Confederation of Indian Industry

Ministry of External Affairs
Government of India

INDIAN OCEAN RIM ASSOCIATION

CII-TRIVENI
WATER INSTITUTE

IORA Conference on Water Security & Sustainability

6 September 2017: New Delhi

BACKGROUND NOTE

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Introduction

Let us consider how dependent on the ocean we are. The ocean is vast: it covers seven tenths of the planet, is on average about 4,000 metres deep and contains 1.3 billion cubic kilometres of water (97 per cent of all the water on the surface of the Earth). There are, however, 7 billion people on Earth. This means that each one of us has just one fifth of a cubic kilometre of ocean as our portion to provide us with all the services that we get from the ocean. That small, one fifth of a cubic kilometre portion generates half of the annual production of the oxygen that each of us breathes, and all of the sea fish and other seafood that each of us eats. It is the ultimate source of all the freshwater that each of us will drink in our lifetimes. Thus, the ocean is vital to all life on Earth, providing many provisioning, regulating and supporting services. If human activities are not carefully managed to ensure that they do not alter ecosystem structure and function, they may result in damage to the marine environment and reduction or loss of crucial ecosystem services.

The four main ocean basins of our planet:- the Arctic Ocean, the Atlantic Ocean, the Indian Ocean and the Pacific Ocean. Even though they have different names, they form one single interconnected ocean system. The basins have been created over geological times by the movement of the tectonic plates across the Earth's mantle.

The Indian Ocean

The Indian Ocean is the third largest ocean in the world. It is mostly surrounded by a rim of developing countries and island States. It is the smallest, geologically youngest, and physically most complex of the world's three major oceans. It stretches for more than 6,200 miles (10,000 km) between the southern tips of Africa and Australia and, without its marginal seas, has an area of about 28,360,000 square miles (73,440,000 square km). The Indian Ocean's average depth is 12,990 feet (3,960 metres), and its deepest point, in the Sunda Deep of the Java Trench off the southern coast of the island of Java (Indonesia), is 24,442 feet (7,450 metres).

The Indian Ocean is bound by Asia to the north, by Africa to the west, Australia to the east and Antarctica to the south. It has two major seas, the Red Sea between the Arabian Peninsula and Africa, and the Arabian Sea to the west of India; and the largest bay, the Bay of Bengal, to the east of India. Following the FAO statistical fishing areas, the Indian Ocean is divided into two major parts: the Western Indian Ocean (WIO) and Eastern Indian Ocean (EIO).

The Indian Ocean covers about 30 per cent of the total global ocean area and being predominantly a tropical ocean, accounts for a significant part of tropical coastal biodiversity and deep-sea oceanic biodiversity in various marine ecosystems. It accounts for 30 per cent of the total global coral reef cover, 40,000km^2 mangrove cover, besides supporting various types of biodiversity found in its various ecosystems (Table 1).

Table 1: Types and area cover of marine ecosystems in the Indian Ocean

Ecosystem	Area (Million km^2)
Open Ocean	
Oligotrophic	19.6
Transitional	23.8
Equatorial Divergence	18.9
Coastal	
Upwelling Zones	7.9
Other Neritic Waters	5.3
Other	
Coral Reefs	0.2
Mangroves	0.04
Sandy and Rocky Beaches	0.004
Estuaries	-
Hyper saline Water Bodies/ Lagoons	<0.005

There are two unique geographical features of the Indian Ocean that make its climate and oceanographic processes different from those in other oceanic areas. First, unlike the Pacific and Atlantic Oceans, the northern expanse of the Indian Ocean is limited by the landmass at low latitudes, and second, there exists a low latitude connection between the Indian Ocean and the Pacific Ocean through the Indonesian seas.

No part of the ocean has today completely escaped the impact of human pressures, including the most remote areas. One clear example of this is the universal presence of stratospheric fall-out from atmospheric nuclear-weapons testing, but many other pressures on the marine environment are nearly as widespread.

Issues and Challenges

The current levels of management of marine and coastal ecosystems do not inspire confidence and it is imperative that mechanisms for the protection of the ocean's biodiversity are considered.

Ocean resources are not infinite and are being exploited at a significantly high rate, which impacts on the marine environment. Apart from over exploitation of ocean resources, the impacts of climate change are putting increasing pressure on both marine and terrestrial environments,

through more extreme weather conditions that also increase the likelihood of natural disasters. Small Island Developing States (SIDS) are most vulnerable to climate change-driven disturbances, with millions of people who could be affected by natural hazards such as flooding, storm surges, erosion and other coastal hazards.

The Indian Ocean provides vital resources, ecosystem services and transport routes that are the cornerstones of the economies of bordering States. Future economic prosperity, food security and social wellbeing are inextricably linked to effective management and sustainable use of its resources.

A number of human activities threaten the health of the open ocean. These include:

- **Unsustainable Fishing**: 90% of the world's fisheries are already fully exploited or overfished. The global fishing fleet is 2-3 times larger than what the oceans can sustainably support.
- **Inadequate Protection**: Only 3.4% of the world's oceans have been designated as protected - compared to almost 16% of our planet's land area. Of particular concern is the current lack of protection for a number of sensitive habitats and areas. These include-coral reefs and mangrove forests; deep seas; the High Seas; particularly sensitive areas at risk from shipping activities; and breeding grounds for commercially important fish.
- **Tourism and Development**: According to the UN, 60% of the world's population - more people than inhabited the entire planet in 1960 - live within 60km of the coast. On top of this, 80% of all tourism takes place in coastal areas, with beaches and coral reefs amongst the most popular destinations.
- **Shipping**: Sub-standard ships and poor shipping practices are leading to massive marine pollution and damage. Release of oil and chemicals: through accidental spills and operational discharges is a major challenge.
- **Oil & Gas**: Important reserves of oil and gas are located under the sea floor in many parts of the world. However, prospecting, drilling, and transport can seriously damage sensitive marine areas and disturb marine species.
- **Pollution**: Over 80% of marine pollution comes from land-based activities. From plastic bags to pesticides - most of the waste produced on land eventually reaches the oceans, either through deliberate dumping or from run-off through drains and rivers.
- **Climate Change**: The current increase in global temperature of 0.7°C since pre-industrial times is disrupting life in the oceans, from the tropics to the poles. Marine species affected by climate change include plankton - which forms the basis of marine food chains - corals, fish, polar bears, walruses, seals, sea lions, penguins, and seabirds.

Thus, human pressures impact on the ocean in many and complex ways. They can take effect directly (as when an oil spill kills sea-birds and sessile benthic biota) or indirectly (as when climate change results in changes to the stratification of seawater, with an adverse effect on the nutrient cycle and the production of the plankton on which fish feed). A summary of the varieties of human pressures on the marine environment is presented in table 2:

Table 2: Pressures and Impacts of Human Activities on Marine Environment

Pressure from Human Actiivities	Impact on Marine Environment
Acidification of the ocean (arising from increased CO^2 emissions)	Reduced resilience of coral reefs to other stresses
Changes in sea temperature	Changes in species distribution and roductivities, bottom up ecosystem productivity and community structure
Changes in the salinity of seawater (arising from climate change	Changes to the thermohaline circulation of the ocean, in some places leading to increased up-welling of nutrients
Creation of underwater noise (arising from shipping, offshore prospecting etc)	Disturbance of fish, macro-invertebrates, and marine mammals.
Increased demands for marine space for potentially conflicting uses (arising from fisheries, aquaculture, shipping routes)	Changes in habitat productivity can alter ecosystems
Increased ultra-violet radiation (arising from reductions in ozone layer)	Possible adverse effects on primary production and on fish larvae
Input of explosives and hazardous gases in containers (from dumping)	Additional source of hazardous substances and seabed smothering
Input, or remobilization, of hazardous substances, by both airborne and waterborne routes (arising from land-based activities, dumping, offshore installations and shipping):	Reduction in reproductive success and in ability to resist disease of marine biota
Interference with aerial migration routes (from wind-farms):	Potential damage to seabird population
Introductions of nonnative species or genetic strains (arising from aquaculture, shipping and recreational boats)	Reduction in biodiversity
Sea-level rise (arising from climate change)	Changes in coastal habitats

Water Scarcity in IORA

The Indian Ocean Rim is a region comprised of the states whose shores are washed by the waters of the Indian Ocean. The region is home to about two billion people. They may also be divided into a number of sub-regions (Australasia, Southeast Asia, South Asia, West Asia and Eastern & Southern Africa), each with their own regional groupings (such as ASEAN, SAARC, GCC and SADC, to name a few). Today, IORA is a dynamic organisation of 21 Member States and 7 Dialogue Partners, with an ever-growing momentum for mutually beneficial regional.

The Indian Ocean Rim region is home to nearly one-third of the world's population and is of high economic significance due to its strategic location. Half of the world's trade travels through this region. In addition, the region possesses a variety of natural resources that are vital for the wellbeing of its inhabitants. As such, the Indian Ocean Rim Association (IORA) has begun to place

more emphasis on growing the blue economy within the region in a sustainable and inclusive manner.

The region is highly susceptible to natural disasters and will be at the forefront of future food and water security issues. It will be among the regions of the world that will be most dramatically affected by the consequences of climate change, such as rising sea levels and warming ocean temperatures.

This valuable life and economic supporting resource is globally being wasted and abused, and widespread water pollution makes available water unusable. As droughts and floods are contrasting effects of world's climate, water, like religion and ideology, has the power to move millions of people. Consequently, water supplies continue to dwindle due to resource depletion and pollution, whilst demand is rising fast because population growth is coupled with rapid industrialization and urbanization Lack of funds and investments for water development is one major reason and threat for a looming global water crisis.

Thus, the capacity to sustain the growing demands for freshwater is being challenged, and there can be no sustainable development unless the balance between demand and supply is restored. Competition for water between water ‘uses’ and water ‘users’ increases the risk of localized conflicts and continued inequities in access to services. In this competition, the need to maintain water and ecosystem integrity in order to sustain life and economic development is often ignored. Frequently, the environment, as well as marginalized and vulnerable people, is the biggest losers in the competition for water.

Over the past century, the development of water resources has been largely driven by the demands of expanding populations for food, fiber and energy. Strong income growth and rising living standards of a growing middle-class have led to sharp increases in water use, which can be unsustainable, especially where supplies are vulnerable or scarce and where its use, distribution, price, consumption and management are poorly managed or regulated.

Building a Water Secure Economy in IORA

Indian Ocean provides a substantial portion of the population with food and livelihood, as well as transportation for trade. IORA also comprises of poorer, underdeveloped countries and is the scene of some of the world’s most difficult security challenges, being highly susceptible to natural disasters and will be at the forefront of future food and water security issues.

Economic activity in the ocean is expanding rapidly, driven primarily by developments in global population, economic growth, trade and rising income levels, climate and environment, and technology. Looking to 2030, many ocean-based industries have the potential to outperform the growth of the global economy as a whole, both in terms of value added and employment. The projections suggest that between 2010 and 2030 on a “business-as-usual” scenario basis, the Blue Economy could more than double its contribution to global value added, reaching over USD 3 trillion. Particularly strong growth is expected in marine aquaculture, offshore wind energy,

shipbuilding and repairs, port activities and seafood processing. Table 3 identifies ocean-based industries which are established and emerging.

Table 3: Ocean-based industries

Established	Emerging
Capture Fisheries	Marine aquaculture
Seafood Processing	Deep-and-ultra-deep water oil and gas
Shipping	Offshore wind energy
Ports	Ocean renewable energy
Shipbuilding and Repair	Marine and seabed mining
Offshore oil and gas (shallow water)	Maritime safety and surveillance
Marine manufacturing and construction	Marine biotechnology
Maritime and coastal tourism	High-tech marine products and services
Marine business services	Other Marine R&D and education
Dredging	

The industries mentioned in table 3 contribute roughly USD 1.5 trillion (2.5%) to global gross value added. Calculations on the basis of the OECD's Ocean Economy Database value the ocean economy's output in 2010 (the base year for the calculations and subsequent scenarios to 2030) at USD 1.5 trillion in value added, or approximately 2.5% of world gross value added (GVA). The Blue Economy industries contributed to some 13 million full-time jobs in 2010 around 1% of the global workforce (and about 1.5% of the global workforce actively employed).

IORA is among the regions of the world that are likely to be most affected by the consequences of climate change, such as rising sea levels and warming ocean temperatures. Paradoxically, despite the plethora of challenges, it is also the part of the globe that is least developed in terms of its co-operative mechanisms. The region has now reached a point at which that gap should be addressed.

To promote the sustained growth and balanced development of the region and of the Member States, and to create common ground for regional economic co-operation, six priority areas were identified at the 11th Council of Ministers, in Bengaluru:

- Maritime Safety & Security,
- Trade & Investment Facilitation,
- Fisheries Management,
- Disaster Risk Management,
- Academic, Science & Technology,
- Tourism & Cultural Exchanges

Water scarcity and water quality degradation present major challenges in securing enough water of good quality to meet human, environmental, social and economic needs to support sustainable development of countries. The widespread water quality degradation across the world is the most serious water problem, threatening human health and ecosystems' integrity, but also representing a major concern for the water resources sustainability. New water quality challenges such as emerging pollutants and safe wastewater reuse bring even greater concerns, calling for urgent attention.

To achieve water security, we must protect vulnerable water systems, mitigate the impacts of water-related hazards such as floods and droughts, safeguard access to water functions and services and manage water resources in an integrated and equitable manner.

IORA Conference on Water Security & Sustainability

Given the above analysis and description, water is a promising area of cooperation and aligns well with the IORA's principles of equality, integrity, coexistence and mutual benefit. Sharing of learnings and best practices need to potentially emerge and scaled up among some of the member countries and especially for the benefit of the Least Developed Countries of IORA. In addition, there is also a need for better disaster risk reduction measures and actions that would assist in analysing and managing the causes of disasters, which would improve preparedness for adverse events, reduce vulnerability of people and assets, improve land and environment management, among others.

The importance of oceans for sustainable development has been enshrined in the United Nations Conference on Environment and Development (UNCED) & Rio+20 Conference processes. The potential of the Indian Ocean to meet the developmental needs of IORA Member States is enormous. Recognizing for a more holistic approach to water management, the Confederation of Indian Industry (CII) in partnership with the Ministry of External Affairs (MEA) is organizing the IORA Conference on Water Security & Sustainability on 6th September 2017.

It would, in future, help towards enhancing capacity for the protection of coastal areas, marine environment and resources to ensure sustainable development in the Indian Ocean Rim region and address relevant issues discussed at the Rio +20 United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil on 20 - 22 June 2012, that called for integrating social, economic and environmental goals and objectives for decision-making.

The IORA Conference on Water Security & Sustainability would witness eminent stakeholders deliberate on pertinent issues at the various plenaries that focus on the following:-

- **Plenary I**: Optimizing tools, techniques & technologies for improving efficiency in Fresh Water Use and Waste Water Recycling

  Improving water use efficiency through application of requisite technology, capacity building & sensitization of stakeholders and changing mindset & behavior of individuals can actually transform the water sector towards betterment. Simultaneously, it is imperative to measure and monitor outcome based performance.

- **Plenary II**: Application of State-of-the-art Decision Support systems and Technology for Water Resource Planning at local scales

  The region faces a daunting challenge of water crisis. Addressing water scarcity is a major challenge of this century. Erratic distribution of rainfall, often leading to floods and droughts in various parts of the region is a major concern. If hydrological variability increases in future the situation will become even worse. As the water crisis looms over large parts of the IORA, a Decision Support System assumes importance which can leverage scientific and technological advancement in designing sustainable strategies for sustainable water management.

- **Plenary III**: Scale up of Promising Solutions for Water Security in the Indian Ocean Rim

  Appropriate area differentiated strategies and intervention to bridge the demand and supply gap can ensure Indian Ocean Rim to embark on the path of water security. These can basically range from low cost- low savings strategies to high costs-high savings strategies. Furthermore, addressing water related disasters, protection of traditional water bodies and active involvement of all stakeholders in holistic, comprehensive and scientific management assumes importance in the contemporary context.

The conference would initiate a dialogue that promotes use of **state-of-the-art tools, techniques and technologies for management of fresh water and wastewater as well as enhance capacity building in developing countries, Small Island Developing States (SIDS) and Least Developed Countries (LDCs).**

It would, in future, help towards enhancing capacity for the protection of coastal areas, marine environment and resources to ensure sustainable development in the Indian Ocean Rim region and address relevant issues discussed at the Rio +20 United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil on 20 - 22 June 2012, that called for integrating social, economic and environmental goals and objectives for decision-making.

Therefore, the Conference aims to initiate and facilitate application of state-of-the-art tools, techniques and technologies for Water sustainability; good water governance; improving the living standards of community; and sustainable environmental and resource management. Such an exchange and sharing of tools, techniques and technologies that promote proper management of water resources and enhance capacity building in developing countries, Small Island Developing States (SIDS) and Least Developed Countries (LDCs) would be the special focus. Furthermore, it is essential that the stakeholders are sensitized towards efficient use of water, not polluting the water sources and being water-responsible.

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Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 8,300 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 200,000 enterprises from around 250 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

The CII theme for 2017-18, **India Together: Inclusive. Ahead. Responsible** emphasizes Industry's role in partnering Government to accelerate India's growth and development. The focus will be on key enablers such as job creation; skill development and training; affirmative action; women parity; new models of development; sustainability; corporate social responsibility, governance and transparency.

With 67 offices, including 9 Centres of Excellence, in India, and 10 overseas offices in Australia, Bahrain, China, Egypt, France, Germany, Singapore, South Africa, UK, and USA, as well as institutional partnerships with 344 counterpart organizations in 129 countries, CII serves as a reference point for Indian industry and the international business community.

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