AN UPDATED REVIEW OF SOCIO-ECONOMIC INDICATORS FOR COASTAL COUNTRIES IN THE INDIAN OCEAN

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Purpose

This paper extends the review conducted in the previous year by the IOTC Secretariat on fisheries socio-economic data from coastal States, with particular emphasis on indicators relevant to the Technical Committee on Allocation Criteria (TCAC), together with their associated data collection methodologies and availability. The assessment provides a systematic evaluation of datasets available through the World Bank and other international organisations acting as repositories for such data, in order to assess their coverage, consistency, and suitability for analytical and policy applications.

Background

During the 2nd Working Party on Socio-Economics (WPSE02), key fisheries-level indicators were identified, alongside a set of contextual indicators, following a series of expert presentations by consultants. However, the collection of fisheries-related socio-economic indicators is not conducted in isolation, as most countries compile data at the level of broader economic sectors, with fisheries typically aggregated under the primary sector together with agriculture and forestry. The TCAC subsequently referenced a subset of these indicators as being of particular relevance for decision-making, based on the recommendations of WPSE02.

Data mining of existing global databases provided an initial assessment of the availability of these socio-economic indicators for coastal Members of the Indian Ocean Tuna Commission (IOTC). The principal data sources include the World Bank, the Food and Agriculture Organization Corporate Statistical Database (FAOSTAT), the Organisation for Economic Co-operation and Development (OECD), and the International Labour Organization (ILO), each characterised by distinct data structures and reporting frameworks.

World Bank Database Repository

The World Bank database primarily hosts macroeconomic indicators, including Gross Domestic Product (GDP) and related aggregates, as well as national-level data on population and production activities. However, fisheries-specific datasets, such as vessel statistics, are generally not comprehensively captured within this repository and are more often derived from specialised sources, including Fishery Performance Indicators (FPIs) and peer-reviewed studies based on expert assessments of fisheries efficiency.

In addition to limitations in fisheries-specific data, most nationally reported demographic and economic statistics relevant to fisheries are aggregated within the primary sector, which encompasses agriculture and forestry. While fisheries are formally classified within this sector, a range of fisheries-related economic activities are recorded under secondary and tertiary sectors, including fish processing and manufacturing, as well as service industries that derive income from fisheries value chains. These cross-sectoral linkages are therefore not fully reflected in primary sector aggregates.

Although it is possible to extract proxy indicators from secondary and tertiary sector datasets, isolating fisheries-specific economic activities remains methodologically challenging. Such efforts require careful interpretation to avoid misrepresentation, particularly in countries where fisheries constitute a relatively small component of a more diversified economic structure.

FAO SDG data repository

The FAO statistics, not only hosts primary data like productions, but contains SDG indicators relevant to evaluate the countries ability to protect the fisheries resources, particularly the elements of SDG14 (Life Below Water), to prevent destruction of the marine life. The dependencies of the coastal states on the ocean ecosystem for sustainable economic growth, adhere the importance of the coastal states toward the SDG14 to address the current emerging threats in the oceans (Nairobi Convention, Western Indian Ocean Marine Science Association (WIOMSA) 2018).

The Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) provides not only primary fisheries data, such as production statistics, but also a range of indicators aligned with the Sustainable Development Goals (SDGs). In particular, it includes indicators relevant to assessing countries' capacity to conserve and sustainably use marine resources under SDG 14 (Life Below Water). These indicators support the monitoring of progress toward preventing marine ecosystem degradation and promoting sustainable fisheries management.

The dependence of coastal States on ocean ecosystems for sustained economic growth underscores the importance of their engagement with SDG 14 in addressing emerging threats to marine environments. This is particularly relevant in the context of regional frameworks such as the Nairobi Convention and the Western Indian Ocean Marine Science Association (WIOMSA) (Nairobi Convention, Western Indian Ocean Marine Science Association (WIOMSA) 2018), which highlight the need for coordinated efforts to safeguard marine biodiversity and ecosystem services.

OECD

The Organisation for Economic Co-operation and Development (OECD) provides economic performance indicators, country classifications based on stages of development, and macroeconomic data relevant to TCAC decision-making.

ILO

Similarly, the International Labour Organisation (ILO) provides labour statistics—including employment, wages, and workforce participation—that are essential for capturing fisheries' socio-economic contributions within broader labour markets.

Methods

The socio-economic indicators identified in the TCAC report were analysed across the various data sources for the IOTC coastal States.

- High per capita fish consumption
- High proportion of fish workers employed in small-scale and artisanal fisheries
- High proportion of workers employed in fish processing
- Vulnerable as assessed by the Commonwealth universal vulnerability index
- High contribution to GDP from tuna fisheries
- High proportion of total export value made up of fisheries exports
- Low Human Development Index (HDI) status:

The Per Capita Fish Consumption

Population-level fish consumption can be derived from the OECD-FAOSTAT repository, which provides annual per capita consumption of all fish and seafood. These data are produced by the Food and Agriculture Organization of the United Nations (FAO, 2025) and processed by Our World in Data. FAO calculates these estimates using food balance sheets combined with population data.

In contrast, the World Bank provides data on total fish production and captured production, which may not account for the effects of imports and exports, an important consideration for understanding dietary intake and economic dependence on fisheries. For example, in Seychelles, high catches of pelagic fish are largely exported rather than consumed domestically, while some aquatic species are imported to meet local consumption needs. This highlights the need to consider trade flows in addition to production when assessing fish availability for local populations.

Proportion of Employment in Small-Scale and Artisanal Fisheries and Fish Processing

Fisheries employment is generally aggregated within the primary sector, including agriculture and forestry, in World Bank and OECD datasets, though OECD coverage is limited. World Bank data are based on ILO Modelled Estimates (via World Bank, 2026) and processed by Our World in Data. ILO provides more detailed fisheries-specific employment statistics, disaggregated by sex, age, occupation and activity. Fish processing and related labour are reported under "Shipping, Ports, Fisheries, and Inland Waterways," where fisheries typically dominate in many coastal countries, making this category a useful proxy for fisheries employment.

Commonwealth Universal Vulnerability Index (UVI)

The Vulnerability Index (VI), which measures a country's resilience to environmental disasters and economic shocks, depends on multiple economic, social, and environmental factors. According to (The Commonwealth Secretariat 2021), the index framework comprises three dimensions: (i) Economic vulnerability, reflecting exposure to external and natural shocks; (ii) Physical vulnerability, assessing exposure to climate change impacts; and (iii) Socio-political vulnerability, capturing the recurrence of conflicts and violence. A country's resilience to these vulnerabilities depends on policy performance and capacity to strengthen adaptive measures. Countries are classified according to the extent of their resilience relative to these vulnerabilities. Data for the index indicators used to calculate Vulnerability Index scores are publicly available for analysis.

Contribution to GDP from Tuna Fisheries

The economic contribution of tuna fisheries has been assessed by several organizations, including the World Bank, FAO, and the Pacific Islands Forum Fisheries Agency (FFA), as well as through peer-reviewed fisheries research. Using data from these various sources, the contribution of tuna fisheries to GDP can be estimated directly. Key variables for such estimations include fish price indices from FAO, catch data from IOTC or FAO, and GDP at market prices from the World Bank.

Proportion of Total Export Value made up of Fisheries Exports

The UN Comtrade Database provides comprehensive trade data for tuna products, both whole and processed, classified under commodity code 160414. These datasets capture imports and exports at the national and international levels, enabling analysis of trade flows, market share, and economic reliance on tuna fisheries. When combined with GDP value-added data from the World Bank, these trade statistics allow for the estimation of fisheries' contribution to national economies, including the share of tuna exports in overall economic output.

Human Development Index (HDI)

The HDI, which provides the development rating of a country, through the growth, based on three development criteria of a country: health, education and standard of living (Gross National Income per capita), was created by the United Nations Development Programme (UNDP).

The Human Development Index (HDI), also developed by the UNDP, provides a composite measure of a country's overall development. It is calculated using three key dimensions: (i) health, measured by life expectancy at birth; (ii) education, assessed through mean years of schooling and expected years of schooling; and (iii) standard of living, captured by Gross National Income (GNI) per capita. By combining these dimensions into a single index, the HDI allows for comparative assessments of development across countries and over time. This metric is widely used to contextualize socio-economic conditions, identify development gaps, and inform policy-making, including the assessment of how fisheries and related economic activities contribute to broader national development.

Results

The data for the indicators are not always available for recent years, and for all countries. Efforts were made to extract data up to 2023 for all the indicators described above (**Table *1***) presents the values of these indicators for IOTC coastal States. Employment data sourced from the ILO were not available for 2023 for all countries; consequently, the reference year for employment data ranges between 2019 and 2023.

Summary of indicators

Table. 1. Socio-economic indicators of coastal countries as indicators for TCAC

Country	Per capita consumption (t)	Primary fishery employment	Process fishery employment	MVI score	HDI
Australia	40.9	165	14,124		0.95
Bangladesh	52.6	28,485	70,982	52.39	0.67
China	64.6			46.10	0.79
Comoros	33.9	67	260	60.27	0.59
India	16.9	167,265	471,886	45.98	0.64
Indonesia	76.6	30,107	139,242	32.11	0.71
Iran (Islamic Republic of)	22.2	2,563	24,277	55.69	0.78
Japan		1,849	66,853		0.92
Kenya	5.7	5,882	17,080	56.95	0.60
Madagascar	6.6	6,209	11,880	49.60	0.49
Malaysia	92.2			39.38	0.81
Maldives	152.6	24	193	72.21	0.76

Country	Per capita consumption (t)	Primary fishery employment	Process fishery employment	MVI score	HDI
Mauritius	53.3	15	555	52.16	0.80
Mozambique	25.1	8,880	12,194	47.54	0.46
Oman	54.7			59.81	0.82
Pakistan	2.6	20,701	61,652	59.91	0.54
Philippines	49.9	5,196	46,939	43.61	0.71
Republic of Korea	86.0	1,432	26,217		0.93
Seychelles	76.8	1	51	54.51	0.80
Somalia		54	1,036	67.77	0.38
South Africa	10.8			48.06	0.72
Sri Lanka	43.8	1,043	8,010	48.62	0.78
Sudan		2,655	9,058	62.84	0.52
Thailand	50.1	10,911	39,912	43.14	0.80
United Kingdom of Great Britain and	31.3	130	33,014		0.94

Country	Per capita consumption (t)	Primary fishery employment	Process fishery employment	MVI score	HDI
Northern Ireland					
United Republic of Tanzania	12.6			41.58	0.53
Yemen	4.0			72.87	0.42

Conclusion

The availability of key indicators that reflect the economic development of countries highly dependent on marine resources is often limited. In many cases, accessing these data globally requires direct engagement with the respective organizations. Furthermore, estimating fisheries-specific indicators often necessitates combining multiple variables and datasets. The temporal coverage of available data varies by country, depending on the frequency and capacity of national surveys. For some countries, the most recent data may date back to 2015, whereas for others, data are available as recently as 2025.

References

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