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TECHNICAL GUIDANCE ON THE DESIGN AND IMPLEMENTATION OF ELECTRONIC CATCH DOCUMENTATION AND TRACEABILITY IN VIETNAM, 2020 – 2023



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Acronyms and Abbreviations

ACDS	ASEAN Catch Documentation Scheme
AMS	ASEAN Member States
ASEAN	Association of Southeast Asian Nations
BoL or B/L	Bill of Lading
CC	Catch Certificate
CD	Catch Declaration
CDT	Catch Documentation and Traceability
COLD	Catch Origin Landing Declaration
CTEs	Critical Tracking Events
DARD	Department of Agriculture and Rural Development
DFish	Directorate of Fisheries, Vietnam
eACDS	Electronic ASEAN Catch Documentation Scheme
EAFM	Ecosystem Approach to Fisheries Management
eCDT	Electronic catch documentation and traceability
EEZ	Exclusive Economic Zone
EU	European Union
FAME	Futuristic Aviation and Maritime Enterprise
FAO	Food and Agriculture Administration
FI Cen	The Fisheries Information Center
FMA	Fisheries Management Area
FMO	Fish Marketing Organization
GT	Gross tons
IMO	International Maritime Organization
IUU	Illegal, Unreported, and Unregulated (fishing)
KDEs	Key Data Elements
LGU	Local Government Unit
LOV	Landing of Vessel
NAFIQAD	Animal Health and National Agro-Forestry-Fisheries Quality Assurance Department
MARD	Ministry of Agriculture and Rural Development
MCD	Centre for Marinelife Conservation and Community Development
MCS	Monitoring, Control, and Surveillance
MCPD	Marine Catch Purchasing Document
MD	Movement Documentation
PPC	Provincial People of Committee
RAFMS	Rapid Appraisal of Fisheries Management Systems
RDMA	[USAID] Regional Development Mission for Asia
RFMO	Regional Fisheries Management Organization
RIMF	Research Institute for Marine Fisheries
RPA	Rapid Partnership Appraisal
RPOA	Regional Plan of Action
SEAFDEC	Southeast Asian Fisheries Development Center

TWG	Technical Working Group
UN	United Nations
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership
VASEP	Vietnam Association of Seafood Processors and Exporters
VINATUNA	Vietnamese Tuna Association
VCA	Value Chain Analysis
VCCI	Vietnam Chamber of Commerce and Industry
VIFEP	Vietnam Institute of Fisheries Economics and Planning
VMM	Vessel Monitoring Measure
VMS	Vessel Monitoring System
WWF	World Wildlife Foundation

EXECUTIVE SUMMARY

It is recognized that eCDT (electronic catch documentation and traceability) systems are a relatively new concept for fisheries managers and seafood companies, both in Vietnam and in Southeast Asia. As of 2018, most ASEAN Member States (AMS) including Vietnam remained fully or largely reliant on the use of paper-based catch documentation, particularly at the point-of-catch and at landing. Across the AMS, it also varies widely which parties in each country are responsible for collecting catch documentation and traceability (CDT) data, verifying CDT data, and which data are to be collected at each stage of the supply chain.

In 2014, the United States Government tasked USAID to address the challenges related to IUU fishing in Southeast Asia. Subsequently, in 2015 USAID launched the Oceans and Fisheries Partnership (USAID Oceans), to be implemented through a partnership between USAID's Regional Development Mission for Asia (RDMA), SEAFDEC, and the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF) from 2015-2020. USAID Oceans program works to strengthen regional cooperation for combatting IUU fishing, enhancing fisheries management, and support marine biodiversity conservation. A critical component of the partnership was to develop and test eCDT technologies for application by the interested AMSs. To support eCDT adoption, the regional partnership was to provide clear and simple guidance on how to develop and implement eCDT systems.

During 2016 – 2019, following the development and testing of eCDT technologies within fishery supply chains operating at the program's designated learning sites, USAID Oceans and SEAFDEC, in close consultation with AMS fisheries management agencies and related stakeholder, drafted a Regional Technical Guidance on Design and Implementation of eCDT Systems in Southeast Asia.

In December 2017, USAID Oceans partnered with the Vietnam Department of Fisheries (DFish) to convene a national assessment workshop designed to review and identify capacity and management gaps and private sector partnership opportunities relating to national catch documentation and traceability. A summary report outlining the rapid assessment results and strategic opportunities was subsequently produced by USAID Oceans in partnership with DFish. This report highlights the need and desire for eCDT technology application in Vietnam in support of advancing sustainable and traceable fisheries and curbing IUU fishing. As a result, USAID Oceans received approval from USAID to collaborate and support relevant public and private partners in Vietnam to apply and test available eCDT technologies during the remaining period under the project lifetime.

The Centre for Marinelife Conservation and Community Development (MCD) is a Vietnamese NGO with the mission to promote active cooperation between related stakeholders, implementing initiatives that integrate local knowledge, and international experiences, in order to better manage coastal ecosystems and improve coastal communities' living conditions, contributing to sustainable development of the coastal zone. MCD has been cooperating for years with DFish and various coastal provinces in implementing and promoting fisheries co-management, improving fishermen livelihoods, and contributing inputs to the revised Fisheries Law of Vietnam.

Taking into account the needs from Vietnam, the mission and capacity of the partners, a partnership between the USAID Oceans program and MCD was established since December 2019 in order to collaboratively conduct activities to provide initial support to DFish and to Binh Dinh province to apply and test available electronic catch documentation and traceability (eCDT) technologies to address IUU fishing and promote fisheries sustainability and traceability. One of the key support activities is to work with DFish and other national stakeholders on developing a National Technical Guidance for eCDT system in Vietnam for 2020 – 2023, in support of full implementation of Legal Circular No. 21 and addressing the current needs.

MCD discussed with DFish leadership and related units and agreed upon a joint work-plan. A team of MCD, USAID Oceans, and DFish was organized to implement the tasks. Several workshops and consultation dialogues at national level and in Binh Dinh province were organized during Dec 2019 – Apr 2020 for making inputs to this National Technical Guidance for eCDT system.

The purpose of this National Technical Guidance is to help facilitate Vietnam’s transition from paper-based catch documentation schemes to transparent and financially sustainable eCDT system. This guidance is not meant to replace the ACDS but to enhance and complement it by supporting the establishment and implementation of eCDT systems. This document is intended for Vietnam government, the DFish and its affiliates at provincial level, and the respective members of the private sector.

The National Technical Guidance for eCDT system aims to provide a practical guide for developing and implementing an eCDT system for Vietnam’s capture fishery that can be aligned to the capacities, circumstances, and needs of Vietnam and support regional harmonization.

The objectives of this document are to:

- provide general principles needed to establish and implement an eCDT system that combats IUU fishing and conserves marine biodiversity, including a set of minimum requirements and standards;
- outline a process for designing and implementing an eCDT system; and
- provide guidance on developing a roadmap to support eCDT system adoption and implementation in Vietnam.

Therefore, the National Technical Guidance contains the following key elements: Firstly, it introduces an overview of eCDT system in the Southeast Asia region and the fundamental principles for eCDT systems. Secondly it provides an diagnose and analysis of the current CDT system in Vietnam and concludes that the Vietnam CDT system is currently a Model 2, which means an existing paper-based CDT system that is not integrated across the value chain and is recommended to be moved to an integrated eCDT system. Then it provides a step by step technical guidance for design and implementation of an eCDT system in Vietnam. It also suggests a roadmap for the next process of development and implementation of the eCDT system.

This National Technical Guidance on the Design and Implementation of eCDT System in Vietnam was prepared and sent to DFish for reviews and inputs in mid Apr 2020. The document was written based on the Draft Regional Technical Guidance on the Design and Implementation of eCDT Systems in Southeast Asia dated September 2019, with consultation and customization to be specific and suitable for Vietnam situation, need and capacity. It was also meant to be dynamic, flexible, and able to evolve over time for DFish to take over and to facilitate it to be refined and finalized for adoption.

This document was highly appreciated by DFish Vietnam for supporting their ongoing intensive efforts for improving the fisheries management and combating with IUU fishing in the country.

I. INTRODUCTION

It is recognized that eCDT (electronic catch documentation and traceability) systems are a relatively new concept for fisheries managers and seafood companies, both in Vietnam and in Southeast Asia. As of 2018, most ASEAN Member States (AMS) including Vietnam remained fully or largely reliant on the use of paper-based catch documentation, particularly at the point-of-catch and at landing. Across the AMS, it also varies widely which parties in each country are responsible for collecting catch documentation and traceability (CDT) data, verifying CDT data, and which data are to be collected at each stage of the supply chain.

In an effort to build AMS awareness and capacity relating to using eCDT systems, the Southeast Asian Fisheries Development Center (SEAFDEC) and the Oceans and Fisheries Partnership (USAID Oceans) have drafted a technical guidance document to guide on how ASEAN member countries (or others)¹ can develop and implement eCDT systems to meet their own fisheries traceability and sustainability needs.

The Oceans and Fisheries Partnership (USAID Oceans) is a program funded by USAID/Regional Development Mission for Asia's (RDMA) during 2015 – 2020. It works to strengthen regional cooperation to combat IUU fishing and promote sustainable fisheries, to conserve marine biodiversity in the Asia-Pacific region. USAID Oceans works in close collaboration with the Southeast Asia Fisheries Development Center (SEAFDEC), the Coral Triangle Initiative on Coral Reefs Fisheries and Food Security (CTI-CFF), and national fisheries agencies from across Southeast Asia. USAID Oceans supports the development and implementation of eCDT technologies and systems, to help ensure that fisheries resources from Southeast Asia are legally caught, properly labeled, and environmentally and socially sustainable. The application of system of eCDT technologies will allow seafood products to be continually followed, or 'traced', throughout the seafood supply chain (i.e., from point-of-catch to export), both allowing for only legal and safe products to be imported by concerned nations, while also providing real-time ecological and economic data related to the seafood supply chain captured by eCDT technologies, empowering fisheries managers and strengthening marine resource management and conservation decision making.

In December 2017, USAID Oceans partnered with the Vietnam Department of Fisheries (DFish) to convene a national assessment workshop designed to review and identify capacity and management gaps and private sector partnership opportunities relating to national catch documentation and traceability. A summary report outlining the rapid assessment results and strategic opportunities was subsequently produced by USAID Oceans in partnership with DFish, and following DFish and USAID review and approval, was publicly released. This report (available online at the USAID Oceans website) highlights the need and desire for eCDT technology application in Vietnam in support of advancing sustainable and traceable fisheries and curbing IUU fishing. As a result, USAID Oceans received approval from USAID to collaborate and support relevant public and private partners in Vietnam to apply and test available eCDT technologies during the remaining period under the project lifetime.

The Centre for Marinelifelife Conservation and Community Development (MCD) is a Vietnamese NGO established in 2003 with the mission to promote active cooperation between related stakeholders, implementing initiatives that integrate local knowledge, and international experiences, in order to better manage coastal ecosystems and improve coastal communities' living conditions, contributing to sustainable development of the coastal zone. MCD has been cooperating for years with DFish and various coastal provinces in implementing and promoting fisheries co-management, improving fishermen livelihoods, and contributing inputs to the revised Fisheries Law of Vietnam. MCD is currently implementing the project "Enhancing ecosystems conservation, management and coastal communities' resilience in the South-Central Coast, Vietnam" in collaboration with DFish at national level and local

¹ USAID Oceans. 2019b

partners in Binh Dinh Province. The project is aimed at introducing an ecosystem approach to fisheries management (EAFM) with key managers and practitioners at national and local levels.

Taking into account the needs from Vietnam, the mission and capacity of the partners, a partnership between the USAID Oceans program and MCD was established since December 2019 in order to collaboratively conduct activities to provide initial support to DFish and to Binh Dinh province to apply and test available electronic catch documentation and traceability (eCDT) technologies to address IUU fishing and promote fisheries sustainability and traceability. The support activities include (i) conduct local consultations in Binh Dinh province for combatting IUU fishing and promoting sustainable fisheries development through applying and testing available eCDT technologies; (ii) train small-scale commercial and artisanal fishers and create an eCDT learning-site in Binh Dinh province from point-of-catch through landing and buying using available eCDT technologies, in support of national fisheries management efforts and the provincial development plan; and (iii) work with DFish and other national stakeholders on developing technical eCDT guidelines in support of full implementation of Legal Circular No. 21;

This document is made to assist DFish at national level and coastal provinces in Vietnam in the journey of establishing comprehensive and robust fisheries documentation and traceability and is intended to identify the current situation of catch documentation and traceability in Vietnam then provide practical technical guidance to DFish on moving it forward to an integrated electronic system. This document therefore recommends eCDT development and implementation process including a roadmap for next steps, as well as the different eCDT technologies and methods that have been tested and are available (at the time of writing).

This document also provides information on additional considerations that should be made when developing eCDT systems to ensure a holistic approach that acknowledges environmental, economic, and human aspects of the seafood supply chain. These include human welfare issues related to IUU fishing, particularly labor abuse, working conditions, and gender inequalities.

The technical guidance outlined in this document should also assist to more readily meet national and international seafood regulations and requirements, responding to the increasing demand from importing countries to provide traceable catch documentation, as well as meet Vietnam's obligations as a signatory to the United National FAO Voluntary Guidelines for Catch Documentation Schemes.

1.1 Electronic Catch Documentation Systems in Regional Context

Since the early 2000s, a switch from paper-based to electronic fisheries data collection and documentation systems has been underway, including those used for CDT. This movement has been seen at regional, national, and local levels. An example of this can be seen in the ASEAN Catch Documentation Scheme (ACDS), a paper-based CDT scheme which began its development in 2010 under SEAFDEC as part of a regional initiative between SEAFDEC and AMS to improve traceability of marine capture fisheries, prevent fish and fishery products from IUU fishing from entering the supply chain, and enhance intra-regional and international trade.² In 2017, the Electronic ASEAN Catch Documentation Scheme (eACDS) was developed—an electronic platform developed to operationalize the ACDS. While the ACDS is based on a paper-based CDT scheme, ASEAN recognizes the role of digital technology in modern fisheries management and encourages the appropriate use of eCDT systems.

1.1.1 The Electronic ASEAN Catch Documentation Scheme (eACDS)

In 2017, SEAFDEC led the development of an electronic version of the ACDS—the eACDS—to establish a

² Southeast Asian Development Center, 2017.

standardized software application for region-wide use to enter and collate relevant information (KDEs) along specific points in the supply chain. In 2018, the eACDS was launched as a web-based platform, accessible through both desktop and laptop computers and handheld/mobile technologies, including smart phones and digital tablets. The eACDS stores data in a cloud server during initial testing, with data stored directly in the implementing country's private data server and once fully implemented. During 2018-19, SEAFDEC piloted the eACDS in Brunei and assisted other AMS to explore how the eACDS could be implemented in additional pilot sites to advance national eCDT efforts.

Following the guidance outlined under the ACDS, the eACDS supports three main processes:

1. Issuance of a Catch Declaration (CD)—from point-of-catch to landing;
2. Issuance of a Movement Document (MD)—from landing to processor or local market; and
3. Issuance of a Catch Certification (CC)— from processing to export/import and consumer.

The eACDS also generates Processing Statements/Certificates at the processing stage for fish materials intended for re-export. Completion of these processes provide importers with the required information to clear CDs and trace the origin of fish and fish products through the complete supply chain.

Implementation of the eACDS for domestic fisheries involves nine steps, outlined in Section 2.2. KDEs captured by the eACDS ensure and enhance the efficiency of the system and support more effective fisheries management and good governance. KDEs are collected across six categories:

1. Point-of-Catch
2. Buyers/Receivers and Sellers (Broker/Wholesale)
3. Processors
4. Exporters and International Shipping
5. Importers
6. End Consumers

The eACDS' applications cover all relevant users in the supply chain, across the following steps:

1. Port-out permission and issuing initial CD;
2. Catch reporting at point-of-catch;
3. Port-in permission, catch verification and issuing CD;
4. Fish purchasing at landing;
5. Issuing MD to buyers and processors;
6. Requesting the CC by processors;
7. Issuing the CC by Competent Authority;
8. Export; and
9. Importer, customs, and consumer trace fishery product from a QR-code.

1.1.2 Current National eCDT Systems in AMS

Several AMS have also begun to develop and implement their own national eCDT systems. In many cases, these systems have brought together historic paper-based systems and newer electronic data collection mechanisms to document processes across various points in the supply chain, with the goal of transitioning more fully to electronic-based documentation over time. Three of the most significant national undertakings from 2017-2019, are eCDT initiatives by the governments of Thailand, the Philippines, and Indonesia. As of 2019, Malaysia, Vietnam, and Myanmar were also exploring the development of national eCDT systems, supported by the eACDS modules. The relatively recent and rapid advancement of CDT and eCDT capabilities across AMS have established a number of paper-based and electronic protocols that vary widely across the region.

To effectively meet national and international market requirements and support sustainable fisheries management, it is recommended that national eCDT systems be designed around four components:

1. **eCDT hardware** – including computers, sensors, data loggers, digitized tagging equipment, and cellular, radio, and satellite communications equipment;
2. **eCDT software** – either programmed by software engineers from within the national fishery agencies or via contract with a private company;
3. **Analytical services** – including machine learning and artificial intelligence, typically with data/analytical visualization capabilities via a “dashboard” software application; and
4. **Fishery monitoring centers** – an “integrator” to display real-time data gathered and transmitted by eCDT hardware and software through relevant analytics to enable real-time fisheries management and decision making. These centers are typically housed within the secure office space of a national fisheries management agency or at a separate secure location in partnership with relevant law enforcement and/or maritime defense agencies.

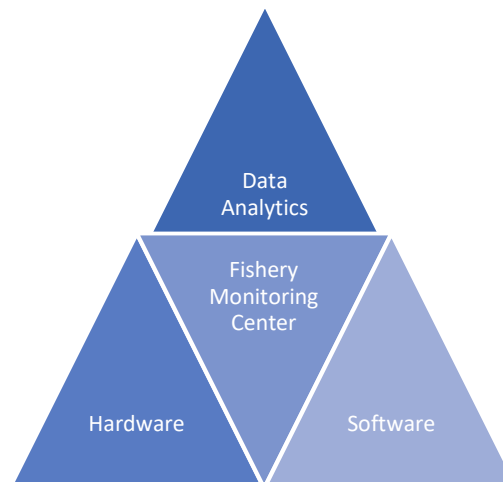


Figure 1: Standard components of an integrated national eCDT system

AMS eCDT capabilities and protocols differ widely by country. Most AMS have catch documentation processes in place that use a combination of electronic and paper data collection at various points in supply chain, with almost all employing paper catch documentation from the point-of-catch and landing. Indonesia, the Philippines, Thailand, and Vietnam have the most advanced electronic/digital components within the CDT systems. Indonesia and Thailand are the AMS to employ an online electronic catch reporting for overseas fishing vessels.

Overall status of Catch Documentation and Traceability of AMS until September 2019:

- All seven countries Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam have catch documentation processes in place, with some having a combination of electronic and paper data collection at various points in supply chain. Almost all are still using paper catch documentation, particularly from point of catch and landing.
- All countries require a catch logbook for commercial fishing operations that must be completed by the Captain. For small-scale fishing, most catch reports are filled in by the fishermen, except in Cambodia and Vietnam where catch data are recorded by fisheries officers.
- Indonesia, Philippines, Thailand, and Vietnam have the most advanced electronic/digital components within their supply chain catch documentation. Indonesia has an e-logbook system to store all paper logbook data for all of its flagged vessels. Thailand has an online electronic catch reporting for overseas fishing vessels.
- Indonesia has the highest number of intra-directorate data sources interfacing with one another from different systems, followed by Malaysia. Thailand has most of their existing catch documentation system data captured under a single platform/application. Indonesia and Thailand employ on-board catch observers in the collection of catch data.

- Malaysia has the highest number of different agencies (across Ministerial jurisdictions) that are involved in the management and data collection of seafood supply chains. Most countries in ASEAN centralize the majority of the seafood supply chain management responsibilities within a single Ministry or Department.

I.2 Fundamental Principles for eCDT Systems

The following principles provide the foundation for a functioning eCDT system, based upon the FAO Voluntary Guidelines for Catch Documentation Schemes, the SEAFDEC-developed Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 and ASEAN Catch Documentation Scheme, and guidance from the Oceans and Fisheries Partnership's Technical Working Group (TWG). All principles utilized in the design and implementation of an eCDT system should conform with national laws, policies, and regulations.

I.2.1 FAO Voluntary Guidelines for Catch Documentation Schemes

The UN Fisheries Resolution on Sustainable Fisheries (2013) expresses concerns over the continued threat to marine habitats and ecosystems resulting from IUU fishing. The Resolution acknowledges the negative impact that these activities have on food security and state economies, particularly in low- and middle-income countries, and calls upon FAO to provide further guidance on catch documentation schemes.

In 2017, FAO developed *Voluntary Guidelines for Catch Documentation Schemes*. The document provides guidance for catch documentation schemes for wild capture fish caught for commercial purposes in marine or inland areas, whether processed or not.

The guidelines are based on the basic principles that catch documentation schemes should:

- Conform with relevant international law;
- Avoid unnecessary barriers to trade;
- Recognize equivalence;
- Be risk-based;
- Be reliable, simple, clear, and transparent; and
- Be electronic, if possible.

Based on these principles, the guidelines state that an eCDT system should serve the following functions:

- serve as the mechanism of issuance and validation of catch certificates by the competent authority, and function as the repository of catch certificate and supply chain data to allow information verification;
- ensure that accurate and verifiable information is available along the supply chain through cooperation of states involved in it;
- be based on agreed international standards and formats for information exchange and data management, ensuring that its components are interoperable;
- be flexible, user-friendly and minimize the burden on users, designed to easily accommodate uploading scanned documents, printing documents, cancelling documents, and conducting data queries;
- ensure data is secure by requiring logins and passwords or other appropriate means;
- define roles and responsibilities for data input and validation, and specify which parts, functions, and levels of the system individual users or user groups may access;
- facilitate documentation flow;
- be flexible in regard to information requirements; and
- assure support for states with limited resources to develop and implement secure electronic systems.

I.2.2 SEAFDEC Guidance

Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020

In 2011, SEAFDEC developed the *Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020* that provides the following guidance related to the “Optimal Utilization of Fish and Fish Products:”

“Develop traceability systems, with mechanisms as needed to certify or validate the information, for the whole supply chain, and establish regulations and enforcement schemes in line with international standards. Align Member Countries’ inspection systems and incorporate strengthened port inspections in the process as a means to improve inspection systems.”

ASEAN Catch Documentation Scheme (ACDS)

In 2015, the *ASEAN Guidelines for Preventing the Entry of Fish and Fish Products from IUU Fishing Activities into the Supply Chain* also presented guidance on managing fishing activities within AMS, which encourages States to monitor all fishing vessels by keeping records and compliance with national laws and regulations and to implement, where appropriate, a vessel monitoring system (VMS).³

In 2017, AMS member states agreed to formally adopt a regional catch documentation scheme that provides a common format, set of standards, information requirements, and simplistic design to enhance applicability with small-scale fisheries across the region. Accordingly, the “ASEAN Catch Documentation Scheme” was developed through a series of regional consultations and endorsed at the 25th ASEAN Sectoral Working Group on Fisheries in May 2017 in Singapore as well as by the SOM-ASEAN Ministers on Agriculture and Forestry.⁴ The ACDS provides guidelines to support three primary objectives:

1. To provide a unified framework that will enhance traceability of fish and fishery products for effective marine fisheries management in AMS;
2. To enhance the credibility of fishery products for intra-regional and international trade; and
3. To prevent entry of fish and fishery products from IUU fishing activities into AMS fishery supply chains

The ACDS was designed to be used as a fisheries management tool to strengthen seafood trade with intra-regional and international markets. To do this, the ACDS recommends that AMS commit to CDT where any seafood product can be traced backward through the full supply chain—from point-of-sale (consumers) to the point-of-catch. Being able to trace seafood products through every point of the supply chain allows consumers, importing countries, and regulators to verify that the seafood product was caught, processed, and shipped legally, ethically, and sustainably, thereby promoting the long-term sustainability of ASEAN fisheries and reducing IUU fishing. As such, AMS that endorse ACDS and commit to implementing a CDT system support ASEAN’s compliance with the regional *Guidelines for Preventing the Entry of Fish and Fishery Products from IUU Fishing Activities into the Supply Chain*,” slotted for AMS adoption by 2020.

In April 2016, the SEAFDEC Council specified that the ACDS should not create an unnecessary burden, cost or lengthy process for supply chain actors. Thus, with support from the governments of Japan and Sweden, SEAFDEC collaborated with the Thailand Fish Marketing Organization (FMO) to design an electronic ACDS (eACDS). In 2017, a web-based application and mobile application were developed to supplement the paper-based system.

³ Southeast Asian Fisheries Development Center, Marine Fisheries Resources Development and Management Department, Malaysia, 2015.

⁴ SEAFDEC, 2019.

1.2.3 Guidance from the Oceans and Fisheries Partnership

During the 3rd Regional USAID Oceans Technical Working Group Planning Workshop in July 2018, TWG members discussed and recommended several principles for an eCDT systems. They agreed that an eCDT system should, at a minimum:

- increase competitiveness of fishery products in national, regional and international markets and facilitate intra-regional trading;
- strengthen national and regional cooperation to combat IUU fishing;
- ensure that common and interoperable eCDT systems are in place;
- serve as a tool for increasing transparency in fisheries governance, human welfare, gender equity and working conditions;
- serve as a tool for increasing economic benefits to all actors in the fisheries supply chain;
- allow countries to meet/comply with different country market/import requirements;
- enhance verification of documents among countries and establish communication and networks among countries;
- link data collected from eCDT systems to fisheries information systems to support fisheries management, biodiversity conservation, and regional data sharing.

Taking these principles into account, later on the USAID Oceans program has drafted a Technical Guidance on the Design and Implementation of Electronic Catch Documentation and Traceability (eCDT) Systems in Southeast Asia dated September 2019. It provides practical technical guidance to AMS on the eCDT development and implementation process, as well as the different eCDT technologies and methods that have been tested and are available.

This document is prepared in a close reference to the above mentioned Regional Technical Guidance, with specifics for Vietnam from governance, technical and social dimensions.

2. Current National Catch Documentation & Traceability System of Vietnam

2.1 Diagnose and Analysis of the Current Situation

2.1.1 Review of fisheries and IUU situation in Vietnam

The following sections provides a brief profile of Vietnam fishing industry, including commercial/industrial fishing and municipal/small-scale operators. The country profile consists of:

- **Production sector overview** (including catch profiles, ports/landing sites, fishing practices and systems, main resources, management, and an overview of fishing communities);

Since 1997, Vietnam's fishery industry has been growing considerably in terms of the number of fishing vessels, which increased from 71,500 in 1997 to 110,950 in 2016 whilst its total annual landing volume increased from

1.08 million tons in 1997 to 2.93 million tons in 2016⁵. In 2019, the total landing volume of the marine capture fishery was approximately 3.6 million tons. The current number of fishing vessels in Vietnam is 96,600⁶. Quantity of fishing vessels has been slightly decreased but fishing capacity significantly increased. Total number of small fishing boats decreased, conversely number of larger fishing vessel grown up.

Regarding to tuna fishery, Binh Dinh, Phu Yen and Khanh Hoa are the main oceanic tuna fishing provinces in Vietnam. There are over 80 small fishing ports and hundreds of traditional landing sites in the country⁷.

According to the Fisheries Law 2017, fishing vessels operating in offshore waters with a vessel total length of more than 15 meters are subjects to install vessel monitoring devices (VMS). The Circular No. 21/2018/TT-BNNPTNT dated 15/11/2018 issued by the Ministry of Agriculture and Rural Development (MARD) regulates the recording, submission of fishing logbook, announcing the list of designated ports, listing of IUU fishing vessels, catch statement, and catch certificate. The Circular stipulates that the fishing vessel's skipper of all vessels that are longer than 12m is responsible for recording fishing logbook, including vessel registry number, time, the object of the fishing, the name of the departure and arrival port, the date of departure, the date of landing the catch. For fishing operations, including the day, month, shooting and hauling time, coordinates (latitude, longitude), species and quantity caught respectively. However, this activity is facing challenges due to poor awareness of the meaning of catch certificate and traceability, while the state management agencies lack tools to quickly check the contents and accuracy of the logbooks.

- **Post-harvest sector overview** (fish utilization, processing, and marketing);

Post-harvest sector in Vietnam usually consists of fish landing sites, middlemen, processors and exporters, supporters and influencers, including government authorities (DFish, NAFIQAD, MOIT, VCCI), research institutes (RIMF, IMER), producer and exporter associations (VINATUNA, VASEP) and others (port authorities, ice factories and cold storage facilities). Ice factories are normally located at the fish landing sites and provide ice for handling fish onboard fishing vessel at sea. There are a number of ice factories at the different landing sites, although the quality of the ice is not always sufficient. Often the same ice quality is used for all types of fish, for instances, for tuna (longer time at sea) and also for lower value fish.

It is an issue for capture fishery since the EU has requested the availability of catch certificates for the fish imported to EU since 2009. These certificates are part of the EU regulations on combating Illegal, Unreported and Unregulated (IUU) fishing. As many fisheries in developing countries consist of small-scale vessels that are often not properly registered and mostly fishing activities operated by poor literacy fishers, the introduction of catch certificates has proven to be a barrier for exports to EU markets.

The US market has applied regulations on seafood monitoring for tuna products imported to the US since January 1, 2018 (SIMP), this provision has some similarities to IUU regulations of EU. However, there are some differences in declaration and supervision. Therefore, it is required that processors and exporters preparing documents for importers (in the US) in accordance with US regulations.

Meanwhile Korean, Japanese and Chinese markets have only regulations on food hygiene and safety, nevertheless, other criteria in relation to traceability, combating illegal fishing, and dolphin-safe fishing are not applicable.

⁵ USAID Oceans. 2018b

⁶ DFish. 2019a.

⁷ Cao Le Quyen. 2018

- **Socioeconomic contributions of the fishery sector** (role in national economy, supply and demand, trade, consumption, food security, and employment);

Vietnam has a coastline of more than 3,260 kilometers (km) on the terrestrial areas, with 112 estuaries. Vietnam's exclusive economic zone (EEZ) covers over 1 million square kilometers (km²). Together with fisheries, capture fishery has become a critical economic sector in the national economy, and contributed to the high GDP growth rate of the country, assured food safety, generated millions of jobs, stabilized livelihoods and lives of not only the coastal residential communities but also communities in other regions of the country, and supported the implementation of policies on poverty reduction and hunger elimination. The average annual export turnover of fisheries is almost USD 8.5 billion in the past three years (2017-2019) – ranked the fifth in value of all export sectors from Vietnam, with average annual growth rate of 7-15%⁸. In addition, capture fishery is closely linked to the national defense and security at sea. In 2010 seafood exports contributed approximately USD5bn out of a total export value of USD 71.6bn. Currently, the fisheries sector ranks among the top five industries in terms of foreign export earnings. More than 5 million people are directly employed by the fisheries sector including fishermen and farmer communities. Overall, around 8 million people, or about 10% of the country's population, derive their main income from fisheries⁹.

- **Institutional structure** (government agencies, key stakeholders, registration, and licensing);

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 Departments 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-DFish) under DARDs and six national branches under the system of NAFIQAD that are directly involved in the country's catch certificate scheme.

Processor and exporter associations: VASEP, VINATUNA and non-governmental organizations NGOs support business companies and fishers by advocating for changes in law, policy, procedure and administrative rules at different levels. The Vietnamese Tuna Association (VINATUNA) was established in 2010. VINATUNA supports the strengthening of cooperation between fishermen, the Government and processing plants as well as other actors in the tuna sector. Also, they protect the voices, and rights of members including the advocacy to the policy level. VINATUNA plays a role in supporting the marketing and exporting for tuna processors/exporters and provides training and awareness raising for members. However, VINATUNA does not engage in catch control or export. At provincial level three provincial tuna associations are established in Binh Dinh, Phu Yen and Khanh Hoa provinces that look after the interests of tuna fishing companies and processors/exporters in these provinces. At a national level VASEP supports exporters of fishery and aquaculture products, including tuna.

⁸ VASEP. 2016

⁹ CBI. 2012

Business enterprises: buying, processing, selling, providing support and logistics services and facilities such as ice, fuel, etc.;

Fishers: directly involved in the fishing activities;

Others: middlemen, border guard, coast guard, fishing port authorities

- **Summary of key trends and issues;**

As mentioned earlier in this document, since 1997, Vietnam's capture fishery industry has been growing considerably in terms of the number of fishing vessels, and until 2019, quantity of fishing vessels has been slightly decreased but fishing capacity has significantly increased. Total number of small fishing boats decreased, conversely number of larger fishing vessel grown up. Fish stock 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.

Vietnam's fishing industry has been faced with the EC's yellow card warning issued in October 2017. As a result, several urgent priorities were identified, such as improving the legal framework for fisheries management, scaling up the country's VMS systems, enhancing catch monitoring and traceability, banning IUU operations, and using an evidence base approach for management. These recommendations, as well as new U.S. SIMP regulations have encouraged Vietnam to rapidly move for fisheries reform towards sustainable and responsible fisheries, which has been planned for in the country's marine economy development strategy.

- **Summary of key private sector fishery associations and companies** (capture fisheries, processing, brokering, marketing, and exporting);

According to the Vietnam Association of Seafood Processors and Exporter (VASEP) and Agricultural Products Processing and Market Development Center, there are presently 784 seafood processing enterprises nationwide in which 568 seafood processing enterprises are licensed by the National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD) and have permission to export to the EU and US markets. Currently, 572 companies were licensed to export to the EU market. The total volume of processed fish products in 2019 was more than 2,000,000 tones. Vietnam has more than 600 freezing, 55 dried and 17 canned processing factories/plants. In Vietnam many companies are traditionally owned by the state or joined stock companies, however, recently, private companies are highly dominant.

Tuna fishery is considered the most important fishing industry in the country. Vietnam tuna export items can be divided into canned tuna and frozen tuna products. Tuna processors and exporters normally buy raw materials from local fishing fleets at local landing sites for processing, exporting, and also importing raw materials to process for re-export purposes. Presently, the country has about more than 50 tuna processing plants nationwide, however, total number of tuna processing and exporting enterprises is more than 100. Accordingly, total export turnover of tuna fishery in 2019 was more than USD 719 million.

- **Overview of the status of IUU activities in the country**, including prevalence and existing measures.

Right after EC's "Yellow card", the Government, the Prime Minister and line ministries at central level, provincial People's Committees (PPC) of coastal provinces and cities, and the whole political system have engaged in directing, proposing timely solutions to address the EC's recommendations. In more than two years now, together with some urgent tasks and solutions to address the EC warning on IUU fishing, the Vietnam's legal system on fisheries in general and on fishing in particular has been completed.

The 2017 Law on Fisheries was ratified by the 14th National Assembly of Socialist Republic of Vietnam, in the 4th meeting on 21st November 2017. The Law takes full effect from the 1st January 2019. This Law provides a legal framework which is comprehensive and in line with international standards, and assures the objective of a sustainable and responsible fisheries with international integration. The 2017 Law on Fisheries promulgates in detail the whole commercial fishing activities, from vessel management, fishing ports, sheltering anchorages to fishing at sea, validation, certification of the origins of aquatic products derived from commercial fishing activities. Accordingly, it is mandatory that fishing vessels of 15 meters or more in overall length must be equipped with vessel monitoring system (VMS device) (as stated in paragraph đ, clause 2, Article 50), and illegal, unreported and unregulated fishing activities was also legalized in a separate part.

Amongst those, violating international waters of Vietnamese fishing vessels is considered the most complicated issue, the implementation of measures on combating IUU to remove "yellow card" of the European Commission (EC) is still difficult. For example, coastal provinces recorded 85 cases, including 137 vessels, with 1,162 fishermen violating foreign waters in 2018; compared to the year 2017, there were increased 28 cases, with 46 vessels and 379 fishermen violating. In the first 5 months of 2019, fishermen violating catching in foreign waters continued to be complicated and happened 41 cases, with 69 vessels and 271 fishermen. There are a number of IUU violating fishing vessels from some provinces including Kien Giang, Ba Ria - Vung Tau, Ben Tre, Ca Mau, Binh Dinh, and Binh Thuan, etc. In the violations, there are some fishing vessels using fake number plates to declare¹⁰.

Moreover, as stated in the Fisher Law 2017, fishing vessel owners or skippers have legal responsibility to provide the catch report based on the guidelines provided by DFISH. Based on Circular No. 21/2018/TT-BNNPT of MARD and Decree No. 42/2019/ND-CP of the Government, a fine up to VND 500,000,000 will be applied to fishing vessel unloading fish at the port or landing site without a completed logbook within 24 hours (see the table 1 below).

Table 1: Amount of monetary penalty to vessel owner/captain for the failure to report and the misreporting of fishing data

	Length 12m-<15 m (million VND)	Length 15m-<24m (million VND)	Length >=24 m (million VND)
Incorrect or incomplete record of catch logbook	05-10	05-10	
Absence, not recording or not providing logbook	20-30	20-30	300-500
Repeatedly committed	-	40-50	500-700

Additional penalties: Temporarily deprived fishing licenses, captain's license from 01 up to 03 months for misreporting catch logbook or transfer logbook

To fishing port management organizations: Monetary penalty from 3.000.000 VND up to 5.000.000 VND for the failure to collect catch logbook, transfer logbook and fishing report.

2.1.2 Review of CDT objectives, efforts, and policies/legislation

¹⁰ DFish. 2019c.

Under Vietnam's legal system on fisheries, applicable from 1989 until 2017, records of catch documentation and catch reports were required; yet catch documentation and reporting were not fully implemented. Encouraged by the yellow card warning from the European Commission, the revised Fisheries Law 2017 reflects massive adjustments to catch documentation and reporting. It provides stipulations on combating IUU fishing, on catch certificate and traceability of the exported, imported seafood and fishery products. Guiding its implementation, Circular No. 21/2018/TT-BNN dated November 15, 2018, governs the recording, submission of fishing logbook, public the list of designated ports, listing of IUU fishing vessels, catch statement, and catch certificate. This Circular is currently the legal basis for CDT in Vietnam. It stipulates in detail about the capture fishing logbook, transshipment logbook, catch report, and catch certificate. It notes that these data and information can be recorded either by paper or by electronic format, in order to make sure the accurate data and information, contributing to avoid IUU in and from Vietnam.

The 2017 Law on Fisheries promulgates in detail the whole commercial fishing activities, from vessel management, fishing ports, sheltering anchorages to fishing at sea, validation, certification of the origins of aquatic products derived from commercial fishing activities. Accordingly, the requirement that fishing vessels of 15 meters or more in overall length must be equipped with vessel monitoring system (VMS device).

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) conduct surveys and research programs to provide specific information in relation to the fisheries sector and develops scientific evidence/advices to technically support fisheries management and policy-making 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, was developed with financial support of the Coastal Resources for Sustainable Development (CRSD) project. The FICen is in charge of developing, managing, and maintaining IT infrastructures, 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. The center is also assigned to work to establish and develop the networks of fisheries statistics between DFish and local levels. The Center has functions to cooperate with relevant organizations to implement communication and outreach, and to disseminate fisheries technology and economic information (Decision No. 578/QD-TCTS-VP dated 21 September 2015, Decision No. 914/QD-TCTS-VP dated 01 September 2017)¹¹.

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. Some public service applications for state management of fisheries sector have already been integrated in the DFish's website and also operated and maintained by FICen.

Nevertheless, currently, all the catch documentation and traceability procedure, including fishing logbook (logsheet), catch statement and catch verification are paper-based.

2.1.3 Review of Industry engagement

¹¹ USAID Oceans. 2018b.

A Rapid Partnership Appraisal (RPA) was conducted by the USAID Oceans program in 2018¹² to evaluate private sector's engagement in CDT initiatives and to identify limited-effort, high-impact partnership opportunities. 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. A number of companies were interviewed that represented the capture, processing and export segments of the supply chain.

The RPA 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.

In Vietnam, marine satellite communication equipment and technology is available nationwide, provided by several large companies such as the Vietnam Post and Telecommunication Group (VNPT), 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.

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. From NGO perspectives, 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. Recently, MCD is also engaged by USAID Oceans and Global Fishing Watch to promote VMS and eCDTS as well and conduct some pilot actions in some coastal provinces (Binh Dinh, Ca Mau).

During the value chain assessment conducted during Dec 2019 – Apr 2020 by MCD with the support from the USAID Oceans project, the following information was captured. The tuna fishers in Binh Dinh province 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. However, the fishers in Binh Dinh still accomplish the fishing logbook in order to avoiding violation of the Law.

For tuna processors, getting sufficient CDT information is also considered as a laborious process. Tuna exploited by Binh Dinh fishing vessels are consumed not only in the province territories but also in Khanh Hoa, Long An, HCM city. In most cases, the CDT information is difficult to verify and assemble, as the captain is not always available, or does not meet minimum requirements. To address this issue, some tuna processors have directly

¹² USAID Oceans. 2018b.

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.

2.1.4. Value chain mapping and CTE identification

Value chain mapping is not yet conducted for all species of seafood products. Recently, with the support of USAID Oceans program, a tuna value chain assessment in Binh Dinh province was conducted during Dec 2019 – Apr 2020 by MCD and its local partners¹³.

The value chain assessment (VCA) focuses on the mapping of supply chains of three tuna species: Bigeye tuna (*Thunnus albacares*), Yellowfin tuna (*Thunnus obesus*) and Skipjack tuna (*Katsuwonus pelamis*) in Binh Dinh province in Vietnam. The VCA identifies the flow of products, types of products, the relationships and linkages among actors in the chain, relevant institutional policies and regulations, abilities to apply eCDT traceability in the tuna chain, as well as evaluating the value chain linkages. The VCA is undertaken as part of an eCDT learning site in Vietnam under the support of USAID Oceans. The VCA provides a number of key findings, as summarized below.

The tuna VCA in Binh Dinh is divided into two analyses of yellowfin/bigeye and skipjack¹⁴. Both chains in general involve multiple actors including fishermen, middlemen, transporters, processing and export companies, international trading companies, wholesalers/retailers and consumers. The product flow is different between the two supply chains. About 30% of the catch of yellow fin/big eye went through processing and export companies in Binh Dinh, 65% was sold to processing plants outside the province (Khanh Hoa and Phu Yen). The rest of yellowfin/bigeye is domestically consumed, mostly in fresh type. For the skipjack, about 60% of the productions were purchased by processing companies from outside the province. The remaining 40% is also consumed domestically. Over 95% of processed products of the tuna chains are exported to foreign markets, especially the US and EU. Major processed products of yellowfin and bigeye tuna are either frozen or fresh chilled, while the skipjack are mostly exported as canned products and as pre-cooked frozen fillets.

Most tuna vessel owners in Binh Dinh are fishermen directly involved in catching tuna (90%). Each fishing vessel consists of 6-7 crew members, of which 3-4 crew members are hired laborers. Net profit is usually divided at a ratio of 50:50, in which the owner gets 50% and the remaining 50% is divided among the crew members. Tuna caught are sold to export processing companies and/or for domestic consumption through the local middlemen. Usually the vessel owners and middlemen have an “interdependent” relationship in supplying loans and input materials and purchasing outputs. This relationship is based on “trust” rather than a contract signed. In general, fishermen are fishing oriented, very few are concerned about the fisheries resources and food safety due to the open access situation. They have less power in the negotiation on the prices of products. They have limited knowledge and skills on the logbook and traceability of product.

Middlemen are local traders who play a key role in the tuna supply chain in Binh Dinh in the context of small -scale fisheries. In the tuna industry, the middlemen mostly act as local purchasing agent for the processing plants at a set price and receive a commission on the buying volume. However, in addition to purchasing, the middlemen also play a role of providing loans and inputs for fishermen, thus they have a certain “influence” on purchasing tuna from fishermen. In this context, the middlemen might be one of the key drivers that can have an influence on changing the practices of fishermen (e.g. for e-logbook and traceability systems) and help processing plants develop and

¹³ USAID Oceans & MCD. 2020.

¹⁴ Binh Dinh Sub-DFish. 2019.

operate a better traceability system if incentives were provided (e.g. premium prices and a more stable price for traceability products).

Processing plants can be seen as one of the most powerful actors in the tuna supply chain. This actor is the one who sets the price and the purchasing volume for the tuna. However, due to small catches of individual vessels (given the nature of small-scale fisheries), most of the processing plants have to rely on the local middlemen to obtain raw materials. They have often established links to the purchasing agents/middlemen through an agreement (but not contracts). Most of the processing plants are concerned about the market requirement and traceability, food quality and food safety certification (including EU, USA, and Japanese markets).

There are some challenges and gaps found from VCA and for eCDT requirements in Binh Dinh province: (i) *There is a lack of supply chain management*: processing plants or exporting companies depend on the middlemen (to gather raw materials) and they could not develop their own supply chain where they can control the quality of post-harvest; (ii) *There is still not yet transparency among the actors in the value chain*. The quality of tuna are not yet classified and paid at the highest value. Limited access to market development and standards; (iii) *The certification of fishing origin is not a concern of fishermen* but of the processing and import-export companies because the companies need to make certificates for ensuring the export quality of their product; and (iv) *Limited awareness and capacity of the small-scale fishers to comply with the requirements of log-book and traceability*.

2.1.5. Identification of human welfare and gender aspects of supply chain

It is observed that there is a lack of overall picture/report about human welfare value chain assessment for CDT/eCDT.

The RPA by USAID Oceans program and some other assessments had limited exposure to labor and welfare issues¹⁵. In conducting the assessments, 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 the new amending Fisheries law 2017 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. The Law 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. Circular No. 22/2018/TT-BNNPTNT dated 15 November 2018 provides regulations on the crew members onboard fishing and government mission vessels. However, for those fishing boats of 6-12m length, regulations is applied to the skipper only. 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 No. 67/2014/ND-CP and Decree No. 17/2018/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 namely 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.

¹⁵ USAID Oceans. 2018b.

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 and 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.

The recent value chain assessment made for the tuna fishery in Binh Dinh province (Dec 2019 – Apr 2020) shows an absolute number of fishers on boat are men. However, at the landing sites, women are the main people who accomplish weighing and selling processes along with middlemen. 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. 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.

2.1.6. Identification of CDT gaps, barriers, and opportunities

A Vietnam CDT Gap Analysis and Partnership Appraisal conducted by the USAID Oceans program in 2018 provides the key findings as summarized below¹⁶.

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

Lack of a unified, interoperable sector database:

¹⁶ USAID Oceans. 2018b.

- While fishing vessel registration and licensing is entered into and managed by a national database yet the compliance of fishing vessel registration and licensing is still very limited, resulting in incomplete and insufficient database.
- Port in and port out procedures to gather fishing vessel information are recorded under a paper-based scheme by a borderguard/port authority officer; however, the data/information is not digitalized nor shared with other fisheries management agencies.
- Catch certification is currently being implemented based on information 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 to cross-check and verify information.

Limitations to current protocols and regulations:

- Even though the option of electronic version is mentioned in the new bylaw document (Circular No. 21/2018/TT-BNNPTNT), the 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.
- 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), and has ratified the PSMA (2009), UNFSA (1995), prepared a plan to be a party of the FAO Compliance Agreement (1993).

There are also 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 entered into force in 2019 and is under enhancement.
- The national fisheries database has been upgraded, with a designated focal point (the Fisheries Information Center) for managing information nationwide.
- A list of designated ports is publicly published by the central government (DFISH).
- A list of IUU fishing vessels is publicly available on the portal of 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 and will be completed during 2020 as one of the strong actions towards removing the yellow card warning by EU. 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 eCDT system capabilities.
- The 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, and VASEP have expressed interest to be more involved in promoting eCDT.
- PPPs may 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.

Currently, all the catch documentation and traceability procedure, including fishing logbook (logsheet), catch statement and catch certificate are paper-based, and under the existing scheme, several issues have been identified from the consultations with the DFish, some subDFish and related stakeholders. All procedures for validation and endorsement, such as granting the Catch Statement and Catch Certificate (CC) are paper based and information provided by the fishers, skippers, vessel owners, or fish buyers is not possibly cross-checked.

Some key issues associated with Vietnam’s capture fishery Catch Certificate are:

- Incompletion of landing declaration by fishing vessel at the landing site/fishing port;
- There are several fishing ports are not yet eligible to certify origins of harvested aquatic products due to poor condition of infrastructure;
- Absence of transportation information (from the landing site/fishing port) to storage/warehouse/processing plants/marketplace, only available information is from place of shipping to the importing market;
- The Catch Certificate form is not yet integrated with the international forms, causing difficulty in declaration of product origin.
- Very limited use of VMS information for validation purposes; disconnected VMS still occurs;
- Poor/unreliable information provided by logbook and low coverage of logbook records due to the low educational level of fishers and the fear of exposing their fishing grounds. The information provided by the logbooks is not reliable nor detailed enough, therefore, not fully meet EU or US market requirements.

Table 2: CDT data collection methods used by competent authorities in Vietnam, across all stages in the fishery supply chain (2019)¹⁷

Country	At sea capture (Small-scale)		At sea capture (Commercial)		Port		Buyer		Shipper (land, boat; domestic)		Processor		Shipper (air or ship; export)	
	Paper	Electronic	Paper	Electronic	Paper	Electronic	Paper	Electronic	Paper	Electronic	Paper	Electronic	Paper	Electronic
Vietnam	•		•		•		•		•		•	•	•	•

This CDT status generally applies to the country (government) as a whole. However, it should be noted that, in some provinces, some private companies have their own electronic systems that need to be integrated with the government system, which will require coordination public/private sector coordination and regulatory action.

Table 3: Primary parties (person/agency) responsible for CDT data collection in Vietnam, across all stages in the fishery supply chain (2019)¹⁸

Country	At sea capture (Small-scale)	At sea capture (Commercial)	Port	Buyer	Shipper (land, boat; domestic)	Processor	Shipper (air or ship; export)
Vietnam	Captain	Captain	- Company - Fishing Port Authority (government)	Buyer (company or agent)	Shipper (company)	Processor (company)	- Shipper - Export Authority (government)

¹⁷ Information provided by Vietnam representatives during consultations conducted by USAID Oceans, 2018, 2019.

¹⁸ Information provided by Vietnam representatives during consultations conducted by USAID Oceans, 2018, 2019.

Table 4: Primary parties (person/agency) responsible for CDT data verification in Vietnam, across all stages in the fishery supply chain (2019)¹⁹

Country	At sea capture (Small-scale)	At sea capture (Commercial)	Port	Buyer	Shipper (land, boat; domestic)	Processor	Shipper (air or ship; export)	Responsible for Data Verification
Vietnam	Directorate of Fisheries (DFish) and Sub-DFish	DFish	Port authorities	Sub-DFish	DFish and Sub-DFish	Sub-DFish	Customs	DFish

Table 5: KDEs collected at each stage across the fishery supply chain by Vietnam competent authorities for CDT purposes (2019)²⁰

Country	At sea capture (Small-scale)	At sea capture (Commercial)	Port	Buyer	Shipper (land, boat; domestic)	Processor	Shipper (air or ship; export)
Vietnam	- Fishing report (vessels 6-12m)	- Logbook (vessels >12m)	- Catch document	- Purchase order	- Manifest or delivery order	- Raw material, batch ID - Finished good ID	- Certificate of Origin - Packing list - Health Certificate - Bill of Lading

2.2 Consultation at National & Provincial Levels

At national level:

Various consultation sessions were organized in Hanoi by MCD and DFish during December 2019 – April 2020 related to eCDT in Vietnam:

(1) Several small meetings were held during Dec 2019 and Jan 2020 in Hanoi between leadership team of MCD and DFish to seek mutual understanding on the scope of work and role of each party in conducting the key tasks set for the eCDT pilot and related deliverables as inputs for the eCDT technical guidelines. Governance setting of the collaboration was agreed in writing with DFish endorsed the work plan proposed by MCD and appointed the Fisheries Information Center as a focal point for the tasks. These meetings served to coordinate and get consensus on a joint work plan on a pilot eCDT in Binh Dinh province and development of a technical guidance document. Key stakeholders defined relevant for the work included the Capture Fisheries Department, the International Cooperation and Science Department, the Legal and Inspection Department, the Fisheries Sub Department of Binh Dinh, Binh Thuan and Ca Mau province, VASEP, the VINANTUNA and technology companies engaging in service providing to fisheries sector’s priorities for transforming into electronic systems. Totally, 15 participants attended in these meetings.

¹⁹ Information provided by Vietnam representatives during consultations conducted by USAID Oceans, 2018, 2019.

²⁰ Information provided by Vietnam representatives during consultations conducted by USAID Oceans, 2018, 2019.

(2) The first national consultative meeting held in Hanoi on 19 December 2019 was to engage a diversity of stakeholders mentioned above and discuss concepts of electronic logbooks, electronic catch and traceability and update the status of each concept in Vietnam. The meeting was a chance for MCD to officially introduce the idea of pilot of eCDT in Binh Dinh province and have feedbacks from number of provincial fisheries sub departments on the pilot proposal. Important updates were on the EU yellow cards with recommendations after the EU mission trip to Vietnam on November 2019, the regulation and practices with VMS on Vietnam fishing vessels and most importantly, the roles and tasks allocation at national and provincial level in regard to IUU combating and eCDT. In this meeting, it was agreed that the task force for the eCDT including the key stakeholders above is formed, the information center is a focal point of DFish to facilitate the consultation for eCDT work and Binh Dinh province is willing to take the lead in the eCDT field testing. So far, 20 people participated in the first national consultative meeting.

(3) The second consultative meeting was held in Hanoi on 14 January 2020 focusing on technology aspects of eCDT requirement for the testing. Topics discussed included i) the current situation of enforcement of regulation on IUU and eCDT by the Capture department to see if the conversion from paper into electronic reached the urgency status ii) how are the readiness at the provincial level regarding the implementation of these regulations, especially the circular 21, which defined that paper based log book is still accepted and electronic catch documentation is encouraged, not yet compulsory and iii) the participation of technology partners, their readiness in the program of eCDT to date. Key findings were 2 potential company have their products closest to the pilot eCDT requirements in Binh Dinh, including VNPT and GTO. 20 people have attended this second technology defined meeting.

(4) In late February 2020, few small consultations were held with selected technology partners to select one to work with the pilot eCDT. FAME, VNPT, GTO were consulted under the facilitation of the Fisheries Information Center. Finally, VNPT was selected to joining the pilot eCDT.

(5) National consultation dialogues with DFish on draft of the National Technical Guidance and Roadmap were held during April 2020. These dialogues were conducted instead of a national workshop due to corona virus pandemic. The consultations provided inputs on the draft technical guidance on eCDT prepared by MCD with consultants and got also feedbacks from the pilot eCDT in Binh Dinh province. A Roadmap was also discussed during these consultations for DFish to lead the process of developing and implementing eCDT in Vietnam.

At provincial level:

Consultations were organized in Binh Dinh by MCD and sub-DFish during Jan-Feb 2020 related to eCDT in Binh Dinh:

(1) Parallel with the process of setting governance for the work on eCDT at national level, similar process was taken place with provincial level in December 2019. DFish has also inform sub DFish on the full work plan of the eCDT pilot and the technical guidelines for collaboration. This process was facilitated via email telephone and official working letter.

(2) The first provincial consultative meeting was held on 9 January 2020 in Quy Nhon city, Binh Dinh province. The meeting introduced the concept of eCDT that has been developed and activated in the previous national consultative meetings. The audience of the provincial meeting, beside key stakeholders of MCD and DFish, also included the fishing boats owners/operators, tuna processing enterprise, collector and port authority. The meeting discussed the current situation of fishing boats, infrastructures that needed for eCDT, the capacity of the provincial alliance to conduct the pilot eCDT. It was agreed that 10 vessels of tuna captured via hand line shall be selected to take part in the following pilot eCDT. Roles and tasks of key actors for the pilot eCDT were discussed, including the sub fisheries department, the tuna processing company that is in the supply chain of tuna captured by the

selected vessels and the vessels owners. The Fisheries Information Center and the VINATUNA stay as a technical advisor for the pilot eCDT to be conducted. In this provincial consultative meeting, a portion of time was for introduction of the upcoming assessment for the tuna supply chain in Binh Dinh province. Key potential informants for the assessment were identified.

(3) Following the provincial consultative meeting, several smaller meeting with various groups were held in January and February 2020 for collecting further information prepared for the pilot eCDT. Key results of these meetings were updated information on the seasons of tuna captures, fishing methods, key actors in the supply chains and their situation in regard to pilot eCDT. Field visits were made together with both potential technology providers to see the possibility of conducting the pilot eCDT.

(4) The provincial consultative meeting on draft report on tuna supply chain assessment was held on 4/3/2020 in Quy Nhon city, with national expert. Useful comments were provided to MCD team to update the assessment.

(5) The handover of equipment and training on use of eCDT software integrated to VMS systems which is available on selected vessels were conducted in March 2020 and the 9 out of 10 vessels have been on their fishing trips, expected to come back with information on how they have been using the provided tools and guidance.

2.3 Vietnam Current System Model

The above analysis allows for an understanding that the Vietnam CDT system is currently a Model 2, which means an existing paper-based CDT system that is not integrated across the value chain and is recommended to be moved to an integrated eCDT system²¹.

Paper-based CDT systems are already in use in many countries to capture data from various actors in the value chain, and involve fishers (logbooks and Captain's certificates), fisheries officer (catch certificate/document), buyer/broker (purchase order), processor (raw material label, batch ID), and shipper (manifest or delivery order). Paper-based CDT systems are susceptible to loss of or damage to the paper documents, present storage issues, are difficult to integrate across the value chain, have very low implementation of standards for data exchange, and have also proven insufficient to meet traceability requirements to eliminate illegal catch and mislabeling. Because of these challenges, it is recommended to transition paper-based CDT systems to an eCDT system that is integrated across the value chain. The transition from traditional paper-based to electronic data records affects all participants in the supply chain, with each participant having different levels of access to software, hardware, and communications technology.

Under this model, the first step is to establish electronic data capture for each actor in the value chain. To do this, users' needs, capabilities, and limitations must be assessed at each node of the value chain, with appropriate technology solutions identified as needed. Suitable tools may include mobile data collection or computer-based applications. Depending on the technological capabilities of the country, data storage may be cloud-based or in physical servers on premise (national or port or provincial office based). Once the data-capture system is operational, the next step is to integrate it across the value chain. The data obtained from the different nodes of the value chain should be linked to tie the nodes to each other. Additional guidance on this step is provided in *USAID Oceans' Fisheries Catch Documentation and Traceability in Southeast Asia: Technical Concept and Specifications* (December 2017), available at www.seafdec-oceanspartnership.org.

²¹ USAID Oceans. 2019b.

3. Technical Guidance for eCDT Design and Implementation in Vietnam

3.1 Technical Guidance Background and Development Process

3.1.1 Purpose, Goal, and Objectives

The purpose of this technical guidance is to help facilitate Vietnam’s transition from paper-based catch documentation schemes to transparent and financially sustainable eCDT system. This guidance is not meant to replace the ACDS but to enhance and complement it by supporting the establishment and implementation of eCDT systems. This document is intended for Vietnam government, the DFish and its affiliates at provincial level, and the respective members of the private sector.

The goal of this technical guidance is to provide a practical guide for developing and implementing an eCDT system for Vietnam’s capture fishery that can be aligned to the capacities, circumstances, and needs of Vietnam and support regional harmonization.

The objectives of this document are to:

- to provide general principles needed to establish and implement an eCDT system that combats IUU fishing and conserves marine biodiversity, including a set of minimum requirements and standards;
- outline a process for designing and implementing an eCDT system; and
- provide guidance on developing a roadmap to support eCDT system adoption and implementation in Vietnam.

This document has been made for supporting Vietnam DFish in its ongoing intensive efforts for improving the fisheries management and combating with IUU fishing.

3.1.2 Development Process:

In 2014, the United States Government tasked USAID to address the challenges related to IUU fishing in Southeast Asia. Subsequently, in 2015 USAID launched the Oceans and Fisheries Partnership (USAID Oceans), to be implemented through a partnership between USAID’s Regional Development Mission for Asia (RDMA), SEAFDEC, and the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF) from 2015-2020. USAID Oceans would work to strengthen regional cooperation for combatting IUU fishing, enhancing fisheries management, and support marine biodiversity conservation. A critical component of the partnership was to develop and test eCDT technologies for application by interested AMS. To support eCDT adoption, the regional partnership was to provide clear and simple guidance on how to develop and implement eCDT systems.^{22, 23}

During 2016 – 2019, following the development and testing of eCDT technologies within fishery supply chains operating at the program’s designated “learning sites,” USAID Oceans and SEAFDEC, in close consultation with AMS fisheries management agencies and related stakeholder, drafted a Regional Technical Guidance on Design and Implementation of eCDT Systems in Southeast Asia. Vietnam participated in various consultative events and made

²² USAID Oceans, 2017a.

²³ USAID Oceans, 2017b.

contributions to that regional technical guidance. The draft Regional Technical Guidance dated September 2019 was shared among the participating countries.

From December 2019, MCD was in cooperation with USAID Oceans to provide some technical support to DFish at national level and the Sub-DFish in Binh Dinh province. Among the cooperative activities, drafting a National Technical Guidance was considered an important support that addressed the current needs.

MCD discussed with DFish leadership and related units and agreed upon a joint work-plan. A team of MCD, USAID Oceans, and DFish was organized to implement the tasks.

Several workshops and consultation dialogues at national level and in Binh Dinh province were organized during Dec 2019 – Apr 2020.

The first draft of the National Technical Guidance and Roadmap on the Design and Implementation of eCDT System in Vietnam was prepared and sent to DFish for review and inputs in mid Apr 2020. The draft was written based on the Draft Regional Technical Guidance on the Design and Implementation of eCDT Systems in Southeast Asia dated September 2019, with consultation and customization to be specific and suitable for Vietnam situation, need and capacity. It was also meant to be dynamic, flexible, and able to evolve over time for DFish to take over and to facilitate it to be refined and finalized for adoption.

3.2 eCDT System and Data Capture Integration

Current paper-based catch documentation schemes have been shown to not be entirely effective and do not have the capacity to trace all products along the complex supply chains of international, regional, and trans-boundary seafood trade back to the harvest event²⁴. This is due, in large part, to the inability of existing catch documentation scheme and document flows to effectively connect with the complexities of international seafood supply chains. In addition, current schemes are challenged by exemptions for specific operations (such as artisanal and small-scale fisheries) and specific seafood product derivatives. In some cases, domestic landings are exempt from catch documentation, traceability, or certification, further weakening systems and diminishing their scope to cover non-IUU related management functions.

The shift towards a fully compliant eCDT system requires supply-chain wide transformation that leverages the strengths of current systems and migrates Key Data Elements (KDEs) from Critical Tracking Events (CTEs) into an efficient, secure, and transparent data management platform. A robust eCDT system should utilize data-logging devices (i.e., a mobile data collection device), remote sensing technology, satellite communications equipment (i.e., Vessel Monitoring System -VMS), and factory control and automation systems (i.e., bar coding, radio-frequency identification tags, etc.). In Figure 2, each circle notes a point in the chain where product is handled, modified, or transferred and thus technology is required to electronically document the event and pass along that data.

²⁴ USAID Oceans. 2019b.

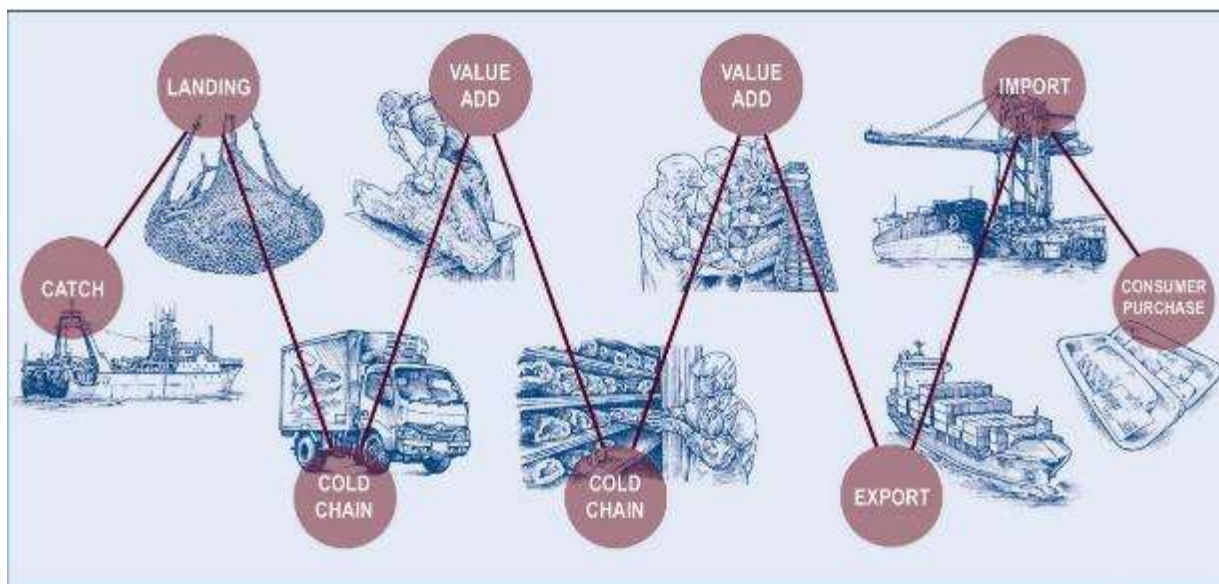


Figure 2: Seafood product movement and data flow

Transparent and financially sustainable eCDT systems can help ensure that the Vietnam fisheries resources are legally caught and properly labeled, and when integrated with existing fisheries information systems can support the collection and analysis of products’ ecological and economic data throughout the seafood supply chain so that they are traceable from their point-of-catch to import and end-retail. CDT remains one of the most valuable and comprehensive methods for collecting fisheries statistics at a reasonable cost, particularly valuable for stock assessment and marine spatial planning efforts. An integrated eCDT system can also provide an important opportunity to support other national and regional priorities, including effective national fisheries MCS.

The data provided along the supply chain by eCDT systems can be used by importing countries to ‘trace,’ or follow, the verifiable information regarding seafood products “from bait to plate,” and detect and deter IUU products. Such eCDT systems are typically a combination of hardware and software installed and used onboard fishing vessels and on land, at port, in processing facilities, and within transportation systems. By using an eCDT system, relevant information about a seafood product can be documented digitally and transmitted in real time to online data exchange services via satellite, cellular, or radio frequency information communication technologies. When combined with strong port-state control measures to prevent the importation and sale of undocumented fish, the data generated through eCDT systems can significantly limit the entry of IUU fish into the fishery supply chain, thereby reducing revenues to illegal operators while strengthening market access for producers who are operating legally and ‘traceably.’

An electronic data entry system and a culture of information sharing is the foundation of achieving robust eCDT. To achieve this, the following five overarching technical conditions must be met:

1. **Electronic documentation and verification of catch and landing data.** Paper documentation of seafood in supply chains, as exists in most countries around the world, has proven insufficient to meet the requirements of traceability robust enough to eliminate illegal catch and mislabeling.
2. **Electronic government import and export certification systems.** The data generated by these systems must allow for tracking a product forward in the chain, tracing the product back through the chain, and must enable verification of customs status.

3. **Product serialization to uniquely identify gross quantities entering or moving through the supply chain.** Serialization can be as basic as country of origin labeling or a serial customs stamp or mark, or as complex as uniquely identifying retail packaging to protect consumer safety or allow consumers to make sustainable food choices.
4. **Transactions within the cold chain also must be electronic, not just for business-to-business exchange, but also for traceability.**
5. **Coordination mechanisms.** If not already existing, a coordination mechanism must be established with and between government agencies, institutions, and levels of government that contribute information to the eCDT system and, just as importantly, with the private sector.

It is also recommended that data be captured at multiple points in the value chain, wherever possible, as this provides the best visibility into potential IUU activities (i.e., more catch being exported than was reported caught). Consideration needs to be given in the development of the eCDT system to locations where electronic data access is non-existent or problematic. Full-chain traceability, that is the ability to track KDEs and other information about seafood products as they move between actors throughout a value chain, must be in place to achieve more complete and robust information capture; and timely electronic data capture is required to integrate data across all actors and CTEs across the value chain. To achieve this effectively, national centralized electronic infrastructure and the adoption of a data standardization scheme for seafood supply chain interoperability is a basic requirement. Accordingly, systems must be designed with interoperability in mind; i.e., different IT systems and software applications must be able to communicate, exchange data, and use the information that has been exchanged.

3.3 Process for Moving a Paper-Based System to an Integrated, Electronic System

As mentioned above, Vietnam currently has an existing paper-based CDT system that is not integrated across the value chain and is recommended to be moved to an integrated eCDT system (USAID Oceans 2019b).

To transition data capture efforts from paper-based—or establish data capture where entirely absent—three steps are recommended, shown in Figure 3 and detailed further in this section.

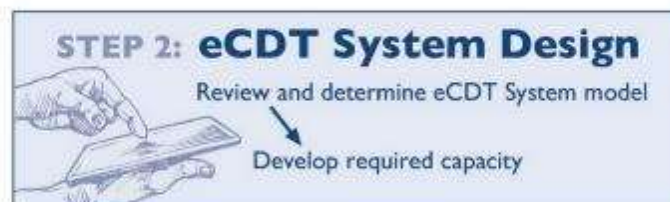
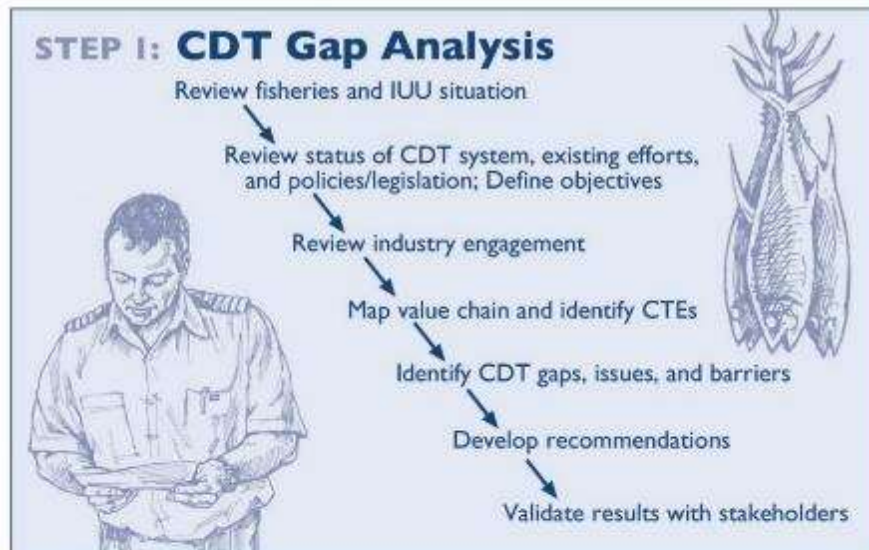


Figure 3: Process for moving to an electronic catch documentation and traceability system

STEP ZERO:

For Vietnam, “Step 0” is suggested to build the necessary capacity required to carry out the other steps in the eCDT design and development process. Step 0 is a “pre-step” that ensures the foundation for designing, testing and implementing a national eCDT system is well-established, and is an entry point that would be particularly important and useful for nations that are relatively new to fisheries traceability, including national agencies that may not have any existing policies or relevant agency authority mandate to advance CDT as a tool in combating IUU fishing and promoting sustainability.

Under **Step One**, a CDT Gap Analysis is conducted to provide inputs to the design and implementation of the CDT system to be developed. A CDT Gap Analysis establishes and assesses the space between the present state (“where we are”) and the target state (“where we want to be,”) and works to bridge this space by identifying what has to be done in order to reach this desired state, and how it should be done. It can also be viewed as a “needs assessment” or a “need/gap analysis” in that challenges and opportunities are presented alongside priorities and timeframes to bridge the gap towards current and ideal eCDT system capabilities. The Gap Analysis provides a framework to review existing information to inform and guide subsequent activities to establish and implement an eCDT system. The Analysis profiles and assesses the country’s fishing industry and market, documents existing CDT protocols and systems, identifies gaps, and ultimately provides recommendations for next steps. The Analysis adopts the Rapid Appraisal of Fisheries Management Systems (RAFMS) framework, which is a typical

rapid rural appraisal methodology that in this case is applied to assess CDT needs, challenges, and opportunities, and recommendations for eCDT systems that can support and strengthen fisheries management.

Step Two marks the design phase of the eCDT system. Four scenario models for moving towards an eCDT system can be considered, based on country status:

1. there is no existing CDT system;
2. there is an existing paper-based CDT system, but it is not integrated across the value chain;
3. there is an existing paper-based and/or eCDT system, but it is not integrated across the value chain; or
4. there is an existing eCDT system integrated across supply chain but product and Human Welfare KDEs must be standardized across the value chain.

Effective eCDT schemes should be as comprehensive and inclusive as possible in terms of coverage and reach, and may consider technology solutions such as those that enable: the timely electronic capture of data associated with integrated trip reporting and trip declarations; data-driven monitoring of fishing harvest activity and fishing effort, quota usage via electronic trip declarations; electronic catch logbook reporting; and receiver and dealer electronic reporting of transshipments or landings. National centralized electronic infrastructure and the adoption of a data standardization scheme for seafood supply chain interoperability is a basic requirement.

Lastly, **Step Three** focuses on eCDT system implementation. Once design is complete, activities such as system operations and administration, data collection and data verification, and monitoring and evaluation must be structured and initiated.

3.3.1 Step 0: Pre-Step

This step may be taken before launching into system analysis and design to ensure that a strong foundation is present. In this step, the lead agency organizes itself and carries out several preparatory activities. The following steps can be taken to establish necessary organizational structures, dialogues, and resources.

1. Establish an eCDT team in the lead agency to guide the process;
2. Engage with other countries, international agencies, and the private sector to strengthen internal eCDT knowledge;

3. Assess capacity needs relevant to successful eCDT system planning, design, and implementation and develop initial capacity building strategy;
4. Raise awareness and basic capacity of internal and external partners on eCDT through use of new/existing eCDT materials;
5. Identify potential partners (from the public and private sectors, non-governmental organizations);
6. Engage with and inform relevant ministries/agencies;
7. Make initial courtesy calls and meetings with government, non-government, and private sector to introduce eCDT and the process to be undertaken;
8. Convene relevant partners at awareness raising meetings and workshops to discuss the technical aspects and objectives of eCDT implementation (e.g., combatting IUU and enhancing sustainable fisheries management);
9. Identify potential funding sources (e.g., national budget, external donors, public-private sector partnerships);
10. Form a steering committee composed of government, non-governmental and private sector representatives; and
11. Develop a draft eCDT system roadmap that includes timeline, budget, and activity lead person in order to establish a clear vision that can guide steps one through three.

3.3.2 Step 1: CDT Gap Analysis and Foundational Research

1a. Review of fisheries and IUU situation

The purpose of this step is to establish a baseline for a country's CDT capacity by developing a clear understanding of the country's fishery sector, as well as the prevalence of IUU fishing and current counter measures. Under this step, a desk study is conducted to develop a brief profile of the country's fishing industry, including commercial/industrial fishing and municipal/small-scale operators. The country profile consists of:

- a production sector overview (including catch profiles, ports/landing sites, fishing practices and systems, main resources, management, and an overview of fishing communities);
- post-harvest sector overview (fish utilization, processing, and marketing);
- socioeconomic contributions of the fishery sector (role in national economy, supply and demand, trade, consumption, food security, and employment);
- institutional structure (government agencies, key stakeholders, registration, and licensing);
- summary of key trends and issues;
- summary of key private sector fishery associations and companies (capture fisheries, processing, brokering, marketing, and exporting); and
- an overview of the status of IUU activities in the country, including prevalence and existing measures.

FORMS OF IUU FISHING ACTIVITIES INCLUDE:

- illegal fishing activities within a country;
- unauthorized transshipment and landing of fish/catch across borders;
- poaching in the EEZs of other countries;
- illegal fishing and trading practices of live reef food fish, reef-based ornamental and endangered aquatic species; and
- IUU fishing in the high seas and RFMO areas.

The IUU assessment should identify relevant transboundary IUU issues and detail individually the illegal, unreported, and unregulated fishing incidents that occur within the country's territorial waters. In most countries in Southeast Asia including Vietnam, illegal fishing is a greater concern than unreported or unregulated. The purpose of the overview is to better understand the types of IUU fishing occurring in the country and the drivers behind them.

1b. Review of CDT objectives, efforts, and policies/legislation

This step is focused on determining Vietnam’s strategic objectives for establishing its eCDT system, current efforts to establish such a system, and existing, supportive policies and regulations (at both the national and local level). Reviewed policies and legislation should include coordination and harmonization mechanisms for eCDT system administration and implementation, which may include policies and legislation on fisheries management, conservation, MCS, enforcement, markets, trade, and food health and safety. Policies and legal statements which describe the country’s strategic eCDT system objectives should be identified, reviewed, and summarized. The purpose of this review is to ensure that the country’s eCDT objectives are clear, specific, and relevant, and that stakeholders know and understand the system’s purpose. The eCDT system should be based on clearly defined objectives, with level of traceability and required functionalities clearly defined, and designed to be user-friendly.

Under this step, researchers should review and document existing government-supported technology platforms that support catch documentation and related data and analytics, inclusive of various technology platforms, both active and in development, housed under different agencies that manage KDEs across CTEs in the seafood supply chain. During this step, all relevant forms and documents used for CDT should be collected to form the basis for the proposed electronic automation and forms of the new system.

KEY QUESTIONS ANSWERED IN STEP 1B:

1. What catch data are currently being documented?
2. What data collection forms are currently being used, if any? Are they paper-based or electronic?
3. How are catch data collected and stored (paper or electronic)?

Ic. Industry engagement

Under this step, private sector’s engagement in CDT/eCDT initiatives is assessed to identify limited-effort, high-impact partnership opportunities. Engaging with the private sector grounds eCDT efforts within industry realities and supports system adoption, scaling, and long-term sustainability. Engaging buyers, seafood companies, and NGOs early in the design of the eCDT system is essential to motivating suppliers to adopt and scale the eCDT system, as well as establishing industry traceability standards and requirements. Guidance on industry engagement is available through the USAID Oceans publication, *Transformational Fisheries Development: Simplified Steps for Public Sector and Industry Engagement.*” The guide can be accessed at www.bit.ly/oceansguides.

During this step, representatives from companies involved in the capture, processing, and export segments of the supply chain are identified and interviewed. Interviews should focus on establishing the companies’ familiarity with CDT/eCDT systems, level of support for an emerging government eCDT system, use of third-party agents, aspects of company labor and welfare, existing government-led CDT partnerships at the national and community level, involvement with associations and organizations, and needs from information and communication technology providers.

1d. Value chain mapping and CTE identification

Mapping of seafood value chains and their CTEs is a fundamental element of the CDT Gap Analysis process to identify and describe CTEs within the wild-caught seafood supply chain, and ultimately ensure that the emerging eCDT system and its required KDEs allow for timely data collection and support data audit requirements. In this step, a Value Chain Analysis is undertaken to identify and map organizations, people, activities, information, and resources involved in moving a product through the different phases of production, delivery to final consumers, and final disposal after use. The Value Chain Analysis approach is mainly a descriptive tool to identify interactions between different chain actors. Typical actors within a wild-caught seafood supply chain include the fishing operation (point-of-catch); catch trans-shippers (either at sea or once directly off-loaded in port); first receivers (at landing points, carrier vessels, and mini-plants); second receivers (aggregators, pack houses, and suppliers); first and second processors; cold chain facilities; actors involved in seafood storage, supply, and export logistics; seafood buyers, (including foreign importers); international customs and trade entry within a regulated market state jurisdiction; and wholesale and retail distributors. Value chain analyses should be conducted individually for each different fishery sub-sectors, such as commercial/industrial fisheries and municipal/small-scale—or for individual species, such as tuna.

CTEs are events that are recorded in order to allow for effective traceability of products throughout the supply chain; they are points in the value chain where a seafood product is moved between actors or premises, transformed, or points where data capture is deemed necessary to maintain traceability.

Common CTEs include:

- production (i.e., the at-sea harvest event);
- landing (at port or to transshipment vessel);
- transportation (i.e., an exchange of goods);
- transformation (i.e., the creation or manipulation of the seafood product(s);
- processing, aggregation, and packaging);
- depletion (i.e., exit of seafood product from the supply chain, including sale to and consumption by the end consumer, as well as disposal).

CTEs serve as critical data points within eCDT systems and play a central role in the design of how and when key data elements are collected within the system.

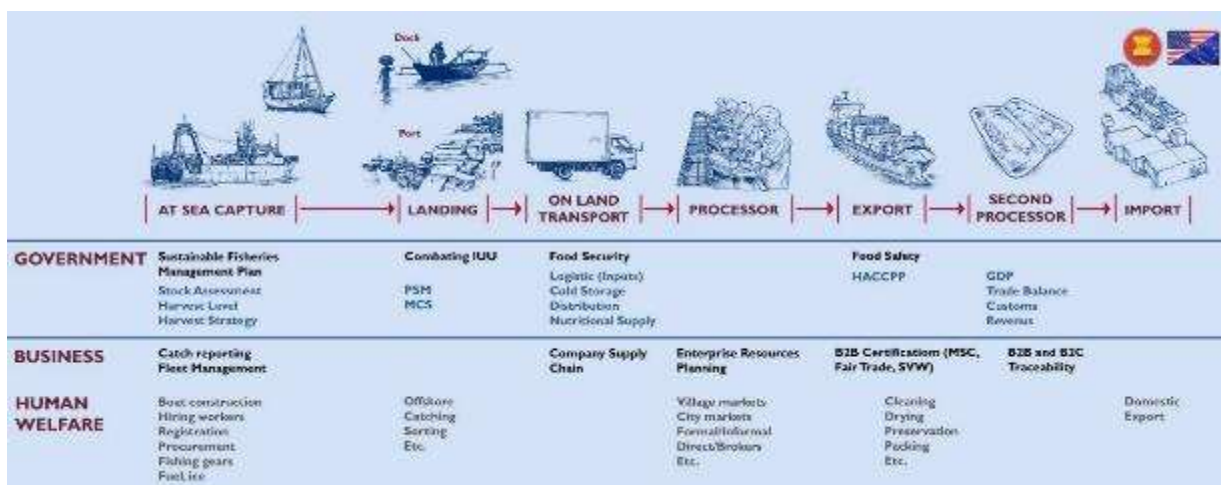


Figure 4: Example of seafood value chain map and uses for eCDT data along the value chain

VALUE CHAIN ANALYSES IDENTIFY:

- different (core) processes in the value chain;
- actors involved in these processes and their roles;
- the flows of product, information and knowledge through value chain?
- product (or service) origins and destinations;
- types of relationships and linkages throughout the value chain; and
- types of (business) services feeding into the chain.

Ie. Identification of human welfare and gender aspects of supply chain

A Gender Responsive Value Chain Mapping and Analysis should also be conducted to delve further into the gender differentials among the women and men actors in the various fisheries value chain nodes. Through this methodology, gender dynamics and power relations can be analyzed to understand hotspots that could be critical to the efficient application of the eCDT system at various nodes. More details on this methodology can be found in USAID Oceans' guide, *Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems*, which provide guidance on how fisheries management systems can be appraised through more holistic, modern methodologies. Chapter Four provides guidance on how to ensure the human aspects of fisheries are integrated in fisheries management plans and other development strategies. This guide, and USAID Oceans' *Gender Research in Fisheries and Aquaculture: A Training Handbook*, which provides additional information on gender concepts can be accessed at www.bit.ly/oceansguides.

If. Identification of CDT gaps, barriers, and opportunities

Through the information gathered through the Gap Analysis, gaps, barriers, and opportunities can be identified in Vietnam's current CDT and data capture processes, as well as in fisheries management, human welfare, regulations, infrastructure and industry preparedness, many of which may directly or indirectly affect the design of the eCDT system. These key findings will comprise the most significant insights generated from the Gap Analysis and are critical towards understanding in Vietnam or sites' various eCDT challenges and opportunities. In this step, these gaps, issues and barriers are agreed upon and highlighted so that they may be acknowledged and addressed in the system design process.

USAID Oceans has developed the guide, *Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems*, to provide guidance on how fisheries management systems can be appraised through more holistic, modern methodologies (www.bit.ly/oceansguides). Chapter three provides guidance on collecting information to assess CDT needs, challenges, and opportunities to inform the development of electronic CDT systems that can support and strengthen fisheries management.

Ig. Development of recommendations

Under this step, recommendations are developed to present a practical roadmap on which aspects of the country's eCDT system-readiness should be prioritized in support of system design and implementation. Recommendations may include potential strategies for system development and implementation, as well as for supportive public-private partnership strategies. The recommendations can be clustered as near-term (zero to six months), short-term (six to twelve months), mid-term (one to two years), and long-term (two to three years), and may be supplemented by additional specific, technical recommendations.

Ih. Validation of results with stakeholders

Once all results and research are gathered, a validation workshop is conducted with key stakeholders to solicit responses and reactions to the study results and recommendations. In addition to providing a venue to present the preliminary Gap Analysis report, the workshop should be designed to invite feedback/discussion on the results, document and (as possible) address any issues or concerns raised by the community/stakeholders (e.g., illegal fishing operations, presence of prohibitive gears), and solicit suggestions from participants on possible solutions, recommended actions, and/or new policy directions. Exercises can be held during the workshop to identify positive and negative forces for and against eCDT implementation, as well as to determine the pro-active steps that can be taken to influence the uptake and success of the prospective eCDT system.

During or immediately following the validation workshop, a meeting with fisheries agencies should be held to discuss validated results, share policy/actions recommended, and vet private sector partnerships for eCDT system testing and adoption.

3.3.3 Step 2: eCDT System Design

Using the information and relationships established in Step One, eCDT system design may now commence. The shift towards a fully compliant eCDT system requires supply-chain wide transformation that leverages the best of the current system and migrates KDEs from CTEs into an efficient, secure, transparent and integrated data management platform. Moving to a robust and integrated eCDT system requires that the following four overarching technical steps be met.

1. **Electronic documentation and verification of catch and landings data.** Paper documentation of seafood in supply chains, as exists in most countries around the world, has proven insufficient to meet the requirements of traceability robust enough to eliminate illegal catch and mislabeling.
2. **Electronic government import and export certification systems.** The data generated by these systems must allow for tracking product forward in the chain, tracing product back through the chain, and must enable verification of customs status.
3. **Product serialization in order to uniquely identify gross quantities entering or moving through the supply chain.** Serialization can be as basic as country of origin labeling or a serial customs stamp or mark, or as complex as uniquely identifying retail packaging to protect consumer safety or allow consumers to make sustainable food choices.
4. **Electronic transactions within the cold chain,** not just for business-to-business exchange, but also for traceability.

Additional guidance is provided in USAID Oceans' *Fisheries Catch Documentation and Traceability in Southeast Asia: Technical Concept and Specifications* (December 2017), available at www.seafdec-oceanspartnership.org.

Design considerations

Scale of the Fishery – Vietnam marine capture fisheries are generally characterized as being composed of both large vessels (commercial or industrial fisheries) and small vessels (small-scale fisheries), as well as a wide variety of different fishing gear types. eCDT systems should account for the needs and special requirements of both types of fisheries. In general, these two fisheries have different characteristics in terms of vessel type, equipment type, gear sophistication, ownership, location of fishing operation, processing of catch, disposal of catch, extent of market integration, and data collection. There may not currently be a typical data capture method, or it may be paper-

based. Any eCDT system must recognize these differences and be designed to address the capacity of the owner/operator of the vessel and gear. The systems on-board a small fishing vessel (typically with no remote connectivity) are very different from those deployed by multi-national seafood distributors. However, both types of systems are essential within the seafood supply chain. For example, the ACDS provides two different catch documents for large fishing vessels and a simplified version for small fishing vessels.

Private Sector Coordination - Many industry members in Vietnam in their effort for improving catch documentation have searched for their own electronic CDT system. These systems should be integrated with the eCDT systems being designed by the government. Data privacy and interoperability need to be discussed and addressed amongst public and private sector system users and contributors.

Human Welfare - Technologies developed by the private sector, NGOs, and the development sector for tracking labor conditions, including human trafficking, currently exist. Linking the systems through an interface to collect relevant information, in particular to deter IUU and related harmful activities, will support good governance of fisheries management areas and human welfare interventions.

Capacity development

Building the capacity of stakeholders, including but not limited to government agencies, institutions, and private sector actors, is critical to effective eCDT system implementation. Without a core group of users that are equipped to test and use the system, eCDT operations will not be effective and long-term sustainability will be compromised. While designing and building the eCDT system, it is critical to engage stakeholders in capacity development activities that crosscut the key areas needed for system effectiveness, including traceability, fisheries management, and human welfare. This engagement will ensure that stakeholders are equipped with the necessary skills to implement, utilize, and contribute to the eCDT system and will support a participatory approach to implementation.

3.3.4 Step 3: eCDT System Implementation

Once the eCDT system has been designed, several activities will need to be undertaken to support its implementation, which include establishing an administration system, verifying data, and conducting regular monitoring, evaluation, and learning.

3a. Administration and financing

An administrative team, and dedicated office (as possible), should be established to provide fulltime overall administration and coordination for the eCDT system. The administrative team should serve as the national focal point to coordinate, monitor, evaluate, and manage the eCDT system. The office should facilitate data capture and sharing; provide necessary assistance and trouble-shooting to value chain actors; compile and collate supporting information and documents, including a list of competent authorities, official seals, names of authorized signatories and their specimen signatures, and requests for verification; and provide formal progress reports to private sector stakeholders and other government agencies/leadership.

3b. Data validation, privacy, and interoperability

Verification procedures should be put in place by the designated administrative team to ensure the eCDT system is compliant at all nodes in the supply chain. Verifications may consist of examining products, verifying declaration data and document authenticity, examining operators' accounts and records, and inspecting means of transport.

For verification purposes, competent authorities in importing countries may seek verification and clarification from exporting countries on the validity and accuracy of the eCDT system documents (or its equivalent) with reference to the identified areas of possible non-compliance.

In addition to the manual verification of data (i.e. visual physical verification), data validation can be performed by cross referencing eCDT data with other databases and systems. For example, fishing grounds can be verified using VMS data; automated data collection by machine (i.e. data logger) can reduce the burden of data validation; and an online/off line e-Logbook or electronic reporting application can record global positioning system (GPS) location onboard fishing vessels during fishing activities. Data also can be validated against business transaction records such as purchase and delivery orders and invoices. Additionally, when designing a CDT system, it's important to maintain data integrity by reducing redundant data entry by allowing certain data (i.e. date of birth, address, gender) to be entered once and easily transferred for use through interconnected nodes of the supply chain.

A robust eCDT system should also include data privacy and security measures to ensure stakeholders' interests are protected. Data privacy and security are important not only to protect against data theft and tampering, but also to ensure data sovereignty in cases where the data center's location is regulated. Data sovereignty means that stored electronic data is subject to the laws of the country in which it is located. International management systems can be used in eCDT system design and development to ensure information is secure. The International Standards Organization's ISO/IEC 27001, for example, is a family of standards that helps organizations keep information assets secure.²⁵

System interoperability is the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged. It is achieved through a) shared database, b) file transfer, and c) messaging for the transfer of data between applications. System interoperability is crucial to ensure effective eCDT data transfer between different systems and is also required for scalability. Several widely accepted international standards have been established to support effective interoperability and reduce needs to convert or translate fishing industry data. For example, the Fisheries Language for Universal Exchange (FLUX) is a standardized messaging format, developed by the United Nations Economic and Social Council and implemented by the UN Centre for Trade Facilitation and Electronic Business. In addition to the messaging format, FLUX defines the detailed information to carry within the message. Another interoperability standard used in the fisheries industry is Electronic Product Code Information Services, promoted by the Global Food Traceability Center. Although there is no mandatory requirement to use these standards, adopting an international standard will support the system's efficacy and scalability.

3c. Monitoring, evaluation, and learning

The eCDT system should be reviewed and updated continuously during the system's testing period and at a minimum every two years and/or when necessary, using a set of established indicators and attributes to consistently measure performance against defined goals. Table 6 presents the minimum suggested set of relevant performance attributes, indicators, and measures that should be established and captured. These can be developed using the three pillars of the EAFM (ecological well-being, human well-being, and good governance) to ensure the system is meeting a diverse and complete set of needs and priorities.

Ecological well-being indicators cover the fisheries value chain's targeted focal species, level of fishing effort, and type of fishing gear/technology. **Human well-being indicators** evaluate income, livelihoods, and human welfare conditions by tracking the value of the catch, employment and occupational structure, labor practices, and compliance with international standards. **Good governance indicators** have three key attributes – law and policy,

²⁵ International Standards Organization.

management, and enforcement and compliance. Sample indicators for “law and policy” include the local/national enabling policy environment as well as compliance with internationally-accepted legal instruments. “Management” indicators cover degrees of licensing/registration of fishing fleet, level of CDT adoption within the fishing industry, and volume of the traceable catch. It is recommended that these attributes and indicators be evaluated during the CDT Gap Analysis process conducted in Step One in conjunction with the RAFMS.

Table 6: Minimum suggested performance measures related to national eCDT system design and implementation

Attribute	Indicator	Measure
Ecological well-being		
Focal species	Target catch (species harvested) within the fisheries value chain	Total # and type of fishery species (Aquatic Sciences and Fisheries Information System/ASFIS species code with associated fishery product code) within the fisheries value chain
Extractive effort	Number of fishing hours/days per trip; Number of trips	Total # of fishing hours/days per trip; number of trips per month/year; multiple choice (gear type) and relative proportions/contributions to total catch
Human well-being		
Income	Value of traceable catch	Total value (in US\$)/year of traceable catch being landed (by species/fishery product within the system)
Livelihood	Employment; occupational structure	Total # of full-time and part-time jobs (gender disaggregated) supported throughout the fishery value chain under the CDT system; relative proportion of jobs, by type (multiple choice)
Human Welfare and gender equity	Presence and accessibility of accurate, verifiable, and completed records for all laborers associated with the production or transformation of a traceable fisheries product	Checklist (Y/N); If “yes”, multiple choice (n=5): legal name; nationality; DOB; job/position title; and legally-recognized unique identification number. Including fishing crewmembers, processors, and other laborers
	Presence of a fair and secure grievance and reporting process used within the fisheries value chain	Checklist (Y/N); If “yes,” (1) multiple choice (n=3) of grievance reporting process typology: (a) available process for reporting working grievance or concern; (b) ability to voice/exercise labor rights; and (c) access to social protective services; (2) level of comfort/freedom to use the grievance and reporting process without fear of reprisal
	Compliance with international standards of fair labor practices; e.g., ILO 188 (for ratifying countries), UN Global Compact on Labor Principles	Checklist (Y/N); if “yes”, multiple choice of which fair labor standards are being complied with
	Degree of workplace grievances or concerns, as reported within the fishery value chain	Checklist (Y/N); If “yes”, total # of reports/year (gender-disaggregated, by complainant); with grievance typology (multiple choice): (1) working conditions; (2) gender-specific workplace violence/coercion; (3) physical abuse/violence (non-gender based); (4) sexual harassment; (5) safety issue

		concern(s); (6) gender-specific working/labor condition concern(s); (7) non-gender specific working/labor condition concern(s). Relative proportion/contribution annually of each grievance reported, gender-disaggregated
Good governance		
Law and Policy	Enabling policy environment	(1) Total # of policies/regulations promoting or requiring uptake of CDT practices and standards; by scale: national, provincial, local (ordinance) (2) Total # of policies/regulations requiring revision or updating to support uptake of CDT practices and standards; by scale: national, provincial, local (ordinance)
	Compliance with internationally-accepted fishery production, handling, and processing standards implemented throughout the fisheries value chain under CDT	(1) Number and type of traceability standards implemented within the fisheries value chain; (2) Number and type of non-traceability standards implemented within the fisheries value chain
Management	Degree of licensing/registration of fishing fleet within the fishery value chain under CDT	Proportion (% of total number) of fishing vessels observed/operating that are legally licensed and registered (International Maritime Organization/IMO #) within the fishery value chain and CDT system
	Level of CDT adoption within the industry (CDT 'uptake')	Total # of fisheries operators participating within the fishery value chain; by species/fishery product within the CDT system; coded by multiple choice: (1) fishing vessels/producers; (2) processors; (3) traders; and (4) exporters; gender disaggregated, as possible
	Volume of traceable catch (CDT capacity)	Checklist (Y/N); If "yes," total kg/year of traceable catch being landed; by species/fishery product within the CDT system
	Level of traceability of fishery product throughout the value chain within CDT system	% of all recommended KDEs being reliably and accurately captured along the fishery value chain within the CDT system
	Level/degree of existing data interoperability within the fisheries value chain	Degree of the ability of existing database systems to 'talk' with one another, as measured by the total number of 'connections' (between two distinct data systems); by species/fishery product within the CDT system
Enforcement and Compliance	Level of known production non-compliance within a fisheries value chain operating under CDT	(1) Total # of suspected illegal fishing vessels identified per year; (2) Total # of suspected illegal fishing vessels boarded or inspected per year
	Level of enforcement actions taken within a fisheries value chain operating under CDT	(1) Total # of enforcement actions taken against alleged illegal fishing operations per year; multiple choice: typology of violations/citations; (2) Total # of suspected illegal fishing vessels apprehended and/or impounded per year; (3) Total # of prosecuted cases made against alleged illegal fishing operations per year; ratio of successful versus unsuccessful convictions; multiple choice (typology of action/punishment)

4. Recommended Roadmap for eCDT Design and Implementation in Vietnam

The following draft National Roadmap is developed by having taken the inputs from the previous documents of the USAID Oceans program produced in 2019²⁶, the consultations on eCDT in various workshops with representatives from the Vietnam DFish at national level and from the Sub-DFish of a number of provinces conducted in Dec 2019 until April 2020. The draft Roadmap is intended to document progress made thus far in advancing electronic catch documentation and traceability (eCDT) and to suggest Vietnam DFish with next steps for further implementation and expansion.

Current Status:

The table below shows the status of the eCDT system in Vietnam at the time of publication of this report, having been reviewed against the Draft Regional Technical Guidance on the Design and Implementation of eCDTS produced by the USAID Oceans program²⁷.

Table 7: The current status of the eCDT system in Vietnam

Step	Activity	Status	Lead / Support
1. Catch Documentation and Traceability (CDT) Assessment	I a. Evaluate fisheries management and illegal, unreported, and unregulated (IUU) fishing situation	Various reports in 2019 in response to the 2nd evaluation mission by EU in Nov 2019	DFish
	I b. Status of eCDT (objectives, efforts, and policies)	Completed (2018) Updated (2020)	USAID Oceans
	I c. Engage with fisheries industry	Completed (2018)	USAID Oceans
	I d. Map value chain and identify critical tracking events (CTEs)	Case study for the tuna value chain in Binh Dinh (3/2020)	USAID Oceans
	I e. Identify CDT gaps, issues, and barriers	Completed (2018)	USAID Oceans
	I f. Develop national eCDT recommendations	Completed (2018)	DFish; USAID Oceans
	I g. Validate gap analysis results with stakeholders	Completed (2018) Updated (5/2020)	DFish; USAID Oceans
2. Design of National eCDT System	2a. Design national eCDT system	Ongoing	DFish
	<ul style="list-style-type: none"> Distinguish between vessel sizes in eCDT scheme 	Completed (2018)	DFish

²⁶ USAID Oceans. 2019c. 2019b

²⁷ USAID Oceans. 2019b

Step	Activity	Status	Lead / Support
	<ul style="list-style-type: none"> Engage private sector to establish national eCDT system 	Completed (2018) To be updated	DFish; USAID Oceans
	<ul style="list-style-type: none"> Consider human welfare concerns 	Ongoing	DFish; NGOs
	2b. Select eCDT model for fishery value chains: Model 2: Moving from paper-based catch documentation schemes to transparent and financially sustainable eCDT system.	<u>In-development:</u> commercial fisheries (Electronic ASEAN Catch Documentation Scheme/eACDS) <u>Pending:</u> small-scale fisheries	DFish
	<ul style="list-style-type: none"> Integrate eCDT across value chain eCDT pilot results from Binh Dinh province 	Ongoing 5/2020	DFish USAID Oceans
	<ul style="list-style-type: none"> Standardize key data elements (KDEs) across value chain 	Ongoing	DFish
	2c. Build national capacity to implement eCDT	Ongoing	DFish;
3. Implement National eCDT System	3a. Implement administrative and financing support for eCDT	Pending	DFish
	3b. Strengthen data validation, privacy, and interoperability	Pending	DFish
	3c. Monitor and evaluate eCDT system; learn and adapt national system	Pending	DFish

Next Steps:

Based on the current status review, the following draft Roadmap is recommended for advancing eCDT system in Vietnam:

Table 8: The suggested Roadmap for advancing eCDT system in Vietnam until 2023

Step	Activity	Responsible by	Time
0. Preparation	0.a Establish an eCDT team in the lead agency to guide the process;	DFish	July 2020
	0.b Assess capacity needs relevant to successful eCDT system planning, design, and implementation and develop initial capacity building strategy	DFish	September 2020
	0.c Develop an eCDT system roadmap that includes timeline, budget, and activity lead	Dfish	September 2020

Step	Activity	Responsible by	Time
	person in order to establish a clear vision that can guide steps one through three.		
	0.d Engage with and inform relevant ministries/agencies	DFish	Regularly
	0.e Identify potential funding sources (e.g., national budget, external donors, public-private sector partnerships);	Dfish	September 2020
1. Catch Documentation and Traceability (CDT) Assessment	1a. Update the evaluation of fisheries management and illegal, unreported, and unregulated (IUU) fishing situation to establish a baseline for a country's CDT capacity by providing a clear understanding of the country's fishery sector and the situation of IUU fishing.	DFish	2020
	1b. Update the eCDT objectives, efforts, legal instruments and policies	DFish	2020
	1c. Conduct a gendered value chain analysis to understand the CDT processes and requirements along the value chain, identify the main exporting markets, and explore market/buyer requirements and customer preferences. The study will inform the eCDT design approach, partnership development, and industry engagement along the value chain, acknowledging and including gender roles and differentials.	DFish	2020
	1d. Update CDT gaps, issues, and barriers	DFish	2020
2. Design of National eCDT System	2a. Design national eCDT system	DFish	
	2a1. Distinguish between vessel sizes in eCDT scheme	DFish	2020
	2a2. Engage private sector to build the national eCDT system. While eCDT systems are valuable tools in achieving improved fisheries management and sustainable seafood trade, their effectiveness requires strong support and engagement, especially from private sector industry members. Implement a robust eCDT system as a means to engage in meaningful dialogue with industry, boost economic growth, advance national trade interests, and champion biodiversity. The Government of Vietnam should leverage global interest towards traceability to engage with members of the public and private sectors as partners in economic growth and biodiversity conservation. The data collected	DFish VASEP	2021

Step	Activity	Responsible by	Time
	<p>by the eCDT system and operational efficiencies realized through the technology should be leveraged as an impetus for constant dialogue between government and industry towards win-win solutions into the future. For effective implementation, it is recommended that the human capacity and technological infrastructures of the Port Authority and DFISH sub-departments be strengthened</p>		
	<p>2a3. Leverage public-private partnerships (PPPs) to support eCDT implementation. PPPs are strongly recommended to bring together resources (i.e. knowledge, technology and capital) for the development of eCDT system infrastructure Harness the domestic and regional experiences on (PPP) opportunities to kick-off Vietnam's eCDT efforts, with setting up pilot sites. It is recommended that pilot sites be selected in Vietnam's main tuna fishery provinces, Binh Dinh, Phu Yen, and/or Khanh Hoa provinces.</p>	<p>DFish VASEP</p>	<p>2020-2021</p>
	<p>2a4. Consider human welfare and gender equity as additional benefits of implementing a robust eCDT system. Application of an eCDT system 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 may not be observed and monitored through basic data collection and require further planning, including how to allocate the benefits of each actor along the supply chain (i.e., shares between vessel owner and crew), payments, and benefits of labors/workers by seafood/fish trading/processing companies. To apply an eCDT system that addresses human welfare and gender issues, a set of standard KDEs should be developed and made mandatory under relevant regulations.</p>	<p>DFISH; VASEP NGOs</p>	<p>Regularly 2021-2023</p>
	<p>2b. Select eCDT model for fishery value chains: Model 2: Moving from paper-based catch documentation schemes to transparent and financially sustainable eCDT system.</p>	<p>DFish</p>	<p>2020</p>

Step	Activity	Responsible by	Time
	2b1. Integrate eCDT across value chain	DFish	2021 - 2022
	2b2. Standardize key data elements (KDEs) across value chain	DFish	2021
	2c. Build national capacity to implement eCDT	DFish Other ministries NGOs	Regularly 2020-2023
3. Implement National eCDT System	3a. Implement administrative and financing support for eCDT	DFish	Regularly 2020-2023
	3b. Strengthen data validation, privacy, and interoperability 3b1. Complete vessel registration for all fishing vessels and install Vessel Monitoring Systems (VMS) onboard immediately for Vietnam fishing vessels operating outside of Vietnam waters.	DFish	2020
	3c. Monitor and evaluate eCDT system; learn and adapt national system The eCDT system should be reviewed and updated continuously during the system's testing period and at a minimum every two years and/or when necessary, using a set of established indicators and attributes to consistently measure performance against defined goals	DFISH	Regularly 2020-2023
	3c1. Formalize policy and regulations that establish the eCDT as a platform to improve fisheries management and demonstrate market leadership on seafood traceability beyond compliance. To orchestrate Vietnam's journey towards robust eCDT, policies and regulations must be put in place to properly align fisheries sector interests, requirements, and processes with the country's broader objectives of establishing sustainable fisheries and maintaining global market competitiveness.	DFish	2021 Regularly

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Annex I. VIETNAM Fisheries Management Regulations

Country	Existing Fisheries Management Policies and Regulations
Vietnam	<ul style="list-style-type: none"> • Fisheries Law 2003 • Fisheries Law (Amended), Law No. 18 /2017/QH14 • Certificate of Safety of Fishing Vessels • Certificate of Technical Safety of Fishing Vessels • Certificate and Training Captain, Chief Fishing Vessel Machinery • Inspection and Monitoring (Fisheries Monitoring Center) • Circular No. 21/2018/TT-BNNPTNT provides regulations on the recording, submission of reports, and fishing logbooks; list of designated ports; list of IUU fishing vessels; certification of raw materials; and granting catch certificate, issued by the Minister of Agriculture and Rural Development • Circular No. 24/2018/TT-BNNPTNT dated November 15, 2018 regarding the update, exploitation and management of national fisheries database • Circular No. 28/2011/TT-BNNPTNT dated April 15, 2011, providing the validation of catch certificates and statements for exportation into the European market • Decision No. 78/QĐ-TTg dated 16 January 2018 National Action Plan to prevent, deter and eliminate illegal, unreported and unregulated fishing up to 2025 • Resolution No. 89/NQ-CP dated 6 July 2018 of the Government, on Vietnam's accession to the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing of the Food and Agriculture Organization of the United Nations (FAO). • Decree No. 26/2019/ND-CP dated 25 April 2019 guiding the implementation of the Amended Fisheries Law 2017 • Decree No. 42/2019/ND-CP dated 16 May 2019 on penalties for administrative violations against regulations on fisheries • Publication of 60 designated ports for granting catch certificate (Decision 886, 988, 1276 and 3621 / QĐ-BNN-TCTS in 2019 • Circular No. 19/2018/TT-BNNPTNT dated 15 Nov 2018 by MARD providing guidance on protection and development of the aquatic resources • Circular No. 22/2018/TT-BNNPTNT dated 15 Nov 2018 by MARD providing regulations on fishing boat staff • Circular No. 23/2018/TT-BNNPTNT dated 15 Nov 2018 by MARD providing regulations on registration of fishing vessels • Decision No. 179/QĐ-BNN-TCTS dated 13 January 2020 approving the action plan for emergent tasks on fighting IUU during first 6 months of 2020

Annex II. Regional Policies Relating to Existing Catch Documentation and Traceability²⁸

Declaration/ Document/ Plan/ Guideline	Date of Approval/ Adoption/Formulation	Description
United Nations Convention on the Law of the Sea	Resulted from the third United Nations Conference on the Law of the Sea, which took place between 1973 and 1982	International agreement which sets limit on territorial waters and protection of ocean's resources.
ASEAN Catch Documentation Scheme (ACDS) for Marine Capture Fisheries	Adopted by 39th ASEAN Ministers on Agriculture and Forestry Meeting September 28, 2017	A fisheries management tool to improve traceability for marine capture fisheries and enhance intra-regional and international trade of the AMSs.
FAO Voluntary Guidelines for Catch Documentation Schemes (VGCDs)	Officially adopted by the FAO Conference at its Fortieth Session in July 2017	Provides assistance to states, regional fisheries management organizations, regional economic integration organizations and other intergovernmental organizations when developing and implementing new catch documentation schemes or harmonizing or reviewing existing schemes.
Port State Measures Agreement	Approved by the FAO Conference at its 36 th Session (Rome, 18-23 November 2009) under paragraph I of Article XIV of the FAO Constitution, through Resolution No 12/2009 dated November 22, 2009	Aims to prevent, deter, and eliminate IUU fishing by preventing vessels engaged in IUU fishing from using ports and landing their catches.

²⁸ USAID Oceans. 2019b.

Declaration/ Document/ Plan/ Guideline	Date of Approval/ Adoption/Formulation	Description
Global record of fishing vessels, refrigerated transport vessels, and supply vessels	Foundations laid in 2005 when the Rome Declaration on IUU Fishing was adopted by the FAO Ministerial Meeting on Fisheries in Rome	The record is a global initiative that primarily involves State authorities and regional fisheries management organizations in compiling an online comprehensive and updated repository of vessels involved in fishing operations.
Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices including Combating IUU Fishing	Endorsed by ministers responsible for fisheries in Bali, Indonesia, May 2007	Eleven countries endorsed the RPOA (Australia, Brunei Darussalam, Cambodia, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam); four regional fisheries organizations provide technical advice and assistance, (FAO/Asia-Pacific Fishery Commission, SEAFDEC, InfoFish, and World Fish Center). The RPOA aims to enhance and strengthen the overall level of fisheries management in the region, in order to sustain fisheries resources and the marine environment, also to optimize the benefit of adopting responsible fishing practices. The actions cover conservation of fisheries resources and their environment, managing fishing capacity, and combating IUU fishing in the areas of Sub-Regional Southern and Eastern of South China Sea and Sulu-Sulawesi Seas, Sub-Regional Gulf of Thailand, and Sub-Regional Arafura-Timor Seas.
Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) RPOA	Adopted at CTI Summit in Manado, Indonesia in May 2009	The RPOA is multilateral partnership of six countries (Indonesia, Malaysia, Papua New Guinea, Philippines, the Solomon Islands, and Timor-Leste). The CTI-CFF RPOA is a living and non-legally binding document that aims to conserve and sustainably manage coastal and marine resources within the Coral Triangle region, taking into consideration laws and policies of each country. CTI-CFF RPOA is a 10-year plan organized in a four-level structure, including goals, targets, regional actions, and national actions excerpted from National CTI Plan of Action.
Strategic Plan of Food, Agriculture and Forestry (SP-FAF), 2016-2025	Endorsed by the 37th ASEAN Ministers on Agriculture and Forestry, held on September 10, 2015, in Makati City, Philippines	This document is designed to guide ASEAN towards achieving Millennium Development Goals, the post-2015 Sustainable Development Goals, and related goals of the UN Zero Hunger Challenge.
Strategic Plan of Action for ASEAN Cooperation on Fisheries, 2016-2020	The First Technical Working Meeting on the Development of Strategic Plan of Action for	This document was developed to ensure the deliverables of the vision and SP-FAF (2016-2025) that are relevant to fisheries sub sector within a five-year time frame, covering the period of 2016-2020.

Declaration/ Document/ Plan/ Guideline	Date of Approval/ Adoption/Formulation	Description
	ASEAN Cooperation on Fisheries (2016-2020), held on November 11-15, 2015, in Tangerang, Indonesia, agreed to elaborate the activities based on the vision and SP-FAF 2016-2025	
European Union Council Regulation no. 1005/2008	Adopted on September 29, 2008 by the Council of the European Union	The regulation aims to establish a community system to prevent, deter and eliminate IUU fishing. It establishes a framework in which access to EU markets for fisheries products is partly conditioned by the extent to which a country, area or region of origin is demonstrably or increasingly free of IUU fishing. The regulation has four main components: port state measures against third-country vessels, a catch documentation scheme, IUU vessel listing, and listing of non-cooperating states.
CATCH IT	Version 1.0 was launched May 7, 2019 by Commissioner Vella at Seafood Expo in Brussels.	EU is in the process modernizing its catch certificate scheme called CATCH IT. CATCH IT aims to digitalize the currently paper-based EU catch certification scheme as laid down by the Regulation (EC) no. 1005/2008. CATCH has been included as part of the revision of the Fisheries Control Regulation (Amendment of Article 12 of the EU IUU Regulation). Until the adoption of the proposal (expected in 2020/2021), this IT system will be used on a voluntary basis by EU member states and their national operators. While being a considerable driver for the reduction of the administrative burden reduction for all actors involved, the use of the system will remain voluntary for third countries even after the adoption of the legal basis. CATCH version 1.0 includes catch certificates, processing statements, importer declarations, and risk-management tools. Other documents as laid down in the EU IUU Regulation (i.e., simplified catch certificate) will be part of future versions/releases of the system developed by the Commission with active involvement of EU Member States.
International Maritime Organization (IMO) Circular Letter No.1886/Rev.6	August 2016	The IMO scheme was introduced with the aim of enhancing maritime safety and preventing maritime fraud. It assigns a permanent, unique seven-digit number to ships for identification purposes, which remains unchanged even if the ship changes name, ownership, or flag. The scheme became mandatory for cargo and passenger ships over a certain tonnage on January 1, 1996; however, fishing vessels were exempt. In December 2013, the IMO General Assembly removed the exemption, allowing fishing vessels of >100 GT into the scheme on a voluntary

Declaration/ Document/ Plan/ Guideline	Date of Approval/ Adoption/Formulation	Description
		basis. In August 2016, through Circular Letter no. 1886/Rev 6, the scheme was further expanded to cover all motorized inboard fishing vessels of >100 GT down to a size limit of 12 meters LOA that are authorized to operate outside of waters under national jurisdiction.
European Union Commission Regulation no. 1010/2009	Legislated in 2009	This regulation sets out detailed rules for implementing Council Regulation no. 1005/2008, establishing a European Community system to prevent, deter, and eliminate IUU fishing. These rules cover, in particular, inspections of third-country vessels in member states ports, the catch certification scheme for importation, and exportation of fishery products and sightings.
U.S. Seafood Import Monitoring Program (SIMP)	January 1, 2018	SIMP establishes reporting and recordkeeping requirements for imports of certain seafood products, to combat IUU-caught and/or misrepresented seafood from entering U.S. commerce. SIMP provides additional protections for the U.S. national economy, global food security, and the sustainability of our shared ocean resources. This is a risk-based traceability program requiring the importer of record to provide and report key data from the point of harvest to the point of entry into U.S. commerce on thirteen imported fish and fish products identified as vulnerable to IUU fishing and/or seafood fraud.
RFMO Catch Documentation Scheme		While some RFMOs play an advisory role, many of them have management powers to set catch and fishing effort limits, technical measures, and control obligations.

Annex III. Workshop and Dialogue Participants

No.	Full Name	Organization	Position	Age		Sex	
				≤ 30	> 30	M	F
1.	Tran Dinh Luan	Department General of Fisheries (DFish)	Director General		x	x	
2.	Le Trung Kien	Fisheries Information Center (FICen-DFish)	Director		x	x	
3.	Le Van Ninh	Fisheries Information Center (FICen-DFish)	Deputy Director		x	x	
4.	Dinh Manh Cuong	Fisheries Information Center (FICen-DFish)			x	x	
5.	Tran Hai Nam	Fisheries Information Center (FICen-DFish)			x	x	
6.	Pham Van Dung	Fisheries Information Center (FICen-DFish)			x	x	
7.	Dang Van Duong	Fisheries Information Center (FICen-DFish)			x	x	
8.	Dang Van Quang	Fisheries Information Center (FICen-DFish)	Officer		x	x	
9.	Nguyen Huu Binh	Department of Capture Fisheries (DFish)	Officer		x	x	
10.	Nguyen Van Hung	Department of Capture Fisheries (DFish)	Officer		x	x	
11.	Nguyen Van Trung	Department of Capture Fisheries (D-Fish)	Director		x	x	
12.	Kieu Trung Dung	Department of Legislation and Inspection (DFish)	Deputy Director		x	x	
13.	Le Tuan	Fisheries Resources Surveillance (DFish)	Deputy Director		x	x	
14.	Nguyen The Hai Diep	Fisheries Resources Surveillance (DFish)			x	x	
15.	Ta Tung	Fisheries Resources Surveillance (DFish)			x	x	
16.	Nguyen Minh Phuong	Department of Legislation and Inspection (DFish)			x	x	
17.	Nguyen Thanh Ha	Ninh Binh Sub-Department of Fisheries			x	x	
18.	Le Duc Thang	Quang Tri Sub-Department of Fisheries			x	x	
19.	Nguyen Cong Binh	Binh Dinh Sub-Department of Fisheries	Deputy manager		x	x	
20.	Huynh Quang Huy	Binh Thuan Sub-Department of Fisheries	Manager		x	x	
21.	Nguyen Viet Trieu	Ca Mau Sub-Department of Fisheries	Deputy manager		x	x	
22.	Tran Van Dat	Ca Mau Sub-Department of Fisheries	Deputy Head of Division		x	x	
23.	Hoang Ha	Nam Dinh Sub-Department of Fisheries			x	x	
24.	Dao Quang Minh	Phu Yen Sub-Department of Fisheries	Officer		x	x	
25.	Vu Dinh Dap	Vietnam Tuna Association	Chairman		x	x	
26.	Duong Long Tri		Technology Expert		x	x	

No.	Full Name	Organization	Position	Age		Sex	
				≤ 30	> 30	M	F
27.	Nguyen Duc Long	VNPT			x	x	
28.	Nguyen Duc Toan	Mecom Marine Equipment Joint Stock Company			x	x	
29.	Tran Ngoc Duy	Mecom Marine Equipment Joint Stock Company			x	x	
30.	Nguyen Thanh Ha	Mecom Marine Equipment Joint Stock Company	Director General		x	x	
31.	Nguyen Dieu Thuy	WWF Vietnam	Coordinator		x		x
32.	Le Hang	Vietnam Association of Seafood Exporters and Producers (VASEP)	Deputy Director of VASEP		x		x
33.	Nguyen Van Huong	Research Institute for Marine Fisheries (RIMF)			x	x	
34.	Nguyen Ngoc Han	Vietnam Institute of Fisheries Economics and Planning	Deputy Head of GIS Division		x	x	
35.	Nguyen The Tiep	Anti-counterfeiting inspection institute	Deputy Director		x	x	
36.	Nguyen Cao Chung	Ministry of Public Security			x	x	
37.	Nguyen Quoc Anh	Fisheries Resources Surveillance Information Center (DFish)	Director		x	x	
38.	Vu Van Ba	Vietnam Academy of Science and Technology (VAST)	Technical Officer		x	x	
39.	Tran Van Phuc	Department of Agriculture and Rural Development of Binh Dinh	Deputy Director		x	x	
40.	Nguyen Sanh Ngoc	Binh Dinh Sub-Department of Fisheries	Officer		x	x	
41.	Nguyen Bac Linh	Quy Nhon Fishing Port Authority	Officer		x	x	
42.	Nguyen Anh Dung	Quy Nhon Fishing Port Authority	Deputy Director		x	x	
43.	Nguyen Minh Khai	Tam Quan Fishing Port Authority	Director		x	x	
44.	Le Duc Nang	Quy Nhon Economics Division			x	x	
45.	Le Van Bich	Binh Dinh Sub-Department of Fisheries			x	x	
46.	Nguyen Tuong Nha	Nha Trang T&H Company			x	x	
47.	Nguyen Ngoc Le	Hoai Nhon Town	Fishermen		x	x	
48.	Do Minh Tu	Hoai Nhon Town	Fishermen		x	x	
49.	La Xuan Truong	Hoai Nhon Town	Fishermen		x	x	

No.	Full Name	Organization	Position	Age		Sex	
				≤ 30	> 30	M	F
50.	Tran Thi Huong	Hai Nguyen Company			x		x
51.	Le Minh Quan	Hoai Nhon Town			x	x	
52.	Nguyen Minh Danh	Hoai Nhon Town			x	x	
53.	Le Van Hoi	Hoai Nhon Town	Ship Owner		x	x	
54.	Le Van Binh	Hoai Nhon Town			x	x	
55.	Huynh Duc Hoang	Thien Thanh Company			x	x	
56.	Nguyen Anh Thu	De Gi Fishing Port Authority			x	x	
57.	Nguyen Thi Minh Le	Hoai Nhon Town	Fishermen		x		x
58.	Tran Thanh Binh	Mai Tin Limited Company			x	x	
59.	Nguyen Van Binh	Vietnam Tuna Association			x	x	
60.	Phan Tuan Loc	Department of Agriculture and Rural Development of Binh Dinh			x	x	
61.	Van Cong Viet	Hoai Nhon Town	Fishermen		x	x	
62.	Ho Dinh Tu	Quy Nhon Fishing Port Authority			x	x	
63.	Ho Van Kim	Binh Thuan Fishing Port Authority			x	x	
64.	Pham Ngoc Tuan	Department of Capture Fisheries (DFish)	Deputy Director		x	x	
65.	Nguyen Thanh Hai	Binh Dinh Sub-Department of Fisheries			x	x	
66.	Tran Thai Son	VTC Telecommunication Joint Stock Company - VNPT	Officer		x	x	
67.	Ha Dang Tien	VTC Telecommunication Joint Stock Company - VNPT			x	x	
68.	Truong Trong Toan	Thinh Hung Company			x	x	
69.	Duong Hoang Tra	Mecom Marine Equipment Joint Stock Company	Officer		x	x	
70.	Dao Manh Dung	Mecom Marine Equipment Joint Stock Company	Officer		x	x	
71.	Tran Quoc Binh	Ca Mau Sub-Department of Fisheries			x	x	
72.	Nguyen Thi Hai Diep	Fisheries Resources Surveillance (DFish)			x		x
73.	Tran Thi Tuyet Mai	VNPT	Officer		x		x
74.	Nguyen Hanh Luyen	Fisheries Information Center (FICen-DFish)	Officer		x		x
75.	Nguyen Huu Binh	Fisheries Information Center (FICen-DFish)	Officer		x	x	

No.	Full Name	Organization	Position	Age		Sex	
				≤ 30	> 30	M	F
76.	Ta Thanh Tung	Fisheries Resources Surveillance (DFish)			x	x	
77.	Vo Dang Trinh	Binh Thuan Sub-Department of Fisheries			x	x	
78.	Mai Viet Ha	Vietnam Marinetime Communication and Electronics LLC (Vishipel)	Director		x	x	
79.	Dao Dac Hoan	Vietnam Marinetime Communication and Electronics LLC (Vishipel)	Deputy Head of Division		x	x	
80.	Nguyen Ngoc Son	Vietnam Marinetime Communication and Electronics LLC (Vishipel)	Officer		x	x	
81.	Nguyen The Anh	Binh Anh Company	Project Officer		x	x	
82.	Le Tuan Anh	Viettel			x	x	
83.	Nguyen Duy Thanh	Research Institute for Marine Fisheries (RIMF)	Deputy Director of Information		x	x	
84.	Nguyen Van Nong	Vietnam Agriculture Newspaper	Reporter		x	x	
85.	Nguyen The Tiep	SmartLife JSC	Chairman		x	x	
86.	Nguyen Cao Luan	GTO Company			x	x	
87.	Nguyen Tuan Anh	Research Institute of Aquaculture	Officer		x	x	
88.	Le Minh Huan	Hoai Nhon Town	Ship Owner		x	x	
89.	Do Minh Tu	Hoai Nhon Town	Ship Owner		x	x	
90.	Vo Thi Y	Tam Quan Fishing Port Authority			x		x
91.	Tran Quyen	Hoai Nhon Town	Ship Owner		x	x	
92.	Bui Lot	Hoai Nhon Town	Ship Owner		x	x	
93.	Phung Giang Hai		Value Chain Expert		x	x	
94.	Tran Manh Thi	Binh Dinh Sub-Department of Fisheries			x	x	
95.	Tran Mai Thuy	Tam Quan Fishing Port Authority			x		x
96.	Tran Van Tuan	Binh Dinh Fisheries Company	Business Director		x	x	
97.	Ngo Thanh Thoai	Hoai Nhon Economics Division			x	x	
98.	Dinh Tu	Hoai Nhon Town	Fishermen		x	x	
99.	Van Cong Viet	Hoai Nhon Town	Fishermen		x	x	
100.	Nguyen Hai Binh	Binh Dinh Fisheries Association	Vice Chairman		x		x
101.	Nguyen Cong Binh	Binh Dinh Sub-Department of Fisheries	Deputy manager		x	x	

No.	Full Name	Organization	Position	Age		Sex	
				≤ 30	> 30	M	F
102.	Nguyen Thu Hue	Centre for Marinelif e Conservation and Community Development (MCD)	Director		x		x
103.	Ho Thi Yen Thu	Centre for Marinelif e Conservation and Community Development (MCD)	Deputy Director		x		x
104.	Than Thi Hien	Centre for Marinelif e Conservation and Community Development (MCD)	Vice Director		x		x
105.	Nguyen Thi Thu Trang	Centre for Marinelif e Conservation and Community Development (MCD)	Program Officer		x		x
106.	Nguyen Thi Hong Van	Centre for Marinelif e Conservation and Community Development (MCD)	Program Officer		x		x
107.	Vu Thi Van Anh	Centre for Marinelif e Conservation and Community Development (MCD)	Administrator		x		x
108.	Nguyen Thi Thao	Centre for Marinelif e Conservation and Community Development (MCD)	Program Officer	x			x
109.	Vu Phong Lan	Centre for Marinelif e Conservation and Community Development (MCD)	Officer		x		x
110.	Le Kieu Trang	Centre for Marinelif e Conservation and Community Development (MCD)	Officer	x			x