



## 11<sup>th</sup> Meeting of the Conference of the Parties to the Convention on Wetlands (Ramsar, Iran, 1971)

*“Wetlands: home and destination”*

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### **Background and context to the development of principles and guidance for the planning and management of urban and peri- urban wetlands (COP11 DR11)**

**Information paper prepared by the Scientific and Technical Review Panel**

#### **1. The urbanizing world and its impacts on wetland environments**

1. The fates of urban human populations and wetlands have been linked since the dawn of civilisation. The establishment and prosperity of the earliest towns and cities in the cradle of civilisation in Mesopotamia were dependent on wetlands of the Tigris and the Euphrates and the benefits they provided. Since the establishment of early urban centres some five millennia ago, most humans have remained predominantly occupants of rural areas. However, this situation has changed markedly in the past few years.
2. 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 rates up to almost 4% per annum, with the rate of increase in urban populations being greatest in the least developed nations. Some estimates have suggested that by 2030 80% of the human population will dwell in urban areas. And whilst cities currently only occupy 2% of the Earth's surface, they use 75% of the world's natural resources and generate 70% of all the waste produced globally.
3. As they expand and develop, 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 focus for the human population, attracting more and more people and generating an ever increasing proportion of Gross Domestic Product (GDP).
4. 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. That is approximately twice the size of the UK, and roughly the same size as Spain (BFF, 2002).

5. As a result of their expansion and management, 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 only locally significant. Other impacts will be chronic, extend well beyond municipal boundaries and leave an almost indeterminate legacy. The knowledge that urbanization can have direct and indirect impacts on the environment, and that wetlands are particularly susceptible to negative change, has long been recognized (Darnell, 1976; Maltby, 1986). Despite this, however, progressive urbanization continues to destroy and degrade natural capital and wetlands in particular.
6. 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, but the destruction of mangroves and wetlands has reduced the flood storage capacity of the land, resulting in increased frequency of 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.
7. 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 in 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, as well as 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. Despite acting as catalysts for economic and social development, ecological footprints of cities extend over considerable distances, covering areas considerably greater than the geographical extent of cities themselves, and are fundamentally unsustainable (Kareiva *et al.*, 2007).
8. The aquatic environment, too, 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).
9. Often indirect impacts can result in downstream problems. Eutrophication, caused by excessive concentrations of nutrients, can be damaging to some aquatic life, for instance resulting in the loss of fish species. 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 consequently the in-stream habitats vital for a range of animals and plants (Keddy, 1983; Booth and Jackson, 1997; White and Greer, 2006).

10. The extent 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 can frequently accelerate 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 have detrimental impacts on wildfowl and other animal populations (Lannas and Turpie, 2009).
11. Understanding the relationship between water and cities is crucial. Cities can generate immense 'water footprints' through a range of consumptive and non-consumptive activities. The unsustainable planning and subsequent use of water resources to support urban populations can have significant impacts on wetlands and the biodiversity they support far beyond the peri-urban environment.
12. Differences in water footprints depend primarily on four factors:
  - i) the total volume of water consumption, which is generally related to gross national income of an area;
  - ii) water-intensive consumption patterns, such as areas where the population consumes a high proportion of meat in their diet<sup>1</sup>;
  - 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, such 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.

## **2. The role of the Ramsar Convention for the wise use of urban and peri-urban wetlands**

13. Wetlands are highly diverse and support a great diversity of life. It is well documented that wetlands have progressively been lost and degraded due to human activities for thousands of years. They are now recognized as being lost at a rate that is greater than for any other type of ecosystem (Millennium Ecosystem Assessment, 2005). Impacts associated with urban expansion represent one of the key drivers of change in that regard.

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<sup>1</sup> It has been estimated that an average of approximately 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.

14. 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, 2010). 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).
  15. It is also clear that whilst humanity is becoming increasingly urban, the quality of urban life is still dependent on ‘nature’, particularly on global ecosystem services (Bolund and Hunhammar, 1999).
  16. 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 of the importance of managing and restoring urban wetlands (Tong *et al.*, 2007), society still pursues resource exploitation rather than embracing resource interdependence (Everard, 2008).
  17. With increasingly rapid urbanization, wetlands are being threatened in two principle ways:
    - i) 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
    - ii) through the watershed-related impacts of urban development, including increased demands for water, increased diffuse and point source pollution, the need for greater agricultural production, demands on the extractive industries to supply materials to support the development of urban infrastructure, and the water requirements of energy production to support the burgeoning urban population.
  18. 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.
- 3. Mandate and process for the development of the “Principles and guidance for the planning and management of urban and peri-urban wetlands” (COP11 DR11)**
19. Ramsar’s 10<sup>th</sup> meeting of the Conference of the Contracting Parties (COP10) in 2008 recognized that wetlands in urban and peri-urban areas can provide a range of important ecosystem services. The Contracting Parties at COP10 were also concerned that in many

countries wetlands are increasingly becoming degraded as a result of urbanization. The Parties at COP10 adopted Resolution X.27 on *Wetlands and urbanization* which *inter alia* called on the Convention's Scientific and Technical Review Panel (STRP) to prepare guidelines for managing urban and peri-urban wetlands, in accordance with an ecosystem approach, taking into account issues such as climate change, ecosystem services, food production, human health and livelihoods. Resolution X.27 also:

[INVITED] 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.

20. In November 2009 an Expert Workshop was held in Naivasha, Kenya, hosted by UN HABITAT and co-supported by the Ramsar Convention, to initiate the development of guidance on urban development, biodiversity and wetland management. Bringing together experts on city management and urban planning, city mayors, and wetland social and environmental scientists from Africa, Asia, South America and Europe, the workshop reviewed the main issues relating to urbanization and wetlands, identified key issues, and offered recommendations. The information derived from this workshop has been summarised in a report (McInnes, 2010<sup>2</sup>) and used to inform this Information Paper and Draft Resolution 11 for COP11.
21. A follow-up workshop was held in Gland during the STRP Mid-Term Workshops in February 2010 which brought together some of the participants in the Naivasha workshop and STRP members. It focussed on developing and refining overarching principles which would guide subsequent development of guidance for sustainable cities and the wise use of wetlands.
22. There has been ongoing liaison with key partners since the February 2010 workshop, including *inter alia* UN HABITAT, the CBD Secretariat, ICLEI – Local Governments for Sustainability, and STRP representatives from the International Organization Partners, to investigate future synergies and opportunities. This has included taking an active role in side events during the CBD COP10 in Nagoya in November 2010 and contributing to the Nagoya/Declaration on Cities and Biodiversity, which charged the Governor of Aichi Prefecture and the Major of Nagoya to present this key statement at the High Level Segment of CBD COP10 for consideration by all the parties<sup>3</sup>.
23. In November 2010 a workshop of the STRP National Focal Points (NFPs) for the Africa Region was held in Johannesburg, South Africa. Attended by almost 50 participants, this provided a forum for STRP NFPs to advise the STRP itself on issues concerning urban and peri-urban wetlands that would benefit from additional scientific and technical guidance. A special working session focused on wetlands and urbanization, and the outcomes from that session have been used to develop the content of the principles and

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<sup>2</sup> See [www.unhabitat.org/downloads/docs/ExpertWorkshopWetlands.pdf](http://www.unhabitat.org/downloads/docs/ExpertWorkshopWetlands.pdf)

<sup>3</sup> See [www.cop10.jp/citysummit/english/images/top/declaration.pdf](http://www.cop10.jp/citysummit/english/images/top/declaration.pdf)

guidance provided in Draft Resolution 11; they are available in full in the workshop report<sup>4</sup>.

#### 4. Ongoing collaboration between Ramsar and UN HABITAT

24. In following up the initial collaborative work described above, UN HABITAT has undertaken a project on *Urban Biodiversity, Wetlands and Ecosystem-based Adaptation in Cities*, which consolidates work in this area and develops a strategy to facilitate UN HABITAT in optimising its comparative advantage in the field to improve the interface between ecosystems and urbanization.
25. Members of the Ramsar STRP have worked closely with UN HABITAT to identify synergies between their work and the development and implementation of Ramsar principles and guidance for the planning and management of urban and peri-urban wetlands.
26. Additional opportunities aimed at implementing outcomes from UN HABITAT's work and effecting change on the ground are being pursued through the Ramsar Secretariat's Senior Regional Advisors. Opportunities are also being sought to extend collaboration on urban wetlands with the International Organization Partners and other organizations such as ICLEI.

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<sup>4</sup> The full report is available at [www.wrc.org.za/Pages/DisplayItem.aspx?ItemID=8920&FromURL=%2fPages%2fKH\\_AdvancedSearch.aspx%3fk%3dramsar%26start%3d1%26o%3d1%26as%3d1](http://www.wrc.org.za/Pages/DisplayItem.aspx?ItemID=8920&FromURL=%2fPages%2fKH_AdvancedSearch.aspx%3fk%3dramsar%26start%3d1%26o%3d1%26as%3d1).

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