

BACKGROUND PAPER

Blue Economy *and* CITIES

UN HABITAT
FOR A BETTER URBAN FUTURE



IMPLEMENTING
THE NEW
URBAN AGENDA



BACKGROUND PAPER

Blue Economy and CITIES

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UN  **HABITAT**
FOR A BETTER URBAN FUTURE



UN-Habitat background paper on BLUE ECONOMY AND CITIES

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United Nations Human Settlements Programme (UN-Habitat)
P. O. Box 30030, 00100 Nairobi GPO KENYA
Tel: +254-020-7623120 (Central Office)
www.unhabitat.org

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Acknowledgements

Main authors: Isabel Wetzel, Thomas Chiramba

Contributors: Alex Koech, Angela Mwai, Atsushi Koresawa, Avi Sarkar, Claudio Torres, David Evans, David Thomas, Douglas Ragan, Graham Alabaster, Jeremiah Ougo, Laura Petrella, Lucy Wainaina, Michael Kinyanjui, Nao Takeuchi, Oana Baloi, Pireh Otieno, Sharmaarke Abdullahi, Susannah Price

Editor: Tom Osanjo

Design and Layout: Euclide Namema



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Key Messages



1. **The Blue Economy encompasses all waterbodies**, including the world's oceans, lakes, rivers and wetlands. Inland cities are affected as much as coastal or island cities.



2. **Cities are at the forefront of the Blue Economy.** Many urban centres are located along coasts and waterfronts around the world. Cities must recognize the value of their natural capital, including their waterbodies.



3. **Harnessing the potential of cities to benefit from the Blue Economy** – such as sustainable livelihoods, green and blue job creation, sustainable housing and infrastructure, waste management, ecological protection and restoration of coastal and waterfront areas.



4. **Integrating urban planning and marine spatial planning must be a priority for Blue Economy.** Bringing together spatial planning and integrated coastal zone management (ICZM) through the development of integrated coastal and marine spatial plans (CMSP) are therefore important steps to guide national government policy-makers, local government officials, marine protection experts and other civic stakeholders.



5. **Governance arrangements** of coastal, marine and other waterbody environments must be harmonized for better economic, social and environmental outcomes. These must go along with appropriate institutional priorities, goals, plans and actions on all levels of government.



6. **Anticipating, mitigating and adapting to the impacts of climate change** is an essential component of the Blue Economy. National and local investments in infrastructure, community resilience and environmental protection must be complemented by shared global and regional principles, strategies and priorities. Improving countries' and cities' readiness to access international climate funds will become crucial in developing a Blue Economy.





7. Resilient urban planning and design, and low-carbon plans for infrastructure and basic services are needed to promote local economic development and to protect cities from further contributing to environmental degradation – paying special attention to water management, wastewater, oceans and marine pollution.



8. Prosperity is a key driver of healthy and sustainable Blue Economies. Without the full engagement of women, youth, and other marginalized groups, these economies will not work to their optimal level.



9. Restoring and protecting coastal and other water ecosystems will be crucial for both cities – in terms of strengthening their resilience to climate-induced shocks – and oceans. Often, the most vulnerable and poorest populations that live in informal settlements are least prepared, will be most deeply affected, and take longest to recover.



10. Investments in data, science and cutting-edge technology will be critical in supporting governance prioritization, reforms and shaping management decisions to achieve sustainable 'blue' transformations.



11. More scientific research is needed to draw the linkages between cities and the Blue Economy, in terms of cities as hotspots of vulnerability, as well as drivers of sustainable development.



2.1 Defining the Blue Economy

The Blue Economy is an emerging concept which encourages better stewardship of our ocean and other blue resources. It provides for an inclusive model in which coastal zones, or those with significant waterbodies – which sometimes lack the capacity to manage their rich water resources – can begin to extend the benefit of those resources to all. The use of the term stems from the UN Conference on Sustainable Development (Rio+20) outcomes where member states pledged to “protect and restore the health, productivity and resilience of oceans and marine ecosystem to maintain their diversity, enabling their conservation and sustainable use for present and future”¹. The terms ‘Blue Economy’ or ‘Blue Growth’ have over the years become common policy usage around the world. Despite increasing high-level adoption of the Blue Economy, as a concept as well as a goal of policy-making and investment, there is still no globally accepted definition of the term.

According to the World Bank², the Blue Economy refers to the sustainable use of ocean and other water resources for economic growth, improved livelihoods and job creation. The activities that are undertaken need to provide social and economic benefits for current and future generations and should also aim at restoring, protecting, and maintaining the diversity, productivity, resilience, core functions and the intrinsic value of the marine ecosystem. Furthermore, they must be based on an economic system that emphasizes clean technologies, renewable energy, waste reduction and the recycling of materials³.

In a broader sense, the United Nations Human Settlements Programme (UN-Habitat) recognizes the limitation of only including oceans and marine issues in the concept, and proposes to expand it to an integrated and innovative approach to the economic consumption of the resources of oceans, lakes, rivers and other waterbodies. It seeks to promote economic growth, responsible production and consumption, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of ocean and coastal, as well as other waterfront areas, through the circular economy. However, recognizing the importance of oceans in the discussion on Blue Economy is crucial, as it is estimated that billions of people worldwide, especially the world’s poorest, rely on the ocean to provide jobs and food, which further underscores the urgent need to sustainably use and protect this natural resource⁴.

Table 1: A definition of the Concept of the Blue Economy

“A sustainable ocean economy emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy.”

Essentially, the Blue Economy concept is a lens by which to view and develop policy agendas that simultaneously enhance ocean health and economic growth, in a manner consistent with principles of social equity and inclusion.

(Economist Intelligence Unit, 2015)

Table 2: Blue aspects of the Green Economy

The main objectives of the Green Economy remained the same, yet with a stronger focus on marine environments. In this context it referred to *“improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities including the principle of a low-carbon economy based on resource efficiency and social inclusion, in particular in states where future resources are marine related”*

(UNEP, 2013)

¹ UNCSD (2012)

² World Bank (2016)

³ World Bank and UN-DESA (2017)

⁴ World Bank (2016)

The growing Blue Economy encompasses a multitude of traditional human activities. However, today's marine and other freshwater resources are also under severe threat by human activities and unsustainable consumption and production patterns. They can be broadly categorized as follows:

Type of activity	Related sectors	Explanation	Driver of growth
Harvesting and trade of marine resources	Fisheries: While fisheries can generate revenue for many stakeholders, there is clear inequality due to overfishing and large-scale exploitation. More conservation efforts are needed to protect and restore fish stock, and to protect the livelihoods of small-scale fishermen/fisheries.	Sustainable fisheries can be an essential component of a prosperous Blue Economy, with marine fisheries contributing more than USD 270 billion annually to global GDP. However, 31.4 per cent of fish stocks were estimated as fished at a biologically unsustainable level and therefore overfished ⁵ .	Growing demand for food and nutrition
Extraction of non-renewable resources	Extraction of goods (e.g. minerals, energy sources, freshwater generation): Oceans and other water resources are being exploited for consumption and production of materials and goods.	More and more cities around the world rely on desalination technology to purify ocean water for their use, due to a lack of natural water sources. This is still costly, but if treated sustainably could help cities' economies.	Demand for resources
Use of renewable natural resources	Renewable energy: Hydro-energy (wind, wave, tidal and offshore plants) plays a vital role in economic development around the world. It is estimated that between 1974 and 2013 the global public budget for ocean energy R&D was USD 1.6 billion ⁶ . Moreover, if ocean energy deployment was on track to reach 748 gigawatts by 2050, this could create over 160,000 jobs by 2030 ⁷ .	Efforts to combine economic and sustainable approaches have led to increased interest in offshore renewables in East Africa, where there has been a growing focus on wave energy ⁸ . Overall, East Africa is forecasted to have more than 50,000 megawatts of renewable energy generation potential by 2030 ⁹ .	Demand for energy resources

⁵ World Bank and UN-DESA (2017)

⁶ Executive Committee of the OES (2011)

⁷ World Energy Council (2016)

⁸ IUCN (2010)

⁹ <http://www.future-energy-eastafrika.com/eastafrica>



Commerce and trade in and around waterbodies	<p>Transport: Over 80 per cent of traded international goods are transported by sea and the volume of seaborne trade is expected to double by 2030 and quadruple by 2050.</p>	<p>Cities are centres of consumption and net importers of food. Much of the food is traded through ports and rivers.¹⁰</p>	<p>Transport and trade demand</p>
	<p>Tourism: Ocean and coastal tourism can bring jobs and economic growth, however if not managed sustainably can have a negative impact on marine ecosystems (e.g. resorts, water sports, cruise ships, boating, seafood consumption)¹¹.</p>	<p>Coastal Least Developed Countries (LDCs) and Small Island Development States (SIDS) receive more than 41 million visitors per year.</p>	<p>Global growth of tourism</p>
	<p>Real estate and coastal development: Other less-known and quantifiable contributions of oceans and other waterbodies are real estate values for properties along these waterbodies that are well planned and developed.</p>	<p>More research is required to determine how such investments, formal and informal, affect the Blue Economy positively or negatively, especially in the context of cities.</p>	<p>Urbanization along waterbodies</p>
Indirect, negative consequences of human activity	<p>Climate change: The impact of climate change that is causing rising sea-levels, coastal erosion, biodiversity loss, changing patterns of vital ocean currents, and acidification are staggering. Oceans are an important carbon sink and help mitigate climate change. Changes to their natural balance will have irreversible effects on our planet's ecosystems and human populations.</p>	<p>Additionally, crucial other water ecosystems such as wetlands, lakes and rivers can help buffer and protect human settlements from extreme weather events caused by climate change, yet they must be protected and maintained in a sustainable manner.</p>	<p>Increased climate change impacts</p>
	<p>Waste Management: 80 per cent of marine litter is from land-based sources.¹² Assessing the quantity and distribution of marine debris globally, there is a higher concentration of debris close to urban centres, emphasizing the need and importance of targeting land-based waste management on the local level.¹³</p>	<p>Improving waste management on land, and especially in cities that are close to waterbodies, is a necessity for protecting marine and freshwater ecosystems from harmful plastic pollution, as well as from wastewater streams that flow directly into these waterbodies.</p>	<p>Waste and water pollution</p>

¹⁰ Hoff et al. (2014)

¹¹ WWF (2015)

¹² Jambeck et al. (2015)

¹³ Willis et al. (2017), Leite et al. (2014)



2.2 Historical background

The need for a Blue Economy approach was discussed and agreed upon at the United Nations Conference on Sustainable Development (UNCSD) in 2012, also known as Rio+20 or Earth Summit. It focused on two key themes: the developing and refining of a global institutional framework for sustainable development and advancing the concept of the 'Green Economy'. During the preparatory process for the conference, many coastal countries questioned the focus of the Green Economy and its applicability to them. Some of the Small Island Developing States (SIDS) voices reflected a need to focus on a stronger position on Blue Economy issues aimed at providing better adaptation mechanisms to coastal and sea resource-based countries, which eventually resulted into the organization of the Blue Economy Summit and then the Third International SIDS Conference in 2014, as well as into the establishment of the SIDS Partnership Framework which was approved by the General Assembly shortly thereafter¹⁴. Giving more importance to this approach meant shedding light on the crucial role that oceans play for humanity and the health of our planet.

Spatial planning, integrated conservation, sustainable and efficient resource use are necessary tools and mechanisms to achieve sustainable development.

Institutional efforts were made to expand the blue aspects of the Green Economy as embodied in the "Green Economy in a Blue World" report¹⁵. Rio+20 helped member states to develop a common understanding that the world's oceans and seas require more in-depth attention and coordinated action. This also led to the development of a Sustainable Development Goal (SDG) that focuses specifically on oceans: SDG 14 that aims to "*conserve and sustainably use the oceans, seas and marine resources for sustainable development*"¹⁶, as well as to a prominent Oceans Conference¹⁷ which took place in 2017. Today, coastal and island states are at the forefront of the Blue Economy advocacy, recognizing that the approach offers solutions that are tailored to their circumstances, constraints and challenges. While many Blue Economy definitions may only include ocean and marine resources, it is obvious that without the support and considerations of other non-coastal or mainland states and other waterbodies, a sustainable and prosperous Blue Economy cannot be achieved.

Therefore, the wider definition of the Blue Economy that encompasses all other significant waterbodies – rivers, lakes and wetlands – demonstrates that at the core lies the de-coupling of socioeconomic development from environmental degradation. To attain this, the blue natural capital must be integrated into all aspects of economic activity – such as infrastructure development, trade, travel, renewable and non-renewable resource exploitation, production and consumption patterns, spatial planning, and local economic development. It demonstrates the urgency with which we need to rethink the management and use of our resources without harming our ecosystems.

The current state of marine, coastal and freshwater ecosystems indicates that further efforts are needed in the management of human activities. Spatial planning, integrated conservation, sustainable and efficient resource use are necessary tools and mechanisms to achieve sustainable development. In addition, integrated ecosystem approaches are the most effective way to tackle the above challenges. Ensuring the ecosystem-based management of human activities will on one hand allow the restoration and conservation of biodiversity and natural resources, while it will on the other hand support sustainable resource extraction and consumption. Only through ecosystem-based management can governments and communities ensure healthy oceans, marine and freshwater environments, and thereby also maintain a healthy quality of life and sustainable development.

¹⁴ Resolution A/70/202

¹⁵ UNEP, FAO, GRID-Arendal, IMO, IUCN, UNDP (2012)

¹⁶ <https://sustainabledevelopment.un.org/sdg14>

¹⁷ <https://oceanconference.un.org/>

2.3 Population trends in the Blue Economy zones

The figures for populations living near marine and freshwater ecosystems have different characteristics but show similar features. Essentially, the trends of larger agglomerations of people living near waterbodies can be found along rivers, lakes and along coastal regions, with some regional differences. While the reasons for urban dwellers living near waterbodies may have shifted, historically cities developed near waterbodies due to limited means of transporting water from source to consumption points. Proximity to a waterbody also enabled agricultural activities and trade to thrive ensuring the development of some of humanity's most recognized civilizations. Today, many modern cities and towns are located at the edge of a waterbody. As engines for economic growth and wellbeing, these cities and towns are dependent on water to support their industrial and service sectors, to sustain the health of their residents, and to improve and protect the natural environment.

Urban population in coastal zones

Coastal regions are home to a large and growing population and are facing higher environmental vulnerabilities than other regions. These vulnerabilities and declines can be deduced to many complex reasons, but are often associated with population pressures. Among the most significant other pressures are habitat conversion, land use change, pollutant levels, and the introduction of invasive species. These pressures can lead to loss of biodiversity, reduced water quality, and a threat to human health. Developing countries are particularly affected by these changes. Today, approximately 3 billion people live within 200 kilometres of a coastline, and over 40 per cent of the world's population lives within 100 kilometres of the coast¹⁸.

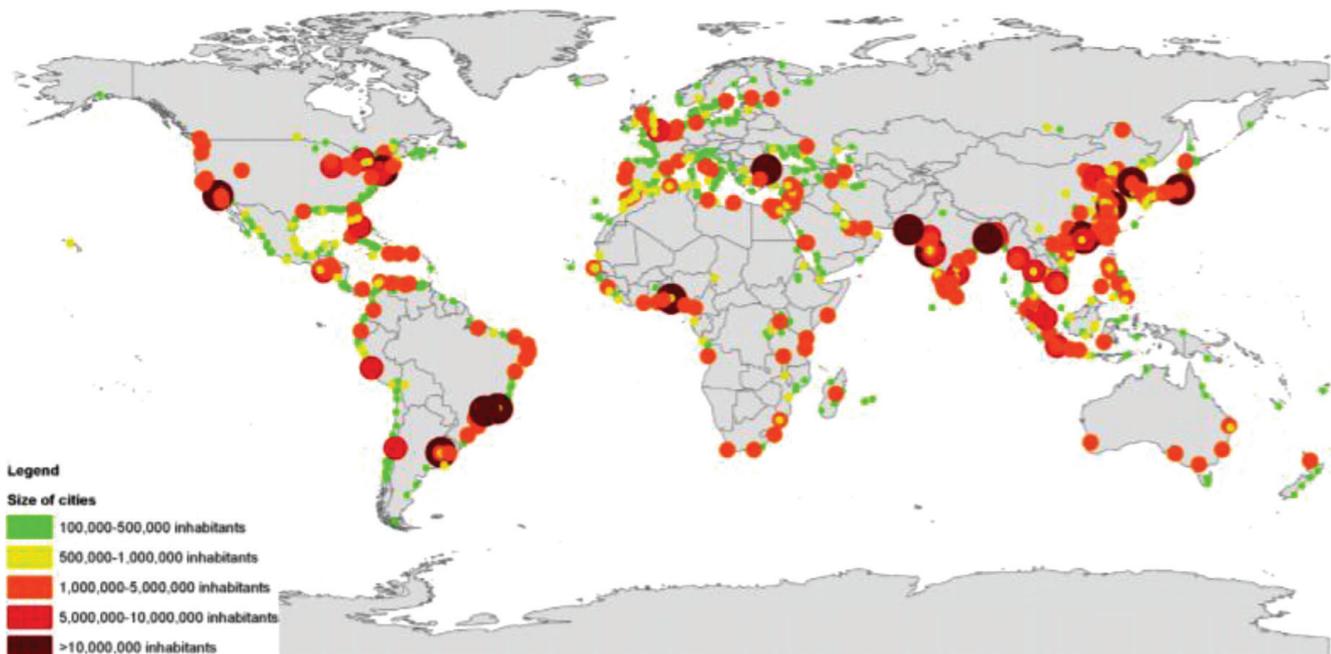


Figure 1: World map of cities with more than 100,000 inhabitants in the period 2005-2012¹⁹

¹⁸ UNDESA (2007)

¹⁹ Barragan and De Andrés (2015)

Population growth and development are critical drivers of change in coastal zones and generate a high pressure on coastal ecosystems and natural resources through increased utilization and pollution.

The current degradation and unsustainable exploitation of over 60 per cent of marine ecosystems will be further affected by population increase and the associated pressures. These include increased global trade flows, unplanned rapid urbanization, and fast growing coastal and maritime industries.

Coastal zones have historically attracted people due to their rich resources, particularly their supply of subsistence resources, as well as for logistical reasons, as they offer access points to marine trade and transport. Furthermore, they provide recreational and cultural activities: Today, approximately 80 per cent of the global tourism is coastal²⁰, and the utilization and development of coastal zones has greatly increased, undergoing tremendous socio-economic growth. However, sustainable economic progress will require coastal and waterfront cities to create the conditions that allow people to have quality jobs that stimulate the economy while not undermining environmental sustainability, tourism and social cohesion. Job opportunities and decent working conditions are also required for the whole working-age population, taking into account the need for gender equality and opportunities for youth.

Coastal areas show distinctive patterns of population structures and development: The population density is significantly higher in coastal than in non-coastal areas²¹ and there is an ongoing trend of coastal migration, which is associated with economic drivers as well as global demographic changes²². Often this is due to an intensified economic and demographic development along coastal areas that outweighs the development of the hinterlands²³. In China, for instance, the growth of coastal urban areas is three times higher than the national rate, which has been associated with the ongoing economic development and specific policies that drive coastward migration²⁴.

Most of the world's megacities are located in coastal zones²⁵ and many of these are situated in large deltas, where combinations of specific economic, geographic and historical conditions attract people and drive coastal migration²⁶. This trend, however, is not restricted to mega-deltas. It is estimated that globally, nearly all coastal ecosystems experienced net in-migration between 1970 and 2000 despite prevalent coastal hazards²⁷. Furthermore, a global meta-analysis of urban land-use change showed that urban land expansion rates in the coastal zone were significantly higher than in the non-coastal hinterland in the same period²⁸. These trends are commonly assumed to continue or to increase, making this an important scenario to consider in policy analysis²⁹. However, coastal population growth and urbanization trends are not uniform and can vary significantly between countries and regions: The highest rates of urban land conversion in the coastal zones, i.e. the increase of urban extent, occurred in China and Southwest Asia, while the lowest change took place in Europe, North America and Oceania³⁰.

Population growth and development are critical drivers of change in coastal zones and generate a high pressure on coastal ecosystems and natural resources through increased utilization and pollution³¹.

²⁰ WWF (2015)

²¹ Small and Nicholls (2003)

²² Hugo (2011)

²³ Smith (2011)

²⁴ Neumann et al. (2015)

²⁵ Brown et al (2013)

²⁶ Seto (2011)

²⁷ De Sherbinin et al. (2012)

²⁸ Seto et al. (2011)

²⁹ Nicholas (2004)

³⁰ Seto et al. (2011)

³¹ Patterson & Hardy (2008)

Coastal growth, land conversion and urbanization are also related to an increasing exposure of large numbers of people and assets to existing hazards and sea-level rise and related effects, which significantly increases levels of risk and vulnerability along coastlines and in populated deltas. This holds especially true for countries of the developing world, including small island states³². Changes in extreme coastal high-water levels due to climate change and sea-level rise and the biophysical and socio-economic consequences of such hazards could render living at the coast extremely risky.

Urban populations near freshwater sources

Traditionally, people have inhabited places with ready access to fresh water. While populations have migrated over centuries, with many of them having migrated to coastal areas, it is estimated that over 50 per cent of the world's population lives closer than 3 kilometres to a surface freshwater body, and only 10 per cent of the global population lives further than 10 kilometres away³³. In this context, fresh water includes small streams, springs, ground water sources, local surface waters such as lakes or rivers, and ephemeral water bodies such as wetlands.

In North Africa, for example, most of the population is located along the coastal zones, or along the major river, the Nile. This is because in this arid region, water bodies are scarce, thus increasing their attractiveness for human settlement, and resulting in urban areas close to them. In addition, the region contains many ancient cities where proximity to fresh water was essential for the founding of large settlements. Figure 2 shows that in the Nile Basin, the urban populations are highest near rivers and lakes, and are expected to increase significantly in all Nile Basin countries³⁴. The Nile Basin is also endowed with rich and diverse wetlands crucial for the provision of multiple ecosystem services – food, water purification and supply, climate regulation, flood control and tourism – and goods, which are beneficial to livelihoods of its citizens, economies and associated ecosystems. However, many of the wetlands are undergoing habitat degradation and loss due to multiple contributing factors: reclamation and conversion for agriculture, settlements and urbanization and invasive species. Other factors are upstream utility infrastructural development, local community over-exploitation and climate change³⁵.

Another example is that of the Yangtze River: one of the most populated and developed regions of China, the Economic Belt encompasses nine provinces and two centrally-administered municipalities – Shanghai and Chongqing. and one of the most urbanized regions of the world. Therefore, the national government set out strategies to develop the economic belt surrounding the river, with a primary focus on restoring and protecting the environment and managing its water resources³⁶. This includes flood risk management, watershed protection and restoration, among other themes.

³² IIED & UN-Habitat (forthcoming)

³³ Kummu et al. (2011)

³⁴ Nile Basin Initiative (2016)

³⁵ Nile Basin Initiative (2015)

³⁶ <https://www.adb.org/news/infographics/peoples-republic-china-support-yangtze-river-economic-belt>





Figure 2: Spatial Population Distribution in The Nile Basin

Source: A data centre in NASA's Earth Observing System Data and Information System (EOSDIS)

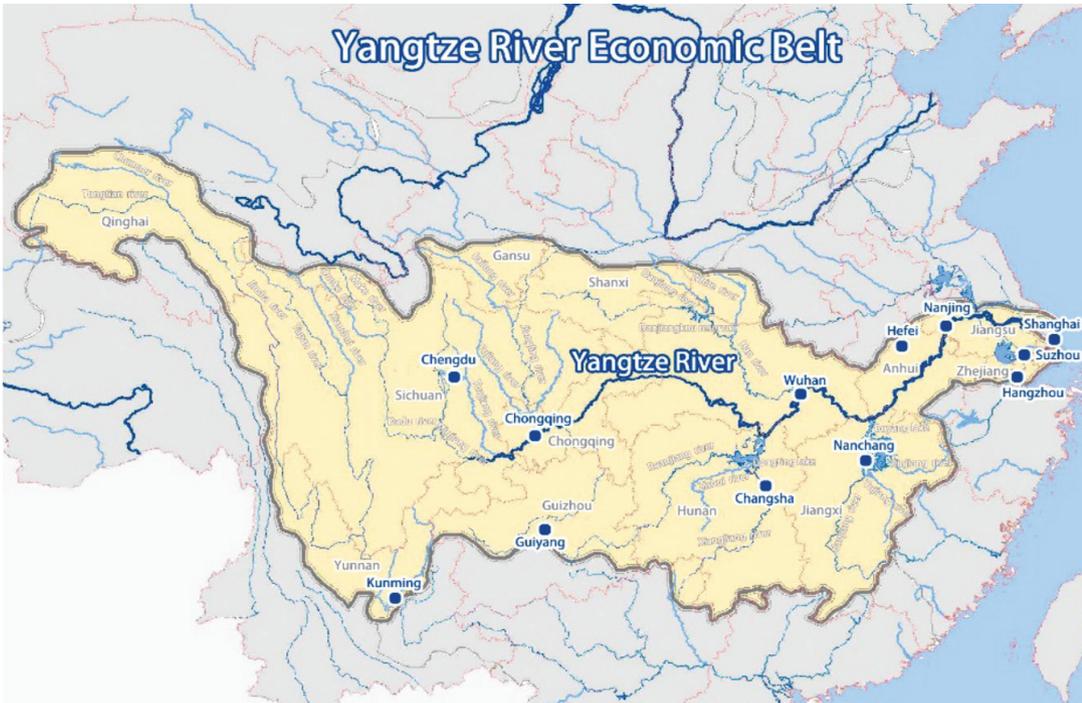
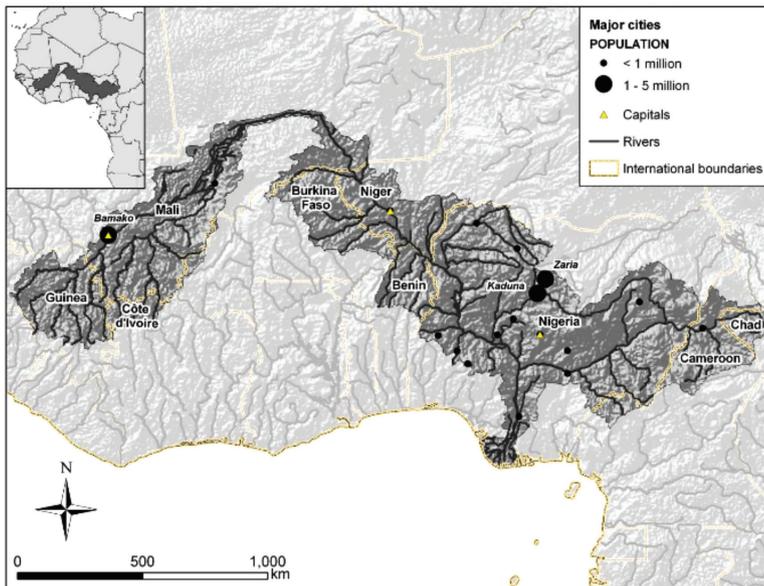


Figure 3: The Yangtze River Economic Belt

The map below also demonstrates that most of the significant cities in the region are situated along the Niger River, further proving the need for urban planning and management to be water-sensitive and transboundary in nature³⁷.



³⁷ Ogilvie et al. (2010)

Freshwater sources are crucial for sustainable urban development. As cities' populations continue to grow, so does also the total water need for adequate municipal supply³⁸. This increase in total municipal water demand is also driven by economic development, where the urban population further relies on the municipal supply rather than other sources of water. Yet, many of the world's developing cities still do not have access to safe drinking water provided by the municipal supply. There is, however, a clear linkage between economic development and per-capita water use increase, as new technologies increase residential uses of water³⁹. There is also an understanding that urbanization leads to increased water pollution through wastewater streams flowing into nearby waterbodies such as rivers or lakes. Institutional responses are needed to tackle the problem of water pollution in an integrated manner, working with other relevant stakeholders.

Furthermore, this paper also stresses that resource conservation and reuse has to be understood both from the point of view of water and solid waste. It is at the level of cities that water resources and wastewater production must be inextricably linked with planning. Profligate use of water resources through overuse and uncontrolled leakage have significant economic impacts. While this is not a priority for many water utilities for economic reasons, it is important to consider the environmental costs of such. For example, if water is lost through leakage, even after it is paid for, it means that others (most usually the poor) will be without water. The overuse of water means that more wastewater is produced while the water quality deteriorates.

2.4 Human settlements and the Blue Economy

In this section, we identify how the location of human settlements affects challenges caused by climate change. Also, we differentiate the challenges that are faced by informal settlements, which are often more severe. After this analysis, we to explore how cities can leverage the advantages offered by coasts and rivers.

2.4.1 Human settlements, coasts and rivers, and climate-induced threats

In the last decade, coastal cities have increasingly been in the spotlight of developmental and environmental challenges. On one hand, coastal areas exhibit higher rates of population growth and urbanization, while they are also exposed to more intense and of higher occurrence hazards induced by sea level rise and changing patterns of climatic conditions. On the other hand, it is important to note the relevance of other waterbodies along which cities are located globally – including rivers and lakes. Unsustainable human activity greatly causes harm and pollution to many waterbodies around the world, especially those with closest proximity to or within cities.

A Special Report of the UN Intergovernmental Panel on Climate Change (IPCC)⁴⁰ released in October 2018 warns that the earth's surface has warmed by 1°C – enough to lift oceans and unleash a crescendo of deadly storms, floods and droughts. At current levels of greenhouse gas emissions, the report projects that temperatures are likely to rise by 1.5°C between 2030 and 2052, resulting in increased climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth.

³⁸ Bradley et al. (2002)

³⁹ McDonald et al. (2011)

⁴⁰ IPCC (2018)



The sea level is projected to increase by 44 to 74 centimetres by 2100⁴¹ – a figure which is detrimental to many SIDS and coastal cities. Kiribati, a SIDS country, is situated at an average of 2 meters above sea level, so any increase in sea level will bury the island in the near future⁴². Sea level rise also results in significant coastal and sea floor erosion, loss of land, damage of infrastructure, loss of coastal capital and increase expenditure in coastal protection and recovery, all of which creates further adverse impacts on ecosystems and their restoration. It is also likely to cause significant changes in human migration patterns due to the increased flood frequency, erosion, inundation and rising water tables and food insecurity⁴³. The lack of capacity of developing countries to incorporate prevention of physical and social hazards into their development further aggravates the effects, with 8.7 million people expected to be displaced by 2050 due to sea and water level rise in Asia alone⁴⁴.

Table 3: Challenges and Opportunities for Coastal Cities and Marine Protection⁴⁵

Challenges	Opportunities
• Climate change impacts	• Aquaculture and Fisheries
• Rapid growth of urban centres	• Blue Economy opportunities
• Limited resource base	• Eco-tourism
• Little resilience and high exposure to natural disasters	• Renewable energies (especially wind and solar energy)
• Increased pollution from inland & ocean	• Biodiversity (land & water)
• Rapidly growing populations	• Ecosystem-based adaptation
• Unsustainable tourism practices without engagement from multiple sectors	• Youth employment in waste management and ocean protection
• Often underfunded and erratic urban planning practices	• Community engagement and participatory processes
• Limited resources from public sector to address coastal and marine challenges together	• Integrating urban planning and marine protection (ICZM and beyond)
• Limited opportunities for the private sector	• Coastal cities autonomy and empowerment
• Poor wastewater and solid waste management	

Floods are the most damaging and costly disasters that affect cities located on coastal areas and as cities are adopting policies and implementing strategies to increase their resilience to the new climatic conditions, new technologies and techniques are being developed. Water and wastewater treatment infrastructure, improved water transport systems sustainable drainage systems must accommodate an increased precipitation and diminish the pollution levels of the waters draining in oceans and seas. In the absence of adaptive infrastructure, coastal communities are at risk of waterborne diseases, loss of assets but also loss of economic opportunities that have been traditional drivers of development. Investments in improving and upgrading public works such as water and wastewater management, roads infrastructure, and sanitation are crucial for accessing Blue Economy opportunities.

It is noteworthy that many in-land cities located along rivers are also increasingly affected by severe floods. Often, global climate-induced weather changes and the increase of severe storms cause inland cities to flood, having detrimental impacts on the urban infrastructure. While many cities have altered

⁴¹ Church et al. (2013)

⁴² UN-Habitat (2015)

⁴³ Perch-Nielsen (2004)

⁴⁴ ADB (2017)

⁴⁵ UN-Habitat (2015), derived from UN-OHRLLS (2011)

the natural course of rivers in its infrastructure development, they have not always considered the effects on the natural ecosystems. It is crucial for cities to understand the natural flow of its rivers, and to prevent the worst impacts of flooding caused by rains through dikes or dams, if needed. Furthermore, appropriate drainage infrastructure and pollution control remain crucial assets in a city's river management.

2.4.2 Informal settlements and vulnerability in Blue Economy zones

Over one billion urban dwellers currently live in poor quality housing, such as tenements, cheap structures, and illegal or informal settlements. These people include a large part of the population whose homes and livelihoods are most at risk from climate change⁴⁶. While the linkage between climate change and cities has been clearly understood⁴⁷, the climate-induced impacts of unsustainable human activities globally will be most severe in coastal and island cities. The adverse impacts of extreme events associated with climate change could affect areas with large informal settlements and other vulnerable urban populations⁴⁸. Poor communities are disproportionately negatively affected for several reasons⁴⁹:

Over one billion urban dwellers currently live in poor quality housing, such as tenements, cheap structures, and illegal or informal settlements.

- The physical location of slums or informal settlements is often on environmentally-fragile locations such as steep slopes, floodplains, coastal shores and river banks. These areas have a high exposure to climatic hazards such as flooding and landslides.
- The socio-economic characteristics of the residents, such as high levels of poverty and illiteracy, mean that these communities have low capacity to deal with shocks and stressors from climate-related disasters. Typically, the worst affected are women and children.
- The political and institutional marginalization of these neighbourhoods, stemming from non-recognition of informal settlements as part of the larger city fabric, often results in the absence of meaningful risk-reducing infrastructure such as storm water drains, proper roads, bridges, and water and sanitation facilities – thereby further reducing the climate resilience of marginalized neighbourhoods and their residents. This marginalization also results in an absence of information, where residents are not involved in response planning, early warning systems or disaster management.

Table 4 outlines how residents of informal settlements may feel the impacts of climate change – and different population groups within informal settlements may be affected in different ways. It is noteworthy that residents of informal settlements are not heterogenous – and that there are differences between households across a settlement and individuals within households. Within a household, age, (dis)ability and health, and gender, are major determining factors of how vulnerable a person will be to a specific climatic impact⁵⁰. More research is needed to explore the issue of urban environmental justice in the context of low-income populations living along waterbodies, but there are many substantial case studies from around the world showcasing the vulnerability that these populations face, in terms of housing, access to services, livelihoods generation, safety and more.

⁴⁶ Huq et al. (2007)

⁴⁷ UN-Habitat (2011); IPCC (2018)

⁴⁸ IPCC (2018)

⁴⁹ IIED & UN-Habitat (forthcoming)

⁵⁰ Ibid.



Table 4: Likely impacts from climate change on (coastal) urban populations living in informal settlements and working in the informal economy⁵¹

Projected changes	Examples of likely impacts	Implications for residents of informal settlements and people working in the informal economy	Possible measures to adapt
Sea-level rise	Coastal erosion, land loss, more floods from storm surges; hundreds of millions of urban dwellers living in low elevation coastal zones	Many informal settlements close to the sea with poor quality housing and lacking drainage infrastructure	Raise awareness of storm surges; construct protective infrastructure or explore relocation in a participatory manner.
More intense precipitation events and riverine floods	Increased flood, landslide, avalanche and mudslide damage resulting in injury and loss of life, loss of property and damage to infrastructure. Increased flood run-off often brings contamination to water supplies and outbreaks of water-borne diseases	Many informal settlements concentrated on sites most at risk of flooding with poor quality housing less able to withstand flooding and a lack of risk-reducing infrastructure. Homes, possessions and income-generating assets are not covered by any public or private insurance. Transport infrastructure damaged affected workers.	Building and infrastructure designs that incorporate flood and landslide resilience; improve drainage infrastructure locally and city flood management practices and systems; innovate to identify suitable disaster insurance products.

2.4.3 Harnessing economic and environmental opportunities of cities in the Blue Economy

Despite major challenges for the coastal communities, the seas and oceans are at the centre of economic activity providing livelihoods and economic opportunities in both urban and rural settings. The main priority today is harnessing the potential of the Blue Economy to boost economic activity and improve living standards. When adequately planned and managed, coastal cities play a vital role in the Blue Economy. About 80 per cent of global tourism is placed on the coast⁵², and cruise ships are a substantive sector of the leisure travel industry. In a globalizing economy with international trade agreements, rising trade flows are expected. As shipping will grow dramatically over the coming decades, and much of which is channelled through coastal cities, the planning for spatial and economic development of coastal areas – including planning considerations for the waterbodies – is crucial, especially in view of enhancing sustainable development and reducing the negative footprint on natural resources and ecosystems.

However, the realization of the full potential of the Blue Economy will also require the effective inclusion of marginalized groups such as women, youth, local communities and underrepresented groups who often face additional barriers when it comes to economic opportunities in coastal cities. The case of women is telling. In various Blue Economy sectors, women are directly and heavily involved. In small-scale and industrial fisheries, women's most prominent role is in post-harvest activities, such as processing and marketing. In West Africa, as much as 80 percent of seafood is marketed by women⁵³. However, much of women's contribution to fisheries is considered "invisible". Gender discrimination stems from the low value attached to the work carried out by women and is perpetuated in their limited access to credit, processing technology, storage facilities, and training⁵⁴.

⁵¹ Adapted from Satterthwaite et al. (2018)

⁵² WWF (2015)

⁵³ FAO (2012)

⁵⁴ FAO (2009)

Of equal relevance is the case of youth. Africa faces a huge demographic challenge in the large and increasing percentage of young people under the age of 30. In addition, many youth do not wish to pursue rural livelihoods in their home areas and instead travel to rapidly expanding cities. In order to participate in the benefits of the Blue Economy, these youth will need education, training, and job opportunities. Their effective labour force participation, however, could be the engine that drives the Blue Economy of the future.

The UN-Habitat Urban Youth Fund supports alternative jobs for young fisherwomen in slums in Karachi, Pakistan

The Participatory Development Initiatives (PDI), a youth-led non-governmental organization, was supported by UN-Habitat's Urban Youth Fund to develop an alternative livelihoods training programme for fisherwomen in Haji Noor Muhammad Goth slum, a community of fisher folk on the coast of Karachi.

Overfishing, environmental pollution, unsustainable urbanisation and industrial activities have severely limited fishing and its related activities as the primary source of income of these fisher communities. Traditionally, women in Pakistan and globally represent the majority in secondary activities related to marine fisheries such as fish processing and marketing. For example, fisherwomen in Karachi are employed peeling shrimp for the local fish processing companies. On average the company would pay a women 50 rupees (USD 0.37) for every 15-kilogram bucket full of shrimp. In one day, she would make approximately 500 rupees (USD 3.70), enough to put food on the table.

With the fishing industry not providing this financial support to women such as 32-year-old Hajra, a mother of four and resident of Haji Noor Muhammad slum, these women have looked for alternative work to supplement their income.

"I know I am no longer a young girl," Hajra states, "but I was a young girl once and have wanted to do so much in life but never got the opportunity to do it. That is what I want for the girls now, to provide them with what I could not have. I would do anything that can help make their lives better".

For young women and youth in general, fishing as an alternative livelihood is inherited from their parents. UN-Habitat and PDI partnered with the community to establish a Young Fisherwomen Associations (YFAs) and train the women in marketing fishing products. Around 300 young women have now joined the YFAs. Yet, this was found to be insufficient, and so young women have had to depend on other skills such as embroidery and poultry farming for their livelihoods. PDI, with the support of UN-Habitat, set up Sughar (meaning skilled and confident woman) Centres inside the slums to train young women in traditional fashion design. Over 100 young women have since benefited from the sewing and embroidery initiative depend more on embroidery and poultry farming for their livelihoods.

Through the support of PDI and UN-Habitat, dual streams of income have been supported and created which assures the health and viability of the fisher communities.



Sound water management in cities will be increasingly important, as many cities face issues of pollution, water scarcity, flooding and other risks associated with unsustainable human activities. Hydrological cycles provide a solution to break unsustainable patterns, by looking at a system of water circulation comprising natural water cycles of evaporation, precipitation, storage, percolation, and runoff as well as artificial water flows in water supply systems and sewerage systems. This is an opportunity for local governments to steer investments towards water management, which benefits not only the citizens but many associated industries.

Various Challenges

- Decrease in river water flow at ordinary times
- Increase in river runoff at times of rain
- Decline in capacity of stable supply at water supply facilities
- Deterioration of water quality
- Depletion of spring water
- Ground subsidence



Sound Hydrological Cycles

- Secure safe and tasty water
- Reduce urban flood damage
- Maintain river flow at ordinary times
- Alleviate damage by water shortage
- Mitigate the heat island effect

Large scale investments are needed to develop, upgrade, and renew resilient port infrastructure along urban waterfronts. Many new ports are constructed in cities around the world (for instance Berbere in Somaliland, Dakar in Senegal, and Lamu in Kenya), but little attention has been paid to reducing their environmental impacts. Without the support of environmental groups, such developments could seriously jeopardize the resilience and sustainability of our planet. Therefore, it is crucial that cities, as well as large-scale investments in infrastructure that are in proximity to cities, are built on green and sustainable principles that help to increase resilience and reduce risks.

Deep water operations for offshore oil and gas extraction, as well as new forms of offshore energy such as offshore wind power, tidal and wave power offer durable and less polluting alternatives for our future needs and contribute to the Blue Economy. A growing investment trend in offshore energy production also impacts the spatial development both on land and the sea.

Innovations in coastal food security that are built on the protection of ecosystems are also setting the stage for a sustainable approach linking oceans with hinterlands, and thereby bridging the rural-urban divide. Therefore, food security also requires Blue Economy solutions such as water surface allocation to fishermen, improvements in transport, storage and commercialization of marine-based food products.

Sound water management in cities will be increasingly important, as many cities face issues of pollution, water scarcity, flooding and other risks associated with unsustainable human activities.



The damages caused by cyclones, severe storms and other extreme weather events are increasing at an alarming rate and will require fast and effective solutions to resilience, recovery and reconstruction. Building resilient housing for the urban populations, especially those located near waterbodies, will become increasingly urgent. Three examples in different settings highlight this issue:

Caribbean region	Singapore	Kathmandu, Nepal
<p>Tropical cyclones and riverine flooding represent the dominant disaster type, accounting for 264 (71.4 per cent) and 59 (15.9 per cent) respectively of the occurrences between 1960 and 2013. Cyclones also account for 94.5 per cent of the damages since 1960, making them the most significant natural hazards for the Caribbean in both occurrences and damages⁵⁵.</p>	<p>About 30 per cent of Singapore's land is under five meters above the sea level. The country will need an annual investment of up to USD 5 million by 2050 to protect its coasts⁵⁶, reducing the investments that would normally have been spent planning for new developments led by increased urbanization and trade and upgrading current infrastructure.</p>	<p>In Kathmandu, a city of over one million people located in the Himalayas, low-income settlements are growing rapidly. Most are located along the banks of its three rivers on steep slopes. About 25 per cent of the households get flooded due to inadequate drainage, when water levels rise during monsoon season. The storm-water and sewage network operates only at 40 per cent capacity⁵⁷.</p>

2.5 The United Nations and the Blue Economy

There are several United Nations agencies, conventions, conferences and bodies that have been formed in the past few decades that deal with various issues around oceans, seas and waterbodies. Noteworthy, a few of them have been steering discussions on how to grow an economy based on the waterbodies, while also protecting them from unsustainable resource extraction, pollution and other issues of environmental degradation. In Table 5, you see a summary of the most important conventions, plans and significant events. For instance, in 2018 the Nairobi Convention has recognized the role that UN-Habitat can play in protecting the marine environment in the West Indian Ocean through targeted urban coastal policies and interventions, adopting two resolutions on this matter during its Ninth Convention of Parties⁵⁸.

⁵⁵ Burgess et al. (2018)

⁵⁶ Ng & Mendelsohn (2005)

⁵⁷ World Bank (2012)

⁵⁸ <https://www.unenvironment.org/nairobiconvention/events/ninth-conference-parties-nairobi-convention>



Table 5: Significant water-related conventions, plans, actions and events by the United Nations

Host UN Agency	Name of Convention / Plan	Start / effectiveness date	Signatories	Region
UNESCO	Ramsar Convention on Wetlands of International Importance	1971 (signed), 1975 (effective)	169	Global
UN Environment (hosts 7)	UN Regional Seas and Action Plans (18 total)	1974	143	Regional
Under the Regional Seas programme	Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention)	1980 (signed), 1982 (effective)	24	Regional
Under the Regional Seas programme	Convention for the Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention)	1981 (signed), 1984 (effective)	22	Regional
Under the Regional Seas programme	Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)	1976 (signed), 1995 (effective)	22	Regional
Under the Regional Seas programme	Protection of the Marine Environment and Coastal Area of the South-East Pacific (Lima Convention)	1981 (signed), 1986 (effective)	5	Regional
N/A	United Nations Convention on the Law of the Sea (UNCLOS)	1982 (signed), 1994 (effective)	157	Global
Under the Regional Seas programme	Convention for the Development, Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (Nairobi Convention)	1985 (signed), 1996 (effective)	10	Regional
Under the Regional Seas programme	Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention)	1986	24	Regional
Under the Regional Seas programme	Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) (there were two predecessors, the Oslo and Paris Conventions)	1992	15	Regional
UN Environment	Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities	1995	108	Global
Convention on Biological Diversity (CBD)	Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coast Biological Diversity (Jakarta Mandate)	1995	180	Global
All	Sustainable Development Goal 14 on Oceans	2015	All member states	Global
All	First United Nations Oceans Conference	2017	N/A	Global
N/A	UN Secretary-General's Special Envoy for the Ocean	2017	N/A	Global



2.5.1 The Agenda 2030 for Sustainable Development

Oceans, seas and marine resources are central to the delivery of the United Nations Agenda 2030 for Sustainable Development, including the Sustainable Development Goals (SDGs). Through the 2030 Agenda, and later reinforced through the first United Nations Oceans Conference in 2017, the sustainability of the oceans and their resources has emerged as a global priority. In the 2030 Agenda, Goal 14 recognizes the “contribution of oceans to sustainable development by seeking to conserve and sustainably use the oceans, seas, and marine resources for sustainable development”⁵⁹. It is crucial to make the connections between Goal 14 and other related goals, to understand the relationship within and between developmental issues. Goal 6 (water), 11 (cities), and 14 (oceans) may in the context of the Blue Economy have the most obvious linkages, however Goals 1 (poverty), 3 (health), 7 (energy), 8 (economy), 9 (infrastructure), 12 (consumption and production), 13 (climate), and 17 (partnerships) have as many important linkages to the Blue Economy.

2.5.2 Relating three SDGs: Goals 6, 11 and 14

The relationship between SDG 6 (water), SDG 11 (cities) and SDG 14 (oceans) is of particular importance. Since most of the world’s megacities are located in coastal areas, and coastal areas generally demonstrate higher population densities, the linkages between sustainable cities, adequate access to clean water resources, and sustainable oceans are obvious. Expansive land and resource use in coastal and other waterbody areas, which also includes infrastructure development, has many negative impacts on natural ecosystems. There are likely synergies between the reduction in marine and freshwater pollution and the development of safe housing and environmentally friendly cities that aim at reducing energy consumption, improving sewer management and minimizing the degradation of oceans and other waters at large⁶⁰. Similar benefits occur between sustainable management practices and conservation efforts of coastal, marine and freshwater environments and the development of safe, resilient and sustainable human settlements. Conflicts may occur where water conservation and restoration limit options for urbanization, housing, infrastructure or transport upgrading. Promoting the construction of new buildings using local materials may have negative impacts on natural ecosystems from which the building materials are removed, and on their conservation and restoration. Therefore, it is important to work with nature to find sustainable and inclusive solutions.

⁵⁹ <https://sustainabledevelopment.un.org/sdg14>

⁶⁰ International Council for Science (2017)



The SDG targets that are most significantly related to one another in this context are the following:

CITIES	11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage
	11.5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
	11.6	By 2030, reduce the adverse per capita environmental impacts of cities, including paying special attention to air quality and municipal and other waste management
	11.A	Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
	11.B	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, [...]
OCEANS	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
	14.2	By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
	14.5	By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
WATER	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safer reuse globally
	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
	6.6	By 2030, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, Aquifers and lakes
	6.B	Support and strengthen the participation of local communities in improving water and sanitation management



3.1 UN-Habitat's core mandate

The United Nations Human Settlements Programme (UN-Habitat) is the United Nations agency mandated by the United Nations General Assembly to promote socially and environmentally sustainable human settlements and achieve adequate shelter for all. Its work is to monitor and report the changing trends and conditions and inform member states on the global changing trends and conditions of urbanization and human settlements. UN-Habitat provides normative and operational solutions to national, subnational and local governments and communities through the development of guidelines, research, reports and publications, among others (normative), and the implementation of projects, programmes and targeted interventions at various governance levels (operational). Since its establishment 40 years ago, the agency has gained a unique and universally acknowledged expertise in sustainable urban development. In the implementation of the Sustainable Development Goals (SDGs), UN-Habitat coordinates SDG 11 “Making cities and human settlements inclusive, safe resilient and sustainable”, and is also a co-custodian for indicator 6.3.1 on wastewater, therefore also further demonstrating its leadership role in monitoring progress and guiding policy development at national level, as well as in working in partnership with other agencies such as the UN Environment Programme. Drawing the linkages between UN-Habitat’s mandate and the other relevant SDGs (such as those on water, climate, sustainable consumption and production, energy, health and oceans), the agency is uniquely equipped to address the challenges that come along with transforming cities, towns and urban areas and to create a more sustainable future for all. This cannot be achieved without considering the significant role of cities’ geographic and environmental conditions, as well as adequate urban planning and design, local economic development, finance and governance, but also the sustainability and quality of their basic services, such as solid and liquid waste management.

The New Urban Agenda (NUA), which was adopted in 2016 during the Habitat III conference, makes explicit references to issues that are important to the Blue Economy. These are the most relevant commitments that explicitly refer to sustainable water and resource management:

§13(h)	“We envisage cities and human settlements that protect, conserve, restore and promote their ecosystems, water, natural habitats and biodiversity, minimize their environmental impact, and change to sustainable consumption and production patterns”
§37	“Promoting safe, inclusive, accessible, green and quality public spaces, including [...] waterfront areas [...] that are multifunctional areas for social interaction and inclusion, human health and well-being, economic exchange [...]”
§68	“Giving particular consideration to urban deltas, coastal areas and other environmentally sensitive areas, highlighting their importance as ecosystems’ providers of significant resources for transport, food security, economic prosperity, ecosystem services and resilience. We commit ourselves to integrating appropriate measures into sustainable urban and territorial planning and development”
§71	“Strengthening the sustainable management of resources, including land, water (oceans, seas and freshwater), [...], with particular attention to the environmentally sound management and minimization of all waste, [...], and in a way that [...] strives to transition to a circular economy while facilitating ecosystem conservation, regeneration, restoration and resilience”
§72	“Long-term urban and territorial planning processes and spatial development practices that incorporate integrated water resources planning and management [...]”
§73	“Promoting the conservation and sustainable use of water by rehabilitating water resources within the urban, peri-urban and rural areas [...]”

3.2 UN-Habitat's role in the Blue Economy

Through spatial planning, urban economy and legislation, UN-Habitat has supported coastal cities and districts to embark on sustainable development practices, seizing opportunities under the Blue Economy, and supporting communities to protect and preserve existing ecosystems. UN-Habitat has furthermore assisted the strengthened governance of coastal cities by working directly with vulnerable communities, planners and decision makers, promoting climate change adaptation, low emission development and sustainable local economic development. Examples of projects include urban renewal (Jamaica), planning new settlements for relocated vulnerable populations (Príncipe), designing and constructing resilient housing, social and educational facilities (Mozambique), and the planning and redevelopment of a lakefront (Kenya), all of which provide necessary support to countries and cities located along coastal and waterfront areas.

Sustainable Resettlement of The Roça Sundry Community, Terra Prometida, in the Autonomous Region of Príncipe, São Tomé and Príncipe

The Roça Sundry community in Príncipe was facing poor living conditions, as the current structures where the community lived – former slave quarters of the colonial plantation farm – were dilapidated and difficult to improve. This was due to overcrowding and lack of space to expand them. Consequently, the housing was also vulnerable to the impacts of climate change. Resettling the community was the safest and most sustainable option. Through careful participatory approaches and with full respect to human rights, UN-Habitat assisted the government in the voluntary and sustainable resettling of the community. Particular attention was paid to minimizing the environmental and ecological impact during project implementation and to enhancing the sustainable livelihoods of community members.



A new neighbourhood with 136 houses and public facilities was constructed, with full engagement of the community. The development has a direct impact on the preservation of beaches, both for tourism purposes and biodiversity conservation (sea turtles come to lay eggs on the island). In a context like the one of Príncipe Island, declared and International Biosphere Reserve by UNESCO, environmental sustainability equals Blue Economy, as in the preservation of its beaches and nature lies its economic potential. The responsible tourism industry has acknowledged this potential and, increasingly, its investments have combined nature conservation with the creation of decent jobs and the improvement of the population's living conditions, as it is the case of the Roça Sundry project, an initiative that has been hailed by the government as a model for the sustainable development of the country.

The project is still underway, but the teams have already achieved major impacts in its implementation, including the following:

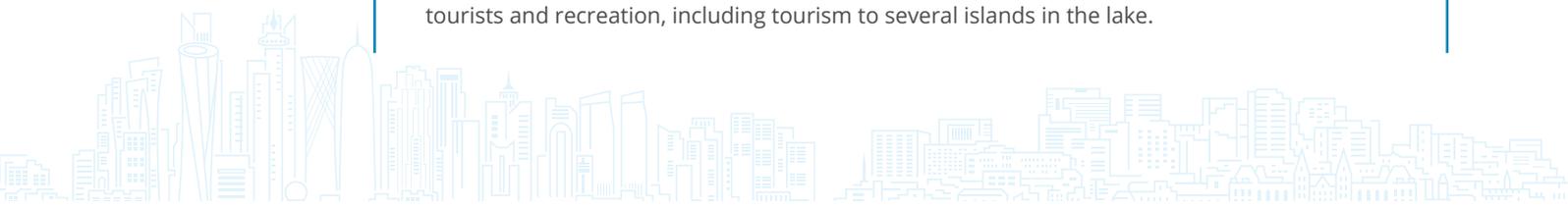
1. **Enhanced partnership:** All stakeholders were engaged in a committee, including the government, tourism sector, community, and UN-Habitat
2. **Compact urban planning:** Through careful urban planning, only the minimal amount of land was used in the resettlement, leaving most of the surrounding forests untouched. This was achieved through contracts to the community, sustainable income generating activities, and compact planning measures.
3. **Sustainable infrastructure:** Water-smart solutions for water and energy supply (e.g. a micro hydropower plant) were developed, as well as low-cost waste management strategies were implemented. These systems reduce fuel dependency prevalent on the island.
4. **Greener construction techniques:** The project developed four incremental housing types that are ecologically friendly (e.g. no sand for construction, but using local stone, wooden roofing, etc.). Residents could choose their preferred housing.

Planning for the redevelopment of the Lakefront in Kisumu, Kenya

The City of Kisumu is located on the shores of Lake Victoria, the largest freshwater body in the world, connecting four countries and supporting the livelihoods of millions of people. The city is facing a difficult water situation and several environmental constraints, including a large wetland in the south and fragile hillsides in the north. When embarking on a strategic planning exercise, the city realised that close to its biggest asset, the lake, there were large areas that were barely utilised, being occupied by obsolete railway infrastructure.

With the support of UN-Habitat, the city reflected on its opportunities through a participatory stakeholder process and the lakefront area was selected as one of the strategic opportunities for intervention. Since then, a city-wide strategic plan has been developed, setting the key principles for the lakefront redevelopment, and several discussions have been held with the informal activities located along the lakeshore (mainly car washing businesses) in order to relocate them. A quick-win project has been developed, to create quality public space along the riparian land, organize leisure activities (such as restaurants) and ensure environmental protection.

Investment opportunities have been discussed, in order to bring on board the largest landowner, the Kenya Railway Corporation (KRC), the city and private investors. A careful economic and financial analysis has identified the importance of cross subsidy, ensuring that the area is developed in line with multiple interests, for instance by including different social groups, supporting mixed-use development, and enhancing the attractiveness of the city for tourists and recreation, including tourism to several islands in the lake.





The project is moving to implementation with resources from ADF and further being sought from the World Bank, with the following impact already achieved:

1. **The ISUD** (Integrated Strategic Urban Development) recognises the potential of the lakefront area. The plan has been adopted by the County Assembly in 2016.
2. **Increased relation and valorisation of the lake:** the city has recognised the need for reconsidering its relationship with the lake and initiated discussion with several user of the lake shores to optimise its use, accessibility and shared benefits
3. **Extension of the city centre:** the good quality patterns of the city centre are being extended to reach the lake, creating a closer relation and accessibility
4. **Protection of livelihoods and improvement of environmental conditions:** the project resulted in discussions and negotiations between users and the city for a better management of environmental dimensions
5. **Capacity of local stakeholders:** Members of County Assembly, technical staff and communities have been exposed to sustainable planning principles and have endorsed a planned approach to the issues
6. **Institutional dialogue:** The city, county and the KRC have established a Management team working on the Lakefront area in an important step for institutional collaboration in this area.
7. **Innovative planning instruments:** the city has adopted a progressive approach to the area, with the intention of developing overarching development criteria. This step of detailed planning has been developed on the basis of assessments by UNH of the planning process and gaps in the country.

Strengthening capacity of policymakers in South-East Asia to promote policies and develop plans for improved wastewater treatment and reuse in urban and peri-urban areas

This project, jointly formulated by ESCAP and UN-Habitat, took place between 2012 and 2014 with the aim of tackling the discharge of untreated wastewater to the environment. The project's main objective was to address this critical issue through strengthening the capacities of policymakers in Vietnam, Laos and Cambodia. This was implemented in order to promote policies and develop plans for improved wastewater treatment and reuse in urban and peri-urban areas.

Decentralised wastewater management systems (DEWATS) could both solve this problem and contribute to the expansion of the sanitation coverage. For that reason, this project also contributed to the efforts to achieve the MDG target of halving the population without sustainable access to basic sanitation by 2015.

Some of the main accomplishments are the following:

- 1. Enhanced knowledge and awareness** of national level policy makers and local government officials in decentralised wastewater management systems (DEWATS) and hygiene amongst urban and peri-urban communities in Lao PDR, Cambodia and Viet Nam.
- 2. Enhanced capacity to generate innovative financing** from financial institutions and donors for DEWATS in Lao PDR, Cambodia and Viet Nam.
- 3. Enhanced capacity in building, operating and maintaining DEWATS** in Lao PDR.

Given UN-Habitat's mandate and its global presence and expertise in urban planning and design, basic services, legislation and governance, economy and finance, housing and slum upgrading, and capacity building and research, and cross cutting issues of gender, human rights, climate change and youth, the agency is well equipped to support the strengthened need to better integrate planning of coastal urban areas and towns that are situated along any waterbodies with the planning for ecosystems protection, conservation and restoration. Due to cities' significant impact on these water ecosystems, a large focus of the Blue Economy will be to make human settlements and their consumption more sustainable, which in turn can help to increase resilience of crucial ecosystems such as inland lakes, rivers, wetlands and oceans. UN-Habitat therefore has a critical role to play in achieving the global Blue Economy agenda. It is committed to supporting local governments in addressing the environmental, economic and social issues of coastal and island cities, as well as inland cities with significant waterbodies through targeted policies, recommendations, urban planning and design guidelines and neighbourhood interventions. The following sectors are part of UN-Habitat's expertise in the area of the Blue Economy:



Planning and governance

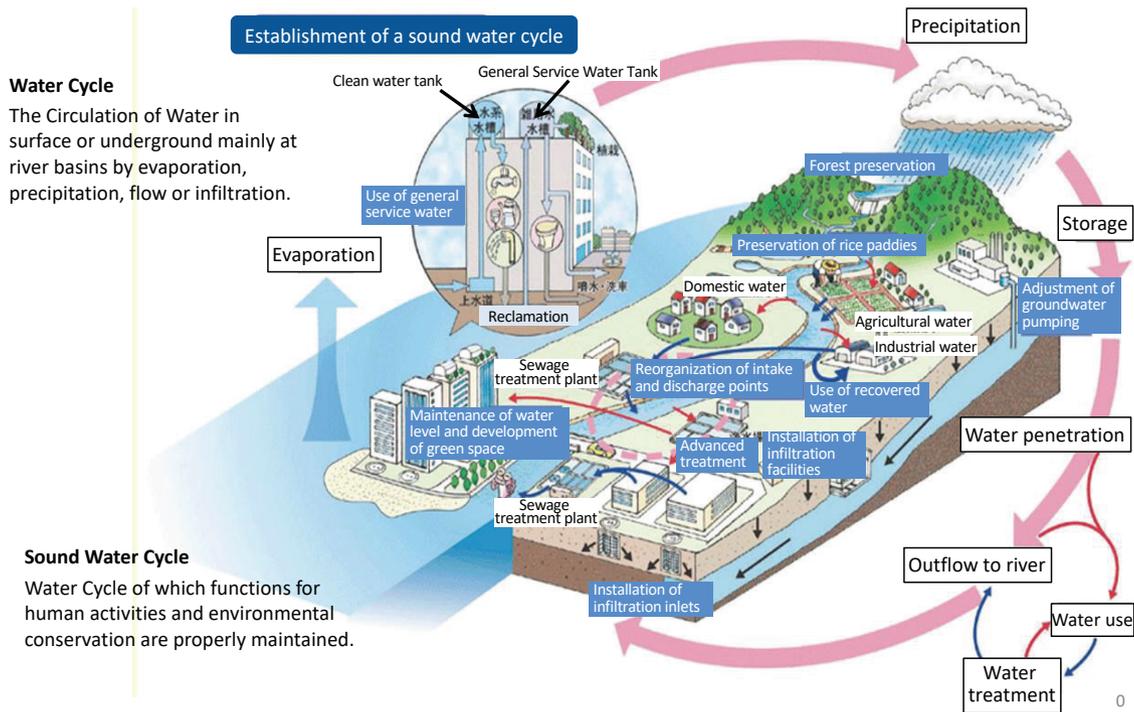


Figure 4: Water Resources in Japan (ROAP, UN-Habitat)

In order to appropriately respond to the opportunities and challenges of the Blue Economy, cities require adequate urban planning and design, governance and legal structures. The analysis of the green and blue systems should be the starting point for understanding contexts and adapting to them. Only by taking into consideration resilience – both on land and in water – can cities and communities develop sustainably. Urban and rural planning should be built on the natural ecosystems and with considerations for the hydrological cycle. The relation of water systems with the provision of ecological services and their landscape value, as well as the related economic opportunities, need to be well understood and capitalised on. The extension of cities, and the redevelopment of existing built up area present enormous opportunities for enhancing the Blue Economy, protecting its basis and providing opportunities to expand. Public spaces around water bodies, as usually foreseen and established by law, can play a very important role in supporting quality urban development, interconnecting green and blue systems and protecting water resources. UN-Habitat has experience in working with water in urban development at different scales, and in different contexts. Jointly working on integrated spatial planning solutions on different governance levels, and with consideration to different scales and sectors, is key to achieving a sustainable Blue Economy.

Policies and strategies

Cities need policies and strategies to steer spatial and economic development while protecting their ecosystem services. Such policies and strategies also help address desired impacts, but also highlight the challenges and opportunities that a city may have. Developing institutional policies and strategies must entail practical solutions to specific urban development challenges, that can be applicable and understandable to communities. Local governments therefore must pay special attention to integrating urban planning and management, land and water resources management with community engagement and existing practices. Often, traditional practices (for instance in coastal and marine protection and management) have been the most sustainable solution for centuries, but local and national governments do not recognize the value thereof. The strategies and policies need to be transformative and need to address both mitigation and adaptation measures. These are areas that UN-Habitat has comparative advantage and global exposure and expertise in.

Sustainable financial mechanisms

An important tool for preserving coastal zones is private sector investment in the preservation and rehabilitation of natural and built infrastructure. Innovative financial mechanisms can be tapped into that can help stimulate public and private investment. For instance, assisting local and national governments in valuing its natural capital can be a powerful tool to understand the importance of ecological protection and derive specific actions from it. Another example includes the private sector: to protect a 60 kilometre stretch of a coral reef in Quintana Roo, Mexico, the regional government has decided to collaborate with the insurance industry, natural conservancy, and hotel industry. The hotel owners are funding the preservation and rehabilitation of the reef as a condition of an insurance policy. The insurance protects the reef and beach in the case of extreme weather events.

Local economic development

Spurring local economic development (LED) can drive Blue Economic growth. For cities, developing a network of jobs and economic opportunities around the protection of its ecosystems will be an asset in the long run. Many cities are searching for ways to overcome the challenge of balancing environmental protection with protecting livelihoods of the most vulnerable populations. If communities are not involved in decision-making or relocation processes, similar behavioural patterns will occur. Therefore, inclusive LED is crucial in driving communities, while the government has the opportunity and responsibility to create jobs favourable to its environmental management – for instance in the sectors of waste management, marine protected areas, recycling industries, coast guard, mangrove restoration, waterfront development and sustainable infrastructure construction, eco-tourism and many more. Furthermore, cities with healthy environments are also more attractive to foreign investment, thereby also increasing the potential for a stronger skilled workforce, including young people.

Climate change

The impact of urbanization is most severe on our natural environment, and coastal cities and their marine environment are more vulnerable to climate change than ever before. This can be partly attributed to the rapid change of land use patterns along the coastal areas. To address this, policies, plans and regulations must be put in place to prevent unsustainable practices. Coastal cities need to understand its urbanization dynamics and anticipate its growth patterns by working on planned city extensions and expanding its service infrastructure in a pre-emptive manner. In turn, resilient coastal urban infrastructure will have to be prioritized, including climate-proofing existing infrastructure services. This will help cities reduce risk and adapt to climate change ahead of time.



Blue-green network planning as a spatial development and climate-resilient strategy - the case of Belmopan, Belize

A growing number of cities are taking actions to achieve sustainable urbanization practices like expanding their green infrastructure to enhance climate-resilience, to complement conventional engineering solutions by maximizing ecosystem services and to invest in clean technologies.



UN-Habitat in collaboration with the Belmopan City Council and other local stakeholders, identified a blue-green network approach for the update of the master plan for the capital city of Belize, Belmopan. They developed a masterplan for the city that provides new strategies for managing urban flood risk, enhances and innovates the garden city character and promotes economic development in this rapidly developing city.

Blue-green network planning consists of planning strategies based on blue water-based elements, green vegetation-based elements, green technologies and low carbon and climate-resilient infrastructure. Blue elements include streams, storm water drains, irrigation channels, wetlands, freshwater, sanitation and public spaces that can temporarily accommodate water overflow. Green elements include trees along streets, recreation zones, playgrounds, parks, forests, greenways and riparian strips. This planning approach acknowledges that cities are embedded in natural systems by examining a city's ecological and hydrological relationships.

The blue-green network planning for Belmopan has a number of objectives. These objectives include to incorporate nature in the city; to enable social integration and spatial connection through public space; to maintain diverse productive urban agricultural landscapes; to rethink floodplain and drainage design; to increase resilience; to enhance investment for nature protection and nature-based tourism; all in order to boost city growth and balanced sustainable development.

Blue-green network planning in Belmopan seeks to protect the ecological and hydrological values of the urban landscape and to provide resilient measures to address climate change.

Solid waste management

Cities and related activities generate considerable amounts of solid and liquid waste and air pollution that end up in aquatic ecosystems. Most of maritime and drift waste, especially cans, plastics and PET bottles, originate from people's economic and social activities on the ground (see below), thus the key solution is "3Rs" (reduce, reuse, recycle) in our everyday life. This issue requires the establishment of sustainable solid waste and wastewater management systems that include sanitary landfill solutions and the development of treatment plants aimed at reducing pollution and its effect on the ecosystem. Furthermore, UN-Habitat supports cities in strengthening their circular economy practices by helping to reduce, reuse and recycle materials and thereby contributing to more resource-efficiency and overall sustainability.

Water and wastewater management

UN-Habitat has engaged in numerous projects to improve water and wastewater management. For instance, the project on the left helped to improve a wastewater facility using bio-materials in Batticalore, Sri Lanka. Another project was the "Water for Life" project in multiple cities in Nepal, where UN-Habitat assisted in improving community water bodies (lakes, wetlands, rivers) and wastewater treatment, engaging the community in discussions and trainings to enhance capacity. UN-Habitat's other work on urban water management includes improving catchment areas, strengthening municipal water supply infrastructure, cleaning rivers and other waterbodies through wastewater treatment systems and community campaigns, improving urban-rural linkages for better water and wastewater management, managing shortages and floods, and collaborating in various global initiatives on water and wastewater issues.

The Lake Victoria Water Supply and Sanitation Programme

UN-Habitat has implemented the training and capacity building component of the Lake Victoria Water Supply and Sanitation Programme (LWATSAN II) in 15 secondary towns in East Africa. LWATSAN II is a regional programme funded by the African Development Bank (AfDB) in partnership with the East African Community (EAC) through the Lake Victoria Basin Commission (LVBC). Its overall objective was to support the secondary urban centres in the Lake Victoria Basin to meet sustainable development goals on water and sanitation and to contribute to the improvement of the livelihoods and health of communities in the basin and to reduce the pollution of Lake Victoria.



As a result of the Programme, water and sanitation facilities in the 15 towns have been upgraded and expanded through the implementation of a wide range of infrastructure works. These comprised mainly the short-term interventions such as installation of new pumps to modernize and expand old water pumping stations, rehabilitation of treatment plants and extension of water distribution networks.

Long-term interventions included construction of new water supply infrastructure, solid waste management equipment, landfills and faecal sludge treatment plants and construction of sanitation facilities in public institutions such as schools and hospitals, public markets and selected informal areas of the towns. Over 840,000 persons have directly benefited from increased access to safe drinking water and improved sanitation.

Resilience and response to disaster

Water-related disasters have increased substantially in the last decade, due to changing climatic patterns and rapidly evolving human activity and economic development globally. UN-Habitat has led efforts in different regions to respond to such disasters, by reconstruction and redevelopment, but also by increasing the overall resilience of infrastructure, communities and institutional capacity to respond to such challenges. Recent major hydrological disasters include the 2004 Indian Ocean Earthquake and Tsunami, the 2011 Great Japan Earthquake and Tsunami, the 2012 Superstorm Sandy and the 2013 Typhoon Haiyan (Yolanda). UN-Habitat has engaged in the recovery process many towns through creating safer homes, reconstructing basic infrastructure after disasters, increasing climate-resilience and conducting vulnerability assessments, and it has also published on the issue of addressing climate change in National Urban Policy⁶¹.

Post - Yolanda (Haiyan) support for safer homes and settlements

The project addresses the urgent need to support self-recovery and housing provision. The project emphasizes building back safer. It further addresses the need to improve infrastructure which would support community resilience.

Impact

660

permanent
houses



54

Community
infrastructure projects



20-54

Infrastructure
projects raised
from 20 to 54



323

semi-skilled
artisans
trained
in resilient housing
construction



31 Foremen

trained in
resilient
housing
construction



4,954

households
trained to
strengthen their
house and
assessed



4,000

households
to benefit
from DRR



⁶¹ UN-Habitat (2016, 2014)

Poverty reduction

Access to improved housing and slum upgrading reduces social inequalities and enables more sustainable urbanization. When cities take into consideration its social, environmental and economic interests in an integrated and just manner, they will be able to better address other related issues such as security of tenure, access to public spaces, enhanced basic service delivery, and urban mobility. Improving urban public housing and slum upgrading can create vibrant neighbourhoods. Reducing poverty has multiple benefits to cities, and the impacts are long-lasting. Providing citizens with equal access to safety and services, while also educating them on sustainable behavioural practices and livelihoods and providing job opportunities in crucial Blue Economy sectors can change cities in a sustainable manner. Poverty reduction has to be at the forefront of driving a Blue Economy.



Coastal cities have historically and culturally been important trade hubs and development sites. They play a crucial role in harnessing the potential of the Blue Economy and in improving the living standards of the coastal communities, while also protecting the ecosystems and biodiversity along the coasts. Some cities, for instance, lie below sea level, thus are explicitly exposed to the impacts of sea level rise – yet they have engineering mechanisms to protect themselves from flooding and land loss. However, some SIDS are particularly vulnerable to threats of tourism, associated ecosystem and biodiversity losses, as well as unsustainable consumption and production, or other economic practices.

Adequate planning for coastal land use and marine areas will ensure the sustainable development of coastal cities and communities, preservation of ecosystems, preservation of important cultural and natural heritage, and the development of socio-economic, 'blue-green' opportunities. Spatial planning is at the forefront of responding to climate vulnerabilities and therefore must also guide the investments in resilient infrastructure, adaptation and mitigation to climate induced risks, while also steering sustainable urbanization processes and the protection of cultural and natural heritage.

If spatial planning takes into account the marine environment – as well as other important waterbodies – it will help strengthen ecological buffer zones, thereby increasing the resilience of the coastal infrastructure. However, there is still a visible division between marine and waterfront management and inland development. There is an opportunity to align these areas through the Sustainable Development Goals, further expanding on the linkages between SDG 6, 11 and 14. Joining activities, plans and actions in the areas of urban development and fresh and saltwater protection will help the alignment, coordination and increased efficiency of investments in infrastructure and development.

Considering that the urban coastal areas have multiplied by 4.5 in the last seven decades, integrated coastal zone management (ICZM) becomes a crucial factor in reinforcing targeted investments. These will have to be integrated and multi-scalar, while also including mixed-use planning, coastal and marine spatial plans (CMSP), and ecological protection and restoration mechanisms. Public participation is key and therefore special attention must be given to the communities that depend on the waterbodies (freshwater and saltwater).

Climate change is one of the major challenges facing coastal and other waterfront cities and urban centres. Impacts on oceans and coasts include the increased salinization, flooding and storm surge damage to shorelines, infrastructure, and the natural environment, as well as strengthened acidification, ocean warming, worsening water quality and supply, and higher frequency and severity of extreme weather conditions.

The challenges of the Blue Economy are global and will require global solutions framed within national and local priorities. Oceans, seas, wetlands, lakes and rivers support human wellbeing and livelihoods and underpin poverty eradication, food security, employment, industrial development, innovation, sustainable communities, health, tourism and protection from natural disasters. When treated sustainably, they can also counteract the impacts of climate change, both as ecological buffers and as carbon reservoirs.

The Blue Economy approach presents an opportunity for governments to develop and discuss novel and innovate methods, technologies and cutting-edge research that help to diversify their economic

and environmental protection activities. Most countries that have waterbodies or are situated along coasts will need to rethink and redevelop the ways in which they have treated their water resources. It remains a challenge to many countries and cities on how best to harness the benefits of the waterfronts – whether for their lakes, rivers, wetlands or oceans. Countries and cities are coming together to learn from one another, share best practices and lessons from countries around the world.

However, local government leaders must engage now in creating their own economic opportunities, environmental protection and spatial planning activities that help spur the Blue Economy, while they can also thrive off the benefits. Much more research is needed in the sectors linking oceans, waterbodies and urban development, especially the knowledge and information that can feed into policy decisions and processes on the local, regional and national levels. However, conferences like the Sustainable Blue Economy Conference help to shape a new global agenda on the topic, and with the engagement from local, subnational and national governments around the world, more adequate responses can be found in making cities and their waterbodies – freshwater and saltwater – more sustainable and resilient.



Research Questions And Policy Recommendations

International organizations are at the forefront of developing new thought, directions, priorities and guidelines. While some national governments have taken up the challenge to define their Blue Economic issues and develop policies associated with the concept, it remains to be seen which efforts will lead to maximum effectiveness and success. Both national and local-level policy-makers will have to engage in these discussions. However, local authorities may often experience the realities of the Blue Economy first – in terms of challenges and opportunities.

For local governments, there are specific policy questions that urgently require responses. Allowing for discussions, while also targeting new research in the area is crucial. This non-exhaustive list provides food for thought for further examination, research and policy development, with the aim to transform communities and strengthen local decision-making:

- How can cities leverage Blue Economy issues in their respective local and national policies and plans? This also means addressing the implementation of the 2030 Agenda and other intergovernmental agreements.
- How can the Blue Economy strengthen poverty reduction, justice and equity?
- How can stakeholders foster prosperity through a sustainable Blue Economy for countries and cities in special situations, particularly SIDS and coastal LDCs?
- How can cities in landlocked countries develop a Blue Economy approach?
- How can science, technology and innovation help local governments strengthen their understanding and implementation of a sustainable Blue Economy?
- How can the Blue Economy leverage sustainable consumption and production cycles on a city-region scale?
- How can cities protect, conserve and restore their water ecosystems through a Blue Economy approach?
- How can a city foster 'blue-green' jobs with the aim to harmonize ecological and economic interests?
- Can cities take actions to decouple their economic development from environmental degradation without the support of national governments? If so, how?



There are a set of global policy directions which the international community will have to address, particularly in light of increasing urbanization along coastal areas and other waterbodies. These will require an urgent re-thinking from governments and other stakeholders. In turn, this will define how support is allocated.

- a. The role of resilient, spatial development of coastal cities in harnessing the potential of the Blue Economy
- b. The ability of cities and towns along waterfronts to optimize the opportunities offered by the Blue Economy
- c. Legal and institutional frameworks put in place to identify priorities and guide development of waterfront cities and that will promote local and international investment in these cities
- d. The governance and management mechanisms of coastal regions that help to protect their ecosystems and support the communities that depend on them
- e. The need for coastal cities to restructure their public expenditures and investments to fully harness the potential of the Blue Economy, through the establishment of education and training institutions to build the capacity of coastal and waterfront communities.
- f. Promotion of equitable benefit-sharing throughout the value chain and work with small-scale producers in local communities, such as fishers and farmers, to establish new market linkages emerging from the Blue Economy.
- g. Acknowledging that the public sector may not be able to sufficiently boost and protect the Blue Economy
 - a. How can we best explore the contribution of the private sector?
 - b. How can we attract sustainable and innovative 'blue finance'?
 - c. How can we build partnerships (Public-Private Partnerships, PPPs) to develop the Blue Economy?
- h. The transformation of coastal cities will likely impact various population groups differently. How do cities account for and respond to differentiated impacts, such as the issues of low-income communities or other vulnerable groups (women, elderly, disabled, youth, children)? For instance, urban expansion may claim land or sea used for livelihood generation. How to involve different groups in consultations?



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UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME

P.O.Box 30030, Nairobi 00100, Kenya;

Tel: +254-20-76263120; Fax: +254-20-76234266/7 (central office);

infohabitat@unhabitat.org

www.unhabitat.org