



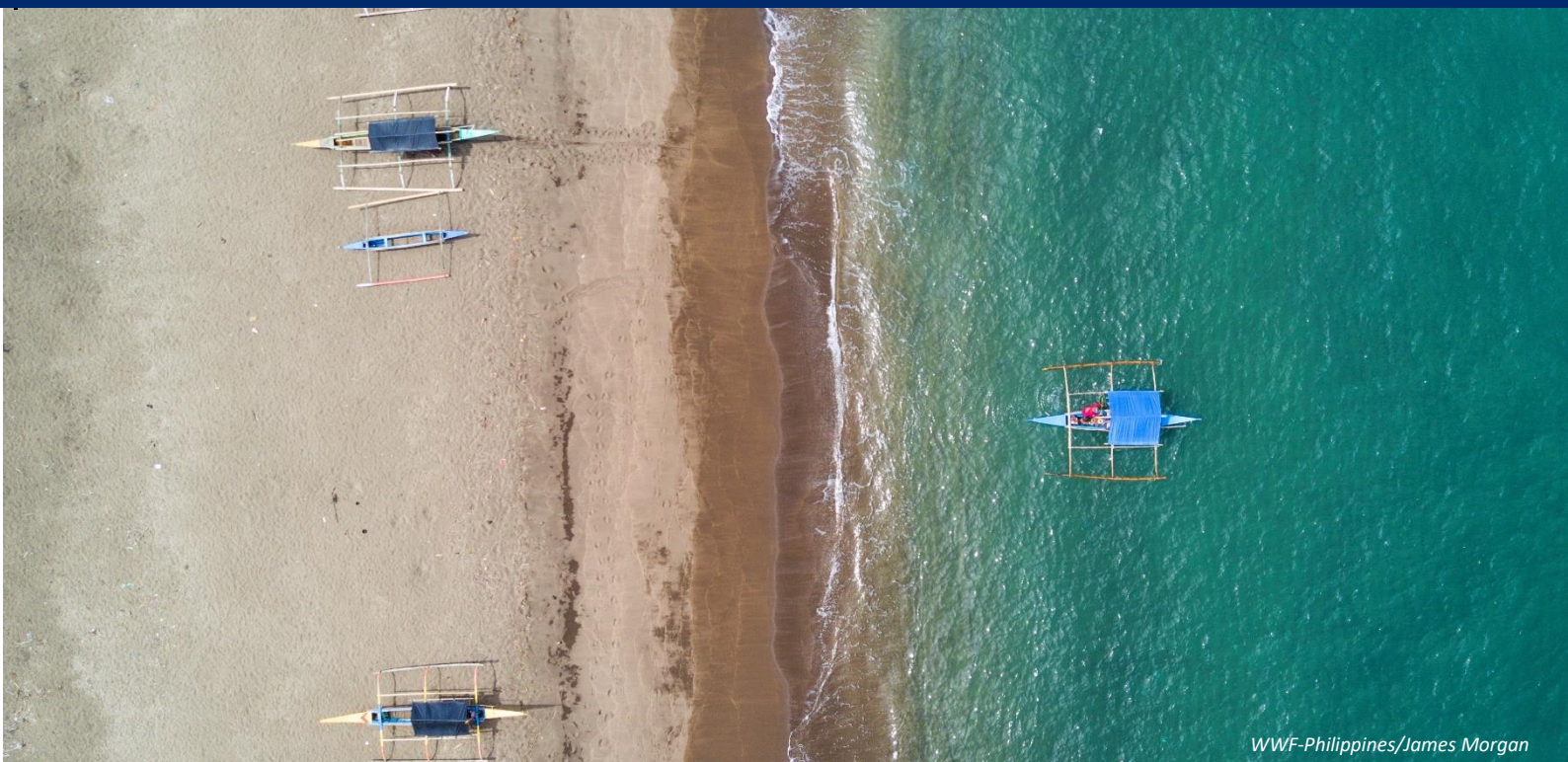
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The Oceans and Fisheries Partnership (USAID Oceans)

Deliverable 5: FINAL REPORT

Applying Catch Documentation and Traceability Technologies in the Small-scale Tuna Handline Fisheries in Mindoro and Bicol, Philippines



WWF-Philippines/James Morgan

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ACRONYMS AND ABBREVIATIONS

BFAR	Bureau of Fisheries and Aquatic Resources
BLE	Bluetooth Low Energy
CDTS	Catch Documentation and Traceability System
CNFIDP	Comprehensive National Fisheries Industry Development Plan
CoC	Chain of Custody
CSO	Civil Society Organization
DA	Department of Agriculture
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
EAFM	Ecosystem Approach to Fisheries Management
eCDT	Electronic Catch Documentation and Traceability
ECQ	Enhance Community Quarantine
FAME	Futuristic Aviation and Maritime Enterprise
FAO	Food and Agriculture Organization of the United Nations
FAO	Fisheries Administrative Order
FARMC	Fisheries and Aquatic Resources Management Council
FIP	Fisheries Improvement Project
FMA	Fisheries Management Area
GLTFFI	Gulf of Lagonoy Tuna Fishers Federation Inc.
IUU	Illegal, Unreported and Unregulated (fishing)
KKPFI	Kabang Kalikasan ng Pilipinas Foundation Inc.
LGU	Local Government Unit
MCDS	Municipal Catch Documentation and Traceability System
MCS	Monitoring, Control and Surveillance
MSC	Marine Stewardship Council
NFARMC	National Fisheries and Aquatic Resources Management Council
NFC	Near-field Communication
NGO	Non-governmental Organization
NSAP	National Stocks Assessment Program
NTMP	National Tuna Management Plan
OMTFA	Occidental Mindoro Federation of Tuna Fishers Association Inc.
OTG	On-the-Go
PaNaGaT	Pangngisda Natin Gawin Tama Network
PATPI	Philippine Association of Tuna Processors Inc.
PPP	Public-Private Partnership
PPTST	Partnership Program Towards Sustainable Tuna
R.A.	Republic Act
RDMA	Regional Development Mission for Asia
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership
WWF	World Wide Fund for Nature



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EXECUTIVE SUMMARY

The marine ecosystems of Southeast Asia are a source of daily food and income to over 200 million people living in the region. As capture fisheries production in Southeast Asia has risen steadily during the past several decades, this has resulted in growing concerns regarding illegal, unreported, and unregulated (IUU) fishing, the unsustainability of current rates of extraction, the collapse of overfished marine resource populations, declines in marine biological diversity, and negative impacts on the economic and food security of millions of people throughout the region. In recent years, there has also been growing concern from the international community—particularly consumers within importing nations such as the United States and the European Union—that the seafood industry in Southeast Asia exacerbates or perpetuates human welfare abuses and concerns within seafood supply chains, including forced labor, unfair labor practices, and unsafe working conditions.

This partnership between The Oceans and Fisheries Partnership (USAID Oceans), funded by the United States Agency for International Development’s Regional Development Mission for Asia (USAID RDMA), with Kabang Kalikasan ng Pilipinas Foundation Inc. (KKPFI), also known as the World Wide Fund Philippines (WWF-Philippines), is to formalize relevant collaborative efforts to expand the use of municipal electronic catch documentation and traceability (eCDT) technologies beyond the USAID Oceans Learning Site of General Santos City, into other regions of the country where WWF-Philippines is currently working closely with municipal fisherfolks who are interested in testing eCDT technologies within their own fishery operations and Local Governance Units (LGUs). This partnership is based on the common goal of both organizations to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity through the demonstration and expansion of eCDT technologies in the small-scale handline tuna fisheries the Philippines.

WWF-Philippines has been working with tuna fisheries stakeholders to achieve sustainable fisheries through a Fisheries Improvement Project on handline tuna fisheries in Mindoro Strait in the province of Occidental Mindoro and in Lagonoy Gulf in the Bicol region. One of the challenges that the project has encountered is the lack of fish catch data reports from the municipal fisheries utilizing these fishing grounds. Reliable fish catch data is needed to determine the real status of the fisheries in the coastal municipalities. This in turn will determine the appropriate interventions in addressing the decline in municipal fisheries production. However, a majority of local government units (LGUs) are unable to produce reliable fisheries-related data that can be used to determine the status of Philippine municipal waters and to know where the fish or fishery products are sourced. This partnership can not only provide a tool to address the lack of fish catch report for the municipal fisheries but it can also provide a great tool to support compliance with both local and international market regulations for verifiable traceability that will cater to the growing demand for sustainably-sourced fisheries products.

This report is mainly focused on gathering information on the use of eCDT by the small-scale tuna handline fisheries in the WWF-Philippines FIP sites. This involves pilot testing of the FAME transponder and Near-field Communication (NFC) card to the small-scale handline tuna fisheries on both FIP sites, taking notes on the user friendliness of the device and evaluating the acceptance of the fishers, considering the perception that it would be an additional task for their fishing operation. The information gathered in this report can give us a better picture of the potential of eCDT technology for small-scale fisheries in terms of combating IUU fishing. Furthermore, it can help in determining how essential this technology can be in promoting sustainable fisheries, as well as understanding the direct benefits the eCDT can have for artisanal fisheries.

USAID Oceans

On May 14, 2015, Tetra Tech was awarded to implement the USAID Oceans project by the USAID Regional Development Mission for Asia (RDMA). USAID Oceans works to strengthen regional

cooperation to combat IUU fishing and promote sustainable fisheries, and 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.

The objectives of USAID Oceans are to: (1) develop financially-sustainable electronic catch documentation and traceability (eCDT) technologies to combat IUU fishing and seafood fraud; (2) expand use of eCDT technologies in priority marine biodiversity areas in Southeast Asia through the ecosystem approach to fisheries management (EAFM); (3) strengthen human and institutional capacity of regional organizations to combat IUU fishing and seafood fraud; and (4) enhance public-private partnerships (PPPs) to combat IUU fishing and seafood fraud, promote sustainable fisheries management, and conserve marine biodiversity. To do this, USAID Oceans supports the development and implementation of eCDT technologies, to help ensure that fisheries resources from Southeast Asia are legally caught, properly labeled, and environmentally and socially sustainable. The application 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. Such eCDT technologies provide for the capture and validation of key data elements relating to ‘traced’ seafood products, including legality and movement from point of harvest, throughout relevant buyers, processors, shippers, importers, distributors, and retailers, all the way to the importing nation and end-consumer.

During 2016 to 2019, USAID Oceans focused extensively on the design, testing, and demonstration of an eCDT system at two ‘learning’ sites in the Sulu-Celebes Sea: (1) in Bitung/Manado, Northern Sulawesi Province, Indonesia; and (2) in General Santos City and Southern Mindanao, in South Cotabato Province, the Philippines. USAID Oceans focused on testing eCDT technologies (hardware and software) within tuna fishery value chains at both learning sites, while also supporting eCDT technology expansion within other fisheries and sites across Southeast Asia during the life of project. In the Philippines, USAID Oceans has also partnered with the SOCSKSARGEN Federation of Fishing and Allied Industries, Inc. (SFFAI) to pilot the initial version of the Philippines’ new electronic CDT system for seafood products, with a focus on tuna and eventually facilitate in rolling out for other stakeholders. A national eCDT system, developed by the Philippines Bureau of Fisheries and Aquatic Resources (BFAR) in partnership with USAID Oceans, is part of BFAR’s long-term plan of an integrated system to manage Philippine fisheries which started with the development of its electronic fisherfolk registration and vessel registration several years ago. USAID Oceans also partnered with the private company Futuristic Aviation and Maritime Enterprise (FAME), to support the testing, improvement, and expansion of vessel tracking and monitoring technologies on board small-scale fishing vessels operating in the waters of the Southern Philippines. FAME technology has continued engagement in testing onboard small-scale commercial fishing vessels and municipal fishing boats in collaboration with BFAR, LGUs, Alliance of Tuna Handliners (ATH) in General Santos and Sarangani Province, and SFFAI. The small fishing boats are equipped with transponders and dashboard that enable real time eCDT data capture and transmission. USAID Oceans also facilitated coordination between BFAR and FAME regarding eCDT system integration and data interoperability. To identify relevant human welfare issues, a labor study and gender analysis was conducted by USAID Oceans for the General Santos City learning site. These assessments provided recommendations on using human welfare key data elements within the eCDT system and designing gender interventions to address known gender equity issues along the tuna fisheries value chain, advocating for a gender sensitive seafood industry and governance.

Building upon the successful engagements and experiences in the learning site demonstrations in the Philippines and Indonesia from 2017 through 2019, USAID Oceans has developed strategic partnerships to adapt and expand (“scale-up”) the application of available eCDT technologies and

experiences into other areas beyond the two learning sites during the fifth and final year of the USAID Oceans project, beginning on October 1, 2019. This initiative has expanded USAID Oceans partnership opportunities in the Philippines. The program's EAFM work has been possible through partnerships with WWF-Philippines and in close collaboration with the government (BFAR), private sector (FAME, JAM Seafoods), and small-scale fishers and fishing associations (Tuna Handline Associations).

WWF-Philippines / KKPFI

Since 2011, WWF Philippines has been working to strengthen the traceability and sustainable management of artisanal yellowfin handline tuna fisheries, in partnership with WWF Germany. Through this effort, WWF Philippines is implementing an important contribution into a larger fisheries improvement project (FIP) funded by the German Development Bank and European seafood retailers. This effort aims to improve the management of yellowfin tuna fisheries by facilitating capacity building and technical developments, including developing a Catch Documentation Scheme and Traceability System for a Handline Tuna Fisheries in the Mindoro Strait, off of Occidental Mindoro Province and the Lagonoy Gulf waters. This CDT system will help in promoting sustainable fisheries by pioneering traceability, an essential requirement in the international trade of any fishery product. In the long term, the science-based data gathered through this project will help to manage the tuna resources of the Philippines and the larger Western Central Pacific Ocean Region, with whom the Philippines shares important fish stocks.

With the rising demand for sustainable seafood by European consumers, WWF has been working with partners on a FIP to ensure that yellowfin tuna fisheries from the Philippines are sustainably caught. The FIP harnesses market power and consumer demand to promote legally and sustainably caught tuna. It supports sustainable fishing techniques, including artisanal fishing with handline reels, and the subsequent transition to sustainable management of two artisanal handline Yellowfin Tuna fisheries. These fisheries, found in Mindoro Strait and Lagonoy Gulf, involve around 5,000 fishers, 112 fishing villages, and over 50 local tuna buying stations.

The FIP has supported the introduction of a registration and licensing system to improve regulation and monitoring of the fisheries. Over 70% of the tuna fishing vessels in the project regions have now registered, with 25 % of tuna fishers having obtained fishing licenses. The system provides local authorities the capability to monitor and control fishing activities, while combating illegal and undocumented fishing in their waters. To ensure compliance with fisheries laws, WWF has also trained fish warden-volunteers to help patrol fishing areas, and detect and report non-compliant fishing activities.

The project also helps in the improvement of a catch documentation and traceability system, a vital component to ensure sustainability of the yellowfin fishery on both sites. Through the WWF FIP some fishers are now documenting their catch and are able to provide relevant information such as the location, time, species, weight, and length, challenges have been encountered in maintaining the system. Such challenges include the novelty of the system, as well as non-compliance of the mandatory catch reporting by local fisheries authorities. There is also no facility where the fish catch report may be submitted, and not all local governments have the capability to receive, collate, and analyze the fish catch data recorded by the fishers. Furthermore, the lack of a clear CDT system in place, with no strict enforcement at the local level, may lead to the mismanagement of the fisheries resources, and an unreliable traceability system. A sound CDT scheme is the cornerstone of a long-term fisheries management plan that addresses IUU fishing.

As part of WWF's work on traceability improvement for yellowfin tuna FIP, the project entered into collaborative work with NAVAMA, a Germany based technology provider of vessel monitoring devices for small scale fisheries. The purpose of this collaborative work was to pilot test a multiple

tracking device for use on small scale fishing vessel to improve transparency and for nature conservancy. The test trial of the new devices was participated in by 13 tuna fishing vessels from the Municipality of Mamburao, Occ. Mindoro. In total, 4 different models from 3 companies were tested for their reliability and seaworthiness. In the search for an effective but inexpensive vessel monitoring device, the project partnered with FAME with the aim of pilot testing their eCDT technologies with municipal handline tuna fishing vessels of Mindoro.

The FIP has been engaging technology providers to identify and develop a traceability software that can be used in small-scale handline tuna fisheries in the Philippines. The purpose of this engagement is to establish an electronic database in collaboration with LGUs, BFAR, and the whole handline tuna fisheries supply chain. This will further test and assess the use of eCDT system in small-scale artisanal fisheries and prove its interoperability with the systems of EU and or US catch certificates and other electronic Monitoring, Control and Surveillance (MCS) systems. This will in turn support the implementation of a responsible fisheries management, if BFAR is to develop such a system. The eCDT system will be customized also based on the guidelines developed by BFAR for the small-scale fisheries that will be implemented in all the coastal LGUs all over the country. The project is continuously coordinating with BFAR for the finalization of the guidelines on municipal catch documentation and traceability system. In any case, the project will continue to use and promote available and existing electronic catch documentation systems with minimum key data elements to input essential data for traceability.

Partnership Objectives

This partnership with USAID Oceans was based on the common goal to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity through the demonstration and expansion of eCDT technologies during a period of four (4) months, between 03 January 2020 and 05 May 2020, with the following objectives:

1. To adapt and apply eCDT technologies piloted with municipal and small-scale fisheries in General Santos City using FAME Technology at WWF sites in Mindoro Strait and Lagonoy Gulf of the Occidental Mindoro Province and the Bicol Region;
2. To integrate existing WWF catch documentation efforts with FAME technology and BFAR's national eCDT system;
3. To support the finalization of policy guidelines for CDT in small-scale fisheries in Occidental Mindoro Province and the Bicol Region; and
4. To develop communication materials and share lessons learned on the development and testing of eCDT technologies with small scale fisheries in Occidental Mindoro Province and the Bicol Region.

I. LESSONS LEARNED FROM THE ECDT TESTING IN MINDORO STRAIT AND LAGONOY GULF.

The installation of FAME transponders and gateways was completed in the middle of March 2020. A total of 30 devices were deployed to the volunteer tuna handline fishers with fishing vessels in Sablayan, Occidental Mindoro. Likewise, 30 devices were distributed to volunteer fishers in the Province of Albay, namely: Tabaco City, the Municipality of Tiwi, the Municipality of Malinao and the Municipality of Bacacay. One gateway was installed for each fishing ground to expand the monitoring capacity for the fishing vessels even if they go beyond the municipal waters (15 km.) (see also, <https://www.seafdec-oceanspartnership.org/news/engaging-small-scale-fishers-in-the-philippines-in-ecdt-systems-proves-the-feasibility-of-scaling-ecdt-for-municipal-fishers-regionally/>).



Installation of FAME transponder to a small-scale tuna handline fishing vessel.

Photo: WWF-Philippines/David N. David

WWF-Philippines has been working on the improvement of the catch documentation and traceability system as part of the small-scale tuna handline FIP, with emphasis on vessel registration and licensing, the use of tuna tags with unique identification numbers, and the correct accomplishment of the BFAR prescribed fish catch reports. Training on fish catch documentation has been conducted through the project to capacitate the tuna fisher's association and the LGUs on how to identify fish species and on what key data elements should be gathered to create a basis for effective fisheries management. Despite the constant encouragement regarding the compliance of the reportorial requirements on fish catch, only a few LGUs and tuna fishers are complying with the policy.

Here are important observations during the implementation of eCDT application to small-scale tuna handline fisheries in Mindoro and Bicol that need to be considered when establishing eCDT technology into the small-scale fisheries in the Philippines.

I.1 Fishers

The first consideration in choosing volunteers for the pilot testing of eCDT technology for the small-scale tuna handline fisheries is that they have to be a member of the tuna fisher's association in their respective municipalities. The second is that they should meet government criteria in conducting fishing operation, i.e., they are legally registered with valid fishing licenses. For the purpose of pilot testing, municipalities were chosen based on where the majority of handline yellowfin tuna were landed and whether they had existing or ongoing fish catch monitoring assisted by WWF-Philippines.

The pilot testing coincidentally took place during the preparation of documents for the MSC Certification assessment of the small-scale handline tuna fisheries in Lagonoy Gulf and Mindoro Strait which is being assisted by WWF-Philippines. Part of the preparation is the identification of the certificate holders, which will include members of the tuna fisher's association owning a tuna handline fishing vessel. We found that the opportunity was favorable in convincing the tuna fishers to participate in the eCDT technology pilot testing. It was explained during the orientation that this technology will help them establish traceability along the supply chain, which is beneficial for those

aiming for MSC certification. This would make it easy for the tuna federation to demonstrate the traceability of their fish and have proof that their products are from a responsible fishing practice.

The fishers became more interested when they learned that the FAME transponder can be used not just for traceability of their fish but also for sending distress signals (SOS) during emergencies. This safety feature of the transponder is vital to the fishermen's safety especially considering that their profession can be quite risky. In communicating this kind of intervention, we found it helpful to explain to the fishers that they can benefit from this technology and it would help them to achieve an equitable supply chain, as well as sustainable management of fisheries stock, both of which can help in the improvement of their livelihood.

The popularity of eCDT technology is fast growing as fisheries experts see this as one of the essential components of Monitoring, Control and Surveillance (MCS) to secure adequate supplies of fish for present and future generation. Mentioning catch documentation, traceability, monitoring and other words that connote the same meaning to the coastal communities would make them hesitant to participate in the process because this may be equivalent to added burden into their fishing operations and/or limiting their fishing capacities. The more effective way to communicate this to the small-scale fishermen is to focus on the benefits of it to them and to the reputation of their fisheries, like;

- a. It could send distress signals during emergencies;
- b. It would make fish catch reporting easier;
- c. It can be used as a basis for acquiring incentives from government agencies and private sectors;
- d. It can be used as a basis for loans;
- e. Market protection;
- f. Market advantage; and
- g. in the case of FIP sites aiming to get an eco-label, it can establish verifiable traceability to become MSC certification compliant.

The majority of the tuna handline fishers appreciate the pilot testing being conducted in their area and are willing to participate. It was observed in Sablayan, Occidental Mindoro that it is easier to convince the fishers to participate in this kind of project, knowing that they will be receiving an incentive by making their fish traceable using the FAME transponder. There are even non-members of tuna fisher's association who express their willingness to participate in the pilot testing knowing that they can earn additional earnings by using the transponder and the



The orientation of handline tuna fishers in Sablayan, Occ. Mindoro on the use of FAME transponder.

Photo: WWF-Philippines/Ana Chavez

NFC cards. However, there are also members of the tuna fisher's association who participated in the pilot testing even if the incentive is not guaranteed because they are bringing tuna to the buying station not part of the eCDT technology pilot testing. The key here is making them aware that the eCDT pilot test will help them to accomplish fish catch reporting easier and that having a robust traceability system is a requirement to acquire MSC certification. In Lagonoy Gulf, a different method

was applied, since the partner processor/exporter (JAM Seafoods) is not sourcing tuna in Bicol at the moment, no incentives were given to the volunteer tuna handline fishermen. But despite the situation, there were still many members of the tuna fisher's association who want to participate in the eCDT pilot testing for the same reason that it can be used for fish catch report, eliminating the need to manually fill-in the BFAR fish catch report form, and as a requirement for MSC CoC standard.

During the early stage of implementation, there were some participating fishers that were confused on where to tap the NFC card. Some of them tapped the NFC card to the tuna, resulting in no data. Some of them tapped the NFC card to the transponder when they reached the landing site, which defeats the purpose of tracing the fish from the point of catch. There is news that reached us that there are transponders that are not working properly. Cases like this are probably due to improper use of the device and/or the NFC cards. It is also possible that the battery of transponder was not properly charged. Some fishers in Bicol removed the FAME transponder from their fishing vessels when they were not going out to fish, in the fear of losing it if it was left attached to their vessel on the dock. There is bizarre information that reached us also that some fishermen were discouraged about participating in the pilot testing because there of information circulating that the use of the transponder allows authorities to detect where the ring net fishing vessels operate in Lagonoy Gulf even if there is no transponder attached to the ring net fishing vessel. This kind of issue needs to be addressed immediately by giving them technical assistance and personally answering whatever questions they have in their mind regarding the transponder. The project was unable to conduct field assessment to check on the transponder and provide answers and explanations to the fishermen's queries regarding the issues on the use of the transponder because of the implementation of the Enhance Community Quarantine (ECQ) due to Covid-19 pandemic. Not all fishermen who participated in the eCDT technology pilot testing own a mobile phone, which makes them difficult to contact during the ECQ.

1.2 Local Government Units (LGUs)

One of the factors that contributes to why majority of the LGUs have a weak capacity to produce reliable fisheries-related data is the absence of a policy guidelines regarding standard key data elements. That is, LGUs are not guided on the kind of fisheries data that needs to be collected for municipal fisheries catch documentation. What makes this situation more difficult is the lack of qualified fisheries extension workers who can understand and effectively accomplish the fish catch reporting for their respective LGUs. Given this situation, a large proportion of catch is undocumented, implying that the level of exploitation in the municipal fisheries is under-reported. The absence of a standard method and/or guidelines for monitoring catch in the municipal fisheries can result in the inconsistency of fish production data between government agencies that gather and manage fisheries-related data. Without reliable statistics on fish catch, effective fisheries management and policy-making is impossible.

Republic Act (R.A.) No. 10654, which amended Republic Act (R.A.) No. 8550 or the Philippine Fisheries Code of 1998, calls for the development and establishment of a catch documentation system (CDS) that can be adopted and implemented by LGUs in municipal waters. The need to establish the CDS is further stipulated in Section 38.5 of the Department Administrative Order (DAO) 10 series of 2015 or the implementing rules and regulations of R.A. No. 10654, which says that,

Rule 38.5. Technical Assistance. Within one (1) year from the effectivity of this IRR, the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) shall develop guidelines for a municipal CDS in coordination with local government units (LGUs).

It is important then that the DA through BFAR should be able to formulate a working CDTS that can be easily adopted by LGUs for fisheries management purposes. What is important too is that several CDTS are being implemented by various non-government organizations (NGOs) and their partner LGUs and fishing communities.

During the stakeholder’s consultations conducted in Mindoro on March 5, 2020 at the Provincial Training Center, Mamburao, Occidental Mindoro and in Bicol on March 10, 2020 at Casa Ver Amore, Tabaco City, LGUs support the eCDT technology pilot testing with the knowledge that this can help them facilitate future transactions regarding the issuance of declarations of landings on all unloading of fish and fishery products, as well as the issuance of auxiliary invoices for the transport of fish and fishery products from their area of jurisdiction to any point of the Philippines. Standardized data will facilitate bench marking of fisheries catch between fishing sites, municipalities, provinces, Fisheries Management Areas (FMAs), and nationwide.

I.3 Bureau of Fisheries and Aquatic Resources (BFAR)

In the Philippines, establishing a fish catch documentation and traceability system is challenging due to the complexity of fisheries in different fishing grounds. Coastal LGUs have different levels of understanding regarding existing fisheries regulations and there is no existing effective mechanism to deliver new national fisheries policies to the LGU level for adoption, resulting in different level of implementation of fisheries regulations in the ground. This project was aimed to support the Tuna Management Plans in Lagonoy Gulf and Mindoro Strait, and in the implementation of management actions/measures in these tuna fishing grounds.

A partnership with other Civil Society Organizations (CSOs) and a close coordination and collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) led to the finalization of the draft Fisheries Administrative Order (FAO) on Guidelines for the Establishment of a Municipal Catch Documentation and Traceability System for LGUs to Manage Fishery Resources was completed in December 2019. The general objective of this Order is to establish a data collection system that is appropriate and viable at the local government level; to provide a management tool to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUUF); to ensure effective and efficient fisheries management; to implement food safety requirements; and to ensure continued market access of fish and fishery products. It is the aim of this Order to enjoin LGUs to establish and implement a municipal catch documentation and traceability system (MCDTS) with the help of relevant government agencies such as the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), the Department of the Interior and Local Government (DILG), civil society organizations and academe.

The final draft of the MCDTS guidelines was lobbied to the National Fisheries and Aquatic Resource Management Council (NFARMC) during the NFARMC 4th Quarter Meeting on the 12th of December 2019 for endorsement to DA – BFAR for approval. The draft MCDT guidelines were presented by a representative from WWF-Philippines, one of the partner NGO of BFAR in the development of the guidelines for the MCDTS because at that time the BFAR point person assigned to lead the development of MCDT guidelines was unavailable. There were no comments regarding the contents of the draft FAO but the NFARMC requested that the proponent agency (i.e., BFAR) should be the one to present the draft FAO to the council. It was decided by the management council that the draft FAO on MCDTS was to be presented by the proponent agency at the next NFARMC meeting which was scheduled on April 19, 2020. However, that meeting was postponed because of the Philippine National Government implementation of Enhanced Community Quarantine over the entire Metro Manila because of the escalating cases of Covid-19 transmission in the country.

In the coordination meeting conducted with the BFAR Regional offices in MIMAROPA and Bicol, they expressed that they appreciate efforts and projects that support and help improve their capacity to better deliver their mandate as fisheries regulatory agency. It is important that the ongoing work on eCDT for small-scale fisheries is in line with the Bureau's effort to develop eCDT to catch up and keep up with the global trends of digitizing the MCS platform in order to curb IUU Fishing and promote more sustainable management of the fisheries resources in the coastal communities. There are concerns that arose during the meeting that this might be not acceptable to fishers because of the notion that the government might tax them more if they become transparent and declare all their fish catch through eCDT. Another issue is regarding what the fishers call their "trade secret." This pertains to the idea that if the fishers declare their good fishing spots through eCDT, other fishers might discover these also, and the potential competition might result into a lower fish catch for them.



*Coordination meeting with BFAR-MIMAROPA on the application of eCDT in the small-scale tuna handline fisheries.
Photo: WWF-Philippines/Jemuel Cueto*

It has been explained that the eCDT platform is equipped with security access, and the only person or group of people who can view the information being submitted by the fishers are those who belong to a single supply chain including LGUs and also BFAR as the national fisheries regulatory agency. The development of eCDT is still ongoing and there are existing collaboration works with other organizations who are finding ways to directly incentivize small-scale fishers using the eCDT technology. The key here is the interoperability of the system.

1.4 Fish Buyer, Processor/Exporter

The work on traceability improvement on handline tuna fisheries has been going on since 2014 as part of the WWF-Philippines FIP on small-scale handline tuna fisheries of Mindoro Strait and Lagonoy Gulf. The work incorporated the compliance on the traceability standard for finfish fisheries, MSC Chain of Custody (CoC) standard, BFAR requirements, and European Union (EU) requirements to create a traceability standard applicable to small-scale tuna handline fisheries in the project sites. All the supply chain actors, including the fishers, were involved in the traceability improvement works and training was conducted to get familiarized with the traceability system. A training on fish catch enumeration with basic fish taxonomy was conducted and participated by the member of tuna fisher's association and representatives from LGUs. Despite all the training being conducted to support the compliance on traceability standard, few fishers are filling up the fish catch report form. Furthermore, the majority of the LGUs have a weak capacity in implementing the fish catch reporting policy because of the absence of policy guidelines on the standard key data elements for fish catch monitoring and traceability system. Based on our observations, fishers are not comfortable in filling up the BFAR prescribed fish catch report. Most of the time, the buying stations are the ones assisting in filling up the BFAR fish catch report. This practice will only record traceability from the point of landing to the processor which does not meet the full traceability standard that the project wants to meet which is from the point of catch to the consumer level.

The challenges for the seafood industry such as IUU Fishing and seafood fraud will continue unless the supply chain actors will work together to shift into digital data solutions like eCDT. A new global platform, practices, and technology are needed to achieve an interoperable traceability system. With the continuous demand for seafood transparency, small-scale fisheries should now adopt this platform

to meet the ongoing trend of seafood traceability. Support and pressure from the processor/exporters are vital in achieving the full seafood traceability to promote sustainable fisheries and to address issues on IUU Fishing and seafood fraud.

The involvement of JAM Seafoods in the application of eCDT with the small-scale tuna handline Fisheries has made it easier to establish traceability from the point of catch using the FAME transponder and eCDT platform. Giving incentives to the fishers for making their catch traceable by using electronic devices makes it more enticing for the fishermen to comply with the reportorial requirement, which is vital in traceability. Also, the eagerness of the tuna federations in both project sites to comply with the MSC certification requirements makes them realize that most of the needed information in the compliance for MSC Chain of Custody (CoC) standard is based on the catch documentation and traceability system.

1.5 eCDT Technology

Finding technology that can adapt to the situations in countries like the Philippines is difficult due to the inconsistency of the digital communication structure to meet the minimum requirements for real-time monitoring. This would mean that there is a need to invest more in a communication structure just to augment this inconsistency. The level of difficulty doubles if it is to be used in a small-scale fishery which is a more complex fishery because of structural and cultural differences in every region. Small-scale artisanal fisheries significantly contribute to the economy of developing countries and to international markets when the EU, US, Japan, and other seafood importing countries open their doors to this sector. Because of this opportunity, there is a need to link the small-scale fisheries to international obligations on marine technology transfer particularly to the technological advances like the electronic catch documentation and traceability system which is crucial for monitoring and enforcement against IUU fishing. Also, there is a need to consider who pays the operational services of eCDT technology provider, so a sustainable source of support to keep fishers using the technology and submitting the data.

Given all the challenges to the adoption of eCDT technology for small-scale fisheries from a developing country, technology providers need to consider several things. The first consideration is the need for technology to be affordable but effective, since it will cater to the small-scale artisanal fisheries. Second, the technology should have a mechanism to compensate for the challenging situation in the inconsistency of the digital communication structure of the area without adding significant costs to use the technology. Lastly, the technology should be easy to customize to adapt to the complexity of the fisheries.

For pilot testing of eCDT in small-scale tuna handline fisheries in the FIP sites of WWF-Philippines, a suitable local technology is available that could meet the criteria to establish eCDT technology for small-scale tuna handline fisheries. The Futuristic Aviation and Maritime Enterprise, Inc. (FAME), offers a maritime transponder that can track and monitor maritime vessels in real-time using a PC or a mobile device. The transponder can be installed in different types of maritime vessels including small-scale fishing vessels. The technology features include independent messaging, meaning it does not need a telecommunication service provider. There is an optional messaging capability and it has Bluetooth Low Energy (BLE) or On-The-Go (OTG) connectivity for the smartphone application. Additional features are Global Positioning System (GPS) and sensors that can record speed, location, path, and with optional sensor connections.

For now, the limitation of the FAME technology is that it records the target species only. It is highly recommended that there is still a need of a fish catch enumerator to assist fishers to record not just the target species but the bycatch/retained species as well because this is very vital in the monitoring of the status of fisheries impact to the ecosystem that could be a basis for fisheries resource management. Constant improvement of the eCDT technology is ongoing to meet the global traceability minimum key data elements requirements and it will include recording of bycatch or

retained species as well and to other possibilities that may be required by any circumstances in terms of seafood traceability.

FAME learned a lot about the experiences in deploying in Saranggani and made the necessary adjustments during the deployment in Sablayan and Lagonoy Gulf.

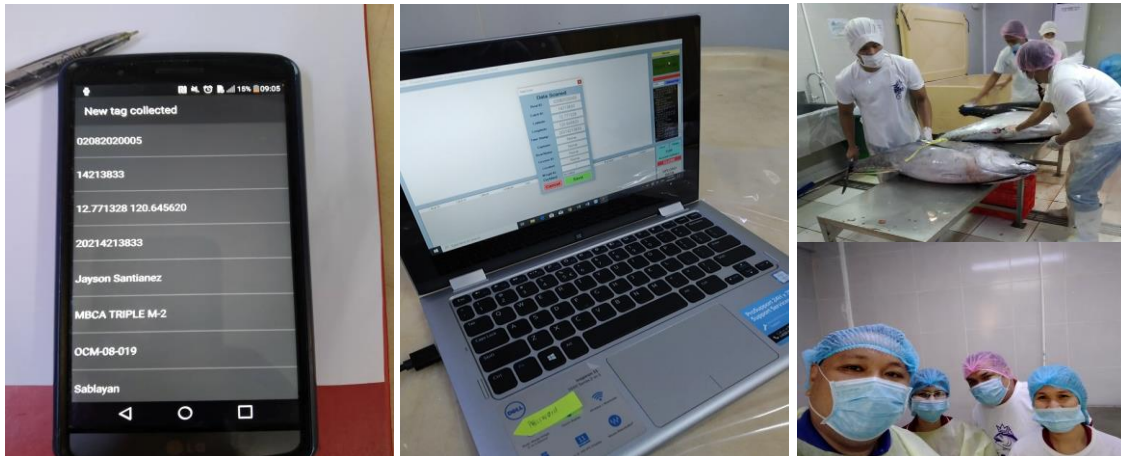
The following are the specific lessons learned by FAME during the pilot testing of eCDT technology:

- The processors and/or exporters should be part of the process because of the direct link with both the fishermen and the buyers.
- The Fish Processors Organization who will be a part of the Small-scale handline tuna MSC Chain of Custody is willing to pay for the services of eCDT technology provider rather than charge the fishermen.
- Traceability is a vital part of any certification that is needed for exporting fish like MSC Certification.
- FAME technology is interoperable with other systems which are key in achieving full traceability to the small-scale handline tuna fisheries of the Philippines.
- Fishermen are very willing to learn and adapt to newly available technologies.
- The technology being offered by FAME plays a vital part in tracing fish from the point of the catch.
- FAME technology is ready to adapt any improvement based on the feedback from the pilot testing sites.

2. RESULTS FROM THE PERIODIC MONITORING CONDUCTED ON THE AT-SEA TESTING AND MAINTENANCE OF THE ECDT TECHNOLOGY

The monitoring on the at-sea testing and maintenance was supposed to include the mapping of the Fish Aggregating Devices (FADs) used by the tuna handline fisherman. This would have been used to determine the spatial distribution of the fishing operations in Mindoro Strait and Lagonoy Gulf and also to update and estimate the number of FADs present in each fishing ground. The data gathered would have been a basis for the plan of BFAR to establish a Tuna Conservation and Management Zone (TCMZ) for each fishing ground. Furthermore, the information is critical for the National Tuna Management Plan (NTMP) and juvenile catch conservation measures like the TCMZ. Periodic monitoring was also supposed to monitor the seaworthiness of the FAME transponder during the pilot testing period. At the same time, a dialogue with the fishers was supposedly scheduled to gather information on the experience of the tuna handline fishers on the use of the transponder and give technical assistance whenever they experience technical problems with the device. These activities were canceled due to the Covid-19 pandemic to adhere to the ongoing Enhance Community Quarantine implementation in the entire island of Luzon. Because of this, the gathering of information was done through mobile phones and during the distribution of food packs for the members of the small-scale tuna handline fisher's association whenever possible. The food packs are from the fundraising campaign organized by the Tuna Fishers Federation assisted by the Sustainable Tuna Partnership Project of WWF-Philippines to give rice packs to the family of the tuna handline fishermen in Mindoro and Bicol during the quarantine period.

In the early stage of the pilot testing, the FAME transponders and the FAME eCDT platform seemed to be working fine. There were 33 yellowfin tuna catches recorded and traced from Sablayan, Occidental Mindoro. The system recorded where the fish was caught, when it was caught, the name of the fishing vessel, the name of the boat captain, fisherman's ID, and the fishing vessel's license number. The transponder was successfully integrated with the processing plant application where it generated QR codes from the processing up to the packing stage. In Bicol, there were 4 fish catch detections recorded in the FAME eCDT platform, showing the location, date, name of fishing vessels, name of the boat captain, fisherman's ID, and the fishing vessel's license number as well. The fishers started using NFC card several days just before the declaration of Enhance Community Quarantine because of Covid-19 pandemic. At the moment JAM seafoods is not sourcing tuna caught from



Data flow and interface of eCDT technology using FAME eCDT platform for small-scale handline tuna fisheries from WWF FIP site. Photo: FAME

Lagonoy Gulf. This is why there are no trials on the integration with the processing plant from this site.

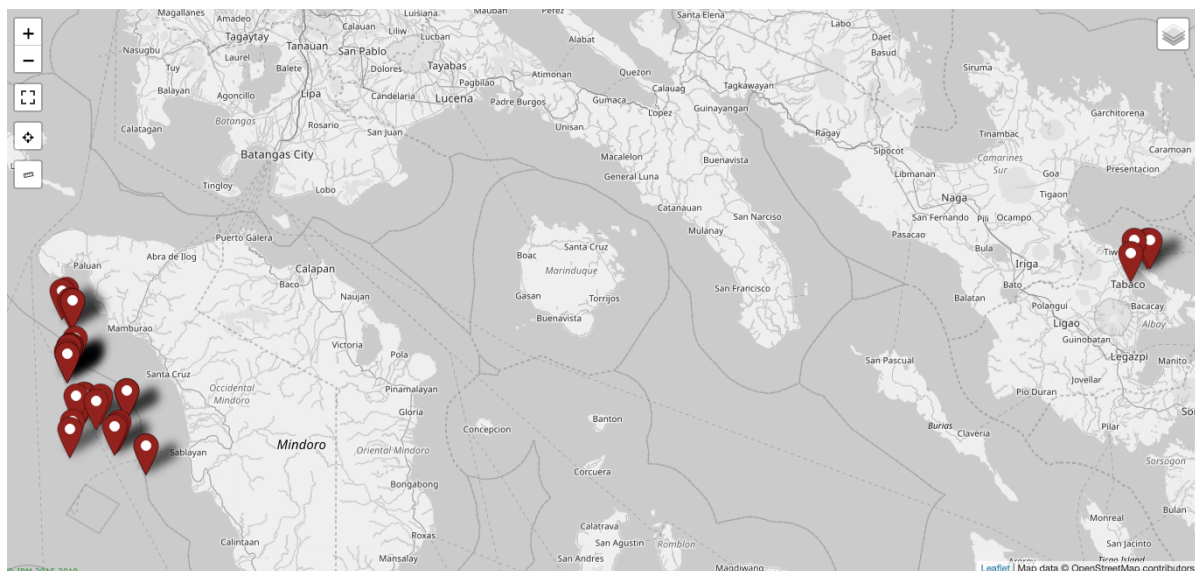


Figure 1. Locations where the YFT was caught by the tuna handline fishermen in Mindoro Strait and Lagonoy Gulf. Credit: FAME technology

During the eCDT technology system trials, there were a few glitches observed in the use of FAME transponder and NFC cards. There were instances that the returned NFC card didn't have data in it. Several possibilities have been observed: maybe the card was not properly tapped on the transponder

or the fishers were confused, and, instead of tapping the NFC card to the transponder, they tapped it on the tuna. Another challenge was experienced by some fishers that operate at night. Even though they exposed the solar panel to the sun all day to charge the transponder, at night, the charge on the battery did not last long and the light from the transponder turned off, an indicator that the battery has run out of power. In Sablayan, Occidental Mindoro, fishers sometimes observed that the transponder indicator light turned off even the device was connected to their generator during their fishing operation at night time. There were also instances that the fishers returned a broken NFC card. It is possible that the cards were damaged when the fishermen poured cracked ice over the NFC card attached to the tuna when they stored it in their cold storage. Another possibility is that the card got was damaged in the process of storing the caught tuna in the boat's cold storage. These incidents have been discussed with FAME and there is a plan to switch the NFC cards with an NFC keychain tag which is more compact and durable.

Generally, according to the fishermen, the device is easy to use and it does not get in the way of their fishing operations. The solar panel is great because they do not need to worry about charging it before fishing. Also, knowing that it is equipped to send distress signals during emergencies, they somehow feel more at ease when they are out fishing. It was observed during the transponder installation and also during the interview through a mobile phone that the giving of incentives to the fishers who participate in the eCDT technology pilot testing makes it more enticing for the other fishers to also participate. Some fishers have expressed their interest to be part of the system in the future, once their buyers and exporters require them to use it for traceability. For a more successful implementation of eCDT technology for small-scale fisheries, the government and supply chain actors need to think of a mechanism for incentivizing the compliant fishermen in addition to market access.

Minimal information has been gathered regarding the experiences of fishermen during the field trial of the FAME transponder because of the ongoing Enhance Community Quarantine due to the Covid-19 virus pandemic. Not all fishermen own a mobile phone and some of them are residing in areas with limited to no cellular network services. The movement of the fish catch enumerators based in the project sites is very limited, and gathering of data and information regarding the eCDT technology pilot testing is challenging.

3. SUMMARY OUTPUTS FROM THE LESSONS LEARNED

3.1 Role of processor and first buyers in supporting eCDT within the supply chain.

Fishermen have a great responsibility in managing their resources and making their fishing practices and livelihood sustainable. They can fulfill this responsibility by adhering to the fishing regulations implemented by the government to avoid overfishing and the continuous destruction of our marine ecosystem. In terms of catch documentation and traceability in the seafood supply chain, the processor and first buyer can have a significant role in influencing their client fishers to practice the legal way of fishing by buying seafood products from a registered fisher, fishing vessel with a valid fishing license, and submitting fish catch report for proper traceability.

The data collected from the FAME technology are transferred to buyers or processors to ensure that the catch is legally caught, sustainably sourced, and traceable. When small-scale fishers are able to participate in the eCDT system in this way, they can more easily obtain required catch certification and Marine Stewardship Council certification, signifying that their catch is “wild, traceable, and

sustainable.” As a result, these fishers have access to a broader range of both domestic and international markets, which can greatly improve their livelihoods.

3.2 Communication/Information Material.

According to the Food and Agriculture Organization of the UN, fish is one of the major sources of animal protein around the world, providing almost 20 percent of the average per capita intake of animal protein. But these resources are facing threats from overfishing that contributes to environmental, economic, and social problems. These issues arise because of the lack of visibility and transparency from catching to the consumer level. First world countries and big fishing companies are trying to mitigate these issues by using today's technologies which are for now the only tool that can lead to a safer and more sustainable world for all. This partnership is focused on the application of eCDT technology to small-scale handline tuna fisheries in the Philippines to combat IUU Fishing and promote traceability along the supply chain of the artisanal municipal fisheries of the country.

This kind of project needs to be communicated to the growing environmentally concerned public who are looking for a more responsibly caught fisheries product. Traceability can provide data and information that companies and consumers can use to inform better decisions in patronizing better brands and products. The project produced several articles during the implementation to let the industry, government agencies, and the consumers that works are being done to improve the traceability on small-scale fisheries that later on can help them comply to the global seafood traceability regulations and secure their market of being a sustainable source of fisheries products (see Annex I). The first article that was posted on the WWF-Philippines website in December 2019 is focused on the needs of the LGUs of a guideline on Municipal Catch Documentation and Traceability System. These guidelines will help the LGUs gather valuable data that can be used in the effective management of their coastal resources (see, <https://wwf.org.ph/resource-center/story-archives-2019/wwf-lobbies-with-nfarmc/>). The second article posted at the WWF-Philippines website in February 2020 is about the pilot testing of FAME transponder to the handline fishing vessels of tuna fishers in Bicol and Mindoro. The article talks on the effort of the project to find key technology that can cater to artisanal small-scale handline tuna of the Philippines, in terms of catch documentation and traceability (see, <https://wwf.org.ph/resource-center/story-archives-2020/sustainable-seafood-tracking-devices/>). The final information material talks about the project and the lessons learned during the implementation period and some recommendations on what to do to level-up the effort in combatting IUUF and promote sustainability in the small-scale fisheries (see Annex II). This will serve as an information, education, and communication material for the whole supply chain actors of small-scale fisheries in the Philippines.

3.3 Other insights:

- The use of real-time eCDT data for improved fisheries management decision-making and strengthened fish stock assessments.
- Fishers’ perspectives that the vessel tracking would be a tool to ensure their safety at sea and facilitate search and rescue in case of emergency while in the fishing area.
- Incentivize the application of traceability to small-scale fisheries to help improve their livelihood. It is clear that traceability connects the key elements of environmental sustainability and social responsibility.

4. NEXT STEPS

People nowadays are becoming more aware and concerned about what is happening to our environment. Because of this there is a growing demand in the sustainable seafood, where consumers from EU member countries and the US are willing to pay a premium price just to make sure that what they are buying comes from a sustainable fishery. Consumers are beginning to appreciate and shift their attention to a healthier source of food and environment-friendly practices of farming and fishing, like choosing organic produce over non-organic and supporting artisanal fishing that is a more traditional and environmentally friendly method of fishing. However, in countries like the Philippines which is one of the sources of seafood products being exported to EU and US, establishing a traceability system for the small-scale fisheries is a challenge because of the cultural and organizational practices that the coastal communities are accustomed to for a very long time. But, since the small-scale fishery already caters to the international market as a source of responsibly caught fishery product, it needs to step up and establish full transparency along its supply chain by adapting eCDT to showcase a verifiable traceability system. Fishing companies, consumers, regulators, NGOs, and government agencies demand more transparency around the seafood products, to address the issues on IUUF and seafood fraud in the seafood industry. These are demonstrated in the EU IUUF regulations, US Seafood Import Monitoring Program (SIMP) and the consumers demand for seafood product with eco-label that all requires traceability system. On a global scale, UN Food and Agriculture Organization (FAO) estimated that about 26 million tonnes of seafood losses annually through IUU fishing, which equivalent to a staggering USD 23 billion losses yearly. This tremendously affects the livelihood of fishers, exacerbates poverty, and contributes heavily to food insecurity.

Transparency along the seafood supply chain demands a huge amount of data and information sharing which cannot be met through a manual paper-based system. The technology for the implementation of traceability system in seafood does exist, what is need is the collaboration of seafood industry and government stakeholders to adopt and implement a traceability system applicable for small-scale fisheries and find a way to disincentivize bad practices or noncompliance to government criteria like vessel registration and licensing and incentivize those who are compliant to the sustainable fisheries regulations. Here are some next step recommendations that need to be considered for the improvement of the application of eCDT for small-scale fisheries to promote full traceability along with the small-scale handline tuna fisheries in the Philippines or the what we called “From Hook to Cook” traceability concept.



Figure 2. Small-scale handline tuna fisheries full traceability From Hook to Cook.
Credit: WWF-Philippines

The following are specific recommendations for future application in support of eCDT systems and other fisheries related initiatives:

- I. Integration with BFAR eCDT system and application of data analytics and visualization tools (for example: <https://www.seafdec->

oceanspartnership.org/resource/innovative-digital-solution-supporting-fisheries-management-and-catch-documentation-data-analysis-msu-naawan-foundation/).

2. Test alignment with the GDST v1.0 Interoperability guidelines, covering key data elements and formats to ensure interoperability, full-chain traceability. Test traceability on several supply chains from first mile to retailer, prior to full adoption across all products in both FIP sites and future sites.
3. Establish data verification protocols based on best practice, i.e. FAO, include traceability software interoperability with authorized data sources, i.e. municipal licensing records/database.
4. Test and scale traceability and trade data for access to capital – ensure interoperability of other technology solution to FAME, for example.
5. Level-up the pilot testing up to the distributor level to establish full chain traceability.
6. Application of eCDT to local markets and link to municipal CDT policy.
7. Conduct of study to quantify the cost and benefits of eCDT system investment.
8. Application to other small-scale fisheries (e.g., blue swimming crab, squid, mahi-mahi, etc.).
9. Linking eCDT data with fish catch monitoring (e.g., National Stock Assessment Program) for improved fisheries management decision-making and strengthened fish stock assessments.
10. Explore how real time fisheries data from eCDT can provide information to support logistics and transportation of seafood products in the supply chain (i.e., from fish landing to retail markets and urban centers) to ensure fish supply, availability, and food security, in case of emergency situations (i.e., COVID-19 situation).
11. Establish crisis contingency plans in the event of supply chain disruption.
12. Establish feasibility plans for investment in pre and post-harvest facilities and other services, including alternative livelihood in aquaculture facilities to secure value added services within the community where economies of scale justify these investments.

5. ACKNOWLEDGEMENTS

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No. AID-486-C-15-00001). The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

ANNEX I. COMMUNICATION MATERIALS

WWF-Philippines Pushes for Sustainable Fisheries, Traceability Guidelines with NFARMC

December 2019



Freshly caught tuna on display. Unregulated fishing activities have led to the decline of fisheries all across the Philippines. Photograph © Alo Lantin / WWF-Philippines

Fisheries across the Philippines have started to collapse – but solutions sit on the horizon.

The Bureau of Fisheries and Aquatic Resources (BFAR), together with representatives from the World Wide Fund for Nature (WWF) Philippines and RARE Philippines, lobbied to the National Fisheries and Aquatic Resource Management Council (NFARMC) during the 4th Quarter Meeting of the NFARMC for sustainable fisheries and the development of the Guidelines for the Municipal Fisheries Catch Documentation and Traceability System on the 12th of December, 2019.

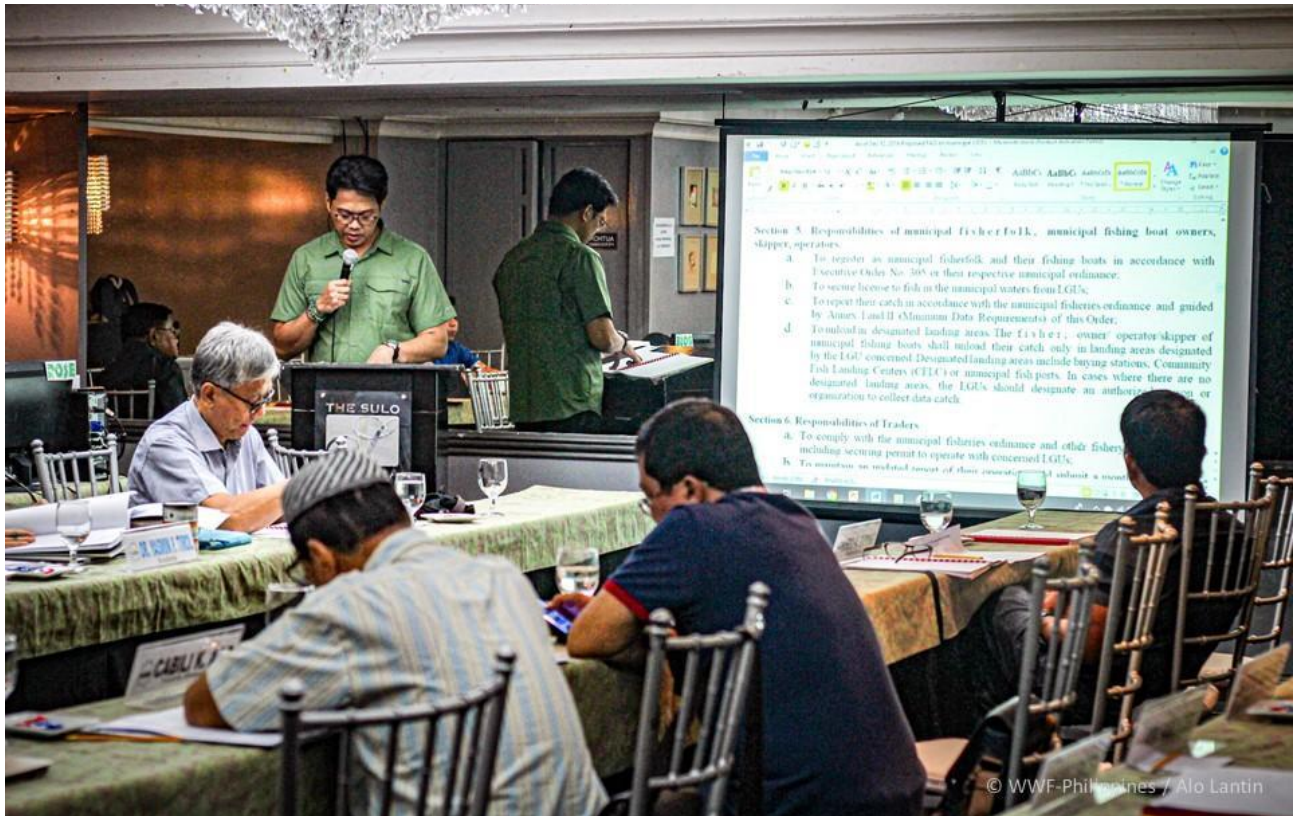


A team of fishermen haul their boat and their catch onto shore. Municipal fishermen are the most affected by the depletion of fishery resources. Photograph © Alo Lantin / WWF-Philippines

Recent studies suggest that the Philippines loses approximately 68.5 billion pesos to illegal fishing activities each year. Poor enforcement has also allowed fishing outfits to operate unchecked, which has left 10 of the country's 13 fishing areas overfished. Rampant and destructive fishing practices have cost the Philippines' fishery industry, putting the livelihoods of millions of Filipinos at risk.

WWF-Philippines, together with the United States Agency for International Development (USAID) and BFAR, has been working with technical partners on the development of an effective electronic catch documentation traceability system, to provide a simple and comprehensive way to monitor fish catches in the country.

“We’ve heard from local government units, and they’ve expressed their willingness to follow traceability measures. Their problem is a lack of guidelines as to what they should be following,” said WWF-Philippines Fisheries Technical Officer David N. David. The existing fisheries code calls for traceability measures to help with the enforcement of the law over the country's marine resources. Guidelines to implement these measures, however, are currently lacking, making it difficult for key players to roll out what is already in the law.



WWF-Philippines Fisheries Technical Officer David N. David addresses the NFARMC about the need for fishery traceability guidelines. Photograph © Alo Lantin / WWF-Philippines

“I think it’s time we have these guidelines in place. In my own municipality, the question that arises is, how are we supposed to trace these fish catches? There are no guidelines for us to follow... If the LGUs don’t have a base to follow, all they can do is wait,” says Luzon Fisherfolk Representative Romeo Gupong. The need for effective enforcement and management over our natural resources continues to grow as pressures weigh heavy on the Philippines’ fisheries. Work with WWF-Philippines and help ensure our seas stay rich with life for generations to come.

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WWF-Philippines Installs Tracking Devices on Fishing Boats to Promote Sustainable Seafood

Throughout the third week of February, the **World Wide Fund for Nature (WWF) Philippines**, together with the **United States Agency for International Development (USAID) Oceans** and technical partner **Futuristic Aviation and Maritime Enterprise (FAME)**, installed tracking devices onto municipal fishing boats in **Mindoro Strait** and **Lagonoy Gulf**, in an effort to introduce traceability measures to local fisheries.

The tracking devices are to be part of an **electronic catch documentation traceability system (eCDTS)** that allows authorities to monitor where fishermen are catching their fish. The goal of the eCDTS is to allow fish catches to be traced from the moment they are caught, right until they are sold on the market. Doing so will help ensure that fish is legally caught, is properly sourced, and is both environmentally and socially sustainable.

The project is also an avenue for data gathering. As the fishermen are out at sea, the trackers will record the path these fishermen take and where their catches take place. This data will then show where fishermen usually go to catch tuna, which would prove useful in the development of effective sustainability policies.

USAID Oceans first conceptualized the project in response to ongoing concerns over illegal, unreported, and unregulated fishing within Southeast Asia. The region's fisheries supply food and income for over 200 million people. Many of its fisheries, however, face collapse due to overfishing and unsustainable extraction practices.

The organization, together with the **Southeast Asia Fisheries Development Center (SEAFDEC)** and the **Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF)**, is looking to bring accountability to regional fishing practices.

In order to introduce the project to the various nations of Southeast Asia, USAID Oceans partners with national fisheries agencies and civil society organizations located in each country. The organization works with WWF-Philippines to bring eCDTS technology to local fisheries.

"The first local launch of this project was in General Santos for commercial fisheries using the eCDT system developed by the Bureau of Fisheries and Aquatic Resources (BFAR), and for municipal fisheries, the use of FAME technology using transponders and radio frequency. USAID Oceans thought of trying the same thing (FAME technology) with municipal fishermen, though, which is why they approached us. They heard about our work with municipal fishermen in Bicol and Mindoro. We figured this would be a good opportunity to test the technology on a small scale," said WWF-Philippines Fisheries Technical Officer **David N. David**. WWF-Philippines has operated in Lagonoy Gulf and Mindoro Strait since 2011. The organization works with municipal fishermen for the promotion of sustainable fishery laws and practices.

"We're really looking for key technologies that can cater to small scale fisheries, in terms of traceability and catch documentation," added David.

Pilot testing will be conducted with the newly-installed tracking devices. Afterwards, USAID Oceans and WWF-Philippines plan on expanding the project to other key fisheries in the country.



Municipal fishermen from Tiwi, Bicol, hold up their new tracking devices. Fishermen in Mindoro and Bicol volunteered to participate in pilot testing the new eCDTS technology. Photograph © Alo Lantin / WWF-Philippines



FAME CEO Arcelio Fetizanan demonstrates to municipal fishermen how to use the new traceability technology and what data the trackers will be collecting. Photograph © Alo Lantin / WWF-Philippines



Fishermen are given tracking devices, to be installed onto their boats. Photograph © Alo Lantin / WWF-Philippines



Technical staff from FAME install a tracking device onto a municipal fishing boat in Tiwi, Bicol. Photograph © Alo Lantin / WWF-Philippines



A fisherman stands with his new tracking devices. The fishermen participating in these first pilot tests acknowledge the benefits that this new technology can provide to their livelihoods, which are heavily reliant on productive fisheries. Photograph © Alo Lantin / WWF-Philippines



Fishermen from Mindoro discuss their questions about the eCDTS project with staff from WWF-Philippines, FAME, and USAID Oceans. Photograph © Ana Chavez / WWF-Philippines



A municipal fishing boat on the shores of Mindoro. Around 200 million people rely on the fisheries of Southeast Asia for food and livelihood. Photograph © Ana Chavez / WWF-Philippines



A tracking device is installed onto a municipal fishing boat in Mindoro. Photograph © Ana Chavez / WWF-Philippines

ANNEX II. INFORMATION MATERIAL



USAID
FROM THE AMERICAN PEOPLE



APPLYING CATCH DOCUMENTATION AND TRACEABILITY TECHNOLOGIES IN THE SMALL-SCALE TUNA HANDLINE FISHERIES IN MINDORO AND BICOL, PHILIPPINES

This document was produced by Kabang Kalikasan ng Pilipinas Foundation, Inc. (KKPFI) also known as World Wide Fund for Nature - Philippines (WWF-Philippines) for the USAID Oceans and Fisheries Partnership, a United States Agency for International Development/Regional Development Mission for Asia (USAID/RDMA) funded Activity.

© James Morgan / WWF

Introduction

This partnership between The Oceans and Fisheries Partnership Activity, funded by the United States Agency for International Development's Regional Development Mission for Asia (USAID Oceans) with Kabang Kalikasan ng Pilipinas Foundation Inc. (KKPFI) also known as the World Wide Fund Philippines (WWF Philippines) aims to formalize relevant collaborative efforts to expand the use of municipal electronic catch documentation and traceability (eCDT) technologies beyond the USAID Oceans Learning Site of General Santos City, into other regions of the country where WWF-Philippines is currently working closely with municipal fisherfolks who are interested in testing eCDT technologies within their own fishery operations and Local Government Units (LGUs).

WWF-Philippines has been working with tuna fisheries stakeholders to achieve sustainable fisheries through a Fisheries Improvement Project (FIP) on handline tuna fisheries in Mindoro Strait in the province of Occidental Mindoro and in Lagonoy Gulf in the Bicol region. This partnership not only provides a tool to address the lack of fish catch report for the municipal fisheries, but it can also provide a great tool to support compliance in the international market in terms of verifiable traceability to cater to the growing demand for sustainably-sourced fisheries products worldwide and in the local market.

PARTNERSHIP OBJECTIVES

This partnership with USAID Oceans was based on the common goals to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity through the demonstration and expansion of eCDT technologies during a period of four (4) months, between 03 January 2020 and 05 May 2020, with the following objectives:

- To adapt and apply eCDT technologies piloted with municipal and small-scale fisheries in General Santos City using FAME Technology at WWF sites in Mindoro Strait and Lagonoy Gulf of the Occidental Mindoro Province and the Bicol Region;
- To integrate existing WWF catch documentation efforts with FAME technology and BFAR's national eCDT system;
- To support the finalization of policy guidelines for CDT in small-scale fisheries in Occidental Mindoro Province and the Bicol Region; and
- To develop communication materials and share lessons learned on the development and testing of eCDT technologies with small scale fisheries in Occidental Mindoro Province and the Bicol Region.

Lessons learned on the eCDT testing in Mindoro Strait and Lagonoy Gulf



Installation of FAME transponder to a small-scale tuna handline fishing vessel.
Photo: David N. David / WWF-Philippines

60 FAME TRANSPONDER INSTALLED

- Sablayan, Occidental Mindoro
- Province of Albay (Tabaco City, Municipality of Tawi, Municipality of Malinao, and Municipality of Bacacay)

WWF-Philippines has been working on the improvement of the catch documentation and traceability system as part of the small-scale tuna handline FIP, with emphasis on vessel registration and licensing, use of tuna tag with a unique identification number and the correct filling-up of the BFAR-prescribed fish catch report. Training on fish catch documentation has been conducted through the project to capacitate the Tuna Fisher's Association (TFA) and the LGUs on how to identify fish species and what key data elements need to be gathered, which can be used as basis for effective fisheries management. Despite the constant encouragement for the compliance to the reportorial requirements on fish catch, still, only a few LGUs and tuna fishers are complying with the policy.

APPLYING CATCH DOCUMENTATION AND TRACEABILITY TECHNOLOGIES IN THE SMALL-SCALE TUNA HANDLINE FISHERIES IN MINDORO AND BICOL, PHILIPPINES

LESSONS LEARNED:

Fishers

1. Participants should be a member of the TFA in their respective municipalities and should meet government criteria in conducting fishing operations like being legally registered with valid fishing licenses;
2. Communicating effectively to the small-scale fishermen the benefits of using the technology to them and to the reputation of their fisheries increases their interest to participate; and
3. It is easier to convince the fishers to participate in this kind of project if they know that they will be receiving an incentive by making their fish traceable using the FAME transponder.



The orientation of handline tuna fishers in Sablayan, Occ. Mindoro on the use of FAME transponder.
Photo: Ana Chavez / WWF-Philippines

Local Government Units (LGUs)

1. One of the factors that contributes to why the majority of the LGUs have a weak capacity to produce reliable fisheries-related data is the absence of policy guidelines on the standard key data elements. This can result in the inconsistency of fish production data between government agencies that gather and manage fisheries-related data;
2. It is important that the Department of Agriculture (DA) through the Bureau of Fisheries and Aquatic Resources (BFAR) should be able to formulate a working CDTS that can be easily adopted by LGUs for fisheries management purposes; and
3. The eCDT technology can lead to the establishment of a database for the municipal fish catch report that can be used by the LGUs to inform policies and plans for coastal and fisheries resource management.
4. The eCDT can help LGUs generate revenues by having robust traceability data of landed and transported fish that will be the basis of issuing auxiliary invoices because the current practice is just simply voluntary reporting by traders since most LGUs don't have inspectors.



Courtesy meeting with Sablayan Mayor Andres D. Dangeros
Photo: Ana Chavez / WWF-Philippines

Bureau of Fisheries and Aquatic Resources (BFAR)

1. It is important that the ongoing work on eCDT for small-scale fisheries is in line with the Bureau's effort to develop eCDT to catch up and keep up with the global trends of digitizing monitoring, control and surveillance platforms to curb IUU Fishing and promote more sustainable management of the fisheries resources in the coastal communities;
2. It has been explained that the eCDT platform is equipped with security access, wherein the only person or group of people who can view the information being inputted by the fishers are only those who belong in a single supply chain including LGUs and also BFAR as a national fisheries regulatory agency; and
3. The development of eCDT is still ongoing and there are existing collaboration works with other organizations who are finding ways to directly incentivize small-scale fishers using the eCDT technology the key here is the interoperability of the system.



Coordination meeting with BFAR-MIMAROPA on the application of eCDT in the small-scale tuna handline fisheries.
Photo: Jemuel Cueto / WWF-Philippines

LESSONS LEARNED:

Fish Buyer, Processor/Exporter

1. Based on our observation, fishers are not comfortable in filling up the BFAR-prescribed fish catch report. Most of the time, the buying stations are the ones assisting in filling up the BFAR fish catch report. This practice will only record traceability from the point of landing to the processor which does not meet the full traceability standard that the project wants to meet, which is from the point of catch to the consumer level;
2. The support and pressure from the processors/exporters are vital in achieving the full seafood traceability to promote sustainable fisheries to address issues on IUU Fishing and seafood fraud;
3. The involvement of JAM Seafoods in the application of eCDT with the small-scale tuna handline fisheries makes the process of establishing traceability from the point of catch using FAME transponder and eCDT platform a lot easier. Giving incentives to the fishers in making their catch traceable by using electronic devices makes it more enticing for the fishermen to comply with the reportorial requirement which is vital in traceability.



Site visit to the partner fish buyer in Sablayan, Occidental Mindoro
Photo: Ana Chavez / WWF-Philippines



FAME maritime transponder
Photo: Ana Chavez / WWF-Philippines

eCDT Technology

1. Given all the challenges and situations in the adoption of eCDT technology for small-scale fisheries from a developing country, technology providers need to consider several things: (1) affordability and effectiveness of the technology, (2) should be able to compensate for the inconsistent digital communication structure of the area without additional costs, and (3) should be customizable.



Data flow and interface of eCDT technology using FAME eCDT platform for small-scale handline tuna fisheries from WWF FIP site.
Photo: FAME

APPLYING CATCH DOCUMENTATION AND TRACEABILITY TECHNOLOGIES IN THE SMALL-SCALE TUNA HANDLINE FISHERIES IN MINDORO AND BICOL, PHILIPPINES

The Futuristic Aviation and Maritime Enterprise, Inc. (FAME), offers a maritime transponder that can track and monitor maritime vessels in real-time using a PC or a mobile device. The transponder can be installed in different types of maritime vessels including small-scale fishing vessels. FAME uses radio frequency to send and receive information through gateways that receive information from the transponder attached to the handline tuna fishing vessels. Fish catch data were sent through the FAME transponder to a cloud server that can be accessed through fame ECDT platform up to the processor/exporter level. FAME technology is interoperable with other systems which is key in achieving full traceability to the small-scale handline tuna fisheries of the Philippines.

OTHER INSIGHTS:

- Real-time eCDT data is useful for improved fisheries management decision-making and strengthened fish stock assessments;
- Fishers believe that the vessel tracking would be a useful tool to ensure their safety at sea and facilitate search and rescue in case of emergency while in the fishing area; and
- Incentivizing the application of traceability to small-scale fisheries can help improve their livelihood. It is clear that traceability connects the key elements of environmental sustainability and social responsibility.

Next steps in achieving full traceability for small-scale fisheries in the Philippines

Transparency within the seafood supply chain demands a huge amount of data and information sharing which cannot be met through a manual paper-based system. The technology for the implementation of a traceability system in seafood does exist; what is needed is the collaboration between seafood industry and government stakeholders to adopt and implement a traceability system applicable for small-scale fisheries and find a way to discourage bad practices or noncompliance to government criteria, like vessel registration and licensing, and incentivize those who are compliant to the sustainable fisheries regulations.



Here are some next step recommendations that need to be considered for the improvement of the application of eCDT for small-scale fisheries to promote full traceability along with the small-scale handline tuna fisheries in the Philippines. This is what we call the "From Hook to Cook" traceability concept:

1. Integration with BFAR eCDT system and application of data analytics and visualization tools (for example: <https://www.seafdec-opsa-partnership.org/resource/innovative-digital-solution-supporting-fisheries-management-and-catch-documentation-data-analysis-msu-naawan-foundation/>).
2. Integration with a seafood traceability mobile application to help customers make more informed decisions in buying fully traceable seafood.
3. Test alignment with the GDST v1.0 Interoperability guidelines, covering key data elements and formats to ensure interoperability, full-chain traceability. Test traceability on several supply chains from first mile to retailer, prior to full adoption across all products in both FIP sites and future sites.
4. Establish data verification protocols based on best practice, i.e. FAO, include traceability software interoperability with authorized data sources, i.e. municipal licensing records/database.
5. Test and scale traceability and trade data for access to capital – ensure interoperability of other technology solution to FAME, for example.
6. Level-up the pilot testing up to the distributor level to establish full chain traceability.
7. Application of eCDT to local markets and link to municipal CDT policy.
8. Conduct of study to quantify the cost and benefits of eCDT system investment.
9. Application to other small-scale fisheries (e.g., blue swimming crab, squid, mahi-mahi, etc.).
10. Linking eCDT data with fish catch monitoring (e.g., National Stock Assessment Program) for improved fisheries management decision-making and strengthened fish stock assessments.
11. Explore how real time fisheries data from eCDT can provide information to support logistics and transportation of seafood products in the supply chain (i.e., from fish landing to retail markets and urban centers) to ensure fish supply, availability, and food security, in case of emergency situations (i.e., COVID-19 situation).
12. Establish crisis contingency plans in the event of supply chain disruption.
13. Establish feasibility plans for investment in pre and post-harvest facilities and other services, including alternative livelihood in aquaculture facilities to secure value added services within the community where economies of scale justify these investments.
14. Develop a database for LGUs to have a publicly available database on fisheries profiling to help in management and enforcement.



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