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Translating commitment to national, regional actions for ISLME sustainability

TDA-SAP completion: commitment to ISLME sustainability.

Following a series of intensive technical stakeholder consultations, involving fisheries and marine authorities and experts from Indonesia and Timor-Leste, the ISLME Transboundary Diagnostic Analysis (TDA) and the Strategic Action Plan (SAP) were finalized and ready for endorsement by fisheries and marine authorities in both countries. The completion and endorsement of the two documents was part of the key achievements of the five-year ISLME project, ending in December 2023. The process was made possible thanks to the close collaboration between the Ministry of Marine Affairs and Fisheries (MMAF) of Indonesia, the Ministry of Agriculture, Livestock, Fisheries and Forestry (MALFF) of Timor-Leste, expert members of the National Scientific Advisory Groups (NSAGs), ISLME TDA-SAP guide Dr. Rudolf Hermes and with a team of experts from the University of Padjajaran as the technical editor.

The TDA is a scientific document that identified the five Priority Environmental Concerns (PECs); namely: (i) unsustainable fisheries and aquaculture practices, (ii) degradation and loss of marine habitats, (iii) marine and land-based pollution, (iv) decline of biodiversity & key species, and (v) climate change impacts.

Based on the TDA findings, experts formulated the SAP, specifying concrete policies and initiatives at national and bilateral level to ensure actions to address the PECs. The ISLME SAP has the following overarching vision, goals and objectives. Each of the five objectives is linked with the PECs:

Vision:

Sustainable fisheries and healthy ocean in the ISLME area, providing ecosystem benefits for long-term prosperity of the communities.

Goals:

- **Ecosystem wellbeing:** responsible, traceable fisheries and aquaculture in ISLME based on ecosystem approach, complying with regulations, and supported by reliable data.
- Improved water quality, controlling all sources of pollution and improved health of all critical habitats and better conservation status of ETP species in the ISLME.
- **Human wellbeing:** more resilient, empowered ISLME dependent communities, enjoying sustainable and equitable benefits of wellbeing with improved socio-economic status.
- **Good governance:** governance of ISLME is based on inclusive participatory management, improved transboundary cooperation.

Objectives:

1. Recovery and sustainable management of fisheries resources: strengthening the implementation of EAFM, reduction of IUU fishing and increasing compliance with fisheries regulations, support the implementation of the Sustainable Small-Scale Fisheries (SSF) Guidelines as per NPOA and regional strategy of SSF. Strengthening of sustainable aquaculture (mariculture) practices, including Ecosystem Approach to Aquaculture (EAA) and Good Aquaculture Practice (GAP)
2. Restoration and conservation of marine habitats (mangroves, seagrass, and coral reefs ecosystems): strengthening marine habitat conservation measures (e.g. marine protected areas)
3. Improving water quality: prevention and reduction of eutrophication from agriculture/aquaculture run-off, as well as prevention and reduction of other forms of marine pollution from wastewater (incl. hydrocarbon/fuel waste, sedimentation, abrasion, intrusion, and mine tailings).
4. Biodiversity of coastal and marine ecosystems recovered and maintained. Conservation measures for ETP and migratory marine species promoted, implemented, and strengthened.
5. Resilience of coastal and marine ecosystems to impacts of climate change strengthened: reduced vulnerability of coastal community to impacts of climate change and adaptation measures are identified, promoted, and adopted.

The estimated cost for implementing the SAP is approximately USD 48.9 million over the period of five years. Such investment is crucial to secure far larger benefits from the goods and services that a sustainable ISLME region can offer in the long-term. Special emphasis was also placed on gender mainstreaming, stakeholder engagement and improving reliable data availability and accessibility.

From the SAP document, Indonesia and Timor-Leste authorities, NSAGs and national stakeholders worked together to develop its respective National Action Plans with rooms for transboundary cooperation to facilitate implementation and achievement of the national targets.

Enhancing commitment, efforts for long-term protection of the Indonesian Seas's fisheries-marine resources

Indonesia and Timor-Leste have made meaningful progress that contributed towards the Indonesian Seas Large Marine Ecosystem (ISLME) sustainability, in spite of COVID 19 and other challenges. Both countries expressed their commitment to continued efforts, including through bilateral cooperation for long-term protection of the

region's marine and fisheries resources and secure community livelihood.



Indonesia and Timor-Leste delegation, participants of the 5th ISLME RPSC meeting

This was the excerpt of the ISLME 5th Regional Project Steering Committee meeting (RPSC) in Bali on 4 December 2023, attended by representatives of FAO, the Ministry of Marine Affairs and Fisheries of Indonesia and the Ministry of Agriculture, Livestock, Fisheries and Forestry (MALFF) of Timor-Leste. The ISLME region covers the waters of Indonesia and Timor-Leste, specifically the north coast area.

The project ensured the engagement of various relevant stakeholders, such as academia, fisher groups, women's groups, associations and private sector, in conducting its activities. Community women's ideas and aspirations were collected to inform implementations, especially for provision of empowerment. The following are among the progress achieved under the three components of the GEF/FAO-supported ISLME project which started in 2018:

Component 1 on addressing transboundary threats to sustainability: the development of ISLME core scientific document: the Transboundary Diagnostic Analysis (TDA) and the Strategic Action Programme (SAP). The TDA identified the primary environmental concerns (PECs) that threaten the region sustainability; while the SAP, which was developed in a participatory manner, detailed a series of clear initiatives, targets and timeframes for concrete path towards ISLME resources sustainability, including the various goods and services that the ISLME has to offer for long-term utilization.

Component 2 on strengthening national capacity for ecosystem approach to fisheries, aquaculture and marine habitat management (EAFM, EAA and MSP: improving the capacity of port assistants; EAFM assessment including fisheries management plan review and development; strengthening fisheries management council (FMC); enhancing access to reliable data. Policy supports included strengthening regulations through Harvest Strategies for mudcrab, snapper-grouper; commodity- and area-based fisheries management plan, organize one-door service to facilitate SSF obtain licence and promote their compliance.

A stocktaking and a roadmap development of the Monitoring Control and Surveillance was carried out. The project has provided supports to SSF, fisher and farmer groups, community-based fisheries watch (*pokmaswas*), and empowerment to coastal women.

Component 3 on facilitating knowledge transfer through regional forums: sharing of expertise and knowledge in various formats and forums, including through IW:Learn, the GEF event and FAO repository, and the ISLME website development. The project also conducted exposure visits for Timor-Leste delegation to observe activities in several sites in Indonesia and organised workshops on bilateral transboundary marine issues with recommendations to inform planning and implementation.

At the meeting, both Indonesia and Timor-Leste looked forward to the endorsement of the TDA and the SAP documents which will allow the project initiatives to continue after the project completion in January 2024.

Mr. Fery Sutyawan MMAF Coordinator of Inland Seas, Territorial and Archipelagic Waters explained that a series of thematic studies and stakeholder meetings were conducted to inform the TDA and the SAP formulation. He said MMAF is glad that the two documents are now available, and that the project activities have contributed to building national capacities for EAFM and EAA; and provided opportunities for Indonesia and Timor-Leste to recently work together to address transboundary issues.



Timor-Leste delegation visited the Karang Antu Port and Fish Landing in Banten

Mr. Lourenco Dos Reis Amaral, National Director of Fisheries Inspection said the ISLME project has provided lessons learned for Timor-Leste on large marine ecosystem (LME) and capacity building on how the north coast should be managed for the wellbeing of the community and the country. “We will make the best use of the SAP for future actions, not just for the ISLME part but also for Timor-Leste’s overall fisheries and marine resources,” he told the participants of the 5th RPSC forum.

FAO Representative for Indonesia and Timor-Leste Rajendra Aryal commended the bilateral cooperation under the ISLME project, saying that Timor-Leste is keen to

improve its agriculture and fisheries. “There are a lot of good practices from Indonesia, which are good for bilateral sharing of expertise. So even though we are at the end of the project but hopefully this is not the end, but the beginning for a bigger collaboration,” he said.

Mr. Chavakat Manghat Muralidharan, ISLME Regional Coordinator appreciated Indonesia and Timor-Leste’s strong commitment to the TDA-SAP endorsement and implementation, saying that good bilateral cooperation with meaningful involvement of national stakeholders provides sound foundation to ensure progress towards sustainability. He thanked both Governments and FAO for the great support during the project.

Transboundary partnership: Indonesia and Timor-Leste intensified sharing of experience for enhanced impacts.

Indonesia and Timor-Leste strengthened bilateral partnership in September 2023 to protect the sustainability of the ISLME region. Under this initiative, Timor-Leste authorities participated in a series of discussions and field activities, organized in Indonesia to facilitate sharing of expertise and experience to enhance ISLME project impacts before the five-year project ends in 2023.



Participants of the ISLME Third Regional SAP meeting in Lombok

The ISLME region, situated in the confluence of the Pacific and Indian oceans, encompasses an area of 2.3 million km² and includes the territorial waters of Indonesia (98 percent) and Timor-Leste (2 percent). The activities conducted under this initiative included discussion for the Strategic Action Programme finalization, in-class training on key fisheries programmes, exposure visits to selected project sites and bilateral discussion on enhancing the role of the Marine Protected Areas and joint monitoring of fisheries activities around the border area and transboundary commitment to ending IUU Fishing.

The Third Regional ISLME SAP meeting in Lombok, West Nusa Tenggara on 11-13 September 2023. At this meeting, fisheries and marine authorities and expert participants from both countries discussed the finalization of the ISLME

Strategic Action Programme (SAP) document that lists concrete initiatives with clear timeframe, baseline, targets to achieve and organization in-charge to tackle the five threats to the ISLME region's sustainability at the national and the transboundary/regional level. The meeting was attended by key participants also involved in the development of the TDA document, namely the Ministry of Marine Affairs and Fisheries (MMAF) and the Minister of Agriculture, Livestock, Fisheries, and Forestry (MALFF), expert members of the National Scientific Advisory Groups (NSAGs), senior TDA-SAP guide Dr. Rudolf Hermes and a team of technical editors from Padjadjaran University.



FAO-supported IMTA facility run by Mataram University EAFM Learning Centre. Photo insert: one of berried lobsters at the facility

Exposure visits for Timor-Leste officials to Indonesia: (i) a visit to the Integrated Multitrophic Aquaculture (IMTA) in Central Lombok, West Nusa Tenggara. At this IMTA site, MMAF, FAO and Mataram University initiated farming of four species, namely sand lobster, silver pomfret, abalone and seaweed in one aquaculture facility since September 2022. This IMTA system helps minimize the impacts of farming to the surroundings with the wastes from lobster and finfish provide nutrients for abalone and seaweed. Seaweed requires 45 days to harvest and at this IMTA system seaweed was farmed in cycles, so that farmers can obtain regular earnings every 30-45 days until all species were harvested.

The pilot IMTA system has shown promising progress and farmers managed to harvest at least 100 kg of seaweed in November 2022 and some of the sand lobsters were found bearing eggs. This IMTA system has good potential for wide adoption at the community level. MMAF Dir. Gen. of Aquaculture, with FAO support, was developing an IMTA module to facilitate IMTA adoption by small-scale farmers; (ii) a visit to the seaweed aquaculture pilot site following EAA, managed by WWF, MMAF and FAO in Serewe Bay, East Lombok. This is the site where the Ecosystem Approach to Aquaculture (EAA) was tried out as a pilot; (iii) a visit to the Nizam Zachman Oceanic Port to discuss port management in North Jakarta and the implementation of the Port State Measures Agreement to end IUU Fishing; (iv) a visit to Karang Antu port and fish landing in Banten to observe activities at the two sites.

The delegation also attended in-class presentation sessions highlighting lessons-learned from the implementation of the Ecosystem Approach to Fisheries Management (EAFM), e-logbook, quota-based fishing; and Fisheries Management Plan, Harvest Strategies and Harvest Control Rules development and implementation.

Indonesia – Timor-Leste bilateral consultation for transboundary cooperation related to utilization of fish resources, management of marine habitats and to combat the Illegal, Unreported and Unregulated (IUU) Fishing, was organized in Bogor, 18-19 September 2023. The IUU fishing caused around USD 20 billion of economic loss in Indonesia and USD 40 million in Timor-Leste with negative impacts to sustainability of the fish resources, the ecosystem and the livelihood of those in the fisheries sector, specifically small-scale fishers which are the main character of fishers in the ISLME region (95 percent in Indonesia and 100 percent in Timor-Leste).

The meeting recommendations included: to do officer exchange to Indonesia for capacity building; to discuss with relevant institutions issues related to quarantine and immigration; improve control and surveillance of Indonesian vessels in the bordering waters to prevent IUU Fishing; to explore possibility to establish marine protected area (MPA) network including Transboundary Nature Peace Park, which can be done bilaterally; both countries to appoint a focal point to strengthen bilateral cooperation; to hold public information campaign on fisheries export for small-scale fisheries in respective border area; to discuss delimitation and organize joint patrol to curb fisheries issues highlighted by both countries.

Enhancing capacity for improved port management effectiveness, combatting IUU Fishing and marine-fisheries resources protection in ISLME region



Training participants checking vessels in and out record during the field trip to Nizam Zachman Oceanic Fishing Port

FAO and MMAF jointly organized harbourmaster basic training for round 25 fishing port officials in the ISLME region. The training, conducted on 11-15 July 2023 in Jakarta, was designed to improve various aspects of port management and enforcement of regulations. The training activities include a series of in-class training on key fisheries and marine topics, a field trip to the largest fishing port in Indonesia, Nizam Zachman Oceanic Fishing Port in North Jakarta, with a hands-on experience of various aspects of harbourmaster duties so that the participants can apply their newly gained knowledge.

The Indonesian FMAs have several characteristics namely multi species, multi gears, multi habitats and multi stakeholders. Therefore, efforts should focus on enhancing the management of fisheries resources, fisheries management plans (FMPs) design, strengthening the coordination and role of the fisheries management council and units and ensuring adaptive management for well-targeted actions and responses. According to Law 45/2019 on Fisheries, the tasks of Harbourmaster include, issuing sailing agreement, arranging arrival and departure of fishing vessels; re-checking completeness of fishing vessel documents; checking technical and nautical fishing vessel and checking fishing gears (and supporting gears); checking catch log book; controlling traffic of fishing vessels in the fishing port; supervising piloting activity; supervising construction of fishing port facilities; providing search and rescue assistance; being in charge of pollution control and fire extinguishment in fishing port; supervising implementation of maritime environment protection; checking the vessel crew; issuing vessel arrival and departure certificate; and catch certificate, among many others.

“The role of harbourmaster is crucial and wide-encompassing, from administrative to enforcement; ensuring proper fishing permits and operation, security and safety and to support fisheries resources protection. The training components were specially designed to cover the harbourmaster’s scopes of work and improve efficient port management,” said Ms. Partinah head of Fishing Port Harbourmaster Working Group.



Training participants conducted safety at sea exercise during the field trip to Nizam Zachman Oceanic Fishing Port

“The training is much-needed to ensure sustainable management of Indonesia’s 11 Fisheries Management Areas (FMAs), five of which are already classified as overexploited,” said Ferry Sutyawan, MMAF Coordinator of Inland Sea, Territorial and Archipelagic Waters.

The government has been working to improve management of the existing fishing vessels to stimulate the economy. This was done by ensuring ease of doing business, creating jobs and strengthening food resilience while at the same time, protecting the country’s fisheries resources in the long term. The fishing vessel regulation is used as an instrument for fisheries management (input control: limit/regulate the number and size of vessels, fishing area and the use of selective fishing gear and capacity), as an instrument for mode of transportation and production tool. There are strict standards and some require licences or permits, which can be obtained through procedures that are simple, easy and fast. Similarly, the FMP, as a strategic planning document, was further translated into management effort, called the Harvest Strategy and Harvest Control Rules for sustainable utilization of fisheries resources.

On fishing vessels safety and security, the government has been promoting the adoption of international conventions into national regulations. Enforcement efforts have continuously been improved to really address the Illegal, Unreported and Unregulated (IUU) Fishing, human trafficking, slavery at sea, forced labour and marine pollution. Upon completion of the training, the port officials have the necessary skills to protect fisheries and marine resources sustainability and responsible fishing practices, in line with the international conventions as adopted in the national regulatory framework.

From SAP to NAP: uniting national efforts, responses for ISLME region protection



The opening session of NAP workshop in Indonesia

As part of the Strategic Action Programme (SAP) finalization process, FAO and the Ministry of Marine Affairs and Fisheries (MMAF) organized wider fisheries-marine stakeholder consultation attended by at least 60

participants working in the ISLME region in a bid to sharpen the National Action Plan (NAP) to protect ISLME sustainability.

The SAP document listed initiatives to address the five Primary Environment Concerns (PECs), identified in the Transboundary Diagnostic Analysis (TDA). The SAP was further translated into the NAP formulated to guide future management in collaboration with the national stakeholders. The participants represented the Ministry of Marine Affairs and Fisheries and its subnational offices and units, international and national non-governmental organizations, academia and research centres, expert members of the National Scientific Advisory Group (NSAG).

“The threats affecting the ecosystem are real and the SAP will be broad enough for all stakeholders to contribute,” said FAO Representative Mr. Rajendra Aryal, adding that contributions from the participants are valuable and will make the discussion very rich.

MMAF Director of Fish Resources Management Dr. Ridwan Mulyana said biota, colony and ecosystems are all interconnected so sustainable management at national and transboundary level is crucial. “This (SAP-NAP) process is a very long, collaborative effort, involving key ISLME stakeholders to ensure comprehensive SAP/NAP development,” he explained.

Laksmi Dhewanthi, Indonesia's Operational Focal Point to the Global Environment Facility and a Senior Advisor to the Minister of Environment and Forestry, expressed her appreciation to the progress in NAP-SAP process. She also stressed the need for integrated ecosystem management initiatives, for clear quantitative and qualitative indicators to measure achievements, for intersectoral wholistic approach to address the interconnection of each PECs and sound monitoring and evaluation to ensure attainment of the targets and milestones set for each specific period.

MMAF Coordinator for Inland Sea, Territorial and Archipelagic Waters Dr. Fery Sutyawan said the ISLME project has made good accomplishments through its collaboration with universities and research organizations. The project has conducted Ecosystem-Approach to Fisheries Management and Aquaculture (EAFM-EAA) through pilot projects, the development of FMA- and commodities-specific Fisheries Management Plans (FMPs), formulation of Harvest Strategy and Harvest Control Rules for high economic value commodities: snapper, grouper, lobster, blue swimming crab and mud crab. He voiced his confidence that the NAP and SAP will further contribute to the sustainable management of ISLME resources.

Strengthening surveillance effectiveness, multisectoral responses, enforcement, and bilateral cooperation

Through the ISLME project, several initiatives were conducted with an aim to improve monitoring, control and surveillance (MCS) effectiveness, multisectoral response and policy-regulatory enforcement. It is hoped that these efforts can be enhanced and further expanded to address key challenges to sustainability such as IUU fishing. The following are some of the key initiatives.

- Strengthening synchronization of marine conservation and fisheries management: development of technical plan for marine conservation to support measurable capture fisheries in FMA 714. The technical plan provided references on location of fishing areas, type, size and number of (supporting) fishing gears, fishing time or season, etc. It also arranged national FGD on fisheries conservation for FMA 714
- National FGD on Bilateral and Regional Cooperation to Prevent, Deter and Combat IUUF was conducted in Bandung 27-30 September 2019. The aim was to identify issues and challenges in Indonesia and Timor-Leste fisheries management as substantive inputs to inform bilateral cooperation. Recommendations: (i) the need to implement bilateral cooperation on surveillance, (ii) formulation of Implementing Agreements on bilateral Cooperation, (iii) follow up mechanism on surveillance cooperation and action plan in Atapupu – Batugade.
- National Coordination Meeting in Balikpapan, 30 November-1 December 2020. The aim was to align surveillance mechanism for combating IUUF and improving regulatory compliance in FMA 713 for snapper-grouper and mud crab fisheries. Conducted based on EAFM findings, stressing the need to improve surveillance and law enforcement to curb irresponsible fishing and to enhance compliance. Key highlights included: the need to foster community engagement in surveillance, improve coordination between national and subnational administration for fisheries management and to strengthen access to data and information.
- In 2022: training for Fisheries Inspector for FMAs 712, 713 and 573 in Sukamandi, 27 Sept-1 Oct 2022, participated by 30 officers from MMAF subnational offices from West Java, Central Java, East Java, East Kalimantan, South Kalimantan, Bali and West Nusa Tenggara provinces.
- MCS stock taking to strengthen institutional capacity to support measurable fisheries and combating IUU Fishing at provincial level in FMAs 712, 713, 714 and 573. This was then used to inform Development of Strategic Plan (Roadmap) for surveillance for FMAs 712, 713, 714 and 573 to support MMAF measurable fisheries.

An expert meeting in July 2023 highlighted a proposed strategy including: the need for digital transformation and technological adoption; adequate MCS funding from national and subnational level, and other sources; policy harmonization and integration, including boosting provincial and sub district engagement in MCS, innovation related to self-reporting and certifications; improved human resources capacity and distribution; institutional and programmatic integration, strengthening facilities and infrastructure; strengthening subnational MCS institutions.

On fisheries certification: fisheries standard requires all fisheries products should be sourced from good, sustainable management; certification fee is expensive and may require a third-party involvement to realize it; certification should meet the market standard at the destination countries (traceability, labour issues, not a product(s) of IUU fishing practices. The government support is needed to facilitate certification implementation.

- Indonesia-Timor-Leste Surveillance Forum Bilateral Dialogue during which both countries agreed to work together to address transboundary issues, specifically IUU Fishing and to explore future collaboration for MPA network establishment at the border area.

Final evaluation: assessing project impacts and sustainability for future improvements



Mr. Hubert and Ms. Nanae in one of the discussions in West Java

FAO ISLME project facilitated independent evaluator Mr Hubert Paulmer, assisted by Ms. Nanae Yabuki from FAO Headquarters Evaluation Office and consultants for national-level evaluation, namely Rizal Idrus for Indonesia and Lusitania Lopes for Timor-Leste to carry out final project evaluation process in Indonesia and Timor-Leste. The evaluator’s activities included conducting data collection, stakeholder interviews, field visits to observe first hand activities at selected sites; and direct discussions with the beneficiaries, and organizing FGDs with field

partners to assess impacts and the synergy during project implementation.

Ms. Nanae said that at FAO evaluation is key to ensure impacts, accountability and to inform future project. The following are the criteria for the final project evaluation: relevance (of interventions to MMAF and MALFF), effectiveness, efficiency, sustainability (the continuity of project activities), factors affecting performance, gender equality, environmental sustainability, financial management, communications and knowledge management, impacts and additionality (added value from the project). The evaluators visited (i) Dadap fishing port in Indramayu, West Java for FGD with 20 fishers beneficiaries of Vessel Monitoring Aid (VMA), observation of VMA in boats and (ii) Kejawen Fishing Port in Cirebon to observe its Integrated Services Center. The preliminary findings will be shared in mid-January 2024 for comments and the final evaluation report will be available in February 2024.

Morodemak fishing port makes concrete steps to adopt the economic circularity for its waste management



Plastic wastes are collected, sorted, and weighed for further processing

In a follow up of the FAO ISLME-supported economic circularity approach for waste management, Morodemak fishing port authority established cooperation with a German-based Got Bag organization for further processing of the port’s plastic wastes. Until October 2023, around 22.8 tonnes of plastic waste was collected, which was then sorted based on types, and ready for recycle and repurposing.

The ISLME project facilitated the adoption of economic circularity approach for waste management and activities included waste data collection disaggregated based on the types of waste; improving garbage collection by providing separate waste bins for organic, paper-based and plastic materials at several points around the port for easy collection and further handling for recycling purposes; raising awareness to end single use plastic bags and to reduce waste.

The project also introduced standard operating procedure for waste management, and facilitated routine port clean-up activities involving local community members. Intersectoral coordination with related offices will also be strengthened to ensure waste handling effectiveness and efficiency. Clean port is part of Morodemak fishing port's top priorities to improve its services and contribute to support growth from the fisheries sector, in line with MMAF's agenda.

Harvest Strategy for sustainable Snapper and Grouper fisheries in FMA 573

FAO supported the development of Harvest Strategy (HS) for snapper and grouper in FMA 573 to sustainably manage both fisheries which currently experience increasing exploitation of both high value fisheries. Both commodities are grouped as reef fishes with level of utilization have reached over exploitation. This is shown by the reduced catches, depletion of stocks, especially in coastal waters and high-intensity fishing grounds. Among the challenges to ensure sustainability is that the most sought-after commodities are plate sized fishes weighing around 500 grams/fish, which is below the mature gonad size and the legal size.

The HS focuses on six snapper species namely *Pristipomoides multidens* (white anggoli), *Pristipomoides typus* (red anggoli), *Lutjanus malabaricus* (red snapper/bambangan), *Pristipomoides sieboldii*, *Lutjanus gibbus* (red snapper/jenaha) and *Pistipomoides filamentosus* (kurisi Bali); and three grouper species, namely *Epinephelus areolatus* (kerapu macan), *Variola albimarginata* (ekor gunting) and *Cephalopholis miniata* (kerapu tomat). The six snapper species represent 72 percent of total snapper data in 2021, while the three grouper species make up 60 percent of total grouper data in the same year.

A 2022 MMAF data showed that the production value of snapper and grouper fisheries in 2021 is IDR 399 billion and IDR 387 billion, respectively. The number reflects the contribution of both commodities is key for the livelihood and economy in FMA 573.

The operational objectives of the HS are increasing the Spawning Potential Ratio (SPR) to at least 20 percent, as the minimum level for fish stock recovery and repopulation; and to protect fishers' livelihoods by maintaining profitable yield (calculated by on the CPUE proxy. If the SPR value is below 20%, the fishery arrangements to be made are as follows:

- i. Reduce the total allowable effort of current fishing fleet by 10% annually.
- ii. Reduce the catch quota by a maximum of 10% per year from the previous year's quota.
- iii. Prohibit fish catch below the minimum legal size.
- iv. Close the fishing ground during the spawning season based on scientific evidence, mutual agreement with fishers and local wisdom.
- v. Reduce fishing operations four months a year.

The process of HS formulation based on the DGCF Regulation no.17/2017 covers among others (i) defining the fisheries unit where the HS will be implemented, (ii) engagement of the stakeholders, (iii) identification of relevant policies and regulations, (iv) formulation of the fisheries management purposes and objectives, (v) determining fish stock status with careful consideration for sustainability, (vi) defining fisheries HS technical elements, (vii) verification for accuracy, (viii) adoption of HS and (ix) periodic evaluation and updating the HS. There were two technical stakeholder consultations conducted to collect inputs to finalize the draft HS and HCR.

Jointly conducted with:



Ministry of Marine Affairs and Fisheries (MMAF) Indonesia



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