

STDF PROJECT GRANT

Application form

SUMMARY

Project title	<i>Facilitating Increased Trade of One-by-One Tuna in Indonesia and Malaysia</i>
Applicant	<p><i>Indonesia: Dr. Syahril Abd Raup - Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries</i> chaliarrauf@yahoo.com</p> <p><i>Malaysia: Arthur Bester Sujang - Department of Fisheries Malaysia</i> arthur@dof.gov.my</p>
Country/region	<i>Indonesia and Malaysia</i>
Implementing organization	<p><i>International Pole and Line Foundation (IPNLF)</i> <i>Craig Turley - Fisheries Director</i> craig.turley@ipnlf.org +44 7701054439 Charity 1145586 2 Chawley Park, Cumnor Hill, Cumnor, Oxford, OX2 9GG</p>
Budget	<p><i>Requested from the STDF: US\$ 992,328</i> <i>Beneficiary's own contribution: US\$ 203,600</i> <i>Other sources (if any):</i> <i>Total project value: US\$ 1,195,928</i></p>
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1. WHAT SPECIFIC SPS PROBLEM(S) WILL THIS PROJECT ADDRESS

Indonesia and Malaysia are key players in the ASEAN tuna fishing industry. As a dominant producer, Indonesia significantly contributes to the global tuna export market, including to the United States and the European Union. The exports include canned products, as well as fresh and frozen tuna. On the other hand, Malaysia primarily exports tuna loins to the United States and Chile.

The International Pole and Line Foundation (IPNLF), are the proposed implementing partner for this STDF project grant proposal, and exclusively work with one-by-one tuna fisheries and their value chains. These fisheries include pole and line and handline fishing methods, which use a single hook and line to catch one fish at a time and are widely practised throughout Indonesia and Malaysia. These fisheries are widely regarded as the lowest environmental impact fishing method, with minimal bycatch or adverse habitat interactions. These fisheries are also considered to be more socially responsible than industrial fishing methods, with high rates of boat ownership and a low barrier to entry enabling one-by-one fisheries to support up to 55 times more livelihood opportunities per tonne of tuna caught. All of the one-by-one tuna value chains that IPNLF work with in Indonesia already supply export markets, however, issues with quality and sanitary conditions in tuna remain the biggest barrier to small-scale fisheries increasing their export and overall market share.

IPNLF work across three key areas of influence. The first is on-the-water, directly making improvements to fishing operations and building capability and capacity at the fisher and vessel level. The second area of influence is in-the-market, with IPNLF operating a membership model spanning 85 commercial members, in 22 counties across the entire one-by-one value chain, from associations and fishing companies, through to processors, import /exporters, distributors, up to major international retailers and brands, all of whom wish to see environmentally sustainable and socially responsible one-by-one fishing methods to see a larger market share. The third area of influence is Ocean-Wide-Policy, where IPNLF have worked closely with the Indonesian and Malaysian governments both nationally and at the Regional Fishery Management Organisations (RFMOs). IPNLF have a registered entity in Indonesia (Yayasan IPNLF Indonesia) and maintains a significant full-time staff component in Indonesia.

Sanitary and phytosanitary (SPS) issues are among the main challenges facing Indonesian and Malaysian tuna exports to key destinations such as the USA, European Union (EU), and Japan. Throughout the decade from 2010 to 2020, there were 388 cases of Indonesian tuna rejections in the US, generally due to issues such as 'filth' and 'salmonella', and a few cases related to 'histamine' levels. Meanwhile, between 2011 and 2020, there were 16 cases of Indonesian tuna rejection in the EU due to poor temperature control, high histamine content, and overtreatment with carbon monoxide.¹

Small-scale, traditional fishers using the handline fishing methods supply the processing industry, facing challenges in capacity and infrastructure. Upstream, poor fish handling and lack of standardization at landing sites need addressing. Testing facilities and processing companies require better food safety awareness. Key issues include lack of access to ice, poor vessel design, insufficient cold chain logistics, and limited testing and quarantine facilities. Climate change impacts the industry by affecting catch seasonality and requiring fishers to travel further, increasing risks and resource needs. Adapting to climate change is essential for maintaining catch quality.

A UNESCAP Study on Food Loss in Indonesian Tuna Trade highlights significant impacts of Non-Tariff Measures (NTMs) on exports to major markets like the EU, US, and Japan. The study shows that 20-30% of Indonesian tuna exports are rejected annually due to stringent NTMs exceeding Codex Alimentarius standards. Rejections stem from differences in food safety standards, poor standard socialization among exporters, and infrastructural deficiencies. Recommendations include enhancing export quality infrastructure, building supply chain capacity, and streamlining NTMs to reduce trade barriers and food loss.²

Approximately 50% of tuna tested in Indonesian labs before export faces rejection.³ Despite established Hazard Analysis Critical Control Point (HACCP)⁴ and Good Fish Handling Practices/*Cara*

¹ European Commission. (2020). RASFF - The Rapid Alert System for Food and Feed - Annual Reports 2011-2020. European Union.

² Sahara, S., et al. (2022). Food loss in international trade : a case study of Indonesian tuna exported to the European Union, the United States, and Japan. Retrieved from: <https://repository.unescap.org/handle/20.500.12870/5146>

³ Nurani, T. W., Iskandar, B. H., & Wahyudi, G. A. (2011). Pre-requisite of the applying HACCP on fresh tuna longline. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 14(2), 115-123.

⁴ HACCP is a systematic, science-based risk management method that identifies, evaluates, and controls specific food safety hazard risks throughout the entire supply chain, ensuring the safety of produced food products. Focusing on prevention, HACCP facilitates changes, including the design of equipment and processing procedures.

Penanganan Ikan yang Baik (CPIB)⁵-compliant processors, limited upstream cold chain and handling capacity lead to high rejection rates. Poor handling, processing, storage, and distribution result in up to 10% global fish catch loss, with small-scale fish processing losses reported as high as 40% (FAO, 1984; Mills, 1979; Moes, 1980). Import rejections due to food safety concerns incur significant costs, up to IDR 400 million (USD 25,000) per incident.⁶ These financial burdens reduce competitiveness, erode trust in food safety systems, and lead to more stringent future inspections, complicating trade. Local consumer confidence may also decline, impacting market dynamics.

In 2022, the United States imported 30,507 tons of tuna from Indonesia, valued at USD 273.95 million FOB, reflecting the strong demand for Indonesian tuna in the American market. Despite a decrease in net weight to 26,866 tons in 2023, the FOB value remained high at USD 210.70 million, indicating a robust market for premium tuna products.⁷ Total supply from handline and pole and line combined could be as high as 271,000 tonnes in 2023 according to officially reported statistics (<https://www.wcpfc.int/ace-by-fleet>).

Malaysia plays a smaller role in tuna exports compared to Indonesia, but its contribution remains significant within the regional context. In a given year, it is estimated that about 2,800 tons of tuna with a market value of RM35 million (approx. USD 7.5 million) are exported there.⁸

2. HOW WILL ADDRESSING THIS PROBLEM(S) INCREASE SPS CAPACITY AND FACILITATE SAFE TRADE?

By addressing the key issues affecting tuna export from Indonesia and Malaysia--such as improving the capacity of supply chain actors, enhancing supporting facilities and infrastructure, and implementing climate change adaptation measures--the project aims to improve SPS compliance, reduce post-harvest losses, and enhance market access. Strengthening local SPS capabilities through targeted training and limited infrastructure upgrades will directly reduce the number of export consignments rejected due to sanitary issues and increase the supply of export grade fish. This improvement will enhance the reputation of Indonesian and Malaysian tuna in international markets, facilitating increased trade volumes and economic benefits for local producers.

In the medium term, the project expects an increase in the volumes of export-grade tuna within the one-by-one tuna processors/exporters who are part of IPNLF's member network, as well as improved food safety and security in local value chains at the priority sites. Adopting internationally recognized best practices for fish handling, storage, and processing will ensure that products meet the highest safety standards, protecting consumer health and increasing market access. This also implies less waste and reduced impact on the environment.

In the long term, the project aims to scale the work at the national and regional level to support the overall country's tuna export quality and reputation globally. The project intends to demonstrate the value of improved SPS capacity through strategic, modest investments in the one-by-one tuna value chains. The project will also provide the potential for scalability at the national and regional levels to bolster both local and global food security and the socio-economic contributions of one-by-one tuna fisheries to countries through their coastal communities. Establishing robust regulatory frameworks that align with international standards, such as Good Fish Handling Practices (CPIB) and Hazard Analysis Critical Control Point (HACCP), will facilitate smoother trade relations and enhance Indonesia and Malaysia's competitiveness in the global market.

Good Fish Handling Practices (CPIB) certification in Indonesia ensures that fishery products meet the quality and safety assurance requirements as stipulated in the Minister of Marine Affairs and Fisheries Decree No. 35/PERMEN-KP/2016. Hazard Analysis Critical Control Point (HACCP) is a systematic, science-based risk management method that identifies, evaluates, and controls specific food safety hazard risks throughout the entire supply chain, ensuring the safety of produced food products. Focusing on prevention, Hazard Analysis Critical Control Point (HACCP) facilitates changes, including the design of equipment and processing procedures.

By demonstrating the business case and creating an investable proposition for improvements in different nodes of the one-by-one tuna value chains (prior to entering existing HACCP certified export value chains) such as vessels, collector stations, and transportation, the project will ensure that

⁵ CPIB (Good Fish Handling Practices/*Cara Penanganan Ikan yang Baik*) certification ensures that fishery products meet the quality and safety assurance requirements as stipulated in the Minister of Marine Affairs and Fisheries Decree No. 35/PERMEN-KP/2016.

⁶ Indrotristanto, N., Andarwulan, N., Fardiaz, D., & Dewanti-Hariyadi, R. (2022). A qualitative study on fishery export refusals due to food safety concerns: identification of product handling, corrective actions, risk factors, and risk mitigation. *Food Research*. [https://doi.org/10.26656/fr.2017.6\(6\).781](https://doi.org/10.26656/fr.2017.6(6).781)

⁷ Central Bureau of Statistics Indonesia. (2023). Indonesia foreign trade statistics export. Author analysis.

⁸ ASEAN Tuna Working Group. (2018). Report on tuna fisheries in the ASEAN region.

these improvements are sustainable and adaptable to future regulatory changes. This approach will also help in achieving long-term capacity building, creating a skilled workforce capable of maintaining high food safety standards and ensuring that the industry can adapt to future changes in international regulations. Implementing standards like Good Fish Handling Practices (CPIB) and Hazard Analysis Critical Control Point (HACCP) will be integral to this process, ensuring compliance with international safety and quality benchmarks, and improving market access.

3. WHAT SPECIFIC DELIVERABLES ARE ENVISAGED TO ADDRESS THE SPS PROBLEM(S)?

The project aims to deliver several tangible outputs to address SPS problems in the one-by-one tuna industry in Indonesia and Malaysia. These outputs are designed to enhance the capacity of supply chain actors, improve supporting facilities and infrastructure, and implement climate change adaptation measures, ultimately leading to desirable changes in practices and outcomes.

A. Outcome 1: Increased SPS capacity of one-by-one tuna value chain actors in Indonesia and Malaysia.

Output 1.1 Increased SPS Capacity of One-by-One Tuna Fishers

This output will increase the capability and capacity of fishers and one-by-one tuna value chain actors by providing a series of practical training workshops and ongoing technical support for the length of the Project Grant. The project aims to deliver these trainings in priority locations with the greatest potential for an increase in export-grade fish by improving fish handling practices, cold chain management and sanitary conditions, which were identified during the STDF Project Preparation Grant (PPG).

There will be two main categories of training delivered. The first will be targeting one-by-one fishers themselves and will be a practical training in best practice fish handling, using [IPNLF's 7-step best practice handling methodology, which has been published by the FAO](#). These workshops will be delivered across 16 priority landing sites (across 3 Islands in Maluku Province, Indonesia and Mabul Island, Malaysia) and the trainings will be refreshed at least 7 times per cohort during the length of the project, with the aim of embedding these skills and knowledge in the communities and achieving a sustainable uptake of behaviours. The second category of training will be a food safety training delivered to both fishers and the broader community members to educate on the risks associated with poor food hygiene practices and the importance of good fish handling, cold chain management and food hygiene practices. This activity will not only increase export-grade tuna by reducing sanitary issues and risk of rejection but will also improve food safety standards at the community level.

All trainings will be delivered by IPNLF staff or strategic partners in Bahasa Indonesia and Malay in the respective sites. Training materials will be tailored for fishers and will include a guidebook and a tutorial video. These will provide an ongoing reference for fishers, helping them consistently apply best practices in their daily operations.

Output 1.2 Increased SPS Capacity of Fish Aggregators and Buying Stations

This output is aimed at increasing the capability and capacity of fish aggregators and buying stations; assisting them to establish a system to monitor their acceptance and rejection rates of tuna, proactively identify risks for SPS issues, and address problems as and when they are identified. The first activity will be to conduct an assessment to establish a baseline of acceptance and rejection rates, as records are rarely kept at the fish aggregator or buying station level. This will also include a gender baseline assessment to understand the specific training needs of women in the post harvest value chain. Secondly, a system will be codeveloped with the aggregators/buying stations to establish ongoing monitoring of acceptance and rejection rates of tuna. Finally, the aggregators/buying station staff will be trained on the food safety standards and the expectations of the export markets, as well as being able to proactively identify SPS risks and take pre-emptive or corrective action. This training will be delivered in at least 8 major buying stations/aggregators and will aim to train 90+ staff. Simplified training materials will be developed for display in buying/receiving stations and distributed via social media platforms to promote good practice.

Output 1.3 Increased SPS Capacity of Government and Quarantine Staff

In coordination with the Government of Indonesia and Malaysia, this output aims to identify the gaps in SPS capacity within the government and deliver some capacity-building activities to fill the identified gaps. These activities include advising the government on developing a tuna-specific

module for the government-mandated fish handling certification (*Cara Penanganan Ikan yang Baik* (CPIB)) (This activity is Indonesia-specific). This ensures that government staff are delivering training that is adapted to the species-specific handling and hygiene practices for export-grade yellowfin tuna. A train-the-trainer workshop will then be delivered to enable the government staff to deliver this training module directly to fishers. Government staff will be better equipped to deliver handling training and Good Fish Handling Practices (CPIB) certification, improving the overall regulatory environment and reducing export rejections.

Finally, the project will provide opportunities for knowledge exchanges between the Indonesian and Malaysian governments on fish handling, food safety and SPS capacity.

B. Outcome 2: Improved Supporting Facilities and Infrastructure

Output 2.1 Demonstrate Improved Facilities and Infrastructure at Fishers' Level

This output will identify and demonstrate improved infrastructure and facilities required at the fishery level to improve SPS-conditions by enabling better handling practices, cold-chain management and operational efficiency.

The first activity will be to redesign locally available vessels to be more conducive to improved handling practices, cold chain management, safety at-sea, and operational efficiency (including fuel efficiency), whilst remaining economically viable, and producing and piloting at least one prototype vessel for demonstration/trialling purposes. The concept vessel will aim to incorporate design features which help to reduce fuel consumption, such as improved hull design and propeller adjustments, as well as exploring the viability of alternative propulsion systems. Before construction of the pilot vessel begins, an economic viability assessment will be conducted to ensure the vessel design is a suitable solution for wider sector adoption. The piloting of one demonstration vessel will showcase the practical benefits of the redesign and will encourage adoption among fishers, leading to widespread improvements in fish quality and reduced post-harvest losses. A communication plan will also be developed to promote the demonstration vessel among fisheries stakeholders within Indonesia and Malaysia.

The second activity is to conduct a study on existing ice making availability in the selected value chains, identifying the gap in sufficient ice supply for best practice cold chain management and identifying the required level of investment and appropriate locations for increased ice making capacity (taking in to account local fish volumes, land use, water availability, power sources and proximity to landing sites). IPNLF will then seek cofinance to establish new ice making facilities in the identified priority locations. The establishment of new ice-making facilities will ensure that fishers have access to sufficient volumes of ice to keep their catch fresh, reducing post-harvest losses and improving product quality.

Output 2.2 Improved Infrastructure at Aggregators and Buying Stations Level

This output will be aimed at demonstrating infrastructural improvements in selected aggregators and buying stations. IPNLF will conduct a study to understand the current conditions and needs of aggregators and buying stations, and identify the improvements and level of investment required for the largest impact (with impact being measured in terms of the possibility of producing more export-grade tuna). At least three sites will be selected to pilot improved infrastructure facilities, prioritising sites with the best cost-benefit outcomes identified in the study. Infrastructure improvements are likely to focus on the use of clean hygienic surfaces for fish processing and improvements to cold-chain and fish storage facilities. These improvements will also be coupled with training and standard operating procedures for personal protective equipment (PPE) and product flows to minimise the risk of cross-contamination at the buying stations and aggregators. Pilot stations will demonstrate the benefits of upgraded infrastructure, serving as examples for other facilities to follow. Enhanced infrastructure will increase the volume of fish that meets export standards, boosting trade and economic benefits.

Output 2.3 Improved Infrastructure at Government Level:

This output is aimed at cost-effectively improving infrastructure that allows government to monitor and assess SPS conditions within one-by-one tuna value chains, helping to provide compliance with national regulations and export requirements, providing a level of trust to export markets. This will include an assessment of the capacity needs of existing government quarantine and testing centres

and providing investment recommendations. Secondly, this outcome will aim to establish mini-testing facilities in locations with no immediate access to testing centres, enabling local governments to proactively monitor SPS conditions and ensure compliance with national regulation and export requirements. These facilities will reduce delays and ensure that more fish meet export requirements.

C. Outcome 3: Climate Change Adaptation Measures

Output 3.1 Increased knowledge and capacity of fishers in adapting and mitigating to climate change that will affect tuna catch quality:

This outcome will aim to proactively build the knowledge and capacity of fishers and the communities to adapt to the impacts of climate change and reduce carbon emissions associated with one-by-one fishing methods. This will include documenting and demonstrating interventions for improved fuel efficiency both of the concept vessel developed from output 2.1 and by making cost-effective adjustments to existing, traditional vessels and comparing it to unmodified, traditional fishing vessels. A comparative study will be conducted on operational costs and fuel efficiency of concept vessel and modified traditional vessels vs unmodified traditional fishing vessels, followed by a communication plan to disseminate findings to fisheries stakeholders in Indonesia and Malaysia.

Secondly, fishers will be trained in behavioural adjustments to their fishing practices which can result in reduced fuel consumption and therefore a lower carbon footprint. Not only will these practices help reduce the carbon footprint, but they will also result in cost savings to fishers, lowering their input costs and helping incentivise sustained behavioural change. Training materials on best practices for fuel-efficient fishing will be developed, including manuals, guides, and instructional videos. They will cover critical aspects such as navigation, engine maintenance, and energy-saving techniques.

4. LOGICAL FRAMEWORK

Result	Project description	Measurable indicators	Target	Sources of verification
Goal <i>Improved Market Access for One-by-One Tuna Caught in Indonesia and Malaysia</i>	<i>Improved Market Access for One-by-One Tuna Caught in Indonesia and Malaysia</i>	<ul style="list-style-type: none"> Increased volume of export-grade tuna within selected value chains. Decrease in the proportion of rejections at buying stations/aggregators. Increased proportion of catch entering export value chains. 	<ul style="list-style-type: none"> 5% increase in the volume of export-grade tuna within selected value chains. Reduce rejections by 5% at buying stations/aggregators compared to the baseline. 	<ul style="list-style-type: none"> Buying station/Aggregator statistics compared to a baseline Factory acceptance/rejection statistics compared to a baseline.
Outcome 1 (s) <ul style="list-style-type: none"> Improved implementation and enforcement of food safety measures. Increased SPS capacity of one-by-one tuna value chain actors in Indonesia and Malaysia	Increasing the capacity of fishers, fish aggregators and buying stations, government officials working at testing facilities.	<ul style="list-style-type: none"> Implementation and enforcement of food safety measures improved. Number of Actors Implementing Best Practices. Number of trainings and workshops delivered Number of value chain actors who have received capacity-building training 	<ul style="list-style-type: none"> 20% of trained actors show improved implementation and enforcement of food safety measures. At least 700 actors with enhanced proficiency in SPS and food safety standards. 25% increase in actors adopting best practices. 	<ul style="list-style-type: none"> Member data Government data Buying station/Aggregator statistics compared to a baseline
Output 1.1 <i>Increased SPS capacity of one-by-one tuna fishers</i>	Training of tuna catch handling, hygiene, SPS & food safety standards, on-vessel cold-chain management	<ul style="list-style-type: none"> Number of trainings and workshops provided Number of fishers with increased capacity by training 	<ul style="list-style-type: none"> 7 Repeated training sessions conducted at 16 landing sites and workshops conducted (112 workshops) >400 fishers trained 	<ul style="list-style-type: none"> Field survey Interview Attendance list Training materials
Output 1.2 Increased SPS capacity of fish aggregators and buying stations	Best practice fish handling, land-based cold chain management, hygienic fish processing, fish preservation and value addition and SPS and food safety standards.	<ul style="list-style-type: none"> Number of trainings and workshops provided Number of aggregators and buyers with increased capacity by training 	<ul style="list-style-type: none"> 8 training sessions and workshops conducted 90 aggregators and buying staff trained 	<ul style="list-style-type: none"> Baseline assessment Field survey Interview Attendance list Training materials

Output 1.3 Increased SPS capacity of government and quarantine staff	Adoption and alignment of international SPS and food safety requirements and methodology	<ul style="list-style-type: none"> • Number of trainings and workshops provided • Number of government and quarantine staff with increased capacity by training 	<ul style="list-style-type: none"> • 2 training sessions and workshops conducted • 200 government and quarantine staff trained 	<ul style="list-style-type: none"> • Interview • Survey • Attendance list • Training materials
<p>Activity 1.1.1: Delivery of training on handling according to the IPNLF's advanced fish handling and cold chain management best practices and guidebook for fishers.</p> <p>Activity 1.1.2: Food safety training for one-by-one tuna value chain stakeholders, upstream of processors.</p> <p>Activity 1.2.1: Conduct an assessment to establish a baseline for rejection/acceptance rates at buying station/aggregators and value-added processing facilities and develop and distribute simplified protocols for measuring results.</p> <p>Activity 1.2.2 Rapid Baseline Gender Assessment to understand the proportion of women working in the post-harvest one-by-one tuna value chains and to identify their unique training requirements to ensure inclusivity.</p> <p>Activity 1.2.3 Capacity building training on results monitoring for rejection/acceptance rates at buying stations/aggregators and value added processing facilities.</p> <p>Activity 1.2.4: Training on food safety and export requirements for aggregators and buying stations.</p> <p>Activity 1.3.1: Advise government in developing a tuna-specific module for the government mandated fish handling certification (<i>Cara Penanganan Ikan yang Baik</i> (CPIB)).</p> <p>Activity 1.3.2: Train-the-trainers workshop of government staff for advanced handling and cold chain management of yellowfin tuna as part of a specific module for yellowfin tuna with CPIB training.</p> <p>Activity 1.3.3: Knowledge exchange between Indonesian and Malaysian Government and private sector to improve standards</p>				
Outcome 2 Improved Supporting Facilities and Infrastructure		<ul style="list-style-type: none"> • Number of improved supporting facilities at the supply chain actors especially at fishers, aggregators, buying stations, and testing facilities • Number of facilities upgraded • Number of actors with improved infrastructure 	<ul style="list-style-type: none"> • 9 improved supporting facilities at different points in the supply chain • 3 facilities upgraded • 300 actors benefiting from improved infrastructure 	<ul style="list-style-type: none"> • Rapid assessment • Field survey • Interview

Output 2.1 Demonstrate Improved Facilities and Infrastructure at Fishers' Level	Boat redesign, better fishing equipment, access to ice and cold chains	<ul style="list-style-type: none"> Boat redesigned and piloted Economic viability assessment on wider adoption of pilot vessel design 	<ul style="list-style-type: none"> 1 demonstration boat redesigned and piloted Pilot vessel design, construction and operation is an economically viable solution for the handline tuna sector in Indonesia and Malaysia 	<ul style="list-style-type: none"> Field survey Interview Report Demonstration vessel pilot Economic viability assessment
Output 2.2 Improved infrastructure at aggregators and buying stations level	Assessment on the current fish aggregators and buying stations conditions and situation, piloting optimum buying stations adhering to SPS and food safety requirements.	<ul style="list-style-type: none"> A mapping of aggregators and buying stations completed Pilot stations upgraded 	<ul style="list-style-type: none"> A detailed mapping report with current conditions and the types of improvement needed 3 pilot stations upgraded and business case evidenced. 	<ul style="list-style-type: none"> Rapid assessment Field survey Interview Report on buying station improvements Business case Communications
Output 2.3 Improved infrastructure at government level	Assessment of the current fish quarantine and food safety testing labs: conditions, locations. Piloting simple testing facilities for remote areas.	<ul style="list-style-type: none"> A mapping of testing stations completed Improved conditions of pilot testing stations Number of government labs upgraded 	<ul style="list-style-type: none"> A detailing mapping report with current conditions and the types of improvement needed 3 pilot testing stations upgraded 3 mini testing sites established 	<ul style="list-style-type: none"> Rapid assessment Field survey Interview Attendance List Training Materials Communications
<p>Activity 2.1.1: Fishers boat redesigning pilot and production of prototype vessel.</p> <p>Activity 2.1.2: Economic viability assessment to determine whether prototype vessel design is a suitable solution for wider sector adoption</p> <p>Activity 2.1.3: Study on ice making facility – understanding the volume of ice needed to sufficiently supply the fleets at selected landing sites and identify the required investment, capacity and ideal locations (land, fresh water, etc.).</p> <p>Activity 2.2.1: Study on mapping of aggregators and buying stations at selected landing sites and conditions and needs for improvement.</p>				

<p>Activity 2.2.2: Implementation of improvements at selected buying stations to serve as models for best practices and demonstrate the business case for making improvements.</p> <p>Activity 2.3.1: Rapid assessment on the quarantine and testing centers' capacity and needs.</p> <p>Activity 2.3.2: Setting up (mini) testing facilities at collection centres with no immediate access</p>				
<p>Outcome 3</p> <p>Climate change adaptation measures</p>	<p>Better understanding at fishers' level on how to adapt to climate change</p>	<ul style="list-style-type: none"> • Number of fishers with increased capacity and behavioural change to adapt to climate change • Number of fishers using fuel-efficient practices 	<ul style="list-style-type: none"> • 30% of trained fishers show increased capacity and behavioural change • 60 fishers using fuel-efficient practices 	<ul style="list-style-type: none"> • Field survey • Attendance list • Training materials • Interview • Comparative report: operational costs of demonstration vessel vs traditional vessel • Communications
<p>Output 3.1</p> <p>Increased knowledge and capacity of fishers in adapting and mitigating to climate change that will affect tuna catch quality.</p>	<p>Modifications of traditional fishing vessels for improved fuel efficiency, and training on fuel-efficient fishing best practices and other measures that will improve catch quality, with a comparative study on fuel usage between modified and unmodified traditional vessels,</p>	<ul style="list-style-type: none"> • Number of fishers with increased capacity to fish better and save fuel, and reduced carbon footprint • Number of trainings conducted • Number of boats adapted for fuel efficiency 	<ul style="list-style-type: none"> • 100 fishers trained with increased capacity and reduced carbon footprint • 6 training sessions conducted • 1-3 Traditional vessels modified for improved fuel efficiency 	<ul style="list-style-type: none"> • Field survey • Attendance list • Training materials • Interview • Comparative report: operational costs of demonstration vessel, modified traditional vessels vs unmodified traditional vessel • Communications
<p>Activity 3.1.1: Modification of traditional vessels to demonstrate increased fuel efficiency to mitigate fishers concerns around higher fuel consumption from carrying more ice.</p> <p>Activity 3.1.2: Training on better fishing practices to increase fuel efficiency.</p>				

5. RISK MATRIX

Results	External risks	Impact	Mitigation measures (Draft)
Goal	<ul style="list-style-type: none"> Weakness of Existing SPS Systems: Inadequate sanitary and phytosanitary (SPS) systems may not meet international standards, leading to repeated rejections of export consignments. This risk can be mitigated by strengthening local SPS capabilities through training and infrastructure upgrades. Political Instability: Changes in government policies or instability can disrupt project activities and timelines. Continuous engagement with governmental bodies and adaptation to policy changes will be crucial. 	Medium to high	<ul style="list-style-type: none"> Strengthen local SPS capabilities through training and infrastructure upgrades, and continuous monitoring to ensure compliance. Engage continuously with governmental bodies, adapt to policy changes, and ensure regular communication with all stakeholders.
Purpose	<ul style="list-style-type: none"> Economic Volatility: Fluctuations in the global and local economy could affect funding and resource allocation. Developing flexible funding strategies and maintaining a reserve fund can help manage this risk. Regulatory Changes: New regulations or changes in international market standards can impede project progress. Staying updated with international trade laws and engaging with regulatory bodies can minimize this risk. Ineffective vessel modifications: Failure to achieve desired improvements in fuel efficiency and catch quality. 	Medium to high	<ul style="list-style-type: none"> Develop flexible funding strategies, maintain a reserve fund, and seek co-funding from diverse sources to ensure financial stability. Stay updated with international trade laws, engage with regulatory bodies, and adapt project plans swiftly to new regulations. Pilot test vessel modifications, gather feedback, and make iterative improvements before full-scale implementation.
Outcomes	<ul style="list-style-type: none"> Reluctance to Adopt Changes: There might be resistance from local stakeholders towards new practices introduced by the project. This can be addressed by involving community leaders and stakeholders in the planning phase and ensuring that changes are culturally and economically suitable. Delays Linked to Outputs: Unforeseen delays in project deliverables, possibly due to logistical issues or partner delays. Regular monitoring and having contingency plans will be essential to keep the project on track. 	Medium to high	<ul style="list-style-type: none"> Involve community leaders and stakeholders in planning, ensure changes are culturally and economically suitable, and provide continuous support. Regular monitoring, establish contingency plans, and maintain flexible schedules to accommodate potential delays.
Outputs	<ul style="list-style-type: none"> Supplier and Partner Delays: Dependencies on external suppliers and partners for critical project components can lead to delays. Establishing strong agreements and having alternate suppliers or partners can mitigate this risk. Natural Disasters: Events such as earthquakes, floods, or pandemics could severely impact project timelines. Disaster recovery and business continuity plans should be in place to address such unforeseen events. Histamine contamination in tuna: Risk of tuna batches being rejected due to histamine levels. Inadequate laboratory facilities for SPS testing: Delays and inaccuracies in testing, affecting export approvals. 	Low to medium	<ul style="list-style-type: none"> Establish strong agreements with suppliers and partners, identify alternate sources, and ensure timely communication. Develop disaster recovery and business continuity plans to address unforeseen events and ensure quick recovery. Implement strict handling and storage protocols, conduct regular histamine testing, and provide training for staff. Upgrade laboratory facilities, provide training for laboratory staff, and ensure alignment with international standards.

6. WHO WILL BENEFIT FROM THE PROJECT AND HOW?

Beneficiaries				
<i>Fishers</i>	<i>Fish aggregators and buying stations</i>	<i>Fish processors and exporters</i>	<i>Government</i>	<i>Community in general</i>
Outcome 1: Increased SPS capacity of one-by-one tuna value chain actors in Indonesia and Malaysia				
Increased capacity in fish handling, increased income from lower rejection and reduced effort	Increased capacity in fish handling, reduced waste and rejection translates into potentially better income, and increased compliance to regulations and standards on food safety and SPS	Increased a stable supply of high-quality tuna for exports	Increased capacity of government staff on food safety and SPS standards, increased export volume and value from reduction of rejects, increased reputation	Reduced rejects and improved quality are expected to reduce pressure to oceans and ensure fish recovery, biodiversity, and preservation of natural resources for food security. Reduced waste will also be beneficial to community and the environment.
Outcome 2 : Improved supporting facilities and infrastructure along the supply chain				
Boat redesign and better fishing equipment in addition to access to ice and cold chains will benefit fishers in ensuring quality catch	piloting optimum buying stations adhering to SPS standards, and food safety requirements will benefit aggregators and buying stations to improve fish quality as well as compliance	Increased a stable supply of high-quality tuna for exports	The assessment of current conditions and need of improvement will help government officials understand what actions they need to do to improve their working place and performance.	Reduced rejects and improved quality are expected to reduce pressure to oceans and ensure fish recovery, biodiversity, and preservation of natural resources for food security. Reduced waste will also be beneficial to community and the environment.
Outcome 3: Climate change adaptation measures are in place				
Reduced effort and resources (less fuel) and increase catch quality	Reduced carbon footprint contributes to better environment and climate, while better revenue from fishers ensures sustainability of supply chain	Reduced carbon footprint contributes to better environment and climate, while better revenue from fishers ensures sustainability of supply chain	Reduced carbon footprint helps in the government NDC targets. It also helps reducing the burden of fuel subsidy.	Reduced carbon footprint contributes to better environment and climate.
Direct beneficiaries of programs, projects, or activities, who act as implementing agent				
Supporter of program, project, or activities, with limited scope of responsibility				
Indirect beneficiaries, where programs, projects, or activities will give indirect benefits to these groups				

The project aims to enhance the one-by-one tuna value chain from upstream to downstream, providing economic and quality benefits to various stakeholders. Fishers will receive capacity-building support to improve fish handling and quality, leading to higher market prices and reduced catch waste, promoting more environmentally friendly fishing practices. Additionally, fishers will benefit from boat redesigns and better fishing equipment, along with improved access to ice and cold chains, ensuring the quality of their catch and reducing post-harvest losses.

Fish Aggregators and Buying Stations will benefit from upgraded infrastructure and the implementation of Hazard Analysis Critical Control Point (HACCP) and Good Fish Handling Practices (*Cara Penanganan Ikan yang Baik* (CPIB)), increasing the volume of high-quality tuna available for export and boosting their income. This includes piloting optimal buying stations that adhere to SPS standards and food safety requirements, further enhancing fish quality and compliance. Improved hygiene and handling practices will positively impact public health and economic stability in local

communities, with a focus on collaborating with women's groups to ensure they have access to necessary training and resources.

Fish Processors and Exporters will benefit from a stable supply of high-quality tuna that meets international standards, thus enhancing their competitiveness in global markets. Sustainable supply of good quality tuna helps sustain the businesses that employ mostly women in the processing industry and other post-harvest activities.

The Governments will benefit from the assessment of current conditions and the identification of necessary improvements to enhance performance, helping officials understand and implement the actions needed to improve their working environment. This project intends to work hand in hand with Indonesian and Malaysian governments. The project fosters collaboration between the private sector and key stakeholders from both Malaysia and Indonesia. In Malaysia, these stakeholders include the Department of Fisheries Malaysia (DOF), the Ministry of Agriculture and Food Industries and the National Pharmaceutical Regulatory Agency (NPRA) from the Government and Asia Tank Tuna SDN BHD (a tuna processor and exporter), Persatuan Pengusaha Tuna Malaysia (Malaysia Tuna Association) from the private sector. In Indonesia, the stakeholders include the Ministry of Marine Affairs and Fisheries—particularly the DG Capture Fisheries and the Marine and Fishery Products Quality Control and Supervision Agency (BPPMHKP), and the Indonesian Food and Drug Authority (BPOM) from the government and Anova Foods, PT Aneka Sumber Tata Bahari, Harta Samudra, and PT Berkat Kelautan Nusantara (all major handline tuna processors and exporters) from the private sector. This collaboration facilitates compliance with international standards required by importing countries such as the USA and the EU.

The Community encompasses everyday people in Indonesia, Malaysia and the world who will benefit from safer products that meet SPS standards, and improvement of food security aspects from reducing loss of waste. The community will also benefit from the better environmental aspects as direct or indirect impacts from this project such as reduced waste, reduced carbon footprint, and better ocean conditions.

7. HOW WILL THE PROJECT ADDRESS GENDER-RELATED NEEDS?

The project will begin with a rapid assessment at the outset to identify specific gender-related needs and constraints within the target communities. This initial assessment will help tailor interventions to effectively address the unique challenges faced by women in the tuna value chain. The project will address gender-related needs, aiming for at least 30 percent cumulative female participation in overall activities. While the harvest sector for one-by-one tuna fisheries is predominantly male, with men comprising the largest proportion of direct beneficiaries in training and workshops targeting >300 fishers, post-harvest value chains involve 40-80 percent female participation. Women play crucial roles as in-port sellers and in grading and sorting, yet their contributions are under-recognised, leading to job insecurity and disproportionate impacts on their livelihoods.

With women playing such a significant role in the post-harvest sector it is critical that capacity building actively considers women's unique needs in the local contexts. To help address these needs, the project will provide specialised training for women in post-harvest activities, focusing on best practices for cold-chain management, SPS awareness, and food safety standards. Inclusive participation will be promoted by supporting women's cooperatives and involving women in decision-making processes. A gender-sensitive monitoring and evaluation framework will track progress, focusing on women's participation and socio-economic improvements. These measures aim to enhance the economic empowerment of women, increase productivity in the tuna value chain, and improve overall community well-being.

8. HOW WILL THE PROJECT ADDRESS ISSUES RELATED TO THE ENVIRONMENT?

The International Pole and Line Foundation works exclusively with one-by-one fisheries because of their low environmental impact. This is because they are highly selective with minimal bycatch, and have no direct habitat interactions due to targeting pelagic species in the less-sensitive ocean surface. Continuing to minimise environmental impacts whilst enabling one-by-one fishers to sustain their livelihoods is a key component of IPNLF's broader mission.

Ensuring this project minimises environmental impacts and supports sustainable fisheries is important for preserving biodiversity, supporting local economies, and ensuring food security. Global estimates suggest that approximately 10% of the world's fish catch is lost due to poor handling, processing, storage, and distribution, with Indonesia experiencing 30-40 percent of its fishery production becoming waste, amounting to 8.6 million tonnes in 2019.⁹ Poor handling quality and

⁹ Wibowo, S., & Ward, A. R. (2017). FAO Fisheries and Aquaculture Circular: C1129. FAO. <https://openknowledge.fao.org/handle/20.500.14283/i6282en>

sanitary conditions of fish products have significant environmental implications, including unnecessary extraction of marine life and increasing the carbon footprint of seafood products due to the harvest losses. Extended soaking times and inadequate on-board handling lead to significant quality loss, contributing to waste. Poor sanitary conditions in handling and processing areas lead to pollution, contaminating local water bodies and affecting marine ecosystems. Additionally, unsustainable resource utilization pressures fisheries efforts and negatively affects coral reef ecosystems.

This project will be implemented in the Coral Triangle—an area located between the Pacific and Indian oceans—recognised as a global center of marine biodiversity.¹⁰ The Coral Triangle is one of the most important marine areas in the world, providing habitat to thousands of marine species, including commercially important tuna species. However, it is also one of the most threatened regions, with approximately 95% of its reefs at risk.¹¹ Overfishing has affected almost every reef in the region, and destructive fishing practices are common, land-based pollution is significant, and coastal development is a growing threat. The area is critical as a biodiversity hotspot and a vital source of fisheries resources for millions of people who rely on it for their livelihoods and food security. Improving catch quality and avoiding loss could help increase one-by-one tuna fishers' revenue and in turn lessen the pressure on the ocean by reducing the impact of fishing activities and incentivising fishers to fish offshore in less sensitive pelagic waters, and not around coral reefs.

The project also includes climate change mitigation and adaptation by including several activities aimed at reducing carbon footprint as well as adjusting to the current climate conditions. For example, enhancing vessel cold storage to accommodate larger fish and more ice ensures that the catch remains fresh, reducing spoilage and waste while lowering the need for frequent trips, thus decreasing fuel consumption and emissions. New vessel design enhances fuel efficiency and reduces ice usage, minimizing the carbon footprint associated with ice production and transport. So as the Proper training in Good Fish Handling Practices (*Cara Penanganan Ikan yang Baik* (CPIB)) to ensure optimal fish preservation and reduces energy consumption.

Enhanced sanitary conditions in processing areas are critical for reducing pollution and protecting marine ecosystems. Implementing proper waste management and drainage systems prevents contamination of water bodies and ensures that waste is handled and disposed of responsibly. This reduces the environmental impact of fishing operations and helps maintain the health of marine ecosystems.

This project also supports national goals by contributing to reduced stunting rates and improving food security index, ultimately benefiting international seafood consumers through safer, high-quality products that contribute to global food security. Reduced rejects and improved quality will reduce pressure on oceans, ensuring fish recovery, biodiversity, and preservation of natural resources for food security. This will also result in reduced waste, benefiting the community and the environment.

Climate change adaptation measures, including reduced carbon footprint, will help achieve government's Nationally Determined Contributions (NDC) targets and reduce the burden of fuel subsidies. This project also promotes reduced operational costs and environmental impact through better fishing practices and vessel adaptations. Improved fishing practices will lead to increased fuel efficiency, further reducing operational costs and environmental impact. In summary, the project aims to create a sustainable and inclusive tuna value chain that benefits Fishers, Fish Aggregators and Buying Stations, Fish Processors and Exporters, Government, and the Community in general, while promoting strong public-private partnerships and enhancing cooperation among relevant stakeholders.

9. HOW DOES THIS PROJECT FIT INTO THE NATIONAL/REGIONAL SPS CONTEXT?

This project significantly advances the Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 2 (Zero Hunger), by addressing food security and poverty reduction. It aligns with Indonesia's Medium-Term National Development Plan (RPJMN) 2020-2024 and Malaysia's National Development Framework, both emphasizing the need to improve food security and reduce poverty.

¹⁰ Evans, S., McKenna, C., Simpson, S., Tournois, J., & Genner, M. (2016). Patterns of species range evolution in Indo-Pacific reef assemblages reveal the Coral Triangle as a net source of transoceanic diversity. *Biology Letters*, 12. <https://doi.org/10.1098/rsbl.2016.0090>.

¹¹ Coral Triangle Initiative. (n.d.). About. Retrieved from <https://www.coraltriangleinitiative.org/about>

In Malaysia, the project fits into the strategic development plan for the tuna industry, as outlined by the Department of Fisheries Malaysia (DOF). The strategic plan for tuna industry development from 2021 to 2030 aims to achieve 85% compliance with domestic and international resolutions and improve the quality of high-value tuna. This plan aligns with the National Agro-Food Policy (NAFP) and the National Food Security Action Plan 2021-2030 (DSMN), which emphasize food security, economic growth, and nutritional improvement. The project supports these objectives by enhancing tuna quality, promoting sustainable practices, and supporting modernization efforts in deep-sea fisheries.

In Indonesia, the project supports national efforts to combat stunting—a critical issue identified in the RPJMN, which aims to reduce its prevalence from 24.4% in 2021 to 14% by 2024. The GEMARIKAN Promoting Fish Consumption Movement (Gerakan Memasyarakatkan Makan Ikan) program, led by the Ministry of Marine Affairs and Fisheries, promotes increased fish consumption to address stunting and malnutrition, aligning with SDG 1 and 2. In Malaysia, NAFP, while primarily focused on SDG 2, also supports SDG 1 by ensuring food security, a crucial element of poverty reduction.

The project's implementation in Indonesia will involve close collaboration with the BPPMHKP (the agency responsible for ensuring the quality and safety of marine and fishery products) and the Directorate General of Capture Fisheries, which oversees all aspects of capture fisheries in the country. The BPPMHKP's strategic plan for 2020-2024 includes ensuring high standards of fishery product quality. This goal is directly supported by the project's focus on enhancing sanitary and phytosanitary (SPS) measures, contributing to BPPMHKP's objective of maintaining rigorous quality and safety standards, reducing contamination, and minimizing waste. The Directorate General of Capture Fisheries aims to improve the welfare of fishers by enhancing fish quality through Good Fish Handling Practices (CPIB) certification. The project's training programs in SPS and Good Fish Handling Practices will directly support this objective by educating fishers on best practices for handling and processing fish. This training ensures adherence to high-quality standards, improving the quality of the catch and supporting the economic opportunities and market access of fishers. By improving the quality and market value of fishery products, the project enhances the incomes of fishers and processors, thereby contributing to poverty reduction and economic stability in coastal communities and the broader fisheries sector. The project will also create a more skilled labor force through training and infrastructure improvements, aligning with national efforts to reduce poverty. The strategic goals outlined in Presidential Regulation No. 72/2021 emphasize food security and poverty reduction, which the project supports by addressing key SPS issues.

Enhancing compliance with SPS standards will produce higher-quality fishery products that meet international requirements, facilitating market access and boosting exports. This aligns with both national SPS policies and strategies aimed at improving fishery product quality and safety. The improved quality and safety of fishery products will increase their competitiveness in international markets, contributing to economic growth in line with national trade policies and strategies. Smallholders and other producers will benefit from increased incomes and better market opportunities, further advancing poverty reduction efforts.

Lastly, Indonesia has an ambition to reduce carbon emission 31.89% through domestic efforts and 43.2% with international support by 2030.¹² Meanwhile Malaysia plan to reduce the carbon intensity of its GDP by 45% by 2030 and a net-zero carbon emitter by 2050.¹³ Both countries need all the help they can get—including from the fishing industry—to achieve that ambition. This project is designed to mitigate and adapt to climate change incorporating more efficient fishing techniques and equipment to reduce carbon emission.

¹² Republic of Indonesia. (2022). Enhanced Nationally Determined Contribution Republic of Indonesia. Retrieved from https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf

¹³

Malaysia. (Year). Malaysia's Update of Its First Nationally Determined Contribution. Retrieved from <https://unfccc.int/documents/497775>

10. HOW DOES THIS PROJECT COMPLEMENT OR BUILD ON OTHER INITIATIVES?

Project Title	Project Area	Sponsor	Lesson Learned	Project Activities & Shared Objectives
GEAPP – Solar Ice Makers in Maluku (2025 – 2027)	Maluku (Same locations in Indonesia as this STDF proposal) Indonesia	Global Energy Alliance for People and Planet	<ul style="list-style-type: none"> • Lessons Learned: Yet to be implemented, but building on the lessons learned from the UNDP Ocean Innovation Challenge (See below) • Incorporation: The project will be implemented by IPNLF in the same Indonesian project sites proposed in this STDF proposal, ensuring full alignment and effectively acting as cofinance for the project outcomes. 	<ul style="list-style-type: none"> • Deploy solar-powered ice machines to increase ice availability at high-priority fish landing sites to improve food hygiene and sanitation to facilitate increased export of tuna products. • Reduce the carbon and plastic footprint of SSF value chains and assist communities to become more climate resilient. • Reduce post-harvest losses to increase local and export food security
Walton Tuna Consortium (2019–2024)	3 Fishing Area: 713, 714 and 715. Indonesia	Walton Family Foundation	<ul style="list-style-type: none"> • Lessons Learned: The consortium emphasized the importance of effective community engagement and robust data collection for sustainable fisheries management. • Incorporation: The proposed project will ensure regular consultations with local communities and stakeholders, and implement a data collection methods to monitor fish handling and processing practices, enhancing transparency and accountability. 	<ul style="list-style-type: none"> • Assist MMAF in adopting a participatory decision-making process for the 2019–2024 tuna management plan. • Draft harvest strategies for fisheries management areas 713, 714, and 715. • Implement interventions for sustainable fisheries management.
UNDP's Ocean Innovation Challenge (OIC) (2022–2024)	Kawa Village, Seram Bagian Barat, Maluku Indonesia	UNDP	<ul style="list-style-type: none"> • Lessons Learned: The significance of innovative, scalable solutions and the integration of gender mainstreaming and livelihood creation were key takeaways. • Incorporation: The project will promote innovative approaches in fish handling and processing, ensuring active involvement of women in all aspects of the project. This will foster inclusivity and enhance economic opportunities for women 	<ul style="list-style-type: none"> • Deploy solar-powered ice-making machines in remote East Indonesian fishing communities. • Produce high-quality yellowfin tuna for premium markets. • Upskill fishers in handling, cold chain protocols, financial literacy, and asset management. • Enhance livelihoods sustainably and climate-friendly.
Ocean for Prosperity Program (LAUTRA) (2023–2027)	10 Provinces: West Nusa Tenggara, East Nusa Tenggara, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo, Maluku, North Maluku, West Papua, Papua. Indonesia 3 WPPNR: 714, 715 and 718.	World Bank	<ul style="list-style-type: none"> • Lessons Learned: Sustainable economic activities must support marine conservation efforts. • Incorporation: The project will integrate sustainable practices in the tuna fisheries value chain, improving the livelihoods of coastal communities through capacity building and infrastructure improvements. 	<ul style="list-style-type: none"> • Enhance sustainable management of selected marine protected areas and coral reef fisheries. • Improve economic access for local communities in target areas.

Project Title	Project Area	Sponsor	Lesson Learned	Project Activities & Shared Objectives
WWF-Coral Triangle Programme (CTP) (2022-2025)	Semporna – Mabul Island Malaysia	Epson Southeast Asia	<ul style="list-style-type: none"> ● Lessons Learned: Establishing Community Innovation and Learning Hubs fosters local leadership and sustainable management of resources. ● Incorporation: The project will reduce post-harvest losses in the tuna value chain by applying best practices from community engagement and capacity-building efforts 	<ul style="list-style-type: none"> ● Improve sustainable, resilient, and equitable fisheries management.
Terumbu Karang Sehat Indonesia (TeKSI) (2022-2029)	Bird's Head Seascape (West Papua and Papua Provinces), East Sumba (Sumba Timur), Pulau Sumba (East Nusa Tenggara Province) Indonesia	Global Fund For Coral Reef	<ul style="list-style-type: none"> ● Lessons Learned: Integrating community-based conservation with sustainable fisheries management is crucial. ● Incorporation: The project will improve the quality and safety of tuna products, reducing pressures on coral reef ecosystems, and aligning with community-based conservation goals. 	<ul style="list-style-type: none"> ● Encourage reef-friendly businesses and support sustainable income streams. ● Promote sustainable business practices and innovative conservation funding with GFCR support. ● Aim for a thriving coral reef ecosystem supported by rewarding businesses.
Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (2009-Now)	Coral Triangle (Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Island, Timor Leste)	ADB, GEF, USAID, DFAT, etc.	<ul style="list-style-type: none"> ● Lessons Learned: Regional cooperation and strong governance frameworks are essential for effective resource management. ● Incorporation: The project will incorporate regional cooperation between Malaysia and Indonesia. 	<ul style="list-style-type: none"> ● Promote sustainable, resilient, and equitable fisheries management through regional collaboration and enhanced capacity.
USAID Ber-IKAN (2022-2026) Now cancelled	2 Fishing Area: 711 and 715 Indonesia	USAID	<ul style="list-style-type: none"> ● Lessons Learned: Effective capacity building and community engagement are critical for sustainable fisheries management. ● Incorporation: The project will focus on enhancing SPS conditions and reducing post-harvest losses in the tuna value chain, leveraging Ber-IKAN's efforts in capacity building. 	<ul style="list-style-type: none"> ● Improve sustainable, resilient, and equitable fisheries management
USAID KOLEKTIF (2022-2026) Now cancelled	2 Fishing Area ¹⁴ : 711 and 715 Indonesia	USAID	<ul style="list-style-type: none"> ● Lessons Learned: Collaborative resource management and strong local governance structures are essential. ● Incorporation: The project will involve local communities in decision-making processes and promote inclusive participation in the tuna fisheries value chain, supporting collaborative resource management. 	<ul style="list-style-type: none"> ● Strengthen protection of Indonesia's marine biodiversity by enhancing MPA management effectiveness. ● Identify and address gaps limiting MPA management effectiveness.

The proposed project has been carefully designed to ensure that it does not duplicate existing technical cooperation activities. A thorough review of ongoing and planned initiatives was conducted. This review involved an analysis of the objectives, scopes, and methodologies of these initiatives. Coordination with key organizations and stakeholders involved in these programs will be maintained throughout the project lifecycle to align efforts and share resources effectively. Regular communication channels will be established to prevent overlapping activities and to ensure that the project complements rather than duplicates existing efforts.

¹⁴ WPPNRI (*Wilayah Pengelolaan Perikanan Negara Republik Indonesia*) is a fisheries management area for fishing that includes Indonesian waters and the Indonesian Exclusive Economic Zone (ZEEI)

11. HOW WAS THIS PROJECT DEVELOPED?

The project proposal was developed through a STDF Project Preparation Grant (STDF/PPG/860) which was implemented by the International Pole & Line Foundation (IPNLF). The project is designed to enhance the quality, hygiene, and socio-economic value of tuna landed by Indonesian small-scale one-by-one fishers. IPNLF conducted rapid assessments and field visits to seven key locations in Indonesia—Larantuka, Maumere, Bitung, Ambon, Kawa, Seram Island, Pasir Putih Buru, and Sorong Southwest Papua. These visits involved gathering data on histamine levels in the tuna value chain, assessing handling practices of tuna products, and conducting random fish sampling to evaluate quality. Additionally, several meetings were held with various stakeholders, including the private sector and local government authorities, to gain insights into local practices, challenges, and potential interventions related to SPS, particularly upstream in the tuna value chain.

This project was developed based on field findings and data collected during the PPG project activities. The activities conducted include:

1. Conducting histamine level tests with multiple stakeholders in the tuna value chain, including fishers, fish collectors, fish processors, and local government authorities. This activity provided data on the quality of tuna products, particularly concerning histamine levels within the value chain.
2. Conducting interviews and focus group discussions to assess the capacity of stakeholders in implementing Hazard Analysis Critical Control Point (HACCP) and handling tuna products. This activity also provided information and feedback on the needs of each stakeholder, especially regarding enhancing capacities in testing, infrastructure, and lab staff capabilities.
3. Field observations, particularly at the vessel level, were conducted to gather information on tuna handling practices on board. These observations provided insights and data on handling practices by fishers that do not yet meet the standards of good fish handling practices (CPIB) and other issues such as fuel inefficiency, ice usage, and vessel infrastructure.

The stakeholders involved in developing this project include:

1. Local fishers in seven locations in Indonesia: Larantuka, Maumere, Bitung, Ambon, Kawa Seram Island, Pasir Putih Buru, and Sorong.
2. Fish processing companies: PT. Pahala Bahari Nusantara, PT. Fajar Flores Flamboyan Fishindo, PT. 1Degree Tuna, PT. Aneka Sumber Tata Bahari, PT. Harta Samudra, PT. Lotus Seafood, and PT. Citra Raja Ampat Canning Sorong.
3. Local government authorities: Ocean Fisheries Port Authority (Pelabuhan Perikanan Samudera) Bitung Authority and Local Government of Marine and Fisheries Agency in Larantuka, Maumere, Bitung, Ambon, Kawa Seram Island, Pasir Putih Buru, and Sorong.
4. Other relevant stakeholders: AP2HI (Indonesian Pole & Line and Handline Fisheries Association) and BIOLAN (a company specializing in tests and molecular diagnostics for food quality detection).

Overall, the results from the various activities provided insights into local practices, challenges, and potential interventions. Key findings include:

1. Several locations have low histamine risk due to short supply chains and adequate ice usage, while other locations show higher histamine risk, especially during peak fishing seasons.
2. Tuna handling practices on board often show high contamination and histamine risks, indicating the need for education and capacity building for fishers.
3. Various stakeholders, including fish processors, port authorities, and local fishers, participated in these activities, demonstrating their commitment to improving the quality and safety of tuna. There is a need for improved ice production and better handling practices, especially at the fish processor level, which opens opportunities for collaboration.
4. Training and the use of BIOLAN histamine detection devices were conducted in various locations, highlighting the importance of training and education in preventing histamine contamination.

In addition to field activities, the project development involved national-level stakeholders to identify broader SPS improvement needs. Consultations with MMAF, particularly Marine and Fishery Products Quality Control and Supervision Agency (BPPMHKP) and the Directorate General of Capture Fisheries, were conducted to understand national requirements for fishery product quality and safety. Relevant documents published by BPPMHKP related to food safety and fish product quality were also reviewed to align the project with national priorities. The project was designed to meet the needs of BPPMHKP

and the Directorate General of Capture Fisheries, as outlined in their strategic plans.¹⁵ BPPMHKP aims to enhance fishery product quality assurance, as detailed in their 2021-2024 work plan, while the Directorate General of Capture Fisheries promotes the adoption of Good Fish Handling Practices (CPIB) based on Hazard Analysis Critical Control Point (HACCP).

The development of this project in Malaysia involved a thorough review of the Department of Fisheries Malaysia (DOF) strategic plan for tuna industry development, which aligns with the National Agro-Food Policy (NAFP) and the National Food Security Action Plan 2021-2030 (DSMN). This review helped align the project with local needs and strategic priorities by identifying opportunities for collaboration to enhance tuna quality and support broader goals related to food security, economic growth, and nutritional improvement. Discussions with potential local partners in mainland Malaysia and Mabul Island, Malaysia, provided valuable insights into the tuna industry, including an overview of the implementation location and potential challenges. This collaborative approach ensured that the project is well-integrated with regional strategies and effectively addresses local issues in the tuna value chain.

12. HOW THE PROJECT WILL BE IMPLEMENTED?

Based on data collected during the PPG phase through site visits in the eastern part of Indonesia, within the Coral Triangle Provinces of North Sulawesi, Maluku, East Nusa Tenggara, and South-West Papua, and consultations with stakeholders including the private sector and government, we have identified strategic areas for our members' value chain. Consequently, we will initiate our pilot project in Indonesia (Ambon, Kawa, Pasir Putih) and Malaysia (Mabul Island) (See Figure 1 below). The project will be implemented at 4 landing sites in each of the 4 project locations.

Approximately 80% of the project activities will take place in Indonesia and the remaining 20% will take place in Malaysia. The reasons for the prioritisation of Indonesia are as follows:

1. Indonesia has a significantly larger tuna industry when compared to Malaysia with 2021 reported catch statistics as follows: Indonesia 433,000 metric tonnes vs Malaysia 69,900 metric tonnes (16%).
2. The value and volume of the tuna exports is significantly higher in Indonesia compared to Malaysia, with 2021 reported figures as follows: Indonesia, \$276.35 million, with a total export volume of about 65,198,700 kilograms. Malaysia, \$639,890 (0.23%), with a total export volume of approximately 144,736 kilograms (0.22%)
3. IPNLF have an established permanent presence in Indonesia with a registered Yayasan (Yayasan IPNLF Indonesia) since and full-time staff component.
4. IPNLF's presence in Malaysia will be established in order to deliver this project (although IPNLF have been engaged in previous projects in Malaysia, but without staff located in country).



Figure 1. Locations project area in inception phase

¹⁵ Ministry of Marine Affairs and Fisheries. (2020). Strategic Plan of the Ministry of Marine Affairs and Fisheries 2020-2024. Ministry of Marine Affairs and Fisheries.

This project has been designed as a multi-phase, multi-year program due to the complexity and the number of locations to be covered. The multi-phase design is to ensure we have established a strong base and progress before continuing to the next level. The first phase will focus on the pilot project in these four locations. Following the successful implementation and evaluation of this initial phase, the program will expand to an additional four locations in the other identified provinces. This phased approach ensures a thorough and systematic expansion, allowing for adjustments and improvements based on lessons learned from each stage.

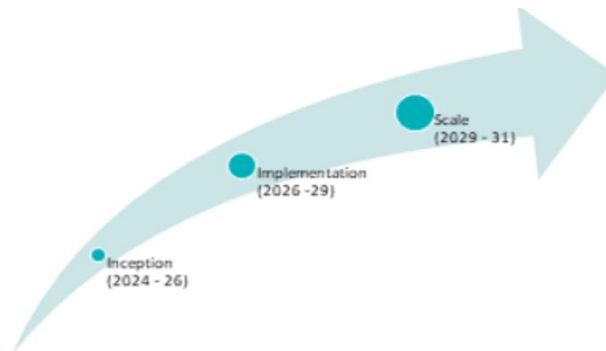


Figure 2. Program Phases

The phases are designed into three distinct stages:

1. Inception (STDF Project - 2 years)

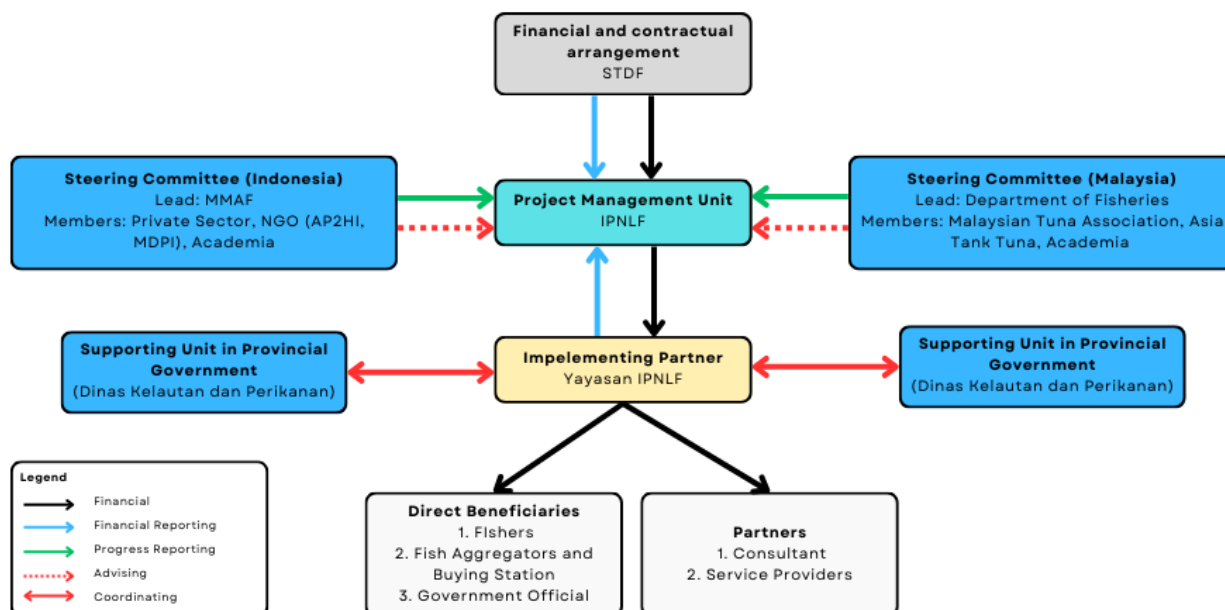
In this phase, we want to understand better the situations in the areas that are strategic to our members value chain. This phase includes assessments and studies, initial training, pilots of activities, and initial set up of the programme. We are focusing in the three areas in Maluku Province: *Ambon*, *Kawa*, *Pasir Putih*, and in Malaysia *Mabul Island*. We are expecting to see early improvement in the beneficiaries such as increase in export-grade quality and reduced rejects.

2. Implementation (3 years) – Requires additional fundraising

Once the training and the programme set up is established in the previous phase, we will deploy bigger resources and implement the piloted activities at the priority areas. In this phase, we will also add four more locations in Sulawesi (*Bitung*), North Maluku (*Ternate*), East Nusa Tenggara (*Larantuka*), South-West Papua (*Sorong*), and Sabah (*Semporna*)

3. Scale phases (2 years)

In this phase, we are expecting to see that the programme will be scaled, supported, and adopted by our members in Indonesia and globally.



To achieve this IPNLF will partner with key Indonesian and Malaysian tuna processors who source from the value chains in the proposed project locations. These processors will also provide staff capacity and SPS-experience as well as co-finance for the project through IPNLF membership and direct strategic investments in their value-chains.

- [Harta Samudra](#): sourcing from handline fisheries in Ambon, Buru, Seram and Morotai
- [PT Aneka Sumber Tata Bahari](#): sourcing handline tuna from Ambon and Seram
- [PT Berkat Kulautan Nusantara \(NusaTuna\)](#): Value added processor based in Bali and sourcing handline tuna from all over Indonesia
- [Anova Food](#): (Subsidiary of Bumblebee Seafood) U.S. Seafood distributor sourcing value added tuna products from all over Indonesia.
- [Asia Tank Tuna SDN.BHD](#): Private sector tuna processor in Malaysia.
- Malaysia Tuna Association: A fishing association for Malaysian Tuna fishers.

The project results will be communicated through a multifaceted strategy led by IPNLF, with support from the STDF Secretariat. Key components include:

6. **Collaboration with STDF:** IPNLF will align efforts with the STDF Communications Plan to ensure consistency and maximize reach.

Audience:

- **Fishers:** Through training materials and workshops.
- **Industry:** Via detailed reports and industry-specific workshops.
- **Government:** Through policy briefs and strategic meetings.
- **Media:** Engaged with press releases and media events.
- **Public:** Reached via social media and engaging stories/videos.

This strategy is in line with the updated STDF communications plan, which supports the delivery of the STDF 2020-2024 Strategy "Safe and inclusive trade horizons for developing countries" and the accompanying MEL Framework. The plan provides an overview of key communications areas for STDF, including objective and audience, products and channels, resourcing, monitoring evaluation, and learning.¹⁶

14. WHAT STEPS WILL BE TAKEN TO ENSURE THAT THE PROJECT RESULTS WILL BE SUSTAINED IN THE LONG RUN?

The government and industry are expected to continue and make investments to promote the SPS improvement.

By the end of the program, we expect project beneficiaries to see and experience the benefits of improving their practices in ensuring SPS aspects are met. If the project objectives are met, the beneficiaries should see that the necessary investments they put in will result in better performance, revenues, and work achievements. We expect that the beneficiaries will continue making investments and maintain the knowledge and practices they gain throughout the project.

To ensure the long-term sustainability of the project results, several key steps will be taken. First, the project will focus on adopting best practices and developing proof-of-concept models. At the fishers level, this will involve implementing pilot programs that demonstrate improved handling and sanitary practices, showing clear benefits in terms of product quality and market value. Proof-of-concept models will highlight how enhanced practices can lead to increased incomes. The project will build a compelling business case for local stakeholders, showcasing the value and benefits of continued investment in these practices. This phase will highlight the economic and environmental advantages, providing tangible evidence of the project's potential impact. The government and industry are expected to continue and make investments to promote SPS improvement, further supporting these efforts.

To support sustainable scaling, the project will develop robust business models and mechanisms for sustainable growth. This includes exploring sustainable financing options and establishing a co-funding mechanism through [IPNLF's membership structure](https://standardsfacility.org/sites/default/files/IPNLF%20membership%20structure.pdf). IPNLF's membership is made up of companies that span the entire one-by-one tuna value chain from fishing associations (which are free members) and vessel owners, through to processors, importers, exporters and distributors and up to international brands and retailers, who are all paid members with fees ranging from \$5,000 - \$15,000 USD per year depending on turnover. IPNLF's existing members span 22 countries, including both producer and market countries with some of the existing members already sourcing from the value chains proposed in this STDF project grant proposal. The main factor that unifies IPNLF's membership is that every member company aims to see the low environmental impact, socially responsible, one-by-one tuna fisheries have a greater market share of the international tuna market. IPNLF Members contribute financially both through membership and sometimes through specific funds which are ringfenced for project development and capital equipment within their supply chains. This ensures that financial resources are dedicated to sustaining projects in the long-term, with members, as beneficiaries, remaining invested in the project's success. A commercial member registered for export is a prerequisite before IPNLF engages with a fishery, as increased economic return for fishers is the only sustainable mechanism for long-term behavioural change amongst fishers. This Project Grant has the potential to incentivise the onboarding of new members at a \$15k membership level with a three-year commitment, further ensuring financial stability and continued investment in the project.

¹⁶ Standards and Trade Development Facility. (n.d.). STDF communications plan. https://standardsfacility.org/sites/default/files/STDF_Comms_plan_Final.pdf

Phasing out project activities will involve transitioning responsibilities to in-country partners, ensuring both financial and institutional sustainability. Capacity-building efforts will focus on empowering local organizations and institutions to maintain standards and drive continuous improvements. Training programs for fish handlers and processors will be institutionalized within local fisheries and cooperatives, ensuring ongoing education and adherence to best practices. The project will work closely with the government to revamp the Good Fish Handling Practices (CPIB) training, focusing on capacity building in SPS standards for government officials and local authorities. By involving government representatives in the training and implementation phases, the project will ensure a strong understanding and support at the institutional level. Alignment with government priorities will help secure ongoing government support. This strategic integration will facilitate the seamless phasing out of project activities, with local institutions and government bodies taking over to maintain the achieved outcomes, ensuring both financial and institutional sustainability.

15. WHY SHOULD THE STDF FUND THIS PROJECT?

This project focuses on improving market access for one-by-one tuna by way of enhancing sanitary and phytosanitary (SPS) conditions within the tuna fisheries value chain in Indonesia and Malaysia. It aligns perfectly with the STDF's mission to promote sustainable improvements in SPS capacity, which directly contributes to economic growth and livelihood sustainability in developing countries. By submitting to STDF, the project aims to build a broader network, gain insights from STDF projects, and foster global synergies in SPS improvement. The core activities of the project include identifying, developing, and disseminating best practices, such as targeted training sessions for fishers and processors on SPS standards, implementing best practices in fish handling, storage, and processing to minimize post-harvest losses, and increasing export-grade tuna volumes. Significant infrastructure improvements are also planned, including upgrades to cold chain facilities and enhancements in fish handling at landing sites, directly contributing to STDF's mandate for innovative and replicable SPS capacity building.

The project aligns with the STDF 2020-2024 strategy by addressing several cross-cutting topics integral to the strategy.¹⁷ Gender mainstreaming is a key component, ensuring substantial female participation in all activities, particularly in post-harvest processing and trading. Women will benefit from specialized training in cold-chain management, SPS awareness, and food safety standards, which aligns with STDF's emphasis on inclusive development and gender equality. Climate change adaptation is another significant aspect, with measures to improve fuel efficiency in fishing vessels and enhance cold chain logistics to support sustainable fishing practices amid climate change. Electronic SPS certification and regulatory practices are not addressed in this project, as SPS certifications including Hazard Analysis Critical Control Point (HACCP) and other quality standards have already been implemented electronically by BKKMPH. The project is expected to provide recommendations or suggestions should any future improvements be necessary.

The approach to SPS improvement is holistic, addressing the entire tuna value chain from upstream to downstream. By focusing on improving SPS conditions from Indonesia and Malaysia, the project ensures a solution to SPS challenges, facilitating harmonized standards and practices that enhance export trade and market access. A key strength of the project is its collaborative and interdisciplinary nature. It involves multiple organizations, including the International Pole and Line Foundation (IPNLF) as the lead implementing body, fisherfolk, local tuna processors, private sectors, and various government agencies such as Indonesia's Ministry of Marine Affairs and Fisheries (KKP) and Food and Drug Supervisory Agency (BPOM). This collaborative framework ensures the project benefits from diverse expertise and stakeholder, encourages synergies, to support sustainability of the program.

The project aligns with the Standards and Trade Development Facility (STDF) in several key areas:

- **SPS Capacity Building:** The core activities include targeted training sessions for fishers and processors on SPS standards, implementing best practices in fish handling, storage, and processing to minimize post-harvest losses, and increasing export-grade tuna volumes. Significant infrastructure improvements are planned, such as upgrades to cold chain facilities and enhancements in fish handling at landing sites, directly contributing to STDF's mandate for innovative and replicable SPS capacity building.

¹⁷ Standards and Trade Development Facility. (n.d.). STDF strategy 2020-2024. Retrieved August 2, 2024, from https://standardsfacility.org/sites/default/files/STDF_Strategy_2020-2024.pdf

- **Collaboration and Innovation:** The project involves multiple organizations, including the International Pole and Line Foundation (IPNLF) as the lead implementing body, fisherfolk, local tuna processors, private sectors, and various government agencies such as Indonesia's Ministry of Marine Affairs and Fisheries (KKP) and the Food and Drug Supervisory Agency (BPOM). This collaborative framework ensures the project benefits from diverse expertise and stakeholders, encouraging synergies that support the sustainability of the program. It also fosters collaboration regionally between two countries.
- **Sustainable and Inclusive Trade:** By improving SPS standards and practices, the project aims to enhance the export quality of tuna, facilitating safer trade and market access. This includes developing sustainable business models and mechanisms for sustainable growth, such as exploring financing options and establishing a co-funding mechanism through a membership system. Members will contribute financially, with funds ringfenced for project development and capital equipment, ensuring long-term investment in SPS improvements.
- **Environmental and Social Impact:** The project addresses cross-cutting topics such as gender mainstreaming, ensuring substantial female participation in all activities, particularly in post-harvest processing and trading. Women will benefit from specialized training in cold-chain management, SPS awareness, and food safety standards, aligning with STDF's emphasis on inclusive development and gender equality. Climate change adaptation measures include improving fuel efficiency in fishing vessels and enhancing cold chain logistics to support sustainable fishing practices amid climate change.

By addressing these areas, the project supports STDF's mission to enhance SPS capacity, facilitate safe trade, and promote sustainable and inclusive development in developing countries.

APPENDIX 1: WORK PLAN

Activity	Responsibility	Year 1				Year 2			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1 <i>Increased SPS capacity of one-by-one tuna fishers</i>	IPNLF								
Activity 1.1.1 Delivery of training on handling according to the IPNLF's advanced fish handling and cold chain management best practices and guidebook for fishers Details: This activity involves developing training materials (tutorial video) that adhere to IPNLF's advanced best practices and international SPS standards (see answering question no.2 and no.11). These materials will be designed to be user-friendly and practical, providing clear guidelines on the best practices for fish handling to maintain quality and safety. Training sessions will be conducted in various fishing communities to ensure wide reach and accessibility.	IPNLF								
Activity 1.1.2 Food safety training for fishers on vessel Food safety training for one-by-one tuna value chain stakeholders, upstream of processors. Details: This activity focuses on educating fishers about on-board food safety practices, including hygiene, proper storage, and temperature control. These training sessions aim to reduce contamination risks and improve the overall quality of the catch, making it more suitable for export.	IPNLF								
Output 1.2 <i>Increased SPS capacity of fish aggregators and buying stations</i>	IPNLF								
Activity 1.2.1 Conduct an assessment to establish a baseline for rejection/acceptance rates at buying station/aggregators and value-added processing facilities and develop and distribute simplified protocols for measuring results. Details: Perform an assessment at various buying stations and aggregators to determine current rejection/acceptance rates. Identify key factor contributing to rejection and necessary improvement. Develop and distribute simplified protocols for consistent measurement and tracking of these rates.	IPNLF								
Activity 1.2.2 Capacity building training on results monitoring for rejection/acceptance rates at buying stations/aggregators and value added processing facilities. Details: Provide targeted training for staff at buying stations, aggregators, and value-added processing facilities on effectively monitoring and documenting rejection/acceptance rates. Cover the use of newly	IPNLF								

developed protocols, data collection methods, and analysis techniques.									
Activity 1.2.2 Rapid Baseline Gender Assessment to understand the proportion of women working in the post-harvest one-by-one tuna value chains and to identify their unique training requirements to ensure inclusivity.	IPNLF								
<p>Activity 1.2.3</p> <p>Training on food safety and export requirements for aggregators and buying stations.</p> <p>Details: This activity will involve the creation of tailored training programs for fish aggregators and buying stations, focusing on the specific requirements for maintaining fish quality, food hygiene practices, and meeting export standards. Topics will include proper handling, cold chain management, hygienic processing, and value addition techniques.</p>	IPNLF								
<p>Output 1.3</p> <p>Increased SPS capacity of government and quarantine staff</p>	IPNLF								
<p>Activity 1.3.1</p> <p>Advise Government in developing a tuna-specific module for the government mandated fish handling training (<i>Cara Penanganan Ikan yang Baik</i> (CPIB))</p> <p>Details: This activity aims to advise the government on adapting the government mandated fish handling certification Good Fish Handling Practices (CPIB) to develop advanced handling practices specific to export-grade yellowfin tuna (which is more sensitive to handling and cold-chain mismanagement than other fishery products).</p>	IPNLF								
<p>Activity 1.3.2</p> <p>Train-the-trainers workshop of government staff for advanced handling and cold chain management of yellowfin tuna as part of a specific module for yellowfin tuna with CPIB training.</p> <p>Details: The workshop focus will be on advanced handling and cold chain management techniques specific to yellowfin tuna. These workshops aim to increase the capacity of government staff to ensure the proper handling and preservation of yellowfin tuna, thereby improving the overall quality and safety of the tuna destined for export markets.</p>	IPNLF								
<p>Activity 1.3.3</p> <p>Knowledge exchange between Indonesian and Malaysian Government and private sector to improve standards</p> <p>Details: This training will focus on training the government staff who deliver the Good Fish Handling Practices (CPIB) certification to fishers at the landing sites, in advanced fish handling and cold chain management techniques specific to yellowfin tuna, increasing government capacity to facilitate increased supply of export grade tuna.</p>	IPNLF								

Output 2.1 Improved infrastructure at fishers' level	IPNLF								
Activity 2.1.1 Fishers boat redesigning pilot and production prototype vessel. Details: This activity involves redesigning boats to better support fish quality preservation. The redesign will incorporate features that enhance the cold chain capacity on board, ensuring that the catch remains fresh from the point of capture until it reaches shore. This will include insulated storage compartments, improved ice storage solutions, and ergonomic design improvements for better handling. This will include manufacturing and piloting one prototype demonstration vessel. A communication plan will be developed to promote the demonstration vessel among fisheries stakeholders in Indonesia	IPNLF								
Activity 2.1.2 Study on ice making facility – understanding the volume of ice needed to sufficiently supply the fleets at selected landing sites and identify the required investment, capacity and ideal locations (land, fresh water, etc.). Details: This activity will conduct a study to determine the optimal locations and capacities for ice-making facilities. The study will assess the current availability of ice, identify gaps, and propose the best sites for new facilities based on proximity to fishing communities, availability of fresh water, and logistical considerations.	IPNLF								
Output 2.2 Improved infrastructure at aggregators and buying stations level	IPNLF								
Activity 2.2.1: Study on mapping of aggregators and buying stations at selected landing sites and conditions and needs for improvement. Details: This activity will involve a detailed assessment of the current conditions at aggregators and buying stations within selected supply chains that already supply export value chains. The study will identify infrastructure gaps, assess current practices, and propose necessary improvements to meet SPS and food safety standards.	IPNLF								
Activity 2.2.2 Pilot Aggregator Stations - Implementation of improvements at selected buying stations to serve as models for best practices and demonstrate the business case for making improvements. Details: This activity will implement the recommendations from the initial assessment study at selected aggregator and buying stations. These pilot stations will be equipped with the necessary tools and technologies to meet international SPS and food safety standards. The goal is to create model stations that showcase best practices in handling, storage, and processing of tuna	IPNLF								
Output 2.3 Improved infrastructure at government level	IPNLF								
Activity 2.3.1 Rapid assessment on the quarantine and testing centres capacity and needs	IPNLF								

Details: This activity involves a quick, thorough evaluation of the existing quarantine and testing facilities. The assessment will identify current capabilities, gaps, and areas needing improvement to meet international SPS standards									
<p>Activity 2.3.2</p> <p>Setting up (mini) testing facilities at collection centres with no immediate access.</p> <p>Details: These mini labs will ensure fish can be evaluated at the first point of rejection (the buying stations and aggregator facilities) to facilitate increased supply into export value chains.</p>	IPNLF								
<p>Output 3.1</p> <p>Increased knowledge and capacity of fishers in adapting and mitigating to climate change that will affect tuna catch quality</p>									
<p>Activity 3.1.1</p> <p>Activity 3.1.1.1: Modification of traditional vessels, to demonstrate increased fuel efficiency to mitigate fishers concerns around higher fuel consumption from carrying more ice.</p> <p>Details: This activity involves modifying traditional fishing vessels to increase ice carrying capacity whilst improving fuel efficiency and reducing the carbon footprint. These modifications aim to reduce operational costs and environmental impact while maintaining the quality of the catch. A comparative study will then be conducted to compare the modified traditional vessels vs the unmodified traditional vessels.</p>	IPNLF								
<p>Activity 3.1.2</p> <p>Training on better fishing practices to increase fuel efficiency.</p> <p>Details: This activity will develop and deliver training programs focused on best practices for fuel-efficient fishing. Topics will include optimized navigation techniques, engine maintenance, and the use of energy-saving equipment. The training will be tailored to the specific needs and contexts of the fishers, ensuring practical and applicable knowledge.</p>	IPNLF								

APPENDIX 2: BUDGET

The detailed budget table is included as an appendix in Excel.

APPENDIX 3: WRITTEN CONSENT

The written consent is included as an appendix.

APPENDIX 4: LETTERS OF SUPPORT

The letters of support is included as an appendix.