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| Committee: | ENVIRONMENTAL COMMISSION |
| Issue: | The question of conservation and restoration of ecosystems in urban areas |
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| Position: | Co-chair of environmental commission |

Introduction

For the first time in the history of Homo sapiens, we are primarily an urban species — more than half of us live in cities or towns. More than 80% of the population living in urban areas in the United States. Many cities continue to expand in the developed world, driven by population growth and a shift to lower-density living. The real dramatic growth in cities, however, will come as the rest of the world catches up with the United States and Europe. “It is predicted, by 2050, the world’s urban population will swell by almost 3 billion, an unprecedented rate of urban construction that is the equivalent of building a city the size of Washington, DC every three days.”¹

The fate of cities depends on nature. Cities are dependent on a flow of ecosystem services from their countryside: food, clean water and clean air are a few among many. As well as that, a growing body of evidence suggests that having a little bit of nature inside cities, in the form of parks or street trees, reduces stress, obesity, and improves residents’ happiness and mental well-being.

Many landscape features that increase livability for people can also play an important role in sustaining native wildlife populations. While urban development can separate larger habitat areas, urban areas can contain key natural areas and features that offer significant benefits to wildlife. The role for urban ecosystems in wildlife conservation has become increasingly recognized in recent decades. Public green spaces set aside in urban areas engage people in nature and enable residents to enjoy the outdoors where they live and work. This builds an awareness of habitat conservation and restoration actions that they can see every day.

The fate of nature and the conservation movement depends on what happens in cities: for example, the types of ecosystem services demanded by urban dwellers will affect how rural landowners use their land. The remnant pieces of wild nature left on the globe, the last great places, will only continue to exist if millions of people in cities want them to.

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<https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

Definition of Key Terms

Aichi Biodiversity Targets: Part of the updated Strategic Plan for Biodiversity for the 2011-2020 period that serves to provide an overarching framework on biodiversity, not only for the biodiversity-related conventions, but also for the entire United Nations system and all other partners engaged in biodiversity management and policy development.

2030 Agenda for Sustainable Development: A plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom, and includes points on ecosystem conservation and restoration in urban areas.

Ecosystem: A biological community of interacting organisms and their physical environment.

Ecosystem management: Ecosystem management is a process that aims to conserve major ecological services and restore natural resources while meeting the socioeconomic, political and cultural needs of current and future generations.

United Nations Environment Program (UNEP): “The global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system, and serves as an authoritative advocate for the global environment.”

Urban areas: Areas with high population density and infrastructure of a built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs.

Population growth: The increase in the number of individuals in a population. Global human population growth amounts to around 83 million annually, or 1.1% per year.

Urban environment: The intersection and overlay of the natural environment, the built environment and the socioeconomic environment.

Green infrastructure (GI): The network of natural and semi-natural areas, features and green spaces in rural and urban, and terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services.

Background Context

Major population growth has occurred in the last two centuries, the global population growing from 1 billion in 1800 to 7.616 billion in 2018. With this growth comes an expansion of urban areas into rural, taking over habitats and ecosystems in the process. “Currently, urban areas cover around 2% of the planet’s land area, but by 2030, they could stretch to almost 10% of the world's land surface. That means losing some 1.2 million square kilometres of other landscapes to urban construction alone,

many of them rich in biodiversity. The Amazon, for example, is currently experiencing Brazil's most rapid rate of urbanisation and is already home to 25 million people." As well as that, rural areas are being used for farming, to keep up with the growing demand for food and resources by people. In China, for example, the population has increased rapidly, and with that, the rise of metropolises. These 'megacities' occupy and continue to grow into natural habitats to accommodate for the rising number of people. "The ecological situation is terrible," admits Xu Jun of the Ministry of Science and Technology. More than a quarter of China's grasslands, for instance, have been lost to farming and mining activities in the past decade, and 90% of the country's remaining 4 million square kilometres of grassland is in poor health.

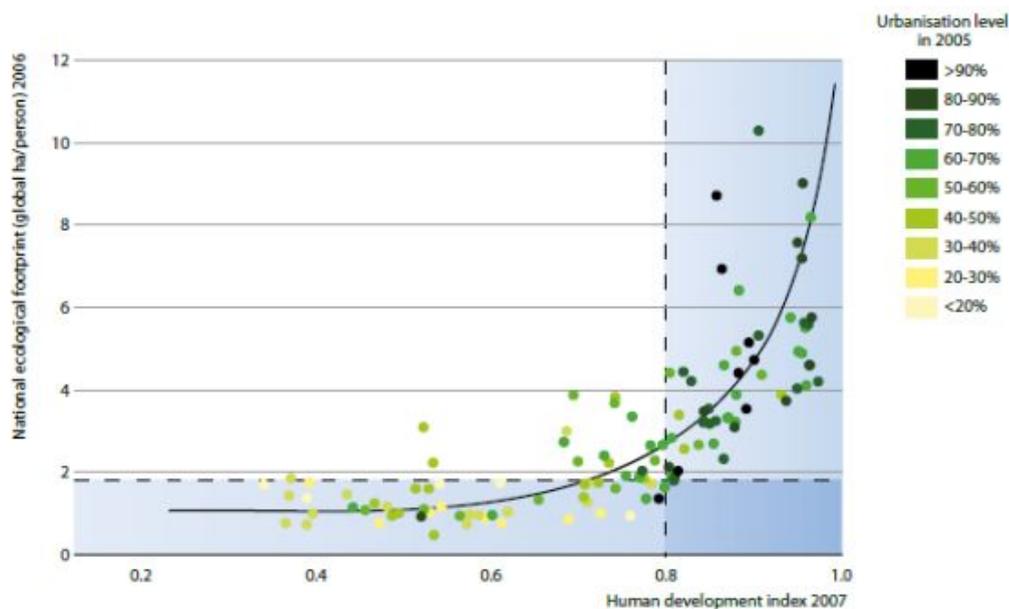


Figure 1: Ecological Footprint by Urbanization Levels of Countries (Source Green Economy Report Cities Chapter, 2011)

Impacts of population growth and urban expansion

Water

According to UN-Water, 75% of planet Earth is covered in water. 97.5% of that is ocean and 2.5% is freshwater. 70% of freshwater is divided into glaciers and ice caps and the remaining 30% into land surface water, such as rivers, lakes, ponds and groundwater. Most of the freshwater resources are either unreachable or too polluted, leaving less than 1% of the world's freshwater, or about 0.003% of all water on Earth, readily accessible for direct human use.

According to the Global Outlook for Water Resources to the Year 2025, it is estimated that by 2025, more than half of the world population will be facing water-based vulnerability and human demand for water will account for 70% of all available freshwater. Furthermore, a report in November 2009 by the 2030 Water Resources Group suggests that by 2030, in some developing regions in the world, water demand will exceed supply by 50% and a report jointly produced by more than two

dozen U.N. bodies states that, "By 2030, nearly half of the world's people will be living in areas of acute water shortage."

The planet is in the midst of what the United Nations is calling a "Global Water Crisis." Freshwater is the most fundamental finite resource with no substitutes for most uses, yet we are consuming fresh water at least 10 times faster than it is being replenished in regions of northern Africa, the Middle East, India, Pakistan, China, and the U.S.. According to the World Resources Institute, "Freshwater ecosystems – the diverse communities found in lakes, rivers, and wetlands – may be the most endangered of all. Freshwater ecosystems have lost a greater proportion of their species and habitat than ecosystems on land or in the oceans; in addition, they are probably in greater danger of further losses from dams, pollution, overfishing, and other threats. In extent, freshwater ecosystems are quite limited, covering only about 1 percent of the Earth's surface. Yet, they are highly diverse and contain a disproportionately large number of the world's species." As human populations grow, so will the problem of clean freshwater availability."

Lower Life Expectancy in the Fastest Growing Countries

According to a Harvard study, "Over the next forty years, nearly all (97%) of the 2.3 billion projected increase will be in the less developed regions, with nearly half (49%) in Africa." Already strained with relentless population explosion, many developing countries, such as in Sub Saharan Africa and Southern Asia, will experience a degradation of their quality and length of life as they face increasing difficulties to supply water, food, energy and housing to their growing populations, which will have major repercussions for public health, security measures and economic growth. These situations are especially dire for populations in Uganda, Nigeria, and Bangladesh, which will double and, in some cases, even triple over the next 40 years.

Depletion of Natural Resources

As the human population continues to explode, finite natural resources, such as fossil fuels, fresh water, arable land, coral reefs and frontier forests, continue to plummet, which is placing competitive stress on the basic life sustaining resources and leading to a diminished quality of life. A study by the UNEP Global Environment Outlook, which involves 1,400 scientists and five years worth of work to prepare, found that "Human consumption had far outstripped available resources. Each person on Earth now requires a third more land to supply his or her needs than the planet can supply." Furthermore, the Millennium Ecosystem Assessment, which is a four-year research effort by 1,360 of the world's leading scientists commissioned to measure the actual value of natural resources to humans and the world, concluded that the structure of the world's ecosystems changed more rapidly in the second half of the twentieth century than at any time in recorded human history, and virtually all of Earth's ecosystems have now been significantly transformed through human actions.

Increased Habitat Loss

Human overpopulation is a major driving force behind the loss of ecosystems, such as rainforests, coral reefs, wetlands and Arctic ice. Rainforests once covered 14% of the Earth's land surface, now they cover a bare 6% and experts estimate that the last remaining rainforests could be consumed in less than 40 years and certainly by the end of the century at the current rate of deforestation.

Due mainly to warming temperatures, acidifying oceans and pollution, close to 30% of the ocean's reefs have already vanished since 1980, including half of the reefs in the Caribbean and 90%

of the Philippines' coral reefs, and scientists forecast that Australia's Great Barrier Reef may be dead by the year 2050 and all coral reefs could be gone by the end of the century. Furthermore, the area of permanent ice cover is now declining at a rate of 11.5% per decade, relative to the 1979 to 2000 average. If this trend continues, summers in the Arctic could become ice-free in as few as 4 years or in the next 30 years. Wetlands are increasingly under threat in the United States, but also all over the world. In the U.S., less than half of original wetlands remain with 53% being lost, which is about 104 million acres. In Europe, between 60% and 70% of wetlands have been completely destroyed. As human populations continue to grow, so will our footprint on the interconnected, ecological infrastructures of life.

Timeline of Key Events

| Date | Description of Event |
|---------------------------------|--|
| 2000-2001 | Millennium Ecosystem Assessment - The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. |
| 13 December 2016 | 5th Global Biodiversity Summit of Cities & Subnational Governments - where new biodiversity-related initiatives were launched, announced and promoted at the Summit |
| 23 December 2016 | New Urban Agenda - Resolution adopted by the General Assembly with reference to the sustainability of urban settlements. |

Possible Solutions

Keeping varying ecosystems alive within urban settlements

Ecosystems within cities play the crucial role of exposing city-dwellers to nature, who might otherwise have little or no contact with the natural world. Studies have shown that a separation from nature leads to a dysfunctional, unsustainable lifestyle. Therefore, aside from providing services themselves, ecosystems in cities provide this educational function. Ecosystems within cities and urban areas can be used as a good platform for education on the topic. Places where the public can be educated on the importance of conserving ecosystems in growing cities can increase their awareness

and allow for further exploration into how we as a society can improve the existing environment as well as our own quality of life.

There is unfortunately a growing disconnect between our societies and our environment and this needs to be reestablished for cities to truly become part of the solution. Studies show that city-dwellers are losing touch with nature and are therefore less likely to value these ecosystem services. This is especially true in less wealthy areas and communities. For this reason, accessible natural areas within cities – and not only the larger-scale ones beyond their borders, are important. This is why many cities have recognized the need to respond to the challenge of “integrating the natural and built form to conserve ecosystem functioning” (UNEP, 2013). For the health and wellbeing of citizens, cities need to provide sufficient public green space – balanced with other types of public space and for it to be accessible to all sectors of the population.

Sustainable resource use to conserve urban ecosystems

Resource efficiency is the sustainable management and use of resources throughout their life cycle, from extraction, transport, transformation, consumption to the disposal of waste, in order to avoid scarcity and harmful environmental impacts. The ability to maintain a certain standard of living through natural resource use, despite increased pressure on those resources, is a key balance that must be struck in order to provide for a happy and healthy populace. Under different scenarios, the reduced availability of water and other ecosystem services, as compared to a sustainable management scenario, ‘business as usual’ or increasing degradation, will cost industry and economic growth prospects for the city an estimated US\$300-500 million over 25 years.

Therefore, minimizing resource extraction, energy consumption and waste generation at the same time as safeguarding ecosystem services is a key feature to resource efficiency, while separating resource use from environmental impacts and economic growth contribute to sustainable development and poverty eradication. Equally, the economic value of resource efficiency can be demonstrated by comparing the service provided by an ecosystem to a man-made alternative. For instance, on the outskirts of Kampala, Uganda, the Nakivubo Swamps provide a natural treatment and filtration service of the biological waste water from much of the city. The proposed draining of the wetland for additional agricultural land was not taken forward when an assessment of this service showed that running a sewage treatment facility with the same capacity as the swamp would cost the city around US\$2 million annually.

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