

Marine Fisheries Insurance

Issues and Strategies for Maldives



Bay of Bengal Programme
Inter-Governmental Organisation

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The marine fisheries sector of Maldives has developed rapidly since the 1970s. From a subsistence activity, it is in the process of transformation to a key blue economy sector, revitalizing the island economy and contributing to the national development. However, what lies in the future of the sector is uncertain. The uncertainty stems from rapid changes in the climate that in turn is changing the conventional socio-ecological system in which the fisheries operate.

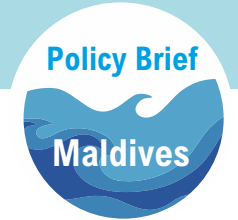
There is no single solution to the emerging problems but a range of actions are needed. One of the much-needed actions is to mitigate the financial risk faced in the fishing operations and the fishers. Insurance is a tested measure employed by people and businesses to deal with risk and uncertainties and cut down expected losses from adverse events.

While still insurance remains an enigma to the fisheries sector, there is a renewed thrust on its integration into fisheries policies to deal with the escalation of risks in the sector, globally. However, it's easier said than done.

The big question is what can be done to popularise the adoption of insurance in the sector. This policy brief presents the views of a wide range of stakeholders on insurance and offers an insurance toolbox for the government to consider and act upon as a social welfare measure.



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Contents

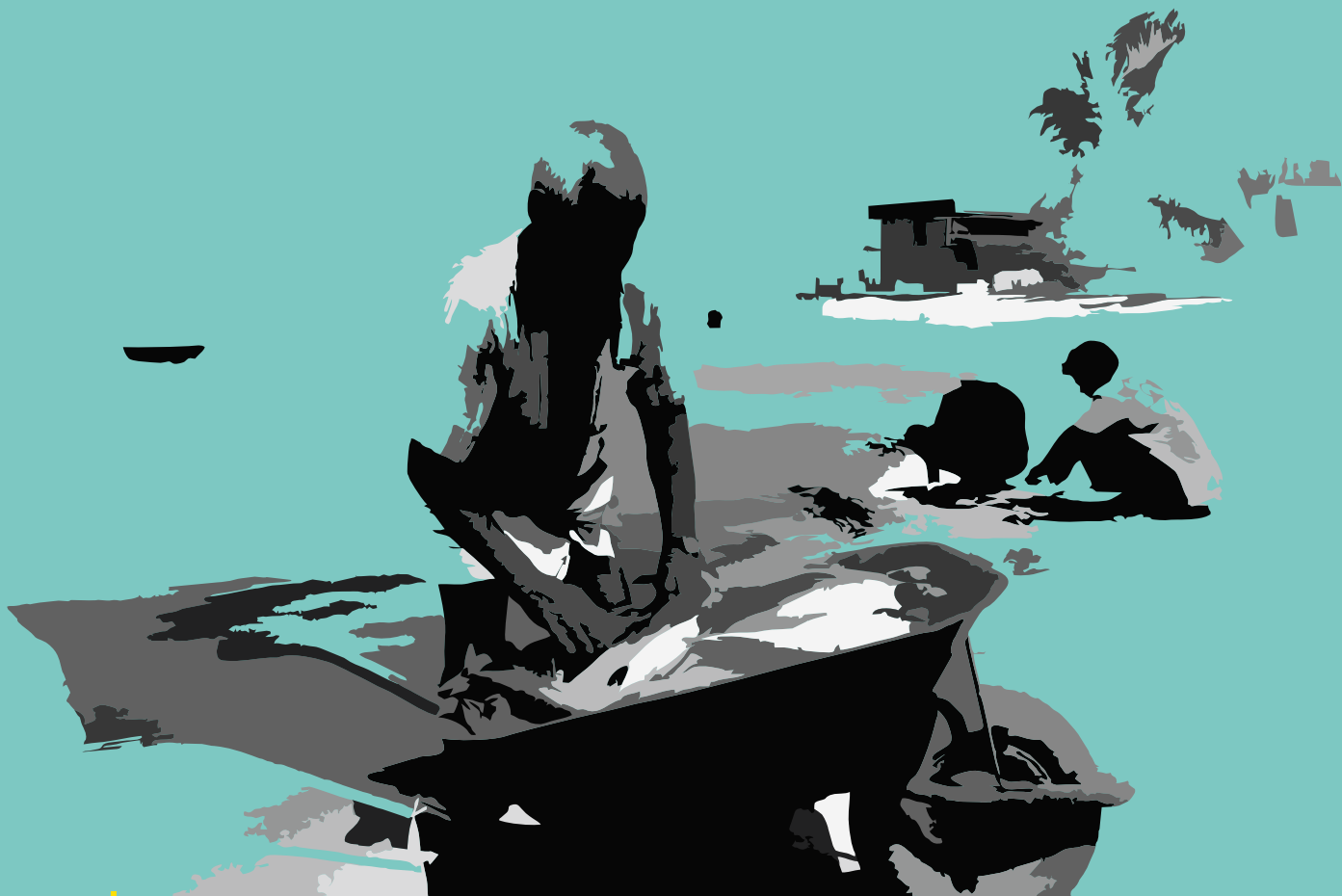
Key Messages iv

1.	Introduction	1
2.	Methodology	2
3.	The typology of risks and risk finance mechanism in fisheries	3
4.	Emerging climate risks	4
	4.1 Fishing pattern in Maldives	5
	4.2 Vessel material and ownership pattern	6
	4.3 Production risks	6
	4.4 Life and income risks	7
5.	Quantifying the risks	8
6.	Taking insurance to people- Findings from the stakeholder consultations and surveys	11
	References	13



Key Messages

- The marine fisheries in the Maldives is playing an important role in the national economy both as a source of food and livelihood. Therefore, ensuring that risks are mitigated to the best possible extent is of paramount importance.
- The sector employs about 18 thousand fishers and many more in the pre- and post-production activities. The nature of fisheries is largely artisanal and small-scale. Addressing the income risks of the fishers will contribute to the SDG 14 Sub goal: “securing sustainable small-scale fisheries” as well as improving the contribution of fisheries in the small island developing states.
- Fishers face conventional business disruption risks and to some extent elevated weather risks. The risk implications vary in terms of scale, timing, location, and impacts. Therefore, to address different types of risk, an insurance-mix is required.
- On the other hand micro insurance and mutual insurance may be promoted to provide tailor made solution (e.g. gear insurance, engine insurance) for the different sub-sectors.
- However, the insurance market is yet to be fully developed to address either conventional or parametric risks. Due to lack of exposure, fishers also lack understanding about insurance and how it can be used strategically. Combined, there is an inadequate trust of the fishers in the utility of insurance schemes and loyalty of insurance companies.
- Therefore, a strong public policy is needed to define the role of various players in the insurance market. To address the trust issue, the Government may act as a mediator or aggregator of risks and facilitate reinsurance. The strong NGOs of the country could be incentivized to promote micro and mutual insurance in the country.



1. Introduction

This policy brief presents the key findings from a study carried out by the BOBP-IGO with funding from the World Bank. The overall objective of the study was to evaluate the existing mechanisms of risk transfer and risk mitigation concerning climate change in the fisheries sector.

Tuna fishing is the backbone of Maldivian economy along with tourism. Maldives has an Exclusive Economic zone (EEZ) of 859,000 sq. km in the western Indian Ocean (FAO Area 51). The current (2020) fisheries production is 148564.86 tonnes largely comprising tunas. There are about 18 thousand marine fishers in the country. Fishing is mostly artisanal. During 2018-20 (3 years), altogether 1,347 fishing vessels were engaged in tuna fishing. Nearly all (99%) fishing vessels are artisanal vessels. That is on an average 449 fishing vessels were engaged in fishing per year during 2018-20. The current value of marine fisheries production is USD 239.65 million, which is about 4 percent of the GDP.

Table 1. Maldives Key Statistics

EEZ (sq. km)*	859,000
Number of fishers*	17589
Total number of fishing vessels engaged during 2019	822
- Mechanized masdhoni	1347
- Longliners	4
Marine fish production (2020) in tonnes (FAO)	148564.86
Value of marine fisheries production at current prices (USD million)	239.65
Contribution to GDP (%)	4.2

**Compiled from Statistical Pocketbook of Maldives 2020*



2. Methodology

This Policy Brief is a result of an exploratory and participatory study conducted by the BOBP-IGO in the South Asia region in 2022. The baseline information was collected through a detailed review and analysis of international policies, government policies, and scientific literature on insurance and climate change and information on marine fisheries production, fishing type, and other related information publicly available on the web. A draft strategy was developed based on the baseline information and critical areas were identified.

In the next step, a participatory approach was adopted and discussions were held with fishers, fisher associations, and insurance companies to understand their perceptions on insurance aspects and workout the draft strategy.



3. Emerging Climate Risks

Maldives is a tropical country and is extremely vulnerable to the effects of climate change. Low-lying atolls will be vulnerable to any future rise in sea level. The effects of sea level rise may influence crucial economic sectors like tourism and fishing.

The cyclone hazard for the Maldives is classified as low. There is a 1% chance of potentially-damaging wind speeds for the islands in the next 10 years. However, due to the northern latitudes' proximity to the cyclone belt, cyclonic impact risk is higher in the north but relatively low in the south (ADB 2021). Nevertheless, despite overall low rating of cyclone prospects, the Maldives have indeed experienced recently a few storms, notably a Very Severe Cyclonic Storm Ockhi in November 2017 and a Very Severe Cyclonic Storm Vayu in June 2019.

The Maldives government has sound policies and plans to shift its focus from a reactive to a more holistic strategy of managing climate and catastrophe risks. These include, in addition to the Strategic Action Plan, the Disaster Management Act and the 7th National Disaster Management Plan (NDMP), as well as the National Emergency Operations Plan (NEOP). Through its community-Based Disaster Risk Reduction (CBDRR) Framework, the NDMA has been advocating a community-based approach for disaster risk reduction. The government has finalized the National Spatial Plan (NSP), a 20-year roadmap for infrastructure, spatial development, and decentralization. The NSP envisages the formation of regional hubs and sub-regional centres, apart from some individual islands, with basic services being made available throughout.



4. Typology of risks and risk finance mechanism in fisheries

The broad types of risks in the marine fisheries sector are presented in Table 2. Fisheries is inherently risky and climate change, especially in the tropical region is likely to exaggerate the risk as shown in Table 2. However, the impact will also depend on the exposure of the country to emerging climate risks and extreme weather events.

The Maldives as such is considered a low-risk country as far as extreme weather events are concerned. However, given the pattern of population distribution, which is skewed towards the capital Male, and coupled with its unique geographical setting, extreme weather events may lead to heavy casualties as was seen during the 2004 Indian Ocean Tsunami and also of recent experiences from the cyclonic events.

The Maldives is also susceptible to slow-onset events such as sea-level rise, fish migration, etc. Therefore, a financial strategy is required to address such events for which insurance may be a suitable option.

Table 2: Types of risks in fisheries and the impact of climate change

Dimension	Internal/operational risks	Climate risks
Production	<p>The catch is stochastic. Acquired knowledge of the fishers supported by technology is used to meet the risk.</p> <p>Loss of fishing days due to conservation and management measures (CMM). CMM, however, improves stock health and contributes to production. Income support (saving-cum-relief) is provided to cover the lean period.</p>	<p>Climate change is likely to obsolete traditional knowledge increasing the production risk.</p> <p>Loss of fishing days due to bad weather days. Since bad weather days are localized in nature, they do not generate benefits like CMM.</p>
Life/ Health	Collision, man slipping overboard, injury from outboard motors, etc.	Cyclones, lightning, flood
Asset risk	Engine failure, gear loss, hull damage,	Damage due to cyclone
Other business	Non-functional/ poor infrastructure, risks	Damages to infrastructure etc. facilities.

4.1 Fishing pattern in Maldives

The four main fishing techniques, used in the Maldives to catch tuna, are pole-and-line (P&L), hand line, longline, and troll line. P&L is by far the mainstay fishing method and makes up for about 76 percent of the tuna catches during the last five years. Hand line is another popular method contributing 23 percent of the total production (Table 3).

Table 3. Major fishing types in the Maldives during 2016-20

The values are percentage contribution of each gear to the total catch.

Gear/Sector	Artisanal Fishing	Industrial Fishing	All sectors
Bait boat (P&L)	37.15	0.00	37.15
Bait boat (Offshore P&L)	0.00	38.60	38.60
Coastal longline	0.69	0.00	0.69
Hand line	16.27	0.00	16.27
Hand line (offshore)	0.00	6.99	6.99
Longline	0.00	0.23	0.23
Troll line	0.05	0.00	0.05
Trolling mechanized	0.02	0.00	0.02
All sectors	54.19	45.81	100.00

Source: IOTC



4.2 Vessel material and ownership pattern

Currently, the fleet is made up of assorted number of wooden and fibre-reinforced plastic (FRP) ships. Pole and line fishing trips can take anywhere from one day to a week, whereas handline trips typically range between 10 and 15 days (Ahusan et al. 2021).

In terms of vessel ownership, the marine fisheries sector of Maldives has seen more capitalistic development with the formation of fishing companies. Especially, the longline fishery is operated by fishing companies. In the case of P&L vessels, families and individuals have the larger share while companies are significantly making inroads (Table 4).

Table 4. Ownership pattern of fishing vessels in the Maldives

Number of boats owned by an entity	Number of owners	
	Longline	P&L
1	1	587
2	1	98
3	1	22
4	0	13
5	1	9
6	0	1
7	0	2
8	1	3
9	0	0
10	1	1

Estimated from the List of IOTC Authorised fishing vessels

While information could not be collected on sources of funding for fishing vessels, from the ownership pattern, it may be construed that institutional finance is available for acquiring fishing vessels. Moreover, institutional finance usually comes with risk coverage programs such as insurance. Therefore, it is likely that all longline fishing vessels and most of the P&L fishing vessels are insured.

4.3 Production risks

Skipjack and yellowfin tuna are the Maldives' mainstays. These species account for around 98 percent of overall marine fisheries production, with skipjack accounting for 69 percent and yellowfin tuna accounting for 29 percent of the fishery, respectively. Both these assets are shared from straddling stocks that are exploited by numerous countries. Furthermore, the spatial distribution of tunas is regulated by changing oceanographic environment (primarily water temperature and dissolved oxygen). Tunas will migrate to various latitudes, longitudes, and depths if water temperature exceeds species-specific thermal tolerance or if the oxygen concentration is insufficient for physiological demands (Durei 2017). Under a "business as usual" scenario, model forecasts of climate change impacts on Indian Ocean tunas are only available very recently for skipjack and yellowfin tuna (RCP8.5). Skipjack tuna, which is currently found in equatorial and tropical surface water, is expected to migrate to higher latitudes. Model simulations show biomass will increase in the first half of this century before declining sharply after the mid-twentieth century. Yellowfin tuna biomass is likewise expected to decline post mid-twentieth century. According to Durei (2017), small island economies such as the Seychelles and Maldives depending on tuna fishing, , maybe the first to suffer from the movement of skipjack tuna biomass from equatorial waters to higher latitudes, which is expected in the first half of the twenty-first century. Instead, other countries such as Madagascar and Mauritius, may profit from the skipjack tuna's latitudinal movement.

Linear projection (Fig. 1) based on yellowfin and skipjack catch data shows that while yellowfin outperformed over the projection, skipjack catch remains highly volatile. The figure should be interpreted in the context of the growing importance of yellowfin fishery as can be seen from the capital investment vis-à-vis, the traditional nature of the skipjack fishery.

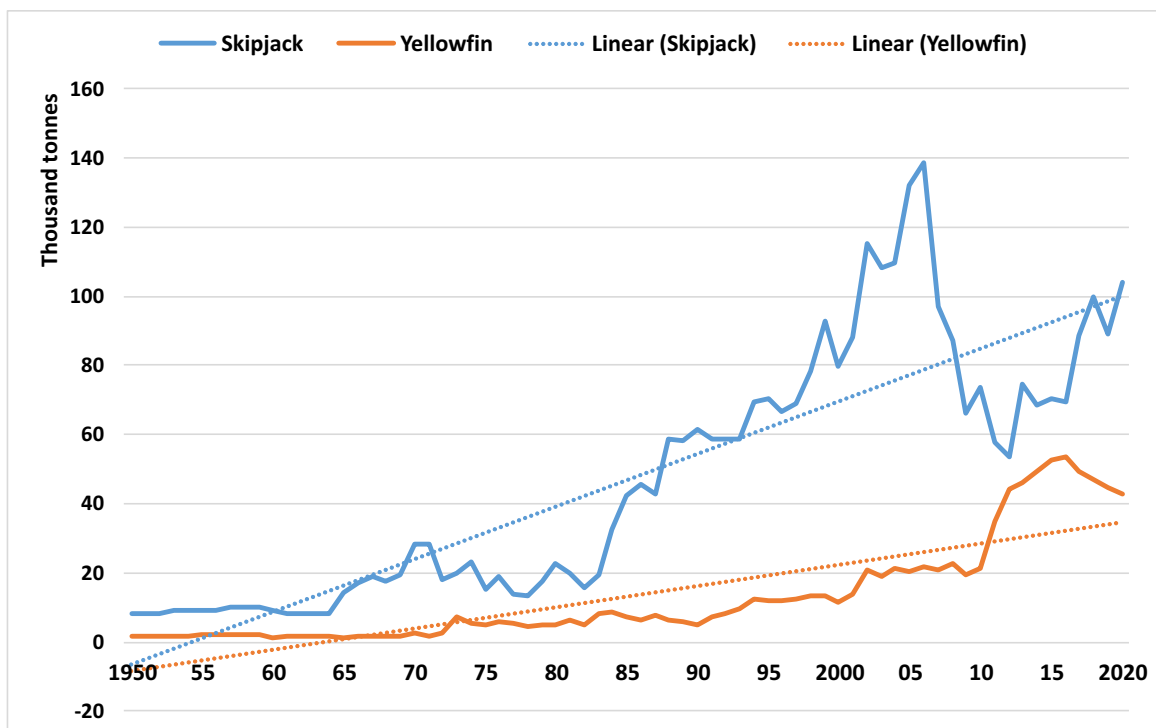


Figure 1. Trend in yellowfin and skipjack tuna production in Maldives from 1950-2020

4.4 Life and income risks

The life risk of fishers is likely to increase further due to various reasons which include the following:

- Increasing intensity of extreme weather events and rough sea conditions while fishing.
- Fishing while there is a depression.
- Sea level rise and stronger sea waves.
- Inclusion of migrant workers in the crew who have little experience of the local sea.
- Migration of fish to deeper water is forcing fishers to spend more time and cover distance at sea to locate fish. The risk exposure is also increasing accordingly.



5. Taking insurance to people- Findings from the stakeholder consultations

The BOBP-IGO conducted a series of consultations in the Maldives on 15th August 2022 to understand the fisheries insurance landscape. On behalf of the BOBP-IGO, Dr. P. Krishnan, Director, coordinated the consultation with the officials from the Ministry of Fisheries, Agriculture and Marine Resources, the Government of Maldives, the Maldivian Fisher Association, and Maldivian fishermen – an NGO working in the sector.

- The Government of Maldives has undertaken various social protection measures including the old age pension. Further, the Government as per agreement with the National Pension Office has the discretion to subsidize the contribution of self-employed persons and fishermen to the pension scheme, following regulations of the Pension Office.
- According to the Maldives Pension Act of 2009, “The Pension Office may facilitate for the provision of Disability Insurance to employees, in accordance with the approval of the Maldives Monetary Authority or Insurance Regulator”. The money required for financing shall be provided by the employer. The Pension Office may, within 02 (two) years of this Act coming into force, with the advice of the ministry responsible for social security, formulate specific regulations for the participation of self-employed persons and fishermen in the Disability Insurance Scheme. The Pension Office may provide rights entitled under the Scheme through contracts entered into between private parties providing insurance.

Currently, the following insurance programs are active in the country:

- **Life Insurance Scheme:** The fishers have to pay the premium for the life insurance scheme in the Maldives, which provides partial cover for life-threatening accidents and disabilities.
- **Health Insurance Scheme (ASANDH):** The total coverage is Rf 200,000 with a cap of Rf. 10,000 for a specific case.
- **Minimum Income Guarantee Scheme:** Under this subscription-based scheme, fishers can participate by paying an annual premium of Rf 250. If a vessel crew did not get MVR 10,000 a month, then they can claim to get insurance to pay compensation up to MVR 10,000. The purposes of the income guarantee scheme are: (i) Financial compensation for low fishing season; (ii) Unexpected price decline of fish in the market; and (iii) Compensation for loss of fishing days due to the adverse weather condition. (Shifaz A, 2022).
- **Pension scheme:** Under this scheme, there is a 15-year premium payment term during which fishers need to pay Rf. 500 per year. From 16th Year, the fishers can receive a pension of Rf. 5000 per month.
- **Vessel Insurance Scheme:** It is a mandatory requirement for registration of the larger fishing vessels. Insurance is also mandatory to secure a loan from the Bank.

Emerging requirements: What fishers think

1. Disability Insurance: Work-related injuries are common in the Maldives. Especially, there are many cases of accidental eye damage while hooking in pole and line fisheries. In the last two years, 10 such cases were reported. However, the existing insurance schemes do not cover disabilities arising out of occupational hazards.

2. Managing Baitfish Grounds: In recent years, due to shortage, fishers are deep diving to catch the bait fish, which is not sustainable in long term.

As bait fish availability is dwindling, traditional methods of catching bait are gradually

becoming less common. Each vessel had 4-6 divers in south atolls, where pole and line fishing was booming. From 2005-06 onwards, Addu atoll fishers started diving for bait fish. Now all pole and line boats in the vicinity have divers and there are 30 fishers in every boat of about 100 ft – 120 ft LOA for diving. Divers have 15-20 min of bottom time and they used to target Silver sprat, and Anchovies, which were good for 1-2 days of fishing. Now they are targeting cardinal fish available in the deep grounds which is good for one week of fishing.

3. Need to Increase DECO facilities: Fishers dive up to 60 metres to catch bait. The Professional Association of Diving Instructors (PADI) defines 18 to 30 metres (60 to 100 ft) as a "deep dive" in the context of recreational diving and considers deep diving a form of technical diving. In technical diving, a depth below 60 metres (200 ft) is considered a deep dive, where hypoxic breathing gas becomes necessary to avoid oxygen toxicity. In professional diving, a depth that requires special equipment, procedures, or advanced training may be considered for a deep dive. However, Maldivian fishers are diving without any special equipment based on their natural skills, which is risky. In the last 2 years, about half a dozen cases of oxygen toxicity were reported where fishers need to be put into a decompression (DECO) chamber. Currently, there are three such facilities in the Maldives.

4. Strengthening Health Insurance Cover: While health insurance covers initial hospitalization, it does not pay for revisits. Traveling from islands to Male and neighboring countries for treatment is a costly affair that is not covered in the insurance plan, which puts strain on fishers.

Further, the decompression chamber treatment needs USD 5500. Until now, >26 DECO cases have been treated, but not paid (Source: Shangrilla Resort dive operations company. Silver Sands Pvt Ltd). The existing scheme does not factor in this issue.

5. Livelihood Insurance: Hospitalization and injuries lead to prolonged alienation from fishing for the active fishers. The current insurance programs do not cover loss of income during hospitalization.

6. Partial Vessel Damage: In the case of vessel insurance, marine hull insurance does not cover partial damage, so the burden of such losses falls on the vessel owners. The total loss is covered, but that is a rare event. Therefore, there should be provisions for covering partial damage, as can be seen in the case of car insurance.

7. Public insurance scheme: The fishers also feel that the Government should purchase the insurance scheme for them covering all perils and health requirements. The current universal health cover and pension cover render the insurance schemes less attractive. Considering the risk involved for the lives and livelihoods of the fishers in the Maldives a tailor-made scheme has to be developed to make it attractive. Fishers can pay the premium if the insurance is attractive.

8. Ease claim settlement: Fishers also find it difficult to claim insurance compensation due to inability to comply with documentation requirements.

Other Suggestions from Stakeholders

- * An awareness campaign is necessary to educate fishers about the insurance programs and their benefits including the proper process of preferring claims for hassle-free settlement.
- * There should be holistic schemes covering both life and health risks. There is a need to introduce a scheme to cover pensions and also compensation when someone is in distress.
- * New rules should be framed to ensure the safety of fishers and cover them under insurance. They should be given the necessary training and provided with quality equipment. Dive computers to be used which can help in tracking depths.
- * SOPs are to be established to treat and also to investigate instances of DECO cases. Certification of divers is essential
- * R&D Needs: There is a need to standardize optimum descending and ascending times,

and bottom staying time which can be arrived at by analyzing data, and there is also a need to develop a new dive table and software for the fishers of Maldives.

- * Fishers constitute a major part of the population and their livelihood needs greater and more focused attention.

In addition, the Government is finding it difficult to expand insurance implementation for the artisanal fleet. The administrative burden in claim settlement for the Ministry of Fisheries is high and there is also an issue of lack of trust between the fishers and the insurance companies (Shifaz, 2022).



6. Recommendations

Information/data coverage of fishermen employed in fishing vessels needs to be improved.

Government intervention is vital, especially for small-scale fishing vessels; At this point of time, there is a lack of mutual trust between the fishers and the insurance companies and both parties want the Government to play the role of mediator. Therefore, a policy statement of the Government on insurance is of foremost importance.

Need to increase awareness and knowledge of fishing communities: Many fishers do not understand how insurance works. Therefore, there is a need to educate them so that they can take informed decisions. To do this, a two-pronged approach may be taken. On one side, the fisher associations and unions can be roped in and a tri-party dialogue amongst the fishers, insurance companies and the government may be arranged. The Maldives has active fisher's associations and educating their leaders is likely to facilitate imparting knowledge to the other members. On the other side, the atoll government may be roped in to educate the small-scale fishers. The insurance agencies should also be educated about the need of the fisheries sector and measures to build confidence should be worked out.

Designing insurance mix for improved access at low cost: The Government should consider various forms of insurance including micro-insurance, community-based insurance, and market-based insurance apart from public insurance schemes.

Developing need-based vessel insurance: All-peril fishing vessel insurance may be made mandatory for all fishing vessels by linking it to licensing, using the data collected by the Government about details of fishing vessels (including price during registration) to buy an all-peril insurance cover for the fishing vessels.

Developing a parametric insurance program: Model Parametric Insurance Scheme may be developed to guide the insurance sector and implementation at a pilot scale. Parametric or Index-based insurance can meet the business loss due to production fluctuations and unexpected lean season and replace the current income guarantee scheme.

Supporting reinsurance: The Government may consider using tax revenue to buy reinsurance products from the market for risk coverage. For this purpose, there can be an imposition of National/ Central Cess on the Licensing Fee to generate funds, which can be used for the purchase of "an all-peril" insurance policy.



A model for consideration

Government's role in reinsuring damage and loss occurrence to fishing assets in Japan

The most successful and unique underwriting characteristic is certainly the one observed in the subsidy insurance program in Japan.

How it operates:

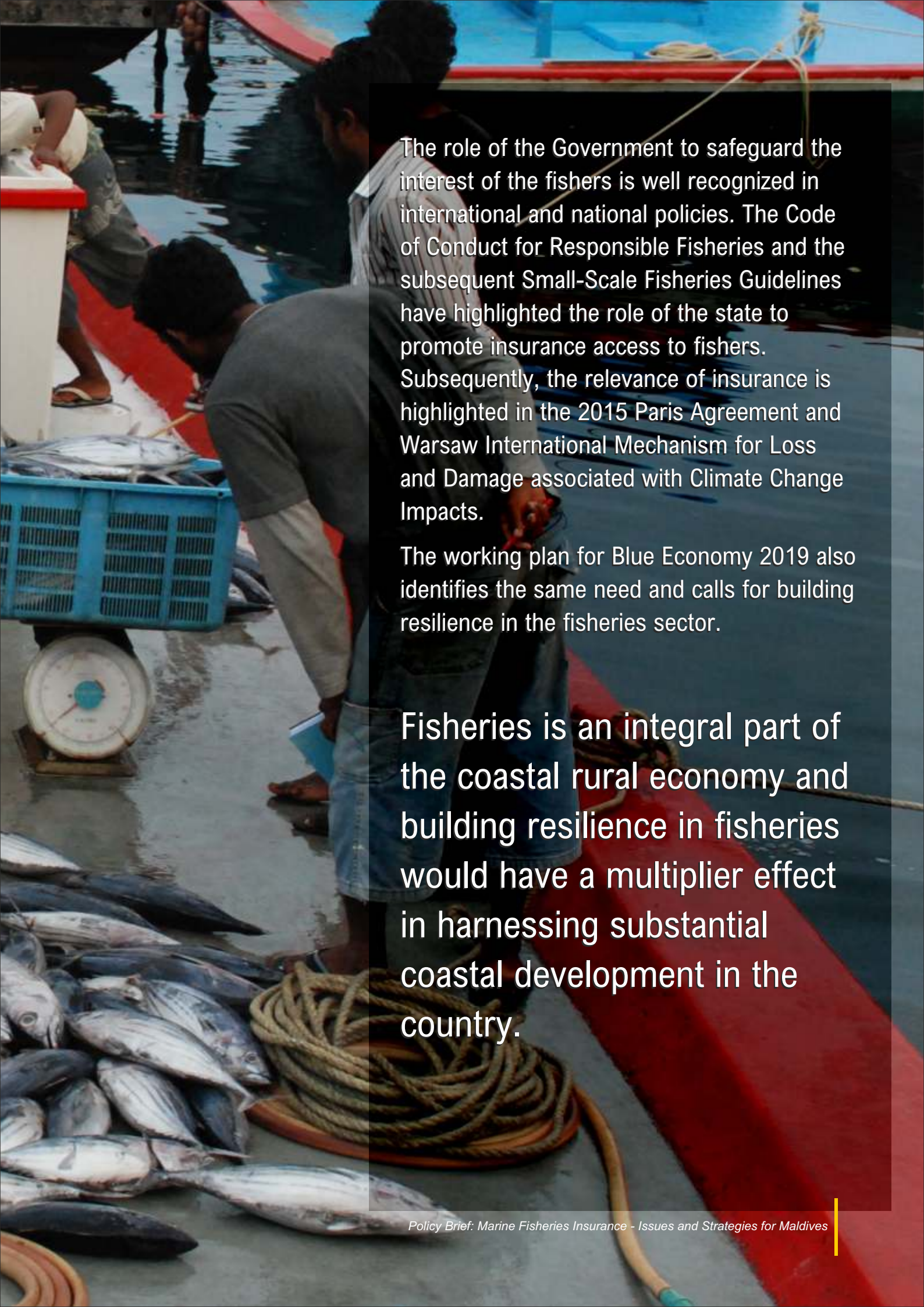
- The condition for obtaining the subsidy is that all the fishers operating vessels with a gross tonnage between 1 and 100 tonnes should be part of a fishing cooperative and enter a contract with the insurance association.
- This arrangement provides an incentive to maximize the coverage of insurance with better sharing of risks and reduction of costs.
- The government reinsures the fishing vessel insurance association by a "Stop Loss" method.
- The government reinsurance activates when the insurance association has paid out claims, which exceed 109 percent of the net premium income of one fiscal year. The government will reimburse 85 percent of the amount of pay-out exceeding 109 percent.
- Besides providing reinsurance and subsidizing the insurance premiums, the government provides tax exemption and approves the articles of the associations and the insurance stipulations including the insurance premium rates. The government also supervises the association and the central society or apex body.

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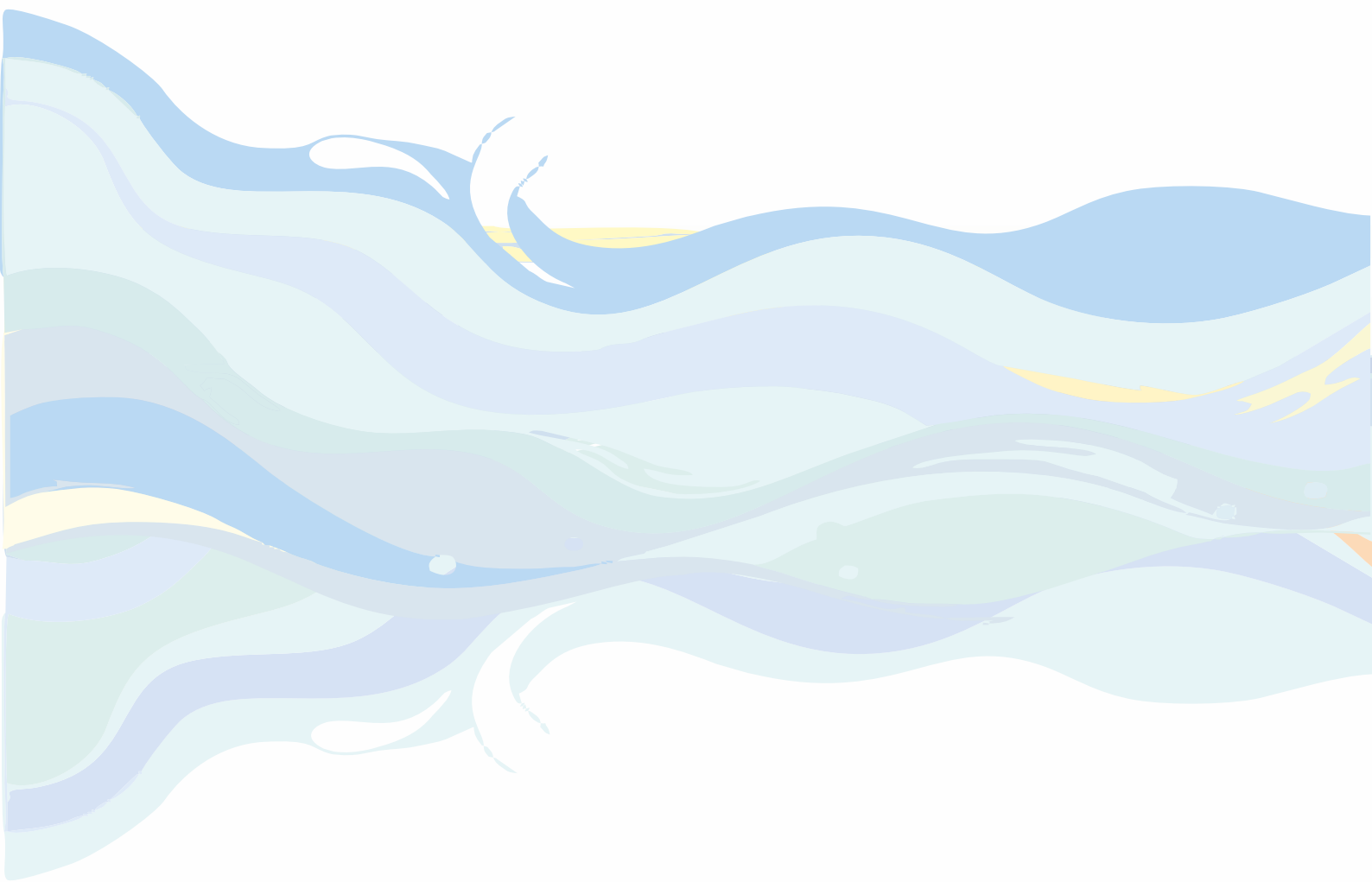




The role of the Government to safeguard the interest of the fishers is well recognized in international and national policies. The Code of Conduct for Responsible Fisheries and the subsequent Small-Scale Fisheries Guidelines have highlighted the role of the state to promote insurance access to fishers. Subsequently, the relevance of insurance is highlighted in the 2015 Paris Agreement and Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts.

The working plan for Blue Economy 2019 also identifies the same need and calls for building resilience in the fisheries sector.

Fisheries is an integral part of the coastal rural economy and building resilience in fisheries would have a multiplier effect in harnessing substantial coastal development in the country.



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