Urban Development, Biodiversity and Wetland Management

Expert Workshop Report

Expert Workshop
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Kenya Wildlife Service Training Institute, Naivasha, Kenya

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Executive Summary

Background

Urban human populations and wetlands have been joined in a turbulent symbiotic marriage since the dawn of civilisation. The advent of the earliest urban conurbations in Mesopotamia was dependent on wetlands and the benefits they provided. For almost five millennia humans remained predominantly occupants of rural areas. This situation has changed markedly in the last few years.

Since the mid 2000s more than 50% of the Earth’s population now resides in cities, towns and urban settlements. This shift to a predominantly urban population is predicted to continue at average rates up to almost 1.6% per annum worldwide with low growth rates in the most developed countries and highest urbanization rates in less developed and the least developed countries.

Urban areas can generate a range of negative impacts on the environment. These impacts will vary in their scale and geographic scope. Some impacts may be short-term and of only local significance. Other impacts may be chronic and extend well being municipal boundaries.

The relationship between water and cities is crucial. Unsustainable use of water resources can have significant impacts on wetlands and the biodiversity they support far beyond the peri-urban environment.

Wetlands are highly diverse and support a great diversity of life. Wetlands include lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans.

Wetlands have progressively been lost and degraded due to human activities for thousands of years. They are now recognised as being lost at a rate that is greater than for any other type of ecosystem.

Wetlands are essential for human well-being. They deliver a range of benefits or ecosystem services including provisioning services, such as food and fibre which are essential for human welfare, and regulating services, such as recharge of groundwater and protection from natural hazards, which are critical to sustaining vital ecosystem functions. Wetlands also have considerable aesthetic, cultural, educational and spiritual values and provide sustainable opportunities for recreation and tourism.

For the prosperity of future generations and the protection of wetland biodiversity it is essential that society moves away from resource exploitation and adopts a more sustainable approach to urbanization.

There are many organizations currently active in the fields of urban development planning and management and the protection, restoration and enhancement of wetlands and their biodiversity. These include the UN-HABITAT and the Ramsar Convention. Many of these organizations are implementing joined-up initiatives which are benefiting people and biodiversity.

Across the world there are many good examples of integrated and sustainable urban development which have considered natural resources and protected the vital ecosystem services that wetlands provide.
Key findings

The Workshop generated a huge amount of information exchange and brought together experts from both the wetland and the urban sectors.

The Workshop identified the need for more intelligent urban planning policy development, including development frameworks and spatial zonation to protect ecosystem services, and in particular those performed by wetlands.

The benefits of stakeholder participation and empowerment, both in problem setting and problem solving, to delivering sustainable cities, were seen as currently lacking but essential to future successes.

A significant barrier to developing and implementing more innovative and cross-cutting was the failure within the planning sector to ensure the provision of adequate institutional capacity for policy development and delivery.

The importance of considering wetlands as water management infrastructure rather than ‘nature reserves’ was emphasized. The broad utility of wetlands was not fully appreciated by many participants from the planning sector.

The Workshop re-emphasized the need to consider the wise use of wetlands both within and beyond urban boundaries and understand the interconnectivity of watershed-scale issues. A key challenge to planners is to develop policies which address factors that extend beyond municipal boundaries.

These issues have been integrated into a new conceptual paradigm which identifies linkages between the two areas of interest in order to deliver sustainable urban development and the wise use of wetlands.

A range of other issues and concepts have also been considered as part of this report. Potentially all of these have a role to play in the delivery of more integrated and sustainable urban development. These include: ecological and water footprints; mitigation banking; payment for ecosystem services; the ecosystem approach; strategic environmental assessments; green building evaluation and labeling; integrated constructed wetlands; working wetland potential; and carbon management.

An approach to developing guidance has been outlined. The objective is to establish the overarching principles which set the policy framework for guidance. Below the overarching principles parallel workstreams are proposed to develop specific guidance from the perspectives of urban development and wetland management.

A timetable to take the work forward to 2011 has been proposed including the continued dialogue between UN-HABITAT and the Scientific and Technical Review Panel of Ramsar and the production of technical guidance.
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Background to Urban Development, Biodiversity and Wetland Management

A population shift from rural to urban

Civilization dawned with the advent of urban settlement. Between 3,500BC and 3,100BC the foundations were laid within the ‘fertile crescent’ bordering the Tigris and Euphrates Rivers, known in ancient days as Mesopotamia, for a type of social order and economy markedly different from anything previously known (Thesiger, 1964). This was a far more complex culture based on large urban conurbations rather than simple rural villages. Here people first attempted to write, develop formal education programmes and evolve legislative systems. Through large-scale manipulation of the environment and the management of wetlands the resultant urbanization heralded important new discoveries in sciences such as medicine, chemistry, astronomy and mathematics, and a bloom of creativity in arts, literature and craftsmanship. These advances established the foundation upon which the civilized world, some five millennia later, depends and established a turbulent symbiotic marriage between humans and wetlands which persists through to the present day (McInnes, 2008).

The balance of the global population has shifted since Sumerians first tried to master the Tigris and Euphrates. For almost 5,000 years humans remained predominantly rural. However, since the mid 2000s more than half of the world’s population now resides in the urban environment (UN, 2009). This trend is predicted to continue at an average global annual growth rate of approximately 1.6% (Figure 1). Rates of growth vary between developed and developing nations. The rate of urban population increase in more developed countries demonstrates some signs of a predicted reduction over the next 40 years, with mean annual growth rates of less than 0.4% predicted for the period 2010-2050. The most rapid predicted increase is across the least developed countries with mean annual growth rates of more than 3.7% predicted for the period 2010-2050 (UN, 2009). The urban population growth rate for the less developed nations, such as Brazil, South Africa, China and India, is closer to the global average with a predicted rate of 2.0% expected between 2010 and 2050 (UN, 2009).

Cities can be a driving force for social and economic development. They have the ability to focus tremendous energy and to generate significant creative and economic betterment. They offer shelter, jobs and services and provide a nexus of productivity. Consequently, cities act as a magnet for human population, attracting more and more people and generating an ever increasing proportion of Gross Domestic Product (GDP).

Whilst this demographic shift is significant, the demand on natural resource consumption and use to sustain urban populations is even greater (Faulkner, 2004). Comparisons between the demands humankind places on nature and the biosphere’s ability to regenerate resources and provide services have demonstrated that the global average demand on biologically productive land equals 2.2 hectares per person versus an available 1.8 hectares per person (Wackernagel et al. 2006). This measure of human demand on the Earth’s ecosystems has been referred to as the ‘ecological footprint’ (Rees, 1992). A study of the ecological footprint of Vancouver, Canada, demonstrated that the city required an area some 200 times larger than the geographic area of the city to support its population (Rees and Wackernagel, 1996). A more extreme picture emerges for London. The ecological footprint of Londoners has been estimated at 49 million global hectares, which is 293 times its geographical area. This is approximately twice the size of the UK, and roughly the same size as Spain (BFF, 2002).
Related to ecological footprints is the perspective that cities can be considered as organisms with their own metabolic processes. The concept of the metabolism of cities was first suggested by Wolman (1965) as an approach to overcome shortages of water and pollution of water and air. This allowed an examination of the complex interactions that take place within cities to be understood rather than studying specific problems in isolation. The metabolism of an ecosystem has been defined by ecologists as the production (via photosynthesis) and consumption (by respiration) of organic matter and is typically expressed in terms of energy (Odum 1971). In this broader context, urban metabolism might be defined as the sum total of the technical and socio-economic processes

1 The designations employed and the material in the World Urbanization Prospects: The 2007 Revision do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory or area or its authorities, or concerning the delimitation of its frontiers or boundaries. The designation “more developed” and “less developed” regions are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. The term “country” as used in this publication also refers, as appropriate, to territories or areas.

More developed regions: They comprise all regions of Europe plus Northern America, Australia/New Zealand and Japan. Less developed regions: They comprise all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia. Least developed countries: The group of least developed countries, as defined by the United Nations General Assembly in 2003, comprises 50 countries, of which 34 are in Africa, 10 in Asia, 1 in Latin America and the Caribbean, and 5 in Oceania. The group includes 50 countries – Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People’s Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia.
that occur in cities, resulting in growth, production of energy, and elimination of waste (Kennedy et al., 2007).

Recent work has shown that the metabolism of cities is increasing, with studies indicating that water and wastewater flows typically greater for the 1990s than the early 1970s (Warren-Rhodes and Koenig, 2001; White, 2003; Kennedy et al., 2007). The impacts of water and wastewater flows on the sustainability of cities have further dimensions, beyond the crucial need for inhabitants to have a safe, reliable water supply.

Many cities have developed over productive aquifers leading to a progressive consumption of this resource. This utilisation usually results due to the excellent quality of groundwater, thus requiring minimal treatment, the security of the resource especially during periods of surface water drought and the ability for independent use by public and private interests. However, for cities which have evolved from a reliance on groundwater the long-term relationship between the evolving urban environment and the city often follows a predictable cycle in which the relationship with an underlying aquifer changes (Foster et al., 1998).

In the early stage of city development, water supply often exploits good quality shallow groundwater, with wastewater and drainage waters discharged back to the ground or to a watercourse. With increasing urbanization a lowering of the water table occurs with localised pollution of groundwater resources resulting from wastewater discharges and other urban activities. Often the lowering of the groundwater surface generates local subsidence. For instance, in Mexico City land has subsided in excess of 7m altering surface drainage and damaging infrastructure (Ortega-Guerrero et al., 1993). As a city expands and matures, a turnaround can sometimes occur. Heavy water-extracting industry often moves away from city centres leaving widespread contamination of the aquifer below the city. With decreasing industrial requirements, pumping of the urban aquifer often ceases. With the relocation of industry to the periphery of cities and the legacy of contamination in the original underlying aquifer, frequently the city relies on peri-urban groundwater supplies or expensive water imports from distant sources such as upland reservoirs. With the cessation of pumping, the water table below the city begins to rebound and rise. Rising groundwater levels can subsequently result in problems associated with flooding and damage to infrastructure, especially of foundations and underground services. Below London the water table in the underlying chalk aquifer has been rising at a rate of 1 to 2.5m per annum since the 1960s (Castro and Swyngendow, 2000). The elevation of groundwater levels is causing problems to infrastructure, including the waterlogging of deep basement, and has been identified as a possible cause for increased duration and severity of surface flooding (GLA, 2002).

Whereas the ecological footprint quantifies the amount of biologically productive land and sea area needed to regenerate the resources a city consumes and to absorb and render harmless, the ‘water footprint’ indicates the volume of water required to sustain a population. The water footprint of a city is defined as the total volume of freshwater that is used to produce the goods and services consumed by the people occupying the city (Hoekstra and Hung, 2002). Since not all goods consumed in one particular city are necessarily produced in that city, the water footprint consists of two parts: use of municipal water resources and use of water from beyond the geographic area of a city, which may be outside the borders of the country. The relationship between city evolution and groundwater utilisation demonstrates that impacts associated with the water footprint can change over time and space.

The differences in water footprints between countries are large: the USA has an average water footprint of 2480m³ per person per annum, whereas China has an average water footprint of 700m³ per person per annum (Hoekstra and Chapagain, 2007). Differences in water footprints depend
primarily on four factors: (1) the total volume of water consumption, which is generally related to gross national income of an area; (2) water-intensive consumption patterns, such as areas where the population consume a high proportion of meat in their diet; (3) climatic extremes, especially in regions with a high evaporative demand where the water requirement per unit of crop production is relatively large; and (4) water-inefficient agricultural practice, which means that water productivity in relation to a unit volume of water is relatively low. These differences translate themselves to urban areas where water footprints will reflect consumptive patterns, economic prosperity, climate and food demand.

This increased burden threatens the quality of the air and water, thereby negatively impacting the natural and living environment (UN-HABITAT, 2008). The hypothesis that urbanization can have direct and indirect impacts on the environment, and that wetlands are particular susceptible to negative change, has long been proven (Darnell, 1976; Maltby, 1986). Yet despite this, the march of urbanization continues to destroy and degrade natural capital.

For example, Lagos, currently the fifth largest city in the world, is the largest manufacturing and port city in West Africa, and a focal point for business and economic development in Nigeria. Metropolitan Lagos is situated on a narrow lowland coastal area which originally supported mangrove swamps. To facilitate city development rapid and unplanned land reclamation has been achieved by infilling coastal swamps and floodplains (Adelekan, 2009). Not only has this impacted directly on wetland biodiversity, the destruction of mangroves and wetlands has reduced the flood storage capacity of the land resulting in increased flooding. McGranahan et al. (2007) noted that while economic activity and urban development often increase the environmental pressures that lead to flooding, it is usually the low income settlements and poorest groups within urban settlements that tend to be the most vulnerable.

The relatively flat terrain associated with river floodplains and estuarine wetlands is easier to urbanize than upland areas resulting in a concentration of human developments on these habitats (Zedler and Leach, 1998). This has resulted in a progressive direct loss of coastal and floodplain wetlands around the globe, through activities such as drainage or infilling, and indirect degradation, through activities away from these areas such as water abstraction or conversion of wetlands to agricultural land (Lee et al., 2006; Bolca, et al., 2007). Impacts are not limited to lowland wetlands. As discussed above, despite acting as catalysts for economic and social development, often the ecological footprint of cities can extend over considerable distances, cover areas considerably greater than the geographical extent of cities themselves and be fundamentally unsustainable (Kareiva, et al., 2007).

The aquatic environment has suffered significantly as a result of the impact of urbanization. Pressures on water resources, such as groundwater abstraction, and the quality of surface and groundwater, contaminated by pollutants, have been documented as extending well beyond the urban administrative boundaries (Hollis, 1990; Kingsford, 2000). Often indirect impacts can result in downstream issues. Eutrophication, caused by excessive concentrations of nutrients, can be damaging to some aquatic life, for instance resulting in the loss of fish species such as salmonids. Increases in sediments washed into a river from urban developments can change the natural riverine processes and the flow regimes resulting in a change in the structure of the channel and

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2 It has been estimated that an average of 16,000 kg of water is required to produce 1 kg of beef (Chapagain and Hoekstra, 2003). This is considerably higher than for any other meat or vegetable of comparable weight.
consequently the in-stream habitats vital for a range of animals and plants (Keddy, 1983; Booth and Jackson, 1997; White and Greer, 2006).

The sprawl of urbanization not only results in direct habitat loss, but also generates additional pressures on the existing biodiversity. The prevalence of invasive species which may spread out from urban areas outcompeting native biota and the increased demand on peri-urban agriculture to support the growing urban population accelerates negative impacts on biodiversity (Pauchard et al., 2006; Gerrard, 2004). As the urban population grows, the requirement for food increases. There are documented cases which demonstrate that illegal hunting by urban dwellers both in urban green spaces and in peri-urban habitats has been shown to have detrimental impacts on wildfowl and other animal populations (Lannas and Turpie, 2009).

The role cities play in regional to global scale biogeoophysical processes, such as impacts on air quality and atmospheric chemistry, is also gaining increasing concern. However, the impacts of cities on air quality have been an anxiety for over a century. Dr. Henry Antoine Des Voeux was quoted on July 26, 1905 in the edition of the London newspaper Daily Graphic stating, "It required no science to see that there was something produced in great cities which was not found in the country, and that was smoky fog, or what was known as 'smog.'" These changes to air quality are well-documented (Atkinson, 2000) even though as concerns have turned towards global climate change in the latter part of the twentieth century it has been suggested that increases in greenhouse gas emissions associated with cities can be considered a product of consumptive patterns and gross domestic product per capita more than they are with urbanization per se (UN-HABITAT, 2008).

Increased urbanization has long been known to influence local to regional climates through a variety of mechanisms. This urban effect is most obvious in the urbanized area itself, however, it can extend to have regional and even global impacts (Mills, 2007). The concentration of buildings and human activity has been shown to lead to the areas of elevated temperatures associated with cities, often termed ‘urban heat islands’ (Bornstein, 1968). The creation of extensive areas of impervious surfaces can alter local temperature regimes by absorbing heat and elevating temperatures (Offerle, et al., 2006). Recent evidence has suggested that these subtle changes in the micro-climate associated with cities may also significantly affect local and regional precipitation regimes (Shepherd, 2005).

A change in wetland biodiversity

Wetlands are inherently diverse and include lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans. The fate of wetlands and human settlement has been linked inextricably for millennia (Maltby, 1986, Coles and Olivier, 2001).

However, it is widely accepted that more than 50% of specific types of wetlands were destroyed in parts of North America, Europe, Australia, and New Zealand during the twentieth century. Many other wetland systems continue to be degraded across the globe. The Millennium Ecosystem Assessment (MA) reported that the degradation and loss of wetlands, and the deterioration of freshwater and coastal wetland species, are more rapid than that of other ecosystems (Millennium Ecosystem Assessment, 2005). It is apparent that we continue to mismanage wetlands and fail to learn from the lessons delivered over five thousand years of human development.

The publication of the recent IUCN Red List of Threatened Species has demonstrated the continued impacts on wetland systems. It is estimated that 37% of freshwater fish species and 30% of all
amphibian species are threatened with extinction (IUCN, 2009). Impacts associated with urban expansion represent one of the key drivers of change. This loss of wetlands and their dependent species continues despite the fact that when both the marketed and non-marketed economic benefits of wetlands are included, the total economic value of unconverted wetlands is often far greater than that of converted wetlands (Costanza et al., 1997; Millennium Ecosystem Assessment, 2005).

The ‘wise use’ of wetlands, at the centre of the Ramsar philosophy, is defined as “the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development” (Ramsar Convention Secretariat, 2007). Wise use therefore has at its heart the conservation and sustainable use of wetlands and their resources for the benefit of humankind. The principle of wise use is especially relevant for wetlands located in urban or urbanizing areas and for those wetlands which support essential water and food requirements of urban areas (Emerton, et al., 1998).

Wetlands provide many ecosystem services that contribute to human well-being and poverty alleviation (Millennium Ecosystem Assessment, 2005). It is well established that provisioning services from wetlands, such as food and fibre are essential for human welfare (Ahmad, 1984). Regulating services, such as recharge of groundwater and protection from natural hazards, are critical to sustain vital ecosystem functions that deliver many benefits to people (Hollis, 1990; Bullock and Acreman, 2003). Wetlands also have considerable aesthetic, cultural, educational and spiritual values (Papayannis, 2008) and provide sustainable opportunities for recreation and tourism (Oumou et al., 2006). In some developed countries urban wetlands may be the last remaining opportunities for urbanites to interact with nature and green spaces (Chiesura, 2004).

These essential ecosystem services may be delivered directly within the limits of urban areas, such as through the regulation of surface run-off, or may occur beyond urban limits within the wider watershed, such as the recharge of groundwater for urban drinking water supplies. Urban and peri-urban wetlands often provide unique and vital benefits to local communities (Ehrenfeld, 2000). A study conducted on That Luang Marsh, which is contiguous to Vientiane, Lao PDR, demonstrated the extensive benefits the wetland provides to the urban population (Gerrard, 2004). In addition to long-held cultural and spiritual values, the value of the provision of rice, vegetables, fish and other animal species in association with the Marsh’s ability to regulate the magnitude of flood risk, store water and clean up city effluent has been estimated at just under $US 5million per annum. The direct benefits to local people, such as providing food and fuel, make up 40% of this total value, demonstrating the importance of the area in contributing to the poverty eradication goals of the Government of Lao PDR (Gerrard, 2004).

The ecosystem services provided by the Nakivubo urban wetland in Uganda have been estimated to have an economic value of approximately $US 2billion per annum (Emerton et al., 1998). The majority of this value relates to the ability of the wetland to buffer and treat wastewater generated from residential and industrial activities in Kampala. However, other ecosystem services are also significant including crop cultivation, such as sweet potatoes and cassava, papyrus harvesting, brick making and fish farming. The beneficiaries of the variety of ecosystem services delivered by Nakivubo wetland include adjacent dwellers, urban residents of Kampala who live beyond the limits of the wetland, industries in the area and the parastatal National Water and Sewerage Corporation. It has been recognised that the high economic value of this wetland must be protected and the economic costs associated with the degradation of these values must be offset against gains arising from wetland modification for residential and industrial development (Emerton et al., 1998).
It is also clear that whilst humanity is becoming increasingly urban the quality of urban life is still dependent on ‘nature’, and particularly global ecosystem services, for its survival (Bolund and Hunhammar, 1999). Wetlands play a crucial role in this scenario. A review of the ability of urban ecosystems to generate local and direct ecosystem services in Stockholm, Sweden, demonstrated that of seven ecosystem types (street trees, lawns/parks, forests, cultivated land, wetlands, streams, lakes/sea) only wetlands delivered on all six of the services assessed (air filtering, micro-climate regulation, noise reduction, rainwater drainage, sewage treatment, recreational/cultural values). However, despite increasing evidence on the importance of managing and restoring urban wetlands (Tong et al., 2007), this reality does not automatically make it easier to fully comprehend or integrate into a society weaned on resource exploitation rather than interdependence (Everard, 2008).

With increasingly rapid urbanization, wetlands are being threatened in two principle ways:

- Through direct conversion of wetlands, whether planned or unplanned, to urban areas, leading to acute problems associated with polluted drainage, direct habitat loss, overexploitation of wetland plants and animals by urban and peri-urban residents and the increased prevalence of non-native invasive species; and
- Through the watershed-related impacts of urban development, including increased demands for water, increasing diffuse and point source pollution and the need for greater agricultural production to support the burgeoning urban population.

For the prosperity of future generations and the protection of wetland biodiversity it is essential that society adopts a more sustainable approach to urbanization, recognizing the need to protect the natural resource base that sustains urban areas. Urban development can be planned and managed in ways that are sustainable. The challenge is to raise awareness of, and provide guidance on, the importance of wetlands as providers of benefits to urban populations as well as the potential for wetlands to operate as essential water management infrastructure and regulate the impacts of urbanization.
The Expert Workshop: (1) Organization and agenda

Organizers

The Expert Workshop was a joint initiative between the United Nations Human Settlements Programme, UN-HABITAT, and the Ramsar Convention. The organising parties ensured that the Workshop adopted a broad approach that took into account not only urban and peri-urban wetlands, but also the significant interactive system between cities/towns and wetlands/watersheds that provide water and other ecosystem services to urban people.

UN-HABITAT

The United Nations Human Settlements Programme, UN-HABITAT, is the United Nations agency for human settlements. It is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all. UN-HABITAT runs a number of global programmes that involve countries from all over the world. The work involves a wide range of partners ranging from central and local government to civil society and beneficiary communities.

UN-HABITAT’s Urban Environmental Planning Branch helps cities get the most out of their vital role in social and economic development by promoting better environmental policies and programmes and improving urban environmental management. Key programmes include: the Sustainable Urban Development Network (SUD-Net and its Cities and Climate Change Initiative (CCCI), the Sustainable Cities Programme, Localizing Agenda 21, and Water and Sanitation Trust Fund. The Sustainable Cities Programme is described as a practical response to universal search for sustainable development and is a joint initiative between UN-HABITAT and UNEP.

UN-HABITAT, through the Sustainable Cities, Localising Agenda 21 and Lake Victoria programmes, has addressed the issue of biodiversity conservation and ecosystems/wetland management, through strengthening cities capacities in environmental planning and management. In collaboration with UNEP, UN-HABITAT has been working on this topic especially as founding members of the Global Partnership for Cities and Biodiversity.

Ramsar Convention

The Convention on Wetlands (Ramsar, Iran, 1971), called the “Ramsar Convention”, is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the “wise use”, or sustainable use, of all of the wetlands in their territories. Unlike the other global environmental conventions, Ramsar is not affiliated directly with the UN system of Multilateral Environmental Agreements3 (MEA), but it works very closely with the other MEAs and is a full partner among the "biodiversity-related cluster" of treaties and agreements.

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3 One of the key outputs of the 1992 Rio Summit was to highlight and focus attention on the environment. The result was a host of conventions, conferences and other activities related to different environmental issues. These have generated a number of multilateral environment agreements (MEAs) such as Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Framework Convention on Climate Change (UNCCC).
Resolution X.27, on Wetlands and Urbanization, of the Conference of Parties (COP) to the Ramsar Convention on Wetlands held in South Korea in 2008:

“INVITES the Ramsar Secretariat to explore ways and means of establishing collaborative links with the UN human settlements programme (UN-HABITAT) concerning the promotion of social and environmental sustainability of towns and cities in relation to wetlands and water”.

In addition to resolution X.27 on Wetlands and Urbanization, issues germane to urbanization and wetlands are also considered in the following COP resolutions:

- X.23 on Wetlands and human health and well-being,
- X.24 on Climate change and wetlands,
- X.19 on Wetlands and river basin management: consolidated scientific and technical guidance.

The Ramsar Secretariat disseminates information widely and run a highly effective communications, education, participation and awareness programme. Key publications for promoting information on wetlands include the Wise Use Handbooks, which is the Ramsar Toolkit set out in 17 brochures containing guidance on the conservation and wise use of wetlands and the Ramsar Technical Reports series includes background reviews and reports prepared by the Scientific Technical Review Panel and other experts.

**Objectives and Expected Outcomes of the Workshop**

The Expert Workshop was hosted by the Kenyan Wildlife Service at their Training Institute in Naivasha, Kenya. The Workshop was conducted over two days and included presentations, plenary discussion sessions and smaller break-out groups. The Workshop brought together a mix of urban planners and managers with wetland experts. Several of the plethora of organizations involved in urban development and wetland management were represented. A full programme and list of participants is provided in Appendix 1.

**Objectives**

The specific objectives of the Expert Workshop were:

- To raise awareness on the issues of wetlands and urbanization.
- To identify the key issues on this topic as well as areas requiring policy and research action.
- To identify initial approaches to enhance partnership between organizations dealing with wetland management and urban development.
- To define the scope of guidance needed for management of urban and peri-urban wetlands.

**Expected Outcomes**

Prior to commencing, it was hoped that the Workshop would deliver tangible outcomes, especially in the following areas:

- Inputs / best practice case studies identified.
- Assessment of key differences between urban wetlands in developed and developing nations.
- Identification of key researchers/research groups working on urban development and wetland
management.

- Gaps and opportunities for further collaboration identified.
- Feedback on potential guidelines for protection/development of urban/peri-urban wetlands.
- Scope and outline for tool/ guidelines for Urban development and wetlands management.

**Expectations**

At the beginning of the Workshop the facilitator canvassed views on the expectations of the participants. The following provide a flavour of the responses provided:

- To understand the linkages between city development and Biodiversity Conservation / wetland management. Are they mutually exclusive?
- To strengthen collaborative links with UN-HABITAT
- To share experiences on water supply and wetland management in Nairobi.
- To come up with good guiding policies.
- To share best practices.
- To learn more about the role of local governments in wetland management.
- To contribute to the lasting marriage of wetlands management and urban development.
- To foster sisterhood and brotherhood of wetland management and urban development.
- To foster partnerships.
- To come up with a clear road map.
- To see how we can optimize benefits.
- To make a link to poverty reduction.
- To focus on wetlands under pressure.
- To see the links between good governance and wetlands.
- To develop practical guidelines on how to deal with wetlands in urban areas.
- To review which tools and guidelines have been useful in addressing wetlands management in urban areas.
- To advocate for strong links by local authorities and other institutions.
- To interact with planners both nationally and internationally.

**Case study presentations**

Case studies can be immensely useful in highlighting the benefits and problems associated with taking a more integrated approach to the planning and management of urban environments and their interaction with natural resources. Case studies which demonstrate bad practice and poor delivery can often have greater utility than examples of best practice as they can highlight limitations and shortcomings.

In preparation for the Expert Workshop several cases studies were reviewed. These were selected from the UN-HABITAT’s project partner cities, especially the Sustainable Cities Programme and Local Agenda 21. Projects were chosen to present a representative cross-section of examples of best
practice urban development combined with wetland biodiversity (Appendix 2). In addition to information provided to the participants, the following case studies were presented in plenary sessions of the Workshop:

**Urban Development Biodiversity and Wetlands in Seogwipo City, South Korea.**
Many environmental challenges were described for Seogwipo City including a paucity of water resources, high value but poorly protected biodiversity, missed tourism opportunities and the need for improved watershed management planning. The case study demonstrated several lessons learnt including the success of using geographic information systems (GIS) to develop web-based, user-friendly models and management systems, the introduction of the concept of total water cycle management incorporating environmental flows on a watershed scale, the promotion of stakeholders in deriving an appropriate strategy and the crucial role of biodiversity in urban planning.

**Salinas and Aguada Blanca National Reserve - Source of life for Arequipa, Peru. Towards a Specific Nature Protection Plan of Lake Salinas and its surroundings.**
The Salinas and Aguada Blanca National Reserve provides the water supply and significant hydropower for Arequipa, Peru’s second largest city. The case study explained that the situation was not an urban issue *per se* but one of adopting an integrated approach across a wider territory. The value of setting up a master plan and a voluntary management committee dedicated to the management and protection of natural resources and traditional customs was also highlighted.

**The urban wetlands management in Lake Victoria Basin Musoma Municipality, Tanzania.**
Musoma municipality is one of the many expanding urban centres along the shores of Lake Victoria. The various development activities in the Municipality have generated significant impacts on the wetlands in the area. Impacts result from various sectoral activities including agriculture, fisheries and forestry. However, it has been recognised that wetlands in Musoma play an important role in terms of supporting livelihoods and providing ecosystem services including fishing, brick-making, tourism and agriculture. A pilot project has been established using the Kitaji Pond aimed at mobilising the community to improve the pond for the benefit of the local community. Whilst some issues are emerging as potential problems, such as breeding mosquitoes and odours generated from solid waste disposal, the Municipality has learnt lessons and now recognises that a good strategy is one that actively involves interest groups and stakeholders from a diverse range of interests.

**Zoning for the sustainable use of wetlands, Sri Lanka.**
This case study focussed on wetlands and urban development in the Western Province of Sri Lanka where wetlands comprise approximately 20% of the land area. Several issues were presented including a lack of strategic planning, a lack of co-ordination among stakeholders, a lack of funds and a lack of powers to take action against activities which are deleterious to the wetlands. To address these issues guidelines for wetland zoning and regulations for application in urban development plan preparation have been developed. The goal was to facilitate environmentally and economically sustainable use of low-lying areas, considering their intrinsic potential while maintaining essential flood storage capacity and other environmental benefits. Four basic zones have been identified: wetland protection zone; wetland nature conservation zone; wetland agriculture zone; and low-lying development zone. The zoning is based on a precautionary principle, flood protection requirements, potential economic uses, the needs of the local communities and the ecology of the wetlands. A steering committee, composed of local stakeholders and NGOs and chaired by the Minister, has been established to take the zoning guidelines forward.
Entebbe, Uganda.
The Mayor of Entebbe described the policies that the national government had put in place in Uganda, including the National Wetland Policy of 1994. The case study reviewed the following challenges to the municipality of Entebbe: reduction of poverty to reduce impact on wetlands (especially water resources); loss of wetland species; flooding causing problems; rapid urbanisation associated with a desire to improve livelihoods; institutional capacity for enforcement of laws; lack of co-ordination between acts and permits often resulting in a mismatch of objectives; excessive mining of sand resulting in erosion; illegal dumping and infilling of wetlands rather than materials going to landfill sites; unclear boundaries and marked limits to where wetlands are; and inappropriate financial investment can be damaging to the wetlands. The following lessons have been learnt from this case study: involve local stakeholders to ensure one universal language is used; good wetland management takes time; and there is a need for guidance and proactive awareness. The Mayor also stressed the need to act with urgency.

Managing urban nature – Nairobi experience, Kenya.
Nairobi suffers from rapid urbanization and associated population growth which has exerted heavy pressures on forested land, generated human-domestic animal conflicts leading to armed conflicts and produced a demand for forest products resulting in illegal felling. The city has lacked an elaborate master plan, and poor enforcement of existing legislation has resulted in on-going conflicts between urban planning and urban conservation. Several initiatives have been enacted to improve the urban environment. The case study outlined the Green Wave Program, which targets primary schools to plant trees, the Nairobi Dam rehabilitation project and the Nairobi River Basin rehabilitation programme which aims to restore the riverine ecosystem and to ensure a sustainable supply of water for multiple users. In 2006 the City of Nairobi Environment Outlook Report was produced which provided a range of recommendations on how to improve the quality of life in the urban environment. A key recommendation was to develop a strategic master plan for the development of an integrated urban infrastructure system. The lessons learnt from the Nairobi experience include the need to align urban planning with environmental planning and protection, the requirement to involve as many people as possible in the process, that money sometimes is not enough but rather there needs to be an on-going commitment to the protection of urban nature and, finally, that political goodwill is an essential prerequisite for success.

Local Agenda 21 experiences in Nakuru, Kenya.
Nakuru Municipality is the fourth largest town in Kenya. The town lies 2km to the north of the Lake Nakuru National Park and Ramsar Site. The development of the Local Agenda 21 initiative has been a long-term programme with actions oriented towards building consensus for a long-term vision, streamlining urban development and upgrading the environment, strengthening institutions for capacity building and stimulating innovative partnerships. The initiative has had considerable success and has established a Citizen’s Vision for the implementation of the Nakuru Strategic Structure Plan (2000-2020) which covers all urban activities.

East Kolkata Wetlands, India.
Kolkata is the third largest city in India and a centre of trade and culture. The city evolved without a planned sewage disposal system with waste being dumped into the river or into adjacent saltwater and brackish wetlands. The wetlands gradually converted to freshwater systems providing the opportunity to establish freshwater aquaculture, agriculture and horticulture. Presently the East Kolkata Wetlands represent the largest assemblage of sewage fed fisheries in the world. The wetlands now form the basis for food and livelihood security for approximately 0.2million of the poorest peri-urban population and provide up to 80% of the fish and 60% of the agriculture to the city. The wetlands are currently under stress from physical encroachment of built development, a
shift in the composition of waste as industrialization proceeds and changes in the physical hydrology of the system. The East Kolkata Wetlands have been designated as a Ramsar site and the East Kolkata Wetland Management Authority has been established to protect and manage this important resource. The case study identified the following key messages: the wetlands were now considered as a part of the urban infrastructure; investment in wetland conservation is a way to address the alleviation of urban poverty; there is a need to capture and take into account the full range of ecosystem services associated within the urban development process; both direct and indirect economic incentives need to be established; and the ‘natural’ system needs to be maintained within its own carrying capacity.

**Discussion groups**

Three discussion groups were established to consider key issues relating to the integration of urban planning and wetland management, namely: lessons learnt from case studies; approaches to urban planning in relation to wetlands; and availability and utility of guidance documents and practical tools. The specific terms of reference for these discussion groups are set out below.

**Lessons learnt from case studies**

A specific discussion group was convened to synthesize and summarize issues gleaned from an assessment of case studies, including the ones presented in plenary, those provided in Appendix 2 and personal experiences from across the world. The group formulated discussions around the following three questions:

- Can we define what makes best practice and worst practice examples?
- Are there fundamental gaps in our knowledge?
- Can we identify more case studies to inform the development of guidance?

**Approaches to urban planning**

Modern urban planning emerged as a profession in the early decades of the 20th century, largely as a response to the appalling sanitary, social, and economic conditions of rapidly-growing industrial cities. Initially the disciplines of architecture and civil engineering provided the nucleus of concerned professionals. They were joined by public health specialists, economists, sociologists, lawyers, and geographers, as the complexities of managing cities came to be more fully understood. Contemporary urban and regional planning techniques for survey, analysis, design, and implementation developed from an interdisciplinary synthesis of these fields.

Today, urban planning can be described as a technical and/or a political process concerned with the welfare of people, control of the use of land, design of the urban built-up environment including transportation and communication networks, and protection and enhancement of the natural environment.

Despite the long history associated with urban development planning, and the technical expertise of a range of disciplines including civil engineers, social scientists, geographers and health specialists, significant problems and challenges remain. The following questions were posed for consideration during the discussions:

- The development of good urban planning policies depends of local community participation. What are the current barriers to this happening?
- The implementation of good urban planning policies depends on informed planners and regulators. What are the current barriers to this happening?
• Good urban planning should be about maintaining and improving quality of life. Ecosystem services are known to improve human well-being. Why don’t we plan urban development on the protection and enhancement of ecosystem services?
• Water management is essential to urban development. Are wetlands considered as part of essential water management infrastructure?
• Urban water management needs to be considered in terms of both proximal and distal effects. What are the barriers to considering the effects of urbanization on a watershed basis?
• What happens when urban development occurs in an unplanned and piecemeal manner?

Availability and utility of guidance documents and practical tools
There are clearly many initiatives currently pursuing the goal of sustainable urban development. Many of these initiatives bring together local, national and international partners and invest considerable time and resources into delivering results on the ground. Much of the information generated from these initiatives will already be captured and stored in a variety of forms. The Workshop attempted to identify good guidance where it is known to exist and highlighted other known resources. The Workshop also considered how best to understand the utility and pedigree of any guidance which may exist.

In addition to guidance documentation, practical tools or policy approaches which have significant relevance were identified and highlighted during the Workshop. The following questions were posed for consideration during the discussions:

• There are many organizations working either individually or in partnership which have developed best practice and generated guidance. Do we know the full extent of these organizations and can we map the multiple relationships which exist?
• Are there essential guidance documents which need to be recorded during the Workshop?
• Do we have ways of measuring the pedigree and utility of any known guidance documents?
• If additional guidance is required, do we know who our audience is?
• Is there a need to define separate guidance for the developing versus the developed world?
• Wetland systems are highly variable. Is there a need to develop guidance specific to wetland types or climatic regimes?

Notes were made by individuals and by the consultant to the Workshop. Flip chart notes captured the outcomes from the discussion groups. The content of the formal presentations and the notes made during discussions and plenary deliberations have been synthesized to generate a summary of the main findings and a proposed route map and timetable to take this initiative forward.
The Expert Workshop: (2) Main findings

Main findings

The Expert Workshop facilitated a huge amount of information exchange and served as an education event in its own right for many of the participants. Several themes repeated themselves including the conclusion that many of the issues facing wetlands in urban and peri-urban environments appear universal irrespective of the country, location or economic prosperity of the city. It is only the magnitude of change and the transferability of solutions that needs to be refined.

Cities are the driving force of social and economic development. However, from the evidence considered in the Expert Workshop it is clear that the challenges facing cities around the world are complex and that the solutions will have to be multi-dimensional. New concepts and approaches are needed to constructively integrate urban planning and management with the optimization of wetland ecosystem services and the protection of wetland biodiversity in order to deliver sustainable cities and alleviate poverty. The Asian Development Bank states in its 2004 guide ‘City Development Strategies to Reduce Poverty’ that “such a programme has a number of features including building trust, encouraging people to think about cities differently . . . and precipitating a change in behaviour amongst all groups.”

The deliberations of the Workshop built upon the philosophy underpinning the Sustainable Cities Programme of UN-HABITAT and UNEP which focused primarily on capacity building in urban environmental planning and management, on broad-based partnership and participation, on the advancement of collective know-how, and on the leveraging of technical and financial resources at every level, to resolve urban environmental problems. The Workshop also embraced the philosophy underpinning the Ramsar wise use of wetlands and sought to integrate this approach with the key principles of achieving sustainable urban development and adequate shelter for all.

The primary issues which were identified during the Workshop were:

- The need for more intelligent urban planning for development, including initiation of development frameworks and spatial zonation to protect ecosystem services, and in particular those performed by wetlands;
- The benefits of stakeholder participation and empowerment, both in problem setting and problem solving, to delivering sustainable cities;
- The requirement to ensure the provision of adequate institutional capacity for policy development, delivery and monitoring;
- The importance of considering wetlands as water management infrastructure rather than ‘nature reserves’; and
- The need to consider the wise use of wetlands both within and beyond urban boundaries and understand the interconnectivity of watershed-scale issues.

These issues are considered further below and have been integrated into a revised paradigm which seeks to illustrate the linkages in order to develop and implement urban planning policy which incorporates wetland-related and other issues identified during the Expert Workshop (Figure 2). This new paradigm tries to integrate wetlands more closely within the traditional linear approach to urban planning and management.
Figure 2. The revised paradigm for the development and implementation of urban planning policy incorporating wetland-related and wider issues identified during the Expert Workshop. (Dashed orange line represents the limits of the traditional ‘linear’ conceptual framework for urban planning and management. Arrows indicate where explicit linkages need to be made and addressed.)

Urban planning for development

It was clear from both the formal presentations on case studies and the wider discussions that the participants all recognized that there was a need for a refined approach to urban planning for development and the implementation of associated policies. The Workshop identified a range of challenges that the two communities of wetland and urban managers need to consider and address throughout the development of guidance. Initial solutions were also developed. These need to be extrapolated and developed further to ensure they are both appropriate to specific urban situations and implementable under existing municipal structures.

Challenges

The following challenges to urban planning policy development were identified by the Workshop:

- There is a need to consider ‘sustainable urbanization’ which embraces the application of sustainable development principles, founded on the principles or economic, environmental and social sustainability, within urban development plans and associated policies.
- A key challenge is to develop intelligent planning processes and policies which bring two different worlds together in a cohesive and integrated manner.
- Urban planning must be realistic in balancing public interest against private interest. This is especially important when making decisions associated with economic development and the growth of export income.
- Traditionally frameworks and spatial plans are area based and structured on administrative boundaries. This approach fails to address - or in many case even recognize - that these
boundaries are not functional or commensurate with the environmental boundaries required for the protection of wetland, or other, ecosystem services.

- There is a clear need to develop urban policies and plans around the protection of ecosystem services, however there is limited awareness of this concept within both national governments and local administrations.
- In the developing world considerable issues relate to ‘unplanned’ or informal urban settlements. These usually fall outside of the normal planning framework, however, they are often hot-spots of environmental degradation. It is essential that informal settlements are considered further in the development of guidance.
- For any guidance to be implemented successfully and translated into innovative planning policies in urban areas political support is essential. The benefits of developing a new paradigm within urban planning policy must be presented in a language which engenders and develops political backing. Often this language will focus on economic arguments, which are underpinned by social and environmental sustainability, in order to provide a common linguistic currency.
- Throughout the Workshop, climate change was the elephant in the room. It is essential that both the requirements of urban populations and the protection and enhancement of wetland ecosystems takes into account the concepts of climate change mitigation and adaptation. This must also look at how wetlands can be used in the management of carbon budgets.

Solutions

The following suggestions were described in order to assist the development of solutions:

- In order to balance private and public interests it is essential that different sectors such as sanitation, energy, agriculture, water supply and economic development are linked at both the national and local levels across government. This linkage must be achieved in full cognizance of the costs and benefits associated with the provision of wetland ecosystem services.
- In the absence of precise knowledge it is important the development and implementation of planning policies adopts precautionary approaches with regard to impacts on the environment and ecosystem services in particular.
- Many existing bye-laws may represent barriers to delivering a revised approach to urban planning. There is a need for consideration and integration or re-evaluation of current bye-laws to ensure that future compatibility exists.
- The development of urban planning policy is usually limited to the municipal or administrative boundaries. However, increasingly the water and ecological footprints of cities often extend well beyond these limits. The State of the World’s Cities echoed the view that planning for environmental harmony is dependent upon metropolitan governance institutions that effectively span multiple jurisdictions (UN-HABITAT, 2008). Future approaches need to ensure that there is a practical dialogue between planners and managers responsible for urban and rural environments or across their wider footprints.
- The use of environmental impact assessments (EIA) for certain development types is considered a vital mechanism for improving environmental protection. Often this is backed up with a range of environment legislation in order to regulate and control development.
- Often urban planning departments function in relative isolation. Mechanisms need to be put in place in order to generate greater integration including *inter alia* the protection of human health, the alleviation of poverty and sustainable wetland management.
• Planning departments need to evaluate current policies and plans and ensure that counterproductive or ‘perverse’ incentives are removed.

**Stakeholder participation**

One of the strongest messages delivered throughout the Workshop was the need for greater stakeholder participation. Participation was considered to be essential at several stages of the planning process. Whilst some good examples exist of actively involving stakeholders on wetland and planning issues, such as the Kenya Wetlands Forum, in many cases stakeholder involvement occurred late in the process and was rarely influential in defining the problem as opposed to developing solutions to urban planning issues.

**Challenges**

The following challenges were identified by the Workshop:

• To achieve active and empowering stakeholder participation often requires considerable resources in terms of time, personnel and money. In many cities these resources are not available or existing resources are prioritized in different areas.

• Often stakeholder participation is subject to political intervention and can get sidelined due to one-dimensional local political issues. Small but powerful and well-organized coalitions can skew the outcomes of stakeholder involvement emphasizing minority rather than majority or widely held viewpoints.

• There are significant gaps in our knowledge as to how best to involve communities and local residents in decision-making. Whilst there are excellent examples from across the world, knowledge deficiencies still remain. Often the knowledge gaps relate to both when to involve stakeholders in decision-making processes as well as which techniques are the best to ensure a fully participative approach.

**Solutions**

Whilst not definitive, the Workshop proposed some initial solutions for delivering greater stakeholder involvement including:

• There is a need to plan stakeholder involvement at a very early stage in many aspects of urban planning. This should include consultation over the development of plans and policies as well as the assessment of individual urban developments. The approach should be to plan first then consult in a meaningful and participative manner and to be ready to evolve consultation plans as issues arise.

• There needs to be a clear focus on community ownership and empowerment within any stakeholder involvement. Stakeholder consultation should not be regarded as an obligatory hurdle but an empowering process which results in a more sustainable and equitable urban society.

• The importance of a range of ecosystem services to stakeholders needs to be established in order to better understand the implications of plans and policies and also to ensure that opportunities to improve societal well-being are optimized. This will require an inclusive and appropriate use of language, participatory methods during consultation and guidance on the understanding of ecosystem services for planning officials.

• The approach to consultation and stakeholder involvement should be based on the premise of delivering an equitable distribution of benefits associated with sustainable urban development.
The employment of participative approaches to any engagement with stakeholders is fundamental to success.

Stakeholder participation should be a long-term, evolving process which changes society’s perspective. A key step in achieving this, and also embedding future monitoring of the success or otherwise of plans and policies, is the development of local school education programmes.

**Institutional capacity**

One of the primary barriers repeatedly identified during the Workshop was the inability of organizations, be they governmental departments, academic establishments or local non-governmental organizations, was the lack of institutional capacity. The lack of capacity relates to several issues including insufficient quantity or quality of staff, lack of financial resources, cultural obstacles relating to working practices, minimal training and development opportunities and deficient information technology provision.

**Challenges**

The following challenges to addressing institutional capacities were identified:

- Many of the participants from the urban planning sector identified the lack of information on ecosystem services as a barrier to progress. In some cases the concept of using wetlands as providers of solutions, through the ecosystem services that they deliver, was a revelation.

- The wetland and planning communities do not always talk in the same language. There is a need to develop a common language to ensure that concepts are fully understood by both communities.

- The philosophy embedded in the Ecosystem Approach was considered to be of great relevance to urban planners and managers. However, reservations were raised as to how feasible it is to connect planners to the Ecosystem Approach.

- Whilst an enthusiasm to implement change permeated the Workshop, concerns were aired as to whether there are sufficient funds to implement and sustain plans and projects developed out of a paradigm shift. The challenge to governments is to ensure that the funding for plans and projects are fully covered prior to implementation.

- Assuming that there is sufficient resource available to develop plans and policies, a concern is that there will be insufficient institutional capacity to enforce plans and policies. This might be through a lack of staff numbers or equally a lack of trained and informed staff.

- The Workshop identified a wide variety of organizations involved in the development and management of sustainable cities. A summary of some of the key players is provided in Appendix 3. A question posed during the Workshop was how can the wealth of information held by these, and other, organizations be accessed and utilized?

- Institutional capacity is an issue not just for the planning and wetland communities to wrestle with but, due to the complexity of sectors and their cross-cutting interactions, is an issue manifest across government departments.

- The issue of corruption was raised on several occasions. This issue appears to be universal and a potentially serious impediment to the implementation of sustainable urban development. The fundamental challenges posed were how can corruption be dealt with and how can its impacts be reduced?

- Many of the participants recognized that it was relatively easy to describe the problems
associated with deficiencies in institutional capacity but it remains difficult to implement practical solutions.

- Institutional capacity issues extend beyond the planning authorities and other government agencies. The potential for developers or project proponents to undertake EIAs of appropriate quality was a concern. This concern is compounded if there are also capacity issues within the planning authority charged with determining project applications.

**Solutions**

A range of solutions were considered to address institutional capacity issues including:

- An approach that has been implemented successfully in several locations, including in Thailand, involves using local communities in monitoring ecological components. This provides direct stakeholder participation and also provides additional resources required to monitor proposals.

- Increasingly the use of information technology (IT) (including GIS, databases, spreadsheets) is making holistic analysis of spatial information more feasible and less time consuming. The use of computers to model and simulate situations facilitates scenario testing. The provision of good IT and well-trained staff is seen as essential for the development and delivery of urban spatial plans.

- Whilst this may bring with it institutional burdens, the use of local management authorities, such as the East Kolkata Wetland Management Authority in India or the voluntary management committee established for the protection of the Salinas and Aguada Blanca National Reserve, is invaluable to ensure the delivery of plans and policies.

- Dialogue among different municipal departments is essential to share loads and remove duplication of effort. It is important that local government officers liaise with each other in a meaningful and productive way and actively work at knowledge transfer and awareness-raising to ensure the maximum return from resource investment.

- The need to have strong leadership was seen as essential if institutional deficiencies are to be identified and addressed.

**Wetlands as water management infrastructure**

The Workshop considered the suggestion that wetlands should not simply be viewed as areas important for biodiversity but that they should be seen to represent essential water management infrastructure within an urban context. There is a substantial body of evidence demonstrating that wetlands can regulate flood risk, recharge groundwater, improve water quality and provide good quality water supplies. The principle behind this is to consider wetlands at an early stage in the planning process to ensure that an over-reliance on traditional engineered solutions does not become irrevocably embedded in plans and policies and that options for creating or utilizing existing wetlands remain open. The agenda should be about cost effective and efficient water management. A serendipitous by-product of this is the provision of biodiversity.

**Challenges**

This approach is not without challenges. Several issues were aired within the Workshop including:

- Does the evidence base genuinely exist to inform urban planners on the utility and efficacy of wetlands as elements within water management infrastructure? A corollary to this is if the information exists is it in a form that is understandable and applicable to managing urban development across differing climatic and socio-economic environments?
An effective approach is to develop case studies of best practice or to identify exemplars as demonstration sites. Whilst some examples were discussed information on demonstration sites needs to be synthesized within any guidance generated as part of this initiative.

Wetlands are natural systems driven by eco-hydrological and bio-geochemical processes. The creation of a new wetland, to deal with polluted water for instance, may not yield immediate results. Natural systems need time to mature and develop therefore this time element needs to be considered.

It is important that existing wetlands, and especially those of importance for nature conservation or the provision of existing ecosystem services, are protected. This is essential, and infinitely preferential, to creating new wetlands as components of integrated water management infrastructure than to negatively impact existing wetlands.

Sanitation is a significant issue in urban environments. Until recently, the water and sanitation sector and the wetland conservation sector rarely interacted. However, there are good examples of initiatives which link water supply, sanitation provision and sustainable wetland management (for instance the Wetlands, Water and Sanitation programme of Wetlands International). There is a need to build on these initiatives and provide quantification of sanitation services to make this approach attractive to urban planners and sanitation managers.

**Solutions**

The concept of wetlands as essential water management infrastructure is a solution in its own right. It also presents an opportunity to optimize not just the direct water management benefits but to also integrate a variety of other ecosystem services including fish and crop production, carbon sequestration, recreation and landscape aesthetics into a holistic urban solution.

There are several organizations and individuals active in this area of work. There is also extensive published literature on the water management applications of wetlands in urban environments. Many publications also begin to address the economic benefits such as reduced capital and maintenance costs associated with ‘natural’ as opposed to traditionally ‘engineered’ systems.

Good examples exist, such as the extensive fish ponds in the East Kolkata wetlands which developed out of a sewage disposal system and that now not only process the city’s wastewater but also provide approximately 80% of the fish consumed by the city. More exemplars need to be highlighted and utilized to allow information exchange and to raise awareness.

For this approach to be successful there needs to be a sea change in thinking. Engineers need to engage more pro-actively with a wider constituency including ecologists, hydrologists, agronomist and landscape architects. Urban planners and managers need to become more aware of the possibilities offered by wetlands as solutions to urban water management issues.

**Wise use of wetlands**

The concept of the wise use of wetlands is fundamental to the paradigm shift advocated by the Workshop. However the concept was not widely understood or implemented by urban planners and managers. Similarly, awareness of existing guidance produced by Ramsar was relatively low. Many of the issues relating to the wise use of wetlands listed below duplicate issues previously highlighted.

**Challenges**

The principal challenge is to raise awareness of the concept of wise use and to ensure that its principles are embedded more strongly in the psyche of urban planners and managers.
• There was a widely held belief that the understanding of how wetland ecosystems function, both in terms of protecting wildlife and in providing benefits, was severely limited in most planning departments. The concept of ecological character was even more poorly recognized or understood.

• Specific gaps in knowledge were identified. One of the principle concerns to urban planners and managers is the need to understand the trade-offs relating to competing land uses and ecosystem services. This was identified as a significant issue which needed to be addressed in spatial zonation and planning exercises.

• Whilst recognizing the fundamental importance of the concept, understanding the complexity of hydrological regimes, both upstream and downstream of urban environments, and the implications for maintaining ecological character was seen as major challenges for urban planners.

Solutions
The concept of wise use of wetlands is well established in the wetland community and lies at the heart of the Ramsar Convention. Significant guidance on the wise use already exists. Countries that are signatories to the Convention will already have access to the available guidance. A significant amount of information is also available on the Ramsar website. Some of the solutions suggested included:

• Investigate how the existing guidance on wise use can be better accessed by urban planners and managers.

• Assess the utility of the existing guidance on the wise use of wetlands for the purpose of informing urban spatial planning and the zoning of areas to protect ecological character.

• Continue to raise awareness with planners as to the importance of the wise use of wetlands and especially the implementation of ecosystem approaches within the context of sustainable development.
Development of guidelines on urban development, biodiversity and wetland management

Developing guidance

The Expert Workshop confirmed that there are numerous organizations involved in developing guidance and best practice advice with regard to urban development and wetland management (see Appendix 3 for a selection of these). The Workshop examined issues relating to the development of guidance and identified the resolution of the following key factors as being crucial to successful implementation:

**Who is the target audience?**

The development of guidance will depend on the target audience. Different guidance would be developed to inform national governments as opposed to guidance for individual developers. The deliberations identified two principal target audiences:

- The primary audience would be for officials within local government. However, there is a need to influence national government in order to establish the context for local government and to relate guidance to broader governmental mandates.
- The secondary audience is much wider and extends to all organizations involved in sustainable urban development. These will include organizations established under multi-lateral environmental agreements, non-governmental organizations, private sector interests and supra-governmental organizations.

Undoubtedly there is a need for a variety of bespoke guidance in order to address the dynamic nature of the urban environment and to provide information on the subtleties of regional issues, the variation in wetland types and the breadth of economic issues. However, the Workshop focused on the needs of the principal audiences. In addressing local governments, the experts from within the sector, expressed the requirement to be careful and sympathetic with the use of language when dealing with local governments to ensure clarity and understanding.

**What should the guidance contain?**

The Workshop recommended that any guidance produced must not be a static document and should be considered as an element in an evolving and learning process. To shape and guide the evolution of a process the need for overarching principles which link, and address the strategic goals of, the Ramsar Convention and UN-HABITAT was considered of paramount importance. These overarching principles should set the context for guidance and would capture the philosophies of and synergies between UN-HABITAT and Ramsar.

Despite the wetland focus of the Workshop it was recognized that there is a need to extend guidance to all ecosystems. Whilst not a direct remit of the Workshop this needs to be considered further as part of an evolving process.

The Workshop recommended that the overarching principles should be illustrated with examples or exemplars of best practice demonstrating an integrated approach to urban development and wetland management. Examples should encompass different wetland types, be illustrative of a range of urban environments and demonstrate the solutions to a range of environmental pressures. A key
element of case studies should be the inclusions of contact details so that urban planners and managers can engage in direct liaison in order to accelerate the learning experience. Additionally it was recommended that examples should be used to motivate others to take action and implement best practice.

Other issues for consideration

Beyond the discussions held in the Workshop, but introduced in the introductory text of this report and drawing on wider knowledge of wetland issues, an additional range of concepts and issues have been identified which warrant further consideration during the subsequent development of this initiative. Some of these concepts have a direct application within urban environments and already possess well established guidance and exemplars of best practice. Other concepts are relatively embryonic or less well-established and need to be assessed and developed further.

- **Ecological footprint**: This concept provides a contextual view of urban development and its demand on productive land. Considerations should be given to ecological footprints in urban plans and policies in order to understand and reduce wider environmental impacts.

- **Water footprint**: As with ecological footprints, understanding water footprints is valuable in order to assess the wider impacts on hydrological resources, and the relationship with wetlands.

- **Mitigation banking**: A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under environmental regulation. Adopted within the United States in the 1980s, wetland mitigation banking has been described as a neo-liberal environmental policy that has created a functioning market in wetland ecosystem services (Robertson, 2004).

- **Payment for ecosystem services**: Payment for ecosystem services (PES) schemes reward those whose lands (or ecosystems) provide these services, with subsidies or market payments from those who benefit. For example, the downstream users of water treated by an upstream wetland, such as a water company or local residents, pay those who manage the upstream wetland to ensure a sustainable flow of this service. This approach has been advocated as potentially a strong avenue for securing priority areas for conservation (Egoh et al., 2007) and was highlighted during the Workshop as an approach adopted within the town of Naivasha, Kenya.

- **The Ecosystem Approach**: The Convention of Biological Diversity (CBD) adopted the ecosystem approach as the primary framework for action under the Convention, and subsequently has referred to the ecosystem approach in the elaboration and implementation of the various thematic and cross-cutting issues work programmes under the Convention. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Thus the CBD’s ecosystem approach can be regarded as congruent with Ramsar’s overarching concept of wise use.

- **Strategic environmental assessments**: Strategic environmental assessment (SEA) aims to evaluate the environmental consequences of draft plans and development programmes and is therefore undertaken much earlier in the decision-making process than project EIAs. It is seen as a key tool for sustainable development. SEAs should also provide for extensive public participation in government decision-making in numerous development sectors.

- **Green building evaluation and labelling**: The environmental impacts of buildings over their entire life cycle are a serious issue for the construction industry. Schemes have developed across
the world that aim to evaluate, encourage and reward green building design and implementation. Often these address issues such as energy saving, CO$_2$ emissions, waste reduction, water usage, biodiversity and wastewater treatment. This approach can bring benefits within urban developments and can also utilise wetlands to improve building function and design.

- **Integrated constructed wetlands**: The Integrated Constructed Wetland (ICW) concept integrates three inextricably linked objectives: water quantity and quality management, landscape-fit to improve aesthetic site values and enhanced biodiversity (Harrington and McInnes, 2009). The concept has been applied in urban and rural environments and utilises created wetlands as essential water management infrastructure.

- **Working wetland potential**: Developed by the International Water Management Institute (IWMI) the Working Wetland Potential approach explicitly weighs up both social and biophysical factors relating to changing, or continuing, a particular type of agriculture in a wetland (McCartney *et al.*, 2005). This approach has particular application for peri-urban agriculture.

- **Carbon management**: In recent years there has been increasing attention, including through processes implemented under the UN Framework Convention on Climate Change (UNFCCC), to seeking to reduce or offset greenhouse gas emissions through projects designed to restore ecosystems, or maintain (avoid degradation) existing ecosystems, as carbon stores. Certain types of wetlands are being viewed with growing interest as potential carbon stores and vital elements in maturing carbon market.

*Ramsar Scientific and Technical Review Panel*

In addition to the concepts outlined above, there may well be other approaches and issues that need to be considered further in the development of guidance. Currently the Ramsar Scientific and Technical Review Panel (STRP) is developing research, documents and guidance across a range of cross-cutting thematic work areas. The primary synergies with this initiative exist with the following tasks: poverty reduction; economic sector issues; wetlands and human health; wetlands and water resource management; wetlands management, restoration, mitigation and compensation; and wetlands and agriculture. Developments in these areas need to be integrated with progress on the planning and management of urban and peri-urban wetlands.

**The suggested approach to developing guidance**

The Workshop proposed a broad framework for developing guidance. The proposed approach is presented schematically in Figure 3. The objective is to establish the overarching principles which set the philosophical framework for guidance. Below the overarching principles two parallel workstreams are proposed to develop specific guidance from the perspectives of urban development and wetland management.

The wetland guidance should focus on technical aspects pertaining to the wise use, protection and management of wetlands both directly within urban areas and indirectly through wider watershed hydrological processes. The utility of wetlands as essential water management infrastructure should be described and recommendations on the specific roles wetlands can perform within urban and peri-urban environments should be presented. Technical guidance on wetland design, management and monitoring should be presented. Recommendations on how ecosystem services can be optimized and their socio-economic benefits assessed are required to justify adopting innovative approaches to urban planning involving wetlands rather than pursuing traditional engineered solutions.
**Figure 3.** The proposed approach to developing guidance on urban development, biodiversity and wetland management.

The urban development guidance should seek to establish the most appropriate and efficient methods for informing planners and urban managers within the various organizations and networks regarding the utility and wise use of wetlands. Guidance needs to address the issues highlighted in Figure 2 which lie outside of the conventional approach to urban planning, namely institutional capacity and information exchange especially involving stakeholder participation. By accessing the various organizations and networks engaged in sustainable urban development exemplars of best practice should be highlighted.

As specific guidance is developed in the parallel workstreams opportunities to trial guidance across existing networks and collaborators should be sought and feedback from this process incorporated in the further evolution of guidance. However, the Workshop aired a note of caution that this needs to be handled with sensitivity to ensure positive engagement with the process.

**Taking the initiative forward**

There is no doubt that the environmental challenges faced by cities are complex and the need for solutions urgent. Similarly the threats to wetlands continue and their degradation is greater than for any other ecosystem. The Workshop has emphasized the threats and opportunities that exist within the aged and troublesome marriage between urban development and wetland ecosystems. A
paradox exists in that impacts on wetlands are legion within urban environments but wetlands can provide the solution to urban problems such as lack of sanitation, risks from flooding and increasing food consumption. To move towards a resolution of these issues and to develop guidance the following plan is proposed for the development of wetland guidance. A similar plan for the urban guidance will be developed at the pre-STRP Workshop in February 2010.

<table>
<thead>
<tr>
<th>Action</th>
<th>Activity</th>
<th>Timetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-STRP Workshop</td>
<td>Drafting key principles and developing the framework.</td>
<td>February 2010</td>
</tr>
<tr>
<td>STRP Mid-term Workshop</td>
<td>Drafting wetland specific guidance for (1) protection of existing wetlands; and (2) the role of wetlands as multi-functional urban infrastructure.</td>
<td>February 2010</td>
</tr>
<tr>
<td>Draft wetland guidance</td>
<td>Aim to finalise framework for developing guidelines and to produce draft guidance for STRP meeting in Spring 2011.</td>
<td>Spring 2011</td>
</tr>
<tr>
<td>Final wetland guidance</td>
<td>Aim to produce guidance document for July – August 2011 for submission to Ramsar COP in early 2012.</td>
<td>Summer 2011</td>
</tr>
</tbody>
</table>

Development of wetland guidance needs to address and resolve synergies with other STRP thematic work areas. This will be considered at the STRP Mid-term Workshop.

In addition to the plan described above, it is also recommended that a continued programme of engagement is actively pursued by both sectors to ensure that awareness of the issues is developed and opportunities to convey key messages and to discuss solutions are taken.
References


Bolund, P. and Hunhammar, S. 1999. Ecosystem services in urban areas. Ecol Econ. 29, 293–301.


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Appendix 1: Workshop programme and participants

Urban development, biodiversity and wetland management - Expert Workshop Programme

Sunday 15 November 2009
Arrival of participants

Monday 16 November 2009

Facilitator: Cecilia Kinuthia-Njenga, UN-HABITAT

9 am Session 1: Opening and Introduction
1.1 Opening remarks – Setting the scene - Raf Tuts, UN-HABITAT
1.2 Opening remarks – The Ramsar perspective – Paul Mafabi, Ramsar Centre for Eastern Africa
1.3 Introductions of participants – Facilitator
1.4 Introduction of objectives and programme - Facilitator

9.30 am Session 2: City development vs. Ecosystem protection
2.1 Ecosystems: Life support for sustainable urbanization – Paul Chamniern
2.2 An Overview of City Development and Management – Francis Muwowo
2.3 Are city development and wetland conservation mutually exclusive? – Rob McInnes
2.4 Question and Answer – Plenary discussion

11.30 am Session 3: Case studies
3.1 Urban Development Biodiversity and Wetlands in Seogwipo City, South Korea – Kwi-Gon Kim
3.3 The urban wetlands management in Lake Victoria Basin Musoma, Tanzania – Adoh Mapunda
3.4 Zoning for the sustainable use of wetlands, Sri Lanka – Fahmy Ismail
1 pm Lunch

2.15 pm Session 3: Case studies (continued)

3.5 Entebbe, Uganda – Stephen Kabuye

3.6 Managing urban nature – Nairobi experience, Kenya – Benjamin Njenga

3.7 Local Agenda 21 experiences in Nakuru, Kenya – Simon Kiarie

3.8 East Kolkata Wetlands, India – Ritesh Kumar

3.45 pm Session 4: Urban Planning - Guidelines - Case studies

4.1 Working Groups

Discussion topic 1. Approaches to urban planning

Discussion topic 2. Availability and utility of guidance documents and practical tools

Discussion topic 3. Lessons to be learnt from case studies

4.2 Plenary feedback

After dinner - Video: WWF Naivasha Project

Tuesday 17 November 2009

Facilitator: Cecilia Kinuthia-Njenga, UN-HABITAT

9 am Re-Cap of Day one - Facilitator

9.15 am Session 5: Existing programmes

5.1 The Ramsar Convention and the role of the Scientific and Technical Review Panel – Rob McInnes

5.2 UN-HABITAT’s work on Cities and Biodiversity – Karin Buhren

5.3 Local Action for Biodiversity – Shela Patrickson

5.4 Ecosystem-based Adaptation in Coastal Cities – Gabriel Grimsditch
5.5 *Urban development and wetlands management expert workshop* – Patrick Muraguri

5.6 *Capacity Building: International course on African wetland management* – George Owiti

**11 am Session 6: Way forward and closing**

6.1 How best to create linkages?

6.2 Scope of guidance needed

6.3 Closing (next steps in collaboration)

**12 pm Session 7: Field Visit**

7.1 *Lake Naivasha ecosystem management challenges versus urban development* – Mbogo Kamau

12.30 pm Lunch

**2 pm Session 7: Field Visit (continued)**

7.2 Lake Naivasha and Naivasha town
## Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adoh Mapunda</td>
<td>Musoma Municipal Council</td>
</tr>
<tr>
<td>Benjamin Njenga</td>
<td>City Council of Nairobi</td>
</tr>
<tr>
<td>Bernard Opaa</td>
<td>National Environment Management Agency</td>
</tr>
<tr>
<td>Catherine Yaa</td>
<td>East Africa Wildlife Society</td>
</tr>
<tr>
<td>Cecilia Njenga</td>
<td>UN-HABITAT Kenya</td>
</tr>
<tr>
<td>Dora Guillen</td>
<td>Arequipa</td>
</tr>
<tr>
<td>Esther Osunga-Wanjala</td>
<td>UN-HABITAT</td>
</tr>
<tr>
<td>Francis Muwowa</td>
<td>Copperbelt University Lusaka</td>
</tr>
<tr>
<td>Gabriel Grimsditch</td>
<td>UNEP</td>
</tr>
<tr>
<td>George Owiti</td>
<td>Kenya Wildlife Service</td>
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<tr>
<td>James Njogo</td>
<td>Kenya Wildlife Service</td>
</tr>
<tr>
<td>Jane Macharia</td>
<td>National Museum of Kenya</td>
</tr>
<tr>
<td>Judith Nyunja</td>
<td>Kenya Wildlife Service</td>
</tr>
<tr>
<td>Karin Buhren</td>
<td>UN-HABITAT Kenya</td>
</tr>
<tr>
<td>Kwi-Gon Kim</td>
<td>Seoul National University / International Urban Training Centre</td>
</tr>
<tr>
<td>Mohammed Ezzat Abdelalim</td>
<td>Participatory Development Programme in Urban Areas</td>
</tr>
<tr>
<td>Mohammed Ismail</td>
<td>UN-HABITAT Sri Lanka</td>
</tr>
<tr>
<td>Patrick Muraguri</td>
<td>Wetland Forum</td>
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<tr>
<td>Paul Chamniern</td>
<td>Thailand Environment Institute</td>
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<tr>
<td>Paul Mafabi</td>
<td>Ramsar Centre for Eastern Africa</td>
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<tr>
<td>Raf Tuts</td>
<td>UN-HABITAT Kenya</td>
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<tr>
<td>Ritesh Kumar</td>
<td>Wetlands International / Ramsar STRP</td>
</tr>
<tr>
<td>Rob McInnes</td>
<td>Bioscan (UK) Ltd / Ramsar STRP</td>
</tr>
<tr>
<td>Samuel Kasiki</td>
<td>Kenya Wildlife Service</td>
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<tr>
<td>Shela Patrickson</td>
<td>ICLEI</td>
</tr>
<tr>
<td>Simon Kiarie</td>
<td>Nakuru Municipality</td>
</tr>
<tr>
<td>Stepehn Kabuye</td>
<td>Mayor of Entebbe</td>
</tr>
<tr>
<td>Stephen Mutoro</td>
<td>Kenya Alliance of Residents Association</td>
</tr>
</tbody>
</table>
Appendix 2: Case studies

The following case studies have been selected from the UN-HABITAT’s 2008 best practice database. Projects were chosen to present a representative cross-section of examples of best practice urban development combined with wetland biodiversity.

Case study 1: Practice Protection of the natural environment on the beach: declassifying of urban land, recovery of wetland and preparation for public use in Motril, Granada

<table>
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<td>Thematic Areas:</td>
<td>Land Use Management</td>
</tr>
<tr>
<td></td>
<td>Environmental Management</td>
</tr>
<tr>
<td></td>
<td>Architecture and Urban Design</td>
</tr>
<tr>
<td>Classification:</td>
<td>Best Practice</td>
</tr>
</tbody>
</table>

| Summary:             | The main purpose has been the declassification and purchase of 146,000m² of urban, developable land located 100 m from the beach and its protection as specially protected, non-developable land to make it available to the public as an ecological reserve. |
|                      | The tendency to develop the coastal areas and the local government’s lack of knowledge of the ecological value of the wetland at the end of the 1980s resulted in its being classified as developable and its drying out was started. |
|                      | A public initiative in 1996 resulted in the start of the procedure to protect the wetland, which was achieved in 2000. |
|                      | This implied a change in the municipal urban and tourism models towards a more sustainable model for the land. |
|                      | With the support of other government departments (regional, national and European), the land was equipped with infrastructures for use as a space for environmental education while actions were taken to develop its ecological potential. |
|                      | The enclave is fundamental for the preservation of the biodiversity, this being the only coastal wetland in the province. Censuses of bird life and studies carried out by the regional government show its ecological value and its progressive increase after the restoration. Even though it is located next to buildings, because of its careful preservation, its 146,000m² are home to |
more than half the endangered bird species in the region.

As well as the ecological preservation, much work has been done to adapt it as a space for environmental education considering that its preservation in the future will depend upon society’s knowledge and valuing of it.

To achieve this preservation over the long term, it has been given a use and management plan and its preservation has been sought actively above the municipal level.

Lessons learned:
The importance of public participation in land classification.

Change in municipal policy towards a more sustainable model: preservation of natural areas in coastal areas.

Preservation of the biodiversity. Framework space for environmental education.

Diversification of beach tourism towards environmental tourism.

The public initiative was fundamental in preserving the natural space. The legal processes of land classification includes public participation although the strengthening of these would prevent a repetition of errors such as the urban classification of the wetland.

An important tool in strengthening participation is local Agenda 21, which did not exist when the space was classified as urban, making municipal policy more sustainable.

The biodiversity is a fundamental element in the sustainability of an area.

As well as its importance in the local biodiversity, the wetland is a refuge for an important bird migration which passes through the municipality, meaning that it is also an important element in global biodiversity.

Environmental conservation by the government requires the backing of society as a whole to maintain itself over time. Because of this, the preservation of a space of high ecological value is as important as its use for environmental education. The preservation of the wetland has been a turning point in the municipal environmental education policy.

The land-harmful coastal tourist development (the model under which the wetland was classified as urban) has been shown to be counter-productive for the tourist development of coastal municipalities. The progressive awareness of society of the environment requires not degraded environments so that the preservation of the wetland from tourist building is not a negative element but a positive one for tourist development, adding value to its ecological and environmental values.
## Case study 2: The Integrative Renovation of Landscape of South Bin Jiang River

<table>
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<tr>
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<th>China</th>
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<tbody>
<tr>
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<td>Environmental Management</td>
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<tr>
<td>Classification:</td>
<td>Good Practice</td>
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### Summary:

The Waterfront Regeneration on Southern bank of Xin’an River. Huangshan City is located in the southeast of Anhui Province, covering an area of 9,807km², and the population is 1,500,000. The main city area where the Municipal Government lies is at the source of the Xin’an River, and constructed along the river. The built-up area is 22 km², and the residential population is 200,000.

A long history gave rise to the Hui Merchants, and gave birth to Hui Culture. The ancestor of Huangshan people respected ‘Nature and Ecology’, and pursued ‘the Harmony of Man and Nature’. They mostly lived along the river, and created their beautiful home ingeniously through the ‘Shuikou Garden’. For thousands of years, the love of nature and the respect of ecology prompted the Huangshan people to improve and optimize the residential environment. The Comprehensive Treatment Project of South Waterfront Landscape of Xin’an River, is a successful practice of the improvement of residential environment in Huangshan’s modern city construction.

Southern Waterfront is in Nan’an of the main city, 7,500 meters long from east to west, 300 to 500 meters long from south to north (of which the water covers an area of 200 ha), facing the historical Tunxi Street on the other side of the river. The urban facilities were deficient, banks are burst while trees fell, shacks had developed randomly, sewage was discharged into river directly, the environment was extremely degraded, and what was worse, the life and property of the inhabitants were constantly threatened by the flood until the project was carried out.

In 2004, on the base of adequate scientific authentication of the scheme of Southern Waterfront Landscape Design, the Municipal Government has collected 460 million yuan through variety of channels, and made the decision to carry on this comprehensive regeneration. The aim is to integrate river purification, shanty reset, bank refine, urban building and lighting by the water gap of three-rivers and two-banks. Followed by the principles of nature, ecology and economy, building ecological land bank to launch the local economy and improve people’s life.

In the aspect of the environment melioration, we are getting started by the cleaning up the sullage, building waste, sinking balk and river pothole which
is about millions of volume and reorganized the riverbed and river way. Meanwhile, laying the pipe along river to hold up the sullage of the south area and elevating it to connect to the sewage farm. The waste is gathered and transferred, and the river and public sanitation is maintained.

Under bank improvements, straight and rigid banks were forbidden. By the principle of "Nature and Ecology", we built ecological banks which used laddered concrete with a lawn to protect the bank. The river, bank and green system is well organized and the conflict between the landscape and flood proof is conciliated.

In the aspect of residence improvement, the applying of sustainable development is the goal of this project. This is what we have done perfectly. By synthetic improvement, the relationship between people and nature, residence and nature, urban and nature is well treated.

In the form of landscape, getting more focused on the planting, and protecting the river, nature terrain, well grown trees and residential buildings to integrate the nature and landscape of lakefront. The people now coexist well with nature.

In the structure and layout of the design, the Bin Jiang landscape belt acts as the main axis, connecting important environment nodes in series such as the lotus flower afforestation square, Xin'an music square, wetland park, three Jiangkou park and so on. The lotus flower afforestation square, the Xin'an music square, the wetland park, three Jiangkou park are just like radiant pearls inlayed in the southern waterfront belt. Thanks to the treatment of south waterfront landscape, the shantytowns are relocated, and the newly built housing plot will give inhabitants a more harmonious and beautiful place to live, taking advantage of the mountain, the water, and various landscape features.

The landscape illumination, in line with energy-saving, frugal and user-friendly principles, meets the development needs of an international tourist city and has improved the scenic aspects of the central city.

The progress of the Waterfront Regeneration on Southern bank of Xin'an River fully manifested the resource conservation and the friendly environment and has led the land development, improved the housing environment, developed the public space, promoted the urban personal status, continued the historical arrangement and realized sharing environment by the people of both north and south banks of Xin'an river. On 2\textsuperscript{nd} December 2006, this project was honored to receive a prize in recognition of the environmental gains.

The Waterfront Regeneration on Southern bank of Xin'an River has succeeded in flood prevention and waterfront construction ecology, natural construction and improvement, urban drainage opening botanical garden buildings, historical culture protection and extension. This successful experience is worth spreading in more similar districts and cities.
The policies, which the project was based on, are the interim procedures to manage the city green space in Huangshan, the notice to strengthen the plan and the management and to exalt the architecture culture, the procedures to manage the city landscape architecture and the reply about the integrative renovation project of landscape of South Bin Jiang River from Huangshan develop and innovate committee and so on. When the project has achieved, is to establish the gardens, to save water and, produce a city that is comfortable for living.

<table>
<thead>
<tr>
<th>Related Policies</th>
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### Case study 3: Rush and Reed Conservation and Diversification Programme

<table>
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<th>Country:</th>
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<tbody>
<tr>
<td>Type of Organization:</td>
<td>Non-Governmental Organization</td>
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</table>
| Thematic Areas: | Poverty Reduction  
Environmental Management  
Gender Equality and Social Inclusion |
| Classification: | Best Practice |

| Summary: | The rush and reed conservation and diversification programme conducted by the Committee for People’s Rights was implemented in few villages in Kalutara district of the western province. The programme initiated a craft making programme using traditional technology and patterns which produce certain modified products and traditional products for the markets. Thus it was able to ensure the protection of rapidly diminishing traditional knowledge system. The programme conserved wetlands to ensure continuous supply of raw materials, rushes and reeds. |

| Related Policies: | Government sector policies and institutions related to this encourage traditional knowledge and also promote eco-friendly product usage. Furthermore, there is a policy on biodiversity and the utilization of indigenous knowledge. |
Case study 4: From Discontent to Collective Action: A Social Movement That Protected

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<thead>
<tr>
<th>Country:</th>
<th>Mexico</th>
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<tbody>
<tr>
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<td>Civic Engagement and Cultural Vitality</td>
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<tr>
<td>Classification:</td>
<td>Award Winner</td>
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</tbody>
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| Summary:                  | Our objective was to protect Balandra: a cultural and landscape icon in our state, the last undeveloped beach in the city, and a wetland of international ecological importance. The area was threatened by unregulated coastal development occurring in our city, the plans of landowners to create an exclusive tourism resort, and the lack of political will to maintain Balandra in a pristine state as demanded by citizens. Through the creation of a citizens’ movement (Colectivo Balandra), we achieved seven social and policy results that will allow for the long-term protection of Balandra. The first achievement was the participation of 18,000 citizens of all ages and social groups in the movement. This was the first time in our region that such number of people participated in an environmental and social cause and it created a sense of pride and empowerment that will likely foster other actions. The second achievement was the creation of political will and understanding among federal, state, and municipal governments on the social and ecological importance of Balandra and the need to protect it. The third achievement was the enactment of a State-law that allows municipal governments to protect key land habitats within their territories. The fourth achievement was the creation of the first municipal protected area in our municipality that protects from coastal development the watersheds surrounding the wetland. The fifth achievement was the inclusion of Balandra in the Ramsar List of Wetlands of International Importance. The sixth achievement was the initiation of a process to create a complementing federal marine protected area in the waters surrounding the municipal protected area (this area will be enacted by the end of 2008). Finally, the seventh achievement was stimulating the interest of other municipalities to create protected areas and to play a stronger role in environmental issues. |
| Related Policies:         | The practice resulted in one piece of legislation, three policy tools, and one intergovernmental treaty: |
1. Environmental Law (regional legislation): a new chapter on protected areas was enacted as a result of the practice. This chapter provides a sound legal framework for the creation of protected areas by state and municipal governments.

2. Municipal protected area (municipal policy): Balandra is the first municipal protected area created in our region. The decree includes regulations on land use and prohibits coastal development in the watersheds of Balandra. Due to jurisdictional matters, this area does not include the marine zone.

3. Marine protected area (national policy): The Mexican Park Service is in the final steps to create a marine protected area that will complement the municipal one. Both levels of government have already agreed to manage the protected areas cooperatively.

4. Urban development plan (municipal, policy): the practice led to the enactment of Balandra as a conservation zone in La Paz Urban Development Plan. This plan sets the guidelines and regulations for land use in the city.

5. Ramsar site (international intergovernmental treaty): The area was incorporated in the Ramsar List of Wetlands of International Importance. This recognition provides a framework for action and international cooperation for the conservation and wise use of Balandra's wetland and its resources.

**Case study 5: Manchester Local Sustainable Development Plan: 2030 and Beyond**

<table>
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<th>Country:</th>
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<td>Land Use Management</td>
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<td></td>
<td>Urban and Regional Planning</td>
</tr>
<tr>
<td>Classification:</td>
<td>Good Practice</td>
</tr>
<tr>
<td>Summary:</td>
<td>The Manchester Local Sustainable Development Plan’s (LSDP) objectives stretch across the four themes of the plan. Firstly, over the next two decades and beyond, Manchester will continue to be distinguished as the Parish that maintains its cool climate and keeps its environment clean and green. Secondly, Manchester’s communities will be attractive, comfortable and safe places to live, work, learn and play. Thirdly, Manchester will grow and diversify by capitalising creatively on the economic opportunities that will</td>
</tr>
</tbody>
</table>
emerge from its commitment to sustainable development for the advancement of existing industries and the establishment of new ones that will work harmoniously with the environment. Finally, Manchester Parish Council will achieve the wise use of land and building space through the clarity of its planning decisions based on a commitment to shared objectives and standards for sustainable development and a focus on responsible site planning and creative design.

Although the Manchester LSDP was only recently completed, implementation of ideas was already being undertaken. In an effort to ensure the growth and survival of the agriculture sector, a green house and tissue culture pilot project was launched. Green house technology has also been utilised to revitalised lost vegetation in specific areas of the parish of Manchester. The first Environmental Activity Day took place in July 2007 in one of Manchester’s well known communities. There has even been the development of site selection criteria for various land uses such as educational infrastructure. Manchester has also recognised the importance of preserving areas rich in biodiversity and has proposed the Canoe Valley be declared as a protected area. The Manchester Parish Development Committee commissioned a Water Study to a group of consultants to identify additional water supply. Finally, the South Coast of Manchester will be geared towards community and nature tourism in the future.

Lessons learned: Over the past few years and especially within the last two years, there have been a myriad of lessons learned that result from trial and error. Finding the correct approach/method has not been the easiest task, likewise working out the phases of an implementation plan and identifying the prospective actors.

The most important lessons learned throughout the process has to be that firstly, the involvement of the citizenry/stakeholder is key to the success of true local planning as one discovers that local knowledge is indeed the most important factor. Secondly, establishing from the outset a non-partisan approach helps to get participants more comfortable and allows them the opportunity to feel confident that their concerns will be listened to and addressed without the emergence of political agendas. Finally, there can be no egos from any party involved in the planning process. This fosters a sense of equality and eliminates any level of inferiority, especially when it concerns expression of ideas and opinions.

The Manchester LSDP adopted some of the approaches used by the city of Sudbury, Canada, that recognised public involvement and the value of sustainable planning that would help to generate innovative, yet practical solutions/ideas to solving everyday problems.

These lessons have been incorporated into other initiatives that are on a much smaller scale than the Local Sustainable Development Plan for Manchester. Other plans, that will be microcosms of the overall larger plan, will take the same approach to information gathering and documenting that will feed potential strategies/actions/recommendations/advisory policies. Workshops reflect a wide cross-section in its participants that
includes a number of age groups and gender.

It is vital to create notes of how a problem or challenge was overcome, as this presents valuable lessons on ‘what NOT to do’ and gives room for complete replication of a successful process.

**Related policies:**

The Manchester Local Sustainable Development Planning process has garnered the support of the Planning Division at the Office of the Prime Minister, the Department of Local Government, Town and Country Planning Authority, National Environment and Planning Agency, the National Housing Trust, the Jamaica Institute of Planners, NGOs, CBOs and the private sector. It has also been supported by the Canadian International Development Agency and the Canadian Urban Institute.

There is yet to be a national policy on writing local sustainable development plans in Jamaica. But there have been steady discussions over the last few months between the Government, Central Government ministries and agencies and the local authorities to make that the way forward for planning, with an emphasis on long-range planning in the country.

The Manchester Parish Council has already commenced extracting and implementing advisory policies from within the Manchester Local Sustainable Development Plan: 2030 and Beyond, as well as potential standards for fire safety and recreational spaces for instance. The plan, although in its infancy of implementation, recognises that specific actions will require a policy/ies shift and or an amendment to policy/ies.

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**Case study 6: Sustainable solutions to homelessness/poverty and improved access to water and sanitation.**

<table>
<thead>
<tr>
<th><strong>Country:</strong></th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Organization:</strong></td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td><strong>Thematic Areas:</strong></td>
<td>Housing and Human Rights</td>
</tr>
<tr>
<td><strong>Classification:</strong></td>
<td>Best Practice</td>
</tr>
<tr>
<td><strong>Summary:</strong></td>
<td>Urban homelessness and poverty is on the increase, yet little is being done to alleviate it. Government’s development priorities have been more focused on addressing rural poverty and landlessness. Conventional housing delivery systems within the urban areas have failed the urban poor. The People’s Process on Housing and Poverty in Zambia and the Zambia Homeless and Poor People’s Federation is a partnership between a people’s</td>
</tr>
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</table>
organization and a non-governmental organization focused on community participation and pooling resources together to fight homelessness, and provide land tenure security as a first step to fighting urban poverty. When poor communities pool their resources together, they are able to build houses as a first step towards fighting homelessness and poverty.

**Lessons learned:**

Firstly, the urban poor communities must be in the forefront i.e. it is true that the poor are in the best position to forward best strategies that would alleviate their sufferings. It goes without saying that community-led approaches yield better results. Secondly, it is fundamental to ensure that communities are well organized before embarking on any alliance, primarily because working with individuals or fragmented groups makes it almost impossible to achieve intended goals. Savings on the other hand creates the social capital that enables any project to be successful.

Long lasting change can only happen if people or beneficiaries are key active players in the process of their transformation.

**Case study 7: Katwekera Tosha Bio-Sanitation Centre**

<table>
<thead>
<tr>
<th><strong>Country:</strong></th>
<th>Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Organization:</strong></td>
<td>Non-Governmental Organization</td>
</tr>
</tbody>
</table>
| **Thematic Areas:** | Water and Sanitation  
Technology, Tools and Methods  
Urban Governance |
| **Classification:** | Promising Practice |
| **Summary:** | Located in a slum, Katwekera village lacks water and basic sanitation services. About 150 people share one latrine with many resorting to use of flying toilets and open spaces. Overflow from shallow latrines into open drains poses a health hazard and constrains access by children, the elderly and the physically challenged. Water from various sources is sold by vendors at 4 times higher per litre than the tariffs charged by Nairobi Water Company. Since most residents earn less than a dollar a day, they cannot afford adequate water for their daily needs.

In 2005, five groups that constitute TOSHA coalition democratically elected their leaders and participated in a capacity building programme coordinated by Umande Trust and Halcrow Foundation. The Trust mobilized members in a scoping study aimed at building their capacities to enable them effectively |
participate in planning, implementing and managing water and sanitation projects in Katwekera. The objectives of the initiative were to build capacities of community based resource persons and groups in initiating and managing projects, promoting hygiene in order to change behaviour, designing and constructing a water and sanitation projects based on sound partnerships at all levels.

The community achieved:
- enhanced capacities in designing and planning improved sanitation;
- improved access to information on water and sanitation;
- improved governance from within the community, transparency and accountability;
- partnerships by mobilizing funds, expertise and in-kind support from local, national and international levels;
- a two-storey bio-centre that provides water, sanitation and income.

**Lessons learned:**
Poor communities aspire to live in a clean environment and are ready to use their resource to achieve it or pay a small fee to use decent, clean toilets and bathrooms.

Community participation in the management of services creates a sense of ownership and unleashes responsibility. Partnership enhances realization of goals that would otherwise be difficult to achieve. This project demonstrates successful collaboration among NGOs, local authorities, international agencies, private sector and communities in water and sanitation for the urban poor.

The facility has helped residents to perceive human waste as a resource through application of affordable and socially acceptable technologies for energy production.

Projects take off faster by strengthening existing CBO structures/associations for effective planning, operations and management of improved water and sanitation services within Katwekera.

Replication depends on sponsors due to high investment cost.

**Related policies:**
The Water Act 2002 provides an enabling environment.

The Water Act (2002) provides for a new institutional set-up for planning, supporting and monitoring improvements in water sector performance in Kenya. The reforms have the net effect of promoting commercialisation and ‘ring-fencing’ water revenues from respective local government accounts. The catchwords in the reforms process are ‘allocation efficiency,’ ‘fairness’, ‘productive efficiency’ and ‘sustainability’ of water supply and services. Fundamentally, the Water Act and the concomitant reforms
strategy spell out measures designed to:
- separate policy formulation, regulation and service provision.
- separate water supply and services from water resource management.
- devolve, deconcentrate and decentralise responsibilities.

By divesting out of the water and sewerages services, the government seeks to create an environment for community and private sector participation in the management, supply and conservation of water. Civil society organizations have the responsibility to contribute to the reforms through a concerted programme of policy research and advocacy. This will ensure that the reforms are consistent with principles of inclusive governance and the obligations specific to the right of water.
Appendix 3: Key organizations and initiatives

The following list is not exhaustive but demonstrates the breadth of consideration this issue currently attracts by a variety of organizations and initiatives. UN-HABITAT and the Ramsar Convention are described in the main body of the report.

United Nations Environment Programme (UNEP)

The United Nations Environment Programme, UNEP, was established after the 1972 UN Conference on the Human Environment, held in Stockholm, Sweden, proposed the creation of a global body to act as the environmental conscience of the UN system. The mission of UNEP is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. UNEP’s programme of work to promote and facilitate sound environmental management for sustainable development is implemented by eight divisions:

- Early Warning and Assessment.
- Policy Development and Law.
- Environmental Policy Implementation.
- Technology, Industry and Economics.
- Regional Cooperation.
- Environmental Conventions.
- Communications and Public Information.
- Global Environment Facility (GEF) Coordination.

UNEP operates across six priority areas: climate change, disasters and conflict, ecosystem management, environmental governance, harmful substances and resource efficiency. Under the ecosystem management priority area UNEP acknowledges that the scientific evidence shows that ecosystems are under unprecedented pressure, threatening prospects for sustainable development. They also recognise that while the challenges are daunting, they also provide opportunities for local communities, business and government to innovate for the benefit of communities, economies and the global environment. However, in order to secure the environmental conditions for prosperity, stability and equity, timely responses that are proportionate to the scale of the environmental challenges will be required. In creating such responses, governments, the international community, the private sector, civil society and the general public all have an important role to play.

United Nations Educational, Scientific and Cultural Organization (UNESCO)

The United Nations Educational, Scientific and Cultural Organization, UNESCO, was founded on 16 November 1945. For this specialized UN agency, it is not enough to build classrooms in devastated countries or to publish scientific breakthroughs. Education, Social and Natural Science, Culture and Communication are the means to a far more ambitious goal: to build peace in the minds of men.

Today, UNESCO functions as a laboratory of ideas and a standard-setter to forge universal agreements on emerging ethical issues. The Organization also serves as a clearinghouse – for the dissemination and sharing of information and knowledge – while helping Member States to build their human and institutional capacities in diverse fields. In short, UNESCO promotes international
co-operation among its 193 Member States and six Associate Members in the fields of education, science, culture and communication.

UNESCO is working to create the conditions for genuine dialogue based upon respect for shared values and the dignity of each civilization and culture. This role is critical, particularly in the face of terrorism, which constitutes an attack against humanity. The world urgently requires global visions of sustainable development based upon observance of human rights, mutual respect and the alleviation of poverty, all of which lie at the heart of UNESCO’s mission and activities.

**Millennium Development Goals**

In September 2000, building upon a decade of major UN conferences and summits, world leaders came together in New York to adopt the UN Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets - with a deadline of 2015 - that have become known as the Millennium Development Goals. The eight goals establish a quantitative benchmark to halve extreme poverty in all its forms:

- Goal 1: Eradicate extreme poverty and hunger
- Goal 2: Achieve universal primary education
- Goal 3: Promote gender equality and empower women
- Goal 4: Reduce child mortality
- Goal 5: Improve maternal health
- Goal 6: Combat HIV/AIDS, malaria, and other diseases
- Goal 7: Ensure environmental sustainability
- Goal 8: Develop a global partnership for development

In a recent report the specter of global recession, suppressing economic growth and diminishing the availability of resources, and the increasing influence of climate change were identified as threats which could undermine progress towards the goals (UNb, 2009). For many developing countries lower levels of aid may not only impede progress it may reverse some of the gains made to date.

**Convention on Biological Diversity (CBD)**

The Convention on Biological Diversity (CBD) entered into force on 29 December 1993. It has three main objectives:

- To conserve biological diversity
- To use biological diversity in a sustainable fashion
- To share the benefits of biological diversity fairly and equitably

The Ninth Meeting of the Conference of the Parties to the Convention on Biological Diversity adopted decision IX/28: On promoting engagement of cities and local authorities which:

“INVITES Parties, other Governments, regional and international development agencies and banks engaged in projects that include infrastructure development for cities and local authorities, to integrate biodiversity considerations into those projects, where relevant, and explore options for specific capacity-building and programmes on biodiversity for local officials responsible for their implementation and maintenance;
Invites Parties, other Governments and international development agencies to support and assist cities and local authorities in encouraging and promoting practices, activities and innovations of indigenous and local communities that support the three objectives of the Convention on Biological Diversity and achievement of the 2010 biodiversity target;

Invites Parties to engage their cities and local authorities, where appropriate, in:

(a) The application of relevant tools and guidelines developed under the Convention with a view to contributing to the achievement of the three objectives of the Convention and its goals and targets; and (b) The compilation of information on biodiversity status and trends, including communicating to national Governments any commitments and activities that will contribute to the targets of the Convention on Biological Diversity."

The CBD also facilitates the Global Partnership on Cities and Biodiversity. Launched at IUCN World Conservation Congress in 2008 the Global Partnership on Cities and Biodiversity, and building on considerable work involving the development of action plans and projects, technical assistance and exchange systems to support cooperation between various levels of government, from international to local, the initiative currently brings together UN agencies, international organizations, including ICLEI and IUCN, and local governments to improve the management and conservation of biodiversity through technical cooperation, capacity building projects and communication campaigns.

**Food and Agriculture Organization (FAO)**

The Food and Agriculture Organization, FAO, of the United Nations leads international efforts to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information. The FAO helps developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices and ensure good nutrition for all. Since being formed in 1945, the FAO has focused special attention on developing rural areas, home to 70 percent of the world’s poor and hungry people.

The FAO has established a Food for the Cities initiative to ensure food security in cities during this period of unprecedented and rapid urbanization. The following actions have been identified at a global level:

- taking stock of urban food security and agriculture policies, legal frameworks and programmes that cities and countries around the world have developed, or are developing, with a view to their systematisation and wider dissemination;
- developing decision-making and planning tools (guidelines, criteria and indicators) for policy makers dealing with urban development in relation to agriculture, livestock, aquaculture, land use planning and forestry, as well as urban food system planning and development; and
- setting up multi-stakeholder platforms (international organizations, national and regional representatives and related sectoral expertise) for dialogue, action planning and policy formulation on good governance on food, agriculture and cities, including a high-level advisory panel to FAO.

**ICLEI**

Local Governments for Sustainability, ICLEI, is an international association of local governments as well as national and regional local government organizations that have made a commitment to sustainable development. Over 1107 cities, towns, counties, and their associations worldwide
comprise ICLEI’s growing membership. ICLEI works with these and hundreds of other local governments through international performance-based, results-oriented campaigns and programs.

ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level. Our basic premise is that locally designed initiatives can provide an effective and cost-efficient way to achieve local, national, and global sustainability objectives.

At the ICLEI World Congress in June 2009, a motion was unanimously accepted to adopt the Local Action for Biodiversity (LAB) Initiative as the global ICLEI biodiversity Initiative. The LAB Project aims to assist local governments to conserve and sustainably manage their biodiversity. Its overarching aim is to improve biodiversity management at the level of local government. This is achieved by profiling and promoting the importance of urban biodiversity and the role of local government in its management, and coordinating the sharing of experiences, successes and challenges among a diverse group of participants from around the world. LAB Project partners include ICLEI, International Union for the Conservation of Nature (IUCN), IUCN’s Countdown 2010, the South African National Biodiversity Institute (SANBI) and RomaNatura.

Non-Governmental Organizations

There are a range of non-governmental organizations actively engaged with the issues surrounding wetlands and urbanization. The Ramsar Convention works closely with its five International Organization Partners (IOPs): Wetlands International, IUCN, Birdlife International, the International Water Management Institute (IMWI) and WWF. The IOPs provide invaluable support for the work of the Convention at global, regional, national, and local levels, chiefly by providing expert technical advice, field level implementation assistance, and financial support, both from their headquarters units and from their national and regional offices and affiliates and from their expert networks.

In addition to the five IOPs there exists a multitude of national and international NGOs working tirelessly to deliver on wetland conservation objectives. Similarly there are innumerable aid related NGOs striving to combat the issues faced by urban communities around the globe.