PARTNERSHIP APPRAISAL AND PRIORITIZATION REPORT: THAILAND

The USAID Oceans and Fisheries Partnership

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ACRONYMS AND ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
ASF	ASEAN Seafood Federation
CDT	Catch Documentation and Traceability
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security
DOF	Department of Fisheries Thailand
eCDT	Electronic Catch Documentation and Traceability
EU	European Union
ICT	Information and Communications Technology
IUU	Illegal, Unreported and Unregulated
NGO	Non-Governmental Organization
PPP	Public Private Partnership
SEAFDEC	Southeast Asian Fisheries Development Center
SIMP	United States Seafood Import Monitoring Program
USAID	U.S. Agency for International Development
USAID CTIP	U.S. Agency for International Development Counter Trafficking in Person
USAID Oceans	U.S. Agency for International Development Oceans and Fisheries Partnership

EXECUTIVE SUMMARY

The U.S. Agency for International Development Oceans and Fisheries Partnership (USAID Oceans) is a five-year activity, working in partnership with the Southeast Asian Fisheries Development Center (SEAFDEC), the Coral Reefs, Fisheries, and Food Security (CTI-CFF), and a wide range of public and private sector partners at regional, national, and local levels. USAID Oceans combats illegal, unreported, and unregulated (IUU) fishing and conserves marine biodiversity in the Asia-Pacific region through support for the design, development, and implementation of electronic catch documentation and traceability (eCDT) systems. The program works across Southeast Asia with ASEAN member countries, with two learning sites in General Santos, Philippines and Bitung, Indonesia. Since the program's launch, USAID Oceans has worked across ASEAN member countries to support enhanced traceability efforts, and in 2017 and 2018 engaged heavily with Expansion Site Countries, including Thailand, to complete catch documentation and traceability (CDT) analyses and partnership appraisals.

To improve transparency in the seafood supply chain and ensure the successful implementation of eCDT systems, USAID Oceans engages a variety of fisheries stakeholders, including governments, intergovernmental organizations, seafood industry associations, technology companies, fisher groups, and non-governmental organizations (NGOs) as partners in eCDT system design, testing, and implementation. USAID Oceans develops and implements partnerships to enhance industry support and participation, leverage public and private sector resources in support of system implementation and deploy cutting edge innovation to improve connectivity and data collection. USAID Oceans also works with its partners to build their capacity in executing public and private partnerships (PPPs).

Drawing on the program's expertise and experience in developing effective PPPs, over 2017 and 2018, USAID Oceans engaged with the government of Thailand to conduct a Partnership Appraisal to identify high-value partnership opportunities, which is linked to a complementary CDT Gap Analysis Report. USAID Oceans' Partnership Appraisals are conducted through a multi-step process, including desk research, field interviews, and participatory work sessions designed to uncover opportunities for public-private collaboration. During the process, USAID Oceans' PPP and CDT teams worked together closely to engage buyers, seafood companies, and organizations working on seafood traceability to identify their interests, challenges, opportunities for collaboration, and to design an eCDT roadmap that supports eCDT system design and implementation. This report summarizes the main findings of the Thailand Partnership Appraisal, as well as recommendations for next steps to develop partnerships that will support eCDT implementation.

Across its Expansion Site Countries, the program has found that seafood supply chains are commonly complex and fragmented, using paper-based catch documentation and certification systems as the predominate tool for traceability. With the increasing pressure on the fisheries export industry, particularly by EU regulations and the U.S. Seafood Import Monitoring Program (SIMP), fisheries authorities and seafood industries across the Southeast Asia have noted their recognition of the importance of improving CDT protocols by moving from paper-based to digital systems, as well as the value of leveraging partnerships opportunities to facilitate eCDT system design and implementation.

USAID Oceans' research in Thailand uncovered many opportunities to leverage current system strengths, as well as identified numerous technical, financial, economic, and psychological barriers that highlight the need to demonstrate the business case and added value of eCDT systems, for both government and the private sector. This Partnership Appraisal Report identifies recommended approaches to identify and engage with a range of key organizations, customized for Thailand's specific country systems and contexts. USAID Oceans is pleased to continue its role as a technical advisor in order to support effective government-led partnerships, where partner roles and responsibilities are clearly stated under a legal framework that can create the conditions required for a sustainable eCDT system and an improved seafood supply chain.

1. INTRODUCTION

The U.S. Agency for International Development Oceans and Fisheries Partnership (USAID Oceans) is a five-year activity, working in partnership with the Southeast Asian Fisheries Development Center (SEAFDEC), the Coral Reefs, Fisheries, and Food Security (CTI-CFF), and a wide range of public and private sector partners at regional, national, and local levels. USAID Oceans combats illegal, unreported, and unregulated (IUU) fishing and conserves marine biodiversity in the Asia-Pacific region through support for the design, development, and implementation of electronic catch documentation and traceability (eCDT) systems. The program works across Southeast Asia with ASEAN member countries, with two learning sites in General Santos, Philippines and Bitung, Indonesia. Since the program's launch, USAID Oceans has worked across ASEAN member countries to support enhanced traceability efforts, and in 2017 and 2018 engaged heavily with public and private sector partners in Thailand to complete a catch documentation and traceability (CDT) analysis and partnership appraisal.

The following report proposes different pathways that can be taken to build dynamic partnerships, as well as identifies some key organizations that could play positive roles in system development. In the context of the fishing industry, government-led partnerships require a step-by-step approach to first engage all internal government agencies, to agree on common objectives, roles and responsibilities, resources allocations, and a timeline. Such engagement can take the form of a dedicated CDT task force with representatives from all relevant agencies, a clearly defined organization, specific capacities, budget, and planning. Then, taking a leading role, the relevant fisheries authority – or CDT task force – may identify and engage external public and private partners based on their contribution and interest to test the usability and scalability of a CDT system. Such engagement may require a government agency to use both its authoritative power and specific incentives to promote CDT and motivate engagement.

In other circumstances, a model where there is a close collaboration and co-investments between the public and private sector could also be a viable option that requires less resources from the public sector. The eCDT system will then be co-financed and managed by private companies while relevant government agencies would be systems users for data collection and the validation process. This option also requires less resources for the government to promote adoption since the industry 'First Movers' will voluntarily adopt the system.

Regardless of the partnership model, throughout the process of developing and implementing an eCDT system, continuous stakeholder engagement is vital. Government and industry association play a key role in marketing and promoting the eCDT system as a way to increase seafood industry competitiveness, products' quality and safety, and ultimately create new market opportunities. The scalability and sustainability of the eCDT relies heavily on continuous support and commitment from both the public and private sector.

1.1   USAID Oceans' Partnership Strategy

To improve transparency in the seafood supply chain and ensure the successful implementation of eCDT systems, USAID Oceans engages a variety of fisheries stakeholders, including governments, intergovernmental organizations, seafood industry associations, technology companies, fisher groups, and non-governmental organizations (NGOs) as partners in eCDT system design, testing, and implementation. USAID Oceans develops and implements partnerships to: enhance industry support and participation, leverage public and private sector resources in support of system implementation and deploy cutting edge innovation to improve connectivity and data collection. USAID Oceans also works with its partners to build their capacity in executing public and private partnerships (PPPs).

USAID Oceans' partnerships have been formed with governments, regional institutions, and the private sector aim to achieve the following objectives, and encourages its partners to develop their own partnerships that meet these criteria:

- **Industry Support and Participation**. USAID Oceans develops strategic, market-driven partnerships that capitalize on industry technical expertise, market position, and capacity to engage national and local government counterparts. Developing partnerships in the seafood industry has anchored USAID Oceans-supported eCDT systems within the seafood industry's regional and international realities, while bolstering system scalability and sustainability. Engaging buyers, industry, and non-governmental organizations (NGOs) is essential to motivating suppliers to adopt and scale eCDT and establishes a forum for common industry dialogue on traceability standards and requirements.

- **Long-Term Sustainability**. USAID Oceans engages development organizations, foundations, and other partners to leverage public and private sector funding that can further investments into traceability initiatives. Banks, impact investors, and other financial institutions are ideal candidates for providing sustainable investment and financing mechanisms to address cost barriers and support wider system adoption.

- **Deployment of Cutting-Edge Technology**. USAID Oceans partners with technology providers to harness the latest communication technologies and traceability innovations to ensure the eCDT systems is supports are developed and implemented with the best available connectivity, data capture, and transmission capabilities.

- **Capacity Building**. USAID Oceans strongly believes that robust partnerships are a critical foundation for any eCDT project and thus engages national fisheries agencies to build their capacities in developing partnership strategies, identifying high-value partnerships, and executing partnership agreements to further national and local objectives.

USAID Oceans has focused on identifying partners to support eCDT system design and architectural development; developing market-driven partnerships in its learning sites and along the value chains to key markets; and developing partnerships with key 'Information and Communications Technology' (ICT) companies with proven technology and applications that enable cost-effective "first mile" data collection at-sea and in landing sites. USAID Oceans continues to expand its market/buyer partnerships and ICT partnerships to establish end-to-end digital traceability in its learning sites in Indonesia and the Philippines.
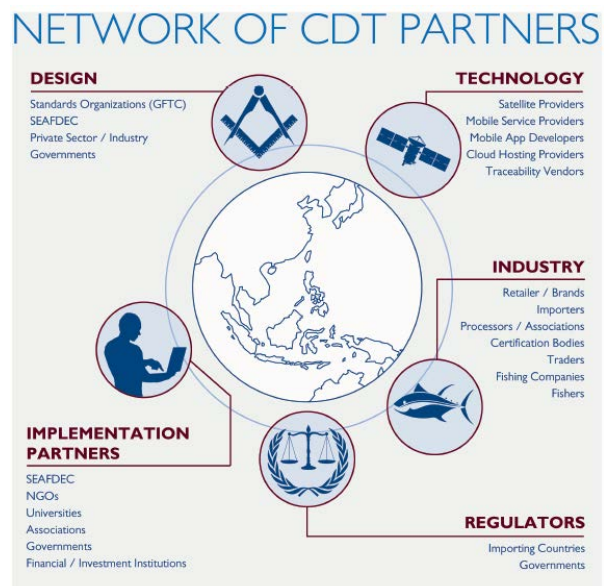
Figure 1. Diagram of USAID Oceans' partnership approach

1.2   Methodology and Approach

Partnership Appraisals identify high-value partnership opportunities and provide recommendations to support a government-led implementation of eCDT systems in a specified country. To complete this Partnership Appraisal, close coordination was required between USAID Oceans' PPP and CDT teams, under the authority of the Thailand Department of Fisheries.

The Appraisal was implemented in the following three key stages:

1. **Desk research and stakeholder mapping** to create a list of relevant companies and organizations;

2. **Fieldwork** to interview priority companies and organizations; and

3. **Validation workshop** to refine and finalize the initial findings and partnership concepts from the Partnership Appraisal and CDT Gap Assessment and secure commitments from relevant ministries.

USAID Oceans' Partnership Appraisals focus on the identification of key stakeholders to participate in eCDT system design and testing, and as such engaged the following key stakeholder groups:

- **Governmental agencies** involved in the seafood supply chain, including fisheries, rural development, trade and industry, customs, and coast guard agencies to facilitate interoperability between current and existing systems and validation processes;

- **Industry stakeholders** with interests in exporting to the EU and US markets, including fishermen, vessel owners, processing companies, buyers, exporters, and industry associations;

- **Information and communication technology companies**, such as mobile and satellite telecommunication service providers, smart devices suppliers, and data analytics services, to provide the technical foundation for digital data collection and validation; and

- **Conservation and non-profit organizations**, including NGOs and international aid agencies, who are already involved in fisheries management and transparency programs, to build on their connection and valuable experience in engaging diverse stakeholders around traceability.

Following eCDT system design, development, implementation, and testing, USAID Oceans encourages its partners to scale eCDT systems at a national level—and beyond. As such, in consideration of longer term goals to bring eCDT systems to scale, strategic approaches need to be developed to both extend the number of stakeholders involved with the eCDT system and to develop new engagement opportunities. As such, USAID Oceans' held discussions with Appraisal participants to develop a strategy for:

- **Engaging additional associated stakeholders related to the seafood industry**, such as financial institutions and insurance companies, who can provide the significant incentives for an eCDT system implementation and scale;

- **Developing specific incentives for companies using the eCDT system with specific rewards** (i.e., easier licensing and certificate approval and renewal, subsidies for small scale, etc.) to ensure industry commitments and embed eCDT system in their day-to-day process; and

- **Developing a marketing strategy** in concert with other departments and industry associations to promote the eCDT systems in terms of seafood industry competitiveness, product quality, and safety that could create new market opportunities.

1.3   Organization of the Report

This report presents USAID Oceans' Partnership Appraisals findings through four key sections: (i) an introduction to the country's partnership with USAID Oceans; (ii) background on Thailand's fisheries sector and context for the partnership appraisal; (iii) appraisal findings; and (iv) partnership recommendations. Partnership Appraisal studies were done in parallel with CDT Gap Analyses, which can be accessed online at www.seafdec-oceanspartnership.org/resources.

2. THAILAND PARTNERSHIP APPRAISAL FINDINGS

USAID Oceans worked closely the Thailand Department of Fisheries (DOF) to assess its fisheries readiness for eCDT through a CDT Gap Analysis and completed this corresponding Partnership Appraisal to identify potential partnership opportunities to support eCDT system design and implementation. The following section presents Partnership Appraisal findings.

2.1 Introduction

The fisheries sector, including aquaculture, is important to Thailand economically, socially, and for food security. The Government of Thailand, through the Thailand DOF, have been working over recent years to develop an eCDT system, which is currently in place and in a process of implementation and enhancement. Prior to USAID Oceans, the DOF had already begun to implement a digital catch certificate system and internal traceability systems that DOF indicated was providing sufficient information for their markets.

USAID Oceans and the Thailand DOF have been working together, directly and indirectly, since the partnership's launch in 2015 through several research and pilot initiatives. As one of its partnership activities, USAID Oceans and the Government of Thailand agreed to conduct a Partnership Appraisal to assess its current CDT system implementation, develop a road map for continuing to implement an eCDT system that will support the country's compliance with international market requirements, and identify strategic partnerships to support system continued design and implementation. Other partnership activities have helped to inform this appraisal, as detailed below.

During USAID Ocean's first year, it identified Thailand-based seafood company, Thai Union, as a high-value, quick-win partnership. Through this partnership, USAID Oceans, Thai Union, and DOF have worked together on a Thailand-based eCDT and crew communications pilot. The pilot project involved Thai Union, DOF, Inmarsat, Xsense, with the support of Mars PetCare. The pilot took place on four vessels over a 36-week period between May and December 2017, and tested Inmarsat Fleet One Vessel Monitoring System (VMS) technology with two-way communications, an e-logbook, and a mobile phone application, Hi-Chat, which was used for crew communications. As well as testing and understanding the potential for electronic CDT within the Thai fleets, the pilot was particularly interested in human welfare aspects and the ability of the crew to communicate securely to a trusted person on land. In January 2018, USAID Oceans completed an assessment of this CDT pilot. Findings and conclusions from that assessment have been included in this Partnership Appraisal as valuable source information.

USAID Oceans completed its Thailand Partnership Appraisal from August to September 2017. To complete the Appraisal, USAID Oceans worked closely with the Thailand DOF; a range of seafood industry stakeholders, including Thai Union, SeaValue, Kingfisher, SeaWealth and TriMarine; the Thai Tuna Industry Association (TTIA) and the Seafood Task Force; and other relevant stakeholders. During August 2017, USAID Oceans visited Songkhla, Thailand to conduct research for the CDT Gap Analysis and Partnership Appraisal. Under this study USAID Oceans conducted 79 interviews with industry associations, fisheries, processors, government, and port authorities to understand the specificities of the local context and gather key information and feedback on their interest/capacities to develop and implement an eCDT system. The conduct of a final validation workshop is pending to validate, refine, and finalize the CDT Gap Assessment, as well as secure commitments from relevant ministries on how they intend to take onboard the findings and recommendations of the report.

2.2 Country Context

As of 2015, 42,512 active fishing vessels were operating in Thailand, including 25,002 powered vessels. Its marine fisheries employed about 172,430 fishers, 82% of whom were migrants; seafood processing and other

fishery-supporting industries employed about 515,000 people, mostly women. Thailand's fisheries and aquaculture sections are currently undergoing a comprehensive reform that was initiated by the Thai Government in 2015, driven largely by concerns over deep-rooted problems of IUU fishing and labor abuse. The reform process has included the enactment of Royal Ordinance on Fisheries B.E. 2558 (2015) which empowers government agencies to combat and significantly penalize IUU fishing and labor abuse in the sector. The government also adopted a several plans including: the Marine Fisheries Management Plan 2015 – 2019; a National Plan of Action to prevent, deter and eliminate IUU fishing (NPOA - IUU); a National Plan of Control and Inspection (NPCI) in 2015; became a signatory to the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing in 2016; and the UN Fish Stocks Agreement in 2017.

In 2013, the Thai Sustainable Fishery Roundtable (TSFR) was established as a joint committee between the public and private sector over acceptable standards in fisheries. TSFR is comprised of six industry associations, with collaboration from DOF and the Department of Livestock Development, to determine, study, and proceed with creating fishing standards that all parties can comply to under the FAO's Code of Conduct for Responsible Fisheries framework. The TSFR intends to improve the efficiency of Thai fisheries management and government, together with environmental responsibility and transparent traceability of fishery products. The Roundtable is one of three Fishery Improvement Projects (FIPs) in Thailand.

The private sector has also created another initiative, the Seafood Task Force, in response to concerns over IUU fishing. The Task Force aims to leverage the extensive know-how and resources of its members to address issues surrounding illegal fishing and labor in seafood supply chain. Task Force members include seafood processors, feed producers, buyers, retailers, government representatives, and NGOs currently working in and/or with business links to Thailand.

2.3   Appraisal Findings

Partnership Appraisal research provided an opportunity to test private sector interest and potential engagement in eCDT initiatives to identify opportunities for high-value partnerships. Through the appraisal, USAID Oceans interviewed a number of companies from the capture, processing, and export industries. Several key themes emerged from those interviews, as follows.

2.3.1   Industry

Partnership Appraisal interviews with members of industry, as well as USAID Oceans' partnership with Thai Union, highlighted several key opportunities, challenges, and recommendations for consideration in Thailand's further development and expansion of their eCDT system.

Opportunities

During USAID Ocean's first year, it identified Thailand-based seafood company, Thai Union, as a high-value, quick-win partnership. Through this partnership, USAID Oceans, Thai Union, and DOF have worked together on a Thailand-based eCDT and crew communications pilot. The pilot project involved Thai Union, DOF, Inmarsat, Xsense, with the support of Mars PetCare. The pilot took place on four vessels over a 36-week period between May and December 2017 and tested Inmarsat Fleet One Vessel Monitoring System (VMS) technology with two-way communications, an e-logbook, and a mobile phone application, Hi-Chat, which was used for crew communications. As well as testing and understanding the potential for eCDT within the Thai fleets, the pilot was particularly interested in human welfare aspects and the ability of the crew to communicate securely to a trusted person on land.

The Thai Union pilot not only provided key insights and recommendations on the way forward for eCDT system implementation, but also fostered an innovative public private partnership model in this sector to

address IUU fishing and human welfare in Thailand. The capacity to engage several boat owners, seafood processors and exporters (Thai Union), technology providers (Inmarsat and Xsense), and an international large-scale buyer (Mars Pet Care), together with government agencies at national and local levels (DoF, PIPO centers), is a unique and promising model to test and potentially scale future catch documentation and traceability solutions in Thailand.

Despite some initial technical problems, such as several satellite communication losses, the piloted technology clearly did assist the CDT process at sea.

> *The use of the e-logbook system, once individuals grew accustomed to it, resulted in proven operational benefits, with better information-sharing between captain and land about on-going trip and catch details. It improved the efficiency of operations and saved time for the owner/captain to facilitate logistics and trade, and reduced time to process products and thus the products' quality— with the potential to achieve premium products level.*

While the DOF plans to test eCDT technology onboard Thai distant water fleets in the Indian Ocean and plans to introduce e-logbook systems to all domestic vessels by 2019, the Thai Union pilot was seen as a good opportunity to learn and adapt such implementation while improving the speed and efficiency of the catch validation process. The next phase would therefore require more policy development and implementation around eCDT with a specific incentive scheme to drive the change, engaging further with central agencies such as the DOF, local fisheries authorities (i.e. PIPO centers), and local governments.

Challenges

Just as the pilot highlighted successful implementation strategies, technologies, opportunities, it also uncovered several key challenges that should be considered in the rollout of any new eCDT technology by DOF. In partnerships such as those used under the Thai Union pilot, the initiative's success is highly dependent on each parties' commitment to contribute and maintain its engagement at all points during the process. Such solutions can only be demonstrated at scale, involving all stakeholders with clear common benefits that match each parties' needs.

Following the initial pilot and its assessment, it has been difficult to demonstrate the value and concrete opportunities to engage more stakeholders to scale, adapt technology and pricing, and further modify the chat application for crew member. The initial pilot partners did not want to move forward without a clear engagement from DOF to validate and authorize such technology. Thus, the need for public-private partnerships is highlighted, with engagement from both government, industry, and other private sector partners. It is important to notice that satellite communication systems require a specific licensing agreement delivered by the Thai government.

The vessel owners did see value in such technology (in the absence of satellite phone) if the price point was set correctly they could be persuaded to use it by the supply chain. Attractive costing will need to be developed for any system to be adopted outside of the regulatory requirements. Some vessels do already pay extra for a satellite phone in order to communicate with vessels while they spend long periods at sea. The price point needs to be close to this additional expenditure. Willingness to pay for the system is currently low among interviewed owners, and most likely requires policy incentives to drive broader adaptation and implementation across the industry. There is still a long way to build trust in the use of such technology, especially related to security and confidentiality. Therefore, the possibility to keep demonstrating the business benefits and incentivize with features like the access to internet-based programs will raise interest and potential adoption among crew, captains, and boat owners.

2.3.2   Information and Communication Service Providers

Due to USAID Oceans' partnership with Inmarsat and Thai Union, the main technology provider in Thailand that the program closely engaged with was X-Sense, which is Inmarsat's local partner in Thailand. Xsense which offered Inmarsat Fleet One Vessel Monitoring System (VMS) technology with two-way communications, an e-logbook, and a mobile phone application, Hi-Chat. As observed in the Thai Union pilot, the Inmarsat Fleet One 2-way communication technology did clearly assist in catch documentation reporting at sea and improve life and safety conditions on the boats. The technology tested already covers the needs of the eCDT system and crew welfare. USAID recommends a focus be placed on improving communications and decreasing the price point for both equipment and data transmission. It is clear that with further adjustments and improvements related to connectivity, there is potential to enhance traceability and at-sea connectivity, which will engage more technology providers and incentivize the development of new products for affordable connectivity at sea. The main concern that remains is related to the capacity to scale such technology, which still requires costly data transfer and thus a new business model, such as a cost sharing solution between owners and staff to be developed and tested.

New eCDT tools provide a new way of addressing the growing market demand for improved labor conditions on boats and stronger reporting mechanisms, bringing the seafood supply chain closer to social compliance and increased trust among buyers.

2.3.3   Industry Associations

USAID Oceans has had several discussions with the Thai Tuna Industry Association (TTIA) to gauge their interest in working with their members to adopt eCDT. USAID Oceans has observed that most TTIA members already have good traceability practices in place, and their existing internal traceability systems which currently comply with EU regulation and US SIMP could be leveraged. Adopting an end-to-end traceability system would require TTIA members to work with their overseas suppliers, and, therefore, members expressed that they would like to understand clear business benefits (and costs) of eCDT adoption. They remain interested in eCDT but would like to have clearer understanding from existing eCDT pilots on how the technology can help enhance their businesses.

2.3.4   Labor and Welfare

As previously mentioned, this assessment had limited exposure to labor and welfare issues. It is relevant to note, however, that Section 37 of the Royal Ordinance on Fisheries B.E. 2558 (2015) requires that a commercial fishing licensee provides occupational safety and hygiene, as well as appropriate working conditions as prescribed in the Ministerial Regulation on Labor Protection in Marine Fisheries. As such, for a fishing vessel of 30 gross tons, a licensee must provide: adequate clean food and drinking water for the total duration of fishing operation; rest periods as prescribed in the Ministerial Regulations; sufficient medications and medical supplies for all crew members and the total duration of fishing operation; first aid treatment and urgent transportation for crew members to access on-shore medical facilities in case of severe injuries or illnesses; medical examinations for crew members at least once a year by a certified medical doctor to issue a certification to approve that they are permitted to work on a fishing vessel before going onboard for the first time; and recreational spaces. Vessels over 60 gross tons must also provide a restroom with an area of at least one square meter and first aid training to at least one of the crew members to be conducted by an institution or agency accredited by a government agency. For safety, licensees for vessels over 30 gross tons must provide tools, equipment and supplies, and lifejackets; and guidelines for the crew members on the use of tools, equipment and supplies; operations of fishing gears and rules of fisheries; and safety on board.
In addition to this ordinance and requirements, Thailand has also been proactive in responding to the sector's numerous and severe human rights concerns. The Government of Thailand has engaged with numerous

international organizations and technology providers to address sectoral labor concerns, including companies such as iRespond that uses technology to address sectoral migrant worker challenges.

3. PARTNERSHIP RECOMMENDATIONS

This section presents recommendations for the private sector and Thai Government to consider in order to enhance existing efforts, provide incentives for adopting eCDT, and expand the use of eCDT.

Form partnerships to conduct additional pilots of existing and emerging technology – The Thai Union partnership, overall, met its initial objectives of enabling both eCDT data collection, as well as crew communications onboard fishing vessels. It illustrated the potential of joint efforts among the fisheries industry, tech providers, and governments to find solutions that improve crew well-being and culture on board, allow for better monitoring of the crew conditions by vessel owners and enable better accountability in terms of the human welfare and operations at-sea on a real time basis.

When conducting the Partnerships Appraisal for Thailand, several private sector companies mentioned that they could benefit from lessons learned from the Thai Union pilot and would consider adopting a similar technology if the pilot results are positive. USAID Oceans encourages the Government of Thailand and private sector partners to consider piloting existing technologies that Thai Union and the USAID Oceans program have supported, and financing mechanisms (such as cost-sharing, government subsidies, impact investments) to help jump-start the scaling of CDT.

Develop a public-private partnership for data interoperability – While the Thai Union pilot demonstrated the usability of the technology for different partners, it was also observed that the information collected, its operational aspects, as well as its compatibility with government systems currently falls short of what is required for the technology to scale and partners to benefit from it.

The interest from Thai government and industry represent a clear opportunity to further develop partnerships, while aligning to the DOF's own plans of testing e-logbook technology on Thai overseas vessels in the Indian Ocean in 2019. Additionally, it would be beneficial to extend the partnership to additional governmental agencies, such as the Department of Labor and local authorities beyond the PIPO center, to provide a more comprehensive evaluation of the role of each agency, identify clear benefits in monitoring crew welfare, and gain policy-level support for increased transparency on board.

Develop a public-private partnership for data analytics - Similar to the recommendation on data interoperability, there is a clear opportunity to develop partnerships for data analytics – between both relevant government agencies and private sector partners. KDEs collected via eCDT could be analyzed in meaningful ways to guide public policies in human welfare and fisheries management. Appropriate authorities (such as DOF and the Ministry of Labor) could look at partnering with technology companies who are experienced in developing data analytics plans to support increasingly data-driven decisions.

APPENDIX 1: THAILAND STAKEHOLDER MAPPING – SEAFOOD INDUSTRY

Company Name	Company Profile	Company Products & Productions figures (volume, market shares, etc.)	Market (domestic or export EU / US / Others)	Location & Contact information
Asian Seafoods Coldstorage Public Company Limited	Seafood manufacturing company specializing frozen and canned seafood products, mainly exported under clients' brand.	Frozen sillago (butterfly slice), frozen shrimp (raw, boiled, battered or battered with deep fried) and frozen squid (full, skinless, sliced, fried or grilled).	Domestic/Export	55/2 Rama2 Road, Tambon Bangkrajao, Amphur Muang, Samutsakorn 74000 Tel (034) 822204-7, (034) 822700-6 Fax (034) 822407, (034) 822698-9, (034) 822706 www.asianseafoods.co.th/
Asian Alliance International Co., Ltd.	Seafood processing and exporting company, with focus on canned tuna, frozen tuna and other by-products such as canned pet food and fishmeal. Plastic cups and pouched products are also available.	Canned/pouched/plastic-cupped tuna, frozen tuna, canned/pouched/plastic-cupped pet food, and fishmeal	Domestic/Export	8/8 Moo 3 Rama II Rd., Banbor, Muang, Samutsakorn 74000 Tel (034) 845566-8, (034) 845575-91 Fax (034) 845547, (034) 845593, (034)845570 www.asianseafoods.co.th/
Asian Feed Co Ltd	Produces aquatic animal feed for fish, crabs, frogs and shrimps.	Asian Feed Co., Ltd. produces aquatic animal feed (for fish, crabs, frogs and shrimps) which is distributed and sold locally in Thailand under Asian Feed brand name.	Domestic	www.asianseafoods.co.th/
Bangkok Seafood	Provides cold storage and manufactures freezing products services, located in Samutsakorn province, the largest center of trading and processing of fishery products in Thailand.	Food processing service, Frozen Shrimp, Squid, Fish, Cuttlefish, Mussel Breaded Products, Value Added Product	EU, U.S.A, Asia	Mahachai, Mueang Samut Sakhon District, Samut Sakhon 74000 www.bangkokseafood.co.th
CHOTIWAT MANUFACTURING CO.,LTD. (CMC)	The third largest tuna packer in Thailand. Manufacturer of canned pet food, tuna loins, and value-added tuna. Committed to developing its quality standards .	Develops products for more than 100 brands of tuna	50+ countries in Middle East, Africa, Oceania, North America, East Asia, Europe and South Africa	
Diamond Food Product	Produces canned tuna with varieties of other related products that are certified by the International Standard in Quality, Food Safety and Halal. Provides services under OEM/Private Label with a strong research and development for value-added that related to tuna products. Committed to satisfying customers in terms of providing the highest quality and reliable services in order to become the leader in canned tuna business.	Tuna, value added - based on Skipjack, Yellowfin, Tongol and Albacore species	Export	www.diamondfoodproduct.co.th
Golden Prize	Manufacturer of canned seafood products, including tuna, sardines, pilchards, mackerel and saury.	Species: Skipjack, Yellowfin,, Tongol, and Albacore tuna Meat: Solid Pack (maximum flakes allowance 15%); Chunks (maximum flakes allowance 30%); Premium Flakes; Shredded	Middle East, Africa, Europe, Asia, North and South America	www.goldenprize.co.th

Company Name	Company Profile	Company Products & Productions figures (volume, market shares, etc.)	Market (domestic or export EU / US / Others)	Location & Contact information
Hayati Group	Food manufacturer including tuna products.	Plain Tuna / Solid, Chunk, Flakes, Shredded in different in Veg oil, Olive oil, spring water or Brine. Canned value added tuna/mixture of tuna flakes with different ingredients.		
Hi-Q food	Produces high quality canned food products for consumers.	Canned tuna / Pet food / added value		www.hiqfood.com
JMB International	Established in Bangkok in 1987, with a primary goal to assist overseas buyers (major importers, institutional or retail distributors, manufacturers from all over the world), in their purchases of canned goods from Southeast Asia.	Export items such as tuna, shellfishes, pineapple, kernel corn, etc.	Export	www.jmbinter.com
Kian Hua	Canned food company.	Canned Tuna, Canned Sardine and other Canned Seafoods	Domestic/Export	www.kianghua.com
KingFisher	Seafood business with subsidiaries that focus on canning, can making and fish protein (Southeast Asian Packaging and Canning Ltd., SEAPAC); value added marine products (KF Foods Ltd.); cold storage business (OCCL); and domestic sales in Thailand (Kingfisher 108 Ltd.).	Tuna / Value Added / Frozen Seafood / Pet food / Fish protein	Domestic/Export	www.kingfisher.co.th
Kodanmal	Exporter that specializes in more than 10 different products including seafood/tuna items.	Tuna-Flakes, shredded, Chunks, Sliced, Solid, Sandwich Spread; Salad in Mayonnaise	Export	www.kodanmal.com
Koliate	Specializes in supplying a wide range of canned food products, including seafood.	Tuna solids, chunks, flakes and shredded	20+ countries for retail, catering, food services, and for reprocessing	www.koliate.com
Lakshita Holdings	Export company specialized in diverse food items, including seafood (canned tuna)	Tuna-Flakes, shredded, Chunks, Sliced, Solid / In brine or oil	Export	www.lakshitaholdings.com
Luen Thai Fishing Venture Limited.	Operates an integrated fishing business that provides services such as base operations, logistics, and processing and marketing of tuna and seafood products.	Fresh tuna, frozen seafood products	South Pacific, Japan, other Far Eastern countries, U.S.A and Europe	www.ltfv.com
MMP INTERNATIONAL CO.,LTD.	Packer of canned fish, primarily tuna. Also offers other seafood i.e. Mackerel, Shrimp, Crab, Baby clams and several value-added products.	Tuna is packed from every species - Skipjack, Yellowfin, Tongol, and Albacore species.	Canada and U.S.A.; Germany, U.K., Greece, Poland, Czech Republic, and Denmark; Japan (pet food); Australia; others	www.mmptuna.com
PATAYA FOOD INDUSTRIES LTD.	Tuna/seafood processing in its owned factories in Samutsakorn province, Thailand & Vietnam.	Canned tuna products & Value added.	Export	www.patayafood.com
PC Tune	Tuna manufacturer	Tuna Spicy Bolona Tuna, Bolona Tona, Tuna Sausage, Chilly Tuna Sausage, Tuna Burger, Tuna Ham, Tuna Tofu, Smoked Tuna Sausage, Cocktail Tuna.	Domestic	www.pctuna.co.th/en
Pegasus	Manufacturer for Tuna, mackerel and sardine, located in Songkhla	SKIPJACK TUNA (Katsuwonus pelamis): Light meat tuna Chunk, Flake, Solid LONGTAIL-TUNA (Thunnus tonggol): White meat tuna Chunk, Flake, Solid	Export	68/2 Moo -6, T.Tumnob. A.Singhakorn, Songkhla 90280, Thailand www.pegasusfood.co.th

Company Name	Company Profile	Company Products & Productions figures (volume, market shares, etc.)	Market (domestic or export EU / US / Others)	Location & Contact information
Premier Canning Industry	Tuna manufacturing / Canned Products company established in 1987.	Human products (Pouch / can): 53 % Pet Food products (Pouch / can): 42 % Tomato Ketchup and Chili Sauces: 3 %	Domestic/Export	www.premiercanning.com
SandStone International	Thai exporter and manufacturers of food products.	Canned White Meat Tuna (tongol, albacore, yellowfin) Canned Light Meat Tuna (skipjack, bonito, etc.)		No. 16/17, Moo 7, Bangna-Trad Road, KM 9, Bangkaew, Bangplee, Samutprakarn, Thailand 10540 www.sandstonethailand.com
SeaWealth Food	Produces frozen value added seafood products in the form of mass customized production to supply retailers and large food service entities.	Shrimp, Tilapia, Calamar, Tuna	EU, U.S.A., Japan	www.seawealth-food.com
Sea Value Public Company Limited	Owns and operates three tuna processing facilities in the heart of Thailand's seafood and tuna cannery business areas (Samutsakorn and Nakornprathom) under its subsidiaries Unicord Plc. and I.S.A. Value Co., Ltd., with total current operating capacity of 1,000 tons/day.	Sea Value Plc. is a tuna processor in Thailand with full range of fisheries-related products (tuna, sardine, mackerel, salmon and other fishes) in various types of packaging formats including value added and ready-to-eat products.	Export	www.seavaluegroup.com
SIAM INTERNATIONAL FOOD CO.,LTD.	40 years of experience. Own 200 trawlers sourcing their own canned tuna production. Processing over 120 metric ton of tuna. Strong sustainability component	Tuna, value added, pet food based on including Skipjack, Yellowfin, Tongol and Albacore species	Europe & North America	www.sif.co.th/
SK FOOD PC	Established in 1977 to manufacture and process mainly tuna and other seafood into cans, pouches, and cups. The company has a factory (capacity of 18,000 Ton per year) and cold storage (Capacity 2,500Ton) where frozen seafood products are made at Kratumbane, Samutsakorn.	Canned tuna, tuna in pouch, tuna in cups, frozen seafood		www.sk-foods.com
Thaistar industrial 1987 Co.Ltd.	Supplier of canned tuna, mackerel, sardines and frozen seafoods, tilapia, vannamei shrimps, rohu, barramundi, red mullet, octopus, squid, tiger prawn, surimi and several other freshwater and saltwater seafood.	Canned tuna, canned sardines, canned mackerel, frozen seafoods, tilapia, rohu, surimi , vannamei shrimps and several other freshwater and saltwater seafood.		Thaistar Industrial 1987 Co., Ltd. 39/295 Bangna Complex Building, 2nd floor, Soi 25, Bang Na Trad, Bangna, Bangkok 10260, Thailand.
Trimarine	Originally formed in Singapore in 1972 as a tuna procurement activity for an Italian government-owned group of companies. In 1986, Tri Marine became a private company and has since grown to be one of the largest tuna supply companies in the world.		Europe, North America, South America, Asia	193-195 Lake Rajada Office Complex 35th Floor Unit 193/140 New Ratchadapisek Road Klongtoey, Bangkok 10110 Thailand www.trimarinegroup.com
Tropical Canning	Information provided in Thai only		U.S., Canada, and Australia	1/1 Karnjanavanich Rd., M.2, Thungyai, P.O.box 44, Hatyai, Songkhla 90110 www.tropical.co.th

APPENDIX 2: THAILAND STAKEHOLDER MAPPING – INDUSTRY ASSOCIATIONS

Name	Descriptions	Contact information	Partnerships Opportunities
Thai Tuna Association (TTIA)	Objectives: • Promote the enterprises who produce and trade tuna goods and all fishery products in packaging forms. • Encourage and assist the members in solving problems as well as negotiating agreement with outsiders for common interest of the object enterprises. • Provide statistical data in both academic and commercial sections related to the operation of the object enterprises. • Monitor the movement of related trading market both inside and outside country, exchange and disseminate academic and trading information, and do researches in relevant with the object enterprises in order to benefit whole members. • Encourage and support the researches so as to improve the members' producing method for better quality and standard. • Collaborate with government to fix, develop, and support trading, industry, financial, or any other business connected to TTIA's objectives. • Make an agreement and set rules and omissions for the members to follow so that all member can work together peacefully. • Negotiate operating issues between member against member and member against outsider. However, the judgment must be neutral and under the limit of the association's procedure. • Make the association as a unity among all members.	THAI TUNA INDUSTRY ASSOCIATION 163 Rajapark Building, 11th floor, Sukhumvit 21 Road (Asoke), Klongtoey-Nua , Wattana, Bangkok 10110, Thailand E-mail: ttia@thaituna.org Tel: +66 2 258 0317-8 Fax: +66 2 258 0319 www.thaituna.org/home/	*Sustainable Fisheries* TTIA supports anti-IUU efforts and encourages of sustainable fisheries and reaffirms that their members have been stringently operating their tuna businesses in a transparent manner along the line of the international principles upheld in UNCLOS 1982, UNSDG 14 (the Sustainable Development Goals: SDGs-Life Below Water), and the FAO's Code of Conduct for Responsible Fisheries. They have additionally been collaborating with various Regional Fisheries Management Organizations (RFMOs) such as the Western and Central Pacific Fisheries Commission (WCPFC), and the Indian Ocean Tuna Commission (IOTC). TTIA is also supportive of the Royal Ordinance on Fisheries, B.E. 2558 (A.D. 2015), Thailand's Marine Fishery Management Plan (FMP), and the National Marine Fisheries Management Policy, 2015 -2019. *Labor* In 2016, TTIA established more conditions to members in order to regulate them to comply with international labor standards and social responsibility. For examples, getting Dolphin Safe approval by Earth Island Institute (EII) and cooperating in the implementation of Good Labour Practice (GLP).
Thai Frozen Food Association	Objectives: • Promote the entrepreneurship foe all types of frozen fishery and agricultural products. • Promote the harmony and information exchange amog members. • Serve as the intermediary in reaching compromises regarding conflicts that may occur among the members themselves or between members and outsiders. • Establish regulations and mutual agreements for members to follow for smooth operation of the business. • Encourage both in quantitative and qualitative, the business of fishery and agricultural products in response to the increase, demand of both domestic and international markets. • Compile statistics about fishing, production, sales and export. To survey and study the member's opinions concerning their business for use to benefit others as a whole. • Cooperate with the government sectors responsible for Thai fishery industry; for example, shrimp, fish, cephalopods and other agricultural products.	Thai Frozen Foods Association 92/6 6th Floor Sathorn Thani II, North Sathorn Rd., Bangrak, Bangkok 10500 Thailand Tel : (662) 235-5622-4, 636 9001-4 Fax : (662) 235-5625 www.thai-frozen.or.th E-mail : thai-frozen@thai-frozen.or.th www.thai-frozen.or.th	TFFA aims to lead its members and the frozen foods industry into the future with continuous development, especially to support implementation of technology and innovation for the benefits of the industry.

APPENDIX 3: THAILAND STAKEHOLDER MAPPING – TECHNOLOGY PROVIDERS

Company Name	Company Profile	Company Products/ Services related to fishing sector	Market	Contact information	Partnership Opportunity
Inmarsat	Inmarsat plc (LSE: ISAT) is a British satellite telecommunications company, offering global mobile services. It provides telephone and data services to users worldwide, via portable or mobile terminals which communicate with ground stations through twelve geostationary telecommunications satellites. Inmarsat's network provides communications services to a range of governments, aid agencies, media outlets and businesses with a need to communicate in remote regions or where there is no reliable terrestrial network. The company was founded in 1979, about 1,760 employees in 2016.	Provide satellite based solutions for the fishing sector allowing fishing vessels and its crew to be connected while at sea Provides end to end services spanning across the needs of the fishing sector to communicate while at sea, including satellite airtime, hardware, consultancy and solutions	Globally	11 Lorong 3 Toa Payoh Block C #01-31 Jackson Square Singapore 319579 www.inmarsat.com/service/fleet-one	Inmarsat is a partner in the Thai Union pilot and has official local partners in Thailand. There is a potential to take learnings from the Thai Union pilot in order the scale CDT in Thailand or enhance Inmarsat's solution for human welfare/labor purpose.
Trinity Roots	Founded in 2013, Trinity Roots is a solution provider company focusing on Enterprise Resource Planning (ERP) based in Bangkok, Thailand. Trinity Roots have experiences in ERP implementation in various business included retails, trading, manufacturing, educational and services industries.	Since 2015, Trinity Roots has been working on anti-illegal, unreported, and unregulated (IUU) fishing projects with Royal Thai Navy and Thai Department of Fisheries (DOF). The company worked with Thai DOF on several projects including: • Port-in port-out system called "Fishing Info" for Thai Flag vessels; • Add-on function for Fishing Info (Inspection and risk assessment system for Thai Flag vessels); • Electronic fishing license system called "e-License"; • Seabook (Fishing Labor registration system); • Electronic port-in port-out (e-PIPO); and • Fisherman Registration system.	Thailand	30/1 Wachiratham Sathit 51 Alley, Khwaeng Bang Chak, Khet Phra Khanong, Krung Thep Maha Nakhon 10260 www.trinityroots.co.th	Given Trinity Roots expertise for developing software for Thai fisheries, the company is in a good position to assess the potential application of eCDT technology solutions developed under the support of the USAID Oceans project within Thailand for small-scale (artisanal) fishers and/or small to medium commercial fishing vessels. Trinity Roots can also share findings to the Government of Thailand and relevant stakeholders.

Company Name	Company Profile	Company Products/ Services related to fishing sector	Market	Contact information	Partnership Opportunity
OceanMind	OceanMind is a not for profit organization working to increase the sustainability of fishing globally through actionable insights into the compliance of fishing activities in support of governments, the fishing industry and fishing industry associations. The organization works in the following areas: • Vessel analysis and compliance assessments • Patrol planning and asset direction • Coaching and training • Improved communication channels • Regulatory review • Information, advice and guidance • Catch compliance validation	The organization has wide range of specialization that is currently providing Thailand toward more sustainable/responsible/better management fisheries. OceanMind provided monitoring, control and surveillance advice, capacity building, training and direct support to the Thai DOF. Working in collaboration with the Seafood Task Force and OceanMind, Thai DOF developed a new Fisheries Management Centre, and greatly increased effective control over the Thai-flagged fishing fleet.	The organization has international experts working in vast areas in relation to fisheries, especially in VMS application, MCS that may have huge opportunities to involve in improvement of the fisheries as a partner with relevant stakeholders	Electron Building, Fermi Avenue, Harwell Oxford, Didcot, Oxfordshire, OX11 0QR, UK. Tel: +44 (0) 1235 567999 www.oceanmind.global	There is a potential for Thai DOF, OceanMind, and Seafood Task Force to leverage their existing work and forge partnerships on data analytics for sustainable fisheries and/or human welfare.