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The Oceans and Fisheries Partnership (USAID Oceans)

VIETNAM CDT GAP ANALYSIS AND PARTNERSHIP APPRAISAL



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Cover Photo: Women sort catch at a local port in Nha Trang, Vietnam. USAID Oceans/Farid Maruf

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ACRONYMS AND ABBREVIATIONS

ACDS	ASEAN Catch Documentation Scheme
CC	Catch Certificate
CDT	Catch Documentation and Traceability
CDTS	Catch Documentation and Traceability System
CITES	Convention in International Trade in Endangered Species of Wild Fauna and Flora
CPUE	Catch per Unit Effort
CSR	Corporate Social Responsibility
CTE	Critical Tracking Event
DARD	Department of Agriculture and Rural Development
DFISH	Directorate of Fisheries, Socialist Republic of Vietnam
eACDS	ASEAN Catch Documentation Scheme
eCDT	Electronic Catch Documentation and Traceability
eCDTS	Electronic Catch Documentation and Traceability System
EEZ	Exclusive Economic Zone
EU	European Union
EU-DGMARE	European Union - Directorate-General for Maritime Affairs and Fisheries
FAO	Food and Agriculture Organization of the United Nations
FICen	Fisheries Information Center
FIP	Fishery Improvement Project
FMC	Fishing Vessel Monitoring Center
GIS	Geographic Information System
GSO	General Statistics Office
HP	Horse Power
ICT	Information and Communication Technology
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
ISEAL	International Social and Environmental Accreditation and Labeling
IT	Information Technology
ITDS	International Trade Data System
IUU fishing	Illegal, Unreported, and Unregulated [fishing]
KDE	Key Data Element
NPOA-IUU	National Plan of Action to Prevent, Deter and Combat Illegal, Unreported and Unregulated Fishing
MARD	Ministry of Agriculture and Rural Development, Socialist Republic of Vietnam
MCS	Monitoring, Control, Surveillance
MT	Metric Tons
NAFIQAD	National Agro-Forestry-Fisheries Quality Assurance Department, Socialist Republic of Vietnam
PPP	Public-Private Partnership
PSMA	Port State Measures Agreement (2009)
RFMOs	Regional Fisheries Management Organizations
RIMF	Research Institute for Marine Fisheries
RPA	Rapid Partnership Appraisal
RPOA	Regional Plan of Action
SEAFDEC	Southeast Asia Fisheries Development Center
SIMP	[US] Seafood Import Monitoring Program
UNCLOS	United Nations Convention on the Law of the Sea

UNFSA	United Nations Fish Stocks Agreement (1995)
US	The United States of America
USAID	United States Agency for International Development
US CBP ACE	US. Customs and Border Protection Automated Commercial Environment
VASEP	Vietnam Associations of Seafood Exporter and Producers
VIFEP	Vietnam Institute of Fisheries Economics and Planning
VINATUNA	Vietnam Tuna Association
VINAFIS	Vietnam Fisheries Association
VMS	Vessel Monitoring System
VNFishbase	Vietnam's national fisheries database
WCPFC	Western and Central Pacific Fisheries Commission

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 is assisting the Vietnam Directorate of Fisheries (DFISH) through targeted technical support to strengthen its capacity to implement an electronic catch documentation and traceability system (eCDTS).

From October 2017 to February 2018, USAID Oceans, through a team of in-country consultants and international experts, conducted a review of Vietnam's legal frameworks, management systems, and fisheries operations to assess current catch documentation and traceability (CDT) protocols and capabilities, the current certification scheme being used in Vietnam's seafood industry, and good practices being used by Vietnam's tuna fisheries that can be leveraged for system implementation. At the conclusion of in-field research, USAID Oceans held a Stakeholder Validation Workshop with DFISH and other relevant stakeholders in Nha Trang to refine key findings and gather input for a force field analysis.

Key findings acknowledge the building blocks already in place within Vietnam's seafood sector that could immediately be harnessed for implementation of an eCDTS. A force field analysis was used to identify and weigh the forces for and against change; in this case, the implementation of an eCDTS in Vietnam's capture fisheries. Notable, identified forces of change were Vietnam's desire to overcome its EU-issued yellow card, requests by global markets and regional fisheries management organizations, and the desire to maintain market share and build a positive reputation for Vietnamese seafood. Forces against change were also identified as challenges, including the country's large fishing fleet, sizeable small-scale fishery, and weak cooperation and partnership between stakeholders, such as between the Ministries and actors along the seafood supply chain.

Through this study, USAID Oceans was able to identify several gaps in Vietnam's current seafood certificate scheme and has developed recommendations to strengthen its CDT capabilities, such as improving the availability of data, strengthening technological infrastructure, and establishing additional institutional arrangements. From these findings, this appraisal presents key findings and recommendations, based upon consideration of the existing drivers towards eCDT from socio-economic, policy, and technology perspectives, and complemented with a rapid assessment of potential private sector partners to support eCDT implementation. Finally, to support its recommendations, USAID Oceans also presents a road map and eCDTS implementation plan, both in the short and long term.

I. INTRODUCTION

The U.S. Agency for International Development 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 improve transparency in the seafood supply chain, USAID Oceans supports the development and implementation of electronic catch documentation and traceability systems (eCDTS). To support its objectives, USAID Oceans engages a variety of fisheries stakeholders to form new partnerships among governments, regional institutions, and the private sector.

As part of its mission, USAID Oceans is assisting the Vietnam Directorate of Fisheries (DFISH) through targeted technical support to strengthen its capacity to implement an eCDTS. DFISH expressed interest in collaborating with USAID Oceans to assess its current catch documentation and traceability (CDT) capabilities through a gap analysis, rapid partnership appraisal, and development of a road map for implementing an eCDTS that will support the country's compliance with U.S. and EU market requirements in the near term, and other importing country requirements in the long-term. USAID Oceans has also worked with DFISH and industry stakeholders to identify and develop strategic public-private partnerships (PPPs) that can support eCDTS implementation and sustainable fisheries management in Vietnam's fisheries sector.

I.1 Objectives

Recognizing that DFISH is already working to address IUU fishing through CDT over the last few years, including through the development of a National Plan of Action, the aim of this assessment was three-fold:

1. Assess the status of the existing CDTS in Nha Trang, Vietnam, as a sample site, to determine any gaps and issues that may hamper the full implementation of traceability of fisheries products in the entire supply chain, including surrounding issues related to gender and human welfare;
2. Complete a Rapid Partnership Appraisal (RPA) to identify a select number of high-impact PPPs; and
3. Recommend a roadmap for addressing the gaps in Vietnam's current CDTS and transitioning towards a full eCDTS.

The assessment also considered the Vietnam's strategic objectives for its fisheries, which include providing transparent information to consumers and building trust with global consumers (*Decision 1445/QĐ-TTg on approval of Master plan for fisheries sector development to 2020, vision to 2030*); as well as preventing, mitigating and combatting IUU fishing to achieve a sustainable and responsible fishing industry (*NPOA-IUU fishing practice*).

I.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)*¹, the shift towards a fully compliant eCDTS requires supply-chain wide transformation that takes

¹ <https://www.seafdec-oceanspartnership.org/resource/cdt101/>, <https://www.seafdec-oceanspartnership.org/resource/cdt201/>

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. Figure 1 describes this shift.

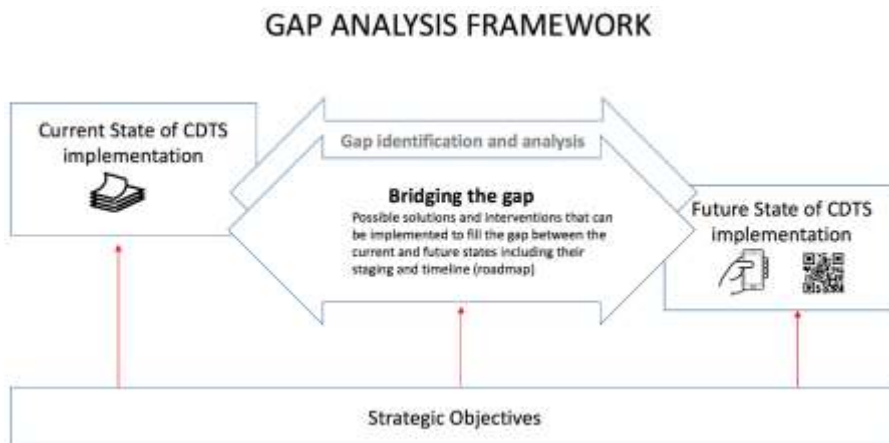
Figure 1. A graphical representation of current versus future data capture across a generic seafood supply chain in Southeast Asia, as recommended by USAID Oceans

Seafood Supply Chain	At sea capture (small scale; >4 to <10 MT)	At sea capture (medium scale; >10 MT)	Port	Buyer/Broker	Shipper (land or boat; domestic)	Processor (1 st , 2 nd etc.)	Shipper (air or ship; export)
Current: Typical data capture method (not integrated across supply chain)							
	None, or paper	None, or paper	Paper or electronic	Paper or electronic	Paper	Paper and electronic	Paper and electronic
Who	Captain	Captain	Company and Port Authority (government)	Buyer/Broker (company or agent)	Shipper (company)	Processor (company)	Shipper and Export Authority (government)
Data/Document Type	Logbook and Captain's certificate	Logbook and Captain's certificate	Catch certificate / document	Purchase order	Manifest or delivery order	Raw material, batch ID; finished good ID	Certificate of Origin; Packing list; Health certificate; Bill of lading
Future: Data capture method via USAID Oceans' CDT System (integrated across chain)							
	Mobile data collection device; pushed to DEX*	Mobile data collection device; pushed to DEX	Mobile data collection device; pushed to DEX	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage
CDT data submission method							
	Cell or satellite	Cell or satellite	Cell or WiFi	Internet	Internet	Internet	Internet

*Data Exchange (DEX)

In the conduct of this gap assessment, “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 eCDTS (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 CDTs gap assessments in General Santos, Philippines; Songkhla, Thailand; and Kelantan, Vietnam. The gap assessment and rapid partnership appraisal was conducted over the course of October 2017 to February 2017, through discussions with stakeholders from government, civil society, and industry actors. The following activities were conducted to inform the gap assessment and rapid partnership appraisal:

- **Desktop Research and Team Discussions.** Research was conducted on CDT-related policies and initiatives in Vietnam, including a review of the legal basis for CDT. 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 Vietnam. This helped establish the parameters for the gap assessment as well as provide the relevant policy and ecological frameworks for consideration under the assessment.
- **Stakeholder Consultations.** Visits and consultations were conducted with relevant stakeholders such as the central government, including DFISH; local government, including the Provincial Department of Agriculture and Rural Development (DARD); fishing port authorities and associations, including Vietnam Tuna Association (VINATUNA), Vietnam Fisheries Association (VINAFIS), and the Vietnam Associations of Seafood Exporter and Producers (VASEP); and local fishers, middlemen, seafood processing, and trading companies. These consultations aimed to gather information about seafood traceability, port in/port out procedures and fishing vessel registration and licensing. Information related to application of the eCDT system to seafood industry was exchanged and discussed to preliminarily assess the feasibility of the system as well as current challenges, difficulties and shortcomings that the industry is facing.
- **Field Visits.** USAID Oceans observed landing activities and catch documentation-related processes in Nha Trang, Vietnam as supervised by DFISH. Several discussions were also facilitated with industry stakeholders from the fishing, processing, and exporting segments of the value chain.
- **Focus Group Discussions.** Several discussions were facilitated with specific offices and divisions under various ministries to run-through some key initiatives and relevant information communication technology (ICT) programs, as well as with industry to identify concerns and areas for possible collaboration.
- **Analysis and Report Writing.** Following the research and engagement outlined above, USAID Oceans processed all inputs for discussion and action planning.
- **Validation Workshop.** Lastly, USAID Oceans held a Validation Workshop to validate, refine and finalize the CDT Gap Assessment and Rapid Partnership Appraisal, as well as secure commitments from relevant ministries on how they intend to take onboard the findings and recommendations of the report. Through the workshop, USAID Oceans conducted a Force Field Analysis to identify impacting forces on CDT and gather ideas and inputs from relevant stakeholders participating in the validation workshop. The outputs were analyzed and used to develop a detailed action plan for eCDT improvement.

1.3 Limitations

All lines of inquiry, data collected, and information processed under this assessment is 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. The assessment is also inherently limited to secondary review (desk study), with information and inputs gathered and validated largely from the gap assessment workshop.

1.4 Organization of the report

This report is organized into four principal sections:

- **Assessing Vietnam’s current CDTS** maps out Vietnam’s current capabilities informing CDT;
- **Rapid Partnership Appraisal** provides an overview of private sector CDT engagement;
- **Key Findings** presents the most significant insights generated over the course of the assessment critical towards understanding the various challenges and opportunities surrounding eCDT in Vietnam; and
- **Recommendations** presents a very practical roadmap on which aspects of Vietnam’s eCDTS-readiness should be prioritized for further development as the country continues its journey towards establishing a full eCDTS.

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 VIETNAM’S CURRENT CDTS

Any attempt to establish a baseline for a country’s CDT 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.

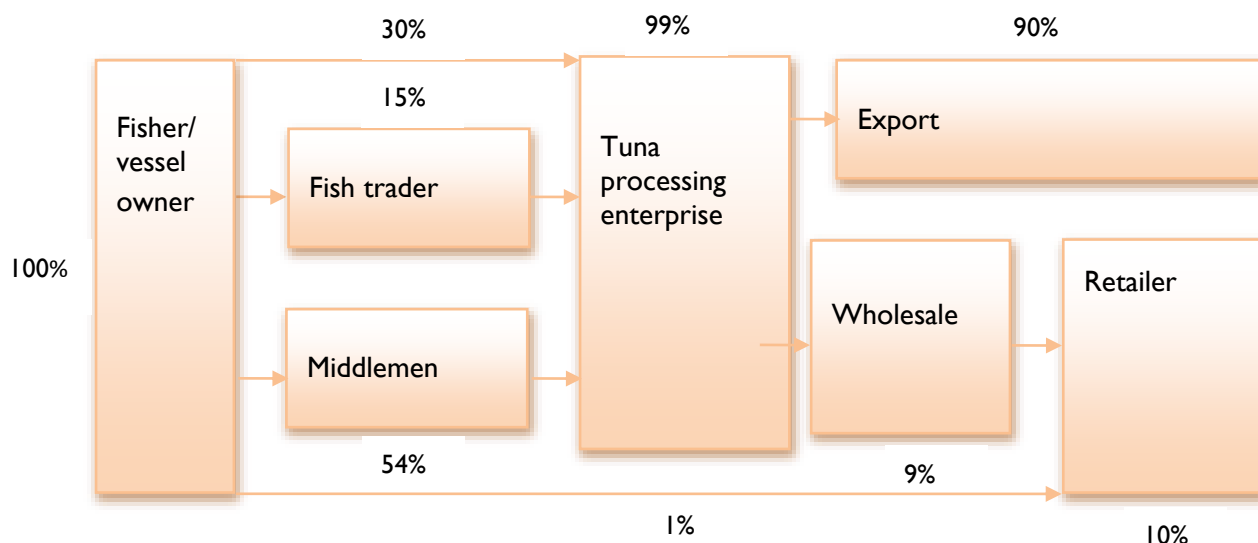
2.1 Socio-economic drivers for CDT

Since 1997, Vietnam’s capture fisheries have been growing considerably, both in terms of the number of fishing vessels and in total annual landing volume. Accordingly, the number of fishing vessels increased from 71,500 units in 1997 to 110,950 units in 2016, and a total annual landing volume of 1.08 million metric tons (MT) and 2.93 million MT, respectively. The detailed number of “offshore fishing vessels” in the period from 2010 to 2016 by provinces provided by the General Statistics Office (2017) is described in Annex I.

The mean catch rate of the capture fishery showed a converse direction, with the overall average value of catch per unit of effort (CPUE) at 0.51 MT per HP in 1997 and 0.29 MT per HP in 2016. Fishery resource assessment results have showed a declining trend over the last two decades whilst conflicts among and within fishing fleets in competition of fishing grounds and fishery resources have recently tended to increase.

According to VASEP (2017), Vietnam’s tuna products have been exported to 96 nations and territories, of which the ten biggest markets are the United States, Japan, Germany, Italy, Spain, Israel, Canada, Tunisia, Thailand, and Mexico. From 2010 to 2016, the annual export turnover of tuna products significantly increased and fluctuated around U.S. \$500 million. Figure 3 shows the results of a study conducted in Binh Dinh province, one of the most three important provinces for tuna in Vietnam. The study indicated that about 90% of provincial tuna fishery production was targeted for export.

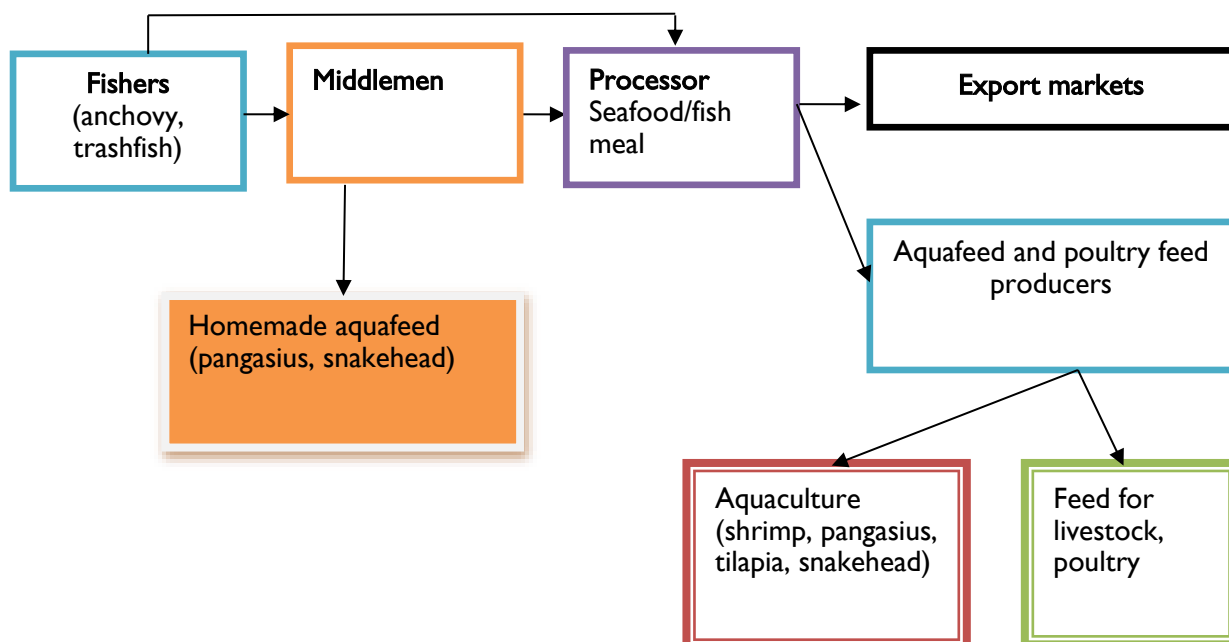
Figure 3. Supply chain of the oceanic tuna fishery in Binh Dinh province, Vietnam (2016)



Source: Cao Le Quyên et al., 2017

Trawlers account for about 30% of the total number of fishing vessels in Vietnam and in some areas, trawl fisheries play an important role in terms of landing volume, such as in Kien Giang, Ben Tre and Ba Ria - Vung Tau provinces. Products caught by trawl fleets are very diverse and used for both domestic consumption and export. The supply chains of seafood harvested by trawlers are complicated and include high economic value species including squid, cuttlefish, octopus and some fish used for surimi processing. The below figure presents key actors along the seafood supply chains in the trawl fishery of Kien Giang Province.

Figure 4. Supply chain of the anchovy and trashfish in trawl fishery in Kien Giang province (2015)



Source: Nguyen Ba Thong, 2017

2.2 Fisheries sector institutional arrangements and management structure

Recognizing the importance of Vietnam's fishery sector and the number of issues and challenges it has faced to achieve sustainable development, the government of Vietnam has developed a strategic development plan and master plan for the sector. Under these plans, important activities are identified that include providing transparent information about seafood exported to consumers and building consumer trust in Vietnam's seafood; ensuring and strengthening market competition in the global market; and applying new technologies to monitor and manage fishing fleets.

Currently, DFISH is developing a National Plan of Action to prevent, mitigate and combat IUU fishing practices. The current draft indicates some key issues that should be addressed, such as prevention of "blue boat" operations, installing VMS onboard offshore fishing vessels, and enhancement of landing monitoring and catch certificate. Following Vietnam being issued a yellow card by the EU in October 2017, some urgent needs have been identified, such as improving the legal framework for fisheries management, scaling up VMS systems, enhancing catch monitoring and traceability, and eliminating "blue boat" operations.

State management of the fisheries sector in Vietnam is under the direct responsibility of the Ministry of Agriculture and Rural Development (MARD), with DFISH assigned to manage the sector on behalf of MARD. DFISH is responsible for collaborating with the Provincial People of Committee (PPC), the highest local government authority, to manage all activities in relation to the fisheries industry.

The provincial authority, the Department of Agriculture and Rural Development (DARD) and relevant authorities, such as the Port Authority, Customs Office, and Coastguard partner with DFISH/MARD to implement fisheries management measures. Accordingly, the provincial authorities are responsible for fishing vessel licensing, registration, catch validating, and granting Catch Certificates. The Provincial Department of Animal Health and National Agro-Forestry-Fisheries Quality Assurance (NAFIQAD) are responsible for issuing the Veterinary Certificate for imported raw materials and fish, and for the statement of exporting products processed from imported materials and catches.

There are 28 coastal Provincial Sub-Department of Fisheries (Sub-DFISHs) under DARDs and six national branches under the system of NAFIQAD that are directly involved in the country's catch certificate scheme. According to the amended circular (revising circular 50/2015/TT-BNNPTNT), the catch certificate scheme will be changed in terms of the process, responsibilities of relevant agencies, and the application of CDT tools. Under this revision, the Port Authority will cross check information for validation purposes, and a fee-based system will be introduced to ensure transparency, sustainability and equity.

USAID Oceans' assessment found that the assignments of relevant fisheries management agencies is complicated, inconsistent, and unclear in regard to monitoring the seafood supply chains and catch certificate scheme. Inspection of catch certificate scheme is not well conducted and the fisheries inspection system at provincial level is inconsistent within provinces.

Figure 5. Key stakeholders involved in Vietnam's fisheries sector

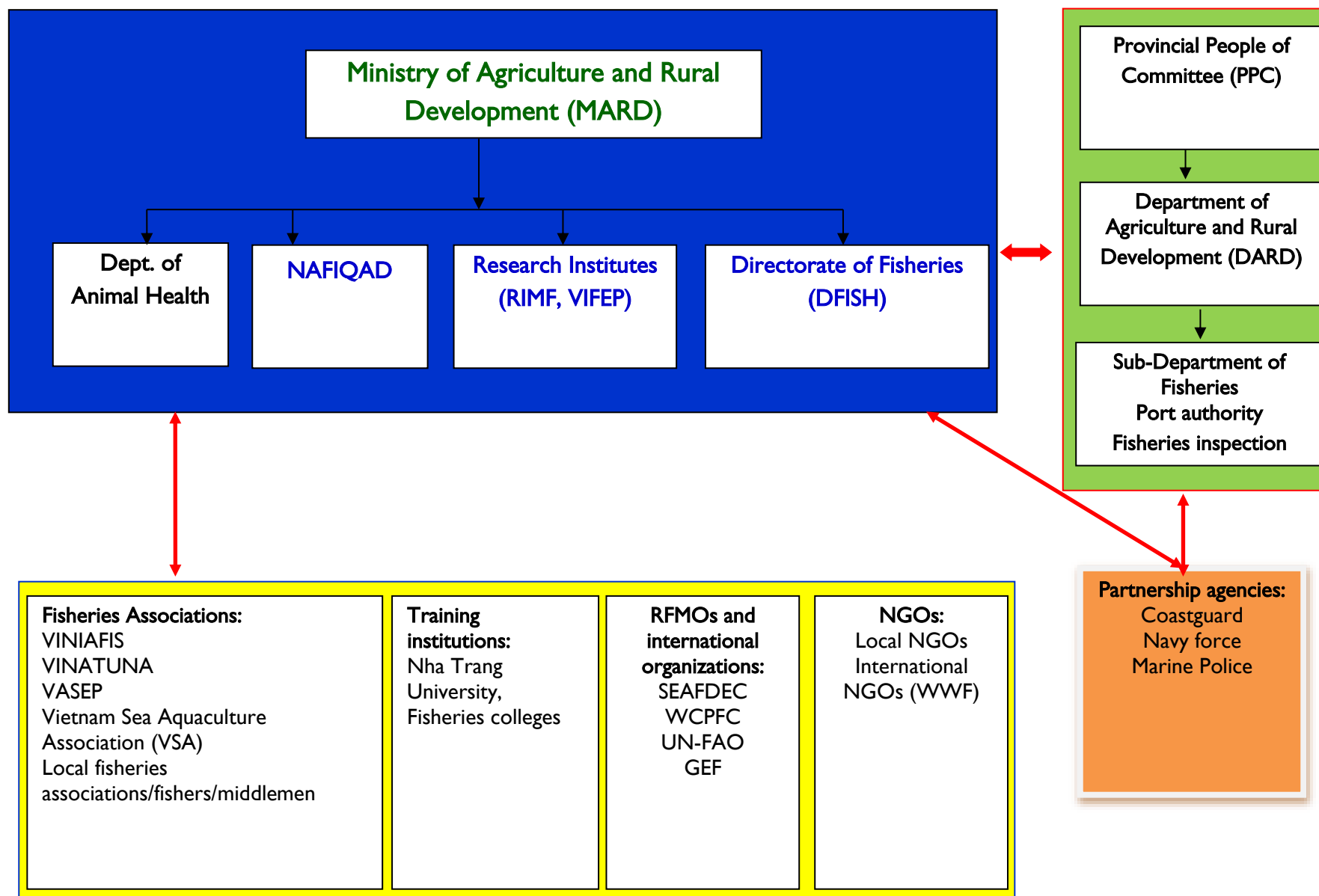
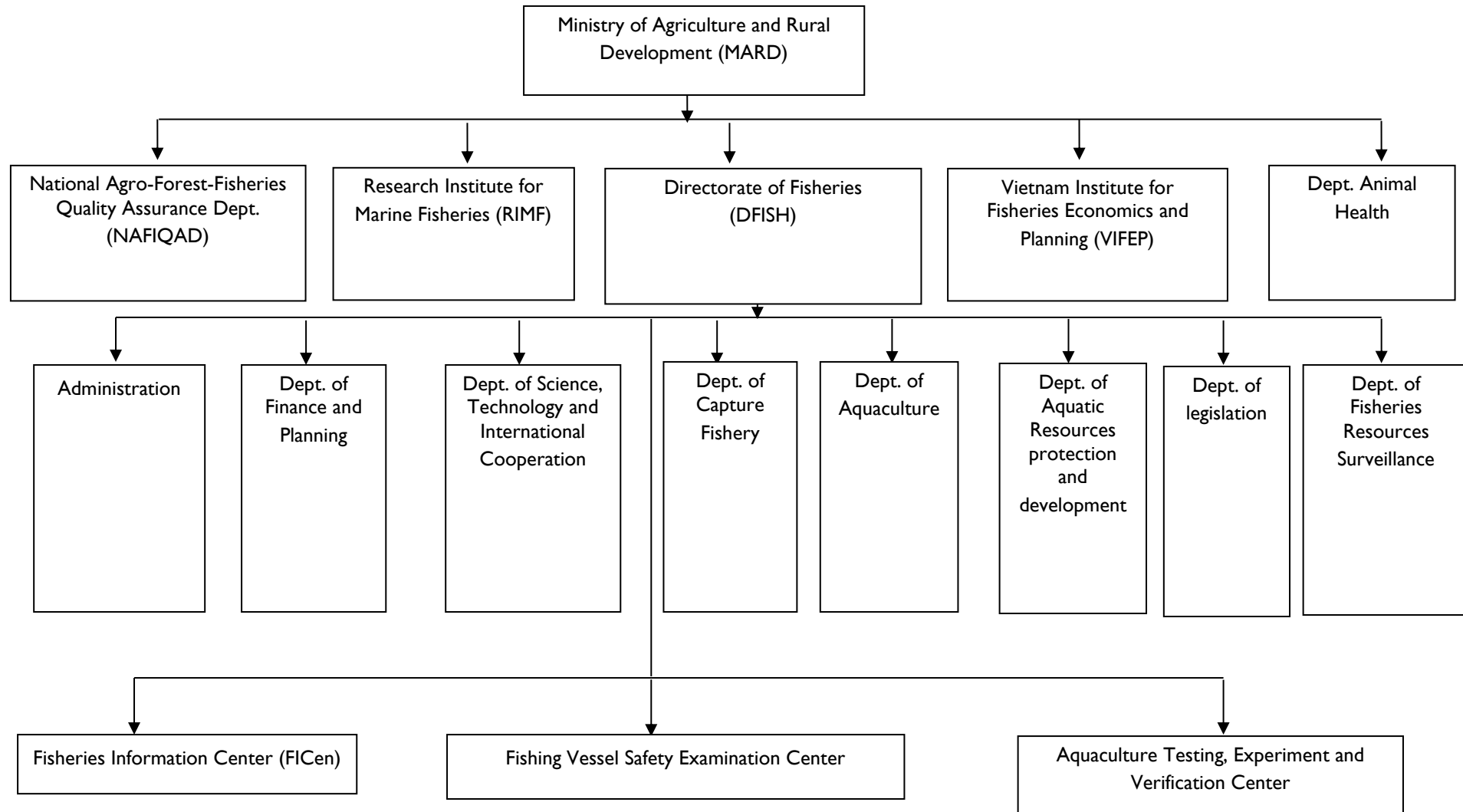


Figure 6. Structure of Vietnam's central fisheries management body



2.1.1 Fishing vessel registration and licensing

DFISH oversees registration for fishing vessels that include fishing vessels of army force, chartered fishing vessels, patrol vessels, research vessels, Vietnam fishing vessels operating outside Vietnam's Exclusive Economic Zone (EEZ), and foreign fishing vessels operating in Vietnam waters. The provincial Sub-Department of Fisheries oversees registration procedures for all local fishing vessels. Decree 66/2005/ND-CP dated 19 May 2005, Circular 24/2011/TT-BNNPTNT dated 6 April 2011, and Decision 10/2006/QD-BTS dated 3 July 2006 regulated that all motorized fishing vessels from 20 HP or un-motorized fishing vessels from 15 meters' length and other floating facilities for fishing industry of from 50 m³ are subject to be registered.

Currently, the fishing vessel registration system has been implemented country-wide, however there is no coherent and unified database for fishing vessel registration and some information as suggested by PSMA and other international bodies are still missing (i.e. IMO number). Each province has its own database, in most cases offline, with limited interoperability. Monthly, each Sub-Department of fisheries sends a report on the status of local fishing vessel registration to DFISH and the local Provincial People of Committee. The limited access to a unified database to check fishing vessel information at landing is a problem for inspectors and relevant agents when verifying the registration of vessels from other provinces.

All fishing vessels with main engine capacity of from 20 HP or un-motorized fishing vessels of from 15 meters must be licensed. Under Decree 59/2005/ND-CP, DFISH is responsible for issuing fishing licenses for the public fishing enterprises belonging to the central government, fishing companies, and fishing vessels under army force and foreign fishing vessel operating in Vietnam EEZ. The local government, under the provincial level, issues fishing licenses for local fishing vessels. Based on the existing legal basis, fishing licenses are valid for 12 months whilst under the amending law, fishing licenses will expire 60 months after issuance. Despite the existence of digital records in Microsoft Access and Excel, the lack of coherent and unified databases for managing license information makes it difficult to access and monitor or cross-check and verify the number of fishing vessels and licenses across provinces.

Decree 32/2010/ND-CP, Decree 33/2010/ND-CP, and some relevant bylaw documents, including Circular 02/2006/TT-BTS, Circular 62/2008/TT-BNNPTNT, Circular number 24/2011/TT-BNNPTNT, regulate fishing gears, prohibited fish species, fishing areas, fishing seasons and fish size capture, Marine Protected Areas, and some licensee renewing requirements.

2.1.2 Port in/port out procedures

Every fishing vessel is required to go through port-out and port-in procedures before leaving or entering the fishing port. Decree 80/2012/ND-CP and Circular 52/2013/TT-BNNPTNT regulate the reporting of landing volume and the number of fishing vessels ported in monthly. The implementation of those regulations requires effective cooperation amongst competent authorities to implement state management activities for fishing industry.

The Port Authority is also responsible for validating the origin of fish products from capture fisheries. All Vietnamese fishing vessels and foreign fishing vessels, those unloading or staying in the fishing ports, are subject to comply with these regulations. Accordingly, before entering the port, the skipper must inform the Authority at least one hour prior to arrival with some key information including vessel registration number, size, and specific requirements for service (if any). Foreign vessels are required to submit more extensive information at least 24 hours in advance. The skipper must comply with the port's code of conduct and other rules requested by the Port Authority. Similarly, the skipper must inform the Port Authority before leaving the port (port out).

Circular 52/2013/TT-BNNPTNT, dated 11 December 2013, provides guidance for implementation of Decree 80/2012/ND-CP. The provincial Department of Agriculture and Rural Development must advise the PPC in the development and promulgation of the fishing port management regulation. The regulations shall clearly define

responsibility, rights of fishing port authority, direct management agency of the fishing port, responsibility for allocation and partnership, and the cooperation mechanism with relevant agencies.

Agreement No 6074/QCPH-BNN-BTLBP between MARD and the Coastguard, promulgated on 30 July 2014, requires cooperation in fisheries management and combating IUU fishing practices. It indicates that the Coastguard and competent authorities under MARD shall have cooperative actions in surveillance, inspection, and patrolling fishing operations and in combating IUU fishing practices. Under which, the Coastguard must oversee fishing vessel port in and port out procedures.

Circular 02/2018/TT-BNNPTNT, dated 31 January 2018, and Decision 27/QD-BNN-TCTS, dated 05 January 2018, promulgate guidelines for developing a plan for fisheries inspection, surveillance, and control following recommendations made by the EU. These guidelines indicate that the DARD is the leading agency for developing and coordinating a representative office for fisheries inspection, surveillance, and control at the fishing port, hereafter called "Fisheries Control Office." The office shall be comprised of representatives from fisheries inspection, DFISH, and Port Authority, whilst the Coastguard is the cooperative agency.

Port out: The vessel owner or skipper shall inform the Fisheries Control Office two hours prior to port out/departure. Documents including the registry license of fishing vessel, fishing license, crew list, fishing logbook, and certificates for skipper/chief engine shall be provided to the office for checking purposes. Inspection for safety at sea, such as safety device/equipment onboard, number of crew, and fishing gears are conducted onboard before the vessel goes to sea for fishing. A specific form, the certificate for port out/port in of the fishing vessel, is issued and will be confirmed by both the fishing vessel and Fisheries Control Office.

Port in: The vessel owner or skipper shall inform the Fisheries Control Office two hours before arrival. The skipper must declare vessel information and return the fishing logbook. The Fisheries Control Office will check the logbook and crosscheck with the actual landing volume and composition. Suspecting information will be checked with the VMS system, either by VX 1700 or MOVIMAR devices. A Catch Declaration must also be completed (Annex II).

2.1.3 Catch certification scheme

Catch is either brought onshore by a fishing vessel or transshipping vessels and is unloaded, sorted, and transported directly to fish markets, seafood processing plants, or stored at the landing point. Fish buyers, seafood processors, and middlemen are responsible for submitting documents and forms with copies of vessel documents and logbooks to the provincial Department of Fisheries to get a catch statement for raw material. The competent authority is then responsible for validation before granting the Catch Certificate. Figure 7 illustrates the catch certification scheme.

Currently, catch verification is a paper-based procedure, and under the existing scheme, several issues have been identified. All procedures for validation and endorsement, such as granting the catch statement and Catch Certificate are paper based and information provided by the fishers, skippers, vessel owners, or fish buyers is not cross-checked. In addition, no lists of IUU fishing vessels are available or publicly published. Some key issues associated with Vietnam's capture fishery Catch Certificate are:

- Absence of landing declaration by fishing vessel at the landing site/fishing port;
- No designated fishing ports available;
- Absence of transportation information (from the landing site/fishing port) to storage/warehouse/processing plants/market place, only available information is from place of shipping to the importing market;
- Inspection of the catch/landing data for Catch Certificate purposes is weak: no cross checking of data, no observer program, no landing data collection for validating catch statements;
- Very limited use of VMS information for validation purposes; and
- Poor/unreliable information provided by logbook and low coverage of logbook records.

Circular 02/2018/TT-BNNPTNT dated 31/01/2018, supplemented by 50/2015/TT-BNNPTNT, 25/2013/TT-BNNPTNT, 02/2006/TT-BTS, 62/2008/TT-BNNPTNT and 26/2016/TT-BNNPTNT, provides guidelines for catch traceability and certification procedures, including procedures for the catch statement of raw materials and catch certificate schemes for local fishing vessels (including transshipment vessels) and the statement of processing fish products from imported raw materials. Roles and responsibilities include:

Fishing port authority:

- Check legal documents of a fishing vessel including fishing vessel registry number/certificate; crew list; fishing license; food safety certificate; fishing logbook and catch, catch composition; transshipment logbook and transshipment catch volume and catch composition; IUU fishing vessel list;
- In collaboration with relevant competent authorities, track/check fishing vessel log to validate fishing area information for offshore fishing vessels (from 90 HP);
- Grant catch statement of raw material; and
- Keep records.

Local Fisheries department:

- Validate information provided in catch statement;
- Conduct inspection, either sample based at the port side (no less than 5% number of total fishing trips for both fishing vessels and transshipment vessels of demersal fish, small pelagic fish, crab, shrimp and 20% for tuna fishery) or by accessing databases including the VMS log; and
- Grant Catch Certificate.

NAFIQAD

- Validate information in relation to fish materials imported for re-export purposes with information about flag state of the fishing vessels, imported volume/ fish species, IUU fishing black list, food safety certificate, and veterinary certificate issued by Department of Animal Health; and
- Grant statement of exporting fish products from imported fish materials.

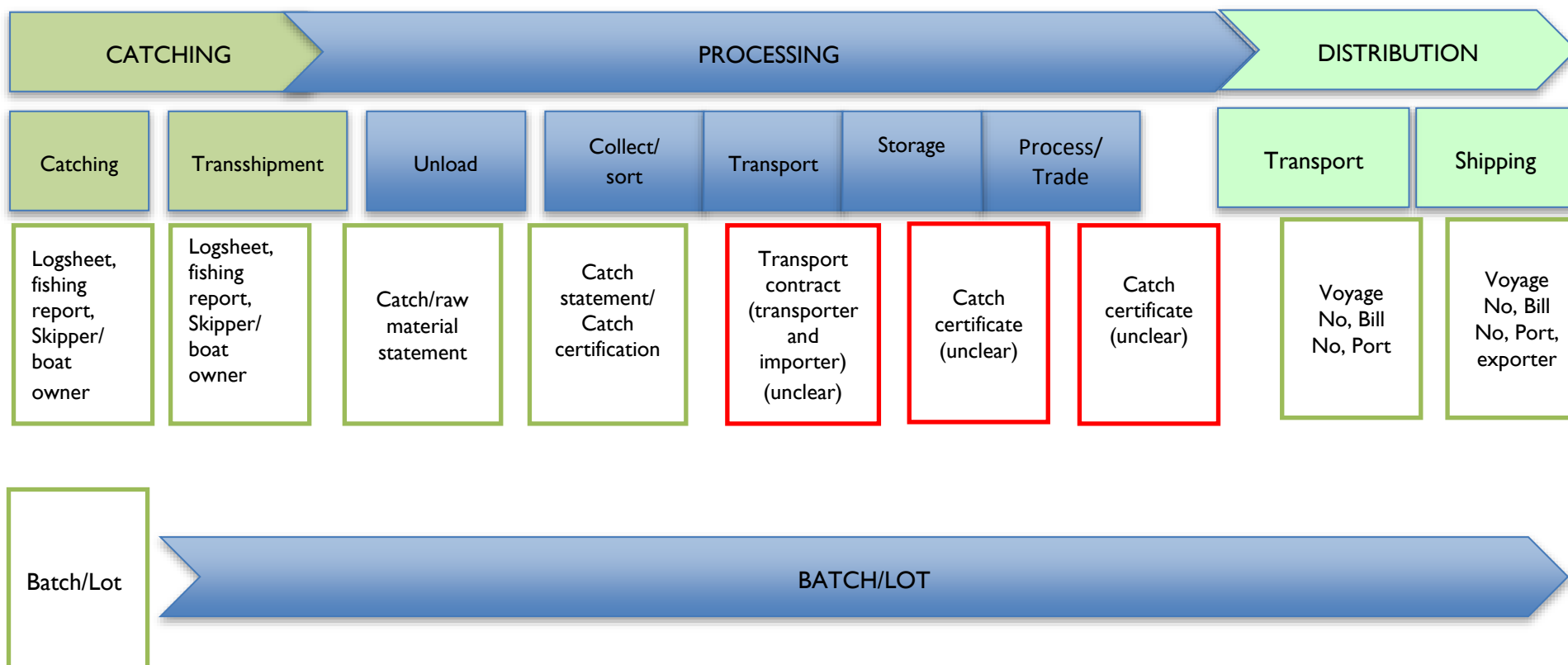
Department of Animal Health

- In collaboration with Customs office, inspect the fish/fishery product origins and monitor the quantity imported;
- Check and grant veterinary certificate for importing fish/fishery products; and
- Implement IUU check for fish/fishery products imported through available IUU fishing vessel black list.

Roles and responsibilities of relevant authorities should be allocated clearly and transparently, with a list of designated ports that have sufficient facilities, well-trained staff, and the ability to access information on fishing vessel operations and management, either online or on demand, for catch validation and inspection.

Transshipment vessels must be regulated and licensed; transshipment logbook/reports will be used to ensure the traceability of the fish/seafood sources. Fishing port authorities should, in collaboration with the local Department of Fisheries, implement procedures for granting the Catch Certificate for fish/fish products required for export purposes.

Figure 7. Flowchart of Catch Certification in Vietnam



2.1.4 Logbook and catch report

Circular No 25/2013/TT-BNNPTNT, dated 10 May 2013, requires that all skippers of fishing vessels with engine power 20 HP and over must complete and return a logbook to the Provincial DARD. DARD is responsible for compiling and analyzing logbook information and reporting to the local PPC, the Ministry of Agriculture and Rural Development (through DFISH), and the Research Institute for Marine Fisheries, who is in charge or managing the country's logbook database. According to bylaw document, Circular 02/2008/TT-BNNPTNT, within 24 hours after landing activity of a fishing vessel is completed, the vessel owner shall submit the fishing logbook and/or fishing report, transshipment report and transshipment logbook of transshipment vessels to the local Port Authority. The fishing report is then applied to all fishing vessels which are issued fishing licenses.

Fishing vessel owners or skippers have the legal responsibility to provide the catch report based on the guidelines provided by DFISH. Based on Decree 103/2013/ND-CP, a fine of VND 500,000 to VND 1,000,000 will be applied to any fishing vessel unloading fish at the port or landing site without a completed logbook. According to Decree 53/2012/ND-CP, completing the fishing logbook is one of the prerequisites to renew a fishing license. There are two formats used for logbooks in Vietnam, one is regulated by Circular 50/2015/TT-BNNPTNT and is applied to all fishing fleets; another is suggested by the Western and Central Pacific Fisheries Commission (WCPFC) for use in tuna fisheries and is much more detailed (Annex II).

Despite legal requirements, only a small number of vessels return complete logbooks, making analysis of catch data provided by the returned logbooks unreliable.

Table 1. Logbook information of Vietnam's capture fisheries in comparison with other requirements

Information	Current logbook format	Amending logbook format	Compliant with WCPFC requirements	Compliant with EU requirements
Fishing vessel name	✓	✓	✓	✓
Vessel registration	✓	✓	✓	✓
Call sign	N/A	✓	✓	✓
IMO number	N/A	N/A	N/A	✓
VMS number	N/A	N/A	N/A	✓
Vessel dimensions	N/A	N/A	N/A	✓
Trip number	✓	✓	✓	
Engine capacity (HP)	✓	✓	N/A	
Fishing gear used	✓	✓	✓	✓
Logbook delivered date	✓	✓	N/A	
Logbook return date	✓	✓	N/A	
Date of port out/in	✓	✓	✓	
Place of port out/in	✓	✓	✓	
Fishing ground	✓	✓	✓	✓
Transshipment	✓	✓	✓	✓
Number of gears used	✓	✓	✓	
Gear shooting information	X	✓	✓	
Gear hauling information	X	✓	✓	
Catch information by haul	X	✓	✓	✓
Total catch by trip	✓	✓	✓	✓
Signature of skipper	✓	✓	✓	✓

2.1.5 Catch declaration

Fish intended for export to the EU must go through two main steps: (1) Catch Statement for raw material to ensure that the fish comes from a non-IUU fishing vessel; and (2) Catch Certification (CC). Both steps are validated and verified by the Provincial Sub-Department of Fisheries under the Provincial DARD. The verification and inspection are implemented both by scheduled and random visits, and on average covers more than 5% of the total number of fishing trips per year. Those regulations are part of the Circular 25/2015/TT-BNNPTNT; however, this circular is under revision to be aligned with EU requirements EC1005/2008 and EC 1010/2009.

Only products designated to the export market require Catch Statements and Catch Certificates granted by the DFISH agencies. Currently, as all validation and verification process are paper-based, they are dependent on the accuracy of information provided by the logbook and catch statement for raw material, provided by the fishers or local seafood buyers. Due to limited access to VMS information by local sub-DISH staff, it is difficult to verify the logbook and catch declaration. Presently, the Catch Statement of raw material is understood as a catch declaration.

According to a newly approved circular, Circular 02/2018/TT-BNNPTNT (dated 31 January 2018), the owner of consignment must inform the Port Authority at least one-hour prior of the vessel name and registry number, intended time of arrival, and predicted catch volume for unloading. The Authority has right to validate the catch information, actual landing volume, logbook and fishing report. Within 24 hours of unloading, the vessel owner or skipper must submit their fishing logbook and report to the Port Authority. The fishing report may be “implied” as the catch declaration, however, the catch declaration should be submitted once the vessel arrives at the landing place. Decision 27/QD-BNN-TCTS, dated 5 January 2018, on promulgating guidelines for local government to check and control fishing vessel operations including port out/port in and fishing at sea. Catch declaration is one of the important components of the port in procedure; nevertheless, catch declaration is not clearly mentioned in Circular 02/2018/TT-BNNPTNT.

2.1.6 Transshipment declaration

Under the amending fisheries law, all support vessels used for the provision of foods, fuel, water and other necessary resources at sea and transshipment vessels are considered as fishing vessels and need to be managed as a normal fishing vessel. Currently, fish transshipment is either conducted by commercial transshipment vessels or fishing vessels. A voluntary fishing cooperative was formed by local fishers, and vessels in the cooperative will alternately bring their catch to shore.

No specific requirements or regulations on catch transshipment are in place under the current fisheries law (2003). Recognizing the important role of managing transshipment fleets, the amending draft of Circular 50/2015/TT-BNNPTNT aims to regulate the catch procurement and transshipment declaration with a detailed logbook form and to empower the Port Authority to manage transshipment information. The new circular 02/2018/TT-BNNPTNT regulates that transshipment logbooks and reports shall be submitted to the Port Authority within 24 hours after all catch is landed.

2.1.7 Fish import (raw material) process and documents requirements

The statement of export fishery products, processed from imported catches, is implemented following [Circular 50/2015/TT-BNNPTNT](#) dated on 30 December 2015 and [Circular 48/2013/TT-BNNPTNT](#). The National Agro-Forestry-Fisheries Quality Assurance (NAFIQAD) is assigned to conduct this duty nationwide.

For raw fish imported to Vietnam, its health must be checked by relevant agencies to ensure the fish is disease free. There are different processes for animal health examinations for raw fish imported for domestic consumption and imported fish raw material for export processed and other purposes. Figures 8 and 9 show flow charts of imported raw materials and re-export products and domestic fish raw material, respectively.

Relevant agencies involved in the monitoring and control of the seafood supply chain, including domestic and imported catch, are presented in Figure 8.

Figure 8. Flow chart of raw material imported and re-export fish products in Vietnam



Figure 9. Flow chart of domestic fish raw material in Vietnam

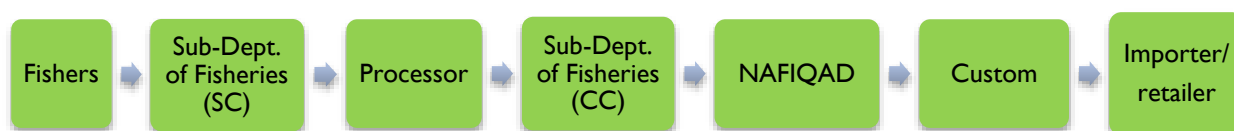
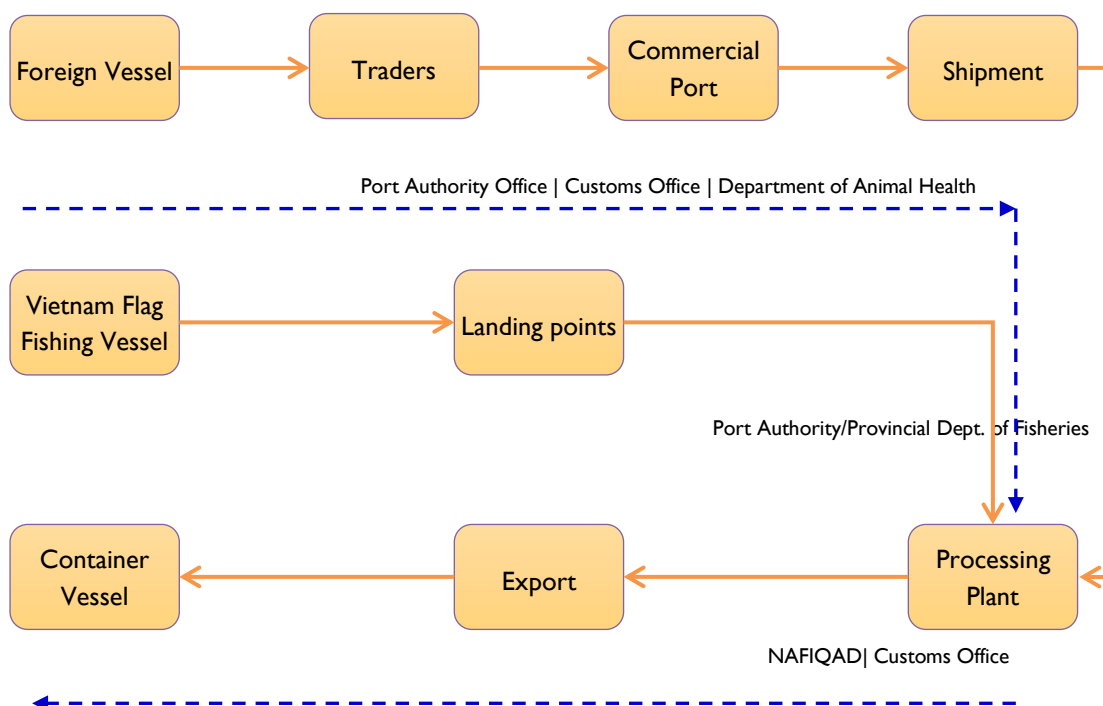


Figure 10. Intra-agency touch points in the seafood supply chain



For raw materials caught by Vietnamese fleets, fish buyers submit required documents to the provincial Fisheries Department (Sub-Department of Fisheries) to get a statement of raw material (SC) and Catch Certificate (CC).

Under the amending draft of Circular 50-TT-BNNPTNT, the catch declaration and SC will be assign to port authorities, and the provincial fisheries department will be responsible for conducting the cross-check for verification purposes. The sub-Department of Fisheries shall have the right to access the national fisheries database, including VMS information, to validate and verify information in relation to fishing vessel administration and at-sea operations.

According to Circular 02/2018/TT-BNNPTNT and Decision 27/QĐ/BNN-TCTS, the Department of Animal Health, in collaboration with the customs office, Port Authority, and associated agencies, inspect and control fish and fishery products imported to Vietnam, including products that are imported for re-export, transiting, and validate traceability information for fish and fishery products imported to Vietnam for both domestic use and re-export purposes.

2.3 International instruments

International and regional instruments for combating IUU fishing and promoting traceability for seafood import/export include the Port State Measures Agreement (PSMA, 2009), UNFSA (1995) and the Food and Agriculture Organization of the United Nations (FAO) Compliance Agreement (1993), UNCLOS (1982), EC No 1005/2008 and EC No 1010/2009, and the Seafood Import Monitoring Program (SIMP) developed by the U.S. National Oceanic and Atmospheric Administration.

The PSMA is a means to ensure the long-term conservation and sustainable use of living marine resources. The intention is that each party will apply the Agreement widely and effectively as port States, for vessels not entitled to fly their flags. It will apply to these vessels when seeking entry to Parties' ports or while they are in port. Certain artisanal fishing and container vessels will be exempt. The Agreement gives special emphasis to the requirements of developing countries to support their efforts to implement the Agreement.

The PSMA seeks to verify that such vessels have not engaged in IUU fishing so that fish caught from IUU fishing activities are blocked from reaching national and international markets, thereby reducing the incentives for perpetrators to continue to operate. The worldwide implementation of the Agreement, coupled with better performance by flag States, supported by effective Monitoring, Control and Surveillance (MCS), and supplemented by market access and trade measures would not only strengthen international efforts to curb IUU fishing but would, as a result, also support the strengthening of fisheries management and governance at all levels.

Article 16 of the PSMA (2009) indicates that to facilitate implementation of this Agreement, each Party shall, where possible, establish a communication mechanism that allows for direct electronic exchange of information; with due regard to appropriate confidentiality requirements. Additionally, the agreement recommends that a Party shall maintain the relevant information available to the public and provide such information, upon written request, to the owner, operator, master or representative of a vessel with regard to any recourse established in accordance with its national laws and regulations concerning port State measures taken by that Party. This included information pertaining to public services or judicial institutions available for this purpose, as well as information on whether there is any right to seek compensation in accordance with its national laws and regulations in the event of any loss or damage suffered as a consequence of any alleged unlawful action by the Party. The Agreement requires better and more effective cooperation and information exchange among coastal States, flag States and regional fisheries management organization and arrangements (RFMOs).

The Compliance Agreement (1993) is intended to improve the regulation of fishing vessels on the high seas by strengthening 'flag-state responsibility.' Parties to the Agreement must ensure that they maintain an authorization and recording system for high seas fishing vessels and that these vessels do not undermine international conservation and management measures. The Agreement aims to deter the practice of 're-flagging' vessels with the flags of States that are unable or unwilling to enforce such measures. Provisions are made for international cooperation and exchange of information in implementing the Agreement, particularly through the FAO. Article VI of the Agreement says that each Party shall make readily available to FAO the following information with respect to each fishing vessel entered in the record required to be maintained under Article IV: (a) name of fishing vessel, registration number, previous names (if known), and port of registry; (b) previous flag (if any); (c) International Radio Call Sign (if any); (d) name and address of owner or owners; (e) where and when built; (f) type of vessel; and (g) length. And each Party shall, to the extent practicable, make available to FAO the following additional information with respect to each fishing vessel entered in the record required to be maintained under Article IV: (a) name and address of operator

(manager) or operators (managers) (if any); (b) type of fishing method or methods; (c) molded depth; (d) beam; (e) gross register tonnage; (f) power of main engine or engines. The agreement also emphasized that each Party shall ensure that each fishing vessel entitled to fly its flag shall provide it with such information on its operations as may be necessary to enable the Party to fulfill its obligations under this Agreement, including information pertaining to the area of its fishing operations and to its catches and landings.

In line with the FAO Code of Conducts for Responsible Fisheries (1995), premium markets promote sustainable and responsible fishing practices through a number of certification schemes such as Marine Stewardship Council (MSC) and Friend of the Sea (FOS). Eco-labeling seafood requires fisheries to meet sustainable and responsible fishing practices to deter, mitigate and eliminate IUU fishing practices.

The U.S. Seafood Import Monitoring Program (SIMP) establishes, for imports of certain seafood products, the reporting and recordkeeping requirements needed to prevent IUU-caught and/or misrepresented seafood from entering U.S. commerce. SIMP requires the importer of record to provide and report key data, from the point of harvest to the point of entry into U.S. commerce. The collection of catch and landing documentation for priority seafood species will be accomplished through the International Trade Data System (ITDS), the U.S. government's single data portal for all import and export reporting. Shrimp, dolphin fish, and tuna are popular seafood items of Vietnam that are impacted by the SIMP.

Vietnam was among 107 States that signed the Convention on the Law of the Sea on 30 April 1982. However, some specific instruments dealing with IUU fishing and responsible fisheries have not been ratified by the Vietnamese government, such as the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing vessels on the High Seas (FAO Compliance Agreement (1993)); The United Nations Fish Stock Agreement (UNFSA (1995)); and the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing PSMA (2009) which was entered into force in 2016 with a current number of 49 states and one Member Organization (EU). Accordingly, the Vietnam government has been involved in number of meetings and workshops held under the UNFSA (1995) and PSMA (2009) and the central government is considering to possibly ratify these agreements in the near future.

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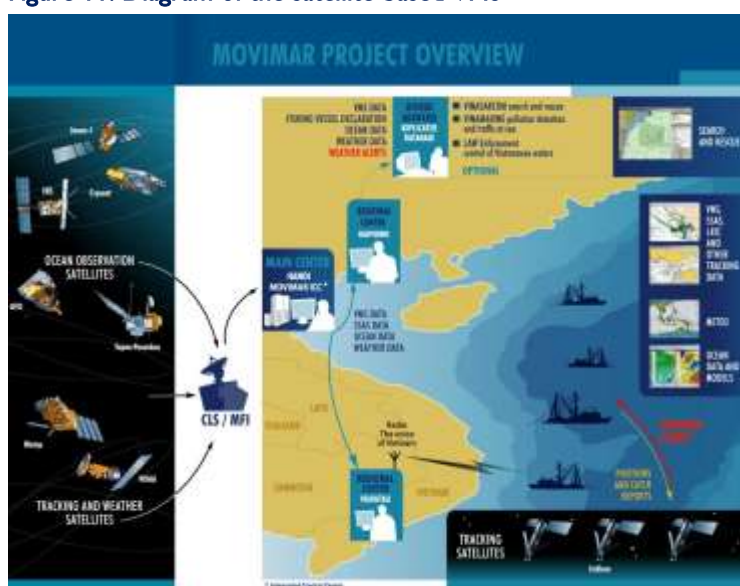
2.4 Existing technologies enabling CDT

2.3.1 Vessel Monitoring Systems (VMS)

In 2012, the first satellite-based VMS was introduced and installed in Vietnam onboard 3,000 fishing vessels including trawl, purse seine, gillnet, and hook and line fisheries under the CLS Argos/MOVIMAR project. The system provides fishing vessel information, including location and time, and oceanographic data such as seawater temperature, salinity, chlorophyll, phytoplankton, water current, and weather information. The system also provides e-catch report and e-logbook features. There are two regional centers for onshore stations in Hai Phong and Ba Ria-Vung Tau, and a main center in Hanoi.

Despite the potential of this advanced VMS technology, the number of vessels currently using the system is much lower than 3,000 units. Vessel owners cannot get data directly from the equipment, but instead need to contact the main center in Hanoi to request their vessel locations.

Figure 11. Diagram of the satellite-based VMS



Another VMS operating in Vietnam uses High Frequency (HF) integrated with GPS (VXI700), with a main onshore station in Hanoi and 26 other stations in coastal provinces in Vietnam. It has been installed onboard 8,900 fishing vessels of more than 90 HP and across different fishing fleets.

Other VMS devices are being trialed in Vietnam, such as Zunibal, on a small number of vessels. Initial reports show positive results with the potential to be scaled across Vietnam fisheries as they meet both vessel owner and fishery managers' requirements of being affordable, resistant, and low

maintenance. They also meet authority requirements as they use solar powered technology that cannot be switched off.

Figure 12. Zubinal VMS tracking system for tuna longline fishing vessel in Vietnam



2.3.2 Fisheries statistics and database system

Currently, Vietnam has no specific system for fisheries statistics. The General Statistics Office (GSO) is officially in charge of collecting all socio-economic data, but the fisheries data collection is not detailed enough to support fisheries management in terms of collecting protocols and accuracy. Monthly, the provincial agencies report fisheries operations, achievements, and production to DFISH. Additionally, the Research Institute for Marine Fisheries (RIMF) and Vietnam Institute of Fisheries Economics and Planning (VIFEP) conducts surveys and research programs to provide specific information in relation to the fisheries sector and develops scientific evidence for management and policy-making purposes. Nevertheless, some consider that the data collection and analysis conducted by these institutes do not align well with their intended purposes.

The Fisheries Information Center (FICen) under DFISH is responsible for managing the website of the Directorate and the national database for the fisheries sector. A national fisheries database, VNfishbase, is under development with financial support of the Coastal Resources for Sustainable Development (CRSD) project and at the time of writing was expected to be available by the end of February 2018. The FICen is responsible for developing, managing, and maintaining the website and electronic portal, for establishing the electronic public services of the fishery sector, and collaborating the development of regulations related to fisheries information, statistics, forecasting, and the application of information technology. They also work to establish and develop the networks of fisheries statistics between DFISH and local levels. The center cooperates with relevant organizations to implement communication and outreach, and to disseminate fisheries technology and economic information (Decision 578/QD-TCTS-VP dated 21 September 2015, Decision 914/QD-TCTS-VP dated 01 September 2017).

The VNfishbase has been integrated with a number of modules to manage information related to capture fisheries such as fishing vessel registration, vessel safety examination, license, logbook, landing data, and provincial fisheries profiles. The database is now under trial with the eight provinces involved in the CRSD project (Thanh Hoa, Nghe An, Ha Tinh, Binh Dinh, Phu Yen, Khanh Hoa, Ca Mau and Soc Trang) and was expected to be in operation on 28 February 2018.

FICen's information technology infrastructure has nine servers in which six units are newly equipped under support from the CRSD project. The center is capable of managing and operating the DFISH website/portal as well as the web-based national fisheries databases. The developing national fisheries database under the CRSD project will be installed and managed by the FICen server system. Table 2 details some important IT infrastructure needs.

The center also has four professional divisions: Administrative, Statistics and Forecasting, Information and Communication, and Division of Information Technology. Currently, this center has a Director and Vice Director and 28 staff members. The Division of Information Technology (IT) is responsible for managing the IT infrastructure, database, and portal management.

Table 2. Key IT infrastructure of Fisheries Information Center (FICen) under DFISH

Order	Items and technical requirements	Unit	Quantity
I	Connection System		
1	Internet Router/Firewall	unit	2
2	Core Switch	unit	2
3	Switch	unit	6
4	Core Firewall	unit	2
5	Wireless router	unit	16
6	Net Management System (NMS)	system	1
II	Server		
1	Blade Chassis	set	1
2	Blade Server	unit	6
3	Server administration system	system	1
4	Back up cabinet	unit	1
5	Back up device	unit	1
III	Software and Application		
1	Windows Server	set	6
2	SQL Server	set	2

3	Virtualization software	set	1
	- VMware vSphere Standard	set	12
	- 1 Year Support & Subscription basic	set	12
	- VMware Center Server Standard	set	1
	- 1 Year Support & Subscription basic	set	1
IV	LAN and accessories		
1	UTP Cat6,4pair	box	130
	<i>Cat 6 hub</i>	<i>set</i>	<i>286</i>
	<i>Connection 24 port Cat6</i>	<i>set</i>	<i>33</i>
	<i>Fiber optic path cord 3.0m Cat6</i>	<i>unit</i>	<i>572</i>
	<i>Fiber optic path cord 2.0m Cat6</i>	<i>unit</i>	<i>635</i>
	<i>Fiber cable 8 core: 8 core/8FO</i>	<i>m</i>	<i>500</i>
V	Server room		
1	UPS 3 phases 20KVA	set	2
2	Air conditioner	set	2
3	Power system	set	1
4	Anti-lighting system	package	1
5	Camera	package	1
6	Door observation system	package	1
7	Firefighting system	package	1
8	Desktop computer	set	30
9	Laptop	set	15
10	UPS for Desktop computer	set	30

Table 3. Human Resource of Fisheries Information Center (FICen) under DFISH

Division	Information Technology	Information and Propaganda	Statistics and Forecasting	Administration	Director	Deputy Director
Staff Members	4	7	8	7	1	1

In regard to management policy, the Department of Capture Fisheries under DFISH is in charge of developing a legal framework specifically for the fishing industry. This department is considered the “state management unit,” whilst FICen is a “public service unit.” The department of Capture Fisheries, under DFISH, is responsible for providing advice to DFISH for developing legal documents in relation to mechanisms and policies on standards, processes and procedures; national databases and management information in fishing industry; as well as fish handling and reducing post-harvest loss, fisheries logistics, and crew and fishing boat safety.

The Fishing Vessel Monitoring Center (FMC) under the Department of Fisheries Resources Surveillance is responsible for managing VMS systems, particularly, the satellite-based VMS system, MOVIMAR. There are two centers in Hai Phong city and Ba Ria-Vung Tau province which are run by the Research Institute for Marine Fisheries (RIMF), however, these centers can only receive information in relation to oceanography to provide additional inputs for fishing ground forecasting activity. No information about vessel tracking is received. The central FMC is based in the main DFISH office and is comprised of 20 staff members. The center is equipped with two servers and 20 computers that facilitate the center to track fishing vessel logs.

Presently, the Asymmetric Digital Subscriber Line is being used to connect FICen with other relevant departments and relevant provincial agencies. It is expected that a leased line will be rented to ensure communication within DFISH; a separate leased line is being used to connect the satellite-based VMS system with service provider, CLS, which is based in France. Relevant stakeholders involved in management of the FICen are briefly described in Table 4.

Table 4. Relevant government agencies point of electronic integration process and system

Stakeholder	Database management	VMS system	Traceability
Directorate of Fisheries (DFISH)	Management of national fisheries database (VNfishbase)	System management	System management
Sub Department of Fisheries	Encode data of fishing vessel registration, licenses, VMS/IMO number (if any)	Management local VMS, cross-check for validation	Check catch documentation, catch statement, VMS, vessel/crew information, grant CC
Port authority	Provide Catch/report declaration forms Encode catch declaration, logbook, update Catch statement database	May access VMS system to crosscheck logbook information	Provide catch declaration forms, check catch documentation, grants Catch statement
Fishers (skippers, vessel owners)	Provide logbook/catch report, fill in e-logbook/catch report (if any) to port authority	Ensure the VMS device properly operated onboard	Submit catch declaration, show license, registration document
Transshipment vessels	Provide procurement/transshipments logbook, declaration to port authority	Ensure the VMS device properly operated onboard	Submit transshipment declaration, show license, registration document
Fish buyers	Submit copies of Catch documentations (catch declarations/reports, transshipment) to Port authority	Provide information of VMS number incorporated in fishing license attached with the catch bought	Submit information of catch documentations (Declaration, report, transshipment) to port authority
Seafood processors	Provide key information of the company/plant to DFISH and registered to have management ID/Code	Provide information of VMS number incorporated in fishing license attached with the catch bought	Submit information of catch documentations (Declaration, report, transshipment) to port authority/Sub-Department of Capture fisheries to get CS and CC respectively
Seafood exporters	Provide information of the company to DFISH and registered to have management ID/Code, track/update transportation information into traceability system		Attached CCs, transportation information

2.3.3 Design of enabling standards

The Vietnam yellow-fin tuna Fishery Improvement Project (FIP) is being coordinated by WWF and VINATUNA with the participation of relevant stakeholders such as DFISH, RIMF, local tuna processors, and fishers in Binh Dinh, Phu Yen, and Khanh Hoa provinces. A FIP traceability code has been developed and trialed at seven tuna processing plants, and four have been audited by third party. The main objective of this FIP traceability code is to separate “eligible FIP fishes” and “non-FIP fishes” toward MSC certification.

The FIP traceability Code includes two parts, code A and B. Code A is the general, obligatory code and code B is an internal code to match buyer and import market requirements.

The General Code:

General code including 06 digits: FI-Company Code-Julian Date – Processed year – Name of fishing port – Name of fishing gear. Example: FI-207-002-6-05-1

Number 1: The first two digits; FI stand for Vietnam yellow-fin tuna FIP

Number 2: Company code; Each company will have a export code and three last digits on their export code stand for the company. The FI and company code can be printed on carton box of final products, others can be stamped.

Number 3: Julian date (03 next digits) Ex: Julian date (002)

Number 4: Year (01 next digit), with only one last digit for the year. For example: 6=2016

Number 5: Coding on the fishing ports (02 next digits). All tuna landing ports are coded. The list of coded fishing ports *can be updated, revised when the fishing ports changed*. Ex: Hon Ro fishing port = 07

Number 6: Fishing gear, of which, handlines are coded as “1” and longlines were coded as “2.” The list of coded fishing gears *can be updated, revised when the fishing gears changed, at this time, FIP ONLY applied to hand and long line*.

The Internal Code

The internal code “B” will be continued after General Code (A). Ex: FI-207-002-6-5-1 – “B” and will developed by companies themselves and applied for FIP products.

3. INDUSTRY ENGAGEMENT IN CDT

USAID Oceans conducted a Rapid Partnership Appraisal (RPA) to evaluate private sector’s engagement in CDT initiatives and to identify limited-effort, high-impact partnership opportunities. As a result, a number of companies were interviewed that represented the capture, processing and export segments of the supply chain. Several key themes emerge and are presented in this section.

The RPA was conducted through desk research, in-depth interviews with a selection of public and private stakeholders, industry associations, seafood and fisheries companies, technology providers, port authorities, and non-profit organizations. Interviews were conducted in both Hanoi and Nha Trang city, Vietnam. Key findings are presented in the section below, with a profile for each potential partner presented in Annex III.

In brief, interviews demonstrated that an eCDTS is perceived as the right solution to improve traceability and transparency in the seafood supply chain. However, tuna fisheries have expressed strong concerns around sharing information about their catch and fishing grounds. Without legal obligations to provide catching data, fisheries may continue to keep such information confidential considering it as a competitive advantage. The best incentive for sharing data would be the guarantee of premium prices and the possibility to be categorized as first grade quality by an independent quality assessment system.

3.1 Industry partners

During RPA interviews, tuna fishers in Nha Trang city voiced concern on their ability to maintain a CDTs without sufficient incentives. Sharing such detailed information, including capture locations, type of species, and volume represents a risk to lose potential catch areas to competitors, especially in a context of declining tuna stocks and higher competition with a growing number of fishing fleets. In addition, recording and maintaining a paper-based catch documentation system is still considered as time consuming and sometimes not a necessity as fishers usually sell their products to wholesalers who do not often require traceability information.

For tuna processors, getting sufficient CDT information is also considered as a laborious process. Most tuna processing factories in Nha Trang source raw materials domestically, either directly from fishers or from traders in Binh Dinh, Phu Yen, Khanh Hoa and Quang Ngai provinces. In most cases, the CDT information is difficult to verify, as the captain is not always available, or does not meet minimum requirements. To address this issue, some tuna processors have directly arranged supply contracts with local fishing vessels and importers as they are also sourcing raw materials from other countries including Thailand, South Korea, Taiwan, and Indonesia and have accompanying CDT documentation.

USAID Oceans observed good traceability practices amongst several long and handline tuna fishery actors, including Hung Vuong, Tin Thinh, Sustainable Seafood Company, Anova, and the Fishing and Living program. Interviewed tuna processors understand the growing market demand for sustainable tuna sourcing and the benefits of eCDT to improve their traceability management systems, meet buyers' requirements in export markets, sustain business with existing buyers, and obtain access to high value markets like the EU and US. They recognize that production planning, marketing, and certifications can provide some advantages in setting up a cost-effective and efficient seafood traceability system. They also indicated that their raw material suppliers, including skippers, boat owners and buyers, would be able to record and maintain data in e-logbook or electronic systems.

However, supply chain actors concerned about the extra costs associated with new data collection technology, as well as information security, particularly related to capture information. These findings confirmed the need to present concrete benefits of eCDT with industry members, including assurance that data will be confidential and participation rewarded.

3.2 Information and communication technology providers

In Vietnam, marine satellite communication equipment and technology is available nationwide, provided by several large companies such as the Vietnam Post and Telecommunication Group, Vietnam Maritime Communication and Electronics LLC, VTC Telecommunications JSC, HT Vietnam Services Joint Stock Company, Zunibal, Viettel, among others. However, despite high interest in the fisheries sector, technology providers are keeping a cautious approach, looking for more clarity in future regulations, which also depend on future regulations for satellite communications services licensing.

3.3 Associations, organizations, and research institutes

A range of well-established organizations were identified through the RPA that can provide valuable support for the design, promotion and implementation of an eCDTS in Vietnam.

As industry representatives, the VINATUNA, VINAFIS, and VASEP can play a key role in building trust with fishers, traders, and processors, and to mobilize active participation and conduct trainings on data recording technology.

WWF Vietnam is also particularly active in promoting fisheries improvement protocols (FIPs) for the tuna industry and has built strong connections with the local industry associations. In addition, the Seafood Task Force is also promoting sustainable and responsible seafood industry in Vietnam.

3.4 Labor and welfare

This assessment had limited exposure to labor and welfare issues. In conducting the assessment, the following details were gathered in relation to CDT protocols and capabilities but are not a comprehensive report on human welfare conditions in Vietnam's fisheries sector.

Bearing the characteristics of a small-scale fishery, many fishers involved in the industry are part-time fishers and the country has no fisher registration, even though some bylaw documents such as Decree 66/2005/ND-CP have been established. Decree 33/2010/ND-CP regulates that fishing vessels must be accompanied by a list of crew and that vessel owners must buy at-sea insurance for crew and other peoples working onboard. Decree 66/2005/ND-CP also regulates that that fishing vessel must be equipped with at sea safety equipment, a communication system to ensure the safety of the crew and the vessel, and a working contract between the crew and vessel owner. Vietnam's government has a program to support insurance for fishing and support vessels, and in some cases, fishing vessel owners may receive financial support to buy communication devices.

In addition, under the support program promulgated by Decree 67/2014/ND-CP, the government has a policy to promote commercial banks to provide loans for fishers to build up large and modern fishing vessels. The government also provides a subsidy for capacity building in use of new technologies, fishing gears, and vessels. Important infrastructure and facilities for the fishing industry, such as fishing ports, landing sites, and shelters, are also invested in by the state budget. Fishers in the four central provinces of Ha Tinh, Quang Binh, Quang Tri, and Thua Thien Hue also receive financial support to attend vocational training to support them securing jobs outside of the fishing industry.

In relation to seafood processing, many companies were found to operate with a high level of concern for social and human welfare issues, particularly to comply with buyer and market requirements. Some certain International Organization for Standardization (ISO) standards and third-party certificates, like MSC, have mandatory social responsibility standards for approved processing plants and seafood items. Research found that most processors utilize working contract and strictly comply with national labor law in terms of working hours and conditions. According to current labor laws, all labors working for more than three months must be provided with social security and health insurance, which seafood processing plants are normally in compliance with.

Some notable issues that may be of relevance to fishers in Vietnam include a lack of working contract issuance; normally verbal contracts are made between crew members and either the skipper of vessel owner. Therefore, it is difficult for crew to receive long term insurance and, for the vessel owner, it is difficult to plan fishing trips due to weak commitments between the fishers and the fishing operation and a current scarcity of laborers in Vietnam's fisheries sector. Fishermen tend to be older in age in Vietnam as the country's younger generation is mobilizing in shore where better education and work opportunities can be found.

Fishers are normally paid with a share of the trip's net profits. Typically, the net benefit of each fishing trip is divided; the vessel owner will take a half and the rest will be shared by the crew including the skipper and chief engineer. Crew benefits will be distributed based on a weighted scale, with the skipper normally receiving the largest cut and fishers receiving the least.

Workers involved in tuna processing plants receive a salary based according to government regulations on the rights, responsibilities and payments of workers. Extra working time and other benefits are paid by the company and are based upon the worker's qualifications, experiences, and productivity.

Female labors account for 65-70% of the total number of laborers engaged in tuna processing plants, whilst in-port fish collection and buying are conducted almost 100% by women. There are no established statistics on the gender aspects in fisheries management bodies, but from observation, men make up the majority of personnel in fisheries management agencies and authorities. It was observed that no women are working onboard offshore fishing vessels, however, some small-scale fishing boats have fisherwomen onboard that are directly engaged in fishing operations, as well as transporting and selling catch in local markets.

4. KEY FINDINGS

Upon consideration of the existing drivers towards eCDT from a socio-economic, policy and technology perspective, complemented with a rapid assessment of relevant private sector themes around eCDT, the following key findings are presented.

Through desk and in-field research, USAID Oceans identified several critical gaps in Vietnam's fisheries regulations, infrastructure, and industry preparedness. Application of an eCDTS may be challenged by several notable reasons including insufficient infrastructures and facilities, a current limitation in human capacity, and inconsistent consensus for eCDTS among stakeholders involved in the sector. These challenges are not seen as critical obstacles to implementing an eCDTS, but are highlighted below so that they may be acknowledged and address in the eCDTS development process:

Lack of a unified, interoperable sector database:

- Fishing vessel registration, licensing is not managed by a coherent and unified national database and is not readily or publicly available.
- Port in and port out procedures to gather fishing vessel information are recorded under a paper-based scheme by a Coastguard officer; however, the data/information is not digitalized nor shared with other fisheries management agencies.
- Catch certification is currently being implemented based on information being provided in "trust" by fishing vessel owners, skippers, middlemen, and fish buyers and through a paper-based system. The lack of a national fisheries database makes it difficult cross-check and verify information.

Limitations to current protocols and regulations:

- Logbook data is still paper-based, with poor completion levels and low return rates. The information provided by the logbooks is relatively reliable but not fully sufficient to meet EU or US market requirements.
- A catch declaration measure has not been implemented and may be confused with catch reporting under the new bylaw document (Circular 02/2018/TT-BNNPTNT).
- List of IUU fishing vessels is unavailable publicly, making it difficult to identify or regulate IUU fishing practices. Enforcement for both fishing vessel operations and compliance with management measures, catch certification was, overall, found to be weak.
- Seafood Import/Export monitoring is complicated by a lack of linkages between imported raw materials and exported seafood products. Current monitoring procedures make it difficult to verify and separate the exporting seafood processed from imported materials and domestic catches.
- International instruments are at varied levels of acceptance in Vietnam. Vietnam signed the UNCLOS (1982) but has not yet ratified the PSMA (2009), UNFSA (1995), or FAO Compliance Agreement (1993).

USAID Oceans also identified several opportunities with Vietnam that may be leveraged in support of eCDTS implementation. These include:

Ongoing initiatives already in place:

- A legal framework for catch certification and management of fishing vessel operation is under enhancement and will be entered into force in 2019.
- The national fisheries database has been upgraded, but at the time of writing was not yet available for managing information nationwide.
- A list of designated ports is under consideration to public by the central government (DFISH).
- Catch transshipment at sea is already being recorded on the paper-based scheme and shall be enhanced under a new legal framework.

Existing technology advancements:

- VMS installation has occurred in Vietnam, however, despite the large number of fishing vessels using VMS onboard, the current implementation scheme does not facilitate robust use of vessel tracking data by competent authority for issuing catch certificates. While this is currently an observed gap, there is an opportunity to strengthen VMS implementation for improved eCDTS capabilities.
- The National Fisheries Information Center (FICen) may have sufficient ICT infrastructure for managing national fisheries database, however, there is a need to build its capacity and develop additional tools and software.

Industry Readiness:

- Seafood processors are willing to apply CDTS, especially processors targeting EU and US markets.
- Relevant fisheries associations, including VINAFIS, VINATUNA, VASEP have expressed interest to be more involved in promoting eCDT. Industry can be mobilized, particularly if Vietnam considers the development of a national plan of action for eCDTS in its capture fisheries.
- PPPs can support eCDTS implementation, and a number of private sector companies in seafood trading/processing, technology and telecommunications providers, industry associations are interested in promoting a sustainable and responsible seafood industry in Vietnam.
- Catch transshipment at sea is already being recorded on the paper-based scheme and shall be enhanced under a new legal framework.

Additionally, a force field analysis was used to identify and weigh the forces for and against change; in this case, the implementation of an eCDTS in Vietnam’s capture fisheries. Some of the important, identified forces of change identified by the validation workshop participants were Vietnam’s desire to overcome its EU-issued yellow card, requests by global markets and regional fisheries management organizations, and the desire to maintain market share and build a positive reputation for Vietnamese seafood. Forces against change were also identified as challenges, including the country’s large fishing fleet, sizeable small-scale fishery, and weak cooperation and partnership between stakeholders, such as between the Ministries and actors along the seafood supply chain. Key forces identified for and against the application of eCDTS in Vietnam fisheries are described in Table 5.

Table 5. Forces for and against application of eCDTS to Vietnam fisheries

Forces for Change	Forces against Change
<ul style="list-style-type: none"> • Market requirements • Improved/quicker ability to trace back information • Current pressure on fishery sustainability • Improved state management for fisheries • Customer approval prior to processing • Batch/lot information • Provide tools to verify • Premium price • Sustainable business • Fleet management • Regulatory requirements • Combating IUU • Support from international organizations • Transparency, wellbeing • Seafood reputation • Search and rescue • Meeting international and regional commitments 	<ul style="list-style-type: none"> • Small scale fisheries • Fishing ground confidentiality • Difficult to adapt to new technology • Don’t want additional regulation • Need financial support • Unclear roles and responsibilities • Additional costs • Extra work and time required • Education background may be needed • Weak enforcement • Lack of regulation for middlemen and brokers • New law is not in effect

Application of an eCDT system will improve data accessibility and accuracy in a cost and time effective way. It will provide real time data collection and validation; facilitate the issuance of catch declaration while reducing risks of falsification; and can address EU warnings and respond to market requirements to enhance the country's seafood reputation and provide systemic benefits to the seafood industry. It requires substantial investments in technology, education, and the formation of new PPPs to determine the best models and devices to suit fishery needs and meet necessary requirements. Poor awareness of benefits and limited capacity amongst fishers, the Port Authority, and local agencies may be addressed through programs for training, conduct of forums, and outreach.

Table 6. Possible solutions to leverage forces in support of eCDTS implementation

Forces for Change	Actions and Solutions
<ul style="list-style-type: none"> • Market requirements • Fast to trace back information • Current pressure on fishery sustainability • Improve state management for fisheries • Customer approval prior to processing • Batch/lot information • Provide tools to verify • Premium price • Sustainable business • Fleet management • Regulatory requirements • Combating IUU • Support from international organizations • Transparency, wellbeing • Seafood reputation • Search and Rescue • Meeting international and regional commitments 	<ul style="list-style-type: none"> • Improve information channels to connect with markets, supplier roundtables • Awareness raising on benefits of eCDTS • Encourage interests of international and regional organizations, donors to support application of eCDTS in fisheries • Leverage eCDTS data to inform fisheries management decisions and planning through connection to management systems • Guidelines on market requirements related to labeling information • Training on use of tools/devices for CC and verification of catch/vessel information required for traceability • Promote incentives to fishers, branding name of seafood • Raise the importance of maintaining market share, reputation and market requirements • Application of VMS system, online databases for monitoring, control and surveillance purposes • Implement regularly propaganda program on current fisheries law • Mandatory use of eCDTS to monitor and inspect, verify catch and fishing vessel operating information • Demonstrate the usefulness of eCDTS in prevent, deter and combat IUU fishing practices • Support enhancement of MCS to ensure the equity of fishing fleets in terms of accessing legal fishing grounds, mitigate illegal fishing practices • Promote involvement of mass media and other communicational channels to improve Vietnam seafood reputation and positive impacts of good practices/eCDTS • Disseminate results and helps that eCDTS may have to S&R operations • Disseminate information requested by market and current/baseline status of Vietnam fisheries • Develop guidelines and disseminate information of international and regional commitments that Vietnam is a member

Table 7. Possible solutions to mitigate forces against application of eCDTS to Vietnam fisheries

Forces against Change	Actions and Solutions
<ul style="list-style-type: none"> • Small scale fisheries • Fishing ground confidentiality • Difficult to adapt to new technology • Don't want regulation • Need financial support • Unclear assignment • Additional costs • Extra work and time required • Education background • Weak enforcement • Lack of regulation for middlemen and brokers • New law is not in effect 	<ul style="list-style-type: none"> • Promote involvement of fisheries associations, local community, landing sites and fishing port authorities, partnership mechanism • Commitments of government and stakeholders involved in seafood supply chain to keep information confidentially • Provide capacity building through training, piloting activities to fishers and relevant stakeholders • Conduct propaganda programs, provide incentives for compliance with management measures • Develop clear mechanisms/policies for investment and operation of the system, promote PPP mechanism • Review, amend the legal framework to ensure the consistent institutional arrangements and responsibility by competent agencies from central to local government • Build awareness of benefits of eCDTS application, long-term impacts for business sustainability • Seek the best fit models, technical solutions, training on use of applications/tools • Provide regular capacity building, forums, dialogues, at field technical supports • Implement NPOA-IUU, inspection plan and improve MCS system • Review, amend/develop bylaw documents to ensure their involvement/responsibilities • Arrange necessary preparations, including development of bylaw documents, associated project proposals and resources, implementation plan for after law goes into effect

5. RECOMMENDATIONS

USAID Oceans strongly recommends the implementation of an eCDTS in Vietnam that supports international and domestic market requirements, promotes fisheries management, and supports human welfare through encouraging responsible seafood sourcing. Through the collection of valid and verifiable data, eCDT systems are powerful tools for decision making, policy setting, and management—particularly for fisheries management, a key priority given the global significance and current vulnerability of Southeast Asia’s marine resources. With effective implementation, eCDT systems can simplify data collection and improve upon traditional methods, such as statistical sampling, that are currently used for gathering fisheries management data. eCDT systems also help to improve data reliability and validity, eliminating much of the uncertainty that can be introduced through manual data entry.

From its research findings, USAID Oceans has developed recommendations that Vietnam may consider in support of the implementation of an eCDTS. These recommendations are presented below and supplemented by specific, technical recommendations that can be found in Annex IV. The following section presents recommendations for implementation of an eCDTS in Vietnam, including potential strategies for system development and implementation, as well as recommendations for public-private partnership strategies that can be used to support eCDTS implementation.

Harness the electronic ASEAN Catch Documentation Scheme (eACDS) and USAID Oceans' recommendations for public-private partnership opportunities to kick-off Vietnam's eCDT efforts, with the possibility of setting up a pilot site. The opportunity presented by SEAFDEC to position its eACDS as a “plug-and-play” system should be considered as DFISH kicks off its own formal processes to set-up a robust eCDTS. The eACDS can be leveraged as a learning tool or platform that can help capacitate government stakeholders on eCDT as well as build a business case for both government and industry to consider around the role an eCDTS can play in facilitating more efficient transactions between government and industry and improving trade with the ASEAN more generally. Adopting the eACDS also presents a relatively low-cost investment on the part of Vietnam as the back-end and front-end support for the eACDS is already in place with simultaneous live case studies to learn from. USAID Oceans recommends that a pilot site be selected in one of Vietnam's main tuna fishery provinces, Binh Dinh, Phu Yen and Khanh Hoa province. Among these three provinces, Nha Trang, Khanh Hoa may be the best candidate, as a majority of seafood processors are located in Khanh Hoa. Hon Ro fishing port in Khanh Hoa is one of the biggest ports for tuna vessels landing with good infrastructure supported by the CRSD project. Khanh Hoa is also a central area with Cam Ranh airport nearby, which will be useful for monitoring progress from the Central Government as well as for exporting seafood products.

Having the eACDS as the baseline for Vietnam's eCDTS will facilitate seamlessly data exchange with other countries in ASEAN that are increasingly starting to request Catch Certificated for any fish imported from other ASEAN Member States. To maximize its value for Vietnam's journey towards an eCDTS, the eACDS can also be positioned as the initial platform that is piloted in a representative port, where in this case, the eACDS would be “de-risking” Vietnam's future investment into the sector by explicitly addressing the unknowns inherent to such an intervention, testing various approaches, and validating market interest within a live environment, all the while limiting government exposure to financial and political risk. For such a pilot, a “public-private partnership” (PPP) can be set up between DFISH and willing industry players. This PPP could establish a safe test environment for government and industry to trial different approaches towards acceptable eCDT, with industry providing regular input and offering their fleets and supply chains as case-studies for the application of an eCDTS.

DFISH can also take advantage of ongoing efforts under the USAID Oceans program to “underwrite” the risk inherent with deploying a new technology such as eCDTS. Specifically, USAID Oceans' relationships with various industry users, technology providers, and other ASEAN government partners can help shorten the learning curve of the Vietnam government by presenting use-cases, live demonstrations among other learning sites, pathways for implementation, visibility on possible technology providers and solutions, policy innovations and ultimately lessons learned and best practices. Annex V outlines some of the technologies USAID Oceans is currently piloting across learning sites that can be immediately tested or deployed.

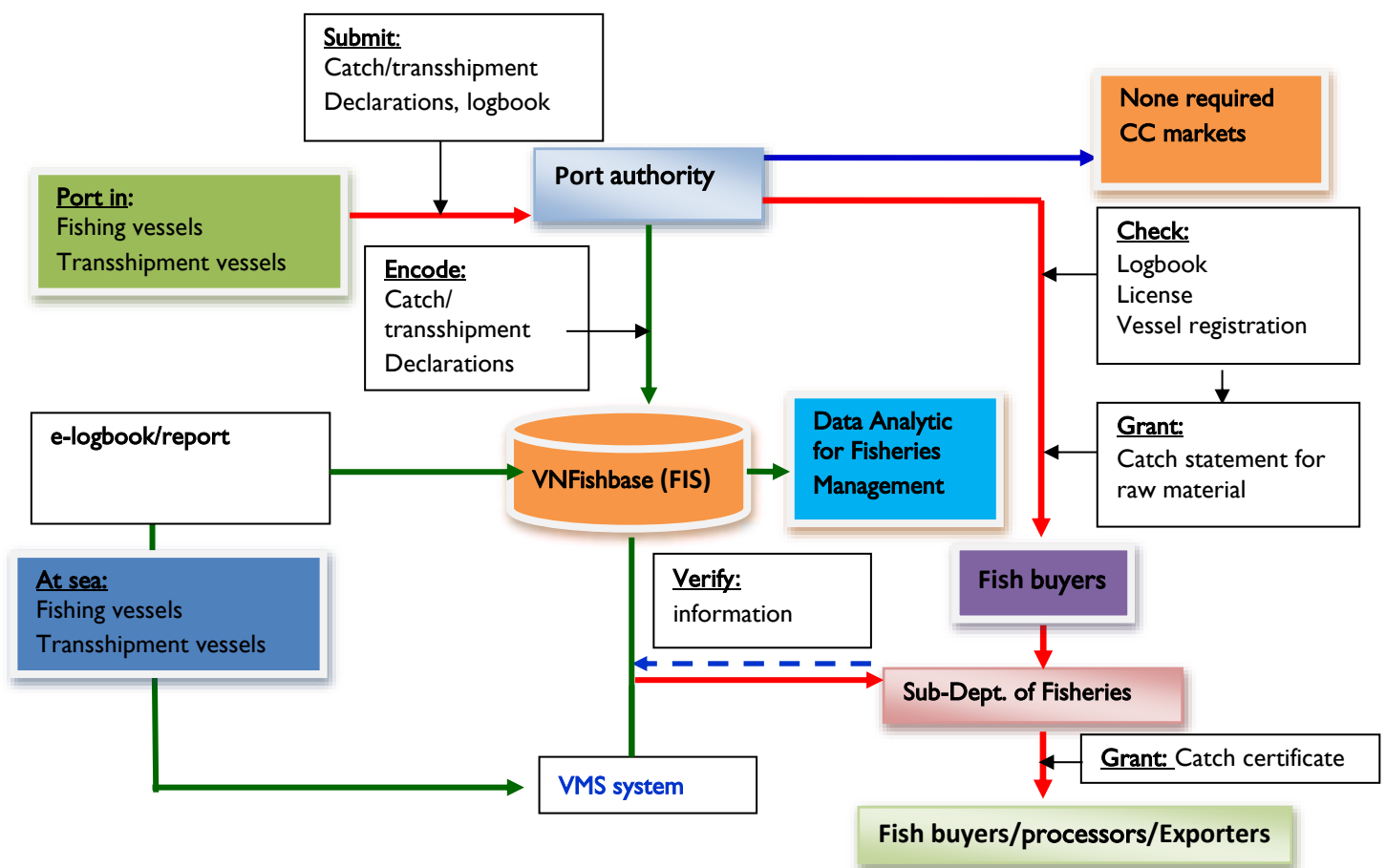
As the current national fisheries database of Vietnam is in the process of being upgraded, findings show that the database will already cover some data collection components that are also part of the eACDS, such as fishing vessel, fishing license, vessel owner, fishing port, and catch/landing data. However, additional components may need to be developed to ensure effective application of the eACDS, including the integration of FAO fish species codes, and information on importer/exporter, processing plants, and the fishing crew. Specific recommendations for modifications are included in Annex IV.

Implement a robust eCDTS as a means to engage in meaningful dialogue with industry and the ASEAN towards boosting economic growth, advancing the trade interests of the country, and championing biodiversity. Industry engagement is critical, thus an eCDTS should be treated only as a tool or a means to an end, which is to improve Vietnam's fisheries management and boost its sustainable seafood trade, among others. The Government of Vietnam should leverage global interest towards traceability to position accordingly and engage with industry as a meaningful partner in economic growth and biodiversity conservation. The data collected by an eCDTS, 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.

A custom-built eCDTS can be developed to support these goals and provide the Vietnam’s public and private sector stakeholders with a robust eCDTS to meet mutual objectives. In support of this recommendation, USAID Oceans provides documented, site-based learning and downloadable technical resources that can support eCDTS implementation. Specifically, USAID Oceans can share its experience, best practices and knowledge from its ongoing implementation of eCDTS in other learning sites (e.g., Philippines and Indonesia).

For effective implementation, it is recommended that the human capacities technological infrastructures of the Port Authority and sub-departments of DFISH be strengthened. It is recommended that DFISH develop and enhance the national fisheries database to ensure data accessibility, additionally the sector’s MCS system should be enhanced to ensure the compliance of all relevant stakeholders in the seafood supply chain with fisheries management measures and regulations. Inspection of granting Catch Certificates shall be regularly conducted to mitigate associated risks. Specific recommendations and considerations that should be made in the development of a custom-built system are outlined in Annex IV.

Figure 13. Proposed eCDT system architecture



Data from the eCDTS, throughout the supply chain, can be used to guide fisheries managers and other government agencies to implement data-based policy; help business operators to better manage their operations; and, lastly, can serve as an important tool to improve human welfare and gender equity in the supply chain. The following table provides an overview of potential of eCDT system contributions to various stakeholders.

Table 8. The ways eCDT can contribute to government, business, and human welfare at different points in the seafood supply chain

	Port Out	At Sea	Import	Landing	On land transport	Processing	Domestic Market	Exporting	2nd Processor	Import
Government										
	Permit Licensing	Fish refugia (Reserves)	Traceable (origin and quality)	Combating IUU	Food security	Processing data cost & sustainability	Food safety & security	Health certificate	GDP	Interoperability
	Small Boat Licensing	Gear restrictions	Tariff	Port State Measures	Nutrition security	Catch certificate	Raw material supply	Labeling	Trade balance	Interpol
	Fisher Registration	Threatened & endangered species		MCS	Logistic (input)			HACCP	Customs	
	Counter-trafficking in persons	By-catch (species composition)		COLD	Distribution			Fish supply - domestic vs export	Revenue	
		Protection of habitat (closures)			Cold Storage			Catch certificate		
		Sustainable fisheries management plans								
		Stock Assessments								
		Harvest level strategy								
		Area & time of harvest								
		Emergency responses								
Business										
	Fishing crew recruitment	Catch reporting		Fish grading	Company supply chain	Product recall		Better market access	B2B Certification: MSC	Market Access
		Fleet management				Reduce operational cost		B2B and B2C traceability		Satisfy customer demand
		Two-way communication				Post harvest lost				
		Stock management				Enterprise resource planning				
						Corporate Social Responsibility (CSR)				
						Occupational Safety and Health (OSH)				
Human Welfare & Gender										
	Legal age of crew	Crew communication		Fair purchase price for small-scale			Fair market prices	Better market access	B2B Certification: FairTrade	
	Fair pay	Safety at sea for small-scale fishers		Financial tools for small-scale			Organizing and influence of small-scale			
	Labor standards met						market access for small-scale			

Consider human welfare and gender equity as additional benefits of implementing a robust eCDTS.

Application of an eCDTS may provide information in relation to gender, age, and working skills of key stakeholders involved in the seafood supply chain and enable data monitoring. Nevertheless, a wide range of human welfare and gender issues, including how to allocate the benefits of each actor along the supply chain, such as the shares between vessel owner and crew), payments and benefits of labors/workers by seafood/fish trading/processing company may not be observed and monitored through basic data collection. To enable application of an eCDTS that addresses human welfare and gender issues, a set of standard Key Data Elements should be developed and made mandatory under relevant regulations.

Leverage Public-Private Partnerships (PPPs) to support eCDTS implementation. PPPs are strongly recommended to bring together resources (i.e. knowledge, technology and capital) for the development of eCDTS infrastructure. Developing effective PPPs can:

- Help to identify and engage Vietnam fishery industry members (fishermen, vessel owners, processing companies, buyers, exporters) with interests in exporting to the EU and US markets in the design and implementation of the eCDTS;
- Provide incentives for companies using the eCDTS with specific benefits (i.e. easier licensing and certificate approval and renewal, subsidies for small scale, etc.) to ensure industry commitments and embed eCDTS in their day-to-day process;
- Identify and engage information and communication technology companies, such as mobile and satellite telecommunication service providers, smart device suppliers, and data analytics services, to provide the technical foundation for digital data collection and validation;
- Identify and engage other associated stakeholders, such as financial institutions and insurance companies, who can provide the significant incentives for an eCDTS implementation and scale; and
- In the longer term, develop a marketing strategy, in concert with other departments and industry associations, to use the eCDTS as a tool to increase industry competitiveness, promote product quality, safety and responsibility, and create new market opportunities.

The potential partnership strategies to design and implement an electronic catch documentation and traceability system for Vietnam fisheries are described below.

Strategy 1 – Government-driven investment and management

Under this strategy, the central government invests in key infrastructures (IT infrastructures, VMS systems, and other devices needed, with relevant government agencies (FICen, Fishing Vessel Information Center under DFISH, Port Authority) responsible for system management and operations. Technology and traceability system providers (software/hardware, data analytics providers) deliver technical solutions, devices, and training activities, and in exchange will be paid for their services to maintain the system, by either by government or seafood supply chain members. Capacity building is conducted in collaboration with relevant fisheries associations, academia, and local/international NGOs.

Strategy 2 – Market-driven investment and government management

Under this strategy, the central government will request the private sector (technology/software providers and fishers/vessel owners, seafood buyers) to co-finance the installation/purchase of devices and software, with relevant government agencies (FICen, Fishing Vessel Information Center under DFISH, port authority) managing and operating the system. The technology providers will be responsible for maintaining and operating the system and will be paid directly from the seafood industry. Capacity building is conducted in collaboration with relevant fisheries associations, academia, and local/international NGOs.

These strategies are based on co-investments from both government and industry, which aligns with Vietnamese government's public and private partnerships approach to upgrade infrastructures in priority sectors. Regardless of the strategy selected, it is important to ensure that the approach address industry concerns related to data confidentiality. Both central government and technology providers will need to make

the necessary commitments to ensure confidentiality as a condition for fishing industry to be involved in the eCDTS.

The roles and responsibilities of each actor in strategies one and two are described in Annex III.

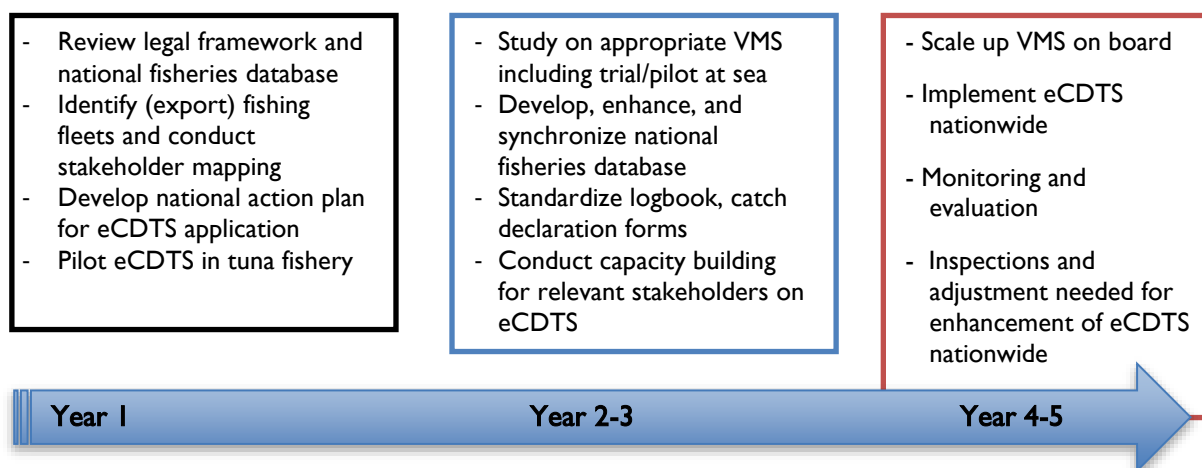
Develop a roadmap for near-, mid-, and long-term implementation of a robust eCDTS that guides public and private sector stakeholders in their roles, responsibilities, and expected contributions. As discussed in Section 2.2, the National Plan of Action for combating IUU fishing practices (NPOA-IUU) is under development and undergoing public consultation before the final draft is approved and formally issued by central government. According to the draft NPOA-IUU, two periods during 2017 to 2025 are planned. The amending fisheries law has been approved by the national parliament, however will not enter into force in 2019. Therefore, a number of sector activities will be implemented after the legal framework is enacted that can be leveraged to support eCDTS implementation.

In response to EU’s recommendations and warning, the following immediate 3-month action plans is recommended:

1. Develop and adopt all relevant legal framework (new Fisheries Acts and subordinates, NPOA-IUU etc.);
2. Pilot the eACDS in one of tuna provinces (Binh Dinh, Phu Yen, Khanh Hoa), and in parallel, develop and deploy new eCDTS;
3. Complete vessel registration for all fishing vessels; and
4. Strengthen MCS: VMS should be installed onboard immediately for Vietnam fishing vessels operating outside of Vietnam waters.

The following proposed roadmap for eCDTS implementation was developed with consideration of the status of fisheries’ legal basis and with consideration of the steps required for the country to adopt, approve, and implement eCDTS nationwide. **Error! Reference source not found.** shows the proposed eCDTS roadmap’s timeframe and milestones. This roadmap is put forth for Vietnam’s consideration as an example of a comprehensive planning framework. USAID Oceans recommends that DFISH work with its national and local partners to develop a custom roadmap that will support and guide the nation’s eCDT vision.

Figure 14. Roadmap for development and application of eCDTS in Vietnam



Plans for improvement of Vietnam capture fisheries CDT and implementation of a full-scale eCDTS are recommended in stages—six months, one year, and three years (Table 9). This is to ensure that the government and relevant stakeholders have sufficient time to proactively arrange the required resources and to develop and implement the key activities identified.

Table 9. Proposed plan eCDTS implementation in Vietnam fisheries

Term	Activities	Expected outputs	Legal and policy	Responsibility
3 months	Implement eACDS in one tuna pilot site for stakeholders (first movers)' capacity building and learning	Stakeholders gain understanding of traceability process		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review
	Development team of a new eCDTS to study eACDS design and architecture, as well as data flow, CTEs and KDEs	Speed up design of development of the new system		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review
	Trial VMS on first mover vessel	MCS division gain expertise in the job. Captain of the vessel will be familiar with the practice. Service provider could evaluate the system.		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review
6 months	Develop or adjust landing data collection according to new traceability process flow for fisheries/particularly catches oriented to export to EU, US markets	Status of landing data collection in Vietnam and gaps for improvements		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review
	Review number of fishing vessels/fleets/gears by provinces targeting fish for export orientation	Structure of the fishing fleets by gears & by locals focusing on exports		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review

Study on stakeholder mapping for seafood supply chains exported to EU, US markets	Identification of key stakeholders on the seafood supply chains to US, EU markets		DFISH and local gov., in collaboration with VASEP, fisheries associations to implement review
Study on/review available VMS systems, identify key issues and lessons learnt	Recommendations for potential VMS systems		Consultants (IC and LC)
Promote partnerships and good practices in improvement of eCDTS	Building a partnership among relevant stakeholders to promote application of eCDTS		All relevant stakeholders involved and co-led by DFISH, local government
Review functions and responsibilities, mechanisms of cooperation among relevant agencies (local gov.; central government; coastguard, inspection, navy and maritime police), custom office in fisheries CDTS	Recommendations for development of collaboration mechanism in application of eCDTS	MARD drafts protocol for inspection and surveillance agreeing inter-agency co-operation	DFISH leads this study through consultancy service
Develop and implement a new eCDTS for tuna fishery in Khan Hoa province	Preliminary results on technical solutions and possible mechanisms in application of eCDTS		DFISH leads/cooperates with local government, donors, technique provider
Develop action plan for enhancement of eCDTS in Vietnam	A details plan for implementation of eCDTS including priority activities, collaborative mechanism, responsibilities, milestones, necessary resources, legal-basis	Amend/develop bylaw documents for application of CDTS	DFISH in collaborate with relevant stakeholders, particularly local fisher associations

	Develop a separate national plan for installation of VMS onboard offshore fleets approved	A detail plan for scaling up VMS installation onboard offshore fishing vessels	Develop VMS Decree including: polling, in-port and defective apparatus procedures, and alternative messaging	DFISH, local gov. and fisheries associations
1 year	Develop and issue new fishing logbook, catch/transshipment declarations format to meet EU, US market requirements	Logbook Information/catch/transshipment match market requirements		DFISH, local gov. and fisheries associations
	Provide training on eCDTS application for building capacity for relevant agencies/stakeholders	Relevant stakeholders will be capable to apply eCDTS		DFISH, local gov. (including port authority) and fisheries associations
	Identify appropriate VMS and conduct at sea piloting installation	Selection of a feasible VMS system to Vietnam fisheries		DFISH, local gov. and fisheries associations, consultancy firms
	Develop and equip necessary facilities for the designated fishing ports to be capable to inspect/validate the catches offloaded	Availability of necessary facilities/tools for inspection and CC works	Circular to list the designated ports, functions and facilities needed to be equipped, rights and responsibilities etc.	DFISH, local gov. and fisheries associations
	Develop/standardize web-based database for fishing vessel registration and licenses, Catch declaration, logbook, VMS- for vessel tracking in the country	An online web-based database is available as tool for validate and verify information		DFISH, local gov. and fisheries associations
	Establish cooperation/collaboration with other ministries/agencies to ensure transparency eCDTS implemented	Collaborative mechanism among relevant agencies to apply eCDTS and combat IUU fishing	Develop and amend by law documents	DFISH/MARD

	(DFISH and customs office)			
	Develop data mart and data analytics to enable fisheries management based on operational traceability data	Data analytics for operational support in developed. Periodic reports and alerts as well as ad hoc query capability developed		DFISH and local government
3 years	Scaling up VMS on board offshore fishing vessels	All offshore fishing vessels will be installed and monitored by VMS system		All relevant stakeholders
	Designated ports effectively monitor, control the landing data	List of designated ports and effective system for inspection, validation of the catches landed	Regulated by the amending law	DFISH, local gov., port authority, coastguard, fisheries inspection will be in charge of
	Patrol vessels cover all offshore areas within Vietnam's EEZ [6]	Compliance of domestic fishing vessels increased, illegal foreign fishing vessels reduced	Regulated by the amending law	DFISH/Dept. of fisheries resources surveillance
	Fishing vessel registration, licenses, list of IUU fishing vessels will be online tracked	Availability of information for validation purposes	Regulated by the amending law	Assign rights and responsibilities to relevant agencies (local dept. of fishery, inspection, port authority.) to monitor, access, update and manage database for fishing vessel registration, licenses and black list of IUU vessels

	Develop data warehouse and business intelligence (BI) for traceability data. Combined with other data from non-traceability system to provide tactical and strategical data analytic to complement operational analytics. These include the use of timeseries data for predictive analysis	Full-fledged FIS data that include business intelligence feature		DFISH and MARD and consulting company
Long term	Catch certificate will fully be managed by a coherent and unified database nationwide	A standardized tool will be available to facilitate CC	By law document needed to specifically rule	Clear delimitation of competences in monitoring, inspection and managing data base at both local and national levels
	Catch declaration/transshipment, transportation and processing information will be online tracked	Landing data will be monthly collected and covered all fishing fleets	Regulated by the amending law	Clearly allocate duties of DFISH, local gov. (including port authority, Dept. of fishery) and RIMF in collecting, analyzing and managing fisheries independent data
	Logbooks will cover all fishing fleets of more than 20 HP	Better compliance with logbook measures and more reliable information provided by fishers	Bylaw documents, penalties and conditions for logbook return	DFISH and local DARD
	Fisheries surveillance force (patrol, inspection) is capable of surveillance at sea and at fishing ports/landing places	Fisheries management measures will be better complied	Amending law should have regulations covering these areas	DFISH and local DARD and relevant partners

	Resources (manpower, budget) for MCS system will be sustainably allocated/maintained	Long-term and sustainable operation of fisheries management body	Amending law should have regulations covering these areas	DFISH and local DARD
	Mechanisms of Monitoring/inspection to ensure the transparency/correction of CC, fishing efforts is controlled	Transparency and equity in fishing industry will be enhanced	Amending law should have regulations covering these areas	DFISH and local DARD and relevant partners
	Accede to full membership of WCPFC for tuna and tuna like fishery of Vietnam	Compliance with WCPFC measures and having rights as full member in the conventional waters	Adopt, harmonize regulations issued by the WCPFC	DFISH/MARD and relevant Central agencies
	Adopting international regulations, good practices in combating IUU	Good practices in fisheries management introduced and sustainable fisheries goal achieved	Ratify 2009 PSMA	DFISH/MARD and relevant Central agencies
	Adopting international regulations, good practices in combating IUU	Good practices in fisheries management introduced and sustainable fisheries goal achieved	Ratify 1995 FSA	DFISH/MARD and relevant Central agencies
	Adopting international regulations, good practices in combating IUU	Good practices in fisheries management introduced and sustainable fisheries goal achieved	Sign 1993 FAO compliance Agreement	DFISH/MARD and relevant Central agencies

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ANNEX I. NUMBER OF OFFSHORE FISHING VESSELS (90 HP) IN VIETNAM, 2010-2016

Provinces	2010	2012	2013	2014	2015	2016
QuảngNinh	162	143	193	268	342	455
HảiPhòng	342	404	388	431	437	467
TháiBình	145	150	146	158	180	221
NamĐịnh	245	276	280	301	367	338
NinhBình	2	2	2	2	5	6
ThanhHóa	636	720	1,451	1,168	1,264	1,585
NghệAn	795	932	1,097	1,260	1,287	1,321
HàTĩnh	30	38	93	141	251	275
QuảngBình	338	523	648	1,022	1,167	1,243
QuảngTrị	76	120	152	171	165	185
ThừaThiên - Huế	172	189	245	265	261	342
ĐàNẵng	175	164	219	219	335	432
QuảngNam	149	165	265	435	479	574
QuảngNgãi	1,545	2,063	2,072	2,650	2,873	2,890
BìnhĐịnh	932	1,975	2,471	2,821	2,832	3,404
PhúYên	680	978	991	1,011	983	997
KhánhHòa	523	765	836	880	830	820
NinhThuận	728	754	832	933	808	913
BìnhThuận	1,712	1,779	2,043	2,092	2,533	2,751
BàRịa - VũngTàu	2,038	2,616	2,540	2,605	2,617	2,551
TP. HồChí Minh	91	39	27	32	40	51
LongAn		6	15	15	11	11
TiềnGiang	743	631	633	678	663	789
BếnTre	1,480	1,747	1,745	1,724	1,656	1,741
TràVinh	111	146	164	182	162	169
KiênGiang	3,292	3,268	3,819	3,950	4,060	4,196
SócTrăng	245	257	296	297	286	324
BạcLiêu	433	438	488	521	486	456
Cà Mau	1,431	1,278	1,305	1,447	1,339	1,469
Total	19,251	22,566	25,456	27,679	28,719	30,976

Source: Directorate of Fisheries, Ministry of Agriculture and Rural Development, Vietnam.

ANNEX II. REQUIRED FORMS AND DOCUMENTATION

Logbook forms (Vietnam and WCPFC formats)

FISHING LOGBOOK
*(Promulgation attached with Circular # 25/2013/TT-BNNPTNT
Dated on 10 May 2013 by Minister of the Ministry of Agriculture and Rural Development)*

Cover page 1	<p style="text-align: center;">DIRECTORATE OF FISHERIES</p> <p style="text-align: center;">FISHING LOGBOOK</p> <p>Main fishing gear:.....</p> <p>Vessel's name:.....</p> <p>Vessel registry number:.....</p> <p>Total main engine capacity (HP):.....</p> <p>Number of crew onboard:.....</p> <p>Key specifications of the fishing gear:.....</p> <p style="padding-left: 40px;">+</p> <p style="padding-left: 40px;">+</p> <p style="padding-left: 40px;">+</p> <p style="padding-left: 40px;">+</p> <p>Date of delivery logbook:; Place of delivery logbook:</p> <p>Date of receiving logbook:; Place of receiving logbook:</p>
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Guidelines for filling out the logbook

Ghi sổ nhật ký khai thác thủy sản thực hiện theo Thông tư số/2013/TT-BNNPTNT ngày/...../2013 của Bộ Nông nghiệp và Phát triển nông thôn.

Hướng dẫn ghi chép

Sổ này sử dụng cho tất cả các tàu cá tham gia khai thác thủy sản:

1. Phần ngày phát, thu số, nơi phát, nơi nộp sổ nhật ký khai thác thủy sản tại trang bìa 1 do cơ quan phát và thu sổ ghi để theo dõi.
2. Thông số cơ bản của lưới (ngư cụ):
 - + Lưới rê ghi: Chiều dài của vàng lưới (m); Chiều cao của lưới (m); Kích thước của mắt lưới 2a (cm);
 - + Lưới kéo (giã) ghi: Chiều dài của giềng phao (m); Chiều dài của giềng chì (a); Kích thước mắt lưới ở đọt lưới 2a (mm);
 - + Lưới vây ghi: Chiều dài của lưới (m); Chiều cao của lưới (m);
 - + Nghề câu ghi: Chiều dài của vàng câu (m); Tổng số lưới câu (lưới câu);
 - + Nghề khác ghi: Kích thước chủ yếu của loại nghề đó.
3. Nơi xuất bến, nơi về bến: ghi tên cảng hoặc địa danh nơi tàu xuất bến, nơi tàu về bến.
4. Vùng hoạt động của tàu:
 - + Vùng biển Vịnh Bắc Bộ ghi: Vùng biển ven bờ (VBB01); Vùng lòng (VBB02); Vùng biển khơi (VBB03); Vùng viễn cá (VBB04).
 - + Vùng biển Miền Trung ghi: Vùng biển ven bờ (BMT01); Vùng lòng (BMT02); Vùng biển khơi (BMT03); Vùng viễn cá (BMT04).
 - + Vùng biển Đông Nam Bộ: Vùng biển ven bờ (ĐNB01); Vùng lòng (ĐNB02); Vùng biển khơi (ĐNB03); Vùng viễn cá (ĐNB04).
 - + Vùng biển Tây Nam Bộ: Vùng biển ven bờ (TNB01); Vùng lòng (TNB02); Vùng biển khơi (TNB03); Vùng viễn cá (TNB04).
5. Địa điểm thả lưới mẻ đầu tiên của chuyến biển: ghi đến phút của Kinh độ, Vĩ độ. Nếu tàu không có máy định vị thì ghi tên vùng biển hoạt động trong chuyến.
6. Địa điểm thu lưới mẻ cuối cùng của chuyến biển: ghi vị trí tàu đến phút của Kinh độ, Vĩ độ. Nếu tàu không có máy định vị thì ghi tên vùng biển hoạt động trong chuyến.
7. Các sản phẩm đánh bắt được chủ yếu:
 - Cá chọn: Là các loại cá có chất lượng cao (cá thu, cá nưi đại dương, cá Hồng, cá song...);
 - Cá xô: Là các loại cá nhỏ (cá trích, cá Bạc má, cá nưi trừ, cá nưi ò....); cá đày (cá đồng, cá mối, cá trác...);
 - Cá tạp: là các loại cá phân, cá lộn,

Trip number :

Date of port out: date month year ; Date of port in: date month year

Place of port out: ; Place of port in:

Fishing area: ; Transshipment weight (if any): kg

1. The first haul of the trip:	
1.1. Shooting time: Hour..... minute; Date..... Month
1.2. Shooting location:	Latitude.....Longitude.....
2. The last haul of the trip:	
2.1. Shooting time: Hour..... minute; Date..... Month
2.2. Shooting location:	Latitude.....Longitude.....
3. Total number of hauls in the trip: set	
4. Total trip catch:..... (kg)	
Main fish in catch:	
Shrimp	Catch:.....kg
Selected fish.....	Catch:.....kg
Mixed fish.....	Catch:.....kg
Trashfish.....	Catch:.....kg
Squid.....	Catch:.....kg
Cuttlefish	Catch:.....kg
Crab.....	Catch:.....kg
Others.....	Catch:.....kg

Signature of skipper

(Full name)

TUNA FISHERY LOGBOOK format following WCPFC guidelines

VESSEL NAME			YEAR					TARGET SPECIES								TRIP NUMBER				PAGE OF TRIP						
DEPARTURE PORT			LANDING PORT					DEPARTURE DATE								LANDING DATE										
Month	Date	Code	Starting Position		Sta rtin g tim e	Finis h time	# hook s bet we en 2 bu oys	LONG TAIL		BY		YF		SHARK		SFA		BUM		BLM		SWO		OTHERS		
			Long	Lat				ALB	BET	YFT	SHK	SFA	BUM	BLM	SWO	#	Weight (kg)	#	(kg)	#	(kg)	#	(kg)	#	(kg)	#

- CODE: FISHING: 1, STOP FISHING: 2 - NOTED: RECORD ON A NEW PAGE IF A PORTION OR ALL THE CATCHES ARE ON BOARD	CAPTAIN	DATE
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EU Catch Certificate (Full form and Simplified form)

European Community Catch Certificate and Re-export Certificate

EUROPEAN COMMUNITY CATCH CERTIFICATE							
Document number				Validating authority			
1. Name		Address			Tel.		
					Fax		
2. Fishing vessel name		Flag – Home port and registration number		Call sign		IMO/Lloyd's number (if issued)	
Fishing licence No – Valid to		Inmarsat No, Fax No, Telephone No, E-mail address (if issued)					
3. Description of product		Type of processing authorised on board		4. References of applicable conservation and management measures			
Species	Product code	Catch area(s) and dates	Estimated live weight (kg)	Estimated weight to be landed (kg)	Verified weight landed (kg) where appropriate		
5. Name of master of fishing vessel – Signature – Seal:							
6. Declaration of transshipment at sea Name of master of fishing vessel			Signature and date	Transshipment date/area/position	Estimated weight (kg)		
Master of receiving vessel		Signature	Vessel name	Call sign	IMO/Lloyds number (if issued)		
7. Transshipment authorisation within a port area							
Name	Authority	Signature	Address	Tel.	Port of landing	Date of landing	Seal (stamp)
8. Name and address of exporter		Signature		Date		Seal	
9. Flag State authority validation:							
Name/title		Signature		Date		Seal (stamp)	

10. Transport details (see Appendix)				
11. Importer declaration				
Name and address of importer	Signature	Date	Seal	Product CN code
Documents under Articles 14(1), (2) of ⁽¹⁾ Regulation (EC) No 1005/2008 ◀	References			
12. Import control — authority	Place	Importation authorised (*)	Importation suspended (*)	Verification requested – date
Customs declaration (if issued)	Number	Date	Place	
(*) Tick as appropriate.				

EUROPEAN COMMUNITY RE-EXPORT CERTIFICATE				
Certificate number	Date	Member State		
1. Description of re-exported product		Weight (kg)		
Species	Product code	Balance from total quantity declared in the catch certificate		
2. Name of re-exporter	Address	Signature	Date	
3. Authority				
Name/title	Signature	Date	Seal/stamp	
4. Re-export control				
Place	Re-export authorised (*)	Verification requested (*)	Re-export declaration number and date	
(*) Tick as appropriate.				

Appendix

Transport details

1. Country of exportation Port/airport/other place of departure	2. Exporter signature			
Vessel name and flag Flight number/airway bill number Truck nationality and registration number Railway bill number Other transport document	Container number(s) list attached	Name	Address	Signature

Port out/port in check list for fishing vessels in Vietnam

DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT FISHERIES CONTROL OFFICE	STATEMENT OF CHECK, CONTROL FISHING VESSEL OPERATIONS	No:.....
PORT OUT CHECK	Time of port out:	
<p>1. Vessel name:..... Vessel registry number:.....</p> <p style="text-align: center;">Name of vessel owner:..... Phone number:..... Address:</p> <p>2. Fishing port/landing site:..... Phone number:..... Address:.....</p> <p>3. Check Documents needed:</p> <p style="padding-left: 20px;"> <input type="checkbox"/> Certificate of fishing vessel registration <input type="checkbox"/> Fishing vessel safety examination register <input type="checkbox"/> Certificates for labors working onboard fishing vessels <input type="checkbox"/> Fishing license <input type="checkbox"/> Certificate of Safety for fishing vessel <input type="checkbox"/> Fishing logbook <input type="checkbox"/> Certificate of food safety condition for fishing vessels from 90 HP </p> <p>4. Practical check onboard</p> <p>Check safety device and communication equipments:</p> <p style="padding-left: 20px;"> <input type="checkbox"/> Rescue device <input type="checkbox"/> Telecommunication equipments <input type="checkbox"/> Other device' <input type="checkbox"/> Signal device <input type="checkbox"/> Maritime equipments </p> <p>Check VMS equipment:</p> <p style="padding-left: 20px;"><input type="checkbox"/> Yes/Name of the equipments:..... <input type="checkbox"/> No</p> <p>Check fishing gear (name of the fishing gear):.....</p> <p style="padding-left: 20px;"> <input type="checkbox"/> Trawl <input type="checkbox"/> Hooks and lines <input type="checkbox"/> Purse seine <input type="checkbox"/> Squid falling net/ castnet <input type="checkbox"/> Gillnet <input type="checkbox"/> Others <input type="checkbox"/> Mesh size is legal </p> <p>Number of crew onboard:</p>		

Vessel owner/Skipper <i>(Sign, full name)</i>	Fisheries Control Office <i>(Sign and Stamp)</i>
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B. PORT IN CHECK	Arrival time of the fishing vessel:
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1. Name of the port/landing site:.....

2. Phone number:.....
 Address:.....

3. Catch declaration:

Species code	Species name	Estimated catch vol.	Weighted catch vol.	Species code	Species name	Estimated catch vol.	Weighted catch vol.
				Total catch volume:			

Vessel owner/Skipper <i>(Sign, full name)</i>	Fisheries Control Office <i>(Sign and Stamp)</i>
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ANNEX III. PARTNER ROLES AND PROFILES

Partner Roles

Roles and responsibilities of relevant stakeholders involved in proposed PPP strategies.

Stakeholder	Role	Responsibility	Method of implementation	Remarks
Strategy I: Capital investment and system management by state government				
Central government	System owner	Financial investment (cover the costs for installation of VMS and relevant devices, airtime and services)	Develop an investment plan to support eCDT implementation	DFISH/MARD and relevant ministries (Finance, Investment, Information) and approved by PM
Local Government	System owner	Financial investment	Develop a co-investment plan to support eCDT implementation, local fishers/vessel owners and seafood processors/traders to develop co-investment plan for CDT	DARD and Provincial People of Committee (PPC) in collaboration with DFISH/MARD
Port authority	Operate CDT	- Capacity building, - Operate Catch declaration database, - Monitor vessel license database	Collaborate with DARD, DFISH	Designated ports nominated by central government
Provincial Dept. of fisheries	Operate CDT	- Capacity building, - Operate Catch declaration database, - Monitor VMS, Licensees, catch documentation across supply chain - Manage CC database	Develop guidelines for seafood/fish supply chain, local authorities (Department of fisheries, port authority) in implement CDT	In collaboration with SARD, DFISH/MARD
Fisheries Associations	Capacity building	Capacity & Awareness building	Members engagement and trainings	VINAFIS, VASEP, local fisheries associations
Regional fisheries management organization (RFMO)	Capacity building	Capacity building via pilot project e.g. application of ACDS	Cooperation through SEAFDEC mechanisms	DFISH, SEAFDEC


VMS Technology providers	Provide VMS devices and relevant applications	Provide devices (VMS, PDA and accessories) and applications / software Maintain VMS system/application	Comply with bidding procedures promulgated by government Payment by either central government or seafood industry	Viettel in partnership with Zunibal, Inmarsat/Vishipel etc.
Traceability Technology providers	Provide traceability technology in supply chain (from vessel to table)	Provide applications/ software Maintain the traceability system	Comply with bidding procedures Payment by either central government or seafood industry	HTC/Deeprace/lc heck / RTA etc.
Vessel owners	- Operate VMS - Provide input for eCDTS (data on catch, species, transshipment, declaration based on regulations)	Comply with regulations on installation and operation of VMS on board, provide information for logbook/catch report/declaration and transshipment	MCS and enforcement Capacity and awareness building (workshops, dialogues, forum etc.) Pilot projects	
Seafood supply chain (fish buyers, retailers, seafood/fish processors)	- Request & validate suppliers' data to provide sufficient information for traceability, internal traceability in the processing plants	Implement traceability system (track, update, maintain) for seafood/fish products at every step (critical events)	All supply chain stakeholders' agreement on traceability system interoperability and ethical code of conducts	
NGOs	- Capacity building & awareness raising in cooperation with seafood supply chain and government - Funding mechanism for small-scale fishers	Based on specific requests from seafood supply chain or interests by donors whom are interested in promoting sustainable fishery in Vietnam	Involve in seafood supply roundtables, forum, dialogues etc; fundraising and piloting relevant projects/activities	Seafood Task Force, SFP, WWF, GIZ, IDH, SNV etc.
Academia	Provide capacity building, awareness raising in cooperation with seafood supply chain and government	Based on specific requests from seafood supply chain; implement the relevant assignments by government	- Involve in seafood supply roundtables, forum, dialogues etc; - Fundraise and pilot relevant	Nha Trang University, RIMF, VIFEP etc.


			eCDT projects/activities	
Strategy 2 – Co- investment by fishing industry, tech providers and government will operate whilst tech providers will manage, maintain the CDT system				
Central government	System owner	Provide co-finance (costs for VMS and relevant devices, accessories, IT infrastructure)	Develop a co-investment plan for eCDT implementation nationwide, involving fishing industry, processors and buyers.	DFISH/MARD and relevant ministries (Finance, Investment, Information) and approved by PM
Local Government	Partner in develop and implement CDT	Co-Finance investment	DARD in collaboration with DFISH/MARD to develop a project	DARD and Provincial People of Committee (PPC)
Port authority	Partner in develop and implement CDT	- Capacity building, - Operate Catch declaration database, - Monitor vessel license database	Collaborate with DARD, DFISH	Designated ports nominated by central government
Provincial Dept. of fisheries	Operate VMS	- Capacity building, - Operate Catch declaration database, - Monitor VMS, Licensees, catch documentation across supply chain - Manage CC database	Develop guidelines for actors in seafood/fish supply chain, local authorities (Department of fisheries, port authority) in implement CDT	In collaboration with SARD, DFISH/MARD
Fisheries Associations	Capacity building	Capacity building, awareness building	Members engagement and trainings	VINAFIS, VASEP, local fisheries associations
Regional fisheries management organization (RFMO)	Capacity building	Capacity building via pilot project e.g. application of ACDS	Cooperation through SEAFDEC mechanisms	DFISH, SEAFDEC
VMS Technology Provider	Co-invest mechanism to provide VMS devices and applications with fee-based system from users / government	Provide devices (VMS, PDA and accessories) and applications / software	Authorized systems purchased by fishing industry (with government incentives)	Viettel in partnership with Zunibal, Inmarsat/Vishipel etc.
Traceability technology providers	Provide traceability technology in seafood supply	Provide applications/ software	Authorized systems purchased by fishing industry	HTC, Deeprtrace, lcheck, RTA etc.


	chain (from vessel to table)	Maintain the traceability system	(with government incentives)	
Vessel owners	<ul style="list-style-type: none"> - Operate VMS - Provide input information (transshipment, catch reports, declaration) - Co-invest in CDT devices (VMS, traceability) 	Comply with regulations on installation and operation of VMS on board, provide information for logbook/catch report/declaration and transshipment	Negotiate with government, seafood processors/buyers and tech providers to share investment costs for VMS, traceability system	
Seafood supply chain (fish buyers, retailers, processors)	<ul style="list-style-type: none"> - Request fish/seafood suppliers to provide sufficient information for traceability - Provide internal traceability in the processing plants - Co-invest in devices (VMS, traceability) 	Implement traceability system (track, update, maintain) for seafood/fish products at every step (critical events)	<ul style="list-style-type: none"> - All supply chain stakeholders' agreement on traceability system interoperability and ethical code of conducts - Negotiate Co-investment mechanism 	
NGOs (international and local)	Provide capacity building, awareness raising in cooperation with seafood supply chain and government	Based on specific requests from seafood supply chain or interests by donors whom are interested in promoting sustainable fishery in Vietnam	Involve in seafood supply roundtables/forum/dialogues etc; fundraising and piloting relevant projects/activities	Seafood Task Force, SFP, WWF, GIZ, IDH, SNV etc.
Academia	Provide capacity building, awareness raising in cooperation with seafood supply chain and government	Based on specific requests from seafood supply chain; implement the relevant assignments by government	<ul style="list-style-type: none"> - Involve in seafood supply roundtables, forum, dialogues etc; - Fundraise and pilot relevant eCDT projects/activities 	Nha Trang University, RIMF, VIFEP etc.

Partner Profiles


Partnership profiles should be developed and refined for each appraisal stage, the profiles below are examples.


Hai Vuong Group		 HAI VUONG GROUP
Sector:	Seafood Processing Industry	
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam 	
Meeting Overview		
Date:	<ul style="list-style-type: none"> 27th September, 2017 	
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam 	
Team:	<ul style="list-style-type: none"> Thuy, Hao 	
Company/Organization Details		
Jobs:	<ul style="list-style-type: none"> Seafood processing. 90% processed products are from tuna 	
Gains:	<ul style="list-style-type: none"> Access to manageable and transparent fishing data supplied by the company's traders Manageable to get accurate catching data efficiently 	
Pains:	<ul style="list-style-type: none"> Limited domestic raw material sources due to scarce supply and more purchase competition. Had to import 80% of raw material from neighboring countries. Facing challenge in collecting sufficient catching data efficiently and in time Net profits declining because of high input costs 	
CSR:	<ul style="list-style-type: none"> N/a 	
USAID Engagement:	<ul style="list-style-type: none"> No 	
Project Component:	<ul style="list-style-type: none"> Networking with traders and capacity building to traders in development and maintenance of catching database Play a role in promoting & scale eCDTS in tuna as well as oilfish, mahi mahi and other seafish subsectors through its members and network of wholesalers. Possibility to test eCDTS in aquaculture through its Tilapia hatcheries 	
Partnership Potential:	<ul style="list-style-type: none"> High 	
Potential Partnership Assets:	<ul style="list-style-type: none"> Members of VINATUNA, VASEP Strong network with traders in Binh Dinh province – a big tuna production of Vietnam Familiar with sustainable certification system including MSC, BRC, Dolphin Safe and Friend of the Sea Strong seafood and aquaculture group with four processing factories and one hatchery with central administration in sales, marketing, production planning and certification management. 	
Project Overlap:	<ul style="list-style-type: none"> 	
Drawbacks:	<ul style="list-style-type: none"> Mini due diligence 	
Name:	<ul style="list-style-type: none"> Nguyen Cong Bay 	
Position:	<ul style="list-style-type: none"> Director 	
Phone:	<ul style="list-style-type: none"> 84.2583.743.333 	


Address:	<ul style="list-style-type: none"> Lot B13-B14, No. 1 St., Suoi Dau Industrial Zone, Suoi Tan Commune, Cam Lam District, Khanh Hoa Province
Email:	<ul style="list-style-type: none"> ha.bay@haivuong.com
Website:	<ul style="list-style-type: none"> www.haivuong.com
Sustainable Seafood Company Ltd.	
	
Sector:	Seafood Processing Industry
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> 27th September, 2017
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Team:	<ul style="list-style-type: none"> Thuy, Hao
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> Seafood processing. Main products are frozen tuna loin
Gains:	<ul style="list-style-type: none"> Monitoring and control of fishing activities in three provinces of Vietnam, including Khanh Hoa, Binh Dinh and Phu Yen Monitoring and updating fishing activities from the network of more than 100 fishers who directly supply tuna to the company Monitoring tuna trading factories with the company's traders network Able to maintain a catch documentation and traceability database efficiently and in time
Pains:	<ul style="list-style-type: none"> Time consuming in collecting sufficient catching data efficiently and in time from fishing vessels
CSR:	<ul style="list-style-type: none"> N/a
USAID Engagement:	<ul style="list-style-type: none"> No
Project Component:	<ul style="list-style-type: none"> Provide training and promoting eCDT technology to fishers and traders Opportunity to test, promote and & scale eCDTS adoption widely in main tuna production provinces and other industry including barramundi, mahi mahi and opakapaka faster Opportunity to promote eCDTS adoption to different actors along the tuna value chain including tuna fishers and wholesalers faster and more efficient Can play a role in coaching fishers on how to operate the introduced eCDT technology Possibility to come into an agreement with acceptable incentives for fishers to adopt eCDTs directly thanks to its direct engagement with tuna fishing fleets Scale out the adoption of technology by fishers
Partnership Potential:	<ul style="list-style-type: none"> High
Potential Partnership Assets:	<ul style="list-style-type: none"> Strong network with fishers in main tuna catching provinces with more than 100 fishers Strong network with traders in three big tuna fishing provinces of Vietnam Experienced in development and running electronic documentation system through two years piloting Trace Register with its buyers in USA Members of VINATUNA and VASEP


	<ul style="list-style-type: none"> Familiar with fisheries improvement project activities including FIP by WWF. Experience in provide training on IUU fishing combat and sustainable catching to fishers
Project Overlap:	•
Drawbacks:	• Mini due diligence
Name:	• Nguyen Dinh Hau
Position:	• Vice Director
Phone:	• 84.2583.744.226
Address:	• Lot F5+ F6, Suoi Dau industrial zone, Cam Lam district, Khanh Hoa province, Vietnam
Email:	• hauvt.nt@gmail.com
Website:	• www.sustainableseafood-co.com
Tin Thinh Company Ltd. 	
Sector:	Seafood Processing Industry
Location:	• Nha Trang City, Khanh Hoa Province, Vietnam
Meeting Overview	
Date:	• 27 th September, 2017
Location:	• Nha Trang City, Khanh Hoa Province, Vietnam
Team:	• Thuy, Hao
Company/Organization Details	
Jobs:	• Seafood processing. Main products include frozen tuna loin
Gains:	• Monitoring and control of traceability information provided by traders from three provinces of Vietnam, including Khanh Hoa, Binh Dinh and Quang Ngai
Pains:	<ul style="list-style-type: none"> Declining supply of tuna from domestic fishers. 50% of raw materials is imported from abroad to fill the shortage Incomplete catching data provided by fishers
CSR:	• N/a
USAID Engagement:	• No
Project Component:	• Promote eCDT adoption by traders
Partnership Potential:	• High
Potential Partnership Assets:	<ul style="list-style-type: none"> Network with traders in three provinces of Vietnam Members of VINATUNA and VASEP
Project Overlap:	•
Drawbacks:	• Mini due diligence
Name:	• Nguyen Anh Tuan
Position:	• Vice Director
Phone:	• +84.258.374.4275
Address:	• Lot F1, Suoi Dau industrial zone, Khanh Hoa province, Vietnam
Email:	• anhtuan.tinthin@gmail.com

Website:	<ul style="list-style-type: none"> • www.tinthin.com.vn
Hoang Hai Group	
Sector:	Seafood Processing Industry
Location:	<ul style="list-style-type: none"> • Nha Trang City, Khanh Hoa Province, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • 28th September, 2017
Location:	<ul style="list-style-type: none"> • Nha Trang City, Khanh Hoa Province, Vietnam
Team:	<ul style="list-style-type: none"> • Thuy, Hao
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • Seafood processing. Main products include tuna, mackerel and mahi mahi
Gains:	<ul style="list-style-type: none"> • Monitoring and control of traceability information provided by traders from Khanh Hoa province
Pains:	<ul style="list-style-type: none"> • Hard to get supply directly from fishing vessels despite that the company establish a collection point at a landing port in Nha Trang city, Khanh Hoa province • Challenged in convincing fishing vessels equipped monitoring system • Costly to get involved in eCDT system and establish traceability data management system
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Promote eCDT adoption by traders
Partnership Potential:	<ul style="list-style-type: none"> • High
Potential Partnership Assets:	<ul style="list-style-type: none"> • Network with traders in Khanh Hoa and some in Binh Dinh provinces • Members of VINATUNA and VASEP • Collection point at a port in Khanh Hoa province
Project Overlap:	<ul style="list-style-type: none"> •
Drawbacks:	<ul style="list-style-type: none"> • Mini due diligence
Name:	<ul style="list-style-type: none"> • Mr. Quoc
Position:	<ul style="list-style-type: none"> • Director
Phone:	<ul style="list-style-type: none"> • 84.2582.217.666
Address:	<ul style="list-style-type: none"> • 298-2/4 Street, Vinh Phuoc Ward, Nha Trang City, Khanh Hoa – Vietnam
Email:	<ul style="list-style-type: none"> • qc@hoanghaico.vn
Website:	<ul style="list-style-type: none"> • www.hoanghaico.vn
The Union of Tuna Fishers of Vinh Tho Ward, Nha Trang City	
Sector:	Seafood Industry
Location:	<ul style="list-style-type: none"> • Nha Trang City, Khanh Hoa Province, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • 28th September, 2017


Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Team:	<ul style="list-style-type: none"> Thuy, Hao
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> Tuna fishing
Gains:	<ul style="list-style-type: none"> Possibility to be engaged in premium tuna supply chain and have direct business linkages with tuna processors
Pains:	<ul style="list-style-type: none"> Declining tuna availability in the ocean for catching. Tuna productivity decreasing from 10% - 15% annually No premium price offered for tuna associated with catching data Unfair judgement on tuna quality by traders
CSR:	<ul style="list-style-type: none"> N/a
USAID Engagement:	<ul style="list-style-type: none"> No
Project Component:	<ul style="list-style-type: none"> Piloting the eCDT technology Provide feedback on the applicability of the pilot technology/app for modification, if any Play a role in promoting the technology solution/app within fishers community beyond tuna industry that can contribute into widely adoption of the technology
Partnership Potential:	<ul style="list-style-type: none"> High
Potential Partnership Assets:	<ul style="list-style-type: none"> Well-organized large group of fishers with 40 members Well trained captain and engineers that are able to use e-logbook Network with traders in Khanh Hoa province Member of VINATUNA Active on Fisheries Improvement projects (WWF FIP) Active group leader
Project Overlap:	<ul style="list-style-type: none">
Drawbacks:	<ul style="list-style-type: none"> Mini due diligence
Name:	<ul style="list-style-type: none"> Mr. Tinh
Position:	<ul style="list-style-type: none"> Group Leader
Phone:	<ul style="list-style-type: none"> Mr Tinh: +84.905.240.221 Mr. Ba: +84.120.838.6824 Mr. Muoi: +84.122.348.3867
Address:	<ul style="list-style-type: none"> Vinh Tho ward, Nha Trang city
Email:	<ul style="list-style-type: none"> N/a
Website:	<ul style="list-style-type: none"> N/a
Vietnam Tuna Association 	
Sector:	Seafood Industry Association
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> 28th September, 2017
Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Team:	<ul style="list-style-type: none"> Thuy

Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • A social organization aiming to improve efficiency and sustainability in seafood industries • Mobilization of stakeholders involving in reservations and sustainable tuna fishing and processing in Vietnam; • Policy dialogues between its members and relevant authorities; promotion of markets and international cooperation related to tuna industries
Gains:	<ul style="list-style-type: none"> • Improve sustainability in tuna fishing industry among its members
Pains:	<ul style="list-style-type: none"> • Facing challenges in raising awareness of its members in IUU fishing and sustainable fishing practices
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Play a role in promoting & scale eCDTS / advocate the benefit of CDT / advance regulations / training in data records and maintenance of eCDTS in fishing vessels in the most efficient way. • Play a role in getting feedback on applicability of pilot technology adopted by fishing vessels sufficiently and efficiently
Partnership Potential:	<ul style="list-style-type: none"> • High
Potential Partnership Assets:	<ul style="list-style-type: none"> • Large number of members in whole countries & Trusted organizations among fishers, traders and processors • Capacities to mobilize resources and participations from the industry • Strong collaboration with DFISH & international NGOs and function as a Co-ordination Unit of Vietnam yellow fin tuna FIP together with WWF-Vietnam & WWF Coral Triangle • Members of VASEP, VIETTRADE
Project Overlap:	<ul style="list-style-type: none"> •
Drawbacks:	<ul style="list-style-type: none"> • Mini due diligence
Name:	<ul style="list-style-type: none"> • Tran Van Hao
Position:	<ul style="list-style-type: none"> • Chairman's assistant
Phone:	<ul style="list-style-type: none"> • 84.2583.502.585 • 84.91583.9250
Address:	<ul style="list-style-type: none"> • Address: 09 Nguyen Dinh Chieu street, Nha Trang city, Khanh Hoa province, Vietnam
Email:	<ul style="list-style-type: none"> • haovinatuna@gmail.com
Website:	<ul style="list-style-type: none"> • www.vinatuna.org.vn
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Vietnam Fisheries Association (VINAFIS) International Center for Aquaculture and Fisheries Sustainability (ICAFIS)</p> </div> <div style="text-align: center;">  </div> </div>	
Sector:	Seafood Industry Association
Location:	<ul style="list-style-type: none"> • Hanoi, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • 30th September, 2017


Location:	<ul style="list-style-type: none"> Nha Trang City, Khanh Hoa Province, Vietnam
Team:	<ul style="list-style-type: none"> Thuy
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> An NGO under VINAFIS promoting sustainable aquaculture and fisheries within Vietnam
Gains:	<ul style="list-style-type: none"> Improve sustainability in aquaculture and fisheries amongst its members through collaboration with experienced partners
Pains:	<ul style="list-style-type: none"> Facing challenges in raising awareness of its members in IUU fishing and sustainable fishing practices
CSR:	<ul style="list-style-type: none"> N/a
USAID Engagement:	<ul style="list-style-type: none"> No
Project Component:	<ul style="list-style-type: none"> Play a role in promoting & scale eCDTS / advocate the benefit of CDT / advance regulations / training in data records and maintenance of eCDTS in fishing vessels in the most efficient way. Play a role in getting feedback on applicability of pilot technology adopted by fishing vessels sufficiently and efficiently Play a role in facilitation linkages and collaboration between fishers, processors and business services providers
Partnership Potential:	<ul style="list-style-type: none"> High
Potential Partnership Assets:	<ul style="list-style-type: none"> Large number of members in whole countries & Trusted organizations among fishers, traders and processors Capacities to mobilize resources and participations from the industry Strong collaboration with DFISH & international NGOs Experienced in collaboration with USAID funded project Members of VASEP, VIETTRADE Experienced in promoting sustainable shrimp and clam value chains in Vietnam including social responsible Knowledgeable and experienced leader
Project Overlap:	<ul style="list-style-type: none">
Drawbacks:	<ul style="list-style-type: none"> Mini due diligence
Name:	<ul style="list-style-type: none"> Dr. Le Thanh Luu
Position:	<ul style="list-style-type: none"> Director
Phone:	<ul style="list-style-type: none"> 84-43-7245121
Address:	<ul style="list-style-type: none"> 3rd Floor, A7 House – 10 Nguyen Cong Hoan St, Ba Dinh, Hanoi, Vietnam
Email:	<ul style="list-style-type: none"> luu.lethanh@icafis.vn or luuria1@yahoo.com
Website:	<ul style="list-style-type: none"> www.vinatuna.org.vn
Vietnam Association of Seafood Exporters and Producers (VASEP)	
	
Sector:	Seafood Industry Association
Location:	<ul style="list-style-type: none"> Hanoi, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> December, 2017
Location:	<ul style="list-style-type: none"> Hanoi, Vietnam


Team:	<ul style="list-style-type: none"> • Thuy
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • An NGO aiming to improve coordination and linkages between enterprises in seafood industries and Vietnam seafood competitiveness.
Gains:	<ul style="list-style-type: none"> • Improve competitiveness of its members in international market
Pains:	<ul style="list-style-type: none"> • Challenges for its members to get sufficient catch and traceability data in the most efficient manner and meet with requirements of its export market
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Play a role in promoting & scale eCDTS / advocate the benefit of CDT / advance regulations / training in data records and maintenance of eCDTS in fishing vessels in the most efficient way through processing members. • Possible to scale out eCDTS adoption in processors beyond tuna industry including aquaculture and other marine fish. • Can be involved in design of eCDTS process, test the system and promote it. • Can advocate for improvement of administrative system
Partnership Potential:	<ul style="list-style-type: none"> • High
Potential Partnership Assets:	<ul style="list-style-type: none"> • Large number of members including seafood producers, exporters and services providers. • A member of United States National Fisheries Institute (NFI); ASEAN Seafood Federation (ASF); Seafood Industries Association; Singapore (SIAS); Vietnam Chamber of Commerce and Industry (VCCI); and Vietnam Advisory Council for Administrative Procedure Reform • Strong linkages between seafood industries and government administrative agencies
Project Overlap:	<ul style="list-style-type: none"> •
Drawbacks:	<ul style="list-style-type: none"> • Mini due diligence
Name:	<ul style="list-style-type: none"> • Nguyen Hoai Nam
Position:	<ul style="list-style-type: none"> • General Secretary
Phone:	<ul style="list-style-type: none"> • 84 8 62810430/ 84 28 62810437
Address:	<ul style="list-style-type: none"> • Head Office: 218 Road Nguyen Quy Canh, Zone A, An Phu An Khanh New Urban Area, District 2, HCM city, Vietnam • Branch office: 10 Nguyen Cong Hoan St, Ba Dinh, Hanoi, Vietnam
Email:	<ul style="list-style-type: none"> • vasephcmcity@vasep.com.vn
Website:	<ul style="list-style-type: none"> • www.vasep.com.vn
<p>University of Nha Trang Research Institute for Marine Science and Fishing Technologies</p> 	
Sector:	Academy
Location:	<ul style="list-style-type: none"> • Nha Trang City, Khanh Hoa province, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • 28th September, 2017
Location:	<ul style="list-style-type: none"> • Nha Trang city
Team:	<ul style="list-style-type: none"> • Thuy, Hao


Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • Provide training in fishing technology, management and resource conservation, marine safety and ship steering. • Research in marine resources management, stock assessment, remote sensing and fishing vessel management technology
Gains:	•
Pains:	•
CSR:	• N/a
USAID Engagement:	• No
Project Component:	<ul style="list-style-type: none"> • Can play a role in development of e-logbook as it has participated in development of fishing port management procedures and pilot implementation of those. • Promote the use of eCDT through training of captains • Capacity building of human resources for fishing vessels and fisheries stock assessment.
Partnership Potential:	• Medium
Potential Partnership Assets:	<ul style="list-style-type: none"> • Experienced in development of e-logbook • Capacities in research on marine resources assessment and management • Strong collaboration with other universities and research institutes in conducting research on fish stock assessment, living marine resource management, fisheries resource management.
Project Overlap:	•
Drawbacks:	• Mini due diligence
Name:	• Mr. Nhuan
Position:	•
Phone:	<ul style="list-style-type: none"> • +84.2582.471.393 • +84.905572517
Address:	• 09 Nguyen Dinh Chieu, Nha Trang, Khanh Hoa, Vietnam
Email:	<ul style="list-style-type: none"> • viencnkt@ntu.edu.vn • nhuannv@ntu.edu.vn
Website:	• www.ntu.edu.vn/vienkhcnkttts
Hon Ro Port	
Sector:	Port Authority
Location:	• Nha Trang city, Khanh Hoa province, Vietnam
Meeting Overview	
Date:	• 29 th September, 2017
Location:	• Nha Trang city
Team:	• Thuy, Hao
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • Landing services for fishing vessels mainly tuna fishing vessels • Provide sorting places, utility and security services
Gains:	• Specific data on caught species including volume, catching areas


Pains:	<ul style="list-style-type: none"> • Could not get data caught by fishing vessels by species
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Can involve in testing the port management system • Promote eCDT to fishing vessels and traders
Partnership Potential:	<ul style="list-style-type: none"> • High
Potential Partnership Assets:	<ul style="list-style-type: none"> • Government port authority • Available sufficient human resources to handle catch granting services • Existing relationship with fishing communities and seafood traders as most tuna fishing vessels land in this port. About 80 vessels arrive a day in peak season
Project Overlap:	<ul style="list-style-type: none"> •
Drawbacks:	<ul style="list-style-type: none"> • Mini due diligence
Name:	<ul style="list-style-type: none"> • Nguyen Trung Hieu
Position:	<ul style="list-style-type: none"> • Manager
Phone:	<ul style="list-style-type: none"> • 84.2583.714.193/84.91447.0646
Address:	<ul style="list-style-type: none"> • Hon Ro Area, Phuoc Dong Commune, Nha Trang City
Email:	<ul style="list-style-type: none"> • hieu.honro@gmail.com
Website:	<ul style="list-style-type: none"> • n/a
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Real-Time Analytics</p> </div> <div style="text-align: center;">  </div> </div>	
Sector:	Tech Provider
Location:	<ul style="list-style-type: none"> • Ho Chi Minh City, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • December, 2017
Location:	<ul style="list-style-type: none"> • Hanoi – Phone interview
Team:	<ul style="list-style-type: none"> • Thuy
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • A research & consulting firm that provides survey and analytics services. • Provide solutions in data collection and analysis in real-time using Mobile and Cloud Technology
Gains:	<ul style="list-style-type: none"> • Development of markets in Vietnam
Pains:	<ul style="list-style-type: none"> • Hard to develop market in Vietnam
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Can provide an application on mobile devices which can collect real-time data including GPS from the moment vessels leave the port, fishing in the ocean, selling points and go back the port. The app is designed with 5 forms with relevant information to be filled with required information including (i) port departure, (ii) fishing areas arrival, (iii) capture completion, (iv) port arrival and (v) sales.
Partnership Potential:	<ul style="list-style-type: none"> • High


Potential Partnership Assets:	<ul style="list-style-type: none"> Experiences in international markets. The company has provided services to many international organization including WB, ADB, UNDP and universities in USA and UK. The solution design is available and ready for customization and modification that can accelerate technology development process. The app is easily to be adopted as it is developed for use on mobile devices as smartphone Data collection is on real-time basis and report can be generated automatically that enable an efficient traceability management
Project Overlap:	•
Drawbacks:	• Mini due diligence
Name:	• Dr. Le Dang Trung
Position:	• Managing director
Phone:	<ul style="list-style-type: none"> 84 8 6684 6530 84 979 344 227
Address:	<ul style="list-style-type: none"> 1101, 11th Fl, Citilight Tower, 45 Vo Thi Sau, District 1, HCMC 11th Fl, Cathay Life Tower, 167 Bui Thi Xuan, Ha Noi
Email:	• trungle@rta.vn
Website:	• www.rta.vn


Hanoi Telecom HT Vietnam Services Joint Stock Company (HTS)		
Sector:	Tech Provider	
Location:	• Hanoi, Vietnam	
Meeting Overview		
Date:	• December, 2017	
Location:	• Hanoi	
Team:	• Thuy, Thong	
Company/Organization Details		
Jobs:	<ul style="list-style-type: none"> Provide consultancy and services in data management and communication technology solutions Provide database management services 	
Gains:	• Promote seafood traceability management solutions to many users	
Pains:	• Hard to promote monitoring and traceability solutions in the markets	
CSR:	• N/a	
USAID Engagement:	• No	
Project Component:	• Provide information technology solutions for traceability (DeepTrace or iCheck) on mobile platform and basis of QR code.	
Partnership Potential:	• High	
Potential Partnership Assets:	• Available monitoring solution called DeepTrace which can be adapted for tuna fishing vessels using with a smart phone	

	<ul style="list-style-type: none"> Flexible offer in administration and maintenance: The users can invest and maintain the database and extract data or get maintenance services from HTS Experienced solution development team
Project Overlap:	<ul style="list-style-type: none"> No
Drawbacks:	<ul style="list-style-type: none"> Mini due diligence
Name:	<ul style="list-style-type: none"> Pham The Hai
Position:	<ul style="list-style-type: none"> Director
Phone:	<ul style="list-style-type: none"> Tel: +84.9.2205.6888/84.24.3577.3009
Address:	<ul style="list-style-type: none"> 02 Chua Boc street, Hanoi, Vietnam Rep. office: 385 C Nguyen Trai, Ho Chi Minh City, Vietnam
Email:	<ul style="list-style-type: none"> haipt@hts.vn
Website:	<ul style="list-style-type: none"> www.hts.vn
	
Sector:	Tech Provider
Location:	<ul style="list-style-type: none"> Derio, Vizcaya, Spain
Meeting Overview	
Date:	<ul style="list-style-type: none"> 05 February, 2018
Location:	<ul style="list-style-type: none"> Idorsolo, 1, 48160 Derio, Bizkaia, Spain
Team:	<ul style="list-style-type: none"> Nguyen Ba Thong, Dong Quang Hong
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> Design of technology solutions for tuna fishing sector Manufacturing of electronic devices Distribution of products Post-sales services Satellite telecommunications expertise Research and development the innovative products
Gains:	<ul style="list-style-type: none"> Provides electronics devices for tuna fishing sector worldwide Provides communications worldwide Provides monitoring systems, VMS in Spain, Europe and South America
Pains:	<ul style="list-style-type: none"> Guidelines for Public Private Partnership for investment in VMS system approved by central government is not available
CSR:	<ul style="list-style-type: none"> N/a
USAID Engagement:	<ul style="list-style-type: none"> No
Project Component:	<ul style="list-style-type: none"> Experienced monitoring solutions development team High level of technical knowledge in communications systems based on satellite
Partnership Potential:	<ul style="list-style-type: none"> High
Potential Partnership Assets:	<ul style="list-style-type: none"> Technology company pioneer in the use of satellite communications applied to fishing monitoring VMS provider in Spain and South America, 22 countries are using VMS developed by Zunibal Globally, 62 VMS dealers

Project Overlap:	<ul style="list-style-type: none"> • Pilot on application of VMS onboard fishing vessels in Ca Mau, Kien Giang provinces
Drawbacks:	<ul style="list-style-type: none"> • No
Name:	<ul style="list-style-type: none"> • Dong Quang Hong
Position:	<ul style="list-style-type: none"> • Technology advisor
Phone:	<ul style="list-style-type: none"> • Tel: +84. 902468198
Address:	<ul style="list-style-type: none"> • 501, 2/4 street, Nha Trang city, Khanh Hoa province, Vietnam
Email:	<ul style="list-style-type: none"> • hongquang@zunibal.com
Website:	<ul style="list-style-type: none"> • http://www.zunibal.com/
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>VIETTEL VTSMART CENTER</p> </div> <div style="text-align: center;">  </div> </div>	
Sector:	Tech Provider
Location:	<ul style="list-style-type: none"> • HCM City, Vietnam
Meeting Overview	
Date:	<ul style="list-style-type: none"> • February, 2018
Location:	<ul style="list-style-type: none"> • HCM City
Team:	<ul style="list-style-type: none"> • Nguyen Minh Khanh Ngoc
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> • Provide telecommunication service • Connectivity • Postal services • Distributing begin-end equipments • Financial investment • Propaganda • Investment in real estate • Import-export • Oversea investment
Gains:	<ul style="list-style-type: none"> • Provides telecommunication, VMS system to fisheries sector
Pains:	<ul style="list-style-type: none"> • Guidelines for Public Private Partnership for investment in VMS system approved by central government is not available
CSR:	<ul style="list-style-type: none"> • N/a
USAID Engagement:	<ul style="list-style-type: none"> • No
Project Component:	<ul style="list-style-type: none"> • Provides telecommunication application, hardware (VMS, PDA) for catch documentation and traceability
Partnership Potential:	<ul style="list-style-type: none"> • High
Potential Partnership Assets:	<ul style="list-style-type: none"> • The biggest telecommunication groups in Vietnam • Sufficient resources needed (human, capital) for investment in CDT • Collaborating with Zunibal (VMS producer) to pilot VMS onboard in Ca Mau and Kien Giang provinces
Project Overlap:	<ul style="list-style-type: none"> • None
Drawbacks:	<ul style="list-style-type: none"> • No experiences in CDT
Name:	<ul style="list-style-type: none"> • Le Minh Kiet
Position:	<ul style="list-style-type: none"> • Director

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<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Seafood Task Force</p> </div> <div style="text-align: center;">  </div> </div>	
Sector:	Seafood
Location:	Multi-national (Thailand & Vietnam)
Meeting Overview	
Date:	<ul style="list-style-type: none"> February, 2018
Location:	<ul style="list-style-type: none"> Hanoi
Team:	<ul style="list-style-type: none"> Thong
Company/Organization Details	
Jobs:	<ul style="list-style-type: none"> Working on combating IUU fishing practices in Thailand and the Southeast Asia region
Gains:	<ul style="list-style-type: none"> Experiences in supporting Thailand government to address the issues associated with IUU fishing practices, forced labors and other social aspects. Promoting seafood/fish traceability and catch documentation in Thai fishing industry which is similar to Vietnam fishery
Pains:	<ul style="list-style-type: none"> The Task Force is currently focused on Thailand but over time, it will start to use the models it is currently developing to expand its scope to other countries
CSR:	<ul style="list-style-type: none"> Yes
USAID Engagement:	<ul style="list-style-type: none"> No
Project Component:	<ul style="list-style-type: none"> Catch documentation and traceability
Partnership Potential:	<ul style="list-style-type: none"> High
Potential Partnership Assets:	<ul style="list-style-type: none"> Seafood Task Force has diverse participants from regional and international seafood processors, retailers, NGOs (SFP, and tech providers, third party in certification). The task force members have rich experiences in promoting global sustainable seafood supply chain/fisheries
Project Overlap:	<ul style="list-style-type: none"> Fisheries in Vietnam – product traceability Shrimp (aquaculture) and Shrimp Feed; Tuna
Drawbacks:	<ul style="list-style-type: none"> None
Name:	<ul style="list-style-type: none"> Tonette Lim
Position:	<ul style="list-style-type: none"> Director
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Inmarsat		
Sector:	Satellite Operator and Solutions Provider	
Location:	HQ in United Kingdom w/ offices in Singapore, HongKong, Japan, Australia, the Netherlands, Canada, and United States	
Meeting Overview		
Date:	<ul style="list-style-type: none"> December, 2017 	
Location:	<ul style="list-style-type: none"> Hanoi, Nha Trang 	
Team:	<ul style="list-style-type: none"> Gibson Villanueva II, Sales & Business Development Manager, Inmarsat Maritime 	
Company/Organization Details		
Services:	<ul style="list-style-type: none"> Provide satellite based solutions for the fishing sector allowing fishing vessels and its crew to be connected while at sea Provides end to end services spanning across the needs of the fishing sector to communicate while at sea, including satellite airtime, hardware, consultancy and solutions 	
Advantages:	<ul style="list-style-type: none"> By enabling satellite communications, vessels could be connected allowing VMS and traceability solutions to be online all the time, while enabling important applications such as voice call, emergency alerts, crew communications, weather, catch prediction, online navigation, etc. Partnership with Vietnam Maritime Communication and Electronics LLC (VISHIPEL) 	
Barrier	<ul style="list-style-type: none"> Unlike its merchant vessel siblings, fishing vessels are not commonly equipped with satellite communications solutions and therefore, adaptability will be the main barrier 	
CSR:	<ul style="list-style-type: none"> N/a 	
USAID Engagement:	<ul style="list-style-type: none"> Inmarsat and US Aid Oceans have signed an MoU in August 2017 highlighting a partnership to try to spread awareness on the benefits of satellite communications for the fishing industry while enabling traceability 	
Project Component:	<ul style="list-style-type: none"> The Inmarsat Fleet One on the vessel, w/ VMS and other traceability systems on shore 	
Partnership Potential:	<ul style="list-style-type: none"> High 	
Potential Partnership Assets:	<ul style="list-style-type: none"> Inmarsat is offering the Fleet One system as an all-in-one technology that allows VMS, catch reporting, voice calls, emergency alerts, crew communications, weather, fish finding, and other vital systems online straight to the fishing boat in the middle of the sea 	
Project Overlap:	<ul style="list-style-type: none"> 	
Drawbacks:	<ul style="list-style-type: none"> N/A 	
Name:	<ul style="list-style-type: none"> Gibson Villanueva II 	
Position:	<ul style="list-style-type: none"> Sales & Business Development Manager, Fishing & Leisure Vertical, Inmarsat Maritime 	
Phone:	<ul style="list-style-type: none"> +65 6499 5483, +65 9021 9456 	
Address:	<ul style="list-style-type: none"> 11 Lorong 3 Toa Payoh Block C #01-31 Jackson Square Singapore 319579 	
Email:	<ul style="list-style-type: none"> Gibson.villanueva@inmarsat.com 	
Website:	<ul style="list-style-type: none"> www.inmarsat.com/service/fleet-one 	

OceanMind	
Sector:	Fisheries Monitoring, Compliance and Analysis
Location:	<ul style="list-style-type: none"> • Oxfordshire, UK
Meeting Overview	
Date, Location:	<ul style="list-style-type: none"> • n/a
Team:	<ul style="list-style-type: none"> • n/a
Company/Organization Details	
Jobs:	<p>OceanMind is a not for profit organization working to increase the sustainability of fishing globally through actionable insights into the compliance of fishing activities in support of governments, the fishing industry and fishing industry associations. Empowered by advanced technology, expert fisheries analysts with wide ranging international expertise provide confidential, in-depth fishing vessel monitoring, compliance and traceability reports with recommendations for enforcement and action for governments and government agencies to actively diminish Illegal, Unreported and Unregulated (IUU) seafood from their countries. The organisation also works in partnership with retailers, processors, suppliers and industry associations to provide unbiased risk identification and fishing vessel compliance to help supply chains make improved seafood purchasing decisions.</p> <p>OceanMind has successfully provided Monitoring, Control and Surveillance support, capacity building and intelligence to governments, fisheries authorities and seafood supply chains all over the world. Its expert fisheries analysts use sophisticated technology using in-depth computer analysis and machine learning to understand data including: open and proprietary vessel tracking telemetry; satellite based RADAR including SAR; VMS and AIS data; optical and near infrared imagery, unmanned aerial, surface or underwater vehicle sensors; global environmental, climate and meteorological information; vessel registry and fishing license databases; vessel blacklists maintained by enforcement authorities and specialist fisheries analysis databases.</p> <p>This support has enabled these organisations to be much more productive and effective in their compliance and investigative work, resulting in more efficient overall management of fisheries, through increased enforcement action, increased deterrence, and overall increased compliance.</p> <p>OceanMind works collaboratively with all of its partners securely and confidentially to provide the following support:</p> <ul style="list-style-type: none"> • Vessel analysis and compliance assessments - OceanMind's team of expert fisheries analysts collate all the necessary pre-analysis data and conduct the in-depth analysis and compliance assessments required for all vessels operating within area of interest. This includes effort analysis and insights into drivers of overfishing. • In-depth reporting with actionable insights – OceanMind delivers compliance assessment results to detail all threats and risks relating to fishing. These intelligence reports include all information necessary to initiate an investigation, including next-step recommendations, such as where to intercept the vessel, how to interrogate the relevant log book, and what information to obtain from the vessel's captain. This enables its partners to

	<p>focus on actionable, high risk information rather than spend valuable time investigating instances of unclear or unverified information.</p> <ul style="list-style-type: none"> • Patrol planning and asset direction - OceanMind provides intelligence reports and detailed insights derived from all available data sources, including satellite imagery, vessel tracks, identity databases, etc., to assist with patrol planning of enforcement assets, including patrol vessels, aircraft, or unmanned craft, as appropriate. • Coaching and training - OceanMind delivers coaching and training to governments and government authority staff to help develop their skills and knowledge and build capacity for the future. • Improved communication channels - Using their international knowledge of fisheries compliance, OceanMind’s fisheries analysts assist with liaison and communication between regional fisheries management organisations, flag states, port states and other important bodies and agencies to enable smooth, productive communications generating improved relationships for ongoing success. • Regulatory review - OceanMind supports governments in the review of their regulations to ensure the most effective mechanisms are employed to effectively enforce fisheries compliance. • Information, advice and guidance – OceanMind has a wealth of knowledge and expertise in all areas of vessel monitoring from artisanal fleets to large industrials and works collaboratively to identify the right monitoring solution to fit with its partners’ needs. • Catch compliance validation - OceanMind works with international retailers, processors and suppliers to provide unbiased risk identification and fishing vessel compliance to increase the certainty for buyers on seafood catch with insights into the fishing method, vessel and operators involved to demonstrate conformity of relevant regulations for sustainable seafood purchasing decisions.
Gains:	<ul style="list-style-type: none"> • Increased knowledge and skills in-country to build capacity for effective ongoing IUU enforcement • Improved validation of fisheries compliance and evidence of reduced IUU seafood entering the country. • Improved traceability and catch validation of seafood for sustainable supply chains.
Pains:	<ul style="list-style-type: none"> • Building trusted collaboration between multiple government departments to ensure joint working and interdepartmental communications to achieve effective results. • Instill economic benefits of behavior change in seafood supply chains of validating seafood as IUU free to seafood supply chains
CSR:	<ul style="list-style-type: none"> • OceanMind is a not for profit focused on improving fisheries sustainability through compliance so all activities aim to accomplish this end and do not just qualify as CSR.
USAID Engagement:	<ul style="list-style-type: none"> • OceanMind has been in discussions with USAID Oceans program for a year discussing different opportunities to assist in the ASEAN region.
Project Component:	<ul style="list-style-type: none"> •
Partnership Potential:	<ul style="list-style-type: none"> • Partnership potential is exceptional.

	<ul style="list-style-type: none"> • OceanMind works collaboratively with all partners to help deliver sustainable fisheries management through compliance monitoring and assistance. Fisheries analysts can work in-country alongside various government departments and provide information, advice and guidance for ongoing training and support. • Through its close working relationship with the Seafood Task Force, OceanMind already has access to many seafood industry organisations based in Vietnam and can help facilitate industry collaboration for behavior change. • OceanMind's analyst expertise enables joint working capability with other technology and industry partners alongside its own technology system to deliver fully detailed, comprehensive results.
Potential Partnership Assets:	<ul style="list-style-type: none"> • Expert, independent fisheries analyst team with global experience to validate monitoring and compliance analysis and provide actionable insight and recommendations for follow up and enforcement. • Highly sophisticated technology system that uses machine learning to quickly and effectively analyze multiple, large data sources including satellite based VMS, AIS, optical imagery, and satellite RADAR with global fisheries license and enforcement databases etc. to verify fishing vessel behavior and traceability of catch before the vessel reaches port. • Previous international experience of success. OceanMind is working with other governments including Thailand and Costa Rica on very similar projects using collective efforts to promote a sustainable and responsible seafood industry and has the benefit of already understanding the approach needed to achieve success. • Not for profit business model provides technology and data economies of scale giving affordable solutions tailored to each partners' needs.
Project Overlap:	<ul style="list-style-type: none"> •
Drawbacks:	<ul style="list-style-type: none"> • Failure to follow up and act on expert advice and recommendations will prevent successful outcomes. • Lack of trust to share information and communicate across the partnership will restrict the level of success that can ultimately be achieved.
Name, Position:	<ul style="list-style-type: none"> • Nick Wise, Director and Founder
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Email:	<ul style="list-style-type: none"> • Nicholas.wise@sa.catapult.org.uk
Website:	<ul style="list-style-type: none"> • www.oceanmind.global

ANNEX IV. ADDITIONAL INFORMATION AND RECOMMENDATIONS FOR ECDS IMPLEMENTATION

Recommendations regarding the eACDS

The ACDS (ASEAN Catch Documentation Scheme) 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 ACDS was developed in 2014 and was 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 Fish Market Organization (FMO) of Thailand for collaboration on development and promotion of electronic system of the ASEAN Catch Documentation Scheme (eACDS).

The development of the eACDS is a regional effort of SEAFDEC and the ASEAN Member States (AMSs) 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 eACDS in the region, the SEAFDEC Council in 2016 agreed to pilot test the eACDS in Brunei Darussalam. On 3 April 2017, the eACDS 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 eACDS in USAID Oceans' expansion sites, including Vietnam. Relating to the ongoing development and testing of eACDS, assessment studies of implementation have been conducted in several expansion countries. Inputs from those studies, as well as lessons learned from learning sites in Philippines and Indonesia, have been considered in the design, development, and implementation of the eACDS in Vietnam.

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 which are:

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

The eACDS captures key information throughout the supply chain, using the following database tables:

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

Comparison matrix between eACDS and Vietnam traceability process

Activities / Steps	eACDS	Vietnam process (based on new Acts)	Proposed improvement/preparation recommendations to implement eACDS in Vietnam	
			Preparations for Vietnam	Improvement for eACDS
Vessel registration	N/A	All fishing vessels from 20 Hp or 15m length upward have to register at provincial Fisheries Department.	Enter all vessels registration data into a database to link with eACDS	Link the Vietnam registration database to eACDS system
Licensing	N/A	All fishing vessels from 20 Hp or 15m length up have to submit documents to provincial Fishery Departments (Sub-DFISH) to get the fishing license before going out to the sea for fishing operations.	Enter all licensing data into a database to link with eACDS	Link the Vietnam licensing database to eACDS system
Port out	<ul style="list-style-type: none"> - Skippers / Owners ask port out permissions from authorities - Port out permissions are in electronic forms with name of officer, official stamp and scannable 	<ul style="list-style-type: none"> - Inform to fishing port authorities before leaving (Clause 3, Article 12, Decree 80/2012/ND-CP); - Skippers / owners submit documents to port authorities; - Port authorities will check: logbook, vessel registration, fishing license, certificates for skippers & chief engine, compliance with food safety regulations and list of crews; - Port authorities check vessels: fishing gears, crew members, life-jackets, communication devices, VMS (if any) (Decision 27/QD-BNN-TCTS); - To be checked & monitored by Coastguard about vessel registration, fishing licenses, crew list, skipper certificates & other documents (Clause 1, Article 18, Decree 77/2017/ND-CP). 	<ul style="list-style-type: none"> - Scannable equipment is needed to be invested; - Stakeholders need to be trained on using eACDS system. 	<ul style="list-style-type: none"> - eACDS is only designed for port out procedure of national fishing vessels but not mentioned to foreign vessels. Thus, it is necessary to add another window for foreign fishing vessels' port out procedure if requested by Vietnam.
Report at sea	<ul style="list-style-type: none"> - Record / auto-record key data elements (KDEs) into eACDS in the telecom signal areas; - Paper-record in the outside telecom signal areas and enter 	<ul style="list-style-type: none"> - Paper record by logbook forms (Appendix 8, Circular 25/2013/TT-BNNPTNT replaced by Appendix 2, Circular 02/2018/TT-BNNPTNT). 	<ul style="list-style-type: none"> - Fishers need to be trained to fill in the CD form in case no signal. - If an internal memory will be added in eACDS, then input data devices (smartphones, tablets) are needed to be 	<ul style="list-style-type: none"> - An internal memory is needed to be add to eACDS in order to record / auto-record internally in eACDS in cases of without telecom signals.

Activities / Steps	eACDS	Vietnam process (based on new Acts)	Proposed improvement/preparation recommendations to implement eACDS in Vietnam	
			Preparations for Vietnam	Improvement for eACDS
	data into eACDS once back to the shore.		invested for piloted fishing vessels; - Fishers are needing to be trained on using eACDS system.	
Transshipment at sea	eACDS has NOT included transshipment at sea as a module in its process.	- The skippers have to fill out the transshipment form (Circular 02/2018/TT-BNNPTNT); - The Skippers complete the transshipment form after port in and submit to Port Authorities within 24 hours .		A module for transshipment report/record need to be added into eACDS.
Port in		- Inform to fishing port authorities at least 1 hour before arrival about: vessels registration number, estimated landing time and catches (Clause 1, Article 12, Decree 80/2012/ND-CP and Clause 3, Article 1, Circular 02/2018/TT-BNNPTNT); - Inform related information to port authorities to check - Submit logbook and cross-check logbook with catches & fishing gears. - Cross-check on the fishing grounds, vessel tracking with VMS system; - Verify information by forms (Decision 27/QD-BNN-TCTS); - To be checked by Coastguard (Clause 1, Article 18, Decree 77/2017/ND-CP) about vessel registration, fishing licenses, crew list, skipper certificates & other documents.	- Similar recommendations as port out procedure.	- Similar recommendations as port out procedure.
Catch verification	- Catch Verification Units will verify the catches (weight by species) and record to the eACDS system	- Port authorities verify and approve the Catch Statement for Raw Materials (Appendix IV, Circular 50/2015/TT-BNNPTNT) for domestic catches & ensure non-IUU catches	- Capacity building and trainings are needed to port authorities to ensure the capability for verifying the	

Activities / Steps	eACDS	Vietnam process (based on new Acts)	Proposed improvement/preparation recommendations to implement eACDS in Vietnam	
			Preparations for Vietnam	Improvement for eACDS
	<ul style="list-style-type: none"> - Port authorities verify the catches and issues / approve Catch Documents (CD). - Important economic marine fish species are coded with 3 digits of the English name by FAO attach with code number, scientific name, local name and pictures. 	<p>(Clause 2, Article 1, Circular 02/2018/TT-BNNPTNT)</p> <ul style="list-style-type: none"> - Port authorities send their staff to check at the port on: + For fishing vessels: Compare and monitor the weight by species corresponding with logbook + Carrier vessels: Compare and monitor the weight by species corresponding with transfer at sea record and selling vessels' logbook (Clause 3, Article 2, Circular 02/2018/TT-BNNPTNT) and a transshipment record (logbook) is requested at Circular 02/2018/TT-BNNPTNT. 	<ul style="list-style-type: none"> catch, including marine fish taxonomy - A clear catch verification procedure need to be guided with Catch Declaration form to coastal provinces (now only fishing trip report at appendix VIIIh - Circular 02/2018/TT-BNNPTNT). 	
Movement Documents (MD) or Marine Catch Purchasing Documents (MCPD)	After getting approved CD, request for MD and MD is issued by MD Units before moving to fish collectors.	For movement documents, Vietnam only have the appendix 5b, Circular 02/2018/TT-BNNPTNT regulated the transport details for exported products from processing plants to commercial / shipping ports to export but without the movement documents for transferring from local fishing port to processing plants.	Regulate the movement documents for transfer the catches from fishing ports to processing plants including key information such as truck number, name of species, quantity, name of the port, name of the venue (processors) and the distance...	
Issue CC	Catch Certification Units certify and issues Catch Certificates (CC).	Provincial Fishery Departments (Sub-DFISH) certify and issue CC (Clause 2, Article 1, Circular 02/2018/TT-BNNPTNT).	Linked databases need to be available for cross-checking such as vessel registration, licensing and vessel monitoring...	
Export seafood products to importers	Information is sent to importers in parallel with seafood products.	Documents could be sent parallel with containers or e-files are sent by email.	Linked databases among stakeholders / authorities such as Custom, NAFIQAD, exporters, processors... should be harmonized in order to input into application.	

Activities / Steps	eACDS	Vietnam process (based on new Acts)	Proposed improvement/preparation recommendations to implement eACDS in Vietnam	
			Preparations for Vietnam	Improvement for eACDS
Importers validate information	Importers can access the eACDS system to validate provided information.	Importers validate information by self-visiting local processors or by the audits of independent third parties.	Basis data should be harmonized & updated on eACDS for validation purposes.	A separate window or APIs (Application Programming Interface) for importers can access and online validate information by application with the decentralization of accessing the information with management agencies.

Recommendations for specific improvements to CDT regulations, protocols, and technology

USAID Oceans has compiled the following list of technical recommendations to be considered in the implementation of the SEAFDEC-led eACDS, or the development of a custom eCDTS system.

For the eACDS in particular, the eACDS process is relatively similar to CDT procedures proposed by the Vietnam government under the amending version of the Circulars: 50/2015/TT-BNNPTNT, 25/2013/TT-BNNPTNT and 62/2008/TT-BNNPTNT. The system and application may need to be modified to in line with Vietnam fisheries management system and legal framework. Relevant agencies and competent authorities should be assigned to monitor, control, and operate the system, including the determination of clear roles of the Port Authority, Coastguard, and the local fisheries department who controls the port in/out procedures and provides and grants required catch certifications.

In addition, USAID Oceans recommends to following modifications to the eACDS for implementation in Vietnam:

- Use local language in the eACDS application
- Make fully electronic (in some steps, paper forms are being used)
- Paper-based documentation is currently being used in parallel with electronic system, with QR codes used on catch documents. A scannable/readable system is recommended so that data upload to the eACDS database is streamlined and can be implemented across all actors in supply chain.
- The national databases for fisheries management (VNfishbase), especially databases on vessel registrations, fishing licenses, should be harmonized and made compatible with the eACDS system.

The following recommendations are suggested for any eCDTS initiatives undertaken by Vietnam to strengthen their CDT capacities and protocols.

Fishing vessel registration and licenses -

- Digitize fishing licensing information management through a national web-based database that clearly allocated agency roles and responsibilities and allows relevant stakeholders to access and update information;
- Develop a tool to alert authorities on vessel license status (i.e. expiration date, validity, etc.);
- Improve system and process to renew and grant new licenses (e.g. through use of VMS, completion and return of logbook, catch declaration, IUU fishing practices); and
- Enhance MCS operations to ensure compliance with regulations in relation to vessel registration, licensing, and monitoring, control at sea operations, and landing data.

Landing and catch declarations –

- DFISH should publicize a list of designated fishing ports or those with sufficient facilities for validating and verifying information of fishing fleet operations for traceability and certificate purposes; DFISH should also develop a plan to upgrade fishing port facilities, as needed, and conduct capacity building for relevant authorities at the central and local levels;
- Develop and implement a standard traceability scheme for unloading and weighing to enhance landing data information, which is particularly important for high economical value species such as yellow fin tuna, big eye tuna, and skipjack tuna;
- Develop a standard form for catch declaration; catch declaration is a verified and approved “catch report” that prepared by captain or skipper that must be submitted upon landing as mentioned in the Circular 02/2018/TT-BNNPTNT;
- Develop standard procedures to record and manage information related to the catch declaration and link to other upstream (logbook) and downstream (catch certificate, export documents) data sources.
- To include the encoding data in machine readable technology, for instance, QR code should be introduced and trialed to ensure that the system will smoothly operate, avoid typing errors, reduce

manipulation by encoders (fishers, fish buyer and port authority) and also mitigate possible risks whilst encoding data/information.

- All fishing vessels must submit fishing logbook or catch report regardless of if they are applying for a CC. This is to ensure that the Port Authority has complete data of landing volume and to reduce the possibility of unreported or IUU fish to enter the certificated catches.
- Middlemen, fish collectors, and buyers may buy fish at the landing points that are already reported or declared to the Port Authority and entered into VNfishbase. Purchased catch should be accompanied with copy of catch declarations with clear IDs or codes that will be used for validation and to get CCs. For those who do not need to have a CC for fish batch or lot, the catch statement and CC scheme will not apply to their supply chain, however, the information of their catches have still been reported to the national database.

National fisheries database and certification scheme -

Communication between owners or buyers of fish/fishery products and with competent authorities to get catch statements for raw materials or catch certificates using postal services imposes a lengthy process that is not efficient. Therefore, an electronic system should be strongly considered, as well as support facilities to verify information of fishing vessels, issue catch statements and certificates. Proposed procedures for the Catch Certification for Vietnam’s capture fisheries may be grouped by the following key components:

1. **Fishing vessel:** completes port in procedures with Coastguard and Port Authority, provides fishing vessel registration, fishing license, logbook, catch declaration, and crew list.
2. **Transshipment vessel:** shows administrative papers (license, crew list, certificates of skipper, vessel registration) and procurement logbook, transshipment declaration.
3. **Port authority:** validates the origin of raw materials traded between fishing vessels, middlemen, and seafood buyers.
4. **Sub-Departments of Fisheries:** verifies catch documentation, accesses national fisheries databases (IUU vessel list, fishing license, vessel registration, logbook, catch declaration, transshipment declaration, VMS database) and grants the Catch Certificate.
5. **DFISH:** develops, operates, and manages the national fisheries database (VNfishbase), e-portal, and updates and maintains the system.

To apply the eCDTS to the fisheries, it is recommended that the catch declaration, catch report, and logbook information be trialed for offshore fleets at the first stage, with unique codes for each fishing vessel. For example, the ID may be initiated by a vessel registration number then trip number, month and year of fishing/landing and registered in the system or database. For example, an ID of the catch documentation can be KH9120TS1.01.18. Explanation of the code may be referred to the following figure.

Figure 15. Proposed code for catch documentation (catch/report declaration) to apply eCDTS for Vietnam fisheries

KH9120TS	1	01	18
Vessel registry number	Trip 1	01 Month: January	18 Year: 2018

Species and catch codes may be used the guidelines of FAO ([FAO-3 Alpha Species Codes \(ASFIS\)](#)) for important economically species whilst the mixed fisheries may use the “commercial group” terminology such as “mixed fish,” “sorted fish,” and “trashfish.” The codes will help to encode and track information in the system.

Additionally, USAID Oceans offers the following recommendations:

- Logbook and catch declaration should be encoded by local fishing port authority;
- Develop online database for IUU vessels for imported raw material;

- Revise and develop KDEs for the capture fishery sector to comply with market requirements and FAO codes;
- In developing the national fisheries database, incorporate the FAO alpha code for fishing vessels, fishing gear, and fish species to ensure compatibility with international systems. In addition, the International Trade Data System, suggested by SIMP, should also be referred to for a single window through which the data required by government agencies for international trade transactions may be submitted. For full details, reference the [U.S. SIMP Compliance Guide](#)² and more information about the [U.S. Customs and Border Protection ITDS](#)³.
- The integrated online database and application should have ability to record and manage the:
 - Catch Certificate and its certification process;
 - Link to Seafood processing plants, seafood traders (importer/exporter);
 - The list of designated ports and other landing sites/fishing ports;
 - Aquatic species in the Redbook data for Vietnam and CITES species list; and
 - National fisheries database, VNfishbase operations.
- Develop and synchronize satellite-based VMS with VNfishbase to enable web-check for vessel tracking purposes;
- Conduct capacity building for central and local government and the Port Authority for monitoring and tracking fishing vessel operations/behavior and verification of catch certification through use of information system; and
- The Sub-Department of Fisheries, which grants the Catch Certificate (CC), should have an office and essential facilities for catch verification and vessel tracking inside designated ports for convenience to fish buyers/seafood processors, to rapidly get raw material statements and CCs, and ensure necessary documents are attached with the lot/batch of fish before leaving the unloading points.

VMS systems -

- Vietnam has many fishing vessels, thus there is a need to have a more in-depth study on the selection of appropriate VMS systems which may be functional for fisheries management purposes and also affordable to local vessel owners. Harmonization between benefits of vessel owners and management bodies should be kept balance, and fishing fleets targeting export markets should be prioritized to install VMS first. Following selection, a VMS pilot should be launched to ensure that the system selected is feasible in terms of management purposes and fulfilling requirements from vessel owners.
- DFISH and the central government should communicate with local fishers, fisheries associations, private sector (seafood/fish buyers/processors), and telecommunication companies to convene dialogues, forums and share information about some trials of VMS devices in Vietnam as well as in the region that may be appropriate to the fishery.
- Each onboard VMS unit has its own VMS number for tracking purposes and may be presented in the fishing license. In addition, the catch declaration/report shall be provided by port authority before vessel going to the sea for fish. Similarly, a transshipment declaration form or fish procurement documents shall be delivered to transshipment vessels to fill in code of fishing vessels and information about catches collected such as species name, weight, location, time etc.

Monitoring the import and export of seafood -

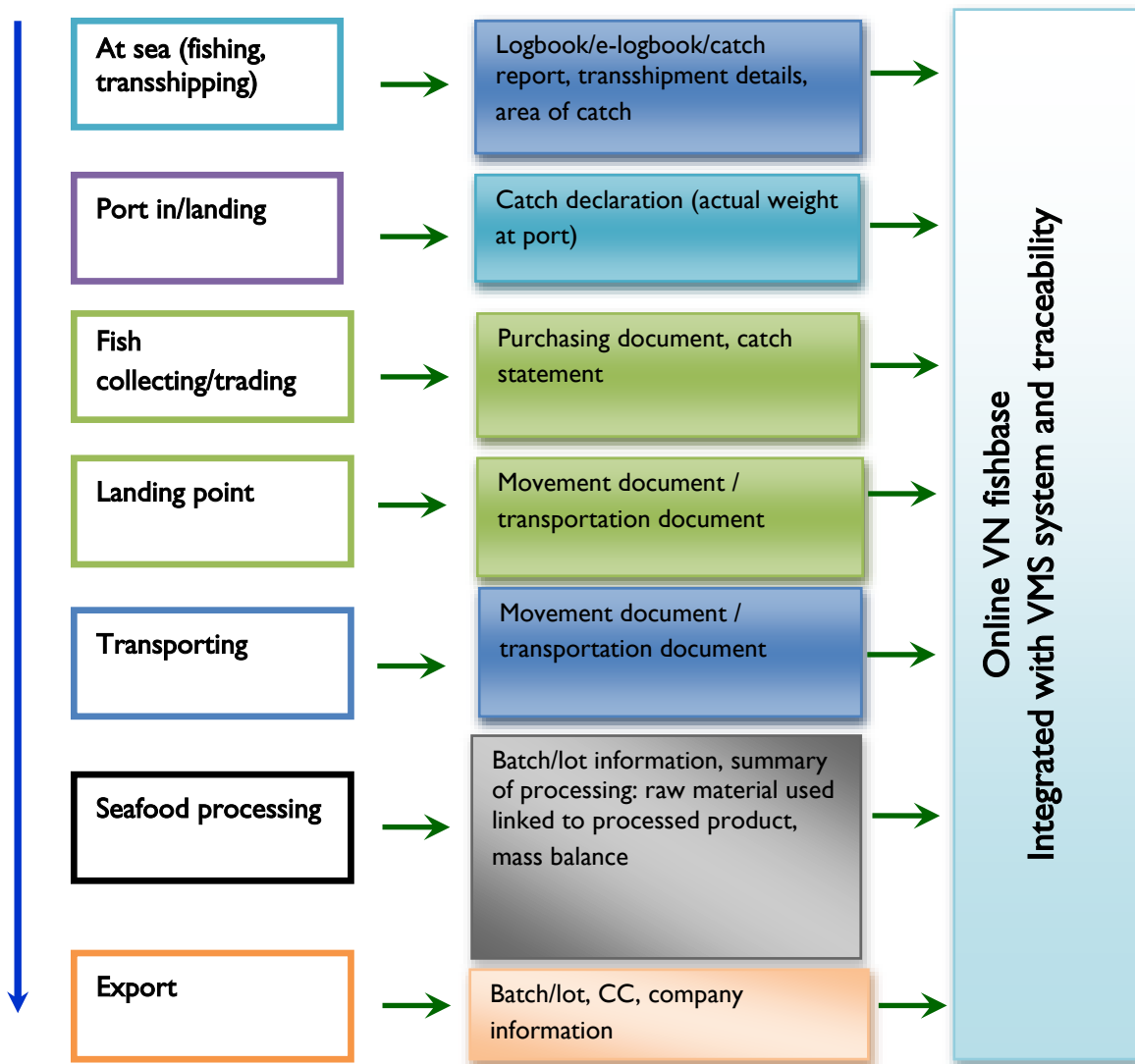
- There is a need to develop and enhance cooperation between Customs, NAFIQAD, the Department of Animal Health, and other relevant agencies to separate fish products processed from imported raw materials and domestic materials;
- A transparent national database and mechanisms of data/information sharing shall be developed to manage information in relation to fish/raw materials and products imported, re-exported, and exported;

² <https://www.iuufishing.noaa.gov/Portals/33/SIMPComplianceGuide2017.pdf>

³ https://www.cbp.gov/sites/default/files/documents/itds_capab_2.pdf

- A national database for processing ratio by seafood product type should be available for calculating the weight of final products and imported materials; and
- Enhance cooperation among relevant Ministries, agencies in preventing, eliminating and combating IUU fishing practices, such as application of the PSMA (2009).
- KDEs that are required by the SIMP program, EC 1005/2008 regulation, and are recommended under the eACDS should be considered in implementing and tailoring the eCDTS.⁴

Figure 16. Point of data entry in Critical Tracking Events (CTEs)



⁴ <https://www.seafdec-oceanspartnership.org/resource/quick-reference-kde-guide/>

ANNEX V. EXISTING TECHNOLOGY AND SOLUTIONS

FAME – Small Scale Fishers Tracking and Communication Device

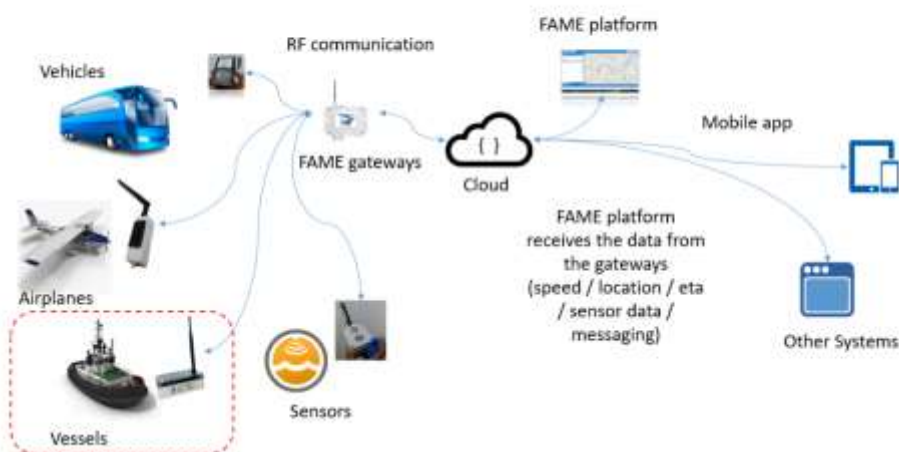
Increasingly, electronic monitoring (EM) systems on fishing vessels can combine position tracking, as seen in Vessel Monitoring Systems (VMS), with integrated telemetry (i.e., gear sensors), catch reporting, fleet management, crew communications, video capture, and other data analytics. The implementation 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.



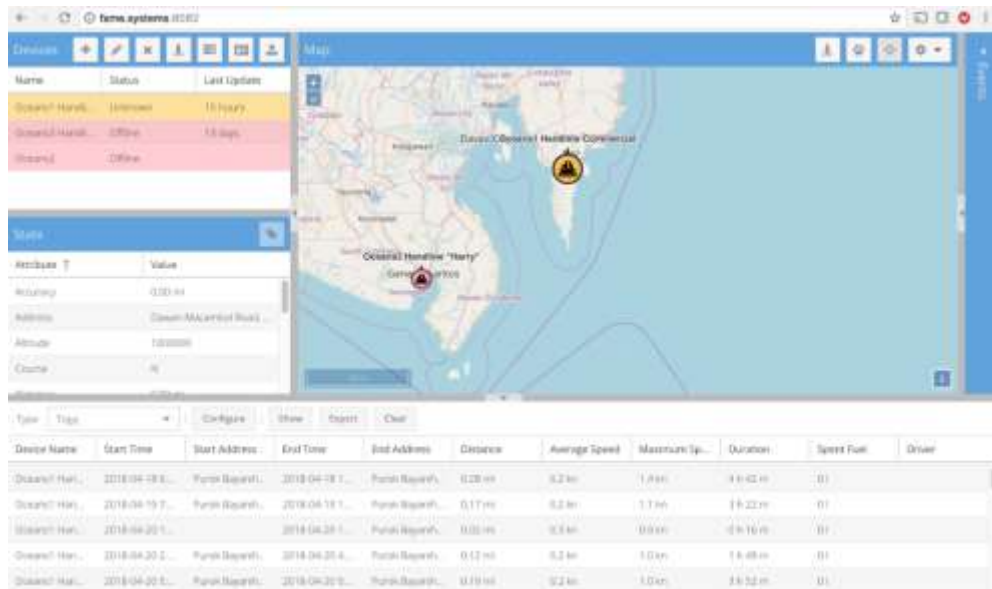
Futuristic Aviation and Maritime Enterprises, Inc. (FAME), a private company based in the Philippines, is the leading provider of small-scale vessel trackers and monitors that also serve as communication devices. FAME has deployments across the Philippines specifically in the MIMAROPA Region, Visayan 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.

Personal communication, together with telemetry data can be sent through the FAME transponders.

How FAME works



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 also 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 also 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 leverage 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.



Beneficiary	Benefits
Fishers and their families	Fisherfolk ability to communicate beyond the cellular coverage by sending text message Full information whereabouts (the fisher location) Emergency alert (both ways) Able to supply to EU and US where the required traceability data exists
Suppliers and middlemen	Fisherfolk 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 thru line 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, default 15 minutes
- 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.

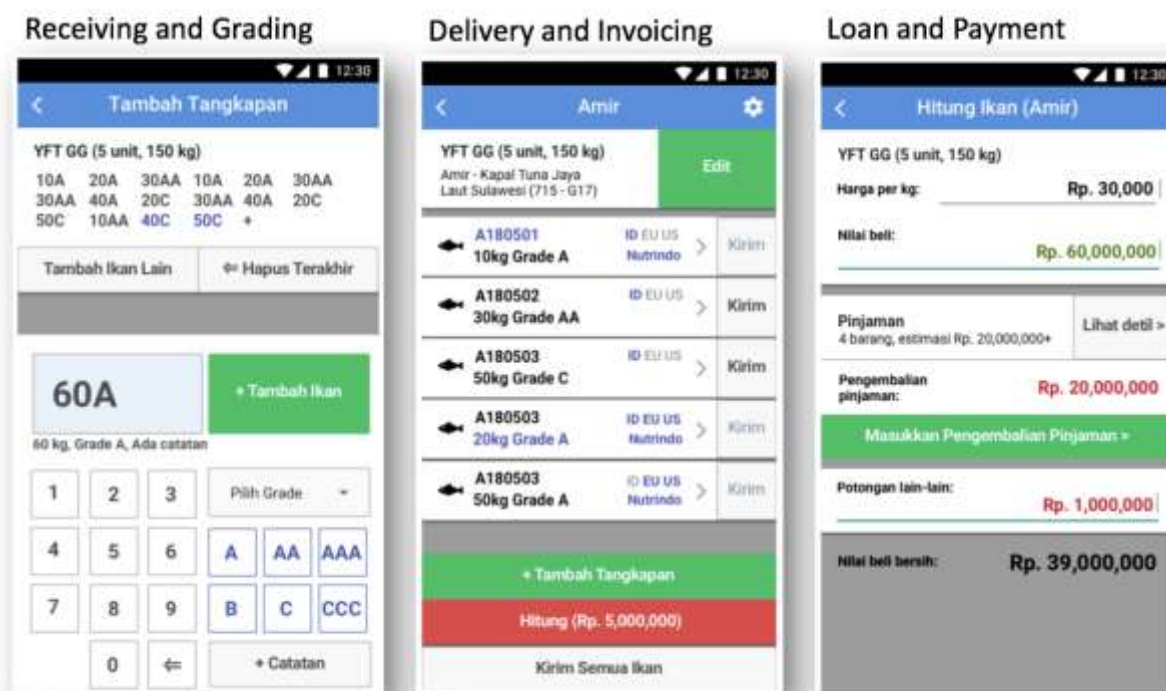
Trafiz is an Android mobile application for small-scale fish suppliers that will serve as the first data entry point in an eCDTS. The application will be implemented as an electronic data recorder for small-scale fish buyers and brokers at a certain landing point.

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 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.

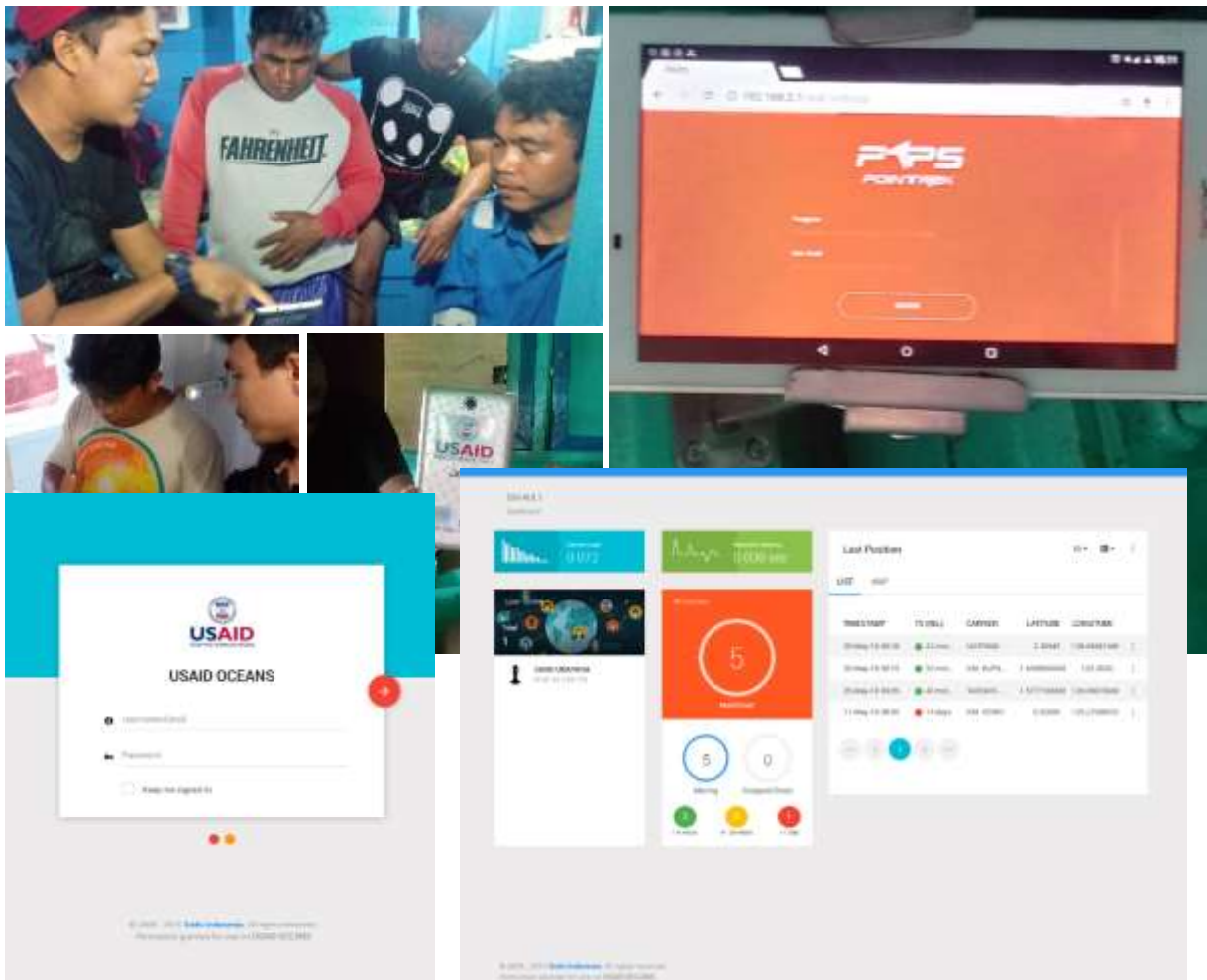
Inmarsat Pointrek VMS Features:

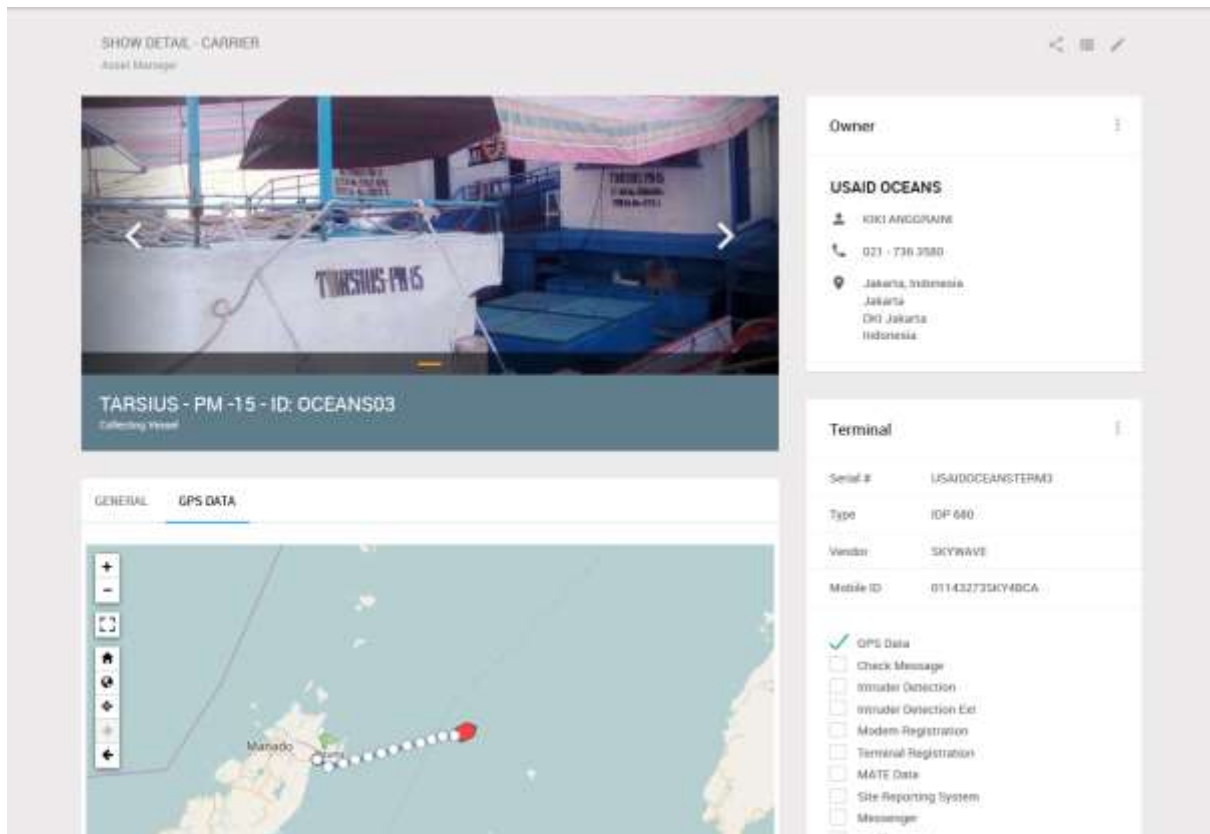
- Conforms to IMO Long-Range Identifications and Tracking Regulation;
- Show detailed fleet information, such as location, speed, heading, ship ID;
- Ship data can be accessed through any computer connected to the Internet;
- Worldwide satellite coverage;
- Web-based application with multiple layer map, 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 (shown below)





Movement of vessel, showing location, direction and speed