POLICY

REGIONAL POLICY FOR IMPROVING THE LIVING AND NON-LIVING RESOURCES SHARED BY EAST AFRICAN COUNTRIES WITHIN THE NAIROBI CONVENTION

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1 PREAMBLE

The Contracting Parties to the Nairobi Convention for the Protection, Management and Development *of the Marine and Coastal Environment of the Western Indian Ocean Region* (hereinafter the Nairobi Convention),

Acknowledging the Conference of the Parties of the Nairobi Convention and its decisions on the 30 – 31 August 2018,

Noting with appreciation the report of the Executive Director of the United Nations Environment Programme on the efforts of the secretariat and the Contracting Parties to implement the work programme for 2018 - 2022,

Supporting the request to the secretariat to develop and support the implementation of the management of climate change as a priority area,

Noting the importance of the set-backlines in reducing damage to infrastructure and protecting important coastal habitats i.e. dunes, mangroves, coastal vegetation that can provide protection against rising sea levels and severe storm surges,

Recognising the negative effects of marine plastic litter, microplastics and microbeads, which are easily ingested and accumulated in the bodies and tissues of many marine organisms,

Concerned about the tremendous negative impact of the use of destructive fishing gear and illegal fishing on the marine resources and habitat destruction,

Noting with concern the potential implications of invasive species to industries, ecosystem functioning and human livelihoods due to increased ocean traffic,

Recognising the efforts of the International Seabed Authority to regulate and manage seabed mining,

Aware of the continued growth of oil and gas exploration, its economic value and its associated risks and impacts which require both regional and national regulation and continued capacity building in the region.

2 CLIMATE CHANGE

2.1 Background

Assessment reports of the Intergovernmental Panel on Climate Change (IPCC) have demonstrated that anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century (Climate Change 2014) Increase in heat in the earth's atmosphere has led to the greenhouse effect, resulting in climate change.

2.2 Issues

The marine and coastal ecosystems in the Western Indian Ocean (WIO) region are invaluable in terms of the ecosystem goods and services they provide. These ecosystems are essential climate regulators, but they are also directly affected by climate change. IPCC reports show that rising rates and magnitudes of warming and other changes in the climate system, accompanied by ocean acidification, increase the risk of severe, pervasive and in some cases irreversible detrimental impacts. Impacts on marine and coastal biodiversity that have already been observed include coral bleaching, ocean acidification, sea-level rise, changes in ecosystem productivity and also negative impacts on fisheries. These changes in the marine environment are expected to worsen into the future especially in Africa where trends show that the continent will get warmer, 1.5 times greater, than the global trends. (Climate change 2014) Marine resources in the WIO region are shared and hence countries within the region are likely to face similar climate change impacts. Strategic responses to protect climate-sensitive ecosystems will be increasingly important for management, since impacts resulting from climate variability and change are already evident and will persist into the future

2.3 Solutions

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (herein after referred to as the “Nairobi Convention”) provides a mechanism for regional cooperation, coordination and collaborative action in solving challenges facing the coastal and marine environments of the Western Indian Ocean (WIO). The contracting parties to the convention recognize that their commitment to sustainable development requires regional collaboration and have thus implemented solutions to a range of non-climate stressors affecting the region over the years. In 2016, the Western Indian Ocean Marine Science Association (WIOMSA) and the Secretariat of the Nairobi Convention developed a Climate Change Strategy for the WIO region. The strategy seeks to foster regional cooperation in addressing the impacts of climate change by assessing the degree of preparedness and the vulnerability and adaptive options of communities within the Nairobi Convention area (Nairobi Convention 2016) While there is little that can be done in the short term to reduce climate change, at least in terms of global greenhouse gas emissions, there are existing opportunities which should be exploited. Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation depends on policies and cooperation at all scales. These policies within the Nairobi convention need to be reviewed with the aim of incorporating emergent issues in order to reduce impacts of climate change.

2.4 Policy

Blue carbon can be part of climate mitigation and adaptation strategies. There is significant opportunity to include and expand blue carbon ecosystems into the revised NDC’s of WIO countries. This includes integrating them both under adaptation and/or mitigation. Realizing the Paris target however can only be achieved through joint efforts of a large number of different stakeholders of all fields and levels. This includes governments, communities, industries, non-governmental organizations.

Blue carbon and NDCs		Action
Somalia	Adaptation & Mitigation	coastal management and mangrove replanting
Kenya	Not included –	
Comoros	Mitigation	marine protected areas
Tanzania	Adaptation	mangrove restoration, coastal & fishery resource management
Madagascar	Mitigation & Adaptation	mangrove conservation and restoration
Mauritius	Adaptation	rehabilitation of wetlands, sea-grass, mangrove and coral reefs
Mozambique	– Not included –	
Seychelles	Mitigation & Adaptation	ocean biomass, blue carbon, and mangrove protection
South Africa	Adaptation	wetlands programs

Mangroves and associated marine ecosystems, commonly referred to as 'blue- carbon ecosystems', capture and store huge stocks of carbon in both above and below ground components (Pendleton et al., 2012). For example, Carbon stocks in mangroves have been estimated to be 5 times higher than in terrestrial forests (Donato et al., 2011). This carbon risks being released back into the atmosphere when these ecosystems are degraded or their land is converted for other uses (GOK 2017) Incorporation of Blue carbon in National Determined Contributions (NDCs) could accelerate achievements of international commitments including the Paris agreement which seeks to limit global warming to a maximum of 2 or even 1.5 degrees (UNFCCC 2015). However, inclusion of Blue carbon ecosystems is lacking from NDCs of some countries in the WIO region (Kenya and Mozambique).

Recommendations:

- Recognition of the role of blue carbon ecosystem in mitigating the effects of climate change among the contacting members of the Nairobi convention and including them in their National Determined contributions
- Adequate sharing of information, and data, and sustained capacity development and support to develop and implement sustainable projects in the WIO

- Creating greater transparency on emissions and environmental impacts, both on parts of countries

3 COASTAL SET-BACK LINES

The Integrated Coastal Zone Management (ICZM) Protocol to the Amended Nairobi Convention is being developed to strengthen the legal framework of the Nairobi Convention for a more effective management of marine and coastal ecosystems across sectors and national boundaries to achieve sustainable development. A key component of a coastal management program is a "set-back" provision where coastal development is prohibited in a protected area adjacent to the water's edge. Set-back lines provide buffer zones between the ocean and properties, to reduce damage to infrastructure and protect important coastal habitats i.e. dunes, mangroves, coastal vegetation that can provide protection against rising sea levels and severe storm surges. The basis of the setback lines should be set at a regional level for harmonisation across the countries.

4 POLLUTION – MICROPLASTICS

4.1 Background

Environmental pollution became a global issue in the 1970's. It wasn't until the early 1990's, that issues of marine pollution started getting global significance (Dauvergne 2018). As such, pollution has been one of the key issues for the Nairobi Convention, it has been extensively covered in certain areas. Even so, there are emerging issues which the Convention has to yet deal with. Environmental pollution from microplastics, and microbeads in particular, is considered an emerging global issue. Microbeads only started getting global significance in 2012 (Dauvergne 2018).

Microbeads, like most plastics, are made from petroleum (Dauvergne 2018). These tiny synthetic solid plastic particles are generally less than 5 mm in diameter and can be as tiny as a micrometre, requiring a microscope to see (New Zealand Ministry for the Environment 2017; Xanthos and Walker 2017; COP 9; Dauvergne 2018). They can be spherical or irregular in shape and are produced in a multitude of colors. Sometimes, they are referred to as 'Ugelstad spheres', after the Norwegian chemist (John Ugelstad, 1921–1997) who first invented them in 1976 (Dauvergne 2018). Similar to plastic bags, microbeads are single-use

plastics. Due to its durability, the lifespan of plastic material is estimated to be hundreds to thousands of years.

Microbeads have been celebrated for advancing cancer research and HIV/AIDS treatments, but they have also found many other uses (Dauvergne 2018). Most popularly, they are used as scrubbers in personal care products, such as facial and body scrubs, toothpaste and shampoo, among others (New Zealand Ministry for the Environment 2017; Xanthos and Walker 2017; Dauvergne 2018). Microbeads are designed to be disposed of via wastewater treatment infrastructure. However, wastewater treatment facilities are not designed to remove manufactured microplastic particles, which means that these particles are then released into the marine environment. An estimated 800 trillion microbeads are released into marine environments daily via waste water treatment infrastructure (Dauvergne 2018).

4.2 Issues

By weight, microbeads do not make up a significant percentage of the annual plastic pollution of the oceans: at most they are estimated to be no more than 1.5% (Dauvergne 2018). However, striking numbers can go down household drains – a single use of an exfoliating face wash can release tens of thousands of microbeads. This means that they accumulate over time. The use of microbeads is however viewed as unnecessary with natural alternates available for use.

In the environment, microbeads have been found to affect marine life. They have been found in fish, zooplankton, seabirds, whales, shellfish and corals. Studies found that microbeads are ingested by fish as well as larvae, leading to the starvation of these species. Microbeads have also been found in marine species consumed by humans, making them toxic for human, animal and plant life (New Zealand Ministry for the Environment 2017; Xanthos and Walker 2017; Dauvergne 2018).

Social impacts that are caused by microbeads have explored. It has been reported that for consumers, the phasing out of microbeads has caused little inconvenience and no price increases, as there are inexpensive natural alternative facial and body scrubs which are readily available. For governments, there have been few economic or political downsides. Most importantly, for beauty product manufacturers, the cost of removing microbeads has

been negligible to their profits. Additionally, volunteering to phase out microbeads has helped protect image of their brands, reduced liability and regulating risks. This means that these companies offer a market advantage over competitors as they can label themselves as environmentally friendly (New Zealand Ministry for the Environment 2017; Xanthos and Walker 2017; COP 2018; Dauvergne 2018).

4.3 Solutions

On the Ninth Conference of Parties to the Nairobi Convention, there was a call to member states of the Convention, to take action on plastic microbeads. Noting that plastic pollution is a big issue in the global environmental sphere, pollution caused by microbeads is an emerging issue. As a result, there is limited information on the environmental, social and economic impacts caused by microbeads. Therefore, research is required to address this gap for a number of reasons; it is important to understand the length and breadth of the impacts caused by microbeads.

The lack of adequate information however does not mean that the Nairobi Convention must delay taking action while waiting for more information. A Precautionary Approach can be applied in handling the issue of microbeads.

Taking into account, the alternative natural exfoliating materials that are available, the Nairobi Convention needs to consider adopting a ban on the use of microbeads by member states before they accumulate in the marine ecosystems. Some European countries, along with Australia and some states in the United States of America, have policies or plans to ban microbeads (Xanthos and Walker 2017). What has been done by these countries could provide best practices, which the Nairobi Convention can use to formulate a policy that will be suitable for member states of the Nairobi Convention. A monitoring programme needs to be implemented, which can ensure that interventions are being adhered to.

4.4 Policy

- There needs to be research conducted to understand further the impacts of microbeads. Evidence of environmental impacts on the marine environment from

microbeads needs to be collected. Additionally, emphasis also need to be placed on analyzing social impact and consequences of microbeads in the environment.

- Currently, waste water treatment infrastructure are not suited for microbeads, there needs to be a monitoring programme that will monitor microbeads in wastewater effluent. It could reveal baseline data of microbeads, as well as other microplastics that are released into the marine environment.
- The baseline data could be used to identify appropriate control strategies. The effectiveness of those strategies need to also be accurately quantified in order to ensure progress.
- Microbeads are viewed as unnecessary, and there are natural alternatives which can be used. Member states of the Nairobi Convention need to encourage manufacturers to explore these natural alternatives, which are said to include nut shells, salt, sugar, pumice, oatmeal, and walnut husks, among others. All these alternatives provide the same exfoliating properties that are provided by microbeads, but they do not pose any threats to the environment.
- Education and outreach programs are essential to modifying human behavior, these should be widely adopted by the member states of the Nairobi Convention.

5 TOXIC HOUSEHOLD SUBSTANCES INTO SEWER SYSTEM

5.1 Background

Many of the products come from sources we use to care for our families, home, the yard, and garden and we use variety of hazardous chemicals. When you no longer want these products, they become hazardous waste. The U.S. Environmental Protection Agency (EPA) defines four major types of hazardous waste:

- Corrosive wastes – can cause a chemical action that eats away materials or living tissue. Battery acid is an example;
- Toxic wastes – can cause illness or death. Pesticides, cleaning products, paints, photographic supplies, and many art supplies are examples;
- Ignitable waste - can catch fire spontaneously or burn easily. Examples include charcoal lighter fluid, gasoline, kerosene, and nail polish remover, and

- Reactive waste - can react with air, water, or other substances to cause rapid heating or explosions. Acids that heat up rapidly and spatter when mixed with water are examples.

5.2 Issues

Most household products are not harmful if used according to the directions on their labels. However, they can become harmful if used improperly, stored improperly, or if unused portions are disposed of improperly.

Most people dispose of hazardous products by throwing them in the trash, pouring them down the drain, burning them, pouring them in a ditch, dumping them on a vacant lot, or burying them in a field. These are the identified dangerous practices
Waste from hazardous products can contaminate lakes, rivers, streams, and groundwater (the places below the ground where water accumulates before it goes to a river, stream, or well). This can create serious problems from these waste products.

- Thrown in the garbage – these wastes can leak into water supply and/or cause air pollution;
- Poured down the drain – toxic material in that wastewater can kill the helpful bacteria and the system will not operate properly; most municipal systems rely on bacteria or other organisms to decompose the waste;
- Poured in storm drains or gutters – this can poison the wildlife and plants and contaminate the soil;
- Burned – there is a risk of producing poisonous fumes which will contribute to air pollution or even cause explosion, and
- Dumped or buried – this may cause contamination through the soil or water, especially if the waste is persistent. The children, wildlife may then be exposed.

5.3 Solutions

- Store containers on high shelves or in locked cabinets away from children.
- Protect the label so it does not come off and get lost.
- Store hazardous household products in the original container.

- Close containers tightly.
- Keep containers dry to prevent corrosion.
- Store similar products together to reduce any danger from reactions if containers should leak or contents should spill.
- Store hazardous household products in a well-ventilated area

5.4 Policy

Policies should be harmonised for countries in under the Nairobi Convention.

6 LIVING MARINE RESOURCES - FISHING

6.1 Background

The use of destructive fishing gear (Illegal fishing) as a way of killing fish has tremendous negative impact not only on the marine resources but also in the environment including habitat destruction. Fishing using illegal gears such as under mesh size, monofilament nets, beach seines and other destructive gears and practices including use of dynamite has greatly contributed to resources decline and environmental destruction which if not well addressed regionally and may lead to serious resource depletion. Legal fishing includes authorized right gears, place, time and manner. Trading in illegal fish including immature fish and other endangered marine resources promote destruction of the resource base. However, this may be exceptional for farmed fish. Management principles on marine resources several ways has been attempted to manage marine recourses however most has been defective including conventional management approach. In addition member states have to attain 30% of their area of jurisdiction as MPAs by 2030 to address SDGs.

6.2 Issues

The issues to marine living resources are Marine Pollution both for land based and shipping, Habitat, Un harmonized harvesting/fishing gears, loss and destruction of habitat by natural and anthropogenic, Overfishing/over exploitation, climate change Ocean Acidification and Invasive Species. In addition management approach and principles are not well organized in the western Indian Ocean.

6.3 Solutions

- To eliminate the use of all illegal fishing gears, practices and dynamite as well as maintaining a conducive environment for fisheries and others living marine resource sustainability.
- To harmonize management principles and approach in the region to all member states for effective fisheries and other living marine resource sustainability.

6.4 Policy

- Member states in collaboration with stakeholders shall set standards for fishing gears and fishing practices for the member states in the region
- Member states in collaboration with stakeholders shall eliminate illegal and destructive fishing gears; and practices such as dynamite fishing
- Member states shall educate community on the importance of legally acceptable fishing gears and practices
- Member states shall protect critical habitats, including spawning areas and seasons, to enhance fish stocks, reproduction and therefore fisheries sustainability.
- Member states in collaboration with stakeholders shall set targets (30%) in their Jurisdiction for declaration as MPAs by end of 2030
- Member states in collaboration with stakeholders shall demonstrate ecosystem based management and MSP planning for management of marine resources in their jurisdiction accordingly
- Member states shall be accountable to control/limit introduction of new species in their area of jurisdiction
- Member states shall educate community and stakeholders on the importance of sustainable management approach in the region
- Member states in collaboration with other stakeholders will ensure all endangered species are effectively managed

7 MARINE ALIEN AND INVASIVE SPECIES

The potential implications of invasive species to industries, ecosystem functioning and human livelihoods is an emerging problem due to increased ocean traffic. Management

regulations in the introduction and trade of marine alien species must be put in place in place in order to limit the dispersal of invasive species. Within the Western Indian Ocean, invasive species may spread beyond international boundaries and require co-management approaches. Where possible and feasible, international regulations can be implemented or adopted in the WIO.

8 SEA BED MINING

8.1 Background

Modern seabed exploration began in the mid-19th century, but has only been expanded in recent times with the advent of more technologically enabling equipment (Macreadie *et al*., 2018). Interests in seabed mining peaked during 2010-2011 with a steep increase in metal prices (Jaeckal *et al.*, 2016). With increased interest in seabed mining, concerns were raised regarding potential impacts of these activities. The United Nations Convention on the Law Of the Sea requires '*effective protection'* from '*harmful effects'* of seabed mining however, both terms have yet to be defined in the context of seabed mining (Jaeckal *et al.,* 2017).

8.2 Issues

The destructive nature of deep seabed mining is said to be akin to terrestrial strip mining where manganese nodule mining is likely to directly impact at least 300 – 800 km^2 of seafloor per year with indirect impacts estimated to be five times larger as a result of sediment plumes (Glover & Smith, 2003; Smith *et al*., 2009). Furthermore, there is a dearth of information about the deep seabed and due to the high cost of exploration and fact finding, it is difficult to determine to what extent the intended areas are sensitive to anthropogenic impacts and to what extent these areas are able to withstand shocks (Macreadie, 2018; Kaikkonen *et al*., 2018). If two manganese nodule contractors were in operation, within 15 years they could directly impact up to 120,000km^2 of seafloor communities (Smith *et al*., 2009).

In order for the sustainable development of seabed mining to occur there needs to be adequate knowledge of global biodiversity hotspots, species distribution, abundance patterns and potentially complex terrain to inform efficient resource development with minimal disturbance (Macreadie, 2018). However, growth in this sector is hampered by cost and

infrastructure (Macreadie, 2018) and seabed mining is said to be elusive due to certain unresolved issues such as engineering, financial and legislative constraints (Jaeckel *et al.*, 2016). The current challenges regarding mineral extraction from the seafloor are how to estimate the impacts on ecosystems before commercial activities start and how to deal with uncertainty stemming from the scarcity of data (Kaikkonen et al. 2018). As a result of the lack of baseline knowledge, Environmental Impact Assessment (EIA) studies are difficult to compile (Kaikkonen *et al.,* 2018).

Due to technological developments and increasing global demand for metals, it will become more economically and technologically feasible to conduct seabed mining (Jakobsen & Matz-Lück, 2016). Considering the forecast for the growth of seabed mining, finding solutions to governing this unfamiliar activity is critical.

8.3 Solutions

- Increased multi-disciplinary research to be conducted to determine potential impacts and risks. Policy development will subsequently be done based on scientific inquiry.
- Increased funding for the research required potentially through support for the Seabed Sustainability Fund for the financing and coordination of research projects.
- Careful, thoughtful and transparent dissemination of information acquired.
- Communities that may be impacted – both directly and indirectly – by the seabed mining must be included in a consultative and participatory manner.
- Capacity building for the Western-Indian Ocean (WIO) region in order to ensure active participation from the populace.
- Areas not suitable for seabed mining should be identified and demarcated as such.
- Demarcation of Ecologically and Biologically Significant Areas should be exempt from mining activities, in order to maintain ecological resilience.
- Mining should be undertaken in such a way so as not to interfere with areas of other industry i.e. seabed mining will impact areas much larger than their allocated area, we must ensure that the activities do not spill over to areas like Marine Protected Areas (MPAs).
- Comprehensive Marine Spatial Planning should be conducted in order to ensure that prospective mining activities do not impact other industries.

- Mining should be undertaken with respect for communities of people and animals with the aim to minimise noise pollution i.e. consider the migrating routes of whales and avoid seismic surveys and/or vessel traffic in those areas.
- Contingency plans for the release of hazardous substances locked into the seabed area.

8.4 Policy

- Before seabed mining is conducted transparent, multidisciplinary research should be conducted in order to ensure that seabed mining is done based on scientific inquiry with the provision of financial support for such research.
- Consultation and participation with relevant communities including capacity building to ensure equal economic participation of the nations' local communities.
- Ecological resilience should be maintained by preventing mining from occurring in areas such as Ecologically and Biologically Significant Areas (EBSAs) or MPAs.
- Mining and its related impacts should not occur in such a way as to encroach upon areas demarcated for other industries.
- Mining and its related impacts should not negatively impact on benthic and pelagic communities of another nation or negatively influence the livelihoods of people.
- Adequate regulation of the impacts of seabed mining should be legislated in line with international seabed authority and each country's constitutional requirements.

9 OFFSHORE OIL AND GAS EXPLORATION

The WIO region has seen continued growth and expansion of oil and gas exploration over the past decade. Most of the ocean remains unexplored, and deep sea oil and gas operations have great economic benefits but there is further potential to remove species, communities and habitats that are as yet unknown to science (Ramirez-Llodra et al., 2011). Increased oil and gas exploration further impact air, surface and groundwater pollution, degradation of soil and vegetation cover. Catastrophic accidents like tube failure, vessel sinking and oil spills are likely to pose large threats to organisms and ecosystems (Glover and Smith, 2003; Thiel et al., 2015). In order to maximise the benefits of oil and gas exploration to the WIO region,

there has to be further emphasis placed on the Nairobi Convention Capacity Building Programme & Emergency Preparedness and Response with related regional guidelines.

10 MANGROVE DESTRUCTIVE

In recent years, frequent impacts of sea surges, inundations and natural disasters recorded in the coastal areas are evidence of increased vulnerability of mangroves largely attributed to human pressures. Coordinated national, regional and international support measures and initiatives towards restoration and conservation of mangroves need to be put in place. Existing opportunities that can be used to support the development of such plans include the regional mangrove networks i.e. Western Indian Ocean Mangrove Network (WIOMN) and African Mangrove Network (AMN).

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