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THAILAND CDT GAP ANALYSIS

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Cover Photo: Fishing Vessel near the port of Songkhla, Thailand.

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ACRONYMS AND ABBREVIATIONS

ACDS	ASEAN Catch Documentation Scheme
ASEAN	Association of Southeast Asian Nations
CC	Catch Certificate
CCCIF	Notification of the Command Center for Combating Illegal Fishing
CCRF	[FAO] Code of Conduct for Responsible Fisheries
CDT	Catch Documentation and Traceability
CDTS	Catch Documentation and Traceability System
CTE	Critical Tracking Event
DLPW	Department of Labor Protection and Welfare
DMCR	Department of Marine and Coastal Resources
DOF	Department of Fisheries Thailand
eACDS	Electronic ASEAN Catch Documentation Scheme
eCDT	Electronic Catch Documentation and Traceability
EEZ	Exclusive Economic Zone
EU	European Union
FIQD	Fish Inspection and Quality Control Division
Fishing Info	Fisheries Information System [Version 2]
FMO	Fish Marketing Organization of Thailand
GPP	Gross Provincial Product
IOTC	Indian Ocean Tuna Commission
IT	Information Technology
IUU	Illegal, Unreported, and Unregulated [fishing]
KDE	Key Data Element
KII	Key Informant Interview
LD	Landing Declaration
MAC	Ministry of Agriculture and Cooperatives
MCPD	Marine Catch Purchasing Document
MCS	Monitoring Control and Surveillance
MCTD	Marine Catch Transshipping Document
MNRE	Ministry of Natural Resources and Environment
MOAC	Ministry of Agriculture and Cooperatives
NCPO	National Council for Peace and Order
PAT	Port Authority of Thailand
PIPO	Port-In/Port-Out
PSMA	Agreement on Port State Measures
RAFMS	Rapid Appraisal for Fisheries Management Systems
RMBS	Raw Material Balance Stock
SCC	Simplified Catch Certificate
SEAFDEC	Southeast Asian Fisheries Development Center
SFMP	Sustainable Fisheries Management Plan
SMDEC	Southern Marine Fisheries Research and Development Center
TMECC	Thailand Maritime Enforcement Coordinating Centre
TWG	Technical Working Group
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	The Conservation and Management of Fish Stocks and Highly Migratory Fish Stocks
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership
VMS	Vessel Monitoring System

EXECUTIVE SUMMARY

The USAID Oceans and Fisheries Partnership (USAID Oceans) is a five-year, regional program working in partnership with the Southeast Asian Fisheries Development Center (SEAFDEC) to strengthen the sustainability of Southeast Asia's fisheries and enhance fisheries management through electronic catch documentation and traceability (eCDT). As such, USAID Oceans has engaged with the Thailand Department of Fisheries (DOF) to provide targeted technical support to strengthen and expand the nation's existing eCDT system. To provide recommendations for further development of Thailand's eCDT system, over 2017 to 2019, USAID Oceans worked with the DOF to conduct this CDT Gap Analysis to identify and assess the successes and challenges of Thailand's existing eCDT capabilities and system implementation. The CDT Gap Analysis focuses on the port of Songkhla and was informed by discussions with members of USAID Oceans' Technical Working Group (TWG) from Thailand and SEAFDEC. It should be noted that since the launch of the study in 2017, the Government of Thailand has made substantial progress in its development and implementation of eCDT systems that could help to address human welfare issues in the fisheries sector and support sustainable fisheries management. Its experiences, reflected throughout this report, provide valuable lessons learned and recommendations for use by other SEAFDEC and Association of Southeast Asian Nations (ASEAN) member countries in the further development of their own eCDT systems.

In 2015, the Thailand DOF commissioned the development of an eCDT system to software development companies, and since 2017 the system has been able to produce electronic Catch Certificates (CC) for exporters. Although its processes and procedures are not entirely electronic, the system presently has the capability to collect and process relevant and important data, not only for traceability purposes but also for stock assessment and fisheries management purposes. The electronic system enables fast and accurate operations of relevant authorities and agencies; however, it can be enhanced in several areas, particularly to better serve small-scale fisheries. Opportunities, such as these, are presented within this Gap Analysis, which presents key findings and recommendations, based upon consideration of the existing drivers towards eCDT from socio-economic, policy, and technological perspectives.

The analysis also presents possible pathways for the Thai Government and its partners towards setting up a comprehensive national eCDT system. Recommendations are clustered as near-term (zero to six months), mid-term (one to two years), and long-term (two to three years). Near-term recommendations include strengthening the availability and reliability of existing core systems; enhancing data integrity; improving catch data quality by promoting the use of the electronic logbook; allowing private sector to submit eCDT data through their systems; and sharing lessons learned with other countries. Mid-term recommendations are to support the formalization of policies and regulations that establish the eCDT as a platform to improve fisheries management and developing the capacity for stakeholders to use eCDT data for sustainable fisheries management. Finally, USAID Oceans recommends in the long-term that the eCDT be leveraged as an opportunity to engage and create dialogues with industry stakeholders towards sustainable fisheries management beyond merely as export compliance.

1. INTRODUCTION

The U.S. Agency for International Development's (USAID) Oceans and Fisheries Partnership (USAID Oceans) is a five-year activity that strengthens regional cooperation to combat illegal, unreported, and unregulated (IUU) fishing and conserve marine biodiversity in the Asia-Pacific region. USAID Oceans seeks to improve integrated fisheries management, focusing on priority species that are vital for food security and economic growth and under threat from IUU fishing and seafood fraud. To enhance transparency in the seafood supply chain and ensure successful implementation of electronic Catch Documentation and Traceability (eCDT) systems, USAID Oceans engages a variety of fisheries stakeholders and forms new partnerships among governments, regional institutions, and the private sector. Through discussions with members of the USAID Oceans TWG from Thailand and SEAFDEC, USAID Oceans conducted a joint assessment with the Thai DOF on the successes and challenges of eCDT system implementation in Songkhla, Thailand. The analysis aims to provide recommendations for further development of the DOF's eCDT system. Thailand's extensive experiences in eCDT development could provide valuable lessons learned and recommendations for other countries in the ASEAN.

1.1 Objectives

The main objective of this CDT Gap Analysis study is to assess and analyze Thailand's existing eCDT system through:

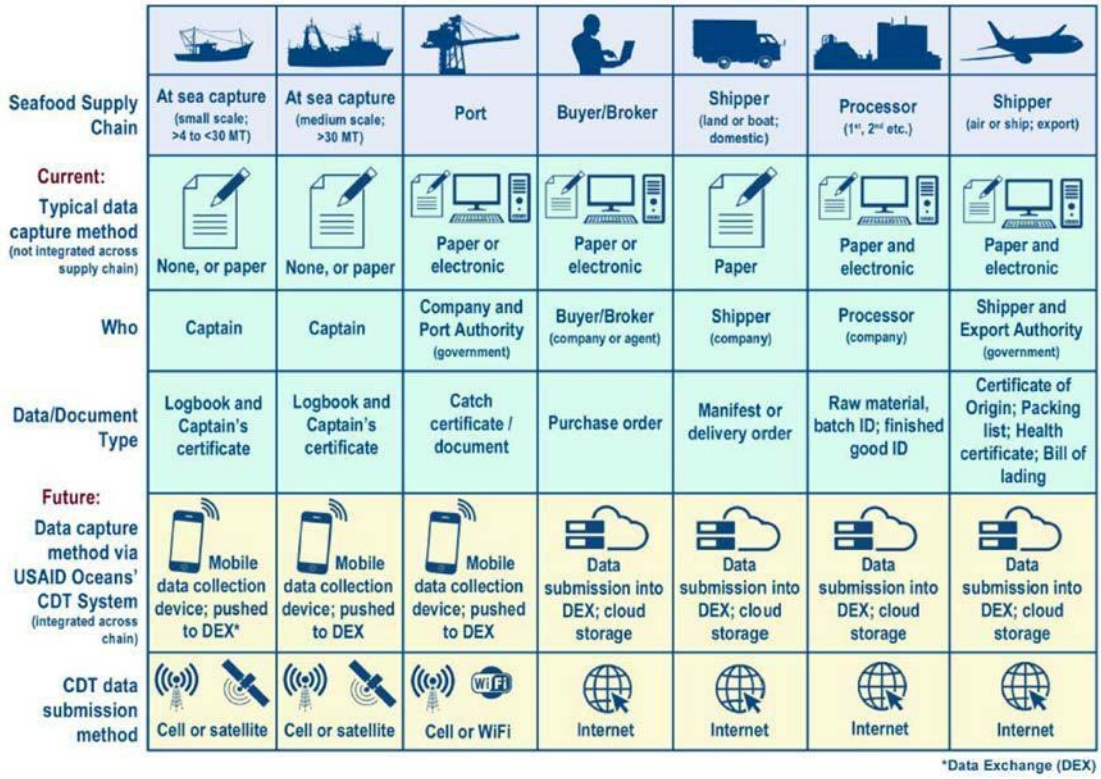
1. Determining the design and architecture of Thailand's eCDT system;
2. Determining the integration process of various systems and agencies involved in eCDT system;
3. Observing the operations of the eCDT system and Port-in/Port-out (PIPO) operations in Songkhla;
4. Conducting focus group discussions, key informant interviews and meeting with private fishing operators/processors and DOF officers;
5. Observing fish landing operations, and data encoding processes at the Songkhla fish market and a vessel landing center (Tha Sa-An);
6. Providing a general overview of Thailand's capture fisheries; and finally,
7. Analyzing gaps in the existing eCDT system as lessons learned for other ASEAN expansion sites.

1.2 Methodology

USAID Oceans has developed recommendations and standards for eCDT systems that are fully transparent, sustainable and comply with national and international market requirements. As outlined in USAID Oceans' Fisheries Catch Documentation and Traceability in Southeast Asia: A Conceptual Overview (CDT 101) and Fisheries Catch Documentation and Traceability in Southeast Asia: Technical Concept and Specifications (CDT 201), the shift towards a fully compliant eCDT system requires supply-chain wide transformation that takes the best of the current system and migrates key data elements (KDEs) from critical tracking events (CTEs) into an efficient, secure, and transparent data management platform.[1] Figure 1 describes this shift, illustrating how traditional, paper-based CDT protocols can be shifted to electronic systems through a Gap Analysis process.

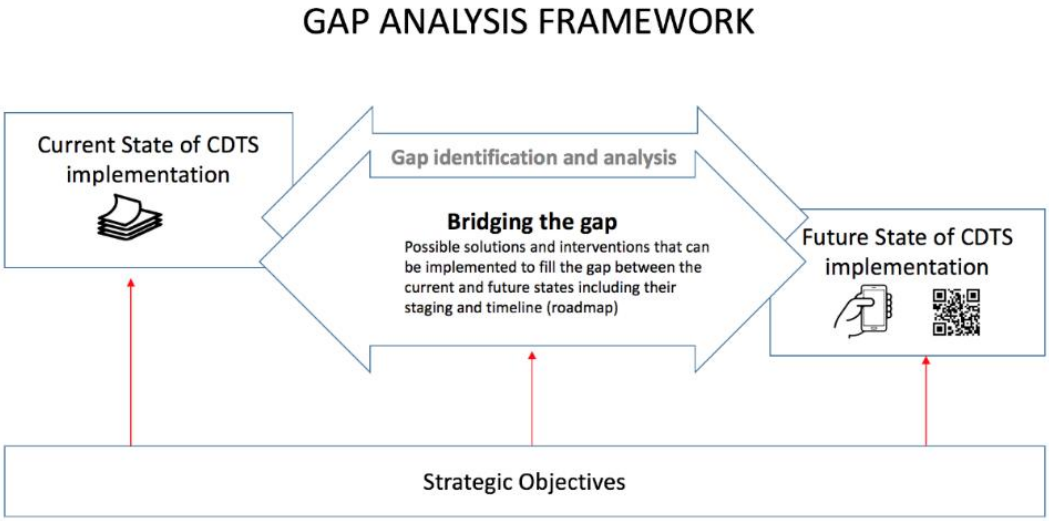
[1] https://www.seafdec-oceanspartnership.org/resource/cdt101/, https://www.seafdec-oceanspartnership.org/resource/cdt201/

Figure 1. A graphical representation a generic seafood supply chain in Southeast Asia, illustrating the movement of current versus future data capture systems



In a CDT Gap Analysis, a "gap" refers to the space between the present state ("where we are") and the target state ("where we want to be"). It could also be viewed as a "needs assessment" or "need-gap analysis" in that challenges and opportunities are presented alongside priorities and timeframes to bridge the gap towards current capabilities and an ideal eCDT system (Figure 2).

Figure 2. Gap Analysis Framework



Source: USAID Oceans Gap Analysis Framework

To ensure consistency, the study closely followed the same approach used by USAID Oceans to conduct CDT Gap Analyses in General Santos, Philippines; Nha Trang, Vietnam; and Kelantan, Malaysia. Field work for the analysis was conducted over the course of June 5-10, 2017, through discussions with stakeholders from government, civil society, and industry actors. Furthermore, desk-based research was conducted by USAID Oceans through to November 2018 to continue monitoring Thailand's CDT initiatives and capabilities. The analysis involved investigations of the current supply chain by following the various stages from vessels to middlemen, brokers, and buyers, traders to the processors, canneries and end users/consumers to address or mitigate CDT system gaps and issues, particularly towards the prevention of IUU fishing and seafood fraud. The following activities were conducted to inform the gap analysis:

- **Desktop Research and Team Discussions.** Research was conducted on CDT-related policies and initiatives in Thailand. This was complemented by a series of internal technical discussions within the USAID Oceans team on related developments at the ASEAN level and across other learning sites relevant to Thailand. This helped establish the parameters for the gap analysis, as well as provide the relevant policy and ecological frameworks for consideration under the assessment.
- **Field Visits.** In June 2017, USAID Oceans observed landing activities at landing site and stock assessment, particularly on data used in the assessment process implementation at Southern Gulf Fisheries Research and Development Center in Songkhla province, as well as the catch documentation issuing process at the Songkhla Fish Inspection and Research Center and a company that request the catch documentation certificate.
- **Key Informant Interviews and Focus Group Discussions.** Data gathering relied on key informant interviews and focus group discussions among the key players or relevant stakeholders from government entities and the private sector such as fishers, operators, brokers, traders, exporters, processors, and DOF officers.
- **Gap Assessment Stakeholder Workshop.** USAID Oceans conducted a stakeholder workshop on August 28-29, 2017, in Songkhla, with 79 participants from the fishing industry, small-scale fisheries, academe, local government units, Thailand's TWG members, local non-governmental organizations, SEAFDEC, and USAID Oceans. The group discussed Thailand's current platforms, protocols, issues, challenges and opportunities related to CDT, as well as held sessions to discuss several fisheries management planning topics and the importance of CDT.
- **Analysis and Report Writing.** Following the research and engagement outlined above, USAID Oceans processed all inputs for discussion and action planning.
- **Validation Workshop**. A final validation workshop was held in May 2019 to validate, refine, and finalize the CDT Gap Analysis, as well as secure commitments from relevant agencies on how they intend to take onboard the findings and recommendations of the report.

1.3 Limitations

All lines of inquiry, data collected, and information processed under this assessment are focused on CDT-related matters. To maintain its focus, this report does not dive into country-level statistics or sectoral profiles as these can be found elsewhere in the literature. Where key statistics are relevant, they are discussed and processed in relation to CDT.

1.4 Organization of the Report

This report is organized into three principal sections:

- Section Two, **Assessing Thailand's Current CDT System,** maps out Thailand's current CDT capabilities and conditions informing CDT;

- Section Three, **Key Findings,** presents the significant insights generated over the course of the assessment that are critical towards understanding various challenges and opportunities surrounding eCDT in Thailand; and
- Section Four, **Recommendations,** presents a practical roadmap on which aspects of Thailand's eCDT-readiness should be prioritized for further development as the country continues its journey towards establishing a full eCDT system.

Additional information can be found in the report's annexes, which provide additional details on recommendations for implementation and supporting information, such as required fisheries documentation.

2. ASSESSING THAILAND'S CURRENT CDT SYSTEM

Any attempt to establish a baseline for a country's eCDT capacity requires a clear understanding of the overarching socio-economic factors, policy context and the available technologies influencing government and industry uptake. As such, this report breaks down the current landscape enabling catch documentation in the country, from socio-economic, policy and technological perspectives.

2.1 Socio-economic Drivers for CDT

Thailand's marine fisheries provide vital resources for its food security. In January 2019, there were 33,531 active Thai fishing vessels (32,781 fishing vessels and 750 supporting vessels) catching 1.34 million tons of seafood. This amount of catch could support the livelihoods of approximately 172,430 fishermen; 131,505 registered fisheries workers; 62,790 Thai workers; 67,715 migrant workers; and 515,000 of those working in the fishery sector, which is significantly contributed by women (e.g., in fish processing, ship building, canned and frozen fisheries product factories, fish meal factories).[2] In rural Thailand, fish is considered an affordable source of protein, contributing significantly to dietary health and food security of more than 2,500 villages of artisanal fishing communities along the coasts.[3]

Thailand has become one of the world's largest fishery exporters. With advancements in technologies and developments in production and processing industries, Thai seafood products have met international quality standards and the demands of the global market. In 2014, exports totaled 1.7 million tons, valued at US$ 6.75 billion, and imports totaled 1.6 million tons, valued at US$ 2.74 billion.[4] However, Thailand's fishery sector still faces several challenges, including shortages of domestic raw materials and of labor.

Exported fishery products account for 20 percent of total Thai food exports. The majority of exported fishery products (over 75 percent) are canned tuna and sardines, shrimps, prawns, processed squids and cuttlefish. The top five export destinations include Japan, the United States, Australia, Canada, and China.[5] Thailand imports fishery products from many countries. Myanmar and Malaysia are among its main trading partners and suppliers of Indian mackerels and tunas to the processing plant for export. Frozen fish, mainly imported from Taiwan, America, China, India and Japan, becomes one of the most imported raw materials due to its low cost.

[2] Department of Fisheries, 2015
[3] Ibid.
[4] Trade Promotion Agency for Agriculture and Industry, Department of International Trade Promotion (DITP)
[5] USDA, GAIN Seafood Report No. TH8067, 2018

Songkhla is one of the most economically productive provinces in Southern Thailand. It accounts for about 21 percent or one-fifth of Thailand's Southern region's economy. The fishery sector contributes up to 28.7 percent of the province's Gross Provincial Product (GPP).[6] Located along the coastal areas, fishery practices have long been a crucial source of income for Songkhla. The East of the province is connected to the Gulf of Thailand and the West is connected to Songkhla Lake, which are the main sites for the province's fishery practices. Songkhla has two main sea ports: the Songkhla Deep Sea Port and the Songkhla Fish Port. The former is located in Hua Khao, Singhanakhon district. It is managed by the Port Authority of Thailand (PAT). The port consists of 2 General Cargo Terminals and 1 Container Vessel Terminal, with a capacity to hold 1.1 million tons of containers and cargos. The latter is located in Bo Yang, Mueang district and is under the management of the Fish Marketing Organization of Thailand (FMO).[7]

Songkhla has large berths, which allow many fishing vessels to dock for unloading of catch. In 2016, the province received 23,591 tons of catch, valued at 592 million THB (estimated US$ 18 million). Furthermore, Songkhla has upstream, midstream, and downstream businesses related to marine fisheries.[8] There are 22 ice plants, five feed mills, 34 canneries/processing plants, 47 pre-processing establishments, and 13 fishmeal factories.[9] Aside from marine fisheries, freshwater aquaculture is practiced in almost every district for household consumption.

2.2 Fisheries Sector Institutional Arrangements and Management Structure

The DOF's Ministry of Agriculture and Cooperatives (MOAC) is the principal government entity that is in charge of fisheries management. The Marine Department is responsible for new vessel registration and vessel permit renewal. Management of the marine environment is under the responsibility of the Department of Marine and Coastal Resources (DMCR) of the Ministry of Natural Resources and Environment (MNRE).[10] The Thailand Maritime Enforcement Coordinating Centre (TMECC), headed by the Royal Thai Navy, handles security issues and protection of the marine resources and inspects maritime transport safety, and identify zones. The DOF, DMCR, TMECC and the Marine Department collaborate and integrate efforts in the following five key areas:

- Monitoring, Control, and Surveillance (MCS);
- National Observer programs;[11]
- Port sampling for stock assessment;
- Compliance and enforcement activities; and
- Data collection and management activities.

[6]Songkhla Provincial Development Plan (2018 - 2021), Fiscal Year 2062 - Integrated Provincial Administration Committee, 2018.
[7] Ibid.
[8] Ibid.
[9]Ibid.
[10]Marine Fisheries Management Plan of Thailand
[11]Thai Fisheries Observer Onboard has been established under the Marine Fisheries Management Plan (FMP) 2015-2019 to combat IUU fishing. The Observer Onboard Program for the first batch of observers (20 candidates selected from the DOF officers) commenced in September 2015 and the second batch (30 candidates) commenced in April 2016. The first observer onboard deployment of the Thai vessels operating on the high sea was conducted in July 2016. The third batch (30 candidates) commenced in August – September 2017.

2.3 Overall Processes and Sub-Processes of Thailand's Traceability System

There are two main types of traceability systems in Thailand: traceability systems for imported raw materials, and for domestic catches. The DOF began to develop the eCDT system in 2015, and in 2017, the first electronic CCs were issued for exporters. Table I illustrates the five main existing databases of the eCDT system in Thailand (see Annex II for more information on where each system operates in the supply chain).

Table 1. Main databases in Thailand's eCDT System

Database	Definition
Fishing Info	Platform to exchange and share vessel information and is used to control Port-In and Port-Out activities of all Thai flagged fishing and support vessels. It contains data on fishing and support vessels, types of fishing gear, prosecution history of each fishing vessel (if any), linking information on fishing licenses and crew.
Thai Flagged Catch Certificate (TFCC) system	Electronic traceability system for fish caught by Thai flagged vessel consisting the information through the whole supply chain including fishing activity, fish landing, distribution, processing and the issuance of Catch Certificates for export. (See more details in Annex IV).
Vessel Monitoring System (VMS)	Satellite technology for real-time monitoring installed for fishing vessels larger than 30 GT. The VMS signal transmits once every hour.
E-License	Database of commercial fishing licenses with licensing information, such as fishing gear specification, number of fishing days, etc.
PSM linked and Processing Statement System (PPS)	Electronic traceability system for imported fish and fisheries product consisting of the PSM which covers the vessel inspection before porting in through import control, off-loading of fish, transportation, and the Processing Statement Endorsement (PSE), which covers processing at establishments until the issuance of Processing Statement and exportation.

Source: DOF

The DOF has established a process to strengthen the validation of its domestic catch system. There is also connectivity and data exchange between the Department and other government agencies, including the Marine Department, the Ministry of Labor and the Ministry of Interior.

Before arrival at the Port-in Port-Out (PIPO) Control Center for necessary inspections to unload their catch, fishing logbooks and other relevant documents must be presented to PIPO staff for inspection of species and weight. The catch is then sent for bidding and sales where the Marine Catch Purchasing Document (MCPD) is

generated. Here the catch may be divided and sent to different processing plants or sold to different buyers. Once the catch has been sent for processing, such as for canning or freezing, food processors can also apply for the CC if they intend to export products to the EU member countries.

The typical process flow under Thailand's current eCDT system is comprised of the following stages:

1. Registrations and permits
2. Port out and inspection (including labor inspection)
3. Fishing (Fishing Logbook)
4. Transshipment (if applicable); Marine Catch Transshipping Document (MCTD)
5. VMS and tracking
6. Port-in and inspection
7. Unloading monitoring, actual weight verification and Landing Declaration (LD)
8. Trading through the MCPD
9. Processing Plants Inspection
10. CC Validation

Table 2 illustrates the Thai seafood supply chain process flow, documentation and supporting IT systems created by the DOF to improve documentation process towards the issuance of CCs or simplified CCs to comply with the European Union's (EU) IUU regulation and facilitate traceability from source to end market.

Table 2. Process and documentation summary of domestic catches by Thai flagged fishing vessels fishing in Thai waters

Process Flow	Fishing ground	Fishing vessels	Carriers	Ports	Processing plants	DOF	Exports
Documentation	Fishing Logbook, VMS records, MCTD			LD, MCPD	MCPD, Processing Record	MCPD, CC	CC
IT System	Fishing Info/ TFCC/VMS			TFCC			

Source: DOF

2.3.1 Registrations and Permits

The DOF has classified the fishing areas into three types: inland water, coastal, and offshore seas. There are two types of marine fisheries: coastal or small-scale fisheries with vessels smaller than 10 gross tonnage operating in coastal seas. Commercial fisheries operate with vessels of ten gross tons and over and with an engine equipped with horse power as prescribed by the Minister operated in offshore sea that extend beyond the coastal sea to the end of the Exclusive Economic Zone (EEZ).

The coastal seas lying within the Kingdom of Thailand extend up to three nautical miles from the baselines. In light of exigencies based on purposes related to aquatic resource management, a Ministerial Regulation may be issued to determine the expanse of coastal seas in any area to cover a distance starting from the baseline shorter or further than three nautical miles as appropriate. Any such adjustment shall not result in a distance off the baseline of less than one point five nautical miles nor of further than twelve nautical miles. In any such case, a map delineating the areas prescribed thereby shall be attached to any such Ministerial Regulation.

The Marine Department is responsible for vessel registration and the issuance of vessel licenses. According to the Section Eight of the Thai Vessel Act B.E. 2481, all types of motorized vessels and non-motorized vessels of six

gross tons or over must be registered. While, the DOF is responsible for issuing fishing licenses for the use of fishing gears which is valid for up to two years.

To apply for the vessel registration from Marine Department, a letter from the DOF is required for commercial fishing vessels of 10 GT or larger and for those commercial vessels smaller than 10 GT using the following fishing gears: pair trawler, otter board trawls, beam trawls, purse seine, anchovy purse seine, all types of dredges, and generator boats).

DOF Thailand has a shared database system that has been integrated among the relevant authorities. Fishing vessel registration (including transshipment vessels) is linked to the e-License Database through Fishing INFO to ensure accuracy and consistency of data.

Observing onboard safety equipment inspection at the PIPO Control Center during CDT Gap Analysis field visits. Photo: USAID Oceans

2.3.2 Port-out and Inspection

All Thai commercial fishing vessels, 30 gross tons and over, and commercial fishing vessels of 10 gross tons or larger in size, which are equipped with fishing gears, such as trawler purse seine and anchovy falling net are required to report to a PIPO Control Center upon porting out (to check documents, vessels and crews) and porting in (to verify documents, check the vessels, and inspect the crew). Port-out and Inspection processes are as follows:

1. The vessel owner makes a request to Port-out via the "Single Window 4 Fishing Fleet" system or in person at a PIPO Control Center, with a completed request form, no more than 24 hours, but no less than an hour before the vessel is to leave the port along with valid documents, such as vessel registrations and fishing licenses.[12]
2. Once the Port-out request has been submitted and the Port-out number has been issued, the Port-out response form should be printed and taken to the vessel.
3. The vessel should not leave the port before the time specified, but should not leave later than two hours. If the vessel cannot leave from the port by the specified time, the port-out request must be cancelled and a new request must be submitted.
4. The vessel can also leave the port without having to notify or wait for an inspector if they are not present, provided that the documentations have been submitted with accurate information.

Crew members wait in-line for officers to check their IDs during a physical inspection at port. Photo: USAID Oceans

At-port, vessel inspection is conducted before and after fishing activities to ensure that all fishery related issues are legal and consistent to all regulations. The person who is in charge of a vessel reporting for port-in and port-out has to present all legal binding documents such as the vessel registration, fishing license, crew list, and fishing logbook. Physical inspections are also conducted to verify that the vessel equipment and fishing gears, as well as other related fishing information (such as total number of fishing days) comply with relevant laws and regulations.

[12] http://fpipo.md.go.th:88/

2.3.3 The Fishing Logbook

The DOF requires all commercial fishing vessels, including artisanal fishing vessels that catch fish for commercial purposes to prepare the fishing logbooks for monitoring, control and traceability purposes. Currently, most fishing logbooks in Thailand are paper-based and consist of the following main parts:

- Catcher's information (i.e., vessel registration number, licensing data and fishing gear, etc.)
- Capture data (i.e., date/time, catch area and quantity);
- Transshipment;
- Species and quantity; and
- Landing port and Landing weight.

Owners of artisanal fishing vessels are not required to submit a fishing logbook, but they are required to submit the MCPD for artisanal fishing vessels. Only owners of commercial fishing vessels (of 10 gross tons and over, and 10 gross tons and below) must prepare and submit a fishing logbook for each trip upon arrival and prior to unloading. Activity must be recorded within 24 hours from the time of departure (Port-out) with specific details captured for each catch. When there is a mooring at sea while a fishing activity is conducted, the exact location must be clearly indicated. Although there are as many as 19 formats of commercial fishing logbooks, each logbook must provide the following details:

1. Name of vessel, vessel registration number, and its size;
2. Name of vessel master or skipper;
3. Location, date and time of catch;
4. Port and date of departure/ entry;
5. Type of fishing gear;
6. Species and quantities; and
7. Land port and landing weight.

2.3.4 Transshipment: Marine Catch Transshipping Document (MCTD)

The DOF permits transshipment of aquatic animals. A vessel registered as a transshipping or storage vessel must prepare the MCTD authenticated and endorsed by the vessel master or an operator. They must comply with all fishing vessel regulations, such as port entry and exit formalities, and VMS installation criteria.

2.3.5 Vessel Monitoring System (VMS) and Tracking: Fisheries Monitoring Center (FMC)

The FMC is the principal unit for monitoring, control and surveillance (MCS) of Thai fishing vessels fishing in Thai waters and beyond, which operates 24 hours a day on a daily basis. The FMC coordinates and works closely with PIPO Centers. It establishes connections with all fishing vessels via the VMS, which is used to monitor the vessels' activities, including areas of fishing, use of fishing gears, and catch transshipment. VMS units transmit data including location, route, and pattern of activities of the vessels to the FMC, which then transfers the data to 30 PIPO Centers for reference for Port-in Port-out inspections. The FMC is located in Bangkok and consists of three sub-units: VMS database management and permitting, VMS monitoring, and behavior analysis (of the fishing vessel).

The Fisheries Act, BE 2558, requires VMS for all commercial fishing vessels of 30 gross tons (or over), as well as fishing vessels used to support other vessels or those registered as a transshipping or storage vessel. VMS must be installed in accordance with the performance standards and functional requirements of the DOF; must remain turned on or available at all times while fishing or landing; and should be locked, riveted, and stamped to prevent

any movement. VMS equipment can be purchased from various vendors offering packages and plans for installation and maintenance.

VMS equipment and software used by the FMC/VMS has been developed and upgraded to enhance data processing through the following functionalities:

- Sorting fishing vessels by vessel license and type of vessel and displaying vessel locations in real time;
- Recording navigation routes and comparing the routes of up to 10 vessels at the same time;
- Automatically notifying any regulation violation and risk, for example when two vessels are moving closer towards each other than 50 meters, when the vessel enters the EEZ of a third country, and when the vessel fails to return to port within 30 days;
- Keeping track of notifications and violation records to be used as inputs for risk analysis; and
- Categorizing fishing behaviors into different levels of risk to be managed by different MCS procedures of the FMC.

In addition, the Thai Government further developed a data storage system, which links the FMC and the VMS database of the DOF with those of other concerned agencies including the Marine Department, the Command Centre for Combatting Illegal Fishing (CCCIF), the Ministry of Labor, and the Royal Thai Police, to leverage data received on fishing vessels' activities for risk analysis in order to ensure more accurate vessel inspections and support law enforcement.

2.3.6 Port-In and Inspection

Port-in procedures are similar to Port-out procedures:

1. The vessel owners may make a request to Port-In via the "Single Window 4 Fishing Fleet System" or in-person at a PIPO Control Center with a completed request form no more than 24 hours, but no less than an hour before the fishing vessel is to enter the port.

Port-in inspection conducted by different agencies at the PIPO center. Photo: USAID Oceans

2. The request is considered as completed once Port-in information has been submitted and the Port-in number has been issued.
3. The vessels should not be ported before the time specified in the Port-in response form, but no later than two hours after. Should the vessel not be ported by the time specified, the Port-in request will be cancelled.
4. In case if the vessel is to be ported at more than one location, the requests should be made simultaneously. Should the port intended for Port-in is not in the area of competence of the PIPO Control Center, the vessel owner must make a new Port-in request.
5. All crews must leave the vessel for investigation. Should there be any suspicious behavior, they are to be interrogated. All documents must be handed to the officers for inspection, such as a vessel registration and permit, fishing license, fishing logbook, vessel master's license, and others as requested. Officers are to inspect fishing gears and equipment, species caught, and the amount and weight of the aquatic animals compared to what is reported in the logbook and ensure that there is neither smuggled goods nor protected species. The location of catch is to be reviewed against the logbook. All data will be submitted

to the Fishing Info database and signed off by the Chief of PIPO Control Center to approve the vessel for landing at an FMO jetty or any privately-owned jetty endorsed by the DOF.

6. At the same time, fishing logbook is revised for consistency between fishing logbook's data and VMS historical tracking during the Port-in.

2.3.7 Unloading: Monitoring and Landing Declaration (LD)

All catch must be landed at an authorized port, already be registered with the DOF. The authorized port must record the information of all vessels entering for docking, transshipping, or landing their catches from the LD. Typically, a port owner should declare the LD to certify the number of species and actual weight of the aquatic animal and submitted to PIPO officers for approval to verify if the estimated catch in recorded logbook exceed the margin of tolerance before any purchasing activity can take place. The electronic system for Thai Flagged Catch Certification (TFFC) Scheme has been implemented along the entire supply chain since September 2017 to replace the previous paper-based system. The system can automatically cross-check data, such as logbook data against the LD, to ensure that the differences between them do not exceed the margin of tolerance.

2.3.8 Trading and Processing: Marine Catch Purchasing Document (MCPD)

From the point of landing, via any sale and purchase agreements, to either a market or a processing establishment, the MCPD is required to record all relevant information about the vessel and where their fish are sold/purchased by different economic operators. In most cases, artisanal fishing vessels (of 10 gross tons or below) are not required to provide the MCPD. However, they would only have to declare this document should their catch be delivered to a processing establishment or to be processed for exportation. The information regarding the fishing vessel recorded in the first part of MCPD includes vessel registration, fishing license, catch area, landing site and date of landing. The second part records sales and distribution, including types and weight of fish, and name of buyers and sellers. Such information is recorded onto the TFCC. Data regarding the catch, including vessel registration, fishing license, catch area, landing site, date of landing, type and weight of fish, in the MCPD are to be cross-checked and verified by the Thai authorities via the TFCC system to prevent any untraceable or fish caught from illegal or unregulated sources to enter the supply chain.

2.3.9 Processing Plant Inspection

According to the Royal Ordinance on Fisheries, BE 2558 (2015), processors are required to implement a traceability system to clearly identify the source and utilization of fish and prevent any unauthorized fish and fishery products from entering into the supply chain. The processing establishments must record each movement of lots/consignments of fish from receiving, processing, packaging and labeling. Type and weight of fish used for processing in each lot must be recorded in the third part of MCPD through TFCC system.

2.3.10 Catch Certificate (CC) Validation

The CC is a document issued by the DOF to certify that fish are legally caught by Thai-flagged fishing vessels and processed through internal validation and endorsement in order to issue a CC. There are two types of CCs: the CC for fishing vessels of 20 gross tons or over; and the Simplified Catch Certificate (SCC) for fishing vessels of 20 gross tons and under. These two types of catch certificates can be issued via the electronic Thai-flagged catch certification system. However, the SCC for artisanal fishing vessels is still paper-based.

Before issuing a CC, the MCPD is to be verified with the information from the LD and the fishing logbook, specifically for the types and weight of fish, via the electronic TFCC System and cross-checked against the data in Fishing Info and on the VMS system. Through this, the DOF can ensure that every consignment with an issued CC can be traced back to its origin of catch.

2.3.11 Imported Raw Materials

The Royal Ordinance on Fisheries BE 2558 (2015) empowered the Thai authorities to control Thai fishing ports and take strong enforcement actions against foreign flagged fishing vessels having been involved in IUU fishing or suspicious of IUU activities. This enabled Thailand to accede to the Agreement on Port State Measures (PSMA) in May 2016. Furthermore, DOF designed the Import Control Scheme to cover all imported fish and fishery products. The inspection of fish imports is not only from foreign flagged vessel but also via land, air freight and container vessels. The consignments are inspected by DOF officers before a decision to issue an import permit is made. The import control system links all agencies' workflows, IT systems and data. This enables Thai authorities to prevent illegally caught fish from entering into the domestic supply chain and international markets from all modes of transport.

In June 2018, the fully comprehensive "PSM linked and Processing Statement System (PPS)" became operational. PPS consists of two systems, namely the electronic PSM System to track fish from pre-port entry to transport and the PSE to track each fish batch from processing plant until export.

The typical import control and traceability process flow is comprised of five stages including:

1. **Inspection before arrival at Thai borders and port**. Vessel must submit Advance Request for Port Entry (AREP) application form. DOF officers decide whether to allow vessel/fish and fishery products to enter Thai borders and ports based on documents to prove the legality of vessels and fish, cross-checking of information and verification of the authenticity of documents. DOF communicates its decision on port entry to the vessel by issuing a "Notification to Fishing Vessels Following a Request to Enter Port" (NOTI) for foreign flagged fishing and carrier vessels. For container, truck and air freight, the Import Permit is issued and endorsed prior landing at Thai borders and ports.
2. **Inspection at Thai entry port.** Vessel and fish onboard are inspected at Thai entry points and Port Inspection Report (PIR) is issued. If inspections are completed without any sign of IUU fish on board, the use of port facilities and offloading of catch is authorized.
3. **Offloading Control**. Once a vessel has successfully passed all prior controls, DOF officers monitor the offloading, weighing and truck loading procedure at ports. When the truck arrives at the cold storage, the actual weight and type of fish is recorded and compared to the landed weight. When the actual weights and types of fish have been approved, the Import Aquatic Animal Movement Document (IMD) is issued, which is the starting document before fish enter the production chain at the processing establishment.
4. **Inspection at processing establishments.** Processing establishments are responsible for identifying the source and utilization of fish to prevent any unauthorized fish and fishery products entering into the supply chain during this processing stage. The principle of inspection in processing establishments for imported fish is the same as the inspection for fish from Thai flagged vessels.
5. **Endorsement of Processing Statement (PS).** Before endorsing PS, the relevant information is cross-checked with IMD and catch certificate from flag state. Fish utilization for the consignment is cross-checked as well. If all data is consistent, PS is endorsed. In doing so, DOF can ensure that every consignment receiving a PS can be traced back to the batch of fish that was imported into Thailand.

Table 3. Process flow and documentation for importing fish processed for EU Export

Process flow	Fishing ground	Fishing vessels	Carriers	Ports	Processing plants	DOF	Exports
Documentation	Fishing license, Vessel's registration certificate, AIS tracking, Transshipment declaration, Stowage plan, Certificate of origin, Customs clearance, Catch certificate from flag state, AREP, NOTI			Bill of lading, Invoice, PIR, Import Permit, IMD, Catch certificate from flag state	IMD, Catch certificate from flag state, Processing record	IMD, Catch certificate from flag state, Processing record, PS	Catch certificate from flag state, PS
IT System	**PSM linked and Processing Statement System (PPS)**						

2.4 Human Welfare and Gender

As noted in Section 1.3, this assessment focused on eCDT processes and infrastructure, with limited exposure to labor and welfare issues. However, in conducting the assessment, the following details were gathered in relation to eCDT protocols and capabilities and those persons that may use or be impacted by them. This section is not a comprehensive report on human welfare conditions in Thailand's fisheries sector.

There are several human welfare and gender related issues affecting Thailand's fisheries value chain, including a lack of sufficient basic amenities, such as food, water, sanitized lavatories and first aid medical treatments, especially for fishers and crews at-sea and workers at the processing facilities. There is also a lack of decent accommodation and housing for workers settling near the ports and processing plants. Similar to other fisheries across Southeast Asia, there is a division of labor between men and women across the supply chain; men are responsible for fishing at-sea and women are responsible for preparations of fishing gears and tools. Women are likely to work at processing facilities, in selling and marketing-related functions, as well as the primary caregiver and housekeeper. There are no women employees or crew in fishing vessels due to the perception of heavy and dangerous work. Nonetheless, both men and women have equal rights to become members of the provincial fisheries board.

Researchers also note the issues of human trafficking and child labor that have affected Thailand's commercial fishing vessels and the historical lack of policies and regulations, which this report has not explored in order to remain focus. However, human welfare violations may occur within the supply chain, for example during the transfers of workers or fishers at import trans-shipment as it could be difficult to monitor. USAID Oceans recommends that its partners consider these risks and how eCDT implementation may be leveraged as solutions.

2.4.1 Legal Frameworks, Policies and Actions

Thailand recognizes that human trafficking, IUU fishing and other human welfare related issues pose serious threats to national security and severe violation of human rights. The Government of Thailand, along with other civil society organizations, made a substantial progresses have been made in addressing them through the issuance and enforcement of several regulations and policies, as well as law enforcement across the value chain.

Section 37 of the Royal Ordinance on Fisheries B.E. 2558 (2015) requires that a commercial fishing licensee provide occupational safety and hygiene, as well as appropriate working conditions as prescribed in the Ministerial Regulation on Labor Protection in Marine Fisheries. As such, for a fishing vessel of 30 gross tons, a licensee must

provide: adequate clean food and drinking water for the total duration of the fishing operation; rest periods as prescribed in the Ministerial Regulations; sufficient medications and medical supplies for all crew members and the total duration of fishing operation; first aid treatment and urgent transportation for crew members to access on-shore medical facilities in case of severe injuries or illnesses; medical examinations for crew members at least once a year by a certified medical doctor; and recreational spaces. Vessels over 60 gross tons must also provide a restroom with an area of at least one square meter and first aid training to at least one of the crew members to be conducted by an institution or agency accredited by a government agency. For safety, licensees for vessels over 30 gross tons must provide (and provide guidelines for usage of) tools, equipment and supplies, and lifejackets; operations of fishing gears and rules of fisheries; and safety on board.

Fisheries workers across the value chain also have the rights and access to medical care through a regulation issued by the Ministry of Public Health to cover the medical welfare of civil servant social security insurance system.[13] There are also regulations issued by the Ministry of Labor that enable and protect workers' welfare and access to basic amenities, including food and medical treatment during at-sea capture for both small-scale and commercial fishing. Such regulations also cover other compensations and benefits, such as incomes and holidays, which are also applicable for all the other nodes of the fisheries value chain beyond at-sea capture.

There are also specific policies, actions and initiatives implemented by both the Thai Government and civil society organizations (CSOs) to ensure and strengthen human welfare in fisheries for both at-sea and at-port. These include:

- Protective measures to reinforce registration of foreign workers and fisheries laborers, as well as vessel registration;
- Commercial vessel VMS requirements, which can also help track crew fishing hours;
- The establishment of the Fisherman's Life Enhancement Center (FLEC) to improve quality of life for legal fisheries labor[14] and future establishment of the "Fisheries Crew Center,"[15]
- Advocacy (by the Ministry of Labor) for the formation of a fisheries labor employee federation for negotiations and a Thailand fisheries labor union; and
- Building and strengthening cooperation between relevant sectors and organizations to promote equal rights and welfare for fisheries workers, including labor and social rights.

Thailand has been a key party to international laws and conventions in tackling the issue of human trafficking, such as Protocol 29 (2014) to the Forced Labor Convention (1930), which was ratified in June 2018. In January 2019, Thailand was the first country in Asia to ratify the International Labor Organization's Convention on Work in Fishing (2007) or C188. The Convention provides guidelines on protecting the living and working conditions of fisheries on board vessels, which will be effective in January 2020.

The Government of Thailand has issued and imposed a number of policies to combat and prevent human trafficking of migrant or foreign workers, as follows: [16]

- Employment process trainings offered to foreign or migrant workers at Re-Integration Centers;
- Sea book or a Seaman book registration requirements and related orientation sessions, a permit to work onboard that remains valid for the same duration as the related work permit, according to Article 83 of the Royal Ordinance on Fisheries B.E. 2558 (2015);

[13] There is limited information on benefits for migrant workers, however, according to the Department of Labor Protection and Welfare, migrant workers (all sectors) with work permits issued by the Department of Employment can avail of the social security system medical services.

[14] The center has been established under a Memorandum of Understanding (MOU) between the Fish Marketing Organization under Ministry of Agriculture and Cooperatives, the Department of Labor Protection and Welfare, the Planned Parenthood Association of Thailand, Stella Maris Seafarers Center Songkhla (Baan Suksan) and Charoen Pokphand Foods Public Company Limited (CPF). It has an operating timeframe of 2016 – 20.

[15] The Center is to be established under the initiative of the Labour Rights Promotion Network Foundation (LPN), a non-governmental organization in Thailand, in collaboration with other government agencies and units.

[16] This section is drafted based on the Report from the "Regional Conference on Human Trafficking in Thai Industry: Trends, Challenges and Good Practices" (April 2019) by Mr. Chirdsak Chookong

- The Royal Ordinance concerning the Management of Foreign Workers' Employment B.E. 2560 (2017);
- "Ship to Shore Right" trainings on labor inspection, organized by the ILO and Government of Thailand under the project to prevent and eliminate forced labor, child labor and unacceptable forms of works;
- Trainings for provincial officials on the new legal frameworks and policies to ensure appropriate protection of workers and their rights; and
- Continued development of a multi-stakeholder approach to promote transparency in the supply chains of sea fishery and seafood processing industries or any other business with risk to the use of forced labor.

In order to reinforce laws and regulations to tackle human trafficking and violations of human rights and welfare, the Government of Thailand has heightened the intensity of labor inspection throughout the value chain as a tool to promote labor protection. Inspections must be conducted for all sizes and types of business operation, prioritizing inspections for high-risk establishments, especially those with potential to use child, forced, debt bondage labor or labor trafficking. The following are examples of inspection processes have been undertaken by the Government, which may be supplemented by other measures throughout the supply chain:

- Port-in and Port-out Inspection: Thailand has 30+ PIPO Control Centers and 19 Forward Inspection Points (FIP) where authorities inspect and verify relevant documents, such as labor contracts, crew lists, and identification cards for migrant workers.
- Onshore PIPO Inspection: At port, officers at the PIPO centers must check labor conditions before the vessels leave the port for fishing; check documents related to employee benefits including work permits, insurance, and monthly income; and verify there is no underage labor, forced labor, or human trafficking present. It is imposed that all workers in fishing vessels should be of age 18 and above.
- At-Sea Fishing Vessel Inspection: The Thai Maritime Enforcement Command Center (Thai-MECC) is the main authority that coordinates and oversees the operations among the collaborating agencies, which include the Marine Department, Thai Marine Police, Department of Fisheries (DOF) and the Customs Department. In addition, the Thai DOF FMC assists in surveillance in cases such as vessels failing to report undocking in the database; and
- Seafood Processing Factory Inspection: The government has created multi-disciplinary inspection teams to inspect seafood processing establishments. Each team is led by the Royal Thai Navy, and consists of four labor inspectors, an officer from the Ministry of Social Development and Human Security (MSDHS), a fishing inspector, a factory inspector, a social security inspector, and a police officer. The inspection aims to strengthen compliance with laws related to fisheries, labor protection including working conditions, forced labor, workplace situation and trafficking in persons including use of child labor.[17]

The Ministry of Labor's Department of Labor Protection and Welfare, and the Department of Employment are responsible for collecting data and information on human welfare in all the nodes of the fisheries value chain. In addition, the Thai DOF also collects information from small-scale fishers, whereas the Fisheries Association of Thailand collects information from commercial scale fishers. All Thai employees working on commercial fishing vessels must have a Seaman's book issued by the Marine Department, and from port to expert, all non-Thai employees must have work permits issued by the Department of Employment. There are indications of reforms to the migrant worker management system with close cooperation of neighboring countries through collaboration among governments, private sector, international organizations, and local and international NGOs.

[17] Under the Royal Ordinance on Fisheries B.E. 2558 (2015), the penalty for seafood processing factories employing illegal workers including migrant worker without a work permit includes fines up to 800,000 THB/worker. If there are less than 5 illegal workers found, there will be a suspension of operation for 10 - 30 days and should there be more than 5 of them, the factory shall be closed. Violations of Labor Protection Law would entail imprisonment, not exceeding 2 years and/or a fine of 200,000 to 2,000,000 THB, including a daily fine of 100,000 to 500,000 THB.

2.4.2 Institutional Arrangements and Management Structure

The Government of Thailand has strengthened the monitoring capacity of its Port-in Port-out (PIPO) Control Centers through the Forward Inspection Point (FIP), which conducts random vessel inspections in parallel with and to validate inspections conducted by the PIPO Centers in 22 coastal provinces. The FIP consists of four groups, each equipped with inspection experts from the relevant governmental agencies, namely, the Royal Thai Navy, the Department of Fisheries, the Marine Department, the Department of Labor Protection and Welfare, the Department of Employment, and the Royal Thai Police.

Across the fisheries value chain, the Department of Employment and Department of Labor Protection and Welfare of the Ministry of Labor, is responsible for overseeing employment and welfare matters of workers, both local and foreign. The Department also works with employers to determine how many foreign workers they require, and issue work permits accordingly.

The Thai Navy and the DOF is involved only at the at-sea capture node for both small scale and commercial vessels, while the Marine Department is responsible only for the commercial ones. The DOF is also in charge of inspections at port and of importers/trans-shippers. In addition, within the Thai DOF, various working groups have been formed to work with external entities on various mandates. The Fisheries Resources Management and Measures Determination Division of the DOF has been mandated to implement regulations measures regarding the registration of fishers including migrant workers, the issuance of their Seabooks according to Article 83 of the Royal Ordinance on Fisheries B.E. 2558 (2015), and inspection of labor practices in factories, and in the overall fisheries supply chain related to gender and welfare e.g., social security, income, and other socio-economic aspects. There are several working groups and organizations involved in such implementation processes including the Fisheries Labor Group, Fisheries Registration and Licensing Group, RFMOs and International Obligation Group, Convention on International Trade in Endangered Species (CITES) and Trading Control Group, and Measure Determination Group.

The Marine Police is responsible for at-sea capture nodes of both small- and commercial scale vessels, and with importers/trans-shippers The Ministry of Public Health is also involved in providing health services in all nodes except at the port and shippers at export (by air or ship).

Aside from the government agencies, there are also other organizations that work in this area of promoting human welfare in fisheries including the Labour Rights Promotion Network (LPN) working across the supply chain and the Environmental Justice Foundation (EJF) and Stella Maris, who oversee the overall supply chain except for the buyers/brokers.

Cooperation among various agencies and organizations, including government entities, the private sector, and NGOs, as well as international cooperation is vital to Thailand's accomplishment in tackling human trafficking and addressing human welfare and gender issues in the fisheries sector.

3. KEY FINDINGS

After assessing the existing drivers for eCDT from socio-economic, policy, and technology perspectives, USAID Oceans has determined the following as key findings that can be used to develop pro-active steps to influence the uptake and success of a prospective eCDT system.

The DOF has developed an electronic traceability system that can store complete, accurate, and consistent KDEs in accordance with important CTEs in the Thai seafood traceability process. CTEs are supply chain events recorded to allow for effective tracing and tracking back products throughout the supply chain. KDEs are the details that describe or define that event and inform the "who, what, when, where, why and

how" of the seafood supply chain. Both must be captured adequately (accurately, verifiably, securely, and in a timely manner) within the eCDT system to enable traceability.

There are nine CTEs in the seafood supply chain in Songkhla, from Port-out to export, excluding vessel registration and fishing licensing processes. The analysis found that in each CTE, the required KDEs are properly recorded and validated so that there is sufficient information to support the issuance of CC. The collection of KDEs in the seafood supply chain by the DOF is conducted in three main areas:

1. **From Port-out to Landing Declaration** to ensure that fishing operations are properly controlled, completely and accurately reported, in order that a complete catch documentation can be produced;
2. **Trading centers** to capture movements of aquatic produce with detailed trading information including on sellers and buyers, species and quantity traded; and
3. **Processing plants** to impose raw material control and reporting system that ensures no aquatic animals are received from IUU fishing.

Several electronic systems have already been put in place to control fisheries activities in Thailand, except at the 'Fishing' and 'Transshipment' stages of the supply chain, which involve manual recording on the following paper forms:

1. **Commercial fishing logbook.** Upon arrival, officers are to verify and record all data from paper-based fishing logbooks onto the TFCC. Longitude and latitude coordinates are manually entered on the VMS to verify the point of catch, making it difficult to accurately track and report the locations of catch as multiple errors can be created, especially when as there are multiple formats for the fishing logbooks.
2. **MCTD.** Transshipment information is another source of important KDEs in the seafood supply chain, although still reported on paper forms. Similarly to the fishing logbooks, MCTD data and latitude and longitude coordination of transshipment location are also to be entered manually onto the database and verified by officers.

The DOF's electronic traceability system only serves commercial fisheries. Processes for artisanal/ small-scale fisheries are manual and paper-based. The MCPD can be submitted as a record of catch and trading activities, which cannot be stored in an electronic format. Fish collectors/middlemen, as well as processing plants, who have purchased from small-scale fisheries and wish to export to EU must prepare the MCPD form, which is required for SCC application. This entire process of data entry and storage for small-scale fisheries is still paper-based.

The FMO has been testing Wi-Fi electronic scales to improve the accuracy of the "actual" weighing at port of aquatic animals. During the field visit to Songkhla Fishing Port, the FMO was working on testing its electronic scales to automatically send weighing data to the TFCC system via Wi-Fi network. The DOF officers randomly record the weight and species of aquatic animals for stock assessment. In current practices, buyers and sellers record the weight of the fish manually and input the weight data onto the online MCPD form. With this new method, accuracy and precision of the weights of aquatic animals can be ensured. In addition, the DOF will be able to access the weight data for the purpose of fisheries management planning.

The DOF is working to develop interconnectivity with relevant agencies' databases through a central database. In Songkhla, Port-in/Port-out and landing procedures are carried out in two different locations: PIPO Control Center for PIPO requests and vessel inspections at the FMO's port for fish landing and unloading. FMO officers have access to the TFCC system for the approval of the LD and the initiation of the MCPD for trading activity. At the PIPO Control Center, many government agencies are working in collaboration but taking on different responsibilities and tasks, such as verifying vessel documentations, crew interviews, inspections of safety on board, among others to collect and consolidate data for the Chief of the Center to make a final decision whether to allow a fishing vessel to depart or enter, based on the information received.

Since June 2018, the DOF has worked to improve digital interconnection between the databases. It developed Fishing Info as a sharing database to integrate the vessel information system of the Marine Department to its licensing data system to consolidate information from vessel registration and fishing and transshipment licenses to ensure accuracy and consistency. Such data is also accessible for all offices of the Marine Department and of the DOF. There have also been improvements in data integration and connectivity at the two main points of integration between the IT systems of the private sector and the DOF i.e., e-logbook system and the e-MCTD system.

There are strong national and international legal frameworks and actions in combatting IUU in Thailand. To date, there are various international and national legal instruments to combat IUU fishing (see Annex VI). Strong collaborations have also been established nationally, such as PIPO Control Center operations which bring together the collaborative and joint efforts of various government agencies including the DOF, Ministry of Labor, Immigration Bureau, Royal Thai Navy and the Marine Department among others as mandated by the new Royal Ordinance on Fisheries.[18] The PIPO Center is the first point of data entry or KDEs in the seafood supply chain, which are connected to the TFCC system, while the DOF is in charge of managing the VMS and radio communication network to enhance traceability in effort to address IUU fishing.

Officers have become more cautious in their practices. More random vessel inspections have been conducted before departure or landing at the PIPO Control Center in accordance with the EU regulations. Officers have also become more thorough in examining and assessing fishing practices of each vessel to compare and contrast with what is indicated in the VMS, such as the journeys and speed of the vessel and its movements according to the types of fishing gear. In addition to checking the identity credentials of the crews upon departure and landing, the DOF officers observe their behaviors more closely to identify abnormalities, such as lethargy or trauma from group interviews. This demonstrates closer attention of the DOF to human welfare in fisheries.

Raw material and labor shortages are major challenges for the fisheries sector. Thailand has been intensively combatting IUU fishing and labor issues by issuing laws and legislations on the management of foreign workers to ensure decent working conditions, and that employment processes comply with relevant regulations, such as that wage payments are paid through bank accounts and that there are holidays and resting time. Currently, it is required by law that migrant workers working on the vessels or at-sea are registered in order that authorities can monitor labor practices on board. As laws and regulations have been issued and reinforced, several suppliers and fisheries whose practices may be perceived as non-complaint are facing shortages of labor.[19] Some of them have left the supply chain due to this reason, especially those that are exporting their products to the EU, which has led to the shortages of raw materials.

4. RECOMMENDATIONS

This section presents possible pathways for DOF Thailand and its partners to consider to "bridge" observed gaps that may challenge a robust, effective eCDT system in the country. These recommendations are clustered as near-term (zero to six months), short-term (six to twelve months), mid-term (one to two years), and long-term (two to three years). These recommendations draw from Thailand's eCDT progress and acknowledge future perceived challenges, such as possible enhancements to European regulations in 2019. USAID Oceans encourages the DOF to take these as opportunities to strengthen its eCDT capabilities and enhance system connectivity.

[18]Collaborated entities of the PIPO Control Center are: Marine Department, Department of Fisheries, Department of Labor Protection and Welfare (DLPW), Department of Employment, Department of Provincial Administration, Royal Thai Navy, Fishing Association, Marine Police, Customs Department, Department of Marine and Coastal Resources and Immigration Bureau.

[19]Commercial Fisher's Association of Songkhla

4.1 Near-Term Recommendations

Strengthen the availability, reliability, and integrity of data in existing core systems: e-License, VMS, Fishing Info, and the TFCC system. Strong measures should be in place to ensure system availability. These measures include improving connectivity infrastructure through secured and robust internet backbone from the data centers of the PIPO Control Center, migrating server to secured cloud services, servers and databases performance tuning to accelerate response time, as well as capacity building for the officers on optimizing the network device (i.e., routers and Wi-Fi access points) and computer equipment (i.e., desktop computers and laptops), as well as mobile devices (i.e., tablets) at the PIPO Control Center to provide fast and timely service. These measures can be precluded with comprehensive system reliability study by competent service providers to map out the issues and solutions.

Improve the quality of catch data by promoting the use of the electronic logbook to ensure an accurate, efficient catch documentation processes. An application that helps vessel masters and crews to prepare a fishing logbook while at sea will improve the quality of catch data. The DOF could commission the development of an e-logbook application or allow other service providers to enter logbook data electronically on TFCC in order to capture more accurate data. Many service providers offer this feature including Sisfo, a service provider of the Pointrek CDT technology that is currently under testing in Indonesia (see Annex VII). Alternatively, a mobile application can be used to record logbook data. Such application must be able to operate in an offline mode to ensure larger uptake.

Allow the private sector to submit CDT data through existing systems. Some companies in the fishing industry have already made substantial investment in their IT systems to help manage their business. Some fisheries might already have a catch reporting and fleet management system and some food processors might have implemented the Enterprise Resource Planning system. Enabling systems as such to submit data electronically could improve data quality, as this would allow submitted data to be verified by a competent authority, both manually and automatically.

4.2 Mid-Term Recommendations

Support efforts to formalize policies and regulations that establish the eCDT system as a platform to improve fisheries management and demonstrate market leadership on seafood traceability beyond compliance. In order to orchestrate Thailand's journey towards an eCDT system, policies and regulations must be in place to properly align the fishery sector's interests, requirements, and processes with the country's broader objectives of sustainably managing its oceans and maintaining its economic competitiveness at the global stage. Immediate policy initiatives should be prioritized, including initiatives to introduce language on traceability. Furthermore, as Thailand strives to make its seafood supply chain 100 percent traceable through an eCDT system, massive amounts of data collected under these initiatives should be harnessed towards improving fisheries management, for instance by ramping up efforts to introduce tailored policies at a Fisheries Management Area level. This would certainly represent Thailand's market leadership and could easily be packaged to the country's advantage as such trailblazing is needed within the ASEAN seafood sector and is in high demand in the global marketplace. Like in the United States, a "trusted trader program" to incentivize industry stakeholders to participate in developing and utilizing the eCDT system beyond the purposes of compliance. The government could streamline or "fast-track" transactions for operators with a good record of compliance and provide other value-added services (such as eligibility to global market linkage programs). Such a program could be designed and communicated as a direct invitation for industry stakeholders and the private sector to partner with government entities on eCDT.

Develop national capacity to use eCDT data for sustainable fisheries management. A methodology for the analysis of eCDT data (e.g., standardized Catch per Unit Efforts, fish stock abundance indexes, estimating productivity of fishery by area and species distribution) and an analytic system that utilizes eCDT data should be developed for fisheries management to analyze spatial distribution of fishing and CPUE within a fishery zone, identify how IUU fishing can be minimized, and track compliance of spatial regulations, such as those concerning the Marine Protected Areas. An eCDT system can ensure the successful tracking of marine resources but not necessarily promote sustainability and biodiversity unless the data is actively used for management plans and purposes, as well as with enforcement efforts. Thailand established the Fisheries Management Plan (FMP) for the year 2015-2019, and the second version of the FMP has already been established for the year 2019-2023 based on the same principles of the Sustainable Fisheries Management Plans (SFMPs) that embrace the use of eCDT for monitoring fisheries, addressing human welfare issues, and informing policy and regulatory decisions that improve sustainability in fisheries management, as well as to promote a sustainable level of legal, responsible, and regulated fishing.

Gather lessons learned on successes, challenges, and best practices of USAID Oceans and other implementing member countries that are currently developing comprehensive eCDT systems. Gathering lessons learned and best practices, such as technical findings, recruitment and scaling methodology, as well as policy provisions can help shorten the learning curve of the Thai Government in implementing its eCDT system. USAID Oceans has established relationships with various industry users, technology providers, and other ASEAN government partners, who are able to share lessons learned through use-cases and live demonstrations in other learning sites, demonstrate pathways for implementation, and recommend possible technology solutions, and policy innovations. The DOF can also take an advantage of ongoing efforts under the USAID Oceans program to "underwrite" the risks inherent in deploying a new eCDT technology. In this regard, USAID Oceans can advise and help broker eCDT-relevant partnerships for the Thai Government. Annex VII outlines some of the technologies USAID Oceans is currently piloting across learning sites that can be immediately tested or deployed for Thailand.

4.3 Long-Term Recommendations

Harness an eCDT system as a means to engage in meaningful dialogues with industry stakeholders and other ASEAN member countries towards boosting economic growth, advancing trade interests of the country, and championing biodiversity. Industry engagement is critical, thus an eCDT system should be treated only as a tool or a means to an end to improve Thailand's fisheries management and boost its sustainable seafood trade, among others. The Thai Government should leverage global interest towards traceability to position accordingly and engage with industry stakeholders as meaningful partners in economic growth and biodiversity conservation. The data collected by an eCDT system, as well as the improved transactions facilitated by the system on behalf of industry, should be leveraged as an impetus for constant dialogue between government and industry towards win-win solutions into the future.

In support of this recommendation, USAID Oceans has developed site-based learning and downloadable technical resources that can support Thailand's eCDT system implementation. Specifically, USAID Oceans can share its experiences, best practices, and knowledge from its ongoing implementation of eCDT systems in other learning sites (e.g., Philippines and Indonesia), facilitate Learning Exchanges, and invite relevant stakeholders from Thailand to participate in workshops and meetings during the program's fourth year.

ANNEX I. Field Study Agenda for Gap Analysis Research

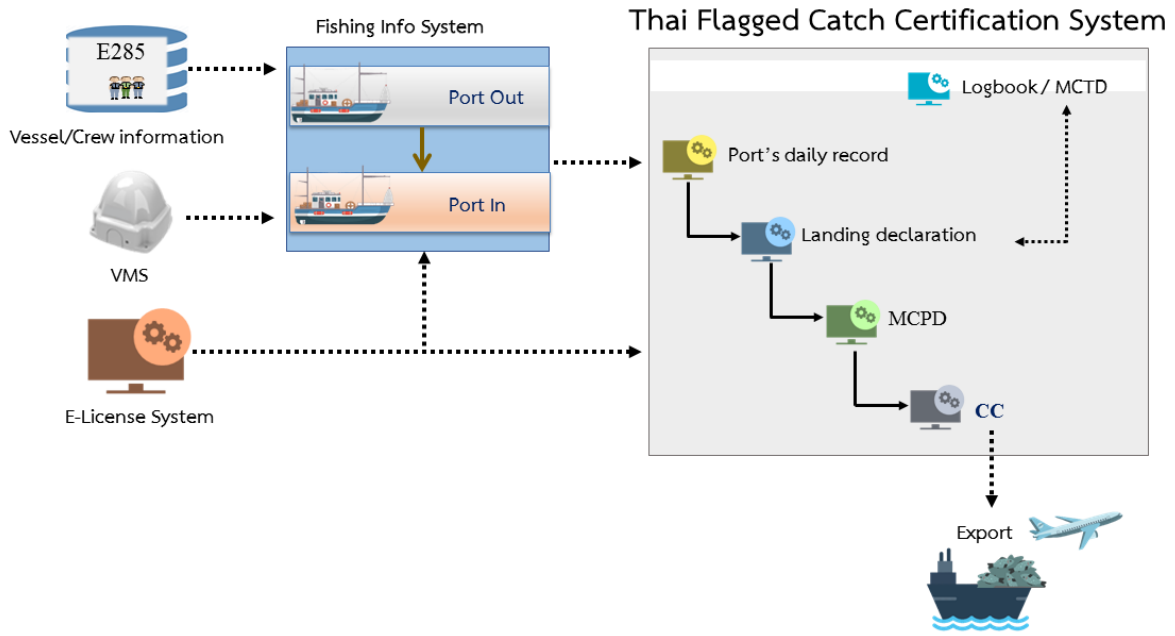
USAID Oceans and the DOF, Thailand

Study Plan – CDT System Joint Assessment and Field Research in Songkhla, June 5-9, 2017

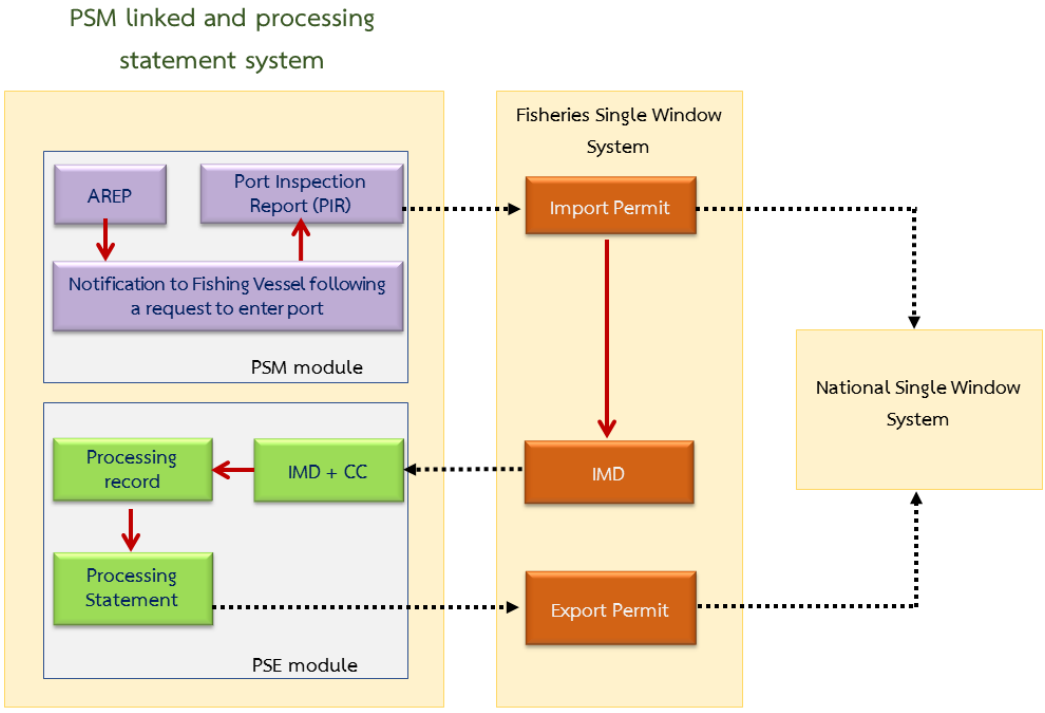
Date	Time	Activities	Location
June 5, 2017	PM	• DOF System and Software Demonstration including the VMS • Conducted interviews on Thai Traceability process flow and supporting technology	1st floor Information and Communication Technology Center, Department of Fisheries Bangkok (located nearby SEAFDEC Secretariat)
June 7, 2017	AM	• Stock assessment interviews and discussions with DOF officers	Southern Marine Fisheries Research and Development Center, Songkhla
	PM	• Thai flagged catch certification system overview • Interview and discussion with Sea Wealth Frozen Food company representatives	Fish Inspection and Quality Control Division (FIQD), Songkhla
June 8, 2017	AM	• Observations of Port-in/Port-out inspection at PIPO Control Center and landing of fishing vessels and operations at the FMO	• PIPO Control Center, Songkhla, • Fish Marketing Organization (FMO), Port of Songkhla 2 (Tha SA-An)
	PM	• Meeting with Songkhla Association of Commercial Fishing Vessel, and DOF officer	• Port of Songkhla 2 Office (Tha SA-An)

ANNEX II. Overview of Information Technology Systems related to CDT Thailand's Seafood Supply Chains

1. Domestic Catch



2. Imported Fish



ANNEX III. Categories of Fishing Vessels in Thailand

Vessel type	Capacity (Gross tons)	Horsepower
Small artisanal fishing vessels	Less than 5	Less than 180
Large artisanal fishing vessels	5 to less than 10	180-220
Small commercial fishing vessels	10 to less than 20	220-380
Medium commercial fishing vessels	20 to 60	Over 380
Large commercial vessels	Over 60	
Transshipment vessels (Domestic)	Over 30	
Transshipment vessels (Operating outside Thai waters)	Over 60	

Source: Marine Fisheries Management Plan of Thailand (2015 – 2019)

ANNEX IV. Thai Flagged Catch Certificate (TFCC) System

System Access

- System Log-in
- Registration
- Registration
- Logbook / MCTD Monitoring System for Operators
- Expiration Date Verification System.

Trial System

- http://tfccdev.fisheries.go.th/tfcc-ppd/

User Manuals

- Fishmeal Certification System and Fishmeal Products (NEW)
- Port-in Port-out Recording System
- Landing Declaration System and Daily Port Summary
- Weight at Port (WP) System
- Logbook System
- Marine Catch Transshipping Document (MCTD)
- Audit at Port (AP) System
- Marine Catch Purchasing Document (MCPD)
- Catch Certificate (CC)
- Type of Aquatic Animals in the TFCC System

Notifications of the Department of Fisheries (DOF), Thailand

- Regulations andDocumentations on the Trading of Aquatic Animals trading. (Trading by Car/Land Transportation)
- Regulations and Documentations on the Movement of Aquatic Animals from local fishing boats (MCPD)[20]

[20]Local fishing boats (do not have to send Logbook to PIPO staff and do not have to enter the MCPD number to be able to trade at all)

User Guides (Online Videos)

- Introduction
- Port-in Port-out Recording System
- Daily Port (DP) Recording System
- Aquatic Landing Recording System (Landing Declaration)
- WP System
- Logbook System
- MCTD
- MCPD

Application to use the System (Signing Up)

- Application Form: Registration to use a Traceability System in the Country for Docks
- Application Form: Registration to use a Traceability System in the country for Entrepreneurs (Fish raft, factory)
- Application Form: Registration of Fishmeal Certification under the TFCC System. - For fishmeal buyers (NEW)
- Request for Cancellation of a Traceability System in the Country

Application Documents

- Documentations for Docking: Application Form, Copy of Identity Credentials (e.g., an ID Card) of the Jetty Owner, Copy of the Berth License (eLicense)
- Documentations for Operators and/or Entrepreneurs using the Fish Raft/ Factory: Application Form, Copy of Identity Credentials (e.g., an ID Card) of a Fish Raft / Factory Owner, Copy of a Fisheries Business Registration Document 2 (Tor Bor 2)
    - Should you take upon both roles (i.e., of an operator and an entrepreneur), you must submit 2 separate applications under the same username.

Submission of Documents

- You may submit your documentations in-person at a PIPO Center located in an area of your convenience.

Helpdesk Contact Details

Scan this QR Code, LINE account: @dofhelpdesk, Phone Number: (+66) 02-104-9444 (24 hours).

ANNEX V. Required Forms and Documentation

Thai Fishing Logbook for Pair Trawls (1 page)

บันทึกการทำการประมง
อวนลากคู่

เลขที่ PO ☐☐☐☐☐☐☐☐☐☐
เลขที่ PI ☐☐☐☐☐☐☐☐☐☐

ชื่อเรือ ทะเบียนเรือเลขที่ ☐☐☐☐☐☐☐☐☐	ท่าเทียบเรือประมงที่ออก วันที่ / / จังหวัด	เครื่องหมายประจำเรือ	น้ำหนักสัตว์น้ำรวม (กิโลกรัม)
ชื่อเรือหู ทะเบียนเรือเลขที่ ☐☐☐☐☐☐☐☐☐	ท่าเทียบเรือประมงที่เข้า วันที่ / / จังหวัด	ฝากสัตว์น้ำมากับเรือขนถ่าย วันที่ / / พื้นที่ขนถ่าย ละติจูด ลองจิจูด ปริมาณสัตว์น้ำที่ขนถ่าย (กิโลกรัม)	

เดือน	วันที่	ครั้งที่วางอวน	เวลาเริ่มทำการประมง	ระยะเวลาทำประมง (ชม.)	พิกัดตำบลที่เริ่มทำการประมง		น้ำหนักสัตว์น้ำที่จับได้ (กิโลกรัม)																					
					ละติจูด (เหนือ)	ลองจิจูด (ตะวันออก)	ทรายแดง	ปากคม (ไส้กอ)	ตาหวาน	จวด	หนวดฤาษี (แพะ)	กะพง	ทู-ลัง	สีกุน	หลังเขียว (กุแร)	หมึกกล้วย	หมึกกระดอง	ปูม้า	กุ้งโอคัก	กุ้งแชบ๊วย	สัตว์น้ำอื่นๆ (ระบุ)				ปลาเลย	ปลาเป็ด	น้ำหนักรวม	น้ำหนักสัตว์น้ำที่เททิ้ง
น้ำหนักรวม																												

ข้าพเจ้าขอรับรองว่าสัตว์น้ำที่จับได้ทั้งหมดได้มาจากการทำประมงที่ถูกต้อง และไม่ได้เกี่ยวพันกับการทำประมงที่ผิดกฎหมาย ขาดการรายงาน และไร้การควบคุมใดๆ เลย

โดยนำสัตว์น้ำขึ้นท่าเทียบเรือประมง 1. ท่าเทียบเรือประมง........................ จังหวัด.............. จำนวน.............. กิโลกรัม

2. ท่าเทียบเรือประมง........................ จังหวัด.............. จำนวน.............. กิโลกรัม

....

ลงชื่อผู้ควบคุมเรือ

ว/ด/ป ..../........./.........

หน้า(page) 1/2

หนังสือคำกับการขนถ่ายสัตว์น้ำ (Marine Catch Transshipping Document : MCTD)

กรมประมง (DEPARTMENT OF FISHERIES)

ส่วนที่(Part)1 ชื่อผู้ควบคุมเรือ/ไต๋เรือ/ผู้ขนถ่ายสัตว์น้ำ (Name of receiving vessel representative).....

เลขที่บัตรประชาชน (ID No.) □-□□□□-□□□□□-□□-□ ที่อยู่ (Address).....

..... เบอร์โทรศัพท์ (Tel.).....

ชื่อเรือ (Name of receiving vessel)..... เลขทะเบียนเรือ (Vessel registration No.) □□□□—□□□□□

จังหวัดท่าขึ้นสัตว์น้ำ (Landing place)..... วันที่ขึ้นท่า(Date of landing).....(ประเทศไทย)

ทั้งนี้ข้าพเจ้า (ผู้ควบคุมเรือ/เจ้าของเรือหรือผู้แทน) ขอมอบอำนาจให้โรงงานผู้ใช้สัตว์น้ำที่ข้าพเจ้าขนถ่ายนี้ลงนามในใบรับรองการจับสัตว์น้ำแทนข้าพเจ้าได้

Remark: I (opeartor/representative) give a processing plant representative authority to sign in the Catch Certificate as my representative.

ลงนามผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน ..... ลงนามเจ้าหน้าที่..... ว/ด/ป.....

Signature of receiving vessel representative ( ) Signature of port authority ( ) (Date)

ส่วนที่(Part)2(1) ชื่อผู้ควบคุมเรือ/ไต๋เรือ/ผู้ทำการประมง..... ชื่อเรือ.....

Name of fishing vessel representative Name of fishing vessel

เลขที่บัตรประชาชน (ID No.) □-□□□□-□□□□□-□□-□ ที่อยู่ (Address).....

..... เบอร์โทรศัพท์ (Tel.).....

เลขทะเบียนเรือ (Vessel registration No.) □□□□—□□□□□—□□□

ใบอนุญาตทำการประมง (Fishing license) □□□□□□□□□□ เลขทะเบียนเรือขนถ่ายสัตว์น้ำ □□□□□□□□□□

ขนาด (Vessel size) ..... ตันกรอส แหล่งทำประมง (Fishing area).....

☐ ฝากสำเนาสมุดบันทึกการทำการประมงมากับเรือ.....

Consigned a copy of fishng logbook with vessel

พื้นที่/ตำแหน่งที่ขนถ่าย (Transhipping area)..... วันที่ขนถ่ายสัตว์น้ำระหว่างเรือในทะเล (Transhipment date).....

ท่าเทียบเรือที่นำสัตว์น้ำขึ้นท่า (Landing port)..... วันที่ขนถ่ายสัตว์น้ำขึ้นท่า (Landing date).....

ชนิดสัตว์น้ำ (Fish Species)	1)	2)	3)	4)	5)	6)
ปริมาณ (Quantity) (กก.Kg)						
ชนิดสัตว์น้ำ (Fish Species)	7)	8)	9)	10)	11)	12)
ปริมาณ (Quantity) (กก.Kg)						

ทั้งนี้ข้าพเจ้า (ผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน) ขอมอบอำนาจให้ผู้ควบคุมเรือ/ไต๋เรือ/ผู้ขนถ่ายสัตว์น้ำลงนามในหนังสือคำกับการซื้อขายสัตว์น้ำแทนข้าพเจ้าได้

Remark: I (opeator/representative) give a receving vessel representative authority to sign in MCPD as my representative.

ลงนามผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน.....

Signature of fishing vessel representative ( )

ส่วนที่(Part)2(2) ชื่อผู้ควบคุมเรือ/ไต๋เรือ/ผู้ทำการประมง..... ชื่อเรือ.....

Name of fishing vessel representative Name of fishing vessel

เลขที่บัตรประชาชน (ID No.) □-□□□□-□□□□□-□□-□ ที่อยู่ (Address).....

..... เบอร์โทรศัพท์ (Tel.).....

เลขทะเบียนเรือ (Vessel registration No.) □□□□—□□□□□—□□□

ใบอนุญาตทำการประมง (Fishing license) □□□□□□□□□□ เลขทะเบียนเรือขนถ่ายสัตว์น้ำ □□□□□□□□□□

ขนาด (Vessel size) ..... ตันกรอส แหล่งทำประมง (Fishing area).....

☐ ฝากสำเนาสมุดบันทึกการทำการประมงมากับเรือ.....

Consigned a copy of fishng logbook with vessel

พื้นที่/ตำแหน่งที่ขนถ่าย (Transhipping area)..... วันที่ขนถ่ายสัตว์น้ำระหว่างเรือในทะเล (Transhipment date).....

ท่าเทียบเรือที่นำสัตว์น้ำขึ้นท่า (Landing port)..... วันที่ขนถ่ายสัตว์น้ำขึ้นท่า (Landing date).....

ชนิดสัตว์น้ำ (Fish Species)	1)	2)	3)	4)	5)	6)
ปริมาณ (Quantity) (กก.Kg)						
ชนิดสัตว์น้ำ (Fish Species)	7)	8)	9)	10)	11)	12)
ปริมาณ (Quantity) (กก.Kg)						

ทั้งนี้ข้าพเจ้า (ผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน) ขอมอบอำนาจให้ผู้ควบคุมเรือ/ไต๋เรือ/ผู้ขนถ่ายสัตว์น้ำลงนามในหนังสือคำกับการซื้อขายสัตว์น้ำแทนข้าพเจ้าได้

Remark: I (opeator/representative) give a receving vessel representative authority to sign in MCPD as my representative.

ลงนามผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน.....

Signature of fishing vessel representative ( )

หน้า(page) 2/2

ส่วนที่(Part)2(3) ชื่อผู้ควบคุมเรือ/ไต๋เรือ/ผู้ทำการประมง..... ชื่อเรือ.....
Name of fishing vessel representative Name of fishing vessel

เลขที่บัตรประชาชน (ID No.) □-□□□□-□□□□□-□□-□ ที่อยู่ (Address).....
..... เบอร์โทรศัพท์ (Tel.).....

เลขทะเบียนเรือ (Vessel registration No.)

ใบอนุญาตทำการประมง (Fishing license) เลขทะเบียนเรือขนถ่ายสัตว์น้ำ

ขนาด (Vessel size) ..... ตันกรอส แหล่งทำประมง (Fishing area).....

☐ ฝากสำเนาสมุดบันทึกการทำการประมงมากับเรือ.....
Consigned a copy of fishng logbook with vessel

พื้นที่/ตำแหน่งที่ขนถ่าย (Transhipping area)..... วันที่ขนถ่ายสัตว์น้ำระหว่างเรือในทะเล (Transhipment date).....

ท่าเทียบเรือที่นำสัตว์น้ำขึ้นท่า (Landing port)..... วันที่ขนถ่ายสัตว์น้ำขึ้นท่า (Landing date).....

ชนิดสัตว์น้ำ (Fish Species)	1)	2)	3)	4)	5)	6)
ปริมาณ (Quantity) (กก.Kg)						

ชนิดสัตว์น้ำ (Fish Species)	7)	8)	9)	10)	11)	12)
ปริมาณ (Quantity) (กก.Kg)						

ทั้งนี้ข้าพเจ้า (ผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน) ขอมอบอำนาจให้ผู้ควบคุมเรือ/ไต๋เรือ/ผู้ขนถ่ายสัตว์น้ำลงนามในหนังสือกำกับการซื้อขายสัตว์น้ำแทนข้าพเจ้าได้
Remark: I (opeator/representative) give a receving vessel representative authority to sign in MCPD as my representative.

ลงนามผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน.....
Signature of fishing vessel representative ( )

ส่วนที่(Part)2(4) ชื่อผู้ควบคุมเรือ/ไต๋เรือ/ผู้ทำการประมง..... ชื่อเรือ.....
Name of fishing vessel representative Name of fishing vessel

เลขที่บัตรประชาชน (ID No.) □-□□□□-□□□□□-□□-□ ที่อยู่ (Address).....
..... เบอร์โทรศัพท์ (Tel.).....

เลขทะเบียนเรือ (Vessel registration No.)

ใบอนุญาตทำการประมง(Fishing license) เลขทะเบียนเรือขนถ่ายสัตว์น้ำ

ขนาด (Vessel size) ..... ตันกรอส แหล่งทำประมง (Fishing area).....

☐ ฝากสำเนาสมุดบันทึกการทำการประมงมากับเรือ.....
Consigned a copy of fishng logbook with vessel

พื้นที่/ตำแหน่งที่ขนถ่าย (Transhipping area)..... วันที่ขนถ่ายสัตว์น้ำระหว่างเรือในทะเล (Transhipment date).....

ท่าเทียบเรือที่นำสัตว์น้ำขึ้นท่า (Landing port)..... วันที่ขนถ่ายสัตว์น้ำขึ้นท่า (Landing date).....

ชนิดสัตว์น้ำ (Fish Species)	1)	2)	3)	4)	5)	6)
ปริมาณ (Quantity) (กก.Kg)						

ชนิดสัตว์น้ำ (Fish Species)	7)	8)	9)	10)	11)	12)
ปริมาณ (Quantity) (กก.Kg)						

ทั้งนี้ข้าพเจ้า (ผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน) ขอมอบอำนาจให้ผู้ควบคุมเรือ/ไต๋เรือ/ผู้ขนถ่ายสัตว์น้ำลงนามในหนังสือกำกับการซื้อขายสัตว์น้ำแทนข้าพเจ้าได้
Remark: I (opeator/representative) give a receving vessel representative authority to sign in MCPD as my representative.

ลงนามผู้ควบคุมเรือ/เจ้าของเรือ/ผู้แทน.....
Signature of fishing vessel representative ( )

หน้าที่ 1/4

☐ PO ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)
☐ PI ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)

แบบฟอร์มการแจ้งการเข้าออกท่าเทียบเรือประมง (สำหรับเรือประมงในน่านน้ำไทย)

จำนวนวันที่กำหนด.....
วันที่ใช้ไปแล้ว.....
วันที่คงเหลือ.....

ส่วนที่ 1 สำหรับเจ้าของเรือ

การแจ้งออก วัน/เวลาแจ้ง...../...../..... ..... : .....

ชื่อท่าเทียบเรือที่ออก.....
ที่อยู่.....
วัน/เดือน/ปี ☐☐ / ☐☐ / ☐☐☐☐
เวลา ☐☐ : ☐☐ ชื่อท่าที่คาดว่าจะเข้า.....
วันที่.....เวลา.....ที่อยู่.....

วัตถุประสงค์ในการออก

- ○ ทำการประมง
- ○ ขึ้นคาน /ซ่อมบำรุง สถานที่.....
- ○ อื่น ๆ.....

การแจ้งเข้า วัน/เวลาแจ้ง...../...../..... ..... : .....

ชื่อท่าเทียบเรือที่เข้า.....
ที่อยู่.....
วัน/เดือน/ปี ☐☐ / ☐☐ / ☐☐☐☐
เวลา ☐☐ : ☐☐

วัตถุประสงค์ในการเข้า

- ○ ขึ้นสัตว์น้ำ ปริมาณสัตว์น้ำที่จับได้ (กก./Kg.) : .....
- ○ จอดเรือ ○ รับบริการ น้ำ/น้ำมัน/น้ำแข็ง
- ○ ขึ้นคาน /ซ่อมบำรุง สถานที่.....
- ○ อื่น ๆ.....

พื้นที่ทำการประมง ○ 1.อ่าวไทยฝั่งตะวันออก ○ 2.อ่าวไทยตอนบน ○ 3.อ่าวไทยตอนกลาง ○ 4.อ่าวไทยตอนล่าง ○ 5.กลางอ่าวไทย ○ 6.อันดามันตอนบน ○ 7.อันดามันตอนล่าง

ชื่อเรือประมง : ..... **ทะเบียนเรือ :** ☐☐☐☐☐☐☐☐☐

เครื่องหมายประจำเรือประมง : ..... **ขนาดของเรือ :** ..... **ตันกรอส**

ใบอนุญาตทำการประมง

☐☐☐☐☐☐☐☐☐☐☐☐ ชนิดเครื่องมือทำการประมง : .....

อุปกรณ์ประจำเรือ

ระบบติดตามเรือ VMS ยี่ห้อ .....รุ่น.....หมายเลขเครื่อง .....
วิทยุสื่อสาร VHF/FM HF/CB HF/SSB ความถี่.....หมายเลขเครื่อง .....
เบอร์โทรศัพท์ :.....

ผู้ควบคุมเรือประมง ชื่อ : ..... **สกุล** .....ระดับประกาศนียบัตร.....

หมายเลขบัตรประชาชน/หนังสือเดินทาง : ☐☐☐☐☐☐☐☐☐☐☐☐☐

เบอร์โทรศัพท์ : .....**ที่อยู่ :** .....

เจ้าของเรือประมง ชื่อ : ..... **สกุล** .....

หมายเลขบัตรประชาชน : ☐☐☐☐☐☐☐☐☐☐☐☐☐

เบอร์โทรศัพท์ : ..... **ที่อยู่ :** .....

ส่วนที่ 2 สำหรับพนักงานเจ้าหน้าที่ ☐ ผ่าน ☐ ไม่ผ่าน ☐ ผ่าน ☐ ไม่ผ่าน

แจ้งออก (PO)	แจ้งเข้า (PI)
พนักงานเจ้าหน้าที่ผู้ตรวจการแจ้งเรือออก ลงชื่อ..... (.....) ตำแหน่ง..... วันที่.....เวลา..... (ประทับตรา)	พนักงานเจ้าหน้าที่ผู้ตรวจการแจ้งเรือเข้า ลงชื่อ..... (.....) ตำแหน่ง..... วันที่.....เวลา..... (ประทับตรา)

LR ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)

ส่วนที่ 3 สำหรับเจ้าของเรือ

รายชื่อคนประจำเรือ							สัญญาจ้าง	
ลำดับ	ชื่อ – สกุล	อายุ	เพศ	สัญชาติ	หมายเลขประจำตัว	หน้าที่ในเรือ	มี	ไม่มี
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บันทึกเพิ่มเติมเกี่ยวกับคนประจำเรือ :.....

.....

ขอรับรองว่าข้อมูลต่าง ๆ ที่ข้าพเจ้าได้ให้ไว้ข้างต้นนี้ เป็นความจริงทุกประการ

ลงชื่อ .....

(.....)

เจ้าของเรือประมง

/ /

หมายเหตุ : กรณีเข้าท่าเทียบเรือประมงมากกว่าหนึ่งท่า ให้ดำเนินการเพิ่มเติมในส่วนที่ 4

: ให้เจ้าของเรือประมงนำเอกสารนี้ไปยื่นต่อศูนย์ควบคุมการแจ้งเรือเข้าออกภายในระยะเวลายี่สิบสี่ชั่วโมง แต่ไม่น้อยกว่าสองชั่วโมงก่อนการนำเรือเข้าหรือออกจากท่าเทียบเรือประมง

: เจ้าของเรือประมง หมายถึง ผู้มีกรรมสิทธิ์ในเรือประมง

หน้าที่ 3/4

LR ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)

ส่วนที่ 3 สำหรับเจ้าของเรือ (ต่อ)

รายชื่อคนประจำเรือ							สัญญาจ้าง	
ลำดับ	ชื่อ – สกุล	อายุ	เพศ	สัญชาติ	หมายเลขประจำตัว	หน้าที่ในเรือ	มี	ไม่มี
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บันทึกเพิ่มเติมเกี่ยวกับคนประจำเรือ :.....

.....

ขอรับรองว่าข้อมูลต่าง ๆ ที่ข้าพเจ้าได้ให้ไว้ข้างต้นนี้ เป็นความจริงทุกประการ

ลงชื่อ.....

(.....)

เจ้าของเรือประมง

/ /

หมายเหตุ : กรณีเข้าท่าเทียบเรือประมงมากกว่าหนึ่งท่า ให้ดำเนินการเพิ่มเติมในส่วนที่ 4

: ให้เจ้าของเรือประมงนำเอกสารนี้ไปยื่นต่อศูนย์ควบคุมการแจ้งเรือเข้าออกภายในระยะเวลายี่สิบสี่ชั่วโมง แต่ไม่น้อยกว่าสองชั่วโมงก่อนการนำเรือเข้าหรือออกจากท่าเทียบเรือประมง

: เจ้าของเรือประมง หมายถึง ผู้มีกรรมสิทธิ์ในเรือประมง

PO ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)
PI ☐☐☐☐☐☐☐☐☐☐ (สำหรับพนักงานเจ้าหน้าที่)

ส่วนที่ 4 สำหรับเจ้าของเรือ

เข้าเทียบท่าเรือประมงที่ 2

ชื่อท่าเทียบเรือประมง.....
ที่อยู่ เลขที่.....ถนน.....ตำบล.....อำเภอ.....จังหวัด.....
วัน/เดือน/ปี ☐☐/☐☐/☐☐☐☐
วัตถุประสงค์เพื่อ ○ ขึ้นสัตว์น้ำ ปริมาณสัตว์น้ำ (กก./Kg.) : .....
○ จอดเรือ ○ รับบริการ น้ำ/น้ำมัน/น้ำแข็ง
○ ขึ้นคาน/ซ่อมบำรุง ○ อื่น ๆ .....

เข้าเทียบท่าเรือประมงที่ 3

ชื่อท่าเทียบเรือประมง.....
ที่อยู่ เลขที่.....ถนน.....ตำบล.....อำเภอ.....จังหวัด.....
วัน/เดือน/ปี ☐☐/☐☐/☐☐☐☐
วัตถุประสงค์เพื่อ ○ ขึ้นสัตว์น้ำ ปริมาณสัตว์น้ำ (กก./Kg.) : .....
○ จอดเรือ ○ รับบริการ น้ำ/น้ำมัน/น้ำแข็ง
○ ขึ้นคาน/ซ่อมบำรุง ○ อื่น ๆ .....

เข้าเทียบท่าเรือประมงที่ 4

ชื่อท่าเทียบเรือประมง.....
ที่อยู่ เลขที่.....ถนน.....ตำบล.....อำเภอ.....จังหวัด.....
วัน/เดือน/ปี ☐☐/☐☐/☐☐☐☐
วัตถุประสงค์เพื่อ ○ ขึ้นสัตว์น้ำ ปริมาณสัตว์น้ำ (กก./Kg.) : .....
○ จอดเรือ ○ รับบริการ น้ำ/น้ำมัน/น้ำแข็ง
○ ขึ้นคาน/ซ่อมบำรุง ○ อื่น ๆ .....

ขอรับรองว่าข้อมูลต่าง ๆ ที่ข้าพเจ้าได้ให้ไว้ข้างต้นนี้ เป็นความจริงทุกประการ

ลงชื่อ.....
(.....)
เจ้าของเรือประมง
/ /

หมายเหตุ : กรณีเข้าท่าเทียบเรือประมงมากกว่าหนึ่งท่า ให้ดำเนินการเพิ่มเติมในส่วนที่ 4
: ให้เจ้าของเรือประมงนำเอกสารนี้ไปยื่นต่อศูนย์ควบคุมการแจ้งเรือเข้าออกภายในระยะเวลายี่สิบสี่ชั่วโมง แต่ไม่น้อยกว่าสองชั่วโมงก่อนการนำเรือเข้าหรือออกจากท่าเทียบเรือประมง
: เจ้าของเรือประมง หมายถึง ผู้มีกรรมสิทธิ์ในเรือประมง

Marine Catch Purchasing Document (MCPD) for Artisanal Fisheries (Page 1 of 2)

หนังสือกำกับการจับและเคลื่อนย้ายสัตว์น้ำจากเรือประมงพื้นบ้าน

เลขที่หนังสือกำกับ ..... หน้าที่ 1/2

ส่วนที่ 1-1 การจับสัตว์น้ำ

ข้อมูลเรือประมง

ชื่อเรือประมง..... เลขทะเบียนเรือ.....

เป็นสมาชิกองค์กรชุมชนประมงท้องถิ่น ..... จังหวัด.....

เครื่องมือทำการประมง.....ใบอนุญาตทำการประมง.....วันที่หมดอายุ...../...../.....

วันที่ออกทำประมง...../...../..... เวลา..... : ..... วันที่สิ้นสุดการทำประมง...../...../..... เวลา..... : .....

แหล่งประมง..... น้ำหนักสัตว์น้ำรวมที่จับได้ (กก.) .....

ข้อมูลการนำสัตว์น้ำกลับเข้าฝั่ง วันที่/เดือน/ปี ...../...../.....

ชื่อสถานที่..... หมู่ที่..... ตำบล..... อำเภอ..... จังหวัด.....

ข้อมูลเคลื่อนย้าย วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามเจ้าของเรือประมง .....
ชื่อตัวบรรจง (.....)

ลงนามผู้ซื้อ.....
ชื่อตัวบรรจง (.....)
เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐
ที่อยู่.....
โทรศัพท์.....

ส่วนที่ 2-1 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย.....
ชื่อตัวบรรจง (.....)

ลงนามผู้ซื้อ.....
ชื่อตัวบรรจง (.....)

ส่วนที่ 2-2 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย.....
ชื่อตัวบรรจง (.....)

ลงนามผู้ซื้อ.....
ชื่อตัวบรรจง (.....)

ส่วนที่ 3-1 ชื่อโรงงานแปรรูป..... เลขทะเบียน (Thailand No.) ☐☐☐☐

ชนิดสัตว์น้ำ									
ปริมาณใช้ (กก.)									
ปริมาณเหลือ (กก.)									
วันที่ผลิต									
ลงนามผู้ควบคุม									

เลขที่หนังสือกำกับ ..... หน้าที่ 2/2

ส่วนที่ 2-3 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย..... ลงนามผู้ซื้อ.....

ชื่อตัวบรรจง (.....) ชื่อตัวบรรจง (.....)

ส่วนที่ 2-4 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย..... ลงนามผู้ซื้อ.....

ชื่อตัวบรรจง (.....) ชื่อตัวบรรจง (.....)

ส่วนที่ 2-5 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย..... ลงนามผู้ซื้อ.....

ชื่อตัวบรรจง (.....) ชื่อตัวบรรจง (.....)

ส่วนที่ 2-6 ชื่อผู้ประกอบกิจการ..... เลขทะเบียน (ทบ.2) ☐☐☐☐☐☐☐☐☐☐

ที่อยู่..... โทรศัพท์.....วันที่/เดือน/ปี ...../...../.....

ชนิดสัตว์น้ำ									
ปริมาณ (กก.)									

ลงนามผู้ขาย..... ลงนามผู้ซื้อ.....

ชื่อตัวบรรจง (.....) ชื่อตัวบรรจง (.....)

ส่วนที่ 3-2 ชื่อโรงงานแปรรูป..... เลขทะเบียน (Thailand No.) ☐☐☐☐

ชนิดสัตว์น้ำ									
ปริมาณใช้ (กก.)									
ปริมาณเหลือ (กก.)									
วันที่ผลิต									
ลงนามผู้ควบคุม									

ส่วนที่ 3-3 ชื่อโรงงานแปรรูป..... เลขทะเบียน (Thailand No.) ☐☐☐☐

ชนิดสัตว์น้ำ									
ปริมาณใช้ (กก.)									
ปริมาณเหลือ (กก.)									
วันที่ผลิต									
ลงนามผู้ควบคุม									

ส่วนที่ 3-4 ชื่อโรงงานแปรรูป..... เลขทะเบียน (Thailand No.) ☐☐☐☐

ชนิดสัตว์น้ำ									
ปริมาณใช้ (กก.)									
ปริมาณเหลือ (กก.)									
วันที่ผลิต									
ลงนามผู้ควบคุม									

ANNEX VI. National and International Legal Instruments for IUU Fishing, Marine Fisheries Management, and Import of Aquatic Animals

IUU Fishing	
National	**International**
Order 10/2558 of the Head of National Council for Peace and Order (NCPO) on Illegal, Unreported, and Unregulated Fishing Notification of the Command Center for Combating Illegal Fishing, for example: No. 1/2558 Format and Time Period of and Procedure for Fishing Logbooks No. 2/2558 Rules and Procedure for Port-in / Port-out Notification No. 3/2558 Rules, Procedure and Conditions for Thai Fishing Vessels to Fish in Foreign Country Waters and High Seas, or Refrigerated Vessels to operate in Foreign Waters No. 4/2558 List of Ports for Foreign Fishing Vessels and Aquatic Animals Transporting Vessels No. 5/2558 List of Foreign Fishing Vessels and Refrigerated Vessels Prohibited from Entering the Kingdom of Thailand No. 6/2668 Rules and Procedure for Compiling and Submitting Report of Vessel Port in-Port out No. 7/2558 Appointment of Competent Officials No. 8/2558 Establishment of Port-in / Port-out Controlling Center No. 9/2558 Performance Standards and Functional Requirements of the Vessel Monitoring System (VMS) for the equipment installed on-board of vessels, Refrigerated/Carrier vessels, and all types of watercrafts used for fishing, transporting, or storing aquatic animals obtained from all types of fishing watercrafts of exceeding 60 Gross Tons No. 10/2558 Procedure in the Event of a Technical Failure or Non-functioning of VMS Device No. 11/2558 List of Foreign Fishing Vessels and Refrigerated Vessels Prohibited from Entering the Kingdom of Thailand (Revised from No. 5/2558) No. 12/2558 Type of Vessel that the Vessel Registrar has the power to revoke and remove from the System No. 13/2558 Performance Standards and Functional Requirements of the Vessel Monitoring System (VMS) for the equipment installed on-board of vessels, Refrigerated/Carrier vessels, and all types of watercrafts used for fishing, transporting, or storing aquatic animals obtained from all types of fishing watercrafts from 30 gross tons to 60 gross tons No. 5/2558 List of Foreign Fishing Vessels and Refrigerated Vessels Prohibited from Entering the Kingdom of Thailand No. 6/2668 Rules and Procedure for Compiling and Submitting Report of Vessel Port in-Port out	Geneva Convention on the Law of the Sea 1958 United Nations Convention on the Law of the Sea 1982 (UNCLOS) The Declaration of Cancun 1992 United Nations Conference on Environment and Development 1992 (UNCED) Agreement to Promote Compliance with International Conservation and Management Measure by Fishing Vessels on the High Seas 1993 Agreement on the Implement of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks 1995 FAO Code of Conduct for Responsible Fisheries (CCRF) FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)

No. 7/2558 Appointment of Competent Officials No. 8/2558 Establishment of Port-in / Port-out Controlling Center No. 9/2558 Performance Standards and Functional Requirements of the Vessel Monitoring System (VMS) for the equipment installed on-board of vessels, Refrigerated/Carrier vessels, and all types of watercrafts used for fishing, transporting, or storing aquatic animals obtained from all types of fishing watercrafts of exceeding 60 gross tons No. 10/2558 Procedure in the Event of a Technical Failure or Non-functioning of VMS Device No. 11/2558 List of Foreign Fishing Vessels and Refrigerated Vessels Prohibited from Entering the Kingdom of Thailand (Revised from No. 5/2558) No. 12/2558 Type of Vessel that the Vessel Registrar has the power to revoke and remove from the System No. 13/2558 Performance Standards and Functional Requirements of the Vessel Monitoring System (VMS) for the equipment installed on-board of vessels, Refrigerated/Carrier vessels, and all types of watercrafts used for fishing, transporting, or storing aquatic animals obtained from all types of fishing watercrafts from 30 gross tons to 60 gross tons.	
Marine Fisheries Management	
National	**International**
Primary law: Fisheries ActB.E. 2490 (1947) Fisheries Act / Royal Ordinance on Fisheries B.E. 2558 (2015). The revised Fisheries Act B.E. 2558 (2015) was promulgated in the Royal Thai Government Gazette on April 28, 2015 and entered into force on June 27, 2015 (60 days after the promulgation). The new legislation is a significant step towards combating illegal, unreported and unregulated (IUU) fishing in Thailand. The law improves official oversight of Thai fisheries to better reflect current industry realities, establishes a fisheries management scheme and improves port state measures in line with international standards. (Source: Royal Thai Embassy) Royal Ordinance on Fisheries B.E. 2560 (2017) (Revised) The Act on Promotion of Management of Marine and Coastal Resources B.E. 2558 (2015) Secondary law: Thai Vessel Act B.E. 2481 (1938) Emergency Decree Amending the Thai Vessels Act, B.E. 2481 (1938), B.E. 2561 (2018), for the prevention of unlawful fishing affecting national economic security, the regulation of Thai vessel fleets, the suppression of the commission of offences and the elevation of fishery standards of Thailand to meet international standards. The Navigation in Thai Waters Act, B.E. 2456 (1913) National Environmental Quality Promotion and Preservation Act B.E. 2535 (1992) Thailand National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing 2015 – 2019 (Thailand NPOA-IUU 2015 - 2019) Fisheries Management Plan of Thailand (FMP)	

Other Notifications of the Ministry of Agriculture and Cooperatives, Notifications of Department of Fisheries, and Announcement of Provincial.	

Importation of aquatic animals into the Kingdom of Thailand	
National	**International**
Fisheries Act, B.E. 2558 (2015) Epidemiological Act, B.E. 2558 (2015) Food Act, B.E. 2522 (1979) Wildlife Conservation and Protection Act, B.E. 2535 (1992) Animal Food Act, B.E. 2525 (1982) and B.E. 2542 (1999) Export and import of goods into the Kingdom, BE 2535 (1991) Notification of the Command Center for Combating Illegal Fishing (CCCIF) Order 11/2558 of the Head of National Council for Peace and Order (NCPO) on the Problem of Illegal, Unreported and Unregulated Fishing	United Nations Convention on the Law of the SEA (UNCLOS) The Conservation and Management of Fish Stocks and Highly Migratory Fish Stocks (UNFSA) FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA) Resolution 10/11 of the IOTC on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing

ANNEX VII. Existing Technology and Solutions for Traceability in ASEAN

The Electronic ASEAN Catch Documentation Scheme (eACDS)

The ASEAN Catch Documentation Scheme (ACDS) was developed to provide a common regional catch documentation scheme, serving as a tool for combating IUU fishing and enhancing international and intra-regional trade of fish and fisheries products from the ASEAN Member States. The draft eACDS was developed in 2014, and circulated to ASEAN member countries in early 2015, with regional work ongoing to finalize and implement the scheme. On 27 December 2016, SEAFDEC signed an MOU with the Fish Market Organization (FMO) of Thailand for collaboration on development and promotion of an electronic system—the e-ACDS.

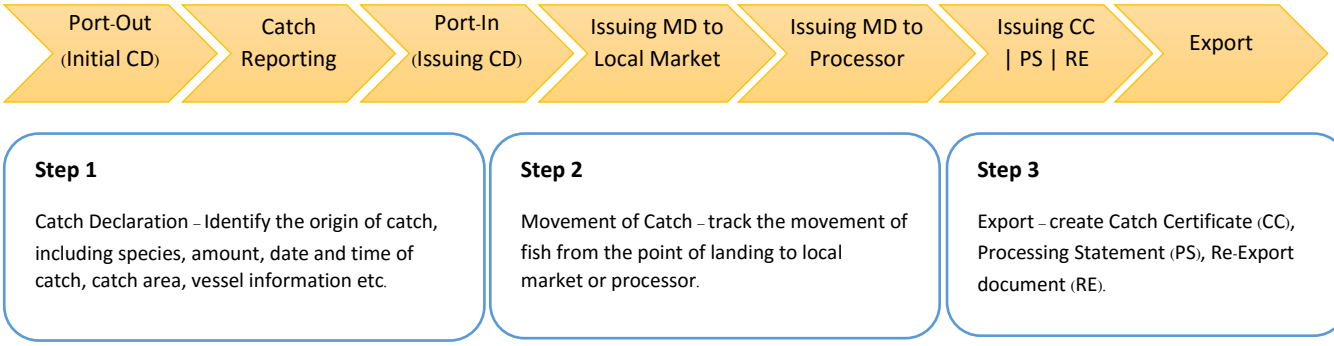
The development of the electronic ACDS (e-ACDS) is a regional effort of SEAFDEC and the ASEAN Member States toward improving traceability of marine capture fisheries and preventing the entry of fish and fishery products from IUU fishing activities into the supply chain. To proceed with the task of ensuring the applicability of e-ACDS in the region, the SEAFDEC Council in 2016 agreed to pilot test the e-ACDS in Brunei Darussalam. On April 3,2017, the e-ACDS was first launched for pilot testing in Brunei Darussalam during the 49th Meeting of the SEAFDEC Council.

Results of the pilot testing in Brunei Darussalam could serve as basis for expanding the application of e-ACDS in USAID Oceans' expansion sites during Year 3 (FY 2018). Relating to the ongoing development and testing of e-ACDS, assessment studies of the implementation of catch documentation and traceability (CDT) have been conducted in several expansion countries. Inputs from those studies, as well as lessons learned from learning sites in Philippines and Indonesia, is a first step in the path to properly plan the design, development, and implementation of the e-ACDS in Vietnam and Malaysia.

The whole e-ACDS traceability process can be broken down into 7 steps, which can be viewed as a representation of a sequence of operations.The 7 steps of e-ACDS workflow can be simplified and grouped into 3 major steps:

1. Catch Declaration
2. Movement Document (MD) or Marine Catch Purchasing Document (MCPD)
3. Catch Certificate and Export

e-ACDS Traceability Workflow

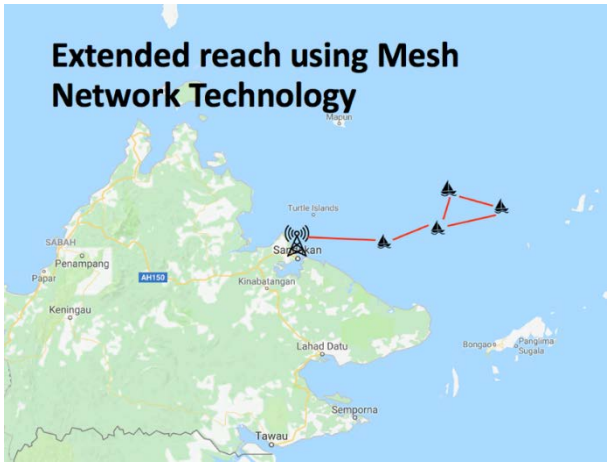


The eACDS has eleven tables, including:

1. Fishing Vessel Registration
2. Fishing License
3. Fishing Vessel Owner
4. Fishing Gear
5. Fish Port
6. Fishing Zone
7. Fish Species (Local Name, Scientific Name, ASFIS Code)
8. HS Product Code
9. Fish Buyer
10. Fish Processor
11. Importer | Exporter

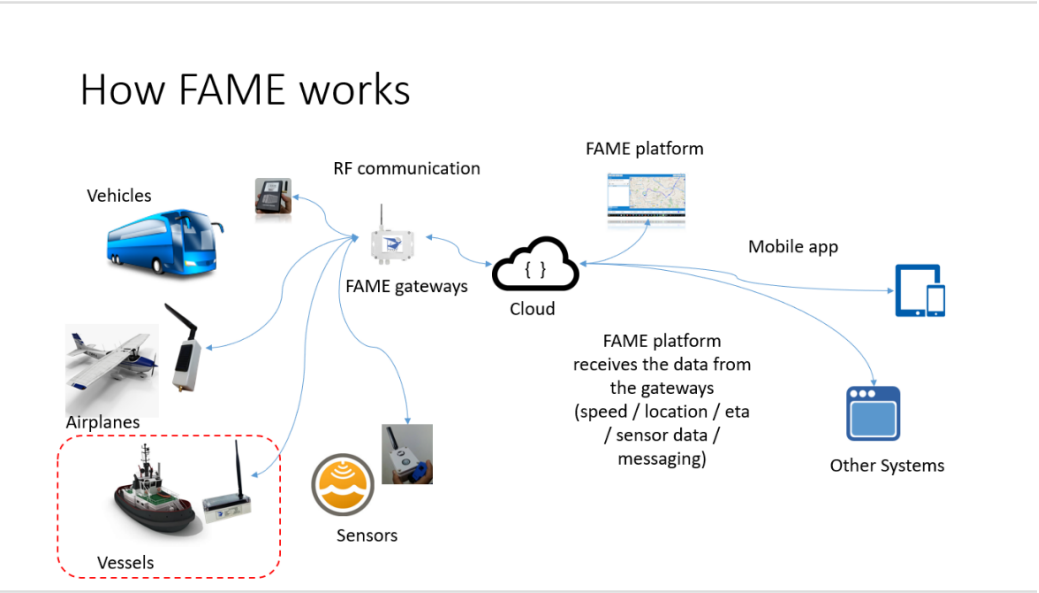
FAME – Small Scale Fishers Tracking and Communication Device

Increasingly, electronic monitoring (EM) systems on fishing vessels can combine position tracking, as seen in Vessel Monitoring Systems (VMS), with integrated telemetry (i.e., gear sensors), catch reporting, fleet management, crew communications, video capture, and other data analytics. The implementation of VMS technology in fisheries is in its infancy in Southeast Asia, and it is primarily deployed on larger fishing vessels (30 Gross Tons (GT) and up), if at all, as an enforcement tool for National Fisheries Regulators and Regional Fishery Management Organizations for Monitoring, Control and Surveillance (MCS). Driven by increasing customer and import market traceability and transparency requirements, for both the fish and the workers, future development of EM technologies will need to include other services (i.e., catch reporting/logbook, electronic monitoring, crew communications, labor reporting, geo fencing, emergency response, etc.), while also addressing the costs and incentives to be commercially sustainable and scale across smaller commercial fishing vessels that dominate fisheries in Southeast Asia.

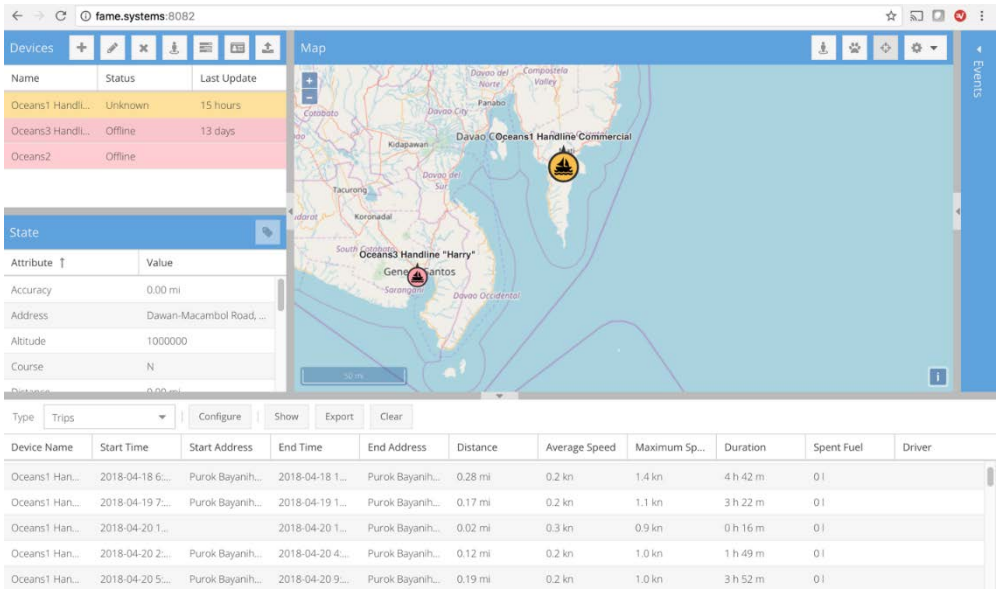


Futuristic Aviation and Maritime Enterprises, Inc. (FAME), a private company based in the Philippines, is a leading provider of small-scale vessel trackers and monitors that also serve as communication devices. FAME has deployments across the Philippines specifically in the MIMAROPA Region, Visayan Region and General Santos. FAME makes use of radio frequency to send and receive information, and its gateways receive the information from transponders and sends to the cloud. Telemetry data can be sent up to 50 km offshore and can be further extended via mesh technology between the transponders, as once the vessel/device is out of range, but within range of another vessel equipped with a FAME transponder,

the data can still be sent to a gateway. Personal communication, together with telemetry data can be sent through the FAME transponders.



FAME also provides a dashboard through a web and mobile browser-based application, allowing users to see details of each transponder and other related data in near real-time, anywhere. The dashboard allows users to draw geofencing areas for remote areas or areas to prioritize, as well as generate custom reports with integrated graphs. FAME users can receive notifications (alerts) both to fishers at-sea and users on-shore. Fishermen can use their mobile phones with USB On-The-Go (OTG) or Bluetooth to send and receive messages without mobile phone tower connectivity. Their platform is fully customizable and has been modified to incorporate USAID Oceans required KDEs.



USAID Oceans and FAME are collaborating and leveraging resources to support the testing, improvement and expansion of vessel tracking and monitoring solutions as well as catch reporting on small-scale vessels at sea in the Philippines. USAID Oceans and FAME have enhanced existing software (e-logbook, fleet management) while

assisting with system integration and interoperability with BFAR to provide seamlessly electronic catch reporting.

Beneficiaries	Benefits
Fishers and their families	Fishers can communicate beyond the cellular coverage by sending text message Full information whereabouts (the fisher location) Emergency alert (both ways) Able to export products to EU and US where the required traceability data exists
Suppliers and middlemen	Fishers can coordinate with their middleperson on the catches and make any necessary preparation (i.e., arrival, amount of cash prepared, transport, cold storage booking) Able to provide catch data that is required by government or market including LGU's Auxiliary Invoice, EU Simplified Form, US SIMP Aggregated form Maximizing CPUE through fishing activity coordination by analyzing fishing trip and catch data history
Boat owners	Asset and fleet management Fishing activity coordination Historical performance analysis
Government Agencies	Compliance Data for Sustainable Fishery Management Program Emergency response Geo-fencing to manage MPAs and borders Community based surveillance and monitoring
Processing Companies	Improve competitiveness at point-of-catch Able to provide data to meet market requirements (EU and US SIMP) More data for supply chain coordination

Technical specification for at-sea devices

- IP66 rating (dust and water prove)
- Integrated SOS button and Distress switch
- Can even reach farther if throughline of sight
- Mesh Network capability to extend the range beyond 50 km by bouncing the signal through other vessel transponder
- Solar and wind powered; Uses low power long range technology
- Pilots and Sea Captain's Secondary Radar
- Sending location data in preset interval, 15 minutes by default

- Secured data transmission encrypted
- Send telemetry data through connected sensors including cold storage temperature and fuel
- USB OTG connection (option Bluetooth or/and NFC)
- Catch reporting complies with government requirement
- Chat and messaging including to SMS gateway (carrier charge might apply)
- Alerts indicator (ideally a blinking light at the transponder showing that there is important message in mailbox mobile application)

Technical specification for at land application

- Mobile chat / messaging application for family member
- Mobile tracking application for authorized user (family member / boat owner)
- On shore control application
- Dashboard for monitoring at sea devices
- Report and analytic module
- Alerts management
- API for integration with other system including BFAR, LGU and companies
- Cloud based
- Integrated SOS button and Distress switch

Trafiz – Supplier Application

USAID Oceans has studied that small-scale fishers (SSF) have many challenges in providing traceability data and that the first buyer or fish supplier is the best candidate to submit traceability data. As such, USAID Oceans is developing "Trafiz," a mobile catch documentation application.

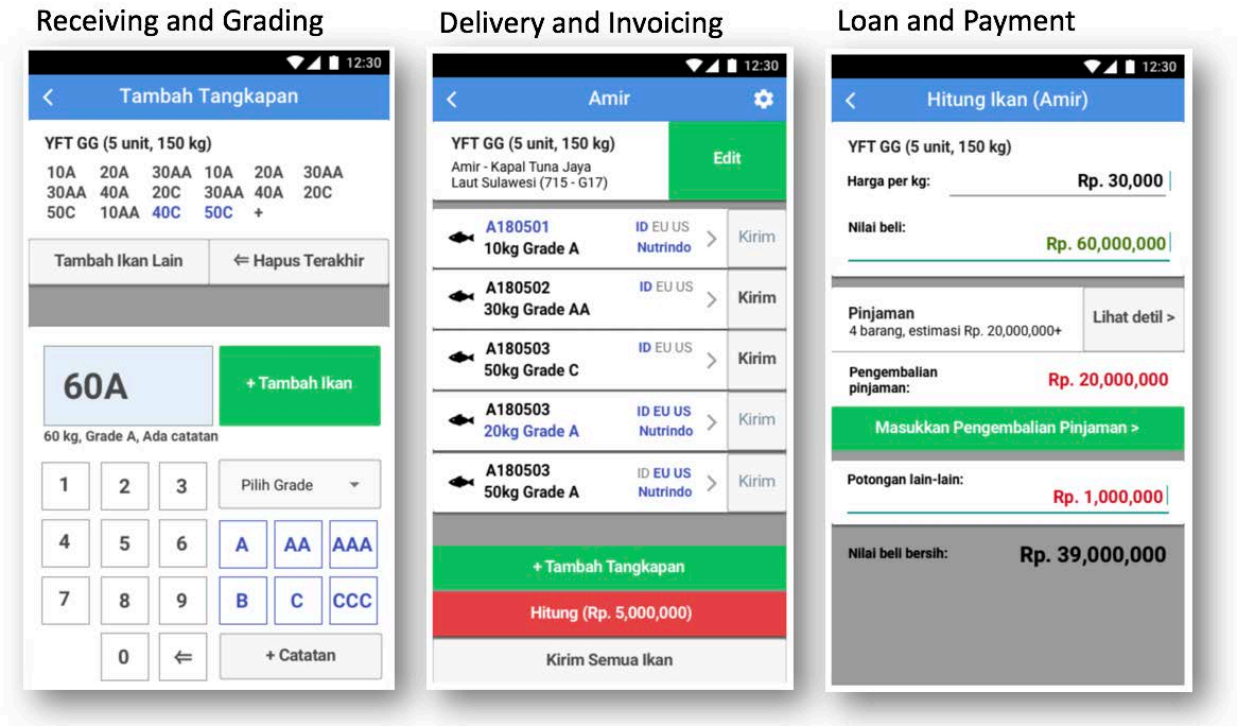
Trafiz is an Android mobile application for small-scale fish suppliers that will serve as the first data entry point in an eCDT system. The application will be implemented as an electronic data recorder for small-scale fish buyers and brokers at a certain landing point.

USAID Oceans has commissioned a software developer to provide application development and support services. The application will be first tested and implemented in the Indonesia learning site of Bitung, with expansion to other regional partners to follow. Trafiz and its source code will be released as an open source tool using public domain and GNU GPL licensed.

Trafiz is designed to:

- Capture data in the chain from fishing vessel to fish supplier in ports where the fish is landed.
- Provide a tool for supplier to record catch report, sales and loan management.
- Provide ability to pass the data down to the next party in the value chain.
- Provide ability to support compliance in the government requirement in small scale catch reporting.
- Provide ability to comply with us seafood import monitoring program (US SIMP) requirements for small-scale harvest events (model aggregated form).
- Provide ability to comply with EU requirements for catches obtained by small fishing vessels (EU simplified form).
- Enable work in off-line and on-line environments where users can still capture and process the transaction without connectivity.

The Trafiz user interface will be similar to the following screen prototype wireframes:



Inmarsat Pointrek – Two-Way Marine Vessel Monitoring System

A two-way vessel monitoring system (VMS) is a two-way communication system that, unlike traditional VMS, allows command center or shoreside users to send messages onboard of vessel. Depending on airtime costs and bandwidth, the communication can be in the form of text, email, alert, control signal or even video chat.

Typically, VMS is used by government authorities as an instrument to track locations, monitor activities and movement of fishing vessels. Also, fleet owners use VMS as a tool for fishing fleet management. With technological advances, more and more VMS functionalities have been expanded to enhance the original tracking capability of traditional VMS including two-way communication, real-time catch reporting, etc.

Pointrek is a vessel monitoring system with automatic identification system (AIS) data integration. Alongside a GPS tracking system, Pointrek also offers users low cost two-way communication when at sea. Sisfo developed Pointrek as a web-based application which can connect via Inmarsat's satellite networks and can be used to monitor the movement of vessels, including data, such as speed, heading, distance, weather information and two-way communications, which are essential for safety and connecting with people on land.

In partnership with USAID Oceans, Pointrek VMS is being tested in Indonesia to provide real-time VMS and electronic catch data (e-logbook) via handheld device (tablet). The system offers person-to-person (P2P) communication from ship to shore through onboard Wi-Fi connected mobile devices via text message, email, and conventional SMS technology.

Benefits of two-way VMS to fleet owners:

- Provide capability to address operational messages to:
    - enhance of fishermen safety;

    - improve fisheries efficiency;
    - manage fish stock and monitor catch;
    - receiving variety telemetry data through connected sensors;
    - monitor and manage control of fishing vessels;
- Boost crew morale with email access or messaging capability to communicate with family and friends.

Benefits of two-way VMS to the government:

- Enable a fisheries authority to directly change the reporting rate of a VMS unit or send the VMS unit an order to provide an immediate positional update of a vessel;
- Enable a fisheries authority to send quick notice to the vessel when approaching prohibited area or marine protected area;
- Improve compliance and data quality, current version of Pointrek catch reporting application is capable to produce logbook that meet regulatory requirement
- Provide a way for a fisheries authority to communicate directly, via text or email.

Inmarsat Pointrek VMS Features:

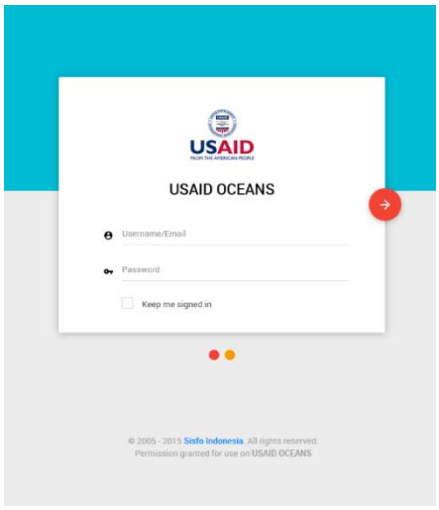
- Conforms to IMO Long-Range Identifications and Tracking Regulation;
- Show detailed fleet information, such as location, speed, heading, ship ID;
- Ship data can be accessed through any computer connected to the Internet;
- Worldwide satellite coverage;
- Web-based application with multiple layer map, including Google Map, OpenStreetMap and other additional tools;
- Ship log, history, and import data to ease reporting;
- Panic button for emergency;
- 24/7 customer support;
- Two-way communication enables real-time communication between vessel-to-vessel or shore-to-vessel.

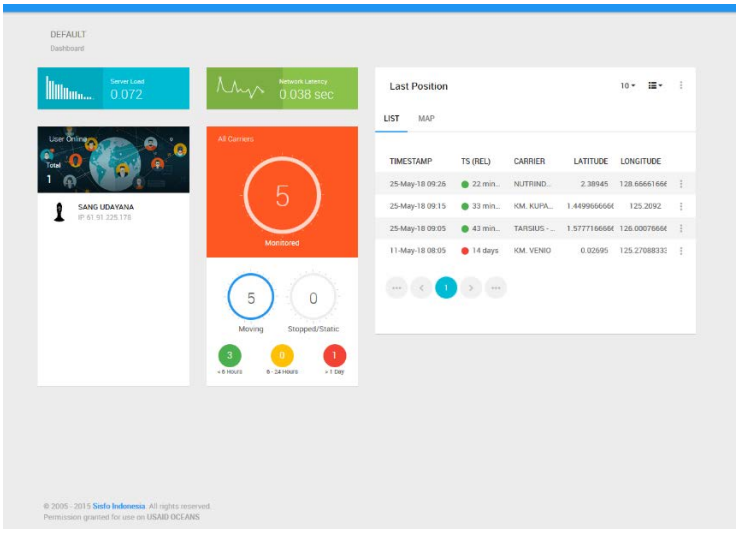
VMS unit installation: The unit consists of an outdoor satellite communication terminal and two main indoor units – central processing unit and power supply (shown below).

E-logbook application for catch at sea reporting:

Pointrek system training in Bitung, Indonesia

Pointrek web login and web dashboards:





Movement of vessel, showing location, direction and speed