications of climate change for the lives and livelihoods of the people we serve</li> <li>• Combining local knowledge with scientific data, the process builds people's understanding about climate risks and adaptation strategies</li> <li>• Framework for dialogue within communities, and between communities and other stakeholders.</li> <li>• Solid foundation for the identification of practical strategies to facilitate community-based adaptation to climate change</li> </ul>	<p><a href="http://www.careclimatechange.org/files/adaptation/CARE_CVCAHandbook.pdf">http://www.careclimatechange.org/files/adaptation/CARE_CVCAHandbook.pdf</a></p>

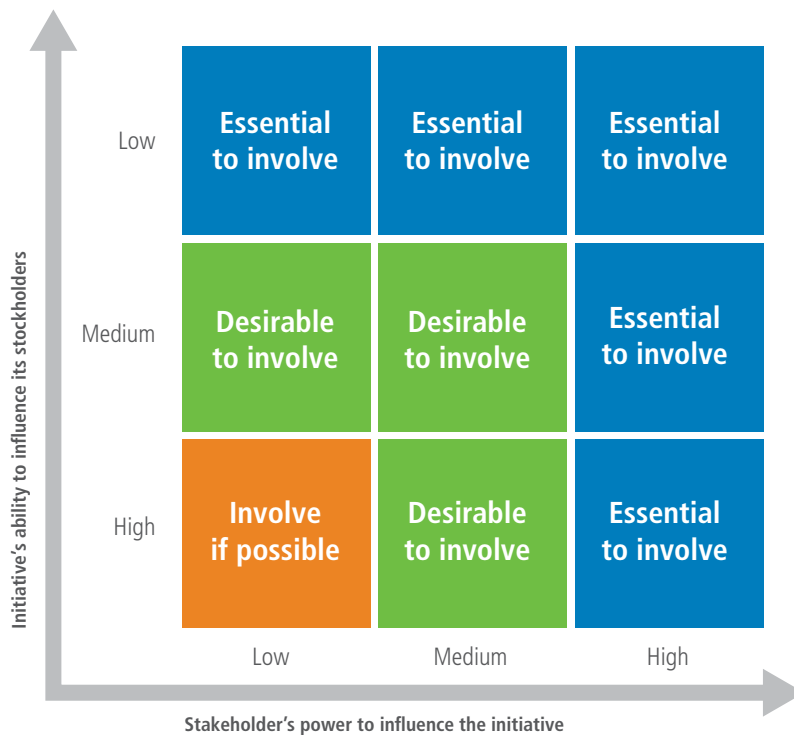


### Annex 3: Stakeholder Matrix

Appropriate and thorough stakeholder selection procedures should be carried out to ensure fair and balanced representation of individuals, groups and organizations.

The MSP Resource Portal provides tools, methodologies, and resources on multi-stakeholder processes: <http://portals.wi.wur.nl/msp/>.

Other references include Minu Hemmati, et al. (2002) Multi-Stakeholder Processes for Governance and Sustainability - Beyond Deadlock and Conflict (Earthscan / UNED Forum) and Nancy Vallejo and Pierre Hauselmann (2004) Governance and Multi-stakeholder Processes (IISD). Below is a sample stakeholder matrix taken from the latter showing choice variables for stakeholder engagement.



Annex 4: **Spatial Planning and Climate Change Tools**

TOOL	SPATIAL FORM, INFRASTRUCTURE AND CLIMATE CHANGE FOCUS	REFERENCE
MIT- GIS based urban network analysis	<p>This is a tool for urban designers, architects, planners, geographers, and spatial analysts for studying the spatial configurations of cities, and their related social, economic, and environmental processes, including climate related issues.</p> <p>The toolbox requires ArcGIS 10 software with an ArcGIS Network Analyst Extension</p>	<p><a href="http://cityform.mit.edu/projects/urban-network-analysis.html">http://cityform.mit.edu/projects/urban-network-analysis.html</a></p>
EU- Climate Change Impacts and Spatial Planning – Decision Support Guidance	<p>Developed for UK planning systems, but applicable in other contexts. Guidance document concentrating on climate change adaptation with the following tools to assist planners in carrying out climate change risk assessment and link that to development options:</p> <ul style="list-style-type: none"> <li>• Constraint mapping</li> <li>• Tipping points (or threshold analysis)</li> <li>• A high level risk assessment/ screening tool</li> <li>• Decision pathways.</li> </ul>	<p><a href="http://www.espace-project.org/publications/Extension%20Outputs/EA/Espace%20Final_Guidance_Finalv5.pdf">http://www.espace-project.org/publications/Extension%20Outputs/EA/Espace%20Final_Guidance_Finalv5.pdf</a></p>
Assessing the Climate Change Fitness of Spatial Planning A Guidance for Planners	<p>Climate Change Fitness Assessment: A 4-step guideline with a focus on the spatial dimension</p> <p>Step 1: Getting prepared</p> <p>Step 2: Assessing the climate change fitness of spatial planning</p> <p>Step 3: Developing enhancement options for climate-proof planning</p> <p>Step 4: Reporting and Informing</p> <p>Next steps: implementation, monitoring and evaluation</p> <p>Useful Tools and Resources</p> <p>Climate Impact Chains</p> <p>Climate Change Fitness Assessment Criteria</p> <p>Climate Change Fitness Checklist</p> <p>Climate Change Fitness Report</p> <p>Decision Tools supporting climate change adaptation</p>	<p><a href="http://www.clisp.eu/content/sites/default/files/GuidanceForPlanners_E_20110817_0.pdf">http://www.clisp.eu/content/sites/default/files/GuidanceForPlanners_E_20110817_0.pdf</a></p>



# Integrating Climate Change into City Development Strategies (CDS)

Today, more than half of the people on the planet live in urban areas and this proportion is expected to increase significantly over the coming decades. Meanwhile urban areas account for between 37 and 49 per cent of global GHG emissions (IPCC 2014) and are heavily vulnerable to the impacts of climate change. Cities, particularly in developing countries, are especially vulnerable to climate change due to the large concentration of populations and their role as national economic hubs. In addition, many urban areas are located on the coast, making them susceptible to rising sea levels. Within cities, the urban poor are among the most vulnerable.

At the same time, cities are growing, especially in the developing world. Urbanization is a source and driver for socio-economic development. Strategically guiding city development and enabling sustainable urbanization is one of the key aspirations of City Development Strategies, and the related methodology advocated by Cities Alliance and its members. This publication attempts to provide a modest input into the effort of unifying both thematic areas, Climate Change and City Development Strategies. This attempt of climate proofing city development strategies is an ongoing process and requires additional effort by governments, academia, and city development partners worldwide. One of those coalitions has been formed under the umbrella of Cities Alliance.

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