



**USAID**  
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The USAID Oceans and Fisheries Partnership (USAID Oceans)

# FINAL PROGRAM REPORT

## Impacts and Lessons Learned

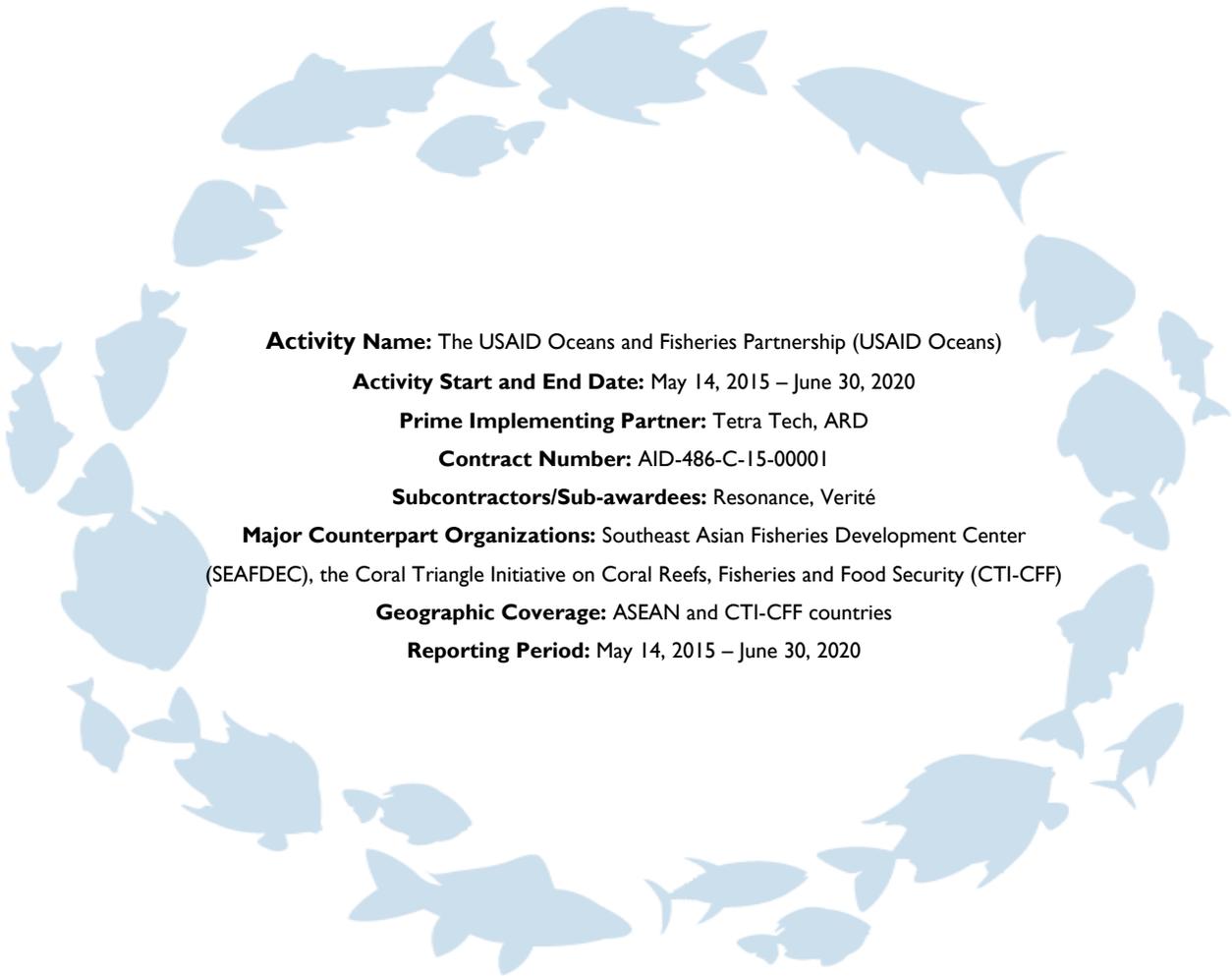
*May 2015 – June 2020*



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**CORAL TRIANGLE  
INITIATIVE**

ON CORAL REEFS, FISHERIES AND FOOD SECURITY

# EXECUTIVE SUMMARY

The USAID Oceans and Fisheries Partnership (USAID Oceans) was a 5-year project initiated in May 2015 as a partnership between the U.S. Agency for International Development (USAID), the Southeast Asian Fisheries Development Center (SEAFDEC), and the Coral Triangle Initiative for Coral Reefs, Fisheries, and Food Security (CTI-CFF). It was developed to respond to the devastating environmental, economic, and human impacts of illegal, unreported, and unregulated (IUU) fishing across Southeast Asia.

Catch documentation and traceability (CDT) efforts in Southeast Asia's fisheries have historically been paper-based and limited to large, commercial companies, presenting challenges in compiling, analyzing, and using data to document and trace fish catch and inform fisheries management practices. Electronic catch documentation and traceability (eCDT) systems alleviate these challenges, particularly when they include small-scale fishers, whose numbers greatly exceed large-scale fishing vessels. Supporting the development, testing, and scaling of eCDT systems was a key component of USAID Oceans' work. eCDT systems document key information about seafood products and allow them to be traced throughout the supply chain. eCDT systems provide a way to ensure seafood is legally caught and properly labeled, support national fisheries management, and allow countries to comply with national, regional, and international seafood regulations and import requirements.

USAID Oceans focused on four technical areas—strengthening eCDT systems; using eCDT to better regulate fishing and curb IUU practices; developing strategic public-private partnerships that capitalize on innovative technological expertise; and integrating human welfare and gender considerations throughout all activities for more equitable supply chains. By focusing on these areas, the project sought to develop and expand financially sustainable

eCDT systems to priority biodiversity areas in the Asia-Pacific region; strengthen human and institutional capacity to conserve marine biodiversity; and enhance partnerships for sustainable fisheries management.

Over five years, USAID Oceans piloted seven eCDT tools that tracked nearly 2,000 metric tons of seafood within the supply chain in Southeast Asia. The project supported the development of legal instruments and capacity building to improve management of over 100 million hectares of biologically significant areas and promote gender equity in fisheries.

Throughout the implementation period, USAID Oceans learned numerous lessons about challenges, best practices, essential stakeholders, and key issues in Southeast Asia's seafood industry. This report shares these lessons and provides recommendations for regional, government, and NGOs to continue working towards regional and global objectives to ensure a legal, fair, and sustainable seafood industry.

More work is needed to continue refining these systems. As these systems are scaled, they must also be tailored to contextual needs of various countries and stakeholders. Ultimately, national eCDT systems must provide integrated solutions and fisheries managers must have the capacity to compile and analyze eCDT data and apply these data to improve fisheries management, conserve biodiversity, protect human rights, and ensure sustainable fishing practices.

While USAID Oceans has made progress in each of these areas, there is still more to be done. The project looks to partners to carry forward this essential work. USAID Oceans hopes this report will serve as a guide for ongoing efforts to strengthen regional cooperation to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity in the Asia-Pacific region.

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*Cover photo: tuna landings at the fish port. Credit: USAID Oceans*

*Illustrations by Donald Bason*

# ACRONYMS AND ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
ATH	Alliance of Tuna Handliners
BFAR	Bureau of Fisheries and Aquatic Resources
CDT	Catch Documentation and Traceability
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
EAFM	Ecosystem Approach to Fisheries Management
eCDT	Electronic Catch Documentation and Traceability
FAME	Futuristic Aviation and Maritime Enterprise
IDS	Innovative Digital Solutions
IUU	Illegal, Unreported and Unregulated
KDE	Key Data Element
M&E	Monitoring and Evaluation
MDPI	Masyarakat Dan Perikanan Indonesia
MFO	Municipal Fisheries Ordinance
MMAF	Ministry of Marine Affairs and Fisheries
RAFMS	Rapid Appraisal of Fisheries Management Systems
SEAFDEC	Southeast Asian Fisheries Development Center
SFFAI	SOCKSARGEN Federation of Fishing and Allied Industries, Inc.
SFMP	Sustainable Fisheries Management Plan
TWG	Technical Working Group
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership
WINFISH	The National Network on Women in Fisheries (Philippines)

# I. INTRODUCTION

This final project report summarizes the accomplishments of the USAID Oceans and Fisheries Partnership (USAID Oceans) and the lessons learned over its five-year implementation period, from May 2015 to June 2020. USAID Oceans was implemented as a partnership between the U.S. Agency for International Development, regional partners SEAFDEC and CTI-CFF in response to the devastating environmental, economic, and human impacts of IUU fishing across Southeast Asia.

The report is intended to share the project's experience in each of its strategic areas and to serve as a reference for ongoing and future projects working to combat illegal fishing, improve fisheries management and conservation, and advance human welfare needs in the industry. By taking stock of these experiences, USAID Oceans hopes its lessons can guide continued efforts in these areas and support the scale-up of interventions aimed at meeting project objectives.

USAID Oceans is pleased to share its progress, successes, and lessons learned through this Final Project Report. The project thanks each of its partners for the role they have played in the Partnership and their contribution to this document. For a full list of partners see Annex I.

## PROJECT OVERVIEW

### Challenge

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**Background.** Southeast Asia's productive and biodiverse marine ecosystems provide food and income for over 200 million people in the region. The region's fish stocks and coral reefs are in danger because of unsustainable fishing practices, which threaten biodiversity, food security, and livelihoods. Fisheries are threatened by overcapacity and overfishing combined with IUU fishing practices that can cause its fisheries to collapse. The decline and failure of the regional fisheries would have devastating consequences for regional food security and livelihoods and would seriously degrade the highest marine biodiversity area on the planet.

Additionally, the region's fisheries have faced challenges related to gender equity and unethical and illegal labor practices, particularly related to a lack of visibility of women's role throughout the seafood supply chain. These issues have gained traction in the media, garnering attention from international news outlets and prompting human welfare initiatives and demand for increased traceability. Insufficient fisheries management and a lack of transparency in terms of how, where, and by whom seafood products are being caught threaten to perpetuate such challenges.

**The Mission.** The goal of USAID Oceans was to strengthen regional cooperation for sustainable and legal management and trade of fisheries resources in the Asia-Pacific region. The purpose of the Partnership was to increase the ability of regional fishery organizations to conserve marine biodiversity and combat IUU fishing in the Asia-Pacific region through the development of transparent, sustainable eCDT systems and improved fisheries management.

USAID Oceans invested in information, tools, and systems designed to improve integrated and sustainable fisheries management in the region, focusing on priority species that are vital for food security, economic growth, and biodiversity conservation and that are under threat from IUU fishing and seafood fraud. The project supported U.S. and regional efforts in Asia and the Pacific to promote sustainable fishing practices, combat fraud, and prevent the sale of fisheries products from IUU fishing.

## Purpose

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### Purpose of USAID Oceans:

Combat illegal, unreported, and unregulated fishing and seafood fraud, promote sustainable fisheries, and conserve marine biodiversity.

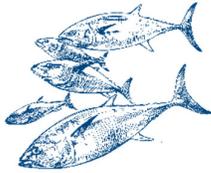
## Objectives

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1. Develop **financially sustainable eCDT systems** to combat illegal, unreported, and unregulated (IUU) fishing and seafood fraud in areas where sustainable fisheries management plans (SFMPs) are being applied;
2. **Expand use of eCDT systems** to priority biodiversity areas in the Asia Pacific region;
3. **Strengthen human and institutional capacity** of regional organizations to conserve marine biodiversity through SFMPs, including actions to combat IUU fishing and seafood fraud; and
4. **Enhance public-private partnerships** to conserve biodiversity, promote sustainable fisheries management, and combat IUU fishing and seafood fraud.

# STRATEGIC APPROACH

USAID Oceans operated under a set of strategic approaches founded on the project’s results framework, guiding principles, and on-the-ground knowledge acquired over the course of the project. These strategic approaches included:



**Regional capacity and cooperation.** USAID Oceans worked with regional, national, and local partners to develop a regional understanding and consensus of the critical importance and interconnected nature of all technical components of USAID Oceans in order to reduce IUU fishing practices and promote fisheries sustainability in the Asia-Pacific region.



**eCDT** was central to USAID Oceans’ work, which provided support to governments and industry to implement systems that reduce IUU fishing practices, improve data management, and support fisheries management planning. USAID Oceans worked closely with public and private sector partners to design, implement, test, and scale eCDT to ensure that traceability solutions align with government and industry needs.



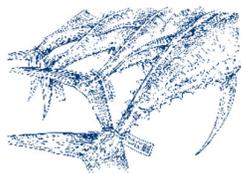
USAID Oceans promoted an **ecosystem approach to fisheries management** as a foundation to enhancing sustainable fisheries management efforts. The project supported its Association of Southeast Asian Nations (ASEAN) and CTI-CFF partners through the development of sustainable fishery plans, which also support marine biodiversity conservation efforts and promotes the use of eCDT technologies for data-driven fisheries management.



USAID Oceans worked to engage and develop **public-private partnerships** at international, national, and local levels to support cross-cutting project objectives. Partnerships were structured to support the expansion and replication of eCDT solutions throughout all stages of the supply chain and bolster long-term adoption and sustainability of eCDT systems. USAID Oceans engaged a variety of fisheries stakeholders, governments, regional institutions, and private sector actors to leverage both public and private sector investment to increase its impact.



USAID Oceans incorporated **human welfare and gender equity** considerations throughout all project strategies and activities. Through detailed gender and labor studies, USAID Oceans identified key human welfare data elements for eCDT systems as well as issues and concerns requiring action. USAID Oceans supported the development of policies and interventions that address these issues. USAID Oceans believes that more gender equitable supply chains, with empowered women and men, lie at the heart of regional fisheries management solutions.



**Communications and outreach** supported USAID Oceans’ work stream-specific objectives as a crosscutting activity. Communications were tailored for key target audiences, which included international, regional, and local government and NGOs to raise project visibility, disseminate project findings and lessons learned, and equip audiences with the resources to take action.



## SCOPE

USAID Oceans worked across the Asia-Pacific through regional, national, and local public and private sector partners to meet project objectives. Early in the project, USAID Oceans adopted a tiered approach for implementation and regional expansion, categorizing countries into “learning sites” and “expansion sites.” Through a series of consultations and analyses, the project selected Bitung, Indonesia and General Santos City, the Philippines as project learning sites. These sites were selected based on the potential to maximize biodiversity conservation, regional impact, and sustainability. The learning sites were essential to the design, development, implementation, and testing of the USAID Oceans eCDT systems and supporting project activities. USAID Oceans worked closely with national and local government fisheries agencies in Indonesia and the Philippines together with local learning-site stakeholders. Their strategic location in the Sulu-Sulawesi Sea, rich biodiversity, significance in regional trade, and readiness to engage with USAID Oceans established the sites as prime candidates. In addition to supporting eCDT development, efforts at the learning sites focused on strengthening policy and building capacity to support regional expansion.

USAID Oceans scaled up project activities to expansion sites in two phases. In the first phase, the project initiated the development of SEAFDEC’s ASEAN Catch Documentation Scheme and regional eCDT system guidelines in coordination with partners in Thailand and Malaysia, and helped these countries develop national roadmaps for implementation. In the second stage of scale up, the project expanded its work to support an ecosystem approach to fisheries management (EAFM), eCDT, and public-private partnerships to other ASEAN and CTI member countries: Brunei Darussalam, Cambodia, Laos PDR, Myanmar, Papua New Guinea, Singapore, Solomon Islands, Timor Leste, and Vietnam. In both learning sites and expansion sites, USAID Oceans provided a targeted package of technical, operational, and material support to facilitate the adaptation and application of the CDT systems, advance sustainable management practices, and promote human welfare and gender equity throughout the fisheries value chain.

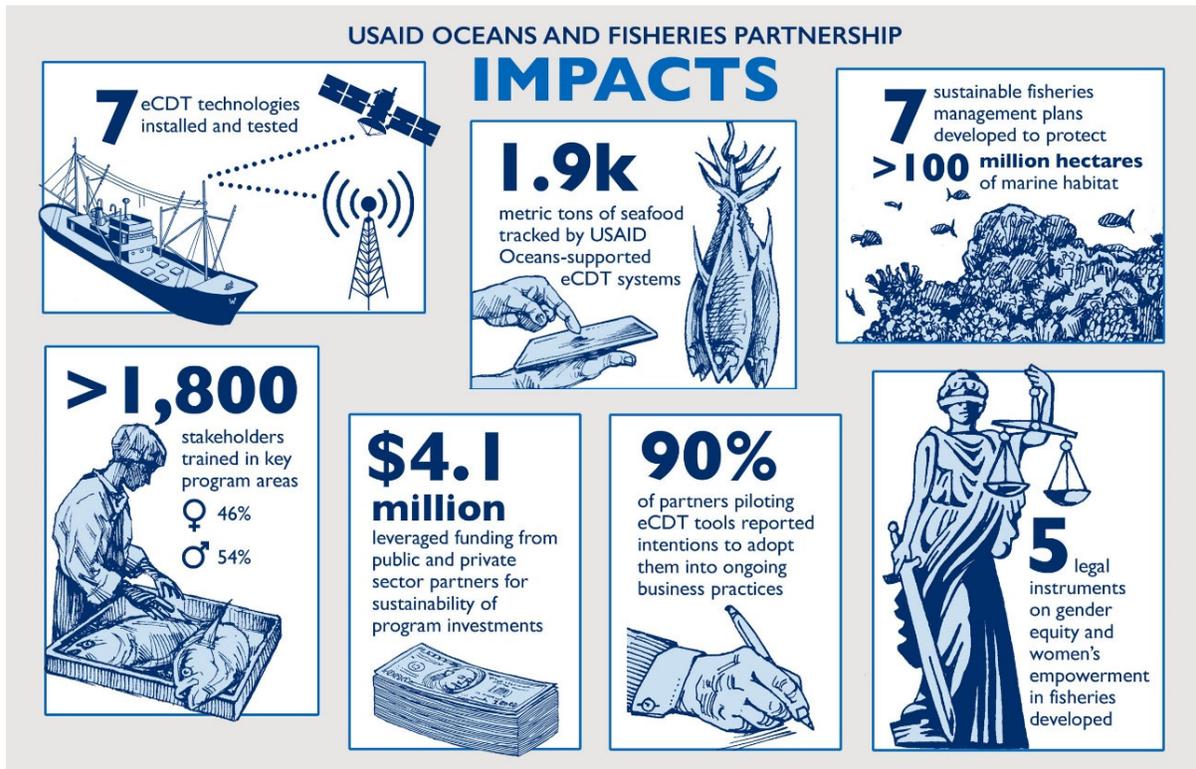
## PROJECT IMPACTS

In the five years of project implementation, USAID Oceans supported the development and piloting of **seven** eCDT tools that were used to track **nearly 2,000** (1,949) metric tons of seafood within the seafood supply chain in Southeast Asia. The project worked with partners to develop **seven** policies and regulations to promote sustainable management of the regions fisheries, resulting in a total of **102 million hectares** of biologically significant areas under improved natural resource management. The project also led development of a sub-regional fisheries management plan for Sulu Sulawesi Seas—the first plan of this kind—enabling countries to work together to more effectively manage transboundary fish stocks and protect marine habitats. Additionally, the project supported the development of **five** legal instruments to promote gender equity, women’s empowerment, and non-discrimination practices in fisheries.

Following the eCDT pilots, nearly all (**90 percent**) of stakeholders using the eCDT tools reported that they were planning to continue using them, and more than 90 percent of respondents from the public sector thought that eCDT data can support better fisheries management (USAID Oceans Final Internal Review Report, Dec 2019). Similarly, SEAFDEC and five national government partners (Indonesia, Philippines, Lao PDR, Myanmar, and Thailand) committed to endorsing regional guidelines for designing and implementing eCDT systems across Southeast Asia.

Due to USAID Oceans capacity building efforts, nearly 2,000 (**1,862**) people—46% (852) of whom are women—are better able to manage natural resources and conserve marine biodiversity. Through partnerships with 14 local, national, regional, and international public and private sector partners, the project leveraged over **\$4,000,000** (\$4,156,402) in public and private partnership investments to support the project’s objectives (Figure 1).

**Figure 1. Summary project impacts of USAID Oceans, May 2015 – June 2020.**



## 2. APPROACH

### THEORY OF CHANGE

The USAID Oceans’ Theory of Change (Figure 2) was grounded in three assumptions. These assumptions focused on the benefits of adopting eCDT systems for fishers, the use of eCDT data to improve fisheries management, and the need for regional capacity and cooperation to expand and sustain CDT as a tool for implementing EAFM.

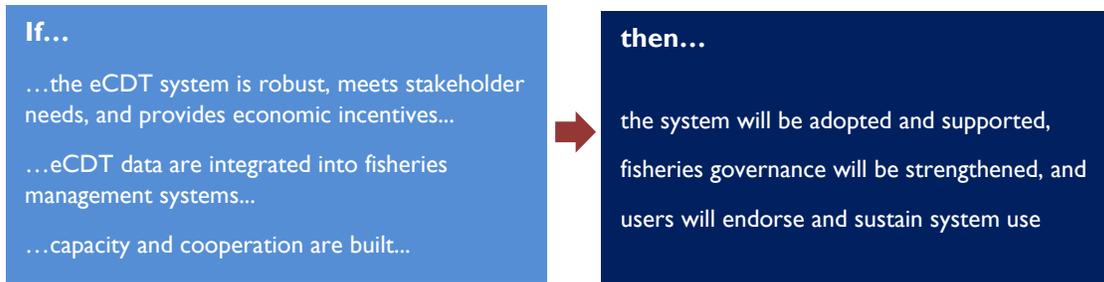


Figure 2. USAID Oceans Theory of Change

### IMPLEMENTATION PHASES

USAID Oceans was implemented in **five phases** over five years (Figure 3). While the project used a phased approach, implementation and expansion of eCDT systems was not a strictly linear process. The process required returning to prior phases to build new partnerships, conduct additional research, and adjust implementation. USAID Oceans often conducted additional research to fully understand issues or gaps that were identified in design and testing eCDT tools. Coordination, partnerships, and capacity building were cross-cutting activities that supported each phase of implementation.

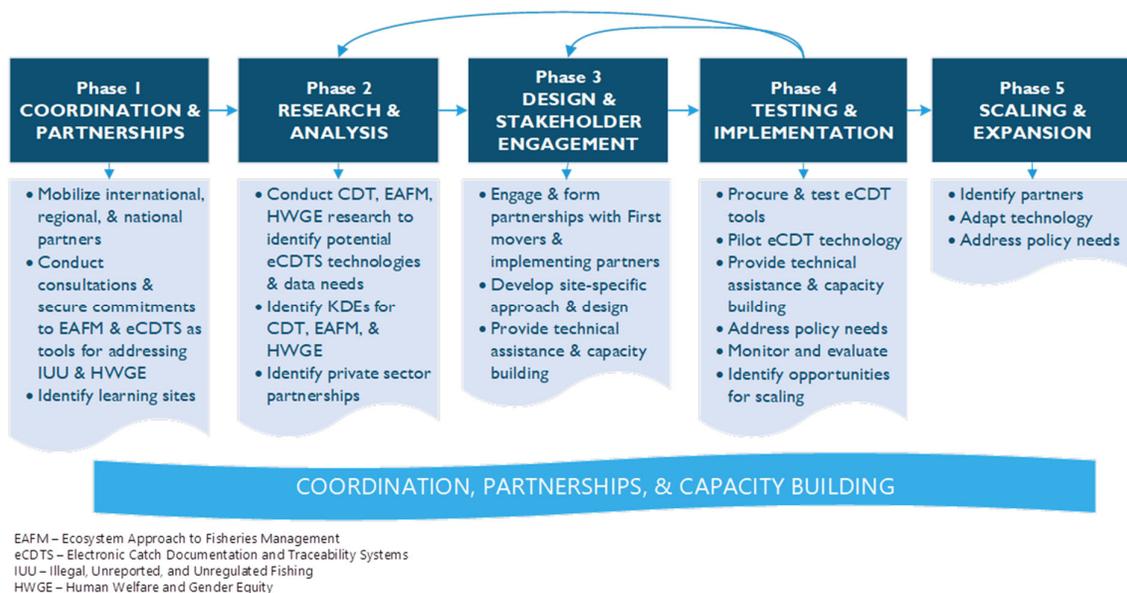
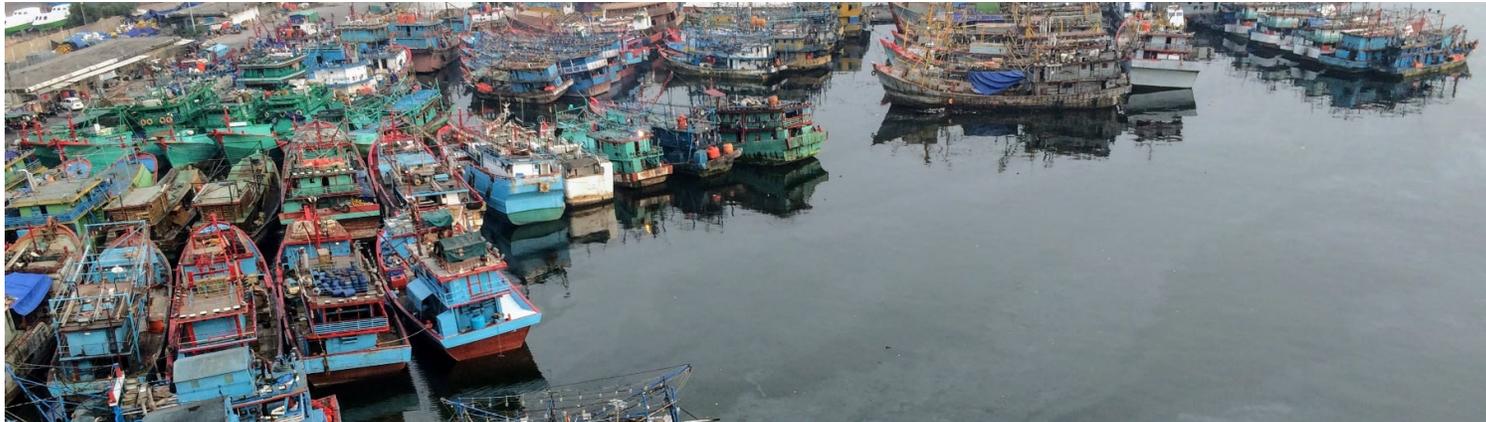


Figure 3. USAID Oceans’ phased implementation approach



## 3. LESSONS LEARNED

### CREATING A REGIONAL NETWORK FOR CAPACITY BUILDING AND COORDINATION

#### The Challenge

IUU fishing is a transboundary issue. Numerous actors, including local and national governments, regional and international organizations, and the private sector, have an interest in eliminating IUU fishing due to its adverse impacts on biodiversity, fisheries production, and trade. When USAID Oceans started in 2015, there were few coordinated efforts and mandates to guide a regional approach to identifying and combatting IUU fishing, and human welfare issues such as human trafficking and slavery, unfit working conditions, and gender inequities were not always openly recognized or transparently discussed regarding fisheries management. International and regional cooperation were needed to combat IUU fishing and organize stakeholders to take action, learn from each other, and make decisions needed to develop and deploy new solutions, such as eCDT technologies, in the region.

USAID Oceans set out to strengthen regional coordination and transboundary fisheries governance and build capacity to develop and implement regional and country-specific CDT systems. USAID Oceans coordinated its strategies and activities across Southeast Asia and the Pacific with relevant regional organizations and partners to establish and strong a regional partner network to benefit both national and local sustainable fisheries management efforts.

#### What did we do?

**Built a regional network and mechanisms for coordination.** USAID Oceans partnered with regional actors with a strong established reputation as leaders in biodiversity conservation and fisheries management and with existing national and local partners (e.g., SEAFDEC, CTI-CFF). These partnerships, which were initiated early in the project and continued throughout the project duration, facilitated regional coordination and collaboration with national government counterparts. Fishing organizations, such as the Alliance of Tuna Handliners in Indonesia and SOCSKARGEN Federation of Fishing and Allied Industries, Inc. in the Philippines also played a major role connecting with local end users and identifying “First Movers”—small and large fishery industry partners keen to serve as early technology adopters. USAID Oceans established mechanisms to facilitate ongoing regional coordination and collaboration, including National Technical Working Groups (TWG) for Indonesia and the Philippines comprised of country-appointed representatives and members of SEAFDEC to work with the project on specific technical objectives and sustain activities beyond the life of the project. USAID Oceans also assembled workstream-specific TWGs for EAFM, human welfare and gender equity, eCDT, public-private partnerships as well as an

EAFM Technical Advisory Group. These groups provided technical support and oversight to develop regional and national guidance documents and policies; conduct analyses and identify gaps in combatting IUU fishing, CDT, fisheries management, and human welfare; and develop roadmaps and action plans.

**Created a space for thought leadership.** Through TWGs, coordination meetings, workshops and trainings, and informal communication and collaboration, USAID Oceans created a space to share ideas and foster discussions related to each of the project's workstreams. Participants in these collaborations included thought leaders and technical experts from national and local governments, software engineers, fisheries management experts, and human welfare and gender specialists. In addition to creating a space for dialogue at regional, national, and local levels, these venues provided a space for members to identify resource needs and partners to fill them. For example, USAID Oceans conducted collaborative research with regional and national partners to gain a greater understanding of gaps within specific fisheries value chains. This research resulted in the development of foundational documents on key data elements (KDE), rapid appraisals of fisheries management systems (RAFMS), partnerships, and gender and human welfare that regional partners can continue to use to support design and adoption of eCDT systems and improve fisheries management beyond the life of the project.

**Enhanced regional, national, and local technical capacities.** USAID Oceans, together with six regional partners, convened thought leaders in formal and informal settings to support capacity building at all levels. The Partnership served as a regional network for learning exchange and platform to develop sustainable fisheries management plans, build capacity around gender integration in fisheries, and develop regional guidance for eCDT system development and using CDT data to improve fisheries management. In addition, the project provided one-on-one support to learning site and expansion site countries to identify and address their individual capacity building needs and develop skills and roadmaps to help them align with regional initiatives.

## What did we learn?

**Partnerships with existing, trusted organizations are essential for gaining entry, convening key representatives and garnering buy-in.** When implementing initiatives across nations, as is common in transboundary fisheries and interconnected marine landscapes, partnerships with regional organizations are critical for gaining an entry point into the region, building support for the project, and establishing a mechanism to engage and convene key stakeholders. The value of regional partner organizations lies in the access these organizations provide to their membership base, and USAID Oceans' partners provided a natural entry point for engaging with member countries and accessing country leadership. Thus, it is important to assess membership representation and convening mechanisms to identify effective regional partnerships.

Depending on regional organizations as a key convening mechanism/platform for engagement can be challenging as individual staff appointments change frequently and attendance to meetings is generally done on a rotating basis. This may make it difficult to engage a stable, long-term, engaged group of project champions committed to sharing what they learned. To mediate this, projects may want to consider additional safeguards to engage regional representatives in a way that allows more consistent, continual, and long-term support. For example, engaging regional partners at every stage of project implementation will ensure ownership of the process, results and outputs, which will facilitate handover to these partners to carry activities forward beyond the project. Supporting the development and endorsement of legal instruments on various aspects of the project also ensures a legal basis for national and local organizations to continue working on recommended actions.

**Initiatives to promote thought leadership should consider creating a space for engagement, using evidence-based advocacy, and identifying and building the capacity of change agents.** Creating a space for various actors to engage was a critical component of USAID Oceans. This engagement was facilitated through a variety of platforms ranging from formal coordination meetings, TWGs, workshops, and training to less formal engagement such as conference calls and email. These varied opportunities for engagement brought together valuable change agents at all levels and from numerous industries, thereby expanding exposure to the project's work and creating opportunities for thought leaders and champions to share what they've learned with others and building trust between government and the private sector. To inspire new thought leaders, existing evidence of impact from pilots is helpful to provide credibility and reinforce the reasoning behind project work. Identifying, convening, and sharing evidence-based information with champions and change agents within the public- and private-sector, including businesses, NGOs, and associations as well as aligning to existing government policies, plans, and programs, was critical to mobilize broader support and make progress quickly.

**Capacity building activities are essential to establish a sustainable network of technical resources and lead ongoing efforts.** Capacity building efforts are a platform for partners and stakeholders to engage with each other and identify issues, needs, and gaps as well as where technical resources lie and how they can be leveraged to advance shared objectives. For example, a software company representative and fisheries manager may engage during a training, and in doing so identify a gap in the manager's data collection and analysis system that the software company can fill.

**Capacity building efforts should be phased, targeted, and tailored to meet stakeholders needs.** Capacity building efforts should be planned and designed based on a model of behavior change that recognizes that stakeholders may enter and move through multiple stages of change. This is particularly true when introducing and supporting the adoption of new technologies. Capacity building should also be informed by gap analyses and needs assessments. In this regard, capacity building activities should be conducted to meet stakeholders where they are in terms of readiness to change and existing knowledge and skills in order to get them to where they need to be to make use of project interventions. They should start small, building foundational knowledge and solidifying a case for change and over time, grow more technical and actionable. Throughout this phased approach, it's important to constantly assess if beneficiaries are ready to take advantage of the proposed benefits of an intervention and what capacity building activities can support them if not. For example, for small-scale fishers to value and make use of business management and market-based benefits of eCDT technology, they first need to have a foundational understanding of financial management, which can be cultivated through financial literacy and business management trainings. In sum, capacity building should be conducted to meet each stakeholder where they are in order to get them to where they need to be to make use of the project interventions.

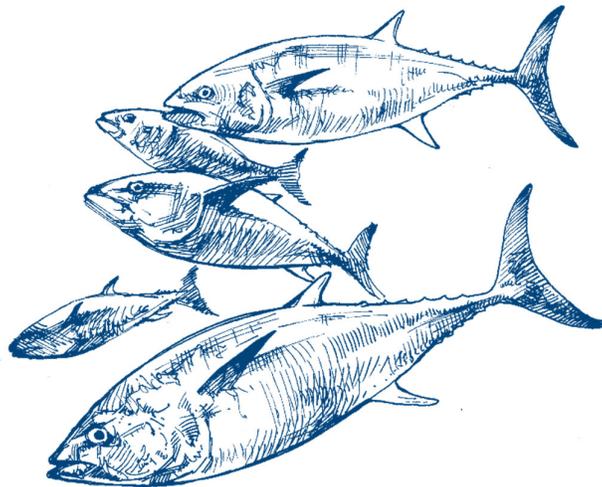
**National and site-level TWGs need to be established early and meet regularly.** USAID Oceans' national and site-level TWGs were essential to address issues that emerged from eCDT system design and testing and to support sustainable fisheries management systems, gender equity, and human welfare. The regular exchange of information between these TWGs ensured that issues were clearly understood and addressed. USAID Oceans' staff facilitated these exchanges using both formal and informal communication, including regular TWG meetings and SMS communication, which became essential to identify and address issues as they emerged at all stages of the project.

## Moving Forward

**Support the development of safeguards to protect against aspects and challenges posed by the larger political landscape that can significantly impact the course of work.** Where possible safeguards such as policies, administrative orders, office orders, memorandums, and ordinances, can protect against political challenges that are beyond the control of the project (e.g., changes in leadership, and political priorities.) In addition, programs should be ready and able to adapt to these external factors.

**Leverage national and site-level TWGs to address ongoing needs and identify new ways eCDT systems can inform management practices.** TWGs should maintain regular meetings to continue current initiatives and to evaluate and adapt to evolving fisheries management needs and new eCDT tools and capabilities as they become available.

**Sustain, supplement, and scale-up capacity building efforts.** Regional actors and ongoing projects should provide regular training to continue to build stakeholders skill sets and supporting national government program priorities in advancing fisheries management using EAFM and eCDT. This will increase interest and buy-in and will ensure a strong and capable stakeholder network to support activity implementation. Ongoing trainings should be based on gap analyses, stakeholder consultations, and emerging technologies and strategies being piloted or scaled.



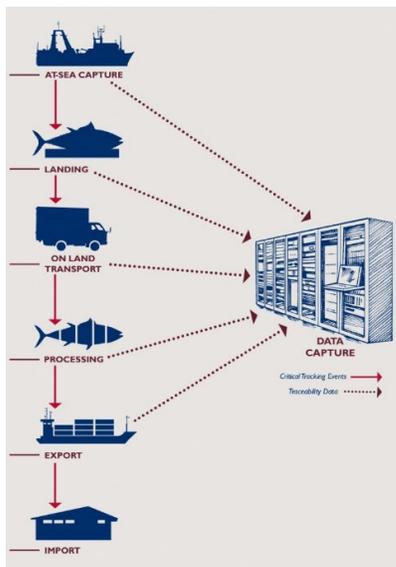


## DESIGNING AND IMPLEMENTING eCDT SYSTEMS

### The Challenge

Challenges for developing and sustaining eCDT systems across the Asia-Pacific vary by country but commonly include a lack of supporting fisheries policies and regulations; inefficient or outdated documentation protocols; unsynchronized documentation processes throughout the supply chain; a lack of harmonized efforts across national or regional fisheries agencies; and inadequate infrastructure for electronic data capture and analysis. There is not a one-size-fits-all model that is appropriate for every country in applying eCDT or EAFM. When USAID Oceans started in 2015, CDT systems in the project’s learning sites were largely paper-based, which made compiling, sharing, and analyzing data extremely challenging. Limited coordination between the public and private sector to share data and use complimentary data collection strategies made it nearly impossible to get a complete picture of activities and production across the seafood supply chain.

A robust eCDT system also allows countries to engage with international markets by complying with import requirements, such as the United States Seafood Import Monitoring Program (SIMP). The project set out to develop eCDT systems that document key information about the harvest, processing, and transportation of a seafood product to enable traceability of that product back through each step of its journey. With eCDT systems, these data can be quickly and easily captured, shared, and managed.



*Critical tracking events in the seafood supply chain*

### What did we do?

**Used a “bottom-up” approach to create and implement tailored eCDT solutions.** USAID Oceans supported the development and implementation of seven eCDT technologies in the project’s learning and expansion sites, acknowledging each site’s individual priorities, requirements, and capabilities. These solutions ranged from data visualization tools customized to a specific country fisheries management department to on-board tools to capture essential data at the point of catch. The project used a “bottom-up” approach by customizing technology solutions to fishery and national eCDT capabilities and stakeholders needs while also supporting existing data standards and best practices for interoperability. These systems were tested in two project learning sites, supported national traceability systems in both Indonesia and the Philippines, and informed support to develop and implement eCDT practices in expansion countries, particularly in Vietnam.

**Strengthened legal bases and government investment in eCDT.** The project worked closely with national and local governments to highlight the legal and market benefits of a strong eCDT system. Underscoring benefits such as increased accuracy and product value, access to international markets, and data-driven fisheries management, resulted in increased government investment in eCDT systems and supported policies to guide further adoption.

**Catalyzed development of a new marketplace of technology providers.** USAID Oceans partnered with a suite of private-sector technology partners to research eCDT needs and develop custom solutions to fill gaps and meet both end-user needs and the data collection needs of public- and private- sector actors (e.g., processing companies and government partners). These connections with technology providers and other local partners built the foundation for ongoing collaboration for continued eCDT system improvement and expansion.

#### eCDT Technologies Supported by USAID Oceans

##### Indonesia

- **eLogbook** and **STELINA**: government-hosted National Fish Traceability and Stock System designed by the Ministry of Marine Affairs and Fisheries (MMAF)
- **Pointrek**: a satellite-based eCDT and vessel monitoring system with 2-way communication, suitable for use aboard medium or large commercial fishing vessels
- **Trafiz**: a mobile application for small-scale buyers, brokers, and middlepersons to record seafood traceability data at point of landing and point of sale
- **TraceTales**: production inventory and product traceability system for use by seafood processors

##### Philippines

- **Bureau of Fisheries and Aquatic Resources (BFAR) National eCDT System**: Philippines government-hosted National eCDT System designed and administered by BFAR
- **FAME**: a private sector eCDT system with hardware and software components suitable for use at sea by municipal fishers, including both small-scale commercial and subsistence fishers

##### Regional

- **Electronic ASEAN Catch Documentation Scheme (eACDS)**: SEAFDEC's electronic software application deployed regionally to support ASEAN countries with implementing ACDS

## What did we learn?

**A “one-size-fits-all” approach to eCDT system design isn’t always appropriate.** Given the diverse points of entry to the supply chain, the wide range of capabilities of the industry, differences in technological expertise and system capacity, and unique data requirements, eCDT systems often need to be tailored. Regional eCDT systems like SEAFDEC’s [electronic ASEAN Catch Documentation Scheme](#) (eACDS) present an important foundational structure for developing country-specific systems that can be adapted to national and local contexts. In this regard, regional coordination is essential to national eCDT system design and implementation to identify eCDT system needs and capacities that are regionally relevant, while locally customized.

**Initial investment in research and development reduces risk and generates motivation needed for innovation.** By investing in research and development with technology partners, the project reduced the risk of losses to the private sector and increased the sector’s incentive to come up with innovative solutions. The project’s investment in developing partnerships in research and development for new technology accelerated the creation of tools, the ability to modify and adapt them, and their roll-out and uptake.

**Iterative research and analysis are needed to inform eCDT system design.** Prior to developing eCDT tools or systems, initial research was crucial to identify the minimum data requirements for an eCDT system to serve multiple needs (export, seafood safety, fisheries management, human welfare, and gender) without overburdening government and stakeholder capacity. Research and analysis should be ongoing and should feed back into modifications to eCDT solutions. This iterative process should involve stakeholders at all levels—from small-scale fishers to national and regional stakeholders—to ensure it considers individual user needs, provincial licensing

and management needs, and the requirements of international markets. Projects should account for the fact that initial research and ongoing data collection and modifications to eCDT solutions, while necessary, are time intensive and require frequent interaction and capacity building with stakeholders at national and local levels to identify and resolve issues related to technology, data capture, accessibility, and use.

**Interoperability is ideal during pilots but not necessary to get eCDT systems off the ground.** Most of USAID Oceans-supported eCDT solutions were piloted within independent nodes of the supply chain. While these solutions will ultimately need to be interoperable to enable traceability throughout the full supply chain, during the pilot phase, there is inherent value to testing, building capacity, and improving individual tools at each node of the supply chain. This approach allows tailored capacity building and troubleshooting based on the technology and the intended user, while still providing evidence needed to secure broader buy-in for adoption. Additionally, interoperability, particularly of new and unfamiliar systems, is challenged by valid data privacy, security, access, and management concerns of partners. Until there is clarification of how issues will be addressed and buy-in from all parties, which can be aided by pilot testing systems that are not yet interoperable, it is difficult to move forward. Ultimately, there will be a need for these solutions to be interoperable and to align private and government systems, but it is not necessary to determine eCDT system feasibility and get these systems off the ground.

**While economic benefits of eCDT were important for fishing companies, other benefits emerged as equally important to stakeholders along the supply chain.** To garner buy-in from stakeholders at all levels, it is imperative to demonstrate the benefits of eCDT, but these benefits vary among stakeholders, from increased operational efficiency to maritime security and safety-at-sea. Companies that worked at all nodes of the seafood supply chain—fishing, processing, trading, and export—experienced benefits from advanced knowledge of their expected catch to inform staffing and processing. The cost savings to business operations were an essential benefit of eCDT systems, but for small-scale fisheries, other benefits of the systems—both actual and potential—emerged as being equally if not more important than the market benefits. For example, small-scale fishers identified two-way communication and safety-at-sea features as the main benefits to them and their families.



## Moving Forward

**Explore sustainable financing mechanisms.** Many First Movers, particularly small-scale fishers, reported that the cost of eCDT systems and tools was a potential barrier to their continued use and scale-up beyond the USAID Oceans program. One commercial fishing company using FAME technology has developed an incentive system where the company provides fishers with a small stipend for any tuna landed with a FAME NFC tag. Governments and fishing companies that benefit from eCDT systems should explore similar sustainable financing mechanisms to encourage eCDT use.

**Leverage small-scale pilots, First Movers, and technical working groups to demonstrate eCDT technologies and communicate benefits to other stakeholders.**

Small-scale activities provided tangible benefits that can be socialized beyond learning sites. Similarly, eCDT system users or “First Movers” who piloted these tools and have experienced the benefits they provide are important advocates for generating additional buy in among peers as well as advocating for resource inputs and financial investment from larger industry actors. They should be convened regularly, along with technical experts, to engage with non-users as a way to share their experience and generate buy-in for adoption and scale-up.

**Develop integration and interoperability standards, that address data security needs.** As new eCDT systems, technologies, and needs continue to emerge, it would help to have a national “Technology Evaluation and Integration Protocol” supported by a multi-sector eCDT technical advisory group. The protocol would serve as a living document that outlines criteria for the review, evaluation, and integration of emerging technologies. To support the protocol, the technical advisory group would review the status of eCDT system implementation, identify and address issues as they arise, and stay current on eCDT technologies. An important aspect of both the Protocol and the Advisory Group would be consideration of and standards for data privacy, security, access, and management. This advisory group would consist of public and private sector partners that meet regularly, and in addition to discussion new technologies and integration opportunity, the group would be able to leverage USAID Oceans’ public-private partnerships to address IUU fishing and improve fisheries management.



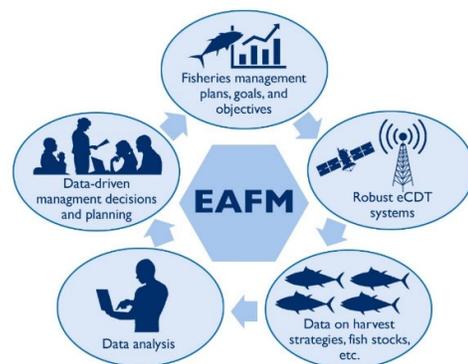


## TRANSITIONING TO DATA-DRIVEN FISHERIES MANAGEMENT

### The Challenge

Effective management of complex, multi-species, multi-gear fisheries is exceedingly challenging when a management body is relying on paper-based CDT systems. Paper-based systems present challenges related to data accuracy, consistent and complete collection of KDEs throughout the supply chain, data aggregation and analysis, and data visualization. eCDT systems can alleviate many of these challenges by allowing for more complete, accurate, and timely data collection and analysis that can feed into SFMPs and management activities.

EAFM provides a broad framework for management of marine resources. This approach focuses on improved ecological well-being (e.g. habitat protection and restoration, pollution reduction, sustainable harvesting) and human well-being (e.g. food security, wealth distribution, gender equality). eCDT is an EAFM intervention that needs to be based on an fisheries management plan that guides collection and analysis of desired data to support an EAFM, and fisheries management objectives. Conversely, relevant elements of the eCDT systems need to be effectively integrated in the relevant EAFM/SFMP plans (Figure 4).



**Figure 4. The intersection of EAFM and eCDT systems and technologies**

### What did we do?

**Supported the development of “nested” SFMP from sub-regional to local levels.** USAID Oceans worked with learning site partners in Indonesia and the Philippines to develop fisheries management plans that guide safe, legal, and equitable, and sustainable practices. In addition to site-level plans, the project supported the development of the first [sub-regional EAFM plan for the Sulu-Sulawesi Seascapes](#) and developed a framework for additional sub-regional EAFM plans for Gulf of Thailand and Andaman Sea. eCDT systems were linked to and supported by these SFMPs. While the eCDT systems help curb IUU fishing, these plans guide management practices for IUU fishing as well as sustainable harvest, food safety, and other fisheries management goals.

**Awarded “EAFM grants” for using eCDT data for real-time fisheries management decision making.** In May 2019, USAID Oceans awarded two EAFM grants—to Masyarakat Dan Perikanan Indonesia (MDPI) to work at the Bitung, Indonesia, and to Mindanao State University Naawan Foundation to work in General Santos City, Philippines—to develop digital solutions for using eCDT data to improve fisheries management by collecting eCDT data, conducting real-time analysis, and using analytical results to inform local and national fisheries management decision-making. The grantees and USAID Oceans worked closely with local fisheries management

organizations and other stakeholder in Indonesia and the Philippines to tailor the digital solutions to stakeholders' data and analysis needs, whether the user was the national government, a seafood processing and export company, or a small-scale fisher. This activity demonstrated that access to real-time eCDT data can provide fishery managers with new and relevant information to enhance their decision making, including in support of marine conservation and fisheries sustainability.

**Established Fisheries Monitoring Centers to support eCDT data corroboration and analysis.** In both learning sites, USAID Oceans procured hardware and software and provided technical assistance to establish Fisheries Monitoring, or “FishMon,” Centers. These centers are located in the port or fishery management offices to help compile and manage eCDT data for both large and small fishing operations. FishMon Centers collect data from various eCDT sources, validate and store them, and make the information available for operational and administrative control and analysis. The centers are hubs to manage the process of port-in/port-out vessel activity and at sea catch reporting. FishMon Centers can be used to manage administrative activities when processing catch documentation; analyze data to inform policies and regulations; issue alerts to notify managers when a vessels is nearing a protected area or other prohibited zone; and improve safety-at-sea through real-time vessel tracking and emergency alerts.

## What did we learn?

**Data access and integration is limited by privacy and security concerns.** Much eCDT data that can be particularly useful for fisheries management, such as the positions of fishing vessels and certain catch information, can be valuable and sensitive information. Data access and privacy challenges limit data sharing, accessibility, and system integration possibilities. Thus, monitoring agencies must make efforts to ensure the physical and operational security of shipboard equipment, communications, and FishMon Centers. Security is essential to ensure that the vessel monitoring system and CDT information is authentic, of high integrity, and private. However, owners of these data, which are often government fisheries management bodies, should be willing to share non-sensitive data with outside stakeholders—possibly after it has been de-identified or aggregated—whenever possible.

**eCDT can provide data to support EAFM and address IUU fishing.** eCDT systems make real-time fisheries data (e.g., fishing area boundaries, where fishing activities are occurring, and fish catch and fishing effort data) available and accessible to inform decision-makers on fisheries management, EAFM, and IUU which include the following real time-data. Thus, eCDT data can be a valuable tool for management efforts such as remote monitoring of compliance to fishing regulations, minimizing seafood fraud and mislabeling, conducting stock assessments, assessing fishing area parameters, and setting harvest control regulation.

It is best practice to build off existing management systems and supplement them with new management plans. Fisheries management bodies have existing infrastructure, policies, practices, and personnel in place. Rather than trying to restructure the existing organizations, it is better to work within the existing system and supplement it with new policies and plans that support eCDT development and EAFM. Not only will this reduce the time needed for uptake, it is likely to increase stakeholder buy-in, particularly from national fisheries organizations.

Engaging regional EAFM and eCDT champions and management constituencies and national- and site-level competent authorities facilitates efficient management changes. At the regional level, working with partners that were already interested working in and interested in sustainable management of the Sulu-Sulawesi Sea (e.g., CTI, EAFM Working Groups, Conservation

International) was essential for generating support for developing and implementing SFMPs and allowed the project to build from the momentum that was already in place from these partners' ongoing work. At the site level, working with competent authorities that already have a relatively high understanding and capacity to develop and implement management plans enabled rapid progress at learning sites. Linking EAFM planning to existing laws and regulations as well as existing EAFM and CDT initiatives provided a starting point to quicken progress in this area.

EAFM planning and implementation have been done mostly by fisheries scientists and managers, although the EAFM framework covers the ecological and socio-economic-political aspects. Because of this, EAFM plans were more heavily focused on the ecological, and less emphasis on the other aspects, particularly on the human well-being which includes gender equality. USAID Oceans highlighted the need to balance the various components, such as shown in the handbook, *Assessing Fisheries in a New Era: Extended Guidance for RAFMS*. USAID Oceans contribution to the process included the tools and methodologies for gender integration and eCDT in RAFMS.

## Moving Forward

**Demonstrate how eCDT data can be used for fisheries management.** While conceptually, eCDT can be a valuable tool for fisheries management, to incentivize adoption of these systems and data-driven management practices, additional evidence is needed to practically demonstrate what eCDT data feed into stock assessments and ultimately in management practices and how, in turn, data-driven management improves the overall health, safety, and security of a country's fisheries. Additional pilot projects could demonstrate how eCDT system data can be used to develop policies such as closed seasons, harvest control rules, and other strategies that support EAFM. The fishery sector should also take advantage of advancements in data analytics, including new and emerging tools for transactional data analysis, big data visualization, data mining, deep learning, object and pattern recognition, artificial intelligence, I and machine learning.

**Build capacity of fisheries scientists and managers to use eCDT data to guide decision making.** Even though fisheries managers have a basic technical understanding of using CDT data for decision making, fisheries scientists and managers need the capacity and must work together to ensure data collected are useful in managing fisheries. Hands-on training and capacity building can ensure managers have the skills and knowledge to use data analysis methodology, tools, and software (e.g., IDS applications, analytic reports, dashboards, alerts, visualizations) to analyze real-time eCDT data on volume, species distribution, and fishing location, vessel tracking and make data-drive decisions. The use of [Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems](#) is encouraged.

**Incorporate data on human welfare and gender into eCDT systems to inform management decisions in these areas.** Many eCDT systems do not disaggregate data by gender and do not capture important data on human welfare issues such as safety at sea, human security, and labor practices. If such data were incorporated into existing eCDT systems, they could be used to design and implement gender-sensitive and human welfare-focused interventions and policies, such as local government Gender and Development Codes.



## LEVERAGING PRIVATE-SECTOR EXPERTISE

### The Challenge

Southeast Asia's complex, transboundary fisheries supply chains require government and private sector participation to leverage the expertise, resources, and interests of various stakeholders to achieve mutually beneficial objectives, increase resource mobilization, scale-up best practices, and establish trust, support, and buy-in amongst stakeholders. When USAID Oceans began, the project's regional partners were also most comfortable and familiar with working with the public sector and often lacked the capacity, resources, and relationships for engaging the private sector or other sectors. Additionally, most government CDT and management efforts focused on commercial operations and did not incorporate small-scale fishing practices, which often make up the majority of fishing efforts in a country. The private sector is a valuable resource to develop eCDT tools for small-scale fishers that can be integrated into national eCDT systems.

To improve transparency in the seafood supply chain and to help ensure successful eCDT system implementation, USAID Oceans fostered partnerships between national and local governments, intergovernmental organizations, fisheries associations, seafood and technology companies, fisher groups, and NGOs. In total, the project leveraged over \$4 million from public- and private-sector partners in support of project objectives.

### What did we do?

**Established venues for public-private engagement and exchange.** By bringing together public and private sector stakeholders through TWGs, coordination meetings, and capacity building events, USAID Oceans helped initiate relationships and conversations among these various stakeholders that did not exist previously. Through these engagements, these public and private sector partners worked together on traceability initiatives to develop and link eCDT systems and tools that meet the needs of various actors at various nodes in the supply chain. The public-private collaborations led to better identification of KDEs and critical tracking events to consider in the development of eCDT systems that can address market and consumer demands, meet government regulatory requirements given complexities throughout the supply chain. These platforms for engagement resulted in partnerships and commitments that support ongoing collaboration to establish, pilot, enhance, and link traceability technologies and systems.

**Support common, international traceability standards and goals.** USAID Oceans engaged with international initiatives, such as the Global Dialogue on Seafood Traceability,<sup>1</sup> to support the adoption of international traceability standards for project-supported technologies and with public-

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<sup>1</sup> The Global Dialogue on Seafood Traceability is an international, business-to-business platform, to support development and adoption of a unified framework for interoperable seafood traceability practice as well as standards supporting technology innovations and expanding the marketplace of available eCDT solutions.

and private-sector partners. USAID Oceans partnered with SecondMuse<sup>2</sup> to provide input on gender equity initiatives under the Seafood Innovation Project, which aims to create an entrepreneurial ecosystem and accelerate innovative solutions for the fisheries and aquaculture sector in Indonesia. These partnerships, and other similar partnerships, expanded the scope of the project's work to national, regional and global initiatives.

**Engaged private-sector technology companies to develop eCDT tools for small-scale fishers.** Partnering with technology companies allowed USAID Oceans to support development of new technologies to bring small-scale fisheries into eCDT systems. Technology designed for small-scale fisheries must address challenges such as the environment in which it is used, varying user capacity, and cost. These private-sector partnerships also increased the number of eCDT technology pilots, increased interest and the number of actors from the technology field in fisheries and expanded the marketplace of available eCDT solutions for public and private sectors. With involvement from the technology industry, eCDT discussions became more complex, addressing technologies like artificial intelligence, drones, and blockchain for data security.

## What did we learn?

**Public-private partnerships build trust between government agencies and the fishing industry to work toward a sustainable industry and sustainable fisheries management.**

Partnerships between the government and fishing companies provided the foundation for coordination needed to design and test eCDT systems. Agreements on the roles and responsibilities between government and private sector entities should be clearly articulated, particularly regarding data confidentiality, access, and integration between private and government systems. By working together to develop and pilot eCDT technologies, the government and private sector gained a greater appreciation of the challenges and opportunities for supporting a sustainable industry. In addition to partnerships supporting eCDT and EAFM activities, partnerships with key public and private human welfare partners were equally important.

**Fishing associations are instrumental to support research and analysis, identify First Movers, facilitate partnerships, and support implementation.**

Fishing associations played a vital role in the government-private sector partnership. These associations have an in-depth understanding of their members' needs and can assist in convening members when key decisions need to be made. They were essential to identifying issues and capacity of their members and engaging them to pilot eCDT systems and discuss project-related issues. These associations were able to identify First Movers and assisted USAID Oceans conduct a robust due diligence process that is essential for identifying issues before engaging with them.

**Different actors and motivations in different countries require differing approaches to meet environmental needs.**

In the Philippines, the government was a strong leader of eCDT adoption and had an existing strong relationship with industry leaders, which helped get industry players on board. In contrast, in Indonesia, adoption was driven by private sector industry and technology providers that were already working on eCDT initiatives. It wasn't until later that the government joined these efforts by developing national tools and systems. In Indonesia, it's likely that the private sector was quicker to adopt eCDT because there were more technology providers and local organizations (e.g., MDPI) already aware of the business benefits of eCDT and working in the field. In the Philippines, the government had a more established eCDT system and greater interest in the benefits of this system at the outset of the project. In all contexts, it is essential to

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<sup>2</sup> SecondMuse works to build inclusive economies that benefit people and protect the environment.

tailor partnership activities to contextual needs, existing eCDT and management systems, and partner capacity and to continuously check in with partners during eCDT and fisheries management plan development and implementation to ensure the partnership are mutually beneficial.

## Moving Forward

**Leverage government momentum driven by import markets.** As eCDT systems become a global standard for meeting international import requirements, national governments will have an increased interest in developing robust eCDT systems and sustainable, data-driven management practices in order to access these markets. Governments can be leaders, champions, and advocates for eCDT and EAFM adoption and compliance.

**Catalyze existing opportunities to convene public and private sector stakeholders.** NGOs and fisheries organizations are working to bring together technology firms, fishing associations, development organizations, and governments with diverse motivations investing eCDT to determine where efforts and mutual interest overlap. Identifying these organizations and leveraging them for ongoing collaboration between the public and private sector will help create more robust, integrated eCDT systems and data analysis tools, management policies that take advantage of new technology developments, and more efficient and effective solutions.

**Use research to demonstrate benefits of eCDT to incentivize private sector engagement.** To better articulate the case for private sector investment in eCDT, additional research should be conducted to develop a strong case for the business benefits of these systems. Currently, there is anecdotal evidence and case studies supporting these business benefits, but proven return-on-investment studies will encourage businesses to invest capital to engage with what are often seen as “voluntary” eCDT systems.

**Partnerships, particularly with NGOs, should include a focus on human welfare.** Partnerships should not only focus on those that can provide eCDT technologies and ecological aspects of fisheries, but they should also bring in the expertise and existing technologies relevant to human welfare. eCDT developers and programmers that USAID Oceans worked with lacked knowledge and expertise on the social/human welfare aspects of fisheries, therefore it is recommended that those experts should work closely with human welfare and gender experts to integrate this area into eCDT and EAFM activities.





## ADDRESSING HUMAN WELFARE AND GENDER INEQUITIES

### The Challenge

The fisheries sector in Southeast Asia comprises women and men who have various roles at each node of the fisheries value chain. The industry is also made up of institutions and individuals from local, provincial, and national levels from government, private, and civil society sectors involved in decision-making and policy and regulatory aspects. These influential actors often strive to increase benefits and returns from the efforts related to fisheries resources, which can result in optimizing production without concern for the ecological and social aspects of fisheries such as social dynamics, power relations, and equity issues related to women and men in the fisheries and seafood industry.

Approximately 50% of the fisheries supply chain in Southeast Asia is comprised of women—from fishers to local markets to processing and export companies to eCDT development. However, the fishing industry is still commonly thought of as male-dominated and women’s roles and contributions often go unseen and their needs and issues ignored. When men’s and women’s roles are not equally recognized, there are a lack of policies, capacity building opportunities, and cultural and social measures in support of women’s work in the industry, further limiting their visibility and opportunities for advancement. This lack of acknowledgment and recognition oftentimes leads to unfair pay and treatment, sexual harassment and other forms of gender-based violence, and lack of safety measures, which are a violation of basic human rights. It is important to consider the needs and interests of both men and women in the process of managing and improving fisheries, as well as their capacities, skills, and interests to ensure inclusivity and participation in sustainable fisheries management.

USAID Oceans worked to highlight the human welfare aspects across Southeast Asia’s fisheries, with a strong focus on gender equity and women’s empowerment. Through in-field assessments, partnerships with labor and gender organizations, capacity building, advocating for policy change, developing knowledge products, and giving a voice to both women and men in the industry, USAID Oceans’ increased awareness of the need for fair labor conditions and worker’s rights and implemented interventions for gender equity and women’s empowerment.

### What did we do?

**Increased global, regional, and local dialogues and awareness and supported women’s engagement at all levels.** Through communications materials, capacity building activities, recognition of women leaders and gender champions, and sponsoring women’s participation in key events, USAID Oceans increased visibility of women’s role in the fisheries industry and created awareness that gender considerations address the needs of both women and men, not exclusively

women. The project developed a suite of communications materials, including profiles of women leaders and gender champions in the field, gender training videos, web-based stories and blogs, animations, and comic strips, to highlight women's and men's roles in fisheries. Additionally, the project sponsored women software developers to participate in eCDT technology development events and helped establish formal and informal networks for gender and women at all nodes of the fisheries supply chain.

**Conducted gender-specific research to highlight needs and inform gender interventions.** USAID Oceans conducted and contributed to gender analyses in learning sites to ensure that they were detailed, scientific, and captured essential data needed to develop effective gender and human welfare interventions. These activities helped to underscore the importance of gender integration and led to other development organizations, such as the FAO, conducting similar analyses to inform their work. This research also led to tailored gender interventions based on the needs and gaps identified, including numerous capacity building activities, financial management training, production of knowledge products, development of legal instruments, and development of formal and informal networks of women in the industry.

**Provided regional and site-specific guidance on gender and human welfare considerations for fisheries.** Through a suite of products developed in collaboration with project partners, USAID Oceans produced technical guidance to facilitate the ongoing implementation of gender and human welfare research and interventions in fisheries. These products include a [training handbook on gender research in fisheries and aquaculture](#), a chapter on gender in “Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems,” a draft regional document on gender integration in the fisheries workplace, and [labor](#) and [gender](#) analyses and summaries of conditions in the project's learning sites. These technical documents were supported by workshops and trainings to socialize them with stakeholders and develop capacity to implement the practices outlined.

#### Human Welfare and Gender Legal Tools Supported by USAID Oceans

- Resolution Supporting the Promotion of Gender Equality and Women's Empowerment in the Tuna Fisheries Sector (Philippines)
- Recommendations to Strengthen Gender Responsiveness of MMAF Gender Mainstreaming Roadmap
- Recommendations to revise the Gender and Development Code to include Sustainable Fisheries Management and eCDT (Philippines)
- Recommendations to revise the Fisheries Code to include gender considerations (Philippines)
- Recommendation to improve women's access to fisher registration (Indonesia)

**Supported the development of gender-sensitive policies and regulations.** In Southeast Asia a legal basis is often needed to guide investment and interventions, including those related to gender and human welfare. USAID Oceans worked with the public and private sector to develop gender strategies and policy recommendations and to advocate for policy change that is more inclusive of both women and men.

## What did we learn?

**Motivating and capacitating local partners is an important aspect of human welfare and gender work.** In a region like Southeast Asia, where awareness of the importance of gender and human welfare considerations in fisheries is limited among fisheries and technology stakeholders, building awareness and capacity in this area was essential in catalyzing behavior change that could lead to interventions and policy change. Once stakeholders understand the importance of gender considerations in their work, they often have a sense of urgency to start taking action. They can become resources to advocate for future change, spread awareness, engage new actors, and lead interventions. At the site

level, stakeholders were engaged during the EAFM planning process given that human welfare and gender equity are among key components of the EAFM framework.

**Building capacity among women is vital despite limitations to women’s participation.**

While USAID Oceans’ interventions, trainings, and events were open to women, their participation, particularly in trainings and technology development, was often limited due to cultural norms and competing household responsibilities. For example, in some instances, women were not allowed to attend a training unless accompanied by a trusted male leader or they were unavailable during the working hours when they trainings were scheduled. These limitations must be considered when planning activities. Because USAID Oceans identified many social, familial, and economic limitations women face during research and planning stages, the project was able to conduct capacity building activities for partners and stakeholders to help them incorporate gender considerations in their work. These types of focused gender activities are necessary to identify ways to increase women’s participation in and benefit from project activities. When women were able to participate in capacity building activities, such as financial management training, it was easier for them to see the business benefits of eCDT technology, making them important advocates for its use.

**Addressing cross-cutting issues like human welfare and gender is challenged by mandates and responsibilities that are often divided amongst different agencies.**

The challenges of addressing issues ranging from gender inequity, labor rights, and crew safety, among other things, is affected by the governmental division of labor and tasks and departments that do not always have the means or jurisdiction to cooperate. For example, human welfare and safety in the workplace are often under the jurisdiction of labor and social welfare departments rather than fisheries departments; labor departments are limited in their ability to address issues of illegal fishing and gear, which are intricately linked to issues such as illegal employment. The division of jurisdictions can hamper effective enforcement, and there is a need to create space for cross-government and inter-government cooperation to enable issues to be addressed. Within different departments, there is a need to have trained labor inspectors and gender specialists to be able to design interventions, analyze data, flag anomalies and human welfare violations, and guide an appropriate response.

**Multiple stakeholder partnerships are key to promoting and advocating for new paradigms in fisheries, such as human welfare, gender equity, and women’s empowerment.**

USAID Oceans’ gender activities and results could not have been achieved without targeting numerous stakeholders. In General Santos City, Philippines, the project’s gender grantee, The National Network on Women in Fisheries/WINFISH, worked with fisheries industry as well as regional and local government units of social welfare, labor and employment, police, agriculture, environment, and health. The grantee also engaged academe, civic organizations, and city governments to ensure that there was widespread awareness of gender equity and women’s empowerment needs in fisheries.

**Human Welfare and Gender Partnership Success Story**

In Indonesia, USAID Oceans found that women fishers in Bitung could not register as “fishers” in the national fisher registration and ID system. USAID Oceans and partners advocated and drafted policy recommendations for the government to expand women’s access to the fisher registration. These actions resulted in women feeling recognized for the work they have been doing for more than 20 years and given them access to important benefits.

## Moving Forward

**Explore opportunities to address human welfare and labor practices.** Most of USAID Oceans' human welfare work focused predominately on gender equity. While the program conducted preliminary research on and engaged in dialogues about broader human welfare and labor practices, it was not within the program's scope and resource capacity to address the full suite of human welfare issues. More work is needed to focus on the broader umbrella of human welfare in fisheries, inclusive of gender. This work should include research-backed behavior change interventions targeting anthropological aspects of harmful human welfare practices (e.g., labor abuses) paired with discussions, policies, and interventions to identify and implement ways to curb harmful practices.

**Link human welfare and eCDT databases.** In addition to incorporating human welfare and gender KDEs in eCDT systems and building the capacity of managers to use these data to improve practices, there are existing databases outside of the fisheries industry that already capture valuable human welfare data. Linking these data systems to eCDT systems and analysis tools would provide fisheries managers and government human welfare sectors with access to a broader range of information to inform action (including law enforcement) and would reduce the data collection burden within eCDT systems.

**Develop National Resolutions Committees to support policy change.** Given that human welfare and gender concerns are relatively new concepts in the fisheries industry in Southeast Asia, policy makers may have limited awareness in this area. While public-private partners may put forth policy recommendations, it can be challenging to get decision makers to understand the reason for the recommendations and commit to action. Gender Resolution Committees could help publicize specific regulations, educate the public and decision makers, and advance policy implementation to improve human welfare practices in fisheries.

**Increase focus on women's involvement in eCDT development, testing, and implementation.** Globally, women's role in technology is not as well-recognized as men's roles. Communicating the importance of involving both women and men in eCDT development, testing, and implementation in systems can be challenging in a historically male-dominated sector. Increasing women's visibility in eCDT—by sponsoring women's participation in eCDT events, such as hackathons; ensuring their presence at development, implementation, and feedback meetings; involving women who have fisheries management roles in discussions about SFMP development and using eCDT to inform decision making—can help change this. It not only exposes the industry to women as key actors in the field, it can enhance eCDT tools by broadening the expertise and innovative input in their development.

**Ensure there is a gender balance among partners,** particularly those piloting eCDT tools, to ensure feedback on the technology and subsequent modifications reflect the needs of women and men. It's important to also ensure that data collection and analysis include gender disaggregated data and that findings from gender analyses feed back into revising and improving program implementation.

# OPERATIONALIZING AND ADMINISTERING A REGIONAL PROGRAM

## Staffing and Administration

**Regional office operations and in-country support to learning site staff must be sufficient for staff to fully and autonomously manage program finance and administration.** The number and expertise of administration and finance staff between the project's three offices (Thailand, Indonesia, and the Philippines) proved to be inadequate to complete necessary administrative and financial functions while also supporting program implementation and activities. Contracted short-term technical assistance was needed to supplement full-time staff for sufficient program activities and administration management. In addition, learning site staff should have a complement of technological, public-private partnerships, and communications expertise to support the program.

**Long-term office registration and personnel administrative considerations should be prioritized at project initiation.** Obtaining extended stay permits and accompanying visas for non-local staff is time intensive and should be prioritized at the outset of the project. Programs should commit fully to the long-term registration of regional office personnel. In the case of USAID Oceans, not prioritizing these staffing needs from the outset required additional time to obtain necessary documentation from national governments. The additional time commitment may have been avoided if the matter was addressed at project start up.

## Communications

**Communications to support adoption of new technologies should be both strategic and informed by a behavior-change approach.** In all aspects of the project's work—eCDT, sustainable fisheries management, human welfare and gender equity, and public-private partnerships—changing attitudes and beliefs and getting buy-in was critical and a central part of the work. A specific social and behavior change communication approach and resources to target specific attitudes and behaviors could have expedited uptake of eCDT technologies, generated buy-in for using eCDT systems for fisheries management, enhanced understanding of the importance of human welfare and gender considerations in fisheries, and expanded partner outreach and buy-in.

**Communications materials should be diverse and supplemented with face-to-face communication and training.** Much of the project's communications work was focused written documentation such as reports and technical documents. While these documents are useful tools for continued implementation and scale-up, they must be supplemented by training and technical expertise. A project with diverse technical focus will face difficulties keeping its audience fully informed on all topics. Thus, communications approaches could focus on minimizing traditional written outputs and supplementing traditional media and documentation with other mechanisms such as regular meetings and workshops and outreach events that both build stakeholder capacity and spread awareness of project activities.

## Monitoring and Evaluation

**A situation analysis at project outset can support a strong project framework and short- and long-term project goals.** Conducting a situation analysis early in the project to identify issues and threats, their underlying causes, and opportunities, and developing a Theory of Constraints would help guide project implementation and monitoring and evaluation (M&E). The

situation analysis should be conducted in collaboration with partners to ensure a common understanding of goals and objectives, project framework, and key stakeholders.

**M&E plans can be effective management tools if applied properly.** Identifying indicators and targets early on in a project and tracking them regularly can help keep team members and partners focus on long-term goals and overarching objectives. When all stakeholders have a common understanding of expected outputs, they are more inclined to harmonize efforts to achieve them. However, targets and indicators must be revisited and revised as needed to reflect changes in project priorities and ensure they are accurate measures of intended project objectives. There may be a need to revise targets or introduce new targets, to ensure they provide a comprehensive measure of project work and guide project activities towards desired outcomes.

**M&E should be ongoing and feed back into project implementation.** In addition to data collection and analysis for reporting purposes, M&E efforts should regularly inform project implementation to support adaptive management. A mid-term internal project review is essential in taking stock of the trajectory of such a complex project and adjusting course as needed. If a project is underachieving in a certain area, research should be done to identify the cause and guide course correction. Similarly, if the project is consistently over-achieving on a certain indicator, it's likely that the indicator is not an appropriate measure of the project's success and may need to be replaced or revised.

## 4. FUTURE CONSIDERATIONS

### Opportunities to 'scale-up' impacts

**Expand the use of eCDT data to support sustainable fisheries management.** In addition to building upon the eCDT tools developed under EAFM grants described earlier, scientists from government and academe should review eCDT data generated as inputs into national fish stock assessments and area-based fisheries management. Specific emphasis should be placed on identifying how data from the eCDT system can support the development of policies such as closed seasons, harvest control rules, and other strategies that support an EAFMS, particularly of existing, designated fisheries management areas. Management decisions related to the human side of fisheries should also leverage eCDT data to inform actions to ensure legal, just, and equitable conditions, and gender sensitive and socially inclusive approaches. This requires eCDT systems to include human welfare data and/or be linked to existing human welfare databases.

**Advance implementation of national and sub-regional SFMPs.** While USAID Oceans and partners have developed groundbreaking national and sub-regional SFMPs, the project timeframe did not provide the opportunity to see their full implementation. Going forward, regional oversight bodies (e.g., SEAFDEC and CTI-CFF), national governments, and private-sector players (e.g., Conservation International) must collaborate to advance implementation of the plans and implement monitoring and evaluation measures to track their impact, respond to issues, and revise them based on the continuously-evolving international seafood supply chain. CTI-CFF is encouraged to establish a Sub-Regional Working Group within the current CTI-CFF Seascape Working Group to focus specifically on implementing Sulu-Sulawesi sub-regional EAFM plan.

**Assess and address systemic problems in the fishery supply chain that limit the benefits of adopting eCDT systems.** Small-scale fishers are interested in eCDT systems because they hope they can benefit by getting a better price for their catch, but systemic problems in the supply chain inhibit the realization of these benefits. Small-scale fishers are often beholden to middle

buyers that provide the capital for fisher to go to sea in return for being able to sell their catch. Before their catch goes to the legitimate exporter it may pass through a series of middle buyers who may not classify their fish properly and only estimate the weight and often don't communicate selling price to the fisher. Overall, there is a lack of transparency about weight, classification, and value along the supply chain. Mechanisms are needed at all levels—regional, national, and local—to help break the exploitation of small-scale fishers. For example, it would be helpful to implement a fishers' micro-loan program and to make information on daily market values available to fishers.

## Regional organization action to be taken

**Maintain a regional platform, such as a Regional eCDT Technical Advisory Group, for continued collaboration and standard setting.** Regional partner organizations SEAFDEC and CTI-CFF should continue to convene ASEAN and CTI member countries to advance regional seafood traceability, guided by the SEAFDEC ASEAN Catch Documentation Scheme and the CTI-CFF Regional Plan of Action. These partners, in collaboration with national governments and private sector stakeholders, should continue to ongoing collaboration and coordinate with the Global Dialogue on Seafood Traceability in its efforts to set regional standards to guide eCDT scale-up and use of eCDT systems for sustainable fisheries management and improved human welfare. Regular communication and coordination should include reviewing the status of eCDT system implementation, identifying and addressing issues as they arise, and staying current on eCDT technologies.

**Develop regional guidance for eCDT system integration that considers data security and privacy needs.** New technologies will continue to emerge that could serve as tools for government and private-sector fisheries managers. To facilitate their inclusion in eCDT systems throughout the region, it is recommended to develop a “Regional Technology Evaluation and Integration Protocol” to standardize eCDT systems and management practices and ensure they collect a minimum set of KDEs that provide access to international export markets. The protocol would be a living document that outlines criteria for the review, evaluation, and integration of emerging technologies, including system integration and data privacy needs. It would be revisited and revised during regular regional coordination meetings.

**Include small-scale fisheries in eCDT planning.** Small-scale fishers make the biggest part of the ASEAN fishing industry. While many small-scale fishers serve community and domestic markets, some serve larger markets, including export markets. For years, small scale fishers have been excluded in the CDT, but with the penetration of mobile technology in at all levels of the community, there are more opportunities to use technology to engage small-scale fishers in eCDT and EAFM. Considering that many small-scale fishers are near the poverty line, efforts to engage this sector of the community should highlight economic and livelihood benefits of eCDT such as higher income (e.g., through subsidy, incentive, and/or fair-trade schemes) and safety at sea.

## Government agency action to be taken

**Integrate eCDT system technologies and support data sharing for fisheries management.** Government-led eCDT systems are often only accessible to a limited number of government agencies and are not shared with the private-sector, even when much of the data were provided by fishing companies. To improve the market-value of eCDT systems, enhance private-sector interest in and compliance with these systems, and improve fisheries management practices, governments need to prioritize integrating data from private sector systems. This integration will also help avoid duplication of effort and provide more data accessibility to fisheries scientists.

**Develop national protocols and stakeholder engagement mechanisms for evaluating eCDT systems.** Similar to the regional guidance on eCDT evaluation and integration, at the national level, countries should develop supplementary guidance tailored to country context and data and management needs. As with the regional guidance, this protocol would include criteria for the review, evaluation, and integration of new technologies as they emerge within the broader framework of the regional guidance. These documents would be developed, owned, evaluated, and revised as needed by multi-sectoral national eCDT advisory groups chaired by the government with members from nongovernmental organizations, fishing associations, and private sector.

**Develop a national committee to support policy change and the adoption and implementation of legal instruments for gender equity and women's empowerment.** Given that human welfare and gender concerns are relatively new concepts in the fisheries industry in Southeast Asia, policy makers have limited knowledge of gender issues and inequities. While public-private partners may put forth policy recommendations, it can be challenging to get decision makers to understand the reason for the recommendation and commit to action. A national committee dedicated to advocating for gender resolutions could help publicize specific regulations, educate the public and decision makers, and advance policy implementation to improve human welfare practices in fisheries. At the same time, this committee should leverage existing entities to support common goals. For example, in the Philippines has Gender Focal Point Systems in government agencies, supported by the Philippine Commission on Women, to ensure that gender is integrated in project activities. The commission and these systems could help develop and support policy changes and ensure their implementation.

**Develop and implement five-year national roadmaps to continue implementing and strengthening eCDT systems nationwide.** USAID Oceans and partners established a solid foundation for eCDT system design, piloting, revision, and phased roll out beyond the project's learning sites. For each country adopting or enhancing their eCDT system, a five-year national roadmap, including an investment/incentive strategy, is needed to bring the eCDT system into full operation. The roadmap should detail priority actions to support technology integration, data sharing, and data use in fisheries management. National government agencies should detail the investment needed in completing the eCDT systems, facilitating integration of government and private sectors systems, purchasing equipment, and maintaining and upgrading systems. Most importantly, incentives are needed to support early adoption until eCDT systems are mainstreamed in the country. National government agencies should realign their current fisheries and subsidies by reallocating budgets from activities that support overfishing, such as providing fishing nets and boats, to explore incentives for eCDT adoption, especially for small-scale fishers.

**Include gender equity, women's empowerment, and human welfare in fisheries management planning and national roadmaps.** National roadmaps for implementing and strengthening eCDT systems should include guidance on practices and policies related to gender equity and human welfare in sustainable fisheries management. USAID Oceans developed and submitted various legal instruments for promoting gender equity and women's empowerment in both project learning sites to local, national, and regional authorities. To ensure these and future similar policies will be properly implemented, country roadmaps must identify actors responsible for implementation and enforcement of these policies. Additionally, each country should appoint an evaluation team to and to guide monitoring and evaluation following implementation, measure impact, and support adaptive management.

## Private sector action to be taken

**Adapt eCDT tools to support the unique needs of small-scale fishers.** Many small-scale fishers are limited in their ability to engage with existing eCDT systems due to their access to technology such as smartphones and tablets, technological literacy, language barriers, cost, and the family- or community-run nature of their work. Technology firms and fishing companies should work to include these fishers in eCDT systems and in the larger commercial seafood market by adapting eCDT tools to their needs. For example, existing on-board technologies for small-scale fishers could have an SMS feature to share location information and send emergency alerts directly to fishers' families, communities, and other nearby fishers. Private sector actors should consider financing mechanisms, such as incentives for fish tracked and tagged using eCDT tools, that reduce the financial burden for small-scale fishers as well as commercial fishers. Local governments should consider incentives for small-scale fishers to deploy technology and support sustainable fisheries. As eCDT technologies are scaled, expansion should be supported by baseline user research to ensure that the technologies are useable and useful in the given context for both commercial and small-scale fishers.

**Explore opportunities to address human welfare issues, gender inequities, and labor practices.** Most of USAID Oceans' human welfare work focused predominately on gender equity. While the project conducted preliminary research on and engaged in dialogues about broader human welfare and labor practices, it was not within the project's scope and resource capacity to address the full suite of human welfare issues. More work is needed to focus on the broader umbrella of human welfare in fisheries, inclusive of gender. This work should include research-backed behavior change interventions targeting anthropological aspects of harmful human welfare practices (e.g., labor abuses) paired with discussions, policies, and interventions to identify and implement ways to curb harmful practices. There are NGOs already working to improve labor practices and worker safety in numerous sectors, including to prevent human trafficking, improve working conditions at sea and on land, ensure fair wages and ethical recruitment and employment, and establish grievance mechanisms. These organizations' efforts can be strengthened by engaging with the fishing industry, potentially through TWGs, to conduct research on and develop policy recommendations and interventions to address the broad spectrum of human welfare needs in the industry.



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## ANNEX II: AVAILABLE RESOURCES

Explore USAID Oceans' training, technology, and research tools, which provide guidance for implementing fisheries development solutions that support sustainable fisheries, consider new technological advancements, and enhance the human aspects of fisheries. Key resources, available in multiple languages, are listed below. To view and download USAID Oceans full set of resources, visit <http://bit.ly/OceansResources>

### Project Overview Materials

**Project Overview Video** – Learn how USAID Oceans and its supported technology solutions are working to strengthen regional cooperation to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity in the Asia-Pacific region. This video provides an overview of what eCDT technology is and the benefits it can bring to a range of partners—from local fishers to international consumers. [bit.ly/Oceansoverview](http://bit.ly/Oceansoverview)

**Fisheries Catch Documentation and Traceability in Southeast Asia primers** – “CDT 101” provides a conceptual overview of USAID Oceans' approach to eCDT, exploring Southeast Asia's fisheries, technology, and partner landscape. “CDT 201” provides a deeper, more technical look at the project's technical approach and outlines specifications used for system design, testing, and implementation. [bit.ly/cdtprimers](http://bit.ly/cdtprimers)

**Data Requirements for Catch Documentation and Traceability in Southeast Asia** – This guide presents a framework for critical tracking events and KDEs recommended to be captured using eCDT systems, including those recommended for enhanced human welfare. It includes a glossary of terms, definitions, and intended uses of all relevant and required KDEs within a traceable, wild-caught seafood supply chain. [bit.ly/oceanskdeguid](http://bit.ly/oceanskdeguid)

**Technology Solutions for Electronic Catch Documentation and Traceability booklet** – This booklet provides an overview of USAID Oceans-developed and supported technology tools for electronic catch documentation and traceability. These tools establish connectivity in remote and at-sea areas, provide a mechanism for data collection and transmission through the entire supply chain, and provide value-added user benefits, such as communication, safety, and business tools. <http://bit.ly/eCDTbooklet>

**Technology Impacts: Business Benefits of Electronic Catch Documentation and Traceability Technologies** – This resource shares impact studies on how eCDT technologies can establish connectivity in remote and at-sea areas; provide mechanisms for data collection and transmission through the entire supply chain; and offer value-added user benefits, such as communication, safety, and business tools. <http://bit.ly/39qLhXk>

**Gender training videos** – Video I introduces viewers to the important role that women play in the seafood supply chain—from preparing boats for sea to managing seafood sales. Video II provides a more in-depth look at gender research, including the importance of conducting gender research to inform fisheries management and important tools for conducting this research. These videos are developed to be used in trainings for fisheries managers at all levels as well as project implementors working in fisheries. <http://bit.ly/2vD3UsE>

**Learning site posters** – Download USAID Oceans’ series of posters that communicate key behaviors and practices needed for sustainable fisheries. The four posters cover illegal, unreported, and unregulated (IUU) fishing; safe and fare workplaces; catch documentation and traceability; and catch handling. Available in multiple languages. <http://bit.ly/siteposters>

**Learning site lessons learned reports** – These reports document lessons learned, recommendations, and next steps from USAID Oceans’ experience developing and testing cutting-edge seafood traceability systems; implementing sustainable fisheries management plans; empowering women and promoting gender equity; and bringing together government and industry to ensure seafood traceability in the project’s two learning sites in General Santos, Philippines, and Bitung, Indonesia. <http://bit.ly/Oceanslessonslearned>

## **Research and Training Guides**

**Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems and Technical Annexes** provide new and extended guidance on appraising fisheries management systems that make use of new technology advancements and acknowledge the human and gender-related aspects of fisheries. Download the RAFMS guide here: <http://bit.ly/RAFMSguide>, and the technical annexes here: <http://bit.ly/RAFMSannex>

**Gender Research in Fisheries and Aquaculture: A Training Handbook** can be used to build team’s understanding of gender equity, its importance in development, and practical tools and research methodologies that can be used to obtain valuable information about the human dynamics of fisheries. <http://bit.ly/gender-research>

**Transformational Fisheries Development: Simplified Steps for Public Sector and Industry Engagement** provides step-by-step guidance for identifying, evaluating, and implementing partnerships between the public and private sector to greatly enhance eCDT and other fisheries development ventures. <http://bit.ly/PPP-guide>

**Technical Guidance on the Design and Implementation of Electronic Catch Documentation and Traceability Systems in Southeast Asia** is a practical guide for developing and implementing electronic catch documentation and traceability systems, principally for marine capture fisheries, that can be aligned to the different capacities, circumstances, and needs of ASEAN member states. <https://bit.ly/2UUlb96>

**Using Electronic Catch Documentation and Traceability (eCDT) to Sustain Fisheries and Conserve Marine Biodiversity** shares USAID Oceans experiences and lessons learned using eCDT to sustain fisheries and conserve marine biodiversity in Southeast Asian region, with a particularly focus on the use of eCDTS data to improve fisheries management and biodiversity conservation. <https://bit.ly/3aVz9hZ>

