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Stakeholder Validation Workshop *Proceedings*

MANADO, INDONESIA

The USAID Oceans and Fisheries Partnership (USAID Oceans)
June 2017

- Value Chain Analysis | Rapid Appraisal for Fisheries Management | Labor and Gender Assessments -

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ACRONYMS AND ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
ATH	Alliance of Tuna Hand-liners
CDT	Catch Documentation and Traceability
CDTS	Catch Documentation and Traceability System
CFP	Common Fishery Policy
CPUE	Catch per Unit Effort
CTI-CFF	Coral Triangle Initiative on Coral Reefs Fisheries and Food Security
EAFM	Ecosystem Approach to Fisheries Management
FAO	Food and Agriculture Organization of the United Nations
FAD	Fish Aggregating Device
FMA	Fisheries Management Area (WPP)
ILO	International Labour Organization
IRR	Implementing Rules and Regulations
IUU	Illegal, Unreported and Unregulated (fishing)
LGU	Local Government Unit
MMAF	Ministry of Marine Affairs and Fisheries
NGA	National Government Agency
NM	Nautical Miles
PNG	Papua New Guinea
PPP	Public-Private Partnership
RAFMS	Rapid Appraisal of Fisheries Management Systems
SEAFDEC	Southeast Asian Fisheries Development Center
SFMP	Sustainable Fisheries Management Plan
SEAFDEC	Southeast Asian Fisheries Development Center
UNSRAT	Sam Ratulangi University
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership Activity
VCA	Value Chain Analysis
WCPFC	Western and Central Pacific Fisheries Commission
WPP	Wilayah Pengelolaan Perikanan (FMA)

1. EXECUTIVE SUMMARY

The USAID Oceans and Fisheries Partnership (USAID Oceans) held the Integrated Stakeholder Consultation Workshop in Manado, Sulawesi Utara Province, Indonesia, June 19-21, 2017. The workshop presented the progress of the USAID Oceans' implementation in Indonesia and served as a venue to present and validate the results of the program's Rapid Appraisal for Fisheries Management Systems (RAFMS), Value Chain Analysis, and gender and labor assessments of fisheries and their value chains. Results were validated by stakeholder groups from the national and local fisheries and related government agencies, private sector, civil society organizations and individual men and women fishers. The workshop also served to initiate the crafting of the learning site Sustainable Fisheries Management Plan (SFMP) through the Ecosystem Approach to Fisheries Management (EAFM).

The three-day workshop was facilitated by Sam Ratulangi University (UNSRAT) and was attended by approximately 100 participants including fisheries business members, fishermen, local and central government, academics, training centers, association of fishermen, small scale fish processors, and non-government organizations. The workshop resulted in the production of validated and updated results of the four USAID Oceans studies; generated a list of issues and problems, opportunities, and recommended interventions for the Bitung learning site; and initiated the development of a Sustainable Fisheries Management Plan (SFMP) through an Ecosystems Approach to Fisheries Management (EAFM).

2. INTRODUCTION

Southeast Asia houses some of the world's most productive and diverse marine ecosystems. These ecosystems provide food and income to over 200 million people in the region; however, unsustainable fishing practices threaten biodiversity, food security and livelihoods.

The USAID Oceans and Fisheries Partnership (USAID Oceans) is a partnership between the United States Agency for International Development, the Southeast Asian Fisheries Development Center (SEAFDEC) and the Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security (CTI-CFF) that works to strengthen regional cooperation to combat illegal, unreported and unregulated fishing, promote sustainable fisheries and conserve marine biodiversity in the Asia-Pacific region. USAID Oceans supports the development of a transparent and financially sustainable catch documentation and traceability system (CDTS) to help ensure that fisheries resources are legally caught and properly labeled. This risk-based, electronic system will be applied to wild capture fisheries in Southeast Asia and the Pacific region and will be based on the ecosystem approach to fisheries management (EAFM).

After conducting Rapid Appraisals, Value Chain Analyses and Gender Studies, USAID Oceans conducted a three-day Integrated Stakeholder Consultation Workshop (ISCW). The workshop served to update stakeholders on program progress, present and validate the results of four learning site studies (Rapid Appraisal for Fisheries Management Systems (RAFMS), Value Chain Analysis, and gender and labor assessments of fisheries and their value chains), and initiate the crafting of the learning site Sustainable Fisheries Management Plan (SFMP) for Fisheries Management Area (FMA) 716.

The workshop was divided into two main sessions. The first day began with an opening ceremony led by the Indonesia Ministry of Marine Affairs and Fisheries (MMAF) followed by presentation on the current Fisheries Management Plan for FMA 716. Remarks from Head of the Marine and Fisheries Institution of Sulawesi Utara Province followed, and subsequently presentations on the progress of USAID Oceans' activities at learning site and the results of the four conducted learning site studies presented by USAID Oceans' subcontracted researchers, Marine Change, UNSRAT, Verite and Masyarakat dan Perikanan Indonesia).

Days two and three focused on the development of the learning site CDTS and Sustainable Fisheries Management Plan for FMA 716. Discussions focused on gathering inputs and comments from participants such as overarching objectives, challenges and opportunities, identified indicators for each operational objective, and management measures for the SFMP.

This workshop report aims to convey the process and the dynamics of the discussion that took place during the workshop.

3. WORKSHOP PURPOSE & OBJECTIVES

3.1 Purpose and Objectives

The aim of USAID Oceans' Integrated Stakeholders Consultation Workshop (ISCW) was to update stakeholders on program progress, present and validate the results of four learning site studies (Rapid Appraisal for Fisheries Management Systems (RAFMS), Value Chain Analysis, and gender and labor assessments of fisheries and their value chains), and initiate the crafting of the learning site Sustainable Fisheries Management Plan (SFMP) for Fisheries Management Area (FMA) 716.

3.2 Outputs

The main outputs of the ISCW were:

- Presentation and validation of USAID Oceans' learning site study results;
- Inputs to Initiate the crafting of the SFMP for FMA 716 with prioritized issues, fisheries management interventions; and
- Recommendations to USAID Oceans for upcoming Bitung learning site activities and implementation strategies.

3.3 Process and Agenda

The Integrated Stakeholder Consultation Workshop (ISCW) was conducted on June 21-23, 2017, in Manado, Indonesia. The three-day meeting was facilitated by UNSRAT and convened over one hundred local stakeholders. Annex I contains the full workshop agenda.

On day one, a formal opening ceremony was held with welcome remarks provided by the Dean of Faculty of Fisheries and Marine Science, Sam Ratulangi University as the organizer of the workshop. An opening speech by the Minister of the Indonesia Marine Affairs and Fisheries (MMAF) of Indonesia was delivered by the Director of Fish Resources Management, Dr. Reza Shah Pahlevi, who noted her appreciation of the partnership with USAID Oceans to improve fisheries management in the Bitung learning site. The opening session was followed by three sets of presentations: 1) the national policy on fisheries management and development in provincial water presented by Mr. Saut Tampubolon of MMAF, 2) the program progress and planned activities of the USAID Oceans Activity and 3) the results of USAID Oceans' learning site studies. Question and answer sessions were held at the end of each presentation set.

On day two of the workshop, an overview of day one's activities was presented, explained by Dr. Daisy Makapedua of UNSRAT. Days two and three of the workshop shifted from presentations to breakout groups, divided as such:

- Group 1: Ecological well-being
- Group 2: Human well-being
- Group 3: Governance

The first group discussion session was designed to discuss and identify fisheries issues. The second group discussion focused on prioritizing identified issues and discussing the operational objectives of fisheries management. On day three, the third and final discussion session focused on identifying recommendations and solutions for the identified priority issues, including measures, indicators, and reference points.

The workshop culminated with participant remarks on their experience and takeaways from the workshop, followed by closing remarks from USAID Oceans, MMAF and the USAID Regional Development Mission for Asia.

4. PARTICIPATION

The workshop was attended by one hundred participants from non-governmental agencies (NGAs), local government units (LGUs), local academe, fishing industry players (such as small-scale and commercial fishers, financiers/scalers, retailers, processors, and relevant civil society organizations), research organizations subcontracted by USAID Oceans (i.e. Marine Change, UNSRAT, Verite, and MDPI), USAID and USAID Oceans, and SEAFDEC (Table 1).

Table 1. Profile of participants

Sector/Group	Male	Female	Total
National Government Agency	5	6	11
Local Government Unit	10	9	19
Academician	3	2	5
Fishing Industry Player	7	8	15
USAID Oceans Implementing Partners	9	15	24
USAID and USAID Oceans	11	12	23
SEAFDEC	2	1	3
Total	**47**	**53**	**100**

Fishing industry players were the most represented sector in the workshop, closely followed by NGA representatives (Figure 1). While the workshop was roughly balanced by sex, more males participated in the workshop in total (Figure 2). See Annex II for the complete list of participants.

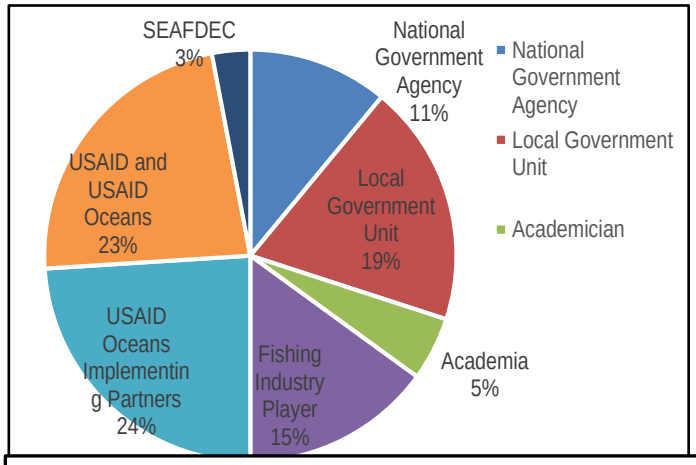


Figure 1. Percentage of attendees per group/sector

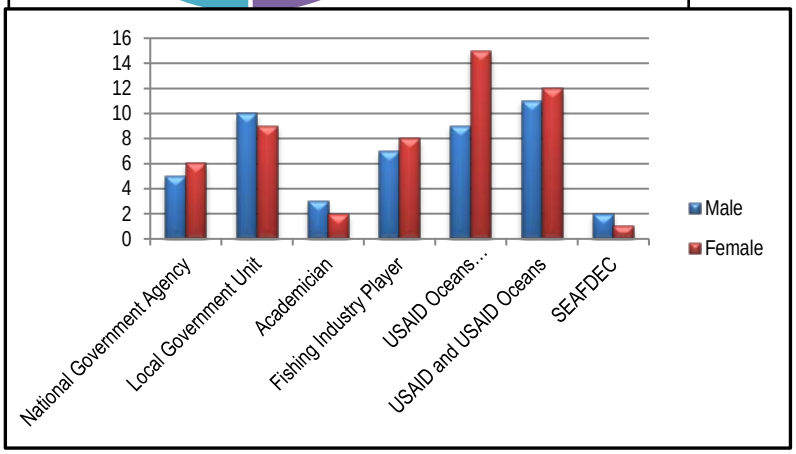


Figure 2. Percentage of male and female attendees per group/sector

5. DAY ONE PROCEEDINGS

5.1 Opening Program

Welcome Remarks

The workshop opening ceremony was facilitated by Professor Grevo S. Gerung, the Dean of Faculty of Fisheries and Marine Science on behalf of the Rector of Sam Ratulangi University. Professor Gerung welcomed all participants to Manado and conveyed the support of the Rector, Professor Dr. Ellen Kumaat. He explained Indonesia's strategic position between the two oceans that makes the country very rich in marine resources, especially in FMA 716. He continued to note that, "even if we ensure that our marine resources are very rich, we also have to realize that fish, especially pelagic fish are transboundary resources, thus fishing technology should also continue to be improved in line with the development of fisheries biology in ensuring the natural recovery of marine resources. The more we protect our marine resources through the EAFM model, the more the harvests will be." This activity, undertaken by UNSRAT in cooperation with Ministry of Marine Affairs and Fisheries under USAID Oceans' support, shows that the management of fishery resources must be integrated comprehensively, instead of partially handled on each separate issue. He continued to note the complex nature of fisheries challenges which include accounting for biological and ecological impacts, gender equity, quality control, and the advancement of fishing technologies. He closed his speech by hoping that the output of the workshop will be benefit to all participants in coastal community and industrialized fisheries.

Opening Remarks

Opening remarks from the Minister of MMAF were represented by the Director of Fish Resources Management, Mr. Reza Shah Pahlevi, who spoke about the importance of sustainable fisheries management in Bitung's and MMAF's appreciation of USAID Oceans' support. USAID Ocean's selection of Bitung as a program learning site is fitting given the area's extensive biodiversity. He noted that current fisheries production data indicate that some areas are being harvested inconsistently, thus the importance of the development and adoption of a Sustainable Fisheries Management Plan.

5.2 Session 1

5.2.1 Policies of North Sulawesi Province on Fisheries Management and Development in Provincial Waters of FMA 716

The head of Marine and Fisheries Affairs of North Sulawesi Province, Mr. Ronald Sorongan, opened by welcoming the participants to North Sulawesi Province. He explained about the richness of the province's marine resources that need to be utilized wisely in order to sustain the resources for the livelihood of the next generations. He then explained the fisheries production of the province in recent years as well as the potential future production. The provincial government, through MMAF, has tried to increase fisheries production by empowering the fishermen, especially the small scale ones, with infrastructures such as providing subsidized small fishing vessels, improving fish port facilities; facilitating fishing permits and conducting capacity building through various trainings. He closed by wishing the participants of the workshop fruitful results through discussions that could benefit for the improvement of the fisheries in Bitung and surrounding areas in North Sulawesi Province.

5.2.3 Overview the Oceans and Fisheries Partnership (USAID Oceans)

Dr. Purwanto presented USAID Oceans' program overview. He noted the partnership's primary objective which is to strengthen regional cooperation to promote sustainable fisheries across Southeast Asia's diverse marine ecosystems. USAID Oceans is a collaboration between the United States Agency for International Development and the Southeast Asian Fisheries Development Center, and works to strengthen regional cooperation to combat illegal, unreported and unregulated fishing, promote sustainable fisheries and conserve marine biodiversity in the Asia-Pacific region.

The USAID Oceans and Fisheries (USAID Oceans) Partnership supports the development of a transparent and financially sustainable catch documentation and traceability system to help ensure that fisheries resources are legally caught and properly labeled. Working across ASEAN (Association of Southeast Asian Nations) and Coral Triangle member countries, USAID Oceans has established two learning sites—General Santos City, Philippines and Bitung, Indonesia. These sites will support the development, implementation, and testing of the CDTS and will serve as a hub for regional knowledge sharing for replication and expansion.

USAID Oceans helps regional organizations with harmonizing oversight policies, providing standard training curricula and developing joint initiatives on sustainable fisheries and marine biodiversity conservation. USAID Oceans believes that close coordination, communication and collaboration among regional stakeholders will enhance the effectiveness and implementation of the catch documentation and traceability system, and thus works to forge a strong regional network of fisheries organizations. USAID Oceans works across five major workstreams: catch documentation and traceability, EAFM, human welfare, public-private partnerships, and communications and outreach.

5.3 Session 2

5.3.1 Profile of Fisheries and Fisheries Recourses in FMA 716

Bitung is situated at the point where the National Fisheries Management Areas (FMA) 715 and 716 meet. The waters of the Sulu-Sulawesi Marine Ecoregion (SSME) that surround Bitung are globally significant and during the past two decades have become a high priority for global conservation and sustainable development efforts. In 2003, the governments of Indonesia, Malaysia, and the Philippines developed an international ecoregion conservation plan for the SSME. By 2009, management of the SSME was formally prioritized through the establishment of the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), supported through several regional and global governmental and non-governmental partners. The international agreement to create and cite CTI-CFF's International Headquarters in neighboring Manado City is an indication of the significant importance that the global community places on the marine biodiversity of Northern Sulawesi. Today, the area remains of significant regional and international policy interest in terms of both marine biodiversity conservation and fisheries management (particularly for tuna species). The strategic location of Bitung makes it an important area for the implementation and testing of Oceans' CDTS and adoption of a Sustainable Fisheries Management Plan.

Learning site ecosystem. FMA 716, locally translated to "WPP 716," is comprised of coastal areas with mangroves, coral reefs and deep waters. More than 86 species of fish are harvested from this fishing area, which is extremely diverse and include rare species such as the coelacanth, an ancient and rare order fish. In addition, more than nine species of crustaceans and more than 10 species of mollusks can be found in its waters. Fisheries production from this fishing area, amounting to 255 thousand tons in 2012, consisted of large pelagic fish species (48.5%), small pelagic fish species (33.1%), demersal fish species (9.8%), reef fish species (5.2%), crustaceans (2.4%), and other living aquatic species (1.0%).

At-risk species present. In 2016, the United States Presidential Task Force on Combating IUU Fishing established a list of "at-risk species" that are particularly vulnerable and threatened by IUU activities. FMA 716 is home to 10 at-risk species, including blue swimming crab, dolphin fish, groupers, red snappers, sea cucumber, shark, shrimps, swordfish, and tuna species.

Priority biodiversity threats. IUU fishing practices, combined with overfishing, pose serious threats to the region's biodiversity. Among other impacts, IUU fishing increases uncertainty regarding catch and fishing efforts.

This uncertainty and lack of data to assess current fish stocks results makes it difficult to formulate and implement fisheries management plans.

SITUATIONAL ANALYSIS

Economic Profile –

Annual Landings. Tuna comprises the majority of fish landed at Bitung Ocean Fishing Port, although over 60 species are notably landed at the port. In 2015, approximately 36,000 tons of fish products were landed in the Bitung port, down from a high of 122,704 metric tons in 2014. The drop in landings is the result of a change in regulations which aim to eliminate illegal and harmful fishing practices.

Proportion of Fish Landed. Of the catch landed in Bitung in 2015, approximately 81% were tuna species—skipjack (40%), yellowfin and bigeye (21%), and frigate/mackerel tuna (19%). In addition to tuna, scad, squid, Spanish mackerel and marlin are also landed, but in volumes much less significant than those of tuna species.

Processing. Bitung is home to multiple tuna canneries that purchase fish landed at Bitung (including from pole-and-line and handline operators) as well as imported frozen products from the Philippines and Papua New Guinea (PNG). Some canneries operate their own purse seine fleet, largely fishing in the western Pacific Ocean around PNG.

Primary tuna processing operations in Bitung focus on: (1) fresh or frozen tuna products, primarily for high-value international markets (Japan/Northern Asia, Europe, and the United States.); or (2) canned products for domestic and regional export markets. In 2015, most of Indonesia's export products were either prepared/preserved (43%) or frozen (41%).

Export. Globally, Indonesia currently ranks as the sixth largest tuna exporting country by value, and Bitung is one of the main tuna fishing ports and processing centers in Indonesia. Between 2011 and 2015, tuna from Bitung was exported to 34 countries in total, but the top five market destinations, Germany, United Kingdom, Thailand, the United States, and Switzerland, comprise 79% of the total 116,662.33 metric tons of product exported. For the European Union, demand for traditional Fish Aggregating Device (FAD)-caught purse seine canned tuna products are sluggish, while demand for sustainable FAD-free Marine Stewardship Council-labelled tuna and pole and line product is high and rapidly increasing. In Southeast Asian countries, demand for both raw material and processed tuna products has been rising, and increases in demand are expected from Middle-East, Latin America and Africa.

Supply Chain Overview –

Vessel Types. Both small and large-scale fisheries operations are active in FMA 716, with both fishing households and commercial operations landing catch at Bitung Port from small, medium, and large-scale vessels. As of September 2016, there were 1,040 vessels registered in Bitung. Approximately 46% of the registered vessels use hand line as the main fishing gear, 32% use purse seine (off-shore tuna purse seiners as well as in-shore small pelagic purse seiners), 3% use pole and line and 19% of registered vessels utilize other gears.

Small vessels make up approximately 95% of the fleet, and include non-power and outboard motor boats (80%) as well as small vessels weighing under five gross tons (4.8%). Small-scale vessels are not required to have fishing licenses to operate. Vessels between five and thirty gross tons are required to obtain a fishing license from the Provincial Fisheries Services, amounting to 4.8% of the current fleet.

Fisherfolk and Fishing Methods. There are approximately 6,700 people engaged in fishing activities around the Bitung Fishing Port, including fishers, factory workers, and merchants. The average number of crew on a mini purse-seiner is 19-20 on a large purse-seiner, six on a handliner, and 27 on a pole-and-line vessel.

Fisher interviews conducted by USAID Oceans indicated that the average overall trip distance of the vessel was 76 nautical miles (nm). The collection vessels travel the farthest, up to 250nm, spending and spend on average 15 days per trip at sea. Handline fishers went 16 day trips to 64 nm (6-200nm) on average. Pole and line vessels averaged 77nm (4-100nm) on seven day trips.

Mini purse seiners travel to 59nm, while large purse seiners average much longer trips that span from 21-180 day trips and as far as 200nm. Fishing time varies, dependent on the type of fishing gear used, but on average is approximately seven hours per day.

Under current government regulations, vessel monitoring systems (VMS) and automatic identification systems (AIS) systems are in place for the vessels >30GT, covering only a small portion of Indonesia's active fishing fleet.

Fishers interviewed indicated that 33.9% have GPS and radio and 23.3% have GPS, radio, and VMS.

Processing Operations. In Bitung, fish and fishery products are processed both in large and small scales. Large-scale processing includes canned, fresh frozen, and fresh chilled tuna, and is distributed to both domestic and export markets. There are 67 registered processors in Bitung, performing processes such as loining, packaging, smoking, and freezing of tuna species. Combined, the processors have a production capacity of 939 tons per day and a total installed capacity of 17,756 tons of cold storage. There are seven registered tuna canning businesses with a combined total installed capacity to produce 585 tons of tuna per day, and store 8,600 tons of raw materials.

Priority Challenges –

Illegal and Overfishing. IUU fishing practices in WPP 716 have many harmful impacts, including overfishing and habitat destruction. Foreign fishing vessels that operate in the fishing zone increase the difficulty of regulation and enforcement, requiring action on a regional and international level. Collaborative, regional action to supplement national interventions, including increased trade regulations for fisheries products would support decreased prevalence of IUU activities.

Human Welfare. Human welfare concerns are present in Bitung's tuna fisheries. Based on surveys conducted with individuals working in Bitung tuna canneries, many are employed as contractual workers with very short-term employment (e.g., day laborers) who work without employment security and are not entitled to basic employee rights or benefits. Similarly, fishing boat laborers often operate as undocumented workers, without basic employee rights or benefits. There are reported instances where such fishing boat labors failed to return home to their families, without explanation. Ensuring a safe and transparent labor chain is central to human welfare priorities in the Bitung learning site.

Economic Development. Indonesia's National Medium-Term Development Plan for 2015-2019 aims to increase economic competitiveness, particularly through increasing the country's comparative advantage of natural resources. The Plan aims to increase the productivity and efficiency of fisheries, a goal that will require enhanced fisheries management to bolster the health and abundancy of the region's fisheries resources. Fisheries management must be an integral part of enhancing the competitiveness of fisheries products to ensure a sustainable future for the country's marine ecosystems and biodiversity. As such, Indonesia is taking steps to develop and implement eco-certification and catch documentation and traceability to optimize fisheries management.

OPPORTUNITIES

Combating IUU fishing and enhancing the sustainability of marine resources presents many complex challenges. Bitung, and many other ports throughout the Asia-Pacific region face the issues of overfishing, increased demand for fisheries products, and complications in regulation and enforcement due to vast fishing territories and transboundary fishing, among others. With these challenges, however, come opportunities for intervention and enhancement. Three main areas of intervention with high-impact results include: **ensuring tuna vessels comply with fisheries laws and regulations, enhancing fisheries management plans** to sustain fishery resources and optimize socioeconomic benefits, and **increasing regional collaboration** to establish coordinated efforts in fisheries management, regulatory design, and enforcement approaches.

To further these opportunities, USAID Oceans has established the following objectives and corresponding achievements:

- **Better understand supply chain value chains.** USAID Oceans conducted a value chain assessment to identify the main export markets and articulate the cost, benefits, and return on equity.
- **Enhance fisheries management through an Ecosystem Approach to Fisheries Management.** USAID Oceans conducted an in-depth analyses to support EAFM plan development that links with broader Sulu-Sulawesi Sea Regional Frameworks.
- **Address human welfare concerns to support policy development and intervention.** Human welfare scoping was conducted to enable USAID Oceans to better understand human welfare issues, including instances of gender inequality and labor rights abuses in the fisheries sector.
- **Develop strategic partnerships that support CDT system implementation.** USAID Oceans has engaged with the private sector to secure their strong support, thus ensuring a mutually beneficial and financially sustainable CDT system.

5.3.2 Results of Value Chain Analysis in Bitung

OVERVIEW

USAID Oceans conducted a Value Chain Analysis study in late 2016 to assess Bitung's tuna industry. The study was undertaken by Marine Change, an advisory firm focused on investments in the Asian marine sector that advances sustainable business. The value chain analysis (VCA) was conducted as a key first step to understand the catch documentation and traceability (CDT) processes and requirements along the value chain, identify the main exporting markets and explore market/buyer requirements and customer preferences. In turn, this study supports the CDT design approach, partnership development and industry engagement in Bitung and along the value chain.

FINDINGS

FISHERY OVERVIEW –

Tuna Production at Bitung Oceanic Fish Port: 36,842 tons (2015); tuna species represented 81-90% of all fish caught and reported in Bitung between 2011-2014.

Vessel and Gear Types: 1,040 registered vessels: 80% < 30 GT and 32% < 5GT

Handline fishery: 46% of registered vessels
Purse seine fishery: 32% of registered vessels
Pole and line fishery: 3% of registered vessels
Other fisheries: 19% of registered vessels use other gear,
including beach seine, gill net, rawai trawl and bottom longline

Fishers: The typology of fishers varies widely in Bitung, from small scale independent fishers who own and operate small vessels and conduct daily trips, to fishers employed by small, medium and large businesses that operate fishing boats taking longer trips to sea. There are approximately 6,700 people engaged in fishing activities around the Bitung Fishing Port.

Traders: 11 registered/licensed traders and an unknown number of informal traders play an aggregation and logistics role in Bitung, moving fish from landing point to processors for export or to local markets.

Processors: 67 processors are registered in Bitung, performing activities such as loining, packaging, smoking and freezing of tuna species. Combined, these processors have a production capacity of 939 tons/day and a total installed capacity of 17,756 tons of cold storage and1,136 tons of Air Blast Freezer storage.

Canneries: 7 tuna canneries are registered in Bitung with a combined total installed capacity of 585 tons of tuna/day.

Export Markets: Germany, United Kingdom, Thailand, U.S. and Switzerland comprise 79% of the total product exported from Bitung between 2011-2015.

Production and Export Volumes (2015): 45,208.5 tons total

Yellowfin: 9,662.7; 1,152.0 exported to U.S., 525.8 to Switzerland, 291.2 to Australia, 213.5 to Spain
Skipjack: 18,263.1; 4,085.0 exported to UK, 3,352.3 to Germany, 283.2 to Netherlands, 219.4 to Switzerland
Eastern little tuna: 53.9
Frigate: 8,746.5
Bigeye: 116.4
Other species: 8,366.0

EXISTING CATCH DOCUMENTATION AND TRACEABILITY PRACTICES –

Entities involved in capture fisheries in Indonesia are subject to various government requirements for business licenses, such as licenses to capture, transport fish or run a fish business. Similarly, fishing vessels, depending on size, are subject to licensing and documentation requirements, such as registration documentation. For fishing vessels <5GT, catch certificates, issued by the government, are required. The Port Authority is responsible for issuing Catch Certificates. There are two catch certificate documents: the initial sheet and the derivative sheet.

1. The Catch Certificate – Initial Sheet is a requirement for fishing boats above 5GT, and consists of the following documents:
    - Application Form

- Photo identification of requesting party
- Draft SHTI (Sertifikasi Hasil Tangakapan Ikan – a Fisheries Catch Certificate statement containing information on the catch of fish landed from fishing vessels for the purpose of recording)
- Surat Izin penangkapan Ikan (SIPI, a license to capture fish)
- Pas Besar/Kecil
- Surat Tanda Bukti Lapor Kedatangan Kapal (STBLKK) - Letters of Evidence Reporting Ship Arrival
- Laporan Hasil Verifikasi Pendaratan Ikan (LHVPI) – Report of Fish Landing Verification, a report prepared by the Supervisory Fisheries after verifying the landing of fish as a condition of issuance SHTI.
- Copy of logbook
- SKPI Surat Keterangan Pendaratan Ikan (SKPI) – Certificate of Fish Landing (SPKI), if outside of Bitung

Once issued, the Catch Certificate – Initial Sheet contains: fish species, catch areas, dates, estimated live weight, estimated weight to be landed and verified weight landed.

2. The Catch Certificate – Derivative Sheet is requested by the exporter, which is typically the cannery or processor. It can only be issued with the approved Catch Certificate – Initial Sheet as an attachment, as some of the information will derive from the Initial Sheet. In order to obtain The Catch Certificate – Derivative Sheet, the requesting party must submit the following documents:
    - Application form
    - Photo identification of requesting party
    - Derivative of SHTI
    - Fish purchase receipt
    - Laporan Hasil Verifikasi Pendaratan Ikan (LHVPI) – Report of Fish Landing Verification
    - Photocopy of SIPI and Pas Kecil
    - Photocopy of Surat Tanda Bukti Lapor Kedatangan Kapal (STBLKK) – Letters of Evidence Reporting Ship Arrival
    - Vessel forms
    - Packing list and invoice
    - Bill of Lading
    - Surat Keterangan Pendaratan Ikan (SKPI)
    - Notification of export goods

Once issued, the Catch Certificate – Derivative Sheet contains a description of the product (e.g., fresh tuna, frozen loin, etc.), the species and verified landed weight, a list of vessels that provided raw material and volumes for each vessel (vessel name, registration number), the name and address of the importer, and transportation information (number of flight and bill number, vessel name and flag, container number, etc.).

In Bitung, tuna processors and canneries report that complying with catch certificate processes is cumbersome, time consuming, and costly. Furthermore, once the paperwork is submitted, there are long waits (at least five days) for catch certificates to be issued by the government.

INDONESIAN COASTAL TUNA SUSTAINABILITY ALLIANCE –

Three organizations that are currently active in Indonesia include Masyarakat dan Perikanan Indonesia (MDPI), Assosiasi Perikanan Pole & Line Handline Indonesia (AP2HI) and the International Pole and line Foundation (IPNLF), share common objectives to enable Indonesian coastal tuna caught one-by-one to enter the market at a premium price under various certification schemes, with full traceability in place. They also aim to create benefits at the community level for the small-scale fishers involved.

In May 2016, the leadership of these three organizations, together with the USAID Oceans' team, agreed on the need to develop an alliance, the Indonesian Coastal Tuna Sustainability Alliance (ICTSA), to work towards common goals, with a clear five-year strategy and plan for the 2016 – 2019 period. Marine Change and Future of Fish will provide key support for the development of the alliance and the partnership with USAID Oceans, in analyzing the traceability system and building a sustainable business model to scale and sustain the CDT system in the long-term.

ICTSA draft phased strategy:

- Phase 1 (September – December 2016): research and understand the traceability landscape, CDT system gaps assessment, value chain analysis, alliance business model development and initial design of the demonstration/testing phase (phase 2)
- Phase 2 (2017): deploy the CDT system demonstration, monitor and review performance, communication successes and challenges, identify resources and develop long-term expansion and scaling strategy for the wider tuna sector in Indonesia
- Phase 3 (2018-2019): scale the CDT system to other sites and incorporate more companies and features.

METHODOLOGY

Marine Change identified the main actors and stakeholders by determining the scope of the tuna value chains from point of catch to final consumer, developed a series of semi-quantitative interview tools to further capture data and views at the main value chain transaction points, and then conducted extensive 'on the ground' interviews with the main actors and stakeholders at the Bitung Oceanic Fish Port. The team identified priority end-markets, their export requirements and the perceived value of improved traceability in those markets. Finally, the team focused on the CDT requirements for different stakeholders in Bitung, highlighted leverage points for CDT and explored the business case for implementing a CDT system in Bitung. This was conducted through a mixture of desktop research and on the ground interviews.

5.3.3 Results of Labor Analysis

OVERVIEW

In 2016, USAID Oceans conducted a study on the labor profile of Indonesian fisheries, with a particular focus on Bitung, North Sulawesi. The study was undertaken by Verité, a global nonprofit organization that conducts research, training, and advocacy for safe, fair, and legal work conditions. The study researched labor conditions in Bitung's tuna sector and identified ways that labor and social concerns could be integrated with the program's Catch Documentation Traceability (CDT) system. Initial scoping studies were conducted in February and March 2016 with in-depth field studies conducted in October 2016. Research was conducted following Indonesia's moratorium on foreign fishing vessels, which was announced in 2014 and lifted in November 2015. The moratorium banned foreign fishing vessels from Indonesia's waters, and in 2015 was expanded to include trawl and seine net fishing. The moratorium had a significant effect on fisherfolk, as all fishing boats above 30 gross tons were prohibited from sailing, and small boats without completed documents were also grounded.

FINDINGS

TYPES OF WORK AND DEMOGRAPHICS –

Vessel Based Work

On vessels, the main occupations are fisher, captain, engine crew and cook. Workers range from 15 to nearly 60 years old and originate from Gorontalo, Bitung, Sangihe Islands, Nusa Tenggara Timur and the Philippines. In Bitung, there are Filipino fishers working on Indonesian boats and Indonesian fishers on Filipino boats. Many of these workers go back and forth between Indonesia and the Philippines, often without identity or work documents.

Land Based Work

Male and female land-based workers interviewed were between 18 and 62 years old, from the Indonesian villages of Gotontalo, Bitung, Manado, Kotamobango, Sangihe and from the Philippines. In factories, men are usually assigned to receiving, skinning, scrubbing and loading the fish; women's tasks include skinning, scrubbing, packing and loading fish. Research findings showed that women are heavily engaged in processing fish, with the total percentage of women factory workers between 60-80 percent.

Gender Roles

In general, fishing is an economic activity that tends to be dominated by men, and women are usually involved in activities related to processing and the commerce of seafood. Previous research has noted that men are culturally considered to possess the appropriate strength, courage and knowledge to fish, while women's work has always been portrayed as complementary or supplementary to the main work of fishing.

This gendered structuration also characterizes the fishing industry in North Sulawesi. All fishers, fishing crew, graders, collectors and land-based support crew (engaged in weighing, cleaning, icing and boxing) are men. The only women researchers encountered were traders, fish sellers, seafood processors or land-based/factory workers. This gendered division of labor has resulted in women's exclusion from higher value work in fishing. The USAID Oceans Gender Analysis is a reference for a deeper study of gender arrangements in fishing communities and an understanding of the value of women's work.

WORKING CONDITIONS –

The study did not make any determination on the prevalence of forced labor; however, several risk indicators of forced labor and human trafficking were detected using the International Labour Organization's definition. Identifying specific risk indicators as they manifest in the sector, and factoring in the mechanisms that render workers "invisible" – or beyond the pale of protective regulations – can provide insight into the types of risk and vulnerability faced by workers.

Working Hours

Vessel based: Workers sleep whenever they can, as there are no fixed working hours while at sea. Fishers interviewed said that it takes between 30 minutes and three hours to catch a single tuna, depending on the fish's size and endurance. At the time of the research, most hand-line boats stayed at sea anywhere from three to five days due to sea patrols and other logistical limitations. Before the moratorium, ships stayed out at sea for weeks or even months.

Land based: Working hours and benefits vary across companies and particularly between canning companies and fresh loins/product factories. Workers at all facilities visited reported working seven hours a day on average. In most cases, they were also required to work unpaid overtime on occasion (although overtime is sometimes paid). One facility took pay deductions of USD $.20/minute for toilet breaks or lateness, while another facility provided benefits such as transport allowance, family allowance and free food during overtime shifts.

Wages, Benefits and Deductions

Vessel based: Vessel-based workers do not receive a monthly salary, and their income depends on their agreement with the boat owner who determines the payment mechanism (usually a profit-sharing scheme). The fishers do not receive payment until the tuna is caught and sold. Filipino crew members usually earn double the amount of the Indonesian crew, regardless of whether it is an Indonesian or Filipino boat, as Filipino fishers tend to work alone and Indonesian fishers work as a team. Fishers are not provided with health insurance and are often vulnerable to mounting cycles of debt, as advances are commonly given to their family members before fishers return from their voyage.

Land based: Canning companies pay workers on a daily basis, and take-home pay varies. On average, workers at these plants earn less than the provincial minimum wage. All workers interviewed said that their employers facilitated the provision of health insurance (BPJS) and social security (JAMSOSTEK), with workers' contributions deducted monthly from their salary.

Health, Safety and Security

Vessel based: Fishers often sustain nylon cuts and burns from hauling tuna out of the sea and are subject to poor weather conditions such as extreme rain, typhoons, or high waves, patrols and being hit by a larger ship. Workers seldom use gloves or any other type of personal protection equipment and none of the boats researchers visited had life vests or rubber rings.

Land based: In the processing plants, workers are constantly exposed to and inhale chlorinated air, as chlorine is used to sterilize boots and to wash workers' hands. Floors are often wet and slippery, as before packing and freezing tuna loins, the loins are watered during the cutting process. Uncomfortable working conditions were observed, such as very hot or cold temperatures; denied access to toilets; and frequent hand and skin irritation due to chemical allergies.

Job Security and Vulnerability

Workers in Bitung's tuna fishing sector faced increased vulnerability from the moratorium on foreign fishing vessels. For both sea and land-based workers the ban has led to an increased precariousness of employment and fear of job loss.

Vessel based: At the time of the field research, the moratorium on foreign vessels was still in effect, and the authorities were still monitoring, inspecting and arresting illegal and undocumented boats and workers. Many of

the seized foreign boats were docked in Bitung, because either their license had expired or the issuance quota for licenses had been reached. Boat owners were penalized with a warning, and their licenses were either suspended or revoked. This served as a strong warning to illegal fishers in Indonesian waters. Some crewmembers, many of whom come from distant islands like Java and Flores, returned to their hometowns, but some did not have enough money to do so and remained attached to their grounded boats. Others found work with the few remaining active boats. Many were forced to wait until the grounded boats obtained a license, during which time the boat owner paid for food, in addition to a meager salary to guard and clean the boat.

Land based: During the moratorium, some salaried factory workers stayed home for months without payment. According to one factory manager, fish production dropped by more than 50 percent during the moratorium. Workers would wait for their company to call them in to work, and as a result, they were paid as daily workers.

Child Labor
Both direct observation and stakeholder interviews confirmed the presence of child labor on vessels. These young workers are still learning how to fish as skillfully as older workers but typically participate in a wide range of tasks on the vessels. Although the legal requirement for 18 year old minimum age for fishers is clear, child labor is a culturally acceptable practice and children are expected to learn fishing as a livelihood at age 13. Very few fishers receive a full education.

RECOMMENDATIONS

In general, even a robustly designed and fully functioning CDT system that collects relevant social information will not automatically lead to the detection of labor abuse. The most accurate data still needs interpretation and analysis by qualified experts familiar with the context so that stakeholders understand the implications that information might have for workers. After collection and analysis, remediation requires a coordinated multi-stakeholder effort that informs the continuous improvement of government and company policies, programs and procedures.

DATA COLLECTION –

Recruitment and Hiring: Collecting additional data could provide transparency and standardization of the process. Useful data is summarized in the table (left).

Onsite Management and Working Conditions:
Collecting data on the following could improve conditions:

- Company organizational charts and policies;
- Production capacity and production schedules;
- Registry of regularly employed workers, cooperative/agency/outsourced workers and juvenile or minor workers, plus contracts for all categories of workers;
- Training materials and records;
- Payroll records and pay slips as well as benefits remittance records;
- Attendance and work hour records; and
- Grievance, discipline and termination records.

POTENTIAL SOCIAL APPLICATIONS OF CDT –

Field research uncovered issues in the following areas. For each area, the study outlined labor practice goals and red flags that can be used as indicators for these issues. CDT systems may be able to aid in the detection and avoidance of several of these issues by enhancing communication services (e.g., email, phone) to crewmembers, and the collection of Key Data Elements may support the detection of red flag conditions.

Vessel based	***Land based***
Registry of: All fishing vessel owners All sea-based workers	Registry of: All company facilities All company suppliers
Written job description for each job function	Written job descriptions for each job function
Standard contracts or fishing agreements	Standard contracts or employment agreements
Vessel registrations	Government issued and authenticated IDs
Data on capacity of each boat	

METHODOLOGY

The Rapid Appraisal of labor and social welfare conditions was conducted in the fishing sector in Bitung, Indonesia in early 2015. Follow-up research was carried out at Manado, Bitung and Sangihe Island in Indonesia in October 2016 to validate labor risks flagged during the Rapid Appraisal. The research sought to gather data on various recruitment and employment practices, and the working and living conditions of tuna fishers and workers in the Bitung seafood industry. Field data-gathering included in-depth interviews and focus group discussions with a representative sampling of workers involved in different work processes in Manado, Bitung and Sangihe; interviews with management representatives, supervisors and labor agents; key informant interviews with government and civil society representatives; site observation of recruitment centers and transit points, work processes and transactions; physical inspection of employer- or labor agent-provided accommodations; and review of available documentation related to recruitment, hiring, employment and management of workers.

This research structure allowed researchers to validate in-field findings and informant interviews with desk research, enabling sound information and findings. The validation process serves to decrease the chance that any particular finding is simply the result of an anomaly or bias, but rather represents a larger systematic issue that can be confirmed by multiple sources. Qualitative information allowed researchers to provide deeper insight into the nature of labor-related risk, relationships between types of stakeholders, individual experiences as well as group norms.

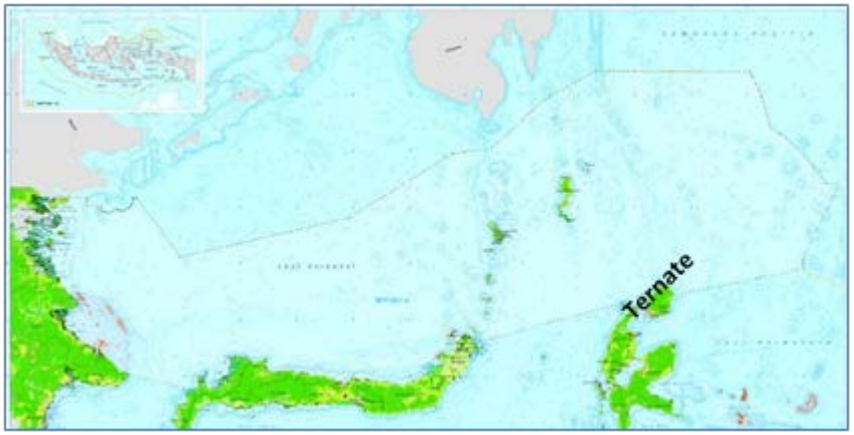
Limitations of the approach stemmed from the fact that much of the work in the supply chain is highly precarious and workers legitimately fear losing their jobs. While researchers made every effort to protect identity of interviewees and conduct interviews in secure location, this pervasive fear may have limited informant willingness to speak openly about their full range of experiences.

5.3.4 Results of Rapid Appraisal for Fisheries Management

OVERVIEW

USAID Oceans conducted a Rapid Appraisal of Fisheries Management Systems in early 2017 to assess the status of the capture fisheries subsector in the Indonesian Fisheries Management Area (FMA) or Wilayah Pengelolaan Perikanan (WPP) 716 (Figure 3). The study assessed the tuna fishery sector, as well as the small pelagic fishery in that management area, as purse seine fishing is employed to catch small pelagic species. In recent years, two decrees have been established to support the Fisheries Management Plan (FMP) for WPP 716, the (i) Fisheries Management Plan for Tuna, Skipjack and Tuna-like species through Ministerial Decree No. 107/KEPMEN–KP/2015; and (ii) FMP for WPP–716 through Ministerial Decree No. 83/KEPMEN–KP/2016. The USAID Oceans study serves to update information, identify strategic issues and revisit fisheries management objectives, measures and interventions, as required, in support of implementing the cited FMPs. Consistent with the objectives of the USAID Oceans program, the study sought to identify potential points of intervention in the production and market chains and provide critical information from these leverage points. These outputs will contribute to strengthening the fisheries management system in order to address the issues of illegal, unreported and unregulated (IUU) fishing and the development of a sustainable Catch Documentation and Traceability (CDT) system.

Figure 3. Map of Indonesia's Fisheries Management Area (FMA/WPP) 716



FINDINGS

ATTRIBUTES –

WPP 716 includes the waters of the Sulawesi Sea and part of Western and Central Pacific Fisheries Commission (WCPFC) Convention area. Its fisheries are complex and diverse, reflecting the region's extraordinary heterogeneous geography and species diversity. The estimated potential fish production that can be harvested sustainably from fish stocks in FMA 716 is estimated at about 480,000 tons, and consists of approximately 46.6% small pelagics, 32.2% large pelagics, 7.2% coral fish, 11.3% demersal, 1.8% penaeid shrimps, while 0.1% lobster, 0.4% mangrove crab, and 0.2 % blue swimming crab and 0.2 % squids (MMAF Ministerial Decree No. 47/KEPMEN-KP/2016).

In terms of volume, the artisanal sector brings in the majority of catch, while industrial fisheries contribute considerably more in terms of value, since they target high value catch, such as tuna and shrimp. Major species caught in WPP 716 include tuna and small pelagics such as round scads, sardines, mackerel and a range of reef fish. Fishing gear used includes purse seine (including 'pajeko' - mini seine), oceanic and coastal drift gill net, set gill net, pole and line, bottom long line, trap, squid jig, bouke ami and some types of hand lines.

Demersal, penaeid shrimp, mangrove crab and blue swimming crab are primarily caught in west 716, with pelagic fish located mainly in the east. Fishing grounds for coral fish, lobsters and squid span the whole of WPP 716, especially along the coastal areas and the small islands, such as in the District of Sangir and Talaud.

THE STATUS OF FISH STOCKS AND FISHERIES –

Large tunas in FMA 716, i.e. skipjack, yellowfin and bigeye tunas, are estimated to be part of the stock in the western and central Pacific Ocean, therefore USAID Oceans' stock assessment referred to the results of the WCPFC stock assessment. USAID Oceans reviewed the maximum sustainable yield (MSY), the maximum level at which a resource can be routinely exploited without long term depletion. Recent levels of the spawning biomass of skipjack tuna were found to be well above the level that will support the MSY. The fishing mortality, the loss of fish of all age-classes, of skipjack tuna was estimated to have increased significantly since the beginning of industrial tuna fishing, but fishing mortality still remains below the level that would result in the MSY, and was estimated to have decreased moderately in the last several years. Current catches of skipjack tuna were found to be lower than, but approaching estimated the MSY. Stocks of skipjack tuna are still estimated to be healthy (WCPFC-SC12-2016/SA-WP-04), while yellowfin tuna stocks are most likely above the level which will support the MSY. Recent levels of fishing mortality of yellowfin tuna stocks are most likely below the level that will support the MSY, and latest catches marginally exceed the MSY (WCPFC-SC10-2014/SA-WP-04). Recent levels of fishing mortality of bigeye tuna stock exceed the level that will support the MSY, and current catches exceed the MSY (WCPFC-SC10-2014/SA-WP-01).

USAID Oceans' study also reviewed the fisheries' spawning potential ratio, which is based on the principle that certain levels of fish have to survive in order to spawn and replenish the stock at a sustainable level. Recent levels of spawning potential of yellowfin tuna stock were estimated to be above the minimum target for sustainability but lower than the optimal level targeted in 2012 (WCPFC- SC10-2014/SA-WP-04). Recent levels of spawning potential of bigeye tuna stock were most likely below the level which will support the MSY, estimated in 2012 (WCPFC-SC10-2014/SA-WP-01).

USAID Oceans' study assessed the development of the Indonesian tuna fishery operating in WPP 716. Based on the distribution of the annual effort of the Indonesian fishing fleet, the optimum production level was surpassed between 2009 and 2010, with the respective effort of 2,294 and 4,407 mini-purse seine units, and an optimum catch per unit effort (CPUE) of about 20.2 tons/purse seine unit/year. The recent status of exploitation (2015) of 716's large tuna fishery, with the calculated CPUE equaling 12.2 tons, was below the optimum level. However, if effort is maintained at the 2015 level, it is likely that the fishery will be recovered. Looking at the CPUE data in 2013, 2014 and 2015–in which the lowest CPUE (10.2) occurred in 2014 but increased in 2015–it is likely that 716's large tuna fishery was in the process of recovery. Similarly to large tuna, the optimum skipjack production level was also surpassed in 2009 and 2010, with the respective effort of 1,788 and 3,435 pole & line units; the optimum CPUE was about 25.6 tons/pole & line/year. The recent status of exploitation (2015) of the skipjack tuna fishery in WPP 716 is below the MSY level, and the fishery is likely in the process of recovery, as indicated by the higher CPUE in year 2015.

The results of USAID Oceans' study, analyzing data from 2005 to 2015, show that fishing pressure from the small pelagic fishery has been at a safe level since 2010. The small pelagic group is dominated by round scads (50%), of which the 'malalugis' (Decapterus macarellus) makes up the majority (76%). Other dominant small

pelagic species groups are anchovies and trevallies, 13.7% and 10.5% respectively. Mackerels, sardines, garfish, flying fish and mullets make up the remaining less than 5% of small pelagic catch. The stock of small pelagics was shown to be in healthy condition, recovering from its overexploitation in 2005 through 2012. Fishing mortality (F) and biomass (B) were estimated to be lower than F at MSY (FMSY) and larger than B at MSY (BMSY), respectively (Fig. 2). Therefore, there is an opportunity to increase fishing activities that target small pelagic species to optimize economic profit and fish production.

The study also found that, since the profit and production curves are bell-shaped, the optimum levels of profit and production (MSY) are achieved when the levels of fishing effort are equal to 501 units and 747 units, respectively (Fig. 3). (Note: 1 unit is equal to a unit of 20 m length vessel operating purse seine).

ENVIRONMENTAL ANALYSIS –

The prevailing environmental/ecosystems components of the WPP 716 Sulawesi Sea are mostly deep-sea, with a narrow strip of continental shelf, some mangrove areas, estuaries and some coral reefs. A number of estuaries and mangroves areas with muddy bottom substrate and sea-grass, found in the East-North Kalimantan area, provide nursery grounds to some of the most economically important fish and shrimp. Some continuous spots of coral reefs are laid from the coastal areas of East-North Kalimantan to North Sulawesi, ending at the Bunaken National Marine Park and exhibit exceptional levels of coral species diversity. The richest locations host 25-30% of the reef-building coral species of the entire Indo-Pacific region. This lends strong support to the selection of Bunaken National Park as one of Indonesia's, and the region's, flagship MPAs (Turak and DeVantier, 2003). The Halmahera Eddy current, found in the Sulawesi and Halmahera Sea, may contribute to the area being a marine productivity hotspot compared to the surrounding regions. As such, during the northwest monsoon and La Niña events, skipjack tuna catch increases in the western tropical Pacific waters.

SOCIO-ECONOMICS OF BITUNG FISHERIES –

The number of fishing vessel crew members varies with the type of gear and size of the vessel. Purse-seine vessels had an average of 25 crew members. Fishing operations with more vessels have more crew members on each boat, however an increase in number of vessels is also found to decrease the profitability per vessel. Since crew members are paid using a profit sharing system, increases in the number of vessels also results in a decrease in economic profit per fisher. Fishers' income is highest when the fish stock is healthy and the fishery is operating at the optimum level.

Fish landed in North Sulawesi are both consumed locally and exported. Traditional processing, such as smoke-fish, is undertaken to preserve the catches. Tuna is sold fresh, processed in cans or is packaged as frozen whole fish, fillet, loin and other forms. Only 31% of tuna production from Bitung is exported, the rest is sold to domestic markets. Tuna landed in Bitung Port is exported to Asian markets, including Thailand and the Philippines, as well as the US, the European Union and other international markets. USAID Oceans' rapid assessment of the tuna value chain revealed that Bitung experienced a production drop of 59% in 2015, causing significant economic impacts in the region and changes in trading dynamics. Adding to production pressures are increasing preferences for sustainable and traceable products from buyers in the US, EU, and Australia.

FISHERIES GOVERNANCE –

Article 33(3) of the Indonesian Constitution stipulates that the land, waters and natural resources therein are basic assets for the people's prosperity and should, therefore, be utilized to the greatest benefit of the people. Marine fish stocks are classified as natural resources, with the management of marine fish stocks inside of provincial waters is under the responsibility of provincial government, and those beyond the boundary of provincial waters the responsibility of central government, i.e. the Ministry of Marine Affairs and Fisheries (MMAF). WPP 716 is one of the most important fishing areas in Indonesia. Its fishing fleet consists of small, medium and large-scale fishing vessels. 95% of the fleet are small scale vessels, consisting of non-power and outboard motor boats, and small fishing vessels of <5GT. Members of the small-scale fishing fleet are not required to have a fishing license to operate. Only 4.8% of Indonesia's fleet, ranging between 5 to <30GT, are are required to have fishing licenses issued by the Provincial Fisheries Services to operate. Fishing vessels greater than 30 GT (only 0.3% of the total fleet) must obtain a fishing license from MMAF to operate.

To manage fisheries in WPP 716, MMAF has issued the (i) FMP for Tuna, Skipjack and Tuna-like species through Ministerial Decree No. 107/KEPMEN–KP/2015; and (ii) FMP for WPP–716 through Ministerial Decree No. 83/KEPMEN–KP/2016. USAID Oceans aims to support the crafting of the fisheries management implementation plan for the North Sulawesi province with MMAF, and for the FMP for WPP 716 to achieve its sustainable fisheries and biodiversity goals. Currently, the MMAF is in the process of establishing "WPP-based fisheries

management authority."

METHODOLOGY

This study was conducted using the Rapid Appraisal of Fisheries Management Systems (RAFMS) framework to complement the EAFM planning process. The RAFMS method consists of four sequential but overlapping steps: (1) secondary data analyses that includes a comprehensive review of existing literature on capture fisheries and tuna industry assessments; (2) reconnaissance surveys to validate the data/information collected from secondary data analyses and site visits to initiate stakeholder engagements; (3) field data gathering to collect data on fishing practices and production, fishing related business activities, cost and earning and other data/information on socio-economic (which included analysis using biomass dynamic, bioeconomic models, statistical analysis and mathematical optimization methods); and (4) a community/stakeholder workshop, conducted to validate the initial analyses and implications as well as develop scenarios on the future of capture fisheries and fisheries management in the region. Under this process, group discussions were also undertaken to identify broad objectives and issues, prioritize issues, formulate operational objectives and identify indicators and performance measures and required management measures/intervention.

5.4 Session 3

5.4.1 Electric Catch Documentation Traceability (e-CDT)

Existing Catch Documentation and Traceability Practices – Entities involved in capture fisheries in Indonesia are subject to various government requirements for business licenses, such as licenses to capture and transport fish or run a fish business. Similarly, fishing vessels, depending on their size, are subject to licensing and documentation requirements, such as registration documentation. For fishing vessels <5GT, catch certificates, issued by the government, are required. The Port Authority is responsible for issuing Catch Certificates. There are two catch certificate documents: the initial sheet and the derivative sheet.

The Catch Certificate – Initial Sheet is a requirement for fishing boats above 5GT, and consists of the following documents:

- Application Form
- Photo identification of requesting party
- Draft SHTI (Sertifikasi Hasil Tangakapan Ikan – a Fisheries Catch Certificate statement containing information on the catch of fish landed from fishing vessels for the purpose of recording)
- Surat Izin penangkapan Ikan (SIPI, a license to capture fish)
- Pas Besar/Kecil
- Surat Tanda Bukti Lapor Kedatangan Kapal (STBLKK) - Letters of Evidence Reporting Ship Arrival
- Laporan Hasil Verifikasi Pendaratan Ikan (LHVPI) – Report of Fish Landing Verification, a report prepared by the Supervisory Fisheries after verifying the landing of fish as a condition of issuance SHTI.
- Copy of logbook
- SKPI Surat Keterangan Pendaratan Ikan (SKPI) – Certificate of Fish Landing (SPKI), if outside of Bitung

Once issued, the Catch Certificate – Initial Sheet contains the fish species, catch area(s), dates, estimated live weight, estimated weight to be landed and verified weight landed.

The Catch Certificate – Derivative Sheet is requested by the exporter, which is typically the cannery or processor. It can only be issued with the approved Catch Certificate – Initial Sheet as an attachment, as some of the information will derive from the Initial Sheet. In order to obtain The Catch Certificate – Derivative Sheet, the requesting party must submit the following documents:

- Application form
- Photo identification of requesting party
- Derivative of SHTI
- Fish purchase receipt
- Laporan Hasil Verifikasi Pendaratan Ikan (LHVPI) – Report of Fish Landing Verification
- Photocopy of SIPI and Pas Kecil
- Photocopy of Surat Tanda Bukti Lapor Kedatangan Kapal (STBLKK) – Letters of Evidence Reporting Ship Arrival

- Vessel forms
- Packing list and invoice
- Bill of Lading
- Surat Keterangan Pendaratan Ikan (SKPI)
- Notification of export goods

Once issued, the Catch Certificate – Derivative Sheet contains a description of the product (e.g., fresh tuna, frozen loin, etc.), the species and verified landed weight, a list of vessels that provided raw material and volumes for each vessel (vessel name, registration number), the name and address of the importer, and transportation information (number of flight and bill number, vessel name and flag, container number, etc.).

In Bitung, tuna processors and canneries report that complying with the catch certificate processes is cumbersome, time consuming, and costly. Furthermore, once the paperwork is submitted, there are long waits (at least five days) for the catch certificates to be issued by the government.

5.4.2 Small Pelagic Fisheries in Indonesia's FMA 716

BACKGROUND

The Preamble of the Indonesian Constitution of 1945 clearly states various national objectives, one of which is to improve public welfare in order to bring into reality one of the national ideas, that is people's prosperity. As such, national development has been undertaken and has promoted various economic activities. Article 33(3) of the Indonesian Constitution stipulates that the land, the waters and the natural resources therein are basic assets for the people's prosperity and should, therefore, be utilized to the greatest benefit of the people. Marine fishery resources are classified as natural resources.[1]

The roles and contributions of marine resources, including fishery resources, in the current long-term national development are clearly stated in the Act no 17 year 2007.[2] The marine environment and its biodiversity will become increasingly important resources for Indonesia to promote economic growth and social development. The Indonesian economic activities that depend on or are related to the sea, including fisheries, have significantly contributed to the national economy through the production of goods and services and creation of jobs for Indonesians. President Joko Widodo and Vice President M. Jusuf Kalla, during their election campaigns of 2014, stated that in order to achieve economic independence, Indonesia needs to conduct a number of programs, one of which is the development of maritime economy, covering: (1) development of integrated fisheries center, (2) the eradication of illegal, unregulated and unreported fishing, (3) reduction of fishing intensity in the area of over-fishing, and increase the fishing intensity in the area of under-fishing within the limits of fishery resource sustainability, and (4) increase in fish production. These goals are included in Indonesia's National Medium-term Development Plan for years 2015 - 2019 (Presidential Regulation no. 2 year 2015).[3]

The National Medium-term Development Plan for the years 2015 – 2019 aims at consolidating the overall development in various fields by emphasizing the achievement of economic competitiveness based on comparative advantage of natural resources and qualified human resources, and the ability of science and technology that continues to increase (Act no. 17 year 2007). The comparative advantage of fishery resources in Indonesia is one of the basis to enhance the competitiveness of fishery products, thus the productivity and efficiency of fisheries should be increased to enhance the competitiveness of fishery products (Presidential Regulation no. 2 year 2015). As the productivity and efficiency of fisheries are higher when fishery resources are healthier and more abundant, the preservation of ecosystems and their flora and fauna are an integral part in building the competitiveness of Indonesia (Act no. 17 year 2007). Optimizing sustainable fish production is another way to strengthen domestic economy, since the increase in fish production contributes to the acceleration of the national economic development.

Unfortunately, most fish stocks in Indonesia are currently over-exploited (Ministerial Decree no. 47/KEPMEN-

[1] Fishery resources, in general, refers to elements of a natural aquatic resource (e.g. strains, species, populations, stocks, assemblages) which can be legally caught by fishing. It may sometimes be taken as including also the habitat of such resources (http://firms.fao.org/firms/concepts/en).

[2] Act no 17 year 2007 on the Long-term National Development Plan for 2005-2025.

[3] Presidential Regulation no. 2 year 2015 on the National Medium-term Development Plan for the years 2015 – 2019.

KP/2016).[4] Some stocks are depleted, and some species are even extinct. Both overfishing and illegal fishing have seriously depleted those living resources and decreased the productivity and resilience of fisheries throughout Indonesia. Overexploitation not only causes negative ecological consequences, but it also has had a negative impact on fishery production, which further leads to negative social and economic consequences.

Indonesia requires strict fisheries management to rebuild stock abundance and restore sustainable productivity. Therefore, management of fisheries becomes an integral part in enhancing the competitiveness of fishery products. Better fisheries management will result in increases in fisheries productivity and efficiency, which in turn will result in optimum sustainable fish production.

Appropriate fisheries management is expected to provide optimum support to national development through positive contributions to increase fishery production, economic growth, productivity improvement, increased income for welfare and prosperity improvement, and increased employment opportunities, while maintaining the sustainability of fish resources and the environment. An ecosystem approach to fisheries management (EAFM), as recommended by FAO (2003),[5] is considered to be an appropriate approach to manage small pelagic fisheries in WPP-716. EAFM is a means to implement sustainable development concepts into fisheries by addressing both human and ecological well-being (FAO, 2003; Bianchi, 2008).[6] The purpose of EAFM is to plan, develop and manage fisheries in a manner that addresses the multiple needs and desires of societies, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by marine ecosystem (FAO, 2003; 2005).[7]

PURPOSE

The paper that this presentation draw from focuses on the small pelagic fish stock in Fisheries Management Area (FMA) or Wilayah Pengelolaan Perikanan (WPP) 716. The small pelagic fish stock was one of the two groups of important species, in terms of quantity and value, namely tunas and small pelagic species. MMAF has finalized and issued the Fisheries Management Plan (FMP) for WPP 716 (Ministerial Decree No. 83/KEPMEN-KP/2016), which was developed using an EAFM framework. [8]

The FMP for WPP 716 as appeared in the Ministerial Decree No. 83/KEPMEN-KP/2016, is not complete with control measures, reference points and control rules. To complement the FMP, the paper presents the current stock statuses of the 17 groups of small pelagic fish species and the fisheries targeting these groups, current issues and objectives of fisheries management, indicators and proposed reference points and harvest control rule. The development of a fisheries management plan is a key step in the implementation of EAFM.[9] This research is expected to contribute to the development and implementation of fisheries control measures for the management of small pelagic fisheries in WPP 716 in order to ensure sustainable and optimal use of the fishery resource.

METHODOLGY

This study was conducted using the rapid appraisal of fisheries management systems to complement the EAFM planning process. The method consists of four sequential but overlapping steps:

1. Completion of a secondary data analyses that included a comprehensive review of existing literature on capture fisheries;
2. Conduct of reconnaissance surveys to validate some of the data/information collected from secondary data analyses, and site visits to initiate stakeholder engagements;
3. Complete field data gathering to collect data on fishing practices and production, fishing-related business activities, cost and earning and other data/information on socio-economic; and

[4] Marine Affairs and Fisheries Ministerial Decree no. 47/KEPMEN-KP/2016 on the estimated potential yield, total allowable catch, and the level of fishery resource utilization in the fisheries management area of the Republic of Indonesia.

[5] The Food and Agriculture Organization of the United Nations (FAO), 2003. Fisheries management. 2. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 2. FAO, Rome. 112p.

[6] Bianchi, G. 2008. The Concept of the Ecosystem Approach to Fisheries in FAO, in: G. Bianchi and H.R. Skjoldal (eds), The Ecosystem Approach to Fisheries (pp: 20 – 38). CAB International and FAO, Rome.

[7] FAO. 2005. Putting into practice the ecosystem approach to fisheries. Rome. 76p.

[8] Marine Affairs and Fisheries Ministerial Decree no. 83/KEPMEN-KP/2016 on Fisheries Management Plan for Fisheries Management Area 716.

[9] A fisheries management plan is a formal or informal arrangement between a fisheries management authority and interested parties or stakeholders which identifies the partners in the fishery and their respective roles, details the agreed objectives for the fishery and specifies the management rules and regulations which apply to it and provides other details about the fishery which are relevant to the task of the management authority (FAO, 2005).

4. Conduct a community/stakeholder workshop to validate the initial analyses and implications as well as develop scenarios on the future of capture fisheries and fisheries management in WPP 716. Group discussions are held as part of the workshop to identify broad objectives of the fisheries management and issues, prioritize the issues, formulate operational objectives for each priority issue, identify indicators for each operational objective, and to formulate required management measures/intervention for each appropriate operational objective.

The activities of the rapid appraisal of fisheries management systems in each step of the development of EAFM Plan are presented in Table 2. Quantitative data were analyzed by using biomass dynamic and bioeconomic models. Statistical and mathematical optimization methods were used in the analyses. Risk assessment was used to prioritized issues. The methods and data used for the analyses as well as the parameter values resulting from the analyses are described in the Annexes.

Table 2. Rapid appraisal of fisheries management systems activities

Steps of developing an EAFM Plan / Activity of Rapid appraisal	Desk study: Comprehensive review of existing literature	Desk study: Secondary data analyses	Reconnaissance surveys	Field data gathering and analysis	Community/stake-holder workshop
1 Define the scope of the fishery management plan under EAF:					
(i) identification of the fishery, geographic area and stakeholders	V		V	V	V
(ii) identification and evaluation of the broad issues	V				V
2 Compile and analyse background information related to: (i) contribution of fisheries to ecological wellbeing and human wellbeing, and (ii) factors affecting the ability of the fishery to achieve its optimal contribution	V	V	V	V	V
3 Set objectives, covering:					
(i) setting the broad objectives,	V				V
(ii) identification of the issues under each of the broad objectives					V
(iii) ranking the issues					V
(iv) developing operational objectives for each priority issue					V
4 Select indicators and reference points for each operational objective:					
(i) Select indicators					V
(ii) Define performance measures/reference points	V	V		V	V
5 Formulate management action/measures and decision rules	V	V		V	V

RESULTS

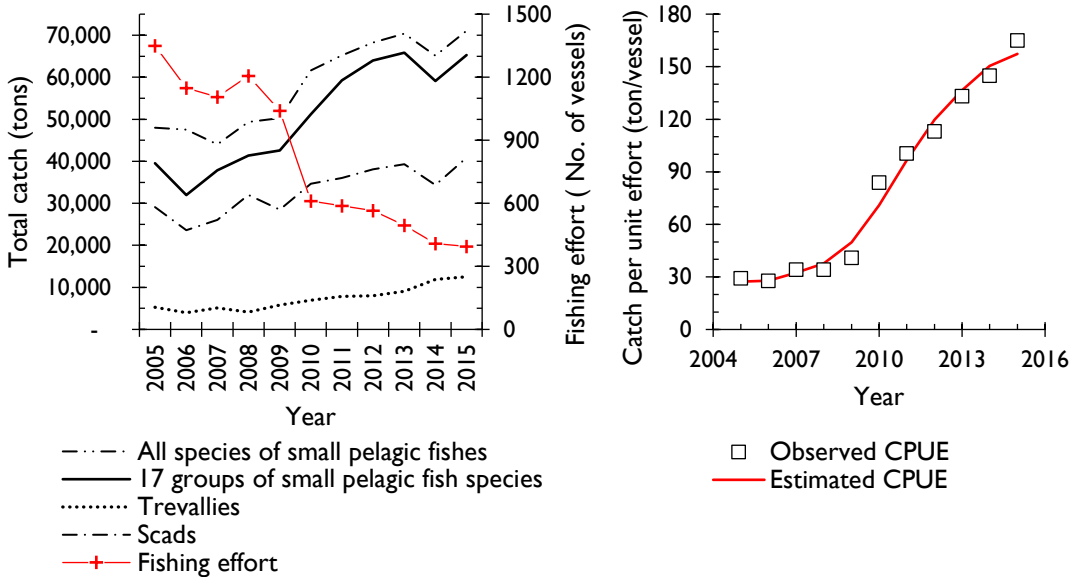
Development of Catch, Fishing Effort and Catch per Unit Effort - Based on the statistical data of capture fisheries, published by DGCF (2016), the small pelagic fishery in the WPP-716 contributed 29.3% of the total production of marine capture fisheries in that area during 2005 – 2015. The small pelagic fishery production landed by purse-seiners from WPP-716 consisted of at least 17 groups of species, contributing 87.1% of the total production of small pelagic fishery during that period. However, 69.2 % of the total small pelagic fishery production consisted of round-scads (56.6%) and trevallies (12.6%).

During 2005-2015, there was a tendency of small pelagic fishery production to increase, while fishing effort of small pelagic fishery tended to decline (Figure 4). The fishing effort was standardized to the number of the 20 meter length overall (LOA) vessels operating purse seine. The average tonnage of the 20 meter LOA vessels was about 35 GT, categorized as a medium scale purse-seiner.

The 17 groups of species were caught by purse-seine fishing fleet and always appeared in the capture fisheries statistic published by DGCF at least during 2005 – 2015. Since the other small pelagic species contributing 12.9% of the total production could consist of different species at different years, this study only analyzed the production of the 17 groups of species. Those 17 groups of small pelagic species will only be mentioned as small pelagic species in the rest of this paper.

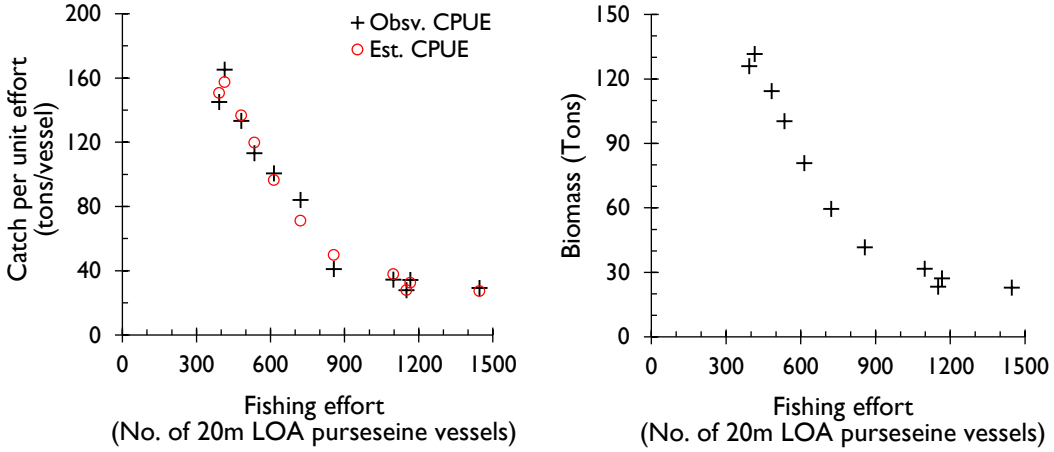
The development of catches per unit of fishing effort (CPUE) resulting from observation and estimation for the period of 2005 – 2015 is presented in Figure 4. The catch per unit effort over the year period tends to increase. In 2015, the production of the small pelagic fish species was about 71 thousand tons. The CPUE of the medium scale purse seine fishery was about 165 ton/vessels. Meanwhile the CPUE of the small-scale purse seine fishery was about 30.4 ton/vessels; the length overall of a vessel operated by the small-scale purse seine fishery was about 12 meters.

Figure 4. Total catch, fishing effort, and catch per unit effort, of small pelagic fishery in WPP-716, 2005 – 2015



Potential Production and the Status of Fish Stock and Fishery – Analysis results showed that the catch per unit effort of small pelagic fishery in WPP-716 decreased with increasing fishing effort (Figure 5). Similarly, biomass of small pelagic fish stock was also estimated to decrease with increasing fishing effort.

Figure 5. Observed and estimated catch per unit effort of small pelagic fishery, and Estimated biomass of small pelagic fish species, in WPP-716



The estimated optimum value of small pelagic fish biomass and production, and the estimated optimum level of fishing mortality and fishing efforts of the small pelagic fishery in WPP 716 are presented in Table 3. The results of the analysis indicate that the small pelagic fish stock in WPP 716 could produce sustainable production at a maximum level of 82 thousand tons/year resulting from fishing effort of 747 units. Fishing activities that resulted in the maximum sustainable yield (MSY) caused a fishing mortality of 0.893 on the small pelagic fish stock, and

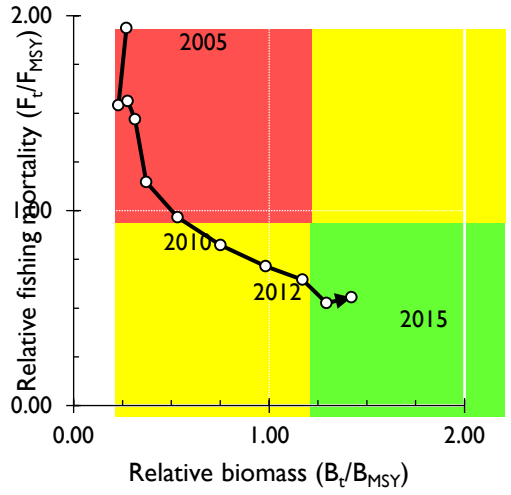
caused the fish biomass to be around 91,950 tons.

Table 3. The optimum value of small pelagic fish biomass and production, and the optimum level of fishing mortality and fishing efforts of the small pelagic fishery in WPP 716

Parameters	Symbol	Units	Point estimate	Approximate 80% confidence limits
Maximum sustainable yield	MSY	tons	82,110	75,630 – 88,100
Fishing mortality at MSY	F_{MSY}		0.893	0.575 – 0.992
Biomass at MSY	B_{MSY}	tons	91,950	76,850 – 142,100
Estimated yield in 2016	$\bar{Y}_{2016}$	tons	66,330	64,720 – 70,000
Relative fishing mortality at MSY	F_{2015}/F_{MSY}		0.555	0.506 – 0.628
Relative biomass at MSY	B_{2016}/B_{MSY}		1.438	1.378 – 1.488

The estimated value of CPUE in year 2015 was about 157 tons/year, while CPUE when MSY reached was about 110 tons/year. In 2015, the fishing mortality (F_{2015}) was estimated to be about 0.496, which was lower than the estimated fishing mortality when MSY reached (F_{MSY}), equaling to 0.893. Therefore, the relative fishing mortality (F_{2015}/F_{MSY}) was about 0.55. On the other hand, the estimated fish biomass in 2015 (B_{2015}) was higher than the fish abundance at MSY (B_{MSY}). The B_{2015} was 131 thousand tons, while the B_{MSY} was about 92 thousand tons. The relative fish biomass in 2015 (B_{2015}/B_{MSY}) was about 1.42. The relative fishing mortality and the relative biomass in 2015, i.e. F_{2015}/F_{MSY} <1 and B_{2015}/B_{MSY} >1, indicated that the fishing pressure by small pelagic fishery to the fish stock was underfishing and the fish stock was in underexploited condition, respectively. The fish biomass was projected to be 132 thousand tons in 2016, and the relative fish biomass (B_{2016}/B_{MSY}) was about 1.44.

Figure 6. Kobe plot of the status of small pelagic fish stock and fishery in WPP-716



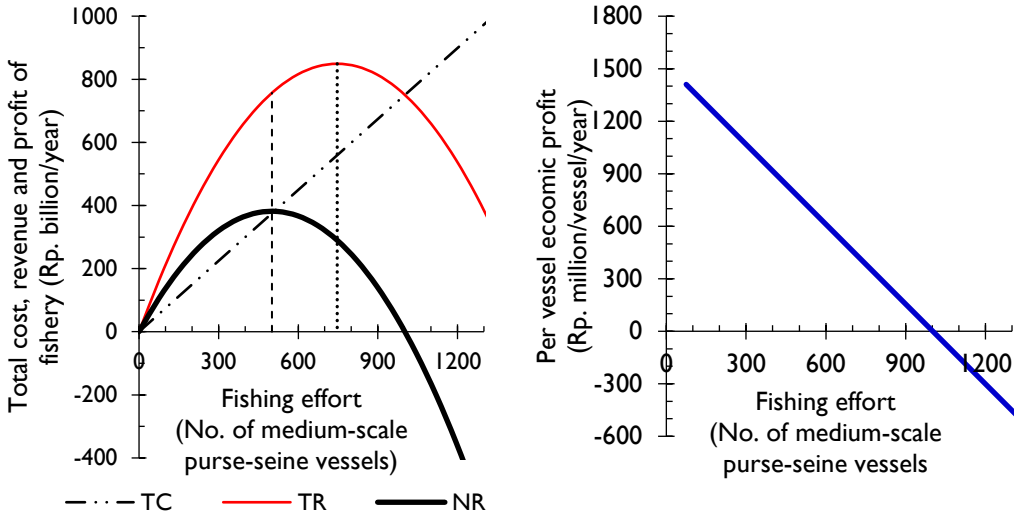
The development of fishing pressures and affected small pelagic fish biomass in WPP-716 was shown from the plot of relative fishing mortality and relative fish biomass presented in Figure 6. In 2005, the small pelagic fishery was overfishing, and the small pelagic fish stock was under overexploited condition, as shown from F_{2015}/F_{MSY} >1 and B_{2015}/B_{MSY} <1. The fishing pressure decreased afterwards, and was at a safe level since 2010, as indicated by F_t/F_{MSY} <1. On the other hand, the fish stock needed longer time to recover from overexploited condition. Therefore, the fish stock was in a healthy condition since 2013, as shown from B_t/B_{MSY} >1. Since 2013, the small pelagic fishery was underfishing, and the small pelagic fish stock was under-exploited.

Economic Potential of Fishery - The average price of small pelagic fishes, based on the data provided by the Oceans Fishing Port of Bitung North Sulawesi, was about Rp. 10,340 per kilogram. Meanwhile, the cost of fishing activity of a medium-scale fishing vessel operating purse-seine in WPP-716 was about Rp. 748.8 million per vessel per year. The estimated cost, the expected income and the expected economic profit of small pelagic fishery operating medium-scale purse-seine vessels at various fishing effort in WPP-716 are presented graphically in Figure 5. The economic profit of fishery varied with the level of fishing effort. In early development of fishery, increases in fishing effort increased the profit. After achieving the optimum profit level, increases in fishing effort decreased the profit. On the contrary, per vessel profit decreased with increasing fishing effort.

When the fishing activity in WPP-716 was targeted small pelagic fish stock with the production at the MSY level, i.e. at the biological optimal level, the total cost of fishery operating medium-scale purse seine vessels was about Rp. 375 billion per year. The expected annual income of the small pelagic fishery was about Rp. 757 billion. Therefore, the expected profit of the small pelagic fishery in WPP-716 and targeting production at the MSY level was about Rp. 382 billion per year. The average economic profit of the fishing activity of a medium-scale fishing vessel operating purse-seine in WPP-716 was about Rp. 762 million per vessel per year when the fishery production was at the MSY level. The optimum economic profit of the fishery was estimated to be about Rp. 382 billion per year resulting from the operation of 501 units of medium-scale purse-seine fishing vessels. The

production of small pelagic fish species when the optimum economic profit achieved, i.e. maximum economic yield (MEY), was about 73200 tons per year. Operation of that fishing fleet costed about Rp. 375 billion per year. When small pelagic fishery was at the economically optimal level, the fishing pressure as indicated by the relative fishing mortality was lower, and therefore safer, than the fishery at the level where biologically optimal. Consequently, the fish stock, as indicated by relative biomass, was healthier than the stock utilized by the fishery at the level where biologically optimal.

Figure 7. The estimated total cost (TC), the expected total revenue (TR), and the expected economic profit (NR) of small pelagic fishery, and economic profit of a vessel, operating medium-scale purse-seine vessels in WPP-716, 2016



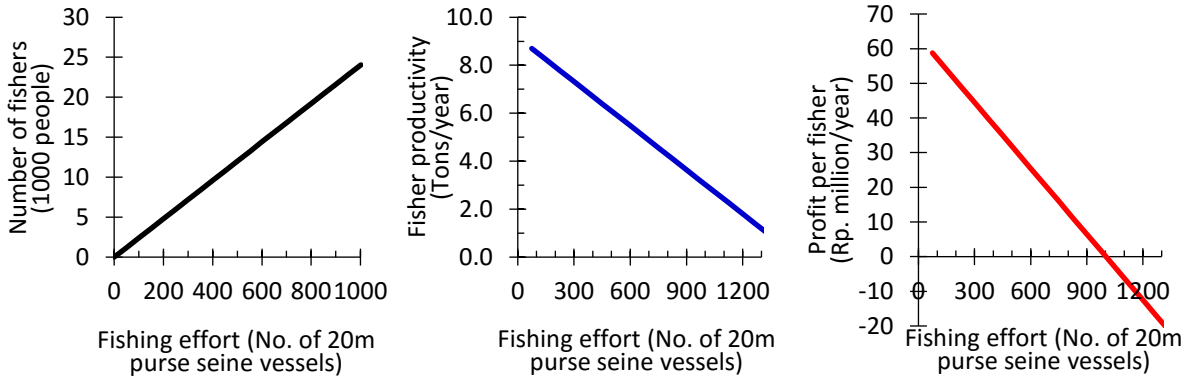
The fishery was estimated to gain zero profit when the number of vessels operated was about 1002 units. At this level of fishing effort, the fishing pressure and the fish stock were in worsened conditions than conditions when fishery utilized stock at either biologically optimal or economically optimal levels. The fishing effort and biomass, and the relative fishing mortality and relative biomass indicated those conditions (Table 4).

Table 4. Estimated production, catch per unit effort, cost, revenue and profits of small pelagic fishery from operating medium-scale purse-seiners at various levels of fishing effort

	Unit	Biologically optimal	Economically optimal	Zero profit	Year 2015
Fishing effort	No. of vessels	747	501	1002	395
Production	1000 tonnes	82.1	73.2	72.6	63.9
Biomass	1000 tonnes	92.0	122.3	60.6	135.3
Catch per unit effort	Tonnes/vessel	109.9	146.1	72.4	161.7
Total cost	Rp. billion	559.3	375.1	750.4	295.8
Total revenue	Rp. billion	849.1	756.9	750.4	660.4
Economic profit	Rp. billion	289.8	381.7	0.0	364.6
Profit per vessel	Rp. million	387.9	761.9	0.0	923.1
Relative fishing mortality		1.00	0.67	1.34	0.53
Relative biomass		1.00	1.33	0.66	1.47

Fisher Productivity and Income - Number of fishing vessel crews varied with type of gear and size of vessel. The average number of purse-seine vessel crews was about 25 people/vessel. The number of fishing vessel crews increases with an increase in the number of fishing vessels (Figure 8). Unfortunately, the increase in the number of vessels result in a decrease in fisher productivity in fishing (Figure 8). An increase in the number of vessels also resulted in a decrease in economic profit per vessel. Since the fishers were paid on the basis of a profit sharing system, increases in the number of vessels also result in decreases in economic profit per fishers.

Figure 8. Employment opportunity, Fisher productivity, and Profit per fisher in the small pelagic fishery at different levels of fishing effort in WPP-716



A fisher gained higher income when fishing effort decreased, as resulted from the termination of fishing activity and exit from fishing industry undertaken by other fishers. The fisher income would be optimum when fish stock is healthy and the fishery operates at the optimum level. When the fishing effort was in the biologically optimal level, i.e. E_{MSY}, fisher productivity and income were 4.6 tons/person/year and Rp. 16.2 million/person/year, respectively (Table 5). The fisher productivity and income were higher than those at E_{MSY} when the fishing effort was in the economically optimal level, i.e. E_{MEY}.

Table 5. Estimated number of fishers of small pelagic fishery, and their productivity and income operating at various levels of fishing effort

	Unit	Biologically optimal	Economically optimal	Zero profit	Year 2015
Fishing effort	No. of vessels	747	501	1002	395
Number of fishers	People	12024	17928	24051	9481
Fishers productivity	Tons/person/year	6.1	4.6	3.0	6.7
Fishers income	Rp. million/person/year	31.7	16.2	0.0	38.5

5.4.3 Methodology on EAFM Planning

The legal basis of fisheries management in Indonesia is Fisheries Act no. 31 year 2004.[10] This Act has its root in the 1945 Constitutions of the Republic of Indonesia, particularly Article 33(3), stipulating that the natural resources of Indonesia are basic assets for the people's prosperity and should be utilized to the greatest benefit of all Indonesians. Improvement of the people welfare is undertaken by national development. In the Long-term National Development Plan for 2005-2025, it is clearly stated the roles and contribution of marine resources (Act no. 17 year 2007). To promote economic growth and development, there is a need to protect marine environments and to manage marine resources, including fishery resources that balance the basic needs of a healthy marine ecosystem, the need to sustain and nourish humankind from what the marine ecosystem can produce. That effort would ensure more reliable sources of food and income for the millions living along coastlines, as well as enhancing the welfare of others in the country. In accordance with those, fisheries management in Indonesia is intended to obtain optimal and sustainable benefits and to ensure sustainability of fish stocks (Act no. 31 year 2004, Article 6(1)).

Management of Indonesian fisheries is a complex task conducted to ensure sustainability and optimal use of multispecies fishery resources living in a complex environment, where interactions exist among fishery resources, and between fishery resources and their ecosystems. Fisheries management in Indonesia is also conducted to achieve a number of objectives, as stated in the Act no. 31 year 2004, Act no. 17 year 2007 and

[10] Fisheries management covers all effort, including integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources, and implementation and enforcement of legislations in fisheries, undertaken by government or other authority in order to accomplish the continued productivity of the resources and other agreed objectives (Act no. 31 year 2004, Article 1).

Presidential Regulation no. 2 year 2015. Those multiple objectives include conservation, economic, and social objectives. Multiple objectives and values of fishery resources and marine ecosystems are recognized within the context of sustainable development. The concept of sustainable development requires an ecosystem approach to fisheries.

The EAFM is the most complex kind of management that places fisheries within the context of the whole ecosystem. It is an approach to balance both human well-being and ecological well-being. An EAFM strives to balance diverse societal objectives, by taking into accounts the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO, 2003). The purpose of an ecosystem approach to fisheries is to plan, develop and manage fisheries in a manner that addresses the multiple needs and desires of societies, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by marine ecosystem (FAO, 2003). This approach is now recommended by FAO and requires that fishery management be placed within the wider context of sustainable development. EAFM merges two different but related paradigms, namely ecosystem management and fisheries management (FAO, 2003; 2005). The ecosystem management focuses on protecting and conserving ecosystem structure and functions by managing the biophysical components of ecosystem, while fisheries management focuses on providing food and income/livelihoods for humans by managing fisheries activities (FAO, 2003). The EAFM requires coordination, consultation, cooperation and joint decision making not only between different fisheries operating in the same ecosystem or geographical area, but also between the fisheries management agency and the other sectors that have an impact on fisheries or are effected by fisheries (FAO, 2005).

The EAFM is in accord with the goals of fisheries management and sustainable utilization of fishery resources in Indonesia, as implicitly stated in Indonesian Constitution of 1945 and Fisheries Act No 31 of 2004. Article 33(3) of the 1945 Constitutions of the Republic of Indonesia and Article 6(1) of Act no. 31 year 2004 clearly state two high level policy goals, i.e. fish stocks as part of natural resources in Indonesia should be sustainable and utilized in an optimal and sustainable way for the welfare of Indonesians. These national goals imply that fisheries management should ensure both ecological well-being and human well-being. The EAF is a means to implement sustainable development concepts into fisheries by addressing both human and ecological well-being (FAO, 2003; Bianchi, 2008).

EAFM is a broadening of current fisheries management practices. Data and information needs to implement EAF will be broader and the analysis will be very complicated, as shown by Plagányi (2007).[11] Consequently, the implementation of EAFM demands higher capacity, wider systems and adds a significant additional budget. From a global perspective, an EAFM is still in its very first stages of implementation, although it may already be quite advanced in a few countries (Garcia & Cochrane, 2005).[12]

Indonesia has initiated the implementation of EAFM, as was used in fisheries management planning for WPP 718 (see Ministerial Decision no. 54/KEPMEN-KP/2014) and other 10 WPPs. However, the formulation of appropriate fisheries management in Indonesia was constrained by incomplete and often biased data and information available. In capacity-poor and data-poor fisheries, as those in Indonesia, complex EAFM models as described by Plagányi (2007) will be difficult to be implemented. However, the absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment. The precautionary approach should be applied widely to conservation, management and exploitation of living aquatic resources in Indonesia, to protect them and preserve the aquatic environment, taking account of the best scientific evidence available (FAO, 1995).[13]

Considering multiple objectives of fisheries management, complexity of multispecies fisheries and the current practice of governance relating to fisheries, limited availability of data and the sub-optimal capacity of management institutions, it is suggested to implement EAFM with a limited coverage focusing on the management unit, taking into account their coastal and marine environment, and involving fisheries institution and other institutions related directly to fishery production economics. Furthermore, fisheries management in Indonesia is expected to be conducted by adopting learning-by-doing processes, or adaptive management to deal with the complexity of fisheries and incomplete data, information and knowledge on the ecosystems. Meanwhile, formulation of the strategy of fisheries management adopting ecosystem approach can be undertaken by using methodology for limited data fishery as developed for the FAO Projects and reported by Cochrane *et al*. (2007)

[11] Plagányi, É.E. 2007. Models for an ecosystem approach to fisheries. FAO Fisheries Technical Paper. No. 477. Rome, FAO. 108p.

[12] Garcia, S.M., & K.L. Cochran, 2005. Ecosystem approach to fisheries: a review of implementation guidelines. ICES Journal of Marine Science, 62: 311-318.

[13] FAO. 1995. Code of Conduct for Responsible Fisheries. FAO, Rome. 41p.

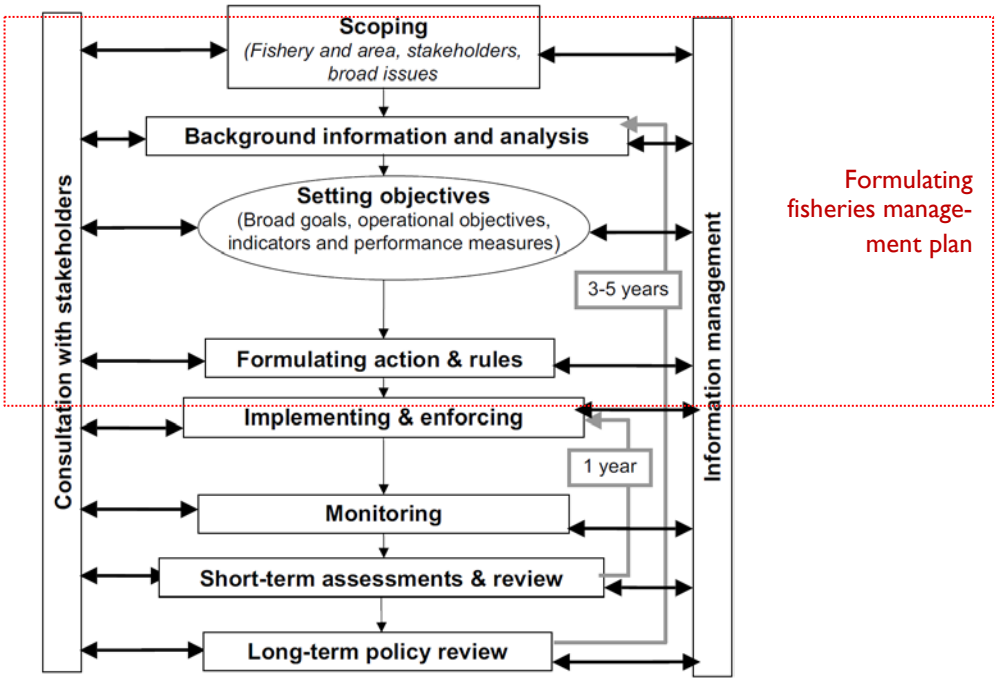
and Grant (2008),[14,15] and for the tuna fisheries of the Western and Central Pacific Region (Fletcher, 2008, 2010).[16,17] FAO, in a purpose of providing technical support to its member countries for the adoption and implementation of the EAF, has issued a handbook on preparation and implementation of an EAFM plan (FAO, 2016).[18]

Based on the CTI Regional EAFM guidelines the EAFM planning process includes the following five steps (plus a pre-step for start-up tasks):

Step 1. Define and scope the fisheries management unit;
Step 2. Identify and prioritize issues and goals;
Step 3. Develop the EAFM plan;
Step 4. Implement the EAFM plan;
Step 5. Monitor, Evaluate and Adapt.

It should be noted that the EAFM planning process is dynamic rather than linear, often cyclic as it evolves, and adaptive. A process of development, implementation, evaluation and adaptation of the EAFM plan with more detail steps (Figure 9) is provided by FAO (2003, 2005), and Garcia & Cochran (2005).

Figure 9. A process of developing, implementing, and modifying an EAFM plan



The steps of the planning and management cycle of EAFM are very similar to those undertaken under conventional fisheries management. Additional mandatory elements under an EAF framework include (1) stakeholder participation at all steps of the planning, management and decision-making process, (2) use of best available knowledge, which also implies that the planning and decision making should take place without being postponed until improved knowledge is available, and (3) to consider the priority of actions along the three main dimensions of fisheries systems, i.e. the ecological, human and institutional dimensions (Bianchi, 2008).

The development of FMPs is a key step in implementing EAFM. The implementation of an ecosystem approach

[14] Cochrane, K.L., C.J. Augustyn, G. Bianchi, P. de Barros, T. Fairweather, J. Iitembu, D. Japp, A. Kanandjembo, K. Kilongo, N. Moroff, D. Nel, J.-P. Roux, L.J. Shannon, B. van Zyl, & F. Vaz Velho. 2007. Results and conclusions of the project "Ecosystem approaches for fisheries management in the Benguela Current Large Marine Ecosystem". FAO Fisheries Circular. No. 1026. Rome, FAO. 167p.

[15] Grant, S. 2008. Scientific basis for ecosystem-based management in the Lesser Antilles including interactions with marine mammals and other top predators: Assessment of fisheries management issues in the Lesser Antilles and the ecosystem approach to fisheries management by, FAO, Barbados. 254p.

[16] Fletcher, W.J. 2008. A Guide to implementing an ecosystem approach to fisheries management (EAFM) for the tuna fisheries of the Western and Central Pacific Region. Forum Fisheries Agency, Honiara, Solomon Islands. Version 5 March 2008. 70p.

[17] Fletcher, W.J. 2010. Planning processes for the management of the tuna fisheries of the Western and Central Pacific Region using an Ecosystem Approach. Forum Fisheries Agency, Honiara, Solomon Islands. Facilitator's Version 6.1 January 2010. 61p.

[18] FAO, 2016. Handbook of the EAF-Nansen project training course on the ecosystem approach to fisheries: Preparation and implementation of an EAF management plan. Rome, FAO. 71p.

requires that management plans be developed consistent with the EAFM principles (Bianchi, 2008). FAO (2003) identifies the key principles addressed by EAFM as follows:

1. Fisheries should be managed to limit their impact on the ecosystem to an acceptable level;
2. Ecological relationships between species should be maintained;
3. Management measures should be compatible across the entire distribution of the resource;
4. Precautionary approach should be applied because the knowledge on ecosystems is incomplete;
5. Governance should ensure both human and ecosystem well-being and equity.

5.4.4 Results of Gender Analysis at Fisheries Sector in Bitung

OVERVIEW

In early 2017, USAID Oceans initiated a gender analysis in the fisheries sector of Bitung, Indonesia through the Faculty of Fisheries and Marine Science, Sam Ratulangi University (UNSRAT), Manado. Bitung is the center of the fishing industry in Eastern Indonesia, particularly for tuna and tuna-like species.

Tuna fishing is predominantly a male-dominated industry. Although women play key roles in post-harvest activities, their contribution to the industry has often been undervalued and unappreciated. Therefore, a gender analysis was conducted to understand the different roles and interactions among male and female actors along the tuna value chain and to identify key issues and constraints to achieve gender equality and women empowerment. The results of this study identified strategic areas of intervention to empower and build the capacity of women along the fisheries value chain.

FINDINGS

USAID Oceans' Gender Analysis, particularly through the value chain mapping workshop, found that the tuna value chain in Bitung is jointly managed by men and women. Fishing and fish transportation activities are exclusively carried out by men, whereas most of the fish processing and fish trading activities are carried out by women. The main gender issues in the fisheries sector in Bitung include differences between men and women in terms of access and control to resources, roles and responsibilities, and knowledge on certain activities.

Through literature reviews, in field data collection, and the value chain mapping workshop, the UNSRAT team established the following preliminary findings. More in-depth analysis will occur as research results are analyzed and the research team finalizes the Gender Analysis Report.

- Men control the access to physical resources (ships, fishing gear and industrial-scale processing units), while women gain access to small-scale processing units and local marketing activities. Access to capital and information resources, especially for small-scale ventures, are most often dominated by women.
- There is close cooperation among family members in carrying out activities in the fisheries sector. If a man as the head of the household works as a fisherman, then his wife plays a role in helping to sell the fish. Conversely, if the wife has a fish processing business, then her husband plays a role to help carry out heavy work, such as transporting fish.
- Both men and women have roles in Bitung's fisheries sector. Men complete heavier physical tasks like fishing and transporting fish, while women are more involved in fish processing and marketing. The participation of women and men in the fisheries value chain is relatively comparable in terms of working hours and income contribution.
- Men were found to be more knowledgeable in fishing activities, while women have more knowledge in fish processing and marketing activities. These gender roles are reinforced in the community through beliefs and perceptions that women are not suitable for fishing activities, either because of physical factors or their responsibility to take care of the house and the children.
- Time spent by women and men in the tuna value chain is relatively equal. Women spend more time than men in fish processing activities, but outdoor activities along the value chain (fish and fish products transport and selling) are relatively comparable between men and women.
- Men and women have equal legal rights and status in all activities of tuna value chain. Power and decision-making varies across the value chain, but on average are relatively comparable and reasonable.
- The distribution of inheritance to children is usually done fairly and equitably regardless of the sex of the child.

RECOMMENDATIONS

Based upon the conducted research, UNSRAT consulted with stakeholders on priority needs and developed the following recommendations to improve gender equity and gender equality in Bitung fisheries. Additional recommendations, including how USAID Oceans' CDTS can benefit gender issues, will be developed upon finalization of the Gender Analysis.

- Strengthen existing groups of women fish processors
- Facilitate formation of new women's groups that will start business as fish vendors and fish processors
- Provide capital assistance programs for women-owned businesses
- Provide tailored training to improve women's entrepreneurial, managerial and technical skills
- Conduct capacity development for women entrepreneurs to gain greater access to raw materials and financial resources
- Develop accompaniment programs for women entrepreneurs to conduct business diversification, market expansion, product development, packaging design, etc.
- Facilitate provision of day care facilities for female workers in fish processing plants
- Support balancing of roles between women and men in public decision-making at kelurahan, kecamatan and city level.

METHODOLOGY

This study employed the Gender Dimensions Framework (GDF) developed by Rubin et al. (2009) to understand gender issues and gender differences in roles, constraints and opportunities along tuna value chain in Bitung. The GDF comprises six dimensions: (i) access and control over key productive assets, (ii) knowledge, beliefs and perceptions, (iii) practices and participation, (iv) time and space, (v) legal rights and status, and (vi) power and decisionmaking. This framework also facilitates data collection and further implementation of the study.

The UNSRAT team conducted a literature review, preliminary field visits, secondary data collection, and a gendered value chain mapping workshop. Primary data collection was carried via interviews with 244 respondents—fishers using various types of fishing gears, fish traders, small-scale fish processors and workers of large fish processing plants. Participation was gender-balanced, with 48% of respondents male, 52% female. The survey was conducted from March to May 2017 and covered four subdistricts in Lembeh Island (Papusungan, Batu Lubang, Pasir Panjang, Pintu Kota) and four subdistricts in the mainland of Bitung City (Aertembaga Satu, Girian Atas, Girian Bawah and Sagerat). Results of in-field research were confirmed through focus group discussions, key informant interviews, and a local stakeholder validation workshop.

6. DAY TWO PROCEEDINGS

6.1 Overview

Opening the second day of the workshop, Dr. Jardie Andaki on behalf of UNSRAT, welcomed the participants to the second day of the workshop, gave a brief synthesis of day one activities and provided an overview of the schedule for day two.

While the first day of the workshop was characterized by plenary presentations, days two and three of the workshop were structured into various group discussions to gather participant inputs. The group discussions aimed to explore and determine priority issues, set objectives, select indicators and management measures for the Sustainable Fisheries Management Plan, especially for tuna and small pelagic fish resources with stakeholders in North Sulawesi Province as a USAID Oceans learning site.

Participants were divided into three major groups based on three components of fisheries issues, namely ecological well-being, human well-being and governance. The local committee divided the participants according to their background (Annex III).

6.2 Parallel Group Discussion

In the discussion session, participants were divided into three main categories related to fisheries, i.e.; contribution of the fisheries to ecological well-being, contribution of the fishery to human well-being, and governance. Each group discussed the issues faced in the management of fisheries resources, especially in regard to tuna and small pelagic fish. The participants in each group were asked to determine the issues that are considered priorities and determine its operational objectives, indicators and its management measures.

Each group was guided by a facilitator from the local committee from the Faculty of Fisheries and Marine Science of Sam Ratulangi University (FPIK-UNSRAT), as follows:

- Dr. Gustav Mamangkey as a facilitator of the Ecological Well-being group,
- Dr. Sitti Suhaimi as a facilitator of the Human Well-being group,
- Dr. Jhony Budiman as a facilitator of the Governance group (Ability to achieve).

In the first focus group session, participants were guided in a discussion of the specific issues faced in managing fishery resources, to later be used to determine the priority issues. The discussions dynamics of the three groups were quite tough, exciting, and dynamic. The participants were enthusiastic to engage with each other in debate as participants were comprised of various layers of fishermen, fishery producers, fishery entrepreneurs as well academe and civil servants from the central and local government.

In the afternoon, each group presented the results of the issues their groups identified. In this presentation session, there were many exchanges of intergroup issues that came up. In the subsequent activities, each group was asked to establish the priority level of the issues raised by using a scoring method (presented by Dr. Purwanto). The results of the work in each group are summarized below:

Group 1: Ecological Well-being

The group discussed that some of the management challenges are related to ecological well-being by determining some priority issues such as that there is a catch limit of big eye tuna (BET) of about 5889 tons/year that has not yet utilized. Participants also discussed Fish Aggregating Devices (FAD) which indicated blocking of the fish migratory path (Hallier and Gaetner, 2008: Marsac *et al*., 2000; Dagorn *et al*, 2010).

Group 2: Human Well-being

The Human Well-being component group discussed the issues related to the increase in remote fishing grounds that have resulted in increased fishing operational costs (a priority issue). Other proposed issues were the declining income from tuna and skipjack fisheries, the low quality of the catch that leads to low selling price of the products, and the lack of fishers knowledge related to post-harvest and handling that may lead to lower quality fish.

Group 3: Governance

The large number of tuna fishing vessels that have not yet registered to the Western and Central Pacific Fisheries Commission (WCPFC) Secretariate and the need for data on the dynamics of tuna and skipjack fisheries for management in the WCPFC area by Governance group were agreed as priority issues. In addition, the absence of derivative regulations regarding the authority of the central and provincial governments related to the Law No. 23/2014 concerning Local Government is also considered as the priority issue.

The presentation of Group 1 was represented by Gustaf Mamangke (FPIK-UNSRAT), Group 2 was represented by Aswan Tamim (DKP Bitung) and Group 3 by Jhoni Budiman (FPIK-UNSRAT).

Following, participants were asked to discuss in groups to set operational objectives by considering the value of impact and handling opportunities on the established priority issues. The purpose of determining the operational objective is to find ways to overcome the priority issues. Dr. Purwanto provided guidance to the participants on how to determine the value of the impact and its handling opportunities. Participants were advised to consider the objectives of Indonesian fisheries management in determining operational objectives and to consider the

productivity aspect and the increase in income as supporting aspects to the determination of 'operational objectives'.

7. DAY THREE PROCEEDINGS

7.1 Panel Discussion Results

On day three, the groups once reported out on their group discussions from the previous day to set operational objectives. Summary reports included:

Group 1: Ecological Well-being

- Increases in remote fishing locations/grounds lead to higher operational costs of the fishers, thus participants determined that it is necessary to increase the abundance of fish in the fishing ground.
- To overcome decreased income from tuna and skipjack fisheries, participants agreed that the productivity of tuna/skipjack vessels must be increased in order to increase the net income of the tuna fisheries.
- The selling price of fish is not prime because of the low quality of the fish catches landed, thus the quality of the catch must be maintained on board.

Group 2: Human Well-being

- The catch limit of big eye tuna (BET) is about 5889 tons/year but has not been utilized, thus the utilization of BET catch limits should be optimized.
- Regarding the use of Fish Attractive Device (FAD) issue which indicates that it may block the fish migration paths, it is necessary to initiate a FAD controlling system in the FMA 716 region.
- The details of other operational objectives agreed by this group are contained in Annex II.

Group 3: Governance

- Large numbers of tuna fishing vessels are not registered with the WCPFC, thus awareness of WCPFC ship registration mechanisms must be raised.
- To address the data needs concerning the dynamics of tuna and skipjack for management in the WCPFC area, participants agreed fishery data must be collected as needed on a regular basis and reported to the WCPFC.
- There are no derivative rules on the authority of the central and regional governments based on Law No. 23/201, thus it is necessary to clarify and to divide some of fisheries management authority.

In the afternoon session, to facilitate the participants' further understanding in determining the operational objectives, Dr. Purwanto explained the determination of the indicators and management steps. Mr. Saut Tampubolon, representative of the Directorate of Fish Resources Management of the Directorate General of Capture Fisheries (MMAF), gave a presentation on management steps and operational objectives examples.

Following, each group revisited the operational objectives that were discussed in the previous session to add indicators and management steps that will inform management strategies. An example of discussion results can be seen in the table compiled by Human Well-being group:

Table 6. Sample of issues, operational objectives, indicators and management measures as compiled by Human Well-being group

No	Issues	Operational Objectives	Indicator	Provision / management measures
1	More remote fishing grounds cause high operating costs	Increase the abundance of fish in the old fishing ground	CPUE	Control of fishing effort
2	Decline in revenue from tuna fishery	Increased productivity of tuna fishing boats	CPUE	Control of fishing effort
		Increased production of tuna	Production, CPUE	Control of fishing effort
		Increase in net income of tuna fishery	Advantages fishermen	Increased efficiency of fishing effort
3	Decline in revenue from tuna fishery	Increased productivity of tuna fishing boats	CPUE	Control of fishing effort
		Increased production of tuna	Production, CPUE	Control of fishing effort
		Increase revenue tuna fishery	Advantages fishermen	Increased efficiency of fishing effort
4	Selling price is not prime because of the low quality of the fish landed	Maintaining the quality of the catch on board	The proportion of fish catches in landing with good quality	Quality control policy of the catch on board
5	Low quality of fish for processing raw material	Maintaining the quality of the fish in transport to the processing unit	The proportion of the raw materials of good quality fish in the processing unit	Policy quality control of raw materials processing
6	Declines in revenue due to the lack of raw materials for the processing of smoked fish	Optimizing the catch of local fishermen	Production	Control of fishing effort
			CPUE	Control of fishing effort
		Increasing the supply of raw materials from other regions	The volume of supply from other regions	National logistics distribution optimization
7	Fisheries contribution to the regional economy declined	Increase the contribution of fisheries to fishing	Production	Control of fishing effort
			CPUE	Control of fishing effort
		Increase the contribution of fisheries on the fish processing	production of processed	Optimization of the supply of raw materials
		Increase Revenue (PAD) on fisheries	PAD of fisheries	Improved government services
8	Declining foreign exchange (devisa) from the export of fish processing	Increase exports of processed fishery production	Volume and export value of processed fish	Matching the requirements of the importing country (al provisions traceability)
				Quality control is processed
				Maintaining the stability of the production of processed
				New market penetration and increased production of processed
9	Household income communities around the fish processing unit declining	Improving fish processing business activities	Volume production of processed fish	Optimization of the supply of raw materials

No	Issues	Operational Objectives	Indicator	Provision / management measures
			Total employment in the fish processing business	optimization of job opportunities for local communities
10	Resources under-exploited tuna	Optimize catches of skipjack fishery	Production tuna	Control of fishing effort
			efforts to arrest	Control of fishing effort
11	Opportunity increase in longline fishing fleet and purse seine area WCP	Improving the fishing fleet in the area purse seine WCP	The number of fishing boats purse seine	Control of fishing effort
			Production of tuna and tuna	Control of fishing effort
		Increase longline fishing fleet in the area of WCP	Number of longline fishing boats	Control of fishing effort
			Production tuna	Control of fishing effort
12	Resilience and food security as a protein source related with catch volume and low quality of the catch	Increase fish production	Fish production	Control of fishing effort
		Preserving fish resources	CPUE	Control of fishing effort
		Maintaining the quality of fish	The proportion of fish catches in landing with good quality	Quality control policy catches
13	Fishermen's cooperative role is not optimal due to capital constraints	Enhancing the role of cooperatives in supporting the efforts of fishermen and fish processors	Kind and cooperative business turnover	
14	Lack of knowledge about the handling of post-catch fish, causing low quality	Improving knowledge and skills of handling post-catch fish		
15	Local fishermen work ethic is lower than foreign fishermen	Improving the work ethic of the local fishermen		

7.2 Closing Program and Sharing of Thoughts

Discussions held during the workshop produced valuable inputs and information to inform the preparation of the Sustainable Fisheries Management Plan (SFMP) develop under the Ecosystems Approach to Fisheries Management (EAFM) for FMA 716. At the end of the workshop, the participants were asked to fill out an After Action Review form (Annex V) as part of the assessment and evaluation of the Integrated Stakeholder Consultation Workshop. Selected participants were asked to share some of comments on the workshop.

Mrs. Deyne Rondonuwu, Head of Bureau for Processing of Marine and Fishery Products, Marine and Fishery Office of North Sulawesi Province, expressed her gratitude for the opportunity to participate in the workshop. She was delighted that their break-out group was well represented and said that even though the participants hold different positions, they still all agreed that law enforcement is important.

Mr. Aswan Thamin, Staff of the Local Government in Bitung, said that he was very grateful to have this opportunity to participate in the workshop as he also participated in the survey done in Lembeh for the Gender analysis study. He hopes that since the USAID Oceans project is a continuing partnership with the LGUs, that the results of the study be translated in a way that influences the government to take concrete actions in the future.

Mrs. Marwiah Lahadji, from small-scale fishery industry in Girian-Bitung, expressed her thankfulness to be involved in the project. She felt that she was free to express her thoughts and was heard during the workshop. She mentioned that as a fish processor she has been invited many times for similar events i.e., seminars and workshops in Jakarta and other places to discuss how to improve the welfare of fishermen and fish processors. The answer is always to have patience. Today, she is still patient and believes that a better future for fisheries lies ahead.

Ms. Shanty Sijabat, Verite, enjoyed the three-day workshop and especially liked the presentations of discussion outputs. She also appreciated how insights were freely shared throughout the duration of the workshop.

Ms. Stephani Mangunsong, MDPI, said that she was delighted to join this workshop and as a result has improved knowledge and experience in fisheries. She appreciated the participation of the different stakeholders, especially during the two days of discussions which were very tough. As a part of governance discussion group, we agreed and concluded that in order to improve human well-being in fisheries, fisheries governance must be improved.

Dr. Johnny Budiman, UNSRAT, was delighted to be involved in the workshop especially as a facilitator for the group of governance discussion sessions. He said that recently we are focusing on the fisheries management through EAFM and that the management of tuna in the Fisheries Management Area (FMA) of 716 needs to be implemented. Therefore, he said a learning center for FMA 716 has been established and the coordinator for this area is the Dean of Faculty of Fisheries and Marine Science UNSRAT Prof. Grevo Gerung.

7.3 Closing Messages

The workshop culminated with closing remarks from USAID Oceans, MMAF and USAID. On behalf ofUSAID Oceans, Mr. Geronimo Silvestre closed the workshop formally by thanking the participants for their enthusiasm and participation during the three-day workshop. He expressed his appreciation to the organizers from MMAF and UNSRAT who organized a successful event.

Mr. Saut Tampubolon, MMAF, remarked that capacity building in the fisheries sector is very difficult as no one knows the exact number of fish, just the catch per unit effort. Therefore, we need data and we need to discuss how to manage the fisheries. All stakeholders should be transparent in providing fisheries data because if the data is biased, the measurement would be wrong. He suggested some recommendations, such as conducting a study for small-scale fisheries in provincial level and developing a harvesting strategy in FMA 715, 716, 717, especially for small pelagic fish such as scad fish.

Mr. Alfred Nakatsuma, Director of the USAID Regional Development Mission for Asia's Environment Office, remarked that he arrived for the first time in Manado in 1993. At the time, management of fisheries was based on market based data. Since then, there have been many improvements now in fisheries management by applying better documentation of fish catch started from the point of catch. He encouraged the participants to support the management of fisheries in Indonesia through working together between stakeholders in fisheries sector.

ANNEX I. STAKEHOLDER VALIDATION WORKSHOP PROGRAM

DAY 1: 19 JUNE 2017

OPENING SESSION

08.30 – 09.00	Registration
09.00 – 09.20	Welcoming remarks and workshop overview (Prof. Grevo Gerung, University of Sam Ratulangi)
09.20 – 09.40	Opening speech -open the workshop (Reza Shah Pahlevi, Ph.D - DGCF MMAF)
09.40 – 10.00	*Coffee Break*

PRESENTATION SESSION 1

10.00 – 10.30	National Policy on Fisheries Management and Development in FMA 716 (Saut Tampubolon - MMAF)
10.30 – 11.00	Policy of North Sulawesi Province on Fisheries Management and Development in Provincial waters of FMA 716 (Ronald Sorongan - DKP Province of North Sulawesi)
11.00 – 11.30	Overview the Ocean and Fisheries Partnership (Dr. Purwanto - USAID Oceans)
11.30 – 12.30	Open discussion (Q & A)
12.30 – 13.30	*Lunch Break*

PRESENTATION SESSION 2

13.30 – 13.50	Profile of Fisheries and Fisheries Resources in FMA 716 (Dr. Badrudin - USAID Oceans, Indonesian team)
13.50 – 14.10	Results of Value Chain Analysis in Bitung Presented by Oceans partner (Sari - Marine Change)
14.10 – 14.30	Results of Labor analysis at fisheries sector in Bitung Presented by Oceans partner (Shanty - Verite)
14.30 – 14.50	Results of Small-scale Tuna Fisheries in Bitung Presented by Oceans partner (Stephani - MDPI)
14.50 – 15.30	Open discussion (Q & A)
15.30 – 15.15	*Coffee Break*

PRESENTATION SESSION 3

15.15 – 15.35	Electronic Catch Documentation Traceability (e-CDT) (Dr. Farid Maruf – USAID/RDMA)
15.35 – 15.55	Small Pelagic Fishery in Indonesia's FMA 716 (Indonesia EAFM specialist, Dr. Purwanto)
15.55 – 16.15	Methodology on EAFM Planning (Saut Tampubolon - MMAF)
16.15 – 16.35	Results of Gender analysis at Fisheries sector in Bitung Presented by Oceans partner (Alvon Yusuf - Unsrat)
16.35 – 17.00	Open discussion (Q & A)
17.00 – 17.15	Closing Day 1

DAY 2: 20 JUNE 2017

INTRODUCTION SESSION

08.30 – 08.45 Overview day 1
Presented by Oceans partner (Daisy Makapedua - Unsrat)
08.45 – 09.00 Welcoming remarks (USAID/RDMA)
09.00 – 10.00 Grouping (Workshop Facilitators by UNSRAT)

- Group 1: Ecological well-being
- Group 2: Human well-being
- Group 3: Governance

Notes: Morning coffee/tea served in each meeting room

PARALLEL GROUP DISCUSSION

10.00 – 12.30 Group discussion session 1: Identify issues of fisheries

12.30 – 13.30 Lunch Break

13.30 – 14.30 Panel discussion 1
14.30 – 17.00 Group discussion session 2: Prioritized issues and revisit operational objectives of fisheries management

Notes: Afternoon coffee/tea served in each meeting room

17.00 – 17.15 Closing Day 2

DAY 3: 21 JUNE 2017

08.30 – 08.45 Overview Day 2
Presented by Oceans partner (Jardie Andaki - UNSRAT)
08.45 – 10.00 Panel discussion 2
Presented by Indonesia Oceans Team

Notes: Morning coffee/tea served in each meeting room

10.00 – 12.30 Group discussion session 3: Revisit fisheries management intervention: measures, indicators, and reference points

12.30 – 13.30 Lunch Break

13.30 – 14.30 Panel discussion 3
14.30 – 15.30 General discussion

Notes: Afternoon coffee/tea served in panel room

15.30 – 16.00 Wrap up workshop
16.00 – 16.15 Closing workshop

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ANNEX III. SCENARIO BUILDING BREAK-OUT GROUPINGS

Group 1 (Ecological Well-being)

1. Muhamad Lukman
2. Lumpat Sormin
3. Daniel Ndahawali
4. Rizka F. Sari
5. Janti Djuari
6. Riana Handayani
7. Eva Stephani Caroline
8. Gustaf Mamangkey
9. Saut Tampubolon
10. Maxi Nelwan
11. Audy Dien
12. Jason Loy
13. Timothy Hromatka
14. Nurafina Suwadji
15. Erfin Nurdin
16. Budi Nugraha
17. Maureen Tangkudung
18. Tineke Adam
19. Feisal Pamikiran
20. Stephanus Mandagi
21. Heri
22. Hendrik Maarebia
23. Wildan Ghifary
24. Reiny Tumbol

Group 2 (Human Well-being)

1. Irawati Tobangen
2. Mariane Pondaag
3. Aswan Thamin
4. Hofni Muhaling
5. Djefry Sagune
6. Deyne Rondonuwu
7. Yenni Rumagit
8. Erni Darongke
9. Anesta Makawekes
10. Marwiah Lahadji
11. Joseph Palinggi
12. Shanty Sijabat
13. Victoria Manoppo
14. Siti Suhaeni
15. Eva Suryaman
16. Noflin Takahelo
17. Hastuti
18. Frits Kaihatu
19. Yanti Djuari
20. Mastin Pakaya
21. Djuwita Aling
22. Lusia Manu
23. Jardie Andaki
24. Daisy Makapedua

Group 3 (Governance)

1. Yosephine Avi Ayu
2. Amelia Klampung
3. Silvana Manumpil
4. Rosela Mamahit
5. Agnes Walukow
6. Liesje Macawalang
7. Give Mose
8. Sari Tolvanen
9. Johnny Budiman
10. Jeanette Pangemanan
11. Putuh Suadela
12. Yuni Trikumoro
13. Cut Pinta
14. Waluyo
15. Irma Sesi Tidajoh
16. Godfried Badoa
17. Irwansyah
18. Momo Kocher
19. Effendi Maaruf
20. Waluyo Susanto
21. Ronald Sorongan
22. Stephani Mangunsong
23. Alvon Jusuf
24. Grevo Gerung

ANNEX IV. AFTER ACTION REVIEW FORM

Kindly **fill each quadrant** below for the **INSIGHTS** you gained, things you **LIKED** best, ideas you think have been **PARKED** and missed out and things which could be **CHANGED** in the workshop so that we could be guided in our future activities of similar nature.

INSIGHT

LIKE

PARKED

CHANGE

Thank you very much.

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