

Western Indian Ocean and Impacts of SDG14: Life Below Water

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Abstract

The SDGs outline a sustainable and inclusive global future. This paper discusses progress toward SDG 14 within the WIO, emphasizing four targets that were set for achievement by 2020. Given that current methods of evaluation of policy-informing lack precision, in this region, little headway has been made toward meeting the set targets, and the attainment of SDG 14 by 2030 does not seem possible. SDG 14.2 and 14.5: Moving at a Snail's Pace for Marine Conservation. Some countries protected only 10 percent of the more marine areas. In fisheries management, progress toward SDG 14.4 (reducing harmful subsidies) and SDG 14.6, combating illegal, unreported, and unregulated (IUU) fishing) is yielding positive, though modest, results. While the socio-economic and governance structures across the WIO (Western Indian Ocean) region vary, the potential for restoring ecological health remains high. To overcome existing challenges and achieve SDG 14, it will be crucial to strengthen monitoring systems, promote integrated governance, invest in capacity building, and foster knowledge sharing. The region will gain social, economic, and environmental advantages from better SDG implementation.

Keywords: Western Indian Ocean (WIO), Marine conservation, fisheries management, area-based management tools, ocean governance, marine protected areas, sustainable resource management, policy and decision-making, regional advancements, monitoring and reporting systems

INTRODUCTION

The progress toward achieving the United Nations Sustainable Development thing 14 (SDG 14) holds significant significance for the Western Indian Ocean (WIO) region, given the reliance of multitudinous littoral communities on ocean health for their food security and livelihoods. Sustainable operation of ocean coffer is a central ideal for blue husbandry within WIO nations (WIOMSA, 2018). This precedence was stressed during the 2022 UN Ocean Conference, erecting commitments from the initial 2017 conference, which electrified transnational commitments to support and implement actions aimed at advancing SDG 14 have been made, yet overall progress on this goal still lags other SDGs. This paper

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weighs the progress made towards four targets of SDG 14, originally set for completion by 2020, using case studies from ten countries in the Western Indian Ocean (WIO) region. These countries include Comoros, France (encompassing Réunion and Mayotte), Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa, and Tanzania. The paper also highlights the significant funding gap and builds upon insights from prior studies on the Sustainable Development Goals.

Three primary goals run through the paper:

1. Using worldwide databases including data on the four SDG 14 targets, evaluated within the context of global indicators, it investigates the evolution of

SDG 14 in the WIO region.

2. It examines political, social, environmental, and economic issues influencing the accomplishment or obstacles to reach Sustainable Development Goal 14 in the area. The common causes and differences influencing the results of many nations were found using a socio-ecological systems approach.
3. It goes over the body of current research to provide possible approaches for quickening WIO area progress toward Sustainable Development Goal 14.

Current reporting on SDG 14 remains inconsistent, as WIO countries have submitted voluntary progress reviews desultorily or, in some cases, not at each over the once five times (United Nations, 2022b). Inadequate data vacuity hinders effective progress monitoring. This paper offers perceptivity into enhancing the use of indigenous pointers, supporting UN member countries in their sweats to develop and apply public and indigenous criteria to condense the global index frame [1].

PROGRESS TOWARD MARINE PROTECTION TARGETS (SDG 14.2 and SDG 14.5)

Most nations have hardly progressed and yet have a long way to go toward their goals for marine conservation. The evaluation of SDG 14.2 was based on the share of national exclusive economic zones (EEZs) under management via ecosystem-based tactics. Three categories emerged from the data analysis for WIO countries: those who made little progress, those who made modest growth, and those who achieved significant advancement. Since none of the nations have totally reached this aim, it follows that none of them have used Marine Spatial Planning (MSP) that satisfies the high criteria of the Ocean Health Index (OHI). Although numerous WIO countries demonstrate a satisfactory ecological status according to the Ocean Health Index (OHI), marine spatial planning (MSP) processes are still underdeveloped, with countries either still in the development phase or at the pre planning stage. Completing the planning framework has brought four nations – France, Mozambique, Seychelles, and South Africa – important MSP process progress. Still, they have not yet put it into use or attained a high OHI in respect to their MSP progress. Somalia ranks smallest for this target, being at there planning stage for MSP with average ecological pointers [2].

SDG 14.5 assesses the extent of marine areas designated as protected. France is the only country to have entirely achieved this target, with 16.6% of its marine areas under protection, covering over 50% of critical marine biodiversity zones. The Seychelles and South Africa are making significant progress, each protecting over 10% of their marine areas, though less than 50% of their key biodiversity zones are included. The Seychelles leads with 32.8% marine protected area (MPA) coverage, followed by France at 16.6% and South Africa at 15.5%.

The conservation of remote islet habitats has been instrumental in the achievements of France and South Africa; however, these efforts still protect only 30–47% of biodiversity-critical areas. Tanzania and Mozambique have made limited progress, with MPA coverage below 5%, while other countries in the Western Indian Ocean (WIO) region lag far behind, with less than 2% coverage. Among the four SDG targets reviewed, SDG 14.5 has shown the least progress overall.

PROGRESS TOWARDS TARGETS ON FISHERIES MANAGEMENT (SDG 14.4 and SDG 14.6)

Target 14.4, focused on fisheries regulation, was evaluated based on the percentage of sustainable fish stocks and the quality of fisheries governance. Most countries (eight) were classified as showing good or moderate progress, with 60–80% of national fish stocks considered sustainable. Notably, Mozambique, Seychelles, Somalia, and Tanzania achieved a high Marine Trophic Index (MTI) score (>3.5). France and Comoros, despite having less than 70% sustainable stocks, maintained an MTI score above 4. Conversely, two countries – Mauritius and South Africa – were categorized as having made limited progress toward this target, with less than 40% of their fish stocks deemed sustainable.

Fish stocks in the region are generally in good condition, but further efforts are needed to ensure all countries meet the target. The SDG Tracker reports a 5% reduction in overexploited stocks within the WIO, reflecting the moderate progress highlighted in this study. Data from 2018 shows that most WIO countries performed better in terms of the percentage of fish caught from overexploitation or depletion of fish stocks, as indicated by the SDG Index Dashboard. This suggests that many WIO countries have already achieved the target. Unlike other reporting platforms, this study incorporates both the proportion of sustainable fish stocks and the impact of fishing pressure on marine trophic levels, which may regard for the differences between its findings and those of other reporting platforms.

Target 14.6, which evaluates countries' efforts to implement international agreements against illegal, unreported, and unregulated (IUU) fishing, revealed that France and Mozambique had successfully achieved the target by 2021, while Kenya and the Seychelles made significant progress. However, half of the countries in the region were classified as showing low to moderate progress, highlighting gaps in the implementation of international measures to address IUU fishing. Actions, such as developing comprehensive plans and adhering to management protocols remain essential to effectively combat IUU fishing. Among the four targets assessed, this target has shown the greatest progress. Nevertheless, challenges persist in monitoring and documenting IUU fishing activities. The pointers for this target primarily emphasize the establishment of measures, instead of their effective implementation (Table 1). Furthermore, the SDG Tracker for 2020 noted that six out of ten nations lacked adequate data to assess progress, emphasizing the difficulties in tracking advancements for this target [3].

Table 1. SDG progress.

Progress Towards SDG 14 Targets	SDG 14.2	SDG 14.4	SDG 14.5	SDG 14.6
Achieved	MSP covering the entire EEZ, OHI 85–95, MTI 45	>90% of stock sustainable	MPAs 10% of EEZ, with 50% of marine KBAS covered	IUU index (response) 1–17
Good progress/Near completion	Under development, completed and approved but not implemented. 75–85	60–90% of stock sustainable, MTI 35–45	MPAs covering 75–10% of the EEZ with at least 50% of marine Key Biodiversity Areas (KBAs) protected, or MPAs covering 10% of the EEZ but less than 50% of marine KBAs included.	IUU index (response) 1.7–2
Average progress	MSP under development, OHI 65–75	20–50% of stocks are sustainable, with a Marine Trophic Index (MTI) of 13–35, or 50% of stocks are sustainable.	MPAs covering 2–7.5% of the EEZ, regardless of the percentage of marine Key Biodiversity Areas (KBAs) protected, or MPAs covering 7.5–10% of the EEZ, but protecting less than 50% of marine KBAs.	IUU index (response) 2–25
Low progress	MSP at pre-planning phase, OHI 60–70	20–50% of stock sustainable, MTI 13–4	MPAs covering 2–7.5% of the EEZ, regardless of the extent of marine Key Biodiversity Areas (KBAs) they protect.	IUU index (response) ranging from 2.5 to 3.0.
Far from	Marine Spatial Planning (MSP) at the pre-planning stage, during the pilot project phase, with an Ocean Health Index (OHI) of 60.	Less than 20% of stocks are sustainable, with an MTI of 1.	MPAs covering 0–2% of the EEZ, regardless of the proportion of marine Key Biodiversity Areas (KBAs) protected.	IUU response index

DRIVERS OF PROGRESS IN SOCIO-ECOLOGICAL SYSTEMS

The objectives of SDG 14 provide a worldwide framework for evaluating oceanic sustainability. Knowing the elements influencing the current performance levels will help us to improve the SDG 14 objectives' implementation by 2030. Reaching Sustainable Development Goals 14.5 and 14.6 has made

great progress possible for some nations (Table 1). Nations that have achieved notable progress on Sustainable Development Goal 14.5, for example, often have good ecological drivers, all of which have high Ocean Health Indices and average Marine Trophic Index (MTI) values. Research demonstrating effective protection in Western Indian Ocean (WIO) areas has shown that fish output has risen in such areas.

Based on Human Development Index, three countries, namely South Africa, France, and Seychelles, have superior socioeconomic conditions than others in the region. Among the significant turning points in the expansion of marine protected areas (MPAs) the 2018 Debt Swap in Seychelles (SSCOE, 2018; UNEP-NC and WIOMSA, 2021) marks. Another example is the Great Blue Wall initiative (IUCN, 2021), which seeks to enhance marine conservation through the establishment of Other Effective Area-Based Conservation Measures (OECMs), including locally managed marine areas. Additionally, political will and strategic actions, like Seychelles' leadership in ocean conservation management (State House, 2020), play a crucial role in driving the creation of MPAs. Immediate efforts to support these actions include resource mobilization through the Nairobi Convention under the UNEP Regional Seas Program, as well as the generation of scientific knowledge, information, and data by WIOMSA to advance marine protection efforts in the region [4].

External elements driving the creation of marine protected areas include the 30 x 30 campaign (Ocean Unite, 2021) and the growing global attention on ocean preservation by the "Our Ocean" conference in Malta (IISD, 2017). Six of ten countries have made significant progress towards reaching SDG 14.6. Though only a small percentage of them are classified as unsustainable (overfished or collapsed), the health of fish stocks in the region is a crucial ecological aspect. Assistance with fisheries governance has traditionally been beneficial to Western Indian Ocean (WIO) nations. The Southwest Indian Ocean Fisheries Commission (SWIOFC), of which all 10 nations are members, promotes international framework adoption and fisheries management debates. Additionally participating in regional fisheries management groups include the Southern Indian Ocean Fisheries Agreement and the Indian Ocean Tuna Commission are they are These groups help to control common fish stocks and stop illegal, unreported, and uncontrolled (IUU) fishing. Global Fishing Watch and other internet platforms are examples of pulse events that enhance the monitoring of fishing operations within their Exclusive Economic Zones (EEZs). Past and ongoing regional surveillance and monitoring programs, like Fish-i Africa and the Indian Ocean Commission's monitoring and surveillance initiative, also provide WIO countries with resources to combat IUU fishing. External drivers, including global efforts to tackle overfishing and the detrimental effects of harmful subsidies on fisheries, also enhance existing management efforts.

The limited progress seen in some countries across the four targets can be better understood through an ecological lens of the WIO region, utilizing indicators like the Ocean Health Index (OHI), Marine Trophic Index (MTI), and fish stock data. While the biodiverse marine ecosystems in the WIO are generally in good condition, significant risks arise from the heavy exploitation of fish stocks, with 30% to 80% of stocks in certain countries being overexploited or depleted. Additional pressures come from climate change, rising marine pollution, and overfishing of species, such as tuna and sharks throughout the Indian Ocean. The ecological health of the WIO is further compromised by its connectivity to the high seas, where fishing activities also impact marine ecosystems within the region.

In terms of socio-economic drivers, the developmental and blue growth priorities in the developing nations of the Western Indian Ocean frequently emphasize the extraction of natural resources rather than conservation objectives. Additionally, external influences, including the significant demand for seafood and important commercial species, such as tuna, play a vital role in determining the extent of marine resource exploitation (Figure 1). Despite involvement in various initiatives, weak governance across WIO countries poses significant challenges in both implementing and monitoring conservation progress. Limited resources, understaffing, inadequate equipment, and the need for capacity building have all contributed to difficulties in managing Marine Protected Areas (MPAs) and addressing illegal, unreported, and unregulated (IUU) fishing. Persistent funding gaps and resource limitations suggest that these obstacles will continue to hinder progress toward achieving SDG 14.

The COVID-19 pandemic significantly impacted progress across all 17 SDGs in 2020, including SDG 14. It disrupted enforcement, strained resources, and limited capacity, thereby hindering nations' efforts to meet their targets. Additionally, political instability and other sudden events can shift government priorities, redirecting focus away from marine initiatives as national agendas evolve with changes in administration. Despite these challenges, the ongoing initiatives in the WIO region present opportunities to improve progress tracking, which could support achieving SDG 14 targets [5].

The IOC UNESCO Marine Spatial Planning (MSP) website as of January 2022 listed only five WIO nations – France, Kenya, Mauritius, Mozambique, and Seychelles – actively engaging in MSP. Conversely, countries, such as South Africa and Madagascar are likewise working to raise MSP at both national and regional levels. Still restricted is the monitoring of progress toward goals. National data entries to the World Database on Protected Areas (WDPA) and regional projects, like the WIO MPA Outlook, help to track coverage of marine protected areas (MPA). Particularly for SDG 14, most national Sustainable Development Goals (SDGs) reporting depends on Voluntary National Reviews, which may just provide a list of finished projects rather than comprehensive assessments of progress. The WIO countries have sent these assessments at erratic periods over the last five years; others have not sent any at all.

Moreover, several external factors complicate the achievement of SDG 14 targets. Target 14.2, which advocates area-based management through tools, like MSP and Integrated Coastal Zone Management (ICZM), proves difficult to implement. Many countries, including those outside the WIO region, are still in the early stages of operationalizing MSP, encountering socio-economic, institutional, and political challenges. Although ICZM has been in use for some time, it too has faced various obstacles that hinder its effective implementation. Similarly, Target 14.4, which aims to ensure biologically sustainable fish stocks, is challenged by limited national capacity for conducting stock assessments. Efforts by the FAO to address this gap only began in 2019, leaving many countries still struggling to develop the necessary capacity.

POTENTIAL STRATEGIES FOR ENHANCING REPORTING AND IMPLEMENTATION OF SDG 14 IN THE WIO INCLUDE

The following findings act as a wake-up call for the region that has seen many projects, assessments, and campaigns over the years. Based on most recent studies, the following improvements and adjustments are advised for the WIO region and its countries.

Enhanced Adoption of SDG 14 Monitoring

To accelerate progress toward SDG 14, it is crucial to promptly and accurately document actions taken in the WIO at both national and regional levels, ensuring they are incorporated into the broader SDG 14 monitoring framework. Currently, the assessment of SDG 14 progress largely relies on UN reporting mechanisms or independent studies, which often lack active involvement from the countries and regions being monitored. Coordination efforts could be strengthened through platforms, such as the Nairobi Convention, which can support countries lagging. Involving scientific networks, like WIOMSA, would also facilitate the collection and use of existing data, improving the monitoring of SDG 14 progress across the WIO region.

A table has been proposed to outline the potential data requirements for each SDG 14 target, along with relevant knowledge sources that can be leveraged within the region. At the regional level, this data might be aggregated and then shared with national focal points in departments handling marine resources and fisheries. These areas of interest might be regularly addressed to complete UNEP or FAO questionnaires about the advancement of SDG 14. Should this knowledge be shared with national stakeholders, it would also enhance the data submission to international databases, such as the World Database on Protected Areas, therefore supporting the monitoring of SDG 14.5. Moreover, this approach could assist countries in preparing voluntary reports by providing valuable insights and results across various SDG 14 targets [6].

FROM ACHIEVEMENT TO A HOLISTIC APPROACH: CONNECTING CONSERVATION AND SUSTAINABLE USE

To accomplish the objectives of Agenda 2030, ambitious strategies must be embraced by the region. Both national and regional efforts to advance SDG 14 should not only address the existing gaps in progress but also tackle the underlying causes. Expanding marine protected areas requires effective processes and the allocation of sufficient resources to ensure their successful implementation and monitoring. This necessitates collaboration among a wide range of stakeholders, including governments developing policies, civil society organizations and businesses taking action, and researchers providing essential evidence to inform policy and decision-making. Platforms, like the WIO's Science to Policy dialogue, can play a key role in fostering such collaboration and driving progress toward SDG 14.

There must also be better alignment between governance frameworks and processes that are associated with marine management. For example, the framework developed after 2020 under the CBD and the SDGs share common objectives, such as increasing marine protected area coverage from the 10% target set by SDG 14.5 to 30%. Integrating SDG 14 goals more effectively with emerging national and regional blue economy strategies is equally important. A narrative-driven approach to reporting progress could offer a more comprehensive view, highlighting the interconnections across multiple SDGs and aligning blue economy efforts with SDG priorities [7].

Marine protection and fisheries management should be approached through an integrated framework. Although the distinct goals of SDG 14 for fisheries and marine protection emphasize the separation between these areas, the overexploitation of marine resources through fishing has a significant impact on ocean health and human well-being. Therefore, achieving fisheries-related SDG 14 targets is essential for effective marine protection. Likewise, well-managed marine protected areas can boost ocean productivity, which in turn benefits fisheries. Coordinating efforts to monitor these targets and addressing their interconnections could help achieve multiple SDG 14 objectives, as well as related goals like SDG 2 and SDG 13 (food security and climate action respectively). However, this integrated approach may require balancing competing interests with other SDGs, such as SDG 1 (poverty alleviation) and SDG 7 (energy access). For example, regulating fishing in biodiversity-rich areas may require compensation mechanisms for affected communities or initiatives to mitigate biodiversity loss due to fishing activities.

A CUSTOMIZED APPROACH TO CAPACITY DEVELOPMENT THROUGH COLLABORATIVE LEARNING

Although the countries in the WIO region share a common part of the Indian Ocean, they display considerable socio-economic differences. These disparities result in varying levels of resources, capacities, and approaches to implementing SDG 14 initiatives and tracking their progress. While some nations have made notable advancements toward achieving SDG 14, others continue to face significant obstacles. Consequently, current and future capacity-building efforts at the regional level must address these diverse needs and implement strategies customized to effectively support SDG 14 [8].

Projects, like the WIO Great Blue Wall and Worldwide Funding Systems, like the Blue Action Fund, which actively promote the WIO region, should consider the particular needs of every country. This study classifies WIO countries into three distinct groups, emphasizing the need for tailored capacity-building strategies to address their specific requirements.

- *High Achievers:* Countries, like France and Seychelles, fall into this category. For these nations, strengthening capacity in monitoring progress is vital to ensure that the results of projects and initiatives are effectively linked to the achievement of SDG 14. Given the diverse targets under SDG 14, it is important to promote coordination across various government departments and enhance the capacity to track progress toward these targets.
- *Countries with Limited Progress:* Nations, such as Comoros and Somalia belong to this group. These countries need capacity development at both the implementation and monitoring levels. For successful implementation, like approaches used for other global goals, like the CBD Aichi

targets, capacity must be built across multiple levels, including local community organizations, national NGOs, governments, and research institutions. These entities are often underfunded and lack sufficient staffing, which limits their ability to take effective action. Regarding monitoring, it is crucial to develop capacity for data production and collection. Processes, such as stock assessments and Marine Spatial Planning (MSP), which are key to SDG 14, will require investment in enhancing national capacity through targeted training initiatives.

- *The third category of countries:* encompasses more than half of the WIO region, which demonstrates low to moderate progress on several objectives. In these countries, targeted measures are necessary to enhance both the implementation and monitoring of activities. Countries with limited progress in achieving ecosystem-based area management (SDG 14.2) need to improve their record-keeping and monitoring efforts for initiatives, such as Marine Spatial Planning (MSP), Locally Managed Marine Areas (LMMAs), and Integrated Coastal Zone Management (ICZM) activities. Most of these countries have not met the MPA coverage target, meaning that additional MPAs and other types of Other Effective Area-Based Conservation Measures (OECMs) are required in the WIO. While new MPAs and OECMs are being established, the effectiveness of these measures is of greater concern. One might question whether this goal remains relevant for the region, as noted by Maron et al. (2021), with only a few countries globally having met specific quantitative targets, most of which are biodiversity targets set by the Secretariat of the Convention on Biological Diversity (2020). A more qualitative or narrative-based approach to assessing progress in marine management and protection, as suggested by some scholars, could prove valuable [9].

To ensure the sustainability of fish stocks, nations must raise their volume for stock assessments, assist initiatives to rebuild and recover fish populations, and phase out harmful fishing practices such as bottom trawling and other destructive methods. Particularly in terms of enhancing monitoring, control, and surveillance systems, the Illegal, Unreported, and Unregulated (IUU) Index and the Global Fishing Index (Mindereroo Foundation, 2021) are two currently in use reporting tools that might help identify areas most in need of capacity development. Effective coordination of these efforts will require regional cooperation in ocean governance. Countries making progress or already meeting their targets can share best practices, helping to drive further advancements toward SDG 14 in the region. Countries lagging should be prioritised for additional support from regional and international partners. This support should focus on fostering long-term, comprehensive improvements in fisheries management, rather than rushing to achieve quick results.

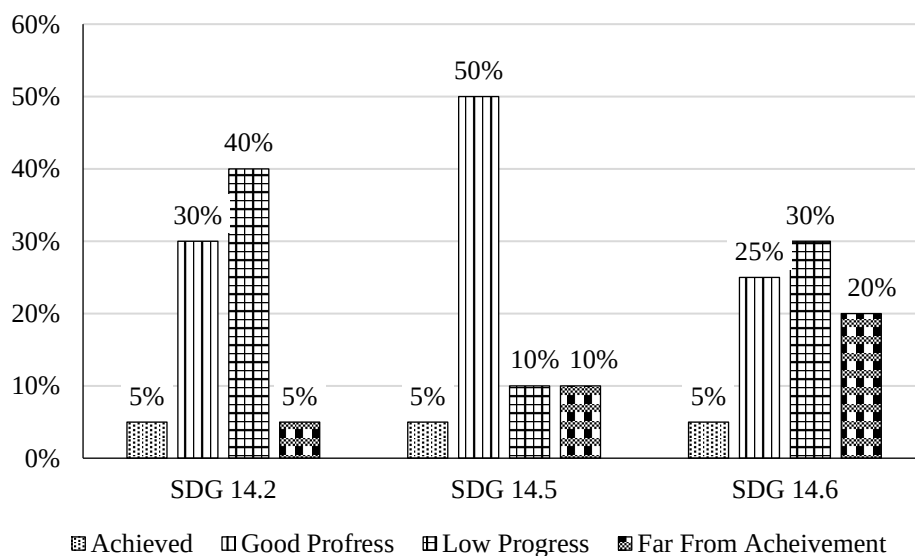


Figure 1. SDG14 Progress chart.

A MULTI-LEVEL APPROACH TO INCLUSION AND SOCIAL EQUITY

SDG 14 can help create an integrated path for the advancement of ocean initiatives while also creating regional support and awareness of regional initiatives that have been undertaken. To realize SDG 14 will also require coordinated effort from every level-local manager of the marines, fisherman, governments, and regional entities. As a nation becomes ever more vocal about pressing issues with regards to its ocean, there must also be critical involvement and presence of local efforts at their base.

The principles of inclusion and social equity should underpin the implementation and monitoring of SDG 14. At the local level, stakeholder engagement must go beyond mere attendance at meetings or receipt of project outcomes. Instead, it should ensure that their voices are genuinely heard, and their perspectives meaningfully integrated into decision-making processes. For example, local communities may oppose Marine Spatial Planning (MSP) if their input is not adequately reflected in the decisions made, even after participating in the process.

While independent and autonomous assessments are in progress, nations and participants have to actively monitor development rather than only provide numbers. Encouragement of good and fair socio-ecological transformation depends on a cooperative approach to knowledge development. Stakeholders should be allowed to have significant discussions on how to achieve sustainable oceans at SDG 14. Including SDG 14 into WIO area blue economy policy development could help to improve blue justice by means of a more inclusive approach. This will place the area among leaders in sustainable ocean management globally [10].

CONCLUSIONS

The Sustainable Development Goals (SDGs) serve as a comprehensive framework for guiding sustainable development efforts extending through 2030 and beyond. This article explores the implementation monitoring and practicality of strategies aimed at achieving SDG 14 within the Western Indian Ocean (WIO) region. It was developed over a five-year period following the adoption of SDG14.

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