

Independent Terminal Evaluation

Indonesia

SMART-Fish programme: Increasing trade capacities of selected value chains within the fisheries sector in Indonesia

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Abbreviations and Acronyms

Abbreviation	Meaning
ACCSQ	ASEAN Consultative Committee on Standards and Quality
AIP	Australian-Indonesian Partnership
APCI	Association of Indonesian of Catfish Producers
APLAC	Asia Pacific Laboratory Accreditation Cooperation
APMP	Asia Pacific Metrology Programme
ASC	Aquaculture Stewardship Council
ASEAN	Association of Southeast Asian Nations
ASTRULI	Indonesian Seaweed Industry Association
BIPM	International Bureau of Weights and Measures
BKIPM	Fisheries Quarantine Agency
BPOM	National Agency of Drug and Food Control
BPPT	Agency for the Assessment and Application of Technology
BPS	Bureau of Statistics Indonesia
BSN	National Standardization Body of Indonesia
CAB	Conforming Assessment Bodies
CAC	Codex Alimentarius Commission
CBI	Centre for the Promotion of Imports
CBIB	Indonesian GAP
CRM	Certified Reference Material
DGFA/DJPB	Directorate General Fisheries Aquaculture
DGR	Daily growth rate
DIMET	Directorate of Metrology
DKP	Provincial/District Fisheries Service
DJPDSPKP	Directorate General of Competitiveness and Strengthening of Marine and Fishery Products
DSN	Standardization Council of Indonesia
EU	European Union
FAO	Food and Agriculture Organization
FCR	Feed Conversion Ratio
FSSC	Food Safety System Audit and Certification
GAP	Good Aquaculture Practices
GDP	Gross Domestic Product
GHdP	Good Handling Practices

Abbreviation	Meaning
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMP	Good Manufacturing Practices
GQSP	Global Quality and Standards Programme
HACCP	Hazard Analysis and Critical Control Points
IAF	International Accreditation Forum
IEC	International Electrotechnical Commission
ILAC	International Laboratory Accreditation Cooperation
IndoGAP	Indonesian Good Aquaculture Practices
INSPIRED	Integrated Sustainable, Productive, Innovative and Resource Efficient Enterprise Development
iPRIDE4Fish	Institute of Productivity, Research, Innovation and Development for Fisheries
ISO	International Organization for Standardization
KAN	National Accreditation Committee
KIM-LIPI	Research Center for Calibration Instrumentation and Metrology
KKP	Ministry of Marine Affairs and Fisheries
LCF	Least Cost Formulation
LPK	Conformity Assessment Institutions
MMAF	Ministry of Marine Affairs and Fisheries
MoA	Ministry of Agriculture
MoE	Ministry of Energy
MoI	Ministry of Industry
MoMP	Ministry of Manpower
MoT	Ministry of Trade
MoTr	Ministry of Transportation
MSC	Marine Stewardship Council
NAFED	National Agency for Export Development
NQIS	National Quality Infrastructure System
NTB	Non-Tariff Barriers to Trade
NTM	Non-Tariff Measures
OOCC	Our Ocean Conference
PAC	Pacific Accreditation Cooperation
PA2HI	Pole & Line and Handline Fisheries Association
PASC	Portable Applications Standards Committee
PSDPKP	Directorate General of Marine and Fisheries Resources Surveillance

Abbreviation	Meaning
PRISMA	Promoting Rural Income through Support for Markets in Agriculture
PSC	Project Steering Committee
PTB	Physikalisch-Technische Bundesanstalt
QI	Quality Infrastructure
QIS	Quality Infrastructure System
RTD	Roundtable Dialogue
ROM	Result-oriented Monitoring
SECO	State Secretariat for Economic Affairs
SIPPO	Swiss Import Promotion Programme
SKPT	Integrated Marine and Fisheries Development Centers
SMART-Fish	Sustainable Market Access through Responsible Trading of Fish
SME	Small and Medium Enterprises
SNI	Indonesian National Standards
SOP	Standard Operations Procedures
SPS	Sanitary and Phytosanitary
STP	Jakarta University of Fisheries
TBT	Technical Barriers to Trade
TSP	Trade Support Programme
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WWF	World Wildlife Fund
WWF	World Wildlife Fund

Glossary of evaluation-related terms

Term	Definition
Baseline	The situation, before an intervention, against which progress can be assessed.
Effect	Intended or unintended change is due directly or indirectly to an intervention.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations.
Logframe (logical framework approach)	A management tool used to facilitate the planning, implementation, and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles.
Outcome	The likely or achieved (short-term and medium-term) effects of an intervention's outputs.
Outputs	The products, capital goods and services which result from an intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Relevance	The extent to which the objectives of intervention are consistent with beneficiaries' requirements, country needs, global priorities, and partners' and donor's policies.
Risks	Factors, generally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance, has been completed.
Target groups	The specific individuals or organizations for whose benefit an intervention is undertaken.
Theory of Change	A set of hypothesis on how and why an initiative works.

Executive summary

The project objective was to increase the value of Indonesian fisheries exports by providing advice to the government on enacting policies for creating favourable conditions for exports, improving the competitiveness and enhance compliance with international market requirements, and facilitating entry into global value chains. The Swiss State Secretariat for Economic Affairs (SECO) funded the project through a grant to UNIDO signed in February 2012. At that time the project document (*Increasing trade capacities of selected value chains within the fisheries sector in Indonesia*) was for 4.5 million USD. This grant amount was subsequently adjusted due to changes in the exchange rate to USD 3,826,570. The project document included six components:

1. Institutionalize public-private sector dialogue;
2. Strengthen local business support services to exporting SMEs in selected fisheries;
3. Improve educational program in productivity, sustainability & innovation for fisheries;
4. A pilot traceability system for fisheries - and other maritime products;
5. Support of certification to sustainability standards for critical markets; and
6. Improve the promotion of Indonesian fisheries exports of selected value chains.

Project identification and inception benefited from multiple studies and consultations to identify ways to enhance the fisheries value chains.

The project came into effect after the signing of the project document by the Indonesian Government in March 2014. SECO granted an extension to close the project on June 2019. The Project Steering Committee (PSC) which had oversight responsibility of the project was formed by UNIDO, SECO and Ministry of Marine Affairs and Fisheries (MMAF). The PSC role was supported by Result Oriented Monitoring (ROM) missions, which provided independent and timely information for decision-making. The project focused on three fisheries value chains: Pangasius, Seaweed and Pole and Line Tuna. During implementation, the PSC closely monitored project developments and approved several changes to adapt, take advantage of new opportunities and improve the project alignment to the priorities of the Government of Indonesia.

Main Project accomplishments

The project strengthened capacities across the pangasius, seaweed and pole and line tuna (P&L tuna) value chains in Indonesia. Overall the project included 5939 participants in 145 events that took place in 37 Indonesian districts and 16 provinces.

Component one of the projects supported 17 policy dialogues and numerous technical seminars that helped develop channels of communication between the producer associations of the three value chains, research organization, the MMAF, and local government authorities. Through these dialogues stakeholders in the value chains have been able to provide input into important policy decisions that have helped stabilize the market, such as the enforcement of restriction of low-quality catfish (“dory”) into the country and the promotion of Indonesia pangasius in the international markets. Round tables led to the establishment of the Tropical Seaweed Innovation Network and also allowed stakeholders to express concerns to the MMAF on the data supporting current

policies on seaweed and P&L Tuna that constrain the development of these two value chains.

Key results - SMART Fish	
Component and cost	RESULTS
Round tables USD 336,240	Industry input to multiple regulations and measures -Campaign on “dory mislabelling” helped expand demand for Indonesian pangasius -Standards established for seaweed and pangasius Business matching: Contracts farmers/processors (amounting to USD 8 mil) Good communication MMAF/Associations Tropical Seaweed Innovation Network (TSIN)
Quality and productivity USDD 588,188	<u>Seaweed</u> 590 farmers are implementing SOP with prod. & quality improvement: USD1.8 Million 4 companies (INSPIRED) annual savings -energy/water USD 953,000 -moisture management USD 858,750 (PT Agarindo and Surya) -SOP printed handbooks, apps, and online resources <u>MSE Seaweed processing</u> -247 women SMEs with USD350,000 annual income - certified products for USD 1.2 million annual value <u>Pangasius</u> 70 farmers using LCF can save USD45 to USD 52 per ton 293 farmers implementing SOP have an additional USD186,000 annual profits Processor reduced fish mortality with a USD 50,000 annual savings SOP/LCF printed handbooks, apps, online resources
Educational program USD 468,574	iPride4Fish: a new think tank for technology innovation and promotion 121 course outlines mainstreaming SIP/Sustainability, Innovation, and Productivity 15 faculty trained on SIP Internship SOP, protocols & training modules 68 internships in fisheries On May 2019 the MMAF decided to make the budgetary resources available to upscale the curricula changes and the internship program to 9 other technical a vocational fisheries universities across the country. MoU for long term collaboration between STP and Univ. of Tasmania signed
Traceability USD 378,126	2 Electronic traceability platforms -SeaweedTrace with 8 companies that control 80% of seaweed processing in Indonesia; more than 3000 farmers, in 14 locations across the country. Cargill and Agarindo signed in May 2019 business agreements with PT Koltiva, a service provider, to mainstream SeaweedTrace and INSPIRED across their operations. -Excel based INSPIRED Light Tool for 5 tuna companies
Certification USD 328,825	Contribution to ASC-MSC Seaweed Standard Development and awareness raising MSC Chain of Custody Traceability gap assessment for AP2HI members and workshop to develop the work plan for improvement for the members (guided by AP2HI)

Key results - SMART Fish	
	Milkfish as alternative bait: Producing 1,700,000 fries/bait value at USD12140
Promotion and branding USD 460.021	3 generic brands launched Improved websites for ASTRULI, APCI, and AP2HI 15 website template for members of the associations Opportunities for pangasius export to Middle East markets (potentially USD 32 million / USD 8 million considering capacities of pangasius processing by APCI members) Opportunities for Tuna exports by AP2HI member companies for Tuna of USD 350,000 – 800,000 at SEG 2018 (Brussels) In May 2019 Abid Global Food, one of the partners of SMART-Fish shipped almost 200 tons of frozen pangasius fillet, valued at USD 472,000 to Saudi Arabia.

Component two introduced and tested new standard operating procedures (SOP) that increased earnings of nearly 1000 participating farmers and fishers and 18 seaweed and pangasius processing companies by reducing costs through improving productivity, energy efficiency and waste reduction. The advice provided by the project led to investments of over 11 million USD. In the processes, the project also helped develop capacities of Valcapfish master trainers and iPRIDE4fish at the Jakarta Fisheries University (STP) on Integrated Sustainable, Productive, Innovative Resource Efficient Development (INSPIRED) and trained over 150 extension service providers on SOPs in 19 locations in 11 different provinces across the country.

Component three of the project, in collaboration with University of Tasmania (UTas) Australia focused on enriching curriculum of the Jakarta Fisheries Univeristy (STP) by mainstreaming Sustainability, Innovation and Productivity (SIP) into the 121 courses (RPS). The project also supported 68 problem-solving internships that were integrated with component two that helped establish links between the STP students and factories and businesses and stakeholders in the three value chains. In May 2019 the MMAF decided to mainstream the new curriculum and problem-solving internship program to the 9 additional fisheries universities and technical schools across the country, considerably expanding the multiplication effect of the project outcome. Component four, piloted External Traceability for Seaweed Value Chain or SeaweedTrace (<https://apps.seaweedtrace.com>). This pilot involved one multinational company that is a significant buyer of seaweed globally, five Indonesian seaweed processors, five seaweed traders and co-operative, and 3000 seaweed farmers in 14 districts in five different provinces. Once tested Kolutva, the SeaweedTrace services provider has signed business agreement with participating companies to maintain and mainstream SeaweedTrace across their operations.

Component five supported several P&L Tuna certification initiatives that were already on their way when the project started implementation by jointly providing support and coordinating activities with other donors and international NGOs. This included activities at the ASEAN level to establish a regional eco-labelling scheme for tuna. With regards to pangasius, through roundtables, the project supporting standard setting for Pangasius fillet which enables standardization of products, in terms of quality, size and the processing, and overall improves marketability of products in export markets. The project also supported

the producer associations and their members to obtain industry certifications from Indonesian Good Aquaculture Practices Certificate (CBIB) and other certifications required to access national, regional and international markets including establish linkages with Global Sustainable Seafood Initiatives (GSSI). In seaweed, the project and the association involved in the development of Indonesia was one of the few developing countries who actively participated in the ASC-MSD Seaweed Standard setting process, with the help of SMART-Fish. Having contributed to establishment of a new sustainability standard, ownership of standard and chances of uptake has increased. Indonesia also ensured that the needs and circumstances of small farmers as ultimate users of the standard were taken into account.

Through component 6 on promotion, the program helped the three associations develop generic brands for Indonesian Pangasius, Indonesia Seaweed and Indonesian P&L Tuna and helped them improve their websites to promote these three value chains. Pangasius and Seaweed Brands were launched at SIAL Interfood in Jakarta in November and SEAFEX Dubai in October 2018. Indonesia Seaweed Brand was also re-launched at International Seaweed Forum (ISS) 2019 in Jeju Island, South Korea in 28 April 2019. Tuna brand was launched at SENA Boston Show in April 2019, then was relaunched at SEG in Brussels in 8 May 2019. The project trained staff and members of the associations on online marketing and developed 13 templates websites for association members and developed a brand manual and guidelines which helps the associations to ensure member's marketing tools (website, brochure, etc.) are consistent with joint brand identity. The promotion activities supported by the government in collaboration with MMAF and other ministries in Indonesia has led to business opportunities of up to 36 million USD for pangasius in the Middle East markets and China.

In summary, the project results are highly relevant to the Government of Indonesia priorities in the fisheries sector. The project design directly addressed the sustainability and prosperity policy objectives of MMAF through an emphasis on the improvement of competitiveness of the value chains, on the generation of value at all stages of the chains and cleaner production and efficient use of resources. The project addressed sovereignty in collaboration with MMAF by promoting pangasius in local market instead of low quality cheap "dory" illegal imports. It aligned well its objectives and components to SECO's trade cooperation program in Indonesia which focused on the increasing competitiveness of enterprises, the enhancement of trade infrastructure, the reduction of technical barriers to trade, and the integration into the world economy.

Project efficiency, the conversion of time and money to results, was high. The project trained over 5000 people on aspects related to the improvement of the value chains, farmers and fishermen increased their incomes, the STP completely reoriented its educational program to develop capacities for the needed support services in the fisheries sector and project advice led investments by partner companies that significantly enhanced production. Concerning the slow start of the project, care was taken to identify the right persons to lead the project and the right partners was time well spent. By 2015 the project was running well. Given the early delays, the PSC granted an 18-month extension to June 2019, an extension which the project did meet.

The evaluation interacted with 86 men and women involved with pangasius and seaweed farming that were members of 26 farmer groups, coops or villages. When asked about what difference the project has made in their lives, their independent responses were strikingly similar. They all referred to important improvements in their standards of living. However, the extent to which different stakeholders benefited from SOP and the new market opportunities has varied. The differences in the benefits derived by the various stakeholders were mostly influenced by circumstances that were not under the control of the project, such as access to capital to expand production, seaweed species suited to local ecological or farmers business models and market conditions.

The project contribution to the transformation of the three fisheries value chains in Indonesia requires a combination of simultaneous and phased interventions that linked changes in different domains and scales. For example, from the “top down” perspective, at the national and international scales, the project supported the development standards and regulations and helped develop market opportunities in the three value chains. The project also helped to strengthen the interactions and channels of communication among stakeholders in the three value chains. From the “bottom up” the project also put in place mechanism to up-scale innovations tested through trials among farmer traders and processors. The project also helped build capacities and mechanisms to continue supporting the change trajectory the project had started. The mechanisms are iPRIDE4Fish, a think tank to continue supporting stakeholders in the fisheries sectors, the three industry associations (ASTRULI, AP2HI, and APCI), and the extension services. The project also helped establish websites and web applications to continue disseminating the new practices and knowledge to a wider population. Of all domain conditions to transform the value chains, the project made its strongest contributions in areas related to the improvement of production practices across the value chain and the development of markets. In the future as production expands, more attention will be needed in the use of natural resources. In several localities seaweed processing practices put significant pressure on scarce underground water resources and overcrowding of seaweed farms in some localities also poses a risk that can affect productivity and spread of diseases in the midterm.

Most of the benefits generated by the project are likely to be sustained. There are a few risk factors that are moderately likely to affect the sustainability of some of the project accomplishment. These risks are not generalized across the value chains; they affect mostly carrageenan seaweed processors and pangasius farmers producing for the traditional market. The high costs and low quality of raw material are risks to carrageenan seaweed processors. Key in this regard is the production data used by MMAF as a basis for its seaweed processing and export policies which seaweed processing firms claim are highly inflated. Some of these firms reported that during the last couple of years they have operated under capacity due to low supply of raw material of the necessary quality. Pangasius farmers that produce for the traditional market and who are tied to feed providers for loans also face financial risks. The most extreme case is in Mauro Jambi where farmers see much of the added value of their production siphoned to fish feed merchants. The extent to which traditional markets can absorb increases of production might also pose a risk on farmers. The key mechanisms supported by the project to upscale results also

require further accompaniment and strengthening. These mechanisms are the three industry associations (ASTRULI, AP2HI, and APCI), iPRIDE4Fish and the extension service.

Recommendations

Recommendation 1: SECO and UNIDO should make allowances to continue supporting, through SMART Fish II, the key mechanisms for the upscaling of results achieved during SMART Fish I, which have yet to reach maturity.

Recommendation 2. MMAF should give a high priority to the ongoing efforts to resolve the disputes pertaining data used to set export policies for seaweed and to regulate foreign investment in the sector and pertaining the information used for the tuna fishing moratorium in the Banda Sea.

Recommendation 3. MMAF should mainstream the improved fisheries curriculum among other fisheries universities across Indonesia, including the internship programme and centers such as iPride4Fish and should also mainstream training of extension services in SOPs.

Recommendation 4. MMAF, SECO and UNIDO should ensure that SMART Fish II and other following projects pertaining value chains, give more attention to the sustainable management of resources such as local zonation of seaweed farming, efficient use of water in seaweed processing, management in P&L fisheries and more effective monetarization of pangasius by-products.

Recommendation 5. Seaweed processing industry companies should put in place supplier development programs to establish long-term business relations with the farmers, improve quality and productivity and secure market access to the farmers.

Recommendation 6. MMAF should expedite the signature and endorsement of SMART Fish II to help ensure the quick transition and prevent the delays that took place during the early phases of SMART Fish I.

Recommendation 7. SECO and UNIDO should continue the adaptive management approach developed in SMART Fish I consisting of regular Result Oriented Monitoring (ROM) missions that feed independent information to a Project Steering Committee which is fully empowered to make decisions to adapt the project to emerging conditions.

Recommendation 8. ASTRULI, AP2HI, and APCI in their role of conveners of future Round Table Dialogues should invite all the key relevant institutions that have incidence in the conditions necessary for the transformation of their value chain. Key missing stakeholders that were identified by current Round Table participants are the Ministry of Finances, Ministry of Trade, Banks, Ministry of Public Works and Ministry of Transport.

Recommendation 9. UNIDO should ensure that SMART Fish II project contains monitoring records and data in a centralized database that is administered by the project management.

Project factsheet

Project title	Increasing trade capacities of selected value chains within the fisheries sector in Indonesia
UNIDO Project ID	120110
Region	Asia
Country	Indonesia
Project donor(s)	SECO
Project approval date	February 2012
Project implementation start date	1 March 2013
Expected duration at project approval	Five years
Project no-cost extension	May 2017
Expected implementation end date (Prodoc signed)	31 May 2019
Other executing Partners	MoI, MoT
Executing partners	MMAF
Donor funding	USD 4.5 Million
Project approval date	n/a
UNIDO input (in kind, USD)	n/a
Co-financing:	n/a
Total project cost (USD)	USD 4.5 Million
Mid-term review date:	n/a
Planned terminal evaluation date	Jan-July 2019

(Source: Project document)

Project evaluation ratings

#	Evaluation criteria	Rating
A	Impact (progress toward impact)	Highly Satisfactory
B	Project design	Satisfactory
1	• Overall design	Satisfactory
2	• Logframe	Highly Satisfactory
C	Project performance	Highly Satisfactory
1	• Relevance	Highly Satisfactory
2	• Effectiveness	Highly Satisfactory
3	• Efficiency	Highly Satisfactory
4	• Sustainability of benefits	Satisfactory
D	Cross-cutting performance criteria	
1	• Gender mainstreaming	Satisfactory
2	• M&E: ✓ M&E design ✓ M&E implementation	Satisfactory
3	• Results-based Management (RBM)	Satisfactory
E	Performance of partners	
1	• UNIDO	Highly Satisfactory
2	• National counterparts	Highly Satisfactory
3	• Donor	Highly Satisfactory
F	Overall assessment	Highly Satisfactory

I. Introduction

Indonesia has over 54 000 KM of coastline with a sea area that is nearly 8 million square KM and is four times as large as its land area. It is the largest archipelago in the world with almost 18000 islands of which some 6000 are inhabited. The country ranks among the top three producers in the world of wild capture, aquaculture and seaweed. Its coastal and marine waters are one of the most fertile fishing grounds and with the highest levels of marine biodiversity in the world. Fisheries are also crucial for food security in Indonesia and capture fisheries and aquaculture employ nearly 6 million workers mostly in the form of small-scale fishing. Typically, a low value-added economic activity, fishing represents only 2.5 of the GNP of the country.

Maritime and fisheries concerns have been a prominent national concern in Indonesia. They became particularly prominent during the elections of 2014. When the newly elected government took office in October 2014, the maritime sector was among the top in the political agenda. The Ministry of Marine and Fisheries Affairs (MMAF) is the entity responsible for managing Indonesia's fisheries, including marine, fisheries, and aquaculture. Since appointed to its position in 2014, the current Minister of MMAF has been a strong advocate for the sector. MMAF has identified three policy priorities in the sector:

- Sovereignty which includes the surveillance of marine and fishery resources and fish quarantine, quality control security of fisheries harvesting and fish biodiversity.
- Prosperity, which focuses on the development of science, technology, innovation, and human resources.
- Sustainability, which emphasizes the management of marine zones, sustainable catch fisheries and aquaculture, and competitive value chain systems for fisheries products.

MMAF policies also gave a high priority to aquaculture development as a way to expand production to meet the country's increasing demand for fish products.

The SMART Fish project was well aligned to the MMAF priorities.

II. Overview of the project

II.1 Project preparation

The project preparation began in 2010, and they included a comprehensive participatory assessment of Indonesia fisheries sector needs' involving a wide range of stakeholders. The work focused on identifying the barriers that are preventing Indonesia from growth, exports, and added value to the Indonesian seafood sector and identifying actions needed to overcome these barriers. Project identification benefited from a comprehensive study of the Indonesian fishery export sector, which analyzed the value chains for selected Indonesian fisheries products and identified ways in which the overall chain could be re-configured and enhanced. This work was undertaken with close involvement of all relevant stakeholders, in particular, the private sector, and included in-depth research on the demand and supply of fishery products and the existing policy framework. The Ministry of

Maritime Affairs and Fisheries (MMAF) also conducted sector studies for selected products (shrimp, tuna, catfish, and seaweeds), which were also used in the design of this Project.

The project preparation team identified the following barriers that were identified:

- a. **Policy inconsistencies and gaps.** The absence of a strategy to serve as a basis for establishing enabling policies and appropriate support infrastructure. Also, lack of engagement of the critical stakeholders in policymaking.
- b. **The value-added potential of fishery products was not fully realized.** Inappropriate technology and lack of skills inhibited the shift from low value/high volume production to high value/high volume production. The studies also reported a lack of business support services to enhance value added to export products at the company level.
- c. **Need to develop fisheries specific trade support promotion services;** including the facilitation of a systematic approach to market development and linking-up local producers with potential trading partners.
- d. **Gaps in compliance services.** Gaps in compliance services such as testing and certification which result in rejections by importing countries, and in turn affect the reputation of Indonesian fishery products. The absence of a traceability system was a limitation to access markets.
- e. **The scarcity of skilled labour,** which prevented the private sector and the government from developing a high-value-added export market development strategy.

II.2 Project objectives and components

The initial project objective was to increase the value of exports by providing advice to the government on enacting policies for creating favorable conditions for exports, strengthening the supply side (improving the competitiveness and enhance compliance with international market requirements) and facilitating entry into global value chains.

SECO and UNIDO signed a project document on February 2012. At this time the project document (*Increasing trade capacities of selected value chains within the fisheries sector in Indonesia*) included the six components, 14 outcomes, and 36 outputs. The six project components were:

- Component 1: Institutionalize public-private sector dialogue in the fisheries sector through a participatory consultation mechanism (fisheries roundtable) to identify critical challenges of fisheries exports for selected value chains and support the national stakeholders in drafting a related fisheries export strategy and action plan for consideration of the Government of Indonesia.
- Component 2: Strengthen local business support services to exporting SMEs in selected fisheries and marine products value chains to improve product quality, compliance with mandatory and voluntary standards, productivity and value added to exports.
- Component 3: Development of educational projects in productivity & innovation for fisheries.
- Component 4: Establish pilot traceability systems for fisheries- and other maritime products.

- Component 5: Support certification to sustainability standards for critical markets.
- Component 6: Improve the promotion of Indonesian fisheries exports from selected value chains in important markets by building capacities for services National Agency for Export Development (NAFED) and conducting feasibility studies.

The project document also stipulated that the Project Steering Committee would define the specific implementation plan and budgets during the project inception process and that it would regularly update the implementation plan during the Steering Committee Meeting. Also, the project document introduced Results-oriented Monitoring (ROM) as a tool to provide independent information on project performance and, too, and advice the PSC steer the project during implementation.

Below is the project original and final budget by components, after taking into account the changes due to the fluctuated exchanged rates, excluding 10% support costs¹

Project outcomes/components	Original Total (USD)	Final Total (USD)
Component 1	416,693	336,240.31
Component 2	462,033	588,188.01
Component 3	480,693	468,546.92
Component 4	234,561	378,124.85
Component 5	591,893	328,824.89
Component 6	350,595	460,021.03
Project management	1,248,113 ²	957,469.06
Project monitoring (ROM) and Final Independent Evaluation	157,720	157,719.88
Direct Support Cost (3%)	119,469	111,454.05
Total	4,061,770	3,786,589.00

II.3 Changes during inception and implementation

In March 2013, the MMAF signed the project agreement. The project document included an inception phase which aimed at recruiting project staff and finishing project preparation including the elaboration of a detailed implementation plan. Project activities started in mid-2014 once the project staff and technical experts were hired and partner institutions had been identified (partners included industry associations, pangasius and seaweed processors, traders, and farmers or fishers). This phase also included the selection of the specific value chains species to be supported by the project and assessment of their demand, supply, quality, and productivity, and certification services. At this point, the project also agreed to coordinate relevant promotion activities with the Swiss Import Promotion Programme (SIPPO).

The inception phase activities included further technical studies and assessments to update the project to the current situation and more directly a line the project with the incoming

¹ Source: Original project budget as per the project document

² Including a contingency budget of USD 281,837

government priorities. In December 2014, the Project Steering Committee (PSC) approved a series of adjustments to the project included in the *Project Inception Report*. Some of the most prominent changes were:

- While originally the component 1 was to support the improvement of six value chains, further studies and dialogue with the MMAF led to the sharpening of the project focus on three fisheries value chains; seaweed, pangasius, and pole & line tuna fisheries (P&L Tuna).
- In component 2, the project identified the Quality & Productivity Centre (Valcapfish) in the University of Fisheries (STP), as the partner that would provide services to improve product quality, compliance with mandatory and voluntary standards and productivity. Subsequently, during implementation, the capacity building focus changed to iPRIDE4Fish, a newly created think tank within STP.
- Component 3 which was initially to develop a master's level education program, was changed to develop add-on modules on productivity and innovation in the university curriculum. During implementation, this was further modified to focus on mainstreaming sustainability, productivity, and innovation across the university curriculum.
- Component 4 further identified as P&L Tuna and pangasius as the two value chains in which to pilot traceability. This component was subsequently modified to focus on internal traceability in P&L Tuna and external traceability in seaweed.
- Component 5 continued to focus on piloting sustainability certification to meet requirements in the international and regional markets for the three value chains.
- Component 6 shifted from a previous emphasis on capacity building in NAFED and studies to a new emphasis on trademarks development and internal and external market promotion of the three selected value chains.

At the time of approving the changes proposed by the Inception Report, the PSC also approved several changes in the budget. The PSC increased funding to Components 2 (the improvement of productivity); 3 (the development of the educational program in STP) and 6 (trade promotion).

MMAF officials soon realized that the project objectives directly supported the new government's policy priorities and developed a keen interest in the project. Government officials in Jakarta and the provinces were involved in the project in the Project Steering Committee (PSC), round table dialogues, seminar, and other training activities. Their involvement resulted in further changes; for example, in component six there was a shift from strengthening NAFED to an emphasis on the promotion of Indonesian pangasius, seaweed, and tuna.

The project initially emphasized export value chains; by 2015 the project's support to the production of pangasius had become more prominent, which was at the time mostly produced for internal consumption. On May 2017 the PSC granted an extension to the project to June 2019 citing the additional time needed to sign the project and to identify the project partners. As indicated in Table 1, changes in the exchange rate led to a grant adjustment of USD 4.5 million in 2012 to USD 3,826,570 in May of 2019. Nevertheless, these exchange rate changes did not result in a reduction of activities as the projects contingency fund covered deficits.

Table 1			
SMART Fish: Budget adjustments 2012 / May 2019 (both grants)			
Project document February 2012		Approved PSC Expenditures to May 2019	
Total grants amount	4,500,000		3,826,570
Management / Agency	1,681,695	Project Operations	928,388
Technical input not allocated	317,000	Support cost	106,223
1. Round Tables	363,860	Round Tables	327,706
2. Strengthen Quality & Productivity Center at Fisheries University Jakarta	409,200	Quality & Productivity Center	593,413
4. Traceability System	181,728	Traceability System	373,621
5. Certification	539,060	Certification	319,703
6. Strengthen Advisory Services of NAFED	297,760	Trade Promotion	453,664
Contingency*	281,837	ROM / Evaluation	157,809
Total expenditures both grants			3,730,654
Fund remaining			95,915

*Contingency was used for technical outputs.

II.4 Project implementation arrangements

The implementation arrangements were well suited to ensure the effective and efficient management of a complex process. Responsibilities among the collaborating institutions were well defined and provisions were made throughout project implementation to keep inform and engage representatives of key stakeholder organizations. UNIDO was responsible for the implementation of the project and the Ministry of Marine Affairs, and Fisheries (MMAF) was the leading country counterpart. Other ministries responsible for specific outputs included the Ministry of Trade (MoT) and the Ministry of Industry (MoI). The Project was governed by a Steering committee (PSC) which provided for UNIDO, SECO, and MMAF as voting members and other counterparts/beneficiaries as observers with a consultative voice. The PSC met twice a year in Jakarta to review the progress and discuss and approve project activities in the coming months. The PSC was fully vested with the authority to modify the project as long as it remained in line with the original objectives. A Project Manager in UNIDO had the overall responsibility for project implementation, who was supported by a full-time Junior Programme Officer (financed by the project) and a Programme Assistant at UNIDO Headquarters.

The UNIDO Office in Jakarta was responsible for overseeing the Project and provide strategic and administrative support (including local disbursements and recruitments). A full-time National Chief Technical Advisor (NCTA) with a trade-related background and management experience coordinated country activities and inputs of technical specialists based at in the Jakarta Fisheries University (STP). The NCTA had the support of a full-time Project Assistant and Administrative Assistant. The Embassy of Switzerland in Jakarta was responsible for the strategic monitoring of the Project on behalf of SECO, the assistance with

coordination among Swiss-funded projects and to represent the interests of the donor in the Steering Committee. Otherwise, SECO had no operational role in the Project.

III. Evaluation methodology

III.1 Objectives of the Evaluation

This evaluation has two main objectives. The first objective is to assess the extent to which the project delivered the expected results. The second objective is to assess the *SMART Fish I Project* contributions to long-term transformations of value chain fisheries in Indonesia. In accordance with the evaluation terms of reference provided by UNIDO, this evaluation assesses the extent and forms by which the project contributed to the conditions necessary for the broad adoption of practices likely to increase the value, improve social equity and ensure the sustainability across the fisheries value chains related to Pangasius, seaweed and P&L Tuna in Indonesia.

The third objective is to identify lessons and recommendations for enhancing the design of the second phase of the project and other relevant interventions. As such, this terminal evaluation addresses the factors that have contributed to, or limited project long term goals. This terminal evaluation (TE) covers the duration of the project from its starting date on 1 March 2013 to 30 March 2019.

III.2 Key Evaluation Questions

- (a) What have been the project's key results (outputs, outcome, and impact)? To what extent were projected results a cost-effective, (was there good value for money across the value chain?).
- (b) What have been the contributions of the project to the conditions that in the long run will lead to the transformation to sustainable fisheries in Indonesia that deliver higher value to agents across the value chain?
- (c) What are the key lessons and recommendations that emerge from the design, implementation, and management of the project?

III.3 Evaluation Approach and Method

This terminal evaluation followed the UNIDO Evaluation Policy³ and the UNIDO Guidelines for the Technical Cooperation Project.

The evaluation ran from November 2018 to July 2019. After conducting a desk review of the project, the evaluation leader, the UNIDO Independent Evaluation Division (IED), and the project team in UNIDO met in November 2018 to determine key evaluation questions

³ UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

and formulate a theory of change for the long-term transformation of the fisheries value chains. Based on these discussions the evaluator leader drafted the inception report and shared it with UNIDO.

A mix of methods approach was used to obtain qualitative and quantitative evidence to answer the evaluation questions. The use of mixed methods allowed the evaluation team to triangulate information, assess causality, and analyze the factors affecting the achievement of results. The team reviewed documents that included the review of the project document, the project inception report, desk studies carried out by the project, the minutes of the Steering Committee Meetings, technical reports by experts, the independent results-oriented monitoring (ROM) reports and the project monitoring records. Using the logical framework as a reference, the evaluation team in coordination with project staff verified archival evidence on the extent to which the project delivered the expected outputs.

The evaluation team used the theory of change (TOC) approach. The TOC provided a roadmap to assess the extent to which project outcomes contribute to the conditions necessary to achieve the broad adoption of behaviors necessary for the desired transformations of a system, in this case, the three targeted value chains. The evaluation team used the TOC to assess a) the extent to which changes had taken place since the start of the project, b) the extent to which those changes were causally linked to project interventions and c) the extent to which project had catalyzed broader changes in the direction of the desired transformation. During the field visits, the evaluation team sought to identify the project contributions to transformations by establishing causal links between project outputs and the necessary conditions for transformation. The evaluation team also endeavoured to identify and test the rival hypothesis that could account for the changes reported.

The country project visit took place from February 25 to March 15, 2019. The figures presented pertaining people trained and results reflect the project achievements until March 15, 2019. Some specific events such as key decisions by MMAF and partner companies to mainstream and upscale project results were updated after that date. The evaluation team composed of the lead international evaluator and a national evaluator. Project sites were selected seeking a balance between sites that were performing well and sites which continued to face challenges. Field visits gave more attention to the pangasius and seaweed value chains as these were the two that received the most support from the project. The evaluation team carried out visits to 32 groups and institutions in five different provinces and eight districts. Interviews took the form of individual interviews and focused groups discussions.

The evaluation team interviewed over 150 stakeholders that included project management, UNIDO's representative in Indonesia, SECO mission in Indonesia, central, provincial and local government officers, extension officers, farmers, businesses, traders and product aggregators, co-operatives, non-governmental (NGOs), and producer associations. Annex 1 includes a schedule of field visits, and Annex 2 includes the names of the persons interviewed in the different locations and institutions. Annex 3 presents the questionnaire used to hold stakeholders' interviews. Given the highly technical nature of the project interventions, the technical experts of the project accompanied the evaluation team and were available to facilitate the visits and to help the evaluation team understand the technical nuances of the project. The Chief Technical Advisor and other project staff under

his supervision were very helpful in coordinating the field visits but were not part of the visits to the field.

The evaluation also included a day and a half stakeholder workshop and three additional focus group discussions with local and central government representatives, farmers and processor associations, university and research organizations, and the project technical experts on broader issues pertaining each of the value chains. These workshops and focus groups helped ensure that the evaluation properly considered the various perspectives of the project stakeholders and also gave representation to different stakeholders. The main objectives of the workshop were:

- To verify the TOC of SMART Fish Project developed during the evaluation inception phase.
- To assess the progress made to the desired transformation of the value chain addressed by the program.
- To identify lessons and critical areas that need to be addressed to support the transformation of fisheries in Indonesia further.

The evaluation used Social Network Analysis (SNA) to assess the progress that had taken place in the conditions necessary for the transformation of the three value chains and to assess, from the perspective of the project beneficiaries, the extent to which the project contributed to the strengthening of the conditions necessary for the transformation of the value chains.

Before leaving Indonesia, the evaluation team presented emerging findings to the project staff and government officials for initial verification. Subsequently, the evaluation team leader traveled to Vienna to present preliminary findings and recommendations to UNIDO. The Independent Evaluation Division of UNIDO also reviewed the draft report of the evaluation before circulating it among stakeholders for comments on factual errors and errors of interpretation.

III.4 Theory of Change

A theory of change (TOC) is an exploratory model that help clarify the links between project activities and long-term objectives. Few projects under implementation have developed TOCs as they were not widely used or required to design projects few years ago. Evaluators typically develop a TOC that is verified and amended in consultation with key project and project stakeholders. Central to the development of a TOC is the identification of the conditions likely to bring about the behavioural changes required to achieve the long-term goal of the project typically imply system transformations (Chen 1990; Mayne 2008). TOCs also identify the critical assumptions made during project design and the extent to which project designers made previsions to change and adapt to unexpected circumstance during implementation (Folke *et al.* 2002; Levin 2003). The use of a theory of change in evaluation does not mean that the project is held accountable for transforming the system. System transformations take time and rarely do they take place within the period of a project. However, the TOC is a model to help assess the extent to which project activities and

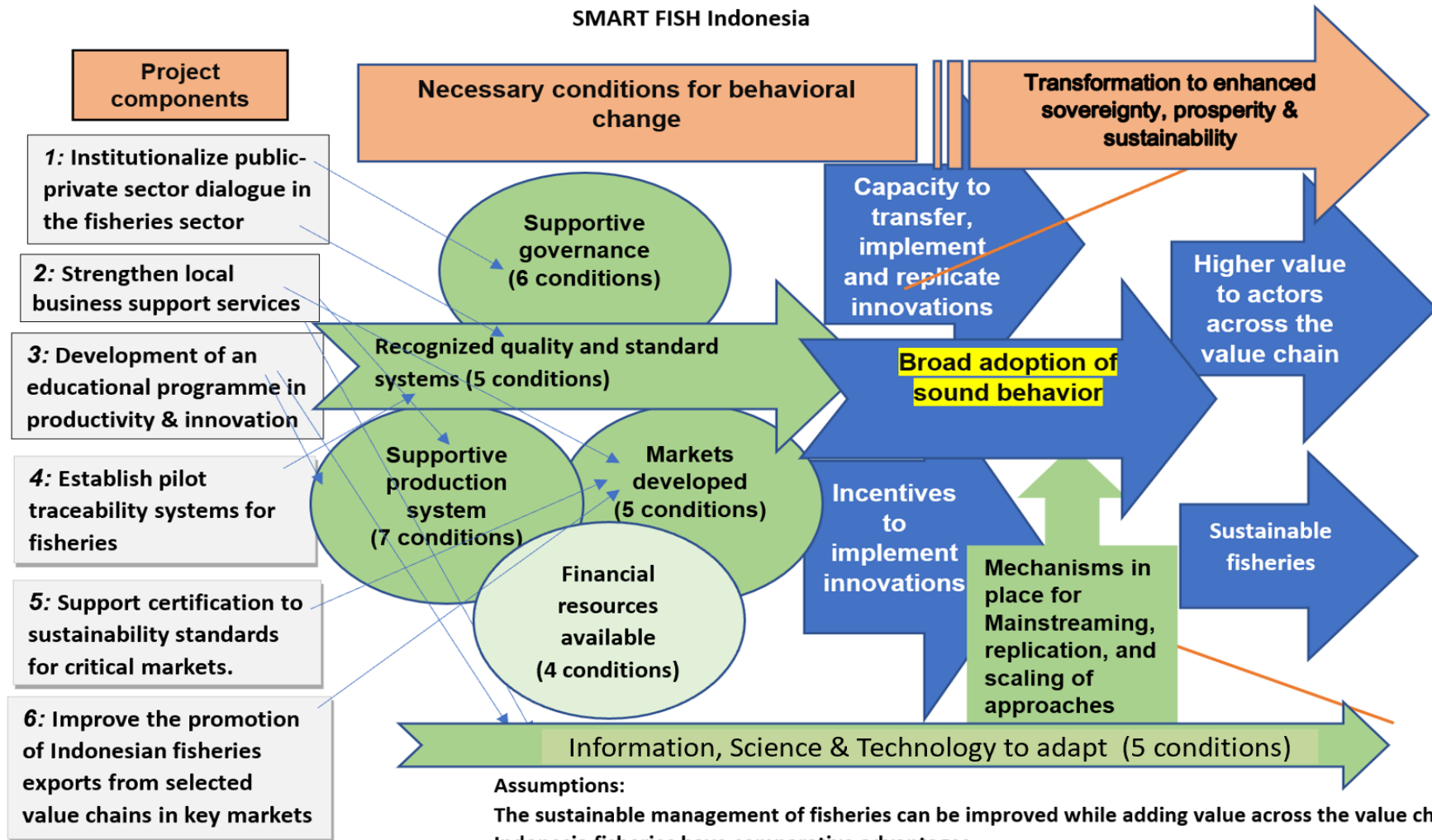
outcomes are helping to steer change in the direction of the desired transformation. Most importantly, TOCs are tools that help evaluators understand how a project becomes part of the broader process that the project seeks to influence and that can help derive lessons to provide recommendations for the future. Given the complex nature of transformational processes, it is important that evaluators monitor and adjust the TOC in light of the information obtained during the evaluation.

During project preparation and inception, UNIDO carried out a series of technical studies about root causes, needs, and opportunities to narrow down the areas of intervention of the project. The lead evaluator and the project management team in UNIDO developed a TOC for the project using the information in these assessments. Figure 1 presents a diagram of the TOC of the SMART Fish project. The top right-hand side of the diagram indicates that the project purpose is to contribute to the government of Indonesia fisheries policy objectives which are: enhance sovereignty, prosperity, and sustainability. The project seeks to contribute to these three policy objectives by supporting the transformation to sustainable fisheries to generate higher value to agents across the value chain. Following the project document, the SMART Fish TOC adopts an integrated approach and presents a model of the conditions for the transformation of the selected value chains from low value and often inequitable and unsustainable to fisheries that are sustainable and generate a higher value to agents across the value chain. The TOC model identifies six domains in which changes must take place to bring about the desired transformation. These domains are production, governance, market, finances, innovation and technology, and quality and standard systems. The evaluation team also elaborated for each domain, an overall condition necessary for transformation. A robust governance system of the value chain that includes the establishment of multi-stakeholder dialogue, the appropriate standards, regulations, and enforcement capacities (6 pre-conditions).

- Existence of tested production practice, technology, and infrastructure necessary for an efficient and sustainable production by farmers and processing companies, and established support services to continue improving technology and building the required skills (7 pre-conditions).
- Markets that recognize and reward with higher prices products that are of higher quality and produced in sustainable ways. Certification and traceability systems that meet the requirements of higher value market (5 pre-conditions).
- Quality systems and standards recognized by higher value markets (5 pre-conditions)
- Availability of financial resources to finance the investments and production costs (4 pre-conditions).
- Capacities across the system to access information science and technology to innovate and adapt to emerging trends. (5 pre-conditions).

Figure 1: Theory of Change

SMART FISH Indonesia

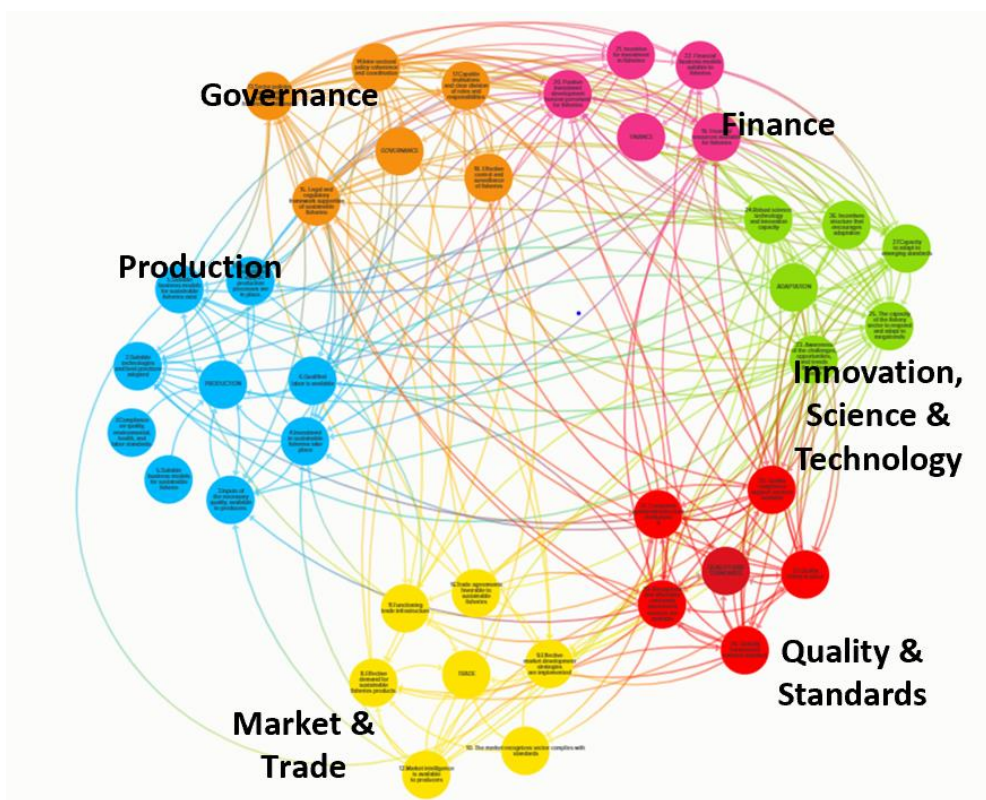


Assumptions:

- The sustainable management of fisheries can be improved while adding value across the value chain
- Indonesia fisheries have comparative advantages
- The necessary conditions identified, when all present, will lead to the desired behavioral change.
- The government of Indonesia intends to promote equitable and sustainable development
- Key stakeholders will perceive benefits from the expected transformation

Nested within the overall conditions necessary for transformation for each domain, are 32 pre-conditions. The TOC groups the 32 necessary conditions interact with one another within and across domains and in various degrees of intensity. Annex 4 includes the six domains and the 32 pre-conditions. As part of the inception process, the evaluation team and the project management team at UNIDO's headquarters identified the critical interactions that need to take place among the 32 pre-conditions. Subsequently using Social Network Analysis, the team developed a model that linked the interactions among these 32 pre-conditions (vertices or nodes in the network) resulting in a total of 236 interactions or edges (See Figure 2).

Figure 2: 32 pre-conditions for transformation



Four critical attributes of the system are:

- Change takes place through the behaviour of agents adapting to one another and changes in the environment. Key agents in the targeted value chains include fishers and farmers, extension workers, traders, processing companies, producer and industry associations, national and international buyers, NGOs, diverse government ministries and agencies, local and provincial governments, Universities and research institutions.
- Pre-conditions also interact across scales. Relevant scale include: 1) administrative/geographic divisions (sub-district, district, province, nation, region, globe), 2) value chain (farm, farmer group, company, local markets, national markets, regional markets, global markets) 3) time (including gradual adoption of technology, production cycles, delays in system response and tipping points).
- Given the multiple domains, pre-conditions necessary for transformation, agents, and scales that are involved, the model also assumes that the system is highly

unpredictable and that unforeseen developments require the adjustment of interventions along the way (adaptive management).

- The model also assumes that the transformational process requires mechanisms to ensure the broader adoption of the changes introduced by the project take place. The mechanisms can vary, but typically these mechanisms will ensure broader adoption through mainstreaming changes into systems, replicating activities or approaches and scaling (up and down) the project results.

The TOC for SMART Fish makes the following broad assumptions:

- It is possible to improve the sustainable management of fisheries in a way that adds value across the value chains,
- Indonesian fisheries have competitive advantages,
- The government of Indonesia intends to promote equitable and sustainable development,
- Key stakeholders perceive benefits from the expected transformation, and
- Indonesian fisheries and aquaculture sector have comparative advantages.

IV. Evaluation findings

This section of the evaluation assesses the effectiveness, efficiency, and relevance of project results drawing from the monitoring information that has been compiled by the project and the ROM reports. The evaluation team verified this information by spot checking the sources of aggregated data, assessing methods to aggregate data and through information obtained from stakeholders' interviews across the value chains in several localities.

IV.1 Project effectiveness

Effectiveness assesses the extent to which the development intervention's objectives were achieved or are expected to be achieved by project completion. The project fully met its objective which was to strengthen "the trade capacity of selected value chains of the Indonesian fisheries export sector, while also promoting the sustainable use of maritime resources." The project helped to increase value across the three value chains, particularly at the upstream sections of the value chain, thus also contributing to a more equitable distribution of benefits. The objectives of the six specific project components were either achieved.

The project did not always deliver the outputs specified in the original log frame. During implementation the specific outputs and outcomes were modified by the PSC to adapt to changing country pre-conditions and policy priorities and to pursue emerging opportunities to best advance the overall project objectives. While the 2012 project document indicated that the project would address six value chains, the first SCM held in December 2014 decided that the project would focus on the improvement of three value chains: pangasius, seaweed, and pole & line tuna value chains. This decision allowed the project to simultaneously addressing several of the key factors that hampered the

competitiveness, equity, and sustainability in each of the value chains. The project carried out activities that involved diverse stakeholders in multiple domains, scales, and geographic locations. By December 2018 the project reported to the PSC having carried out 124 events and having trained in 5311 people (3690 private and 1621 government) and having carried out activities in 36 districts located in 16 different provinces across Indonesia. The project is rated as highly effective.

IV.1.1 Component 1: Round Tables

By the time when this evaluation took place, the project had supported 15 round tables dialogues (RTD) and 28 technical workshops.⁴ The project document or the project inception report did not specify the specific issues to be addressed by the RTDs. Instead, it was left to the stakeholders and subsequent technical studies to identify the topics that needed attention. As a result, the round tables and workshops typically addressed policy, regulatory or technical issues that were the most relevant for the stakeholders. Participants frequently included high level representatives of the MMAF, the relevant industry association (the Indonesian Seaweed Processors - ASTRULI, Association of Indonesian of Catfish Producers – APCI, and The Indonesian Pole & Line and Handline Association- AP2HI), representatives from the Fisheries University (STP), as well as other partners such as NGOs and research institutions. In addition, where required the Programme provided technical inputs (by inviting national and international expert in particular issues) to guide and advise the roundtable dialogue. These RTDs and workshops proved to be very useful to enable the dialogue among the various stakeholders and to provide a channel of communication between the industry associations and high-level officials of the MMAF. Such channels of communication helped to address key policy and regulatory issues affecting the three value chains.

Pangasius. The project supported five RTDs on Pangasius. The early round tables identified the illegal import of pangasius, labelled in the national market as "dory," as one key factor constraining the development of the pangasius fillet industry in Indonesia. As a result of the RTDs and the lobby by Association of Indonesian of Catfish Producers (APCI), MMAF implemented stricter controls of the illegal import of pangasius and collaborated with APCI in a "dory" mislabelling campaign. In parallel the project supported APCI and its members to establish National Standard for Pangasius Fillet (SNI), and obtain Indonesian Good Aquaculture Practices Certificate (CBIB), and HACCP Food Safety, and in promoting Indonesia Pangasius as a high-quality brand.

As a result of these combined efforts, from 2015 to 2018 there was an 80% drop of pangasius labelled as "dory" in the national market. The project staff calculated that domestic production of pangasius fillet increased to 1000 ton/month from 600-700 ton/month in 2015 as a result of government tightening import of illegal pangasius and the promotion of the Indonesia Pangasius brand.

⁴ The project expected to complete three more round tables on seaweed by June 2019.

Another factor affecting the pangasius industry was the low quality of the raw material for the fish filet. RTDs helped to establish contracts between farmers and filet processing industries to ensure market and price to fish farmers and the quality and quantity of raw material to processors. Also, an active virtual dialogue through a WhatsApp application has contributed to stronger linkages and real-time information exchange among farmers, processors, government, NGOs, and other relevant players. The measures supported by the project have helped to stabilize the national market of pangasius while at the same time ensuring the supply of high-quality filet that meets the national health and safety regulations.

Seaweed. The project supported seven RTDs the seaweed value chain. As indicated earlier one of the key contentious issues with regards to seaweed is the validity of the production data used by the MMAF to set its seaweed export policies. MMAF data indicates very high levels of seaweed production, and on this basis, it has set a policy that supports the export of lightly processed seaweed. The Association of Indonesian Seaweed Processors (ASTRULI) claims that production is much lower and that the current seaweed export policies of raw material (seaweed ships) result in terms disadvantageous to the development of a national seaweed processing industry. Particularly concerning is the growing market penetration of the Chinese Seaweed processing industry which ASTRULI claims is heavily subsidized by the Chinese government.

Indonesian seaweed processing industries claim that competition from recently established Chinese companies in Indonesia has resulted in sharp price increases and low-quality raw material. ASTRULI has used the RTDs to express its concerns on the seaweed production data to MMAF. So far, the Coordinating Ministry of Maritime Affairs adopted the suggestion to develop a single unified National Development Roadmap for Seaweed that can address concerns expressed by ASTRULI. These are two important steps that are helping to address the most contentious issue affecting the seaweed processing industry in Indonesia.

The RTDs also contributed to the revision of the Seaweed National Indonesia Standard (SNI), which cover all products and processes related to the production of seaweed and seaweed products and which is harmonized with international standards including CCRF, CITES, ISO, HACCP, and SPS. The seaweed RTDs also were part of the process that led to the adoption of the ASC-MCS Seaweed Standard which covers five principles sustainable wild populations, environmental impacts, effective management, social responsibility, and community relations and interactions. Another important outcome of the RTDs was the creation of Tropical Seaweed Innovation Network (TSIN), which has linked 27 Universities and research institutions that work on seaweed across Indonesia.

Pole & Line Tuna. The project supported three P&L Tuna round tables. As multiple donors are supporting the development of the P&L Tuna value chain, the project focused on supporting and ensuring coordination and collaboration with other projects and initiatives. Particularly noteworthy was the coordination among the different programs supporting the MSC certification of Indonesian Pole & Line tuna fisheries. The P&L Tuna RTDs have also helped Pole Handline Fisheries Association (AP2HI) to establish a dialogue with MMAF on other policy and regulatory concerns of the industry. These concerns include the rules for Fish Aggregation devices (FADs), the review of the evidence used to set fishing in the Banda Sea and Fishing fees for P&L Tuna which are higher than fees for operators using nets.

IV.1.2 Component 2: Quality, Productivity, and the Productivity Center

The project document of 2012 indicated that component 2 would establish a quality and productivity center in Indonesia. The Inception Report identified Valcapfish, at the University of Fisheries (STP), as the center to provide business support services to improve product quality, compliance with mandatory and voluntary standards and productivity and value added to exports. One pre-condition from the 2012 project document is that Valcapfish would provide services for a fee to ensure the quality and sustainability of services. This pre-condition proved to be challenging to comply with. After a lengthy and complicated process, the PSC approved in 2018, to support iPRIDE4fish as a think tank for quality and productivity within STP, instead of Valcapfish center.

Given the institutional uncertainties related to Valcapfish, the project proceeded early on to identify partners among farmer groups, traders and processors to pilot technologies and practices that improve the quality and productivity across the three selected value chains. The project thus started pilot trials that involved the staff from the STP most of whom involved with Valcapfish. The project trials (demo farms) to improve production across the value chains of pangasius and seaweed focused on three key stakeholders being: Farmers, traders, and processors.

The project approach to improving productivity across the value chains

At the farm level of the pangasius and seaweed value chains, the project focused on designing and fostering the adoption of standard operating procedures (SOP) and good aquaculture practices (GAP). These consisted of simple practices that combined the use of probiotics, water quality management, improved feed and better monitoring of feeding in pangasius farming. Seeking to reduce the costs of production, the project also introduced a method of least cost formulas (LCF) for the fish feed using local ingredients. SOP for seaweed farming focused on improving productivity and quality of seaweed harvest using simple farming practices (distance between seeds, ropes, and maintenance during pre and post-harvest). The approach followed by the project when introducing SOP to the farmers typically consisted of five stages.

- First, identify suitable partners in selected locations as champions in implementing the new practices through demonstration farms (demo farms); this might include in-kind grants in the form of ropes to seaweed farmers or feed machines to pangasius farmers (mostly financed by MMAF).
- Second, develop SOPs based on the results of demo farms to show the results and establish standard practices
- Third, training of groups of farmers and extension officers near demo farms SOPs, LCF, and GAP.
- Forth, "upscaling," which consisted of the socialization of the results among a more extensive number of farmers and the replication of trials by other farmers in new locations/districts. During upscaling participating farmers typically received only technical assistance from the project. To reach wider farmers all over Indonesia, the

SOPs were also converted into digital forms in the web and also as applications.

- Fifth, collaborations and synergies with other programs such as TNC, local government (DKP) and also other agencies such as BPWS are established to support up-scaling in other locations.

Training and trials in SOP and GAP included extension workers at all steps of the way. During upscaling, extension workers had a more prominent role in advising farmers during replication, in particular for the pangasius value chain.

The project support to processing industries focused on seaweed and pangasius and in the application of the Kaizen (Continuous Improvement) approach. In 2015 the project carried out several workshops and begun trials with processing industries seeking to apply methods to improve productivity, innovation, and sustainability and to apply Resource Efficient and Cleaner Production (RECP). By April 2016 the project promoted these combined approaches into the INSPIRED (Integrated Sustainable, Productive, Innovative Resource Efficient Development) approach, a unified approach which also incorporated traceability (Component 4). Trials with processing industries also included 68 problem-solving internships with STP students (Component 3) and involved the faculty of STP in such. By August and September of 2017, the project developed an INSPIRED LIGHT tool that incorporated feedback from partner processing firms. In the process, the project also trained 15 faculty as local experts and in Kaizen/Productivity.

The participation of STP in the process helped them to develop a good understanding of the methods developed by the project while at the same time providing STP faculty an opportunity to work in partnership with industry, which rarely happened before the project. Industry and farmer partners implemented many recommendations to improve productivity, sustainability traceability, and clean production. As detailed further down in this report the INSPIRED Program helped make partners work more profitable by reducing costs and improving productivity, often also reducing the use of energy and water.

The pangasius value chain

The project carried out pangasius trial demonstrations in the districts Tulungagung in the province of Surabaya and Muaro Jambi and Batanghari in the province of Jambi. These three districts had a total of 696 pangasius farmers. The project trained 355 farmers belonging to 28 groups in the SOP. Of the trained farmers, 293 (83%) adopted SOP or some elements of SOP (Table 2). These farmers represent 83% of the trained farmers and 34% of the pangasius farmers in these three districts. This rate of adoption compares well with the typical rates of adoption of new agricultural technologies which in the first stage (by innovators) is 2.5%, and in 13% in the stage of early adopters stage (Rogers 2003).

The project also trained a total of 443 farmers in LCF in 7 districts in 6 provinces. Of these 70 farmers have used LCF to produce fish feed. The fish feed consists of 70% of the costs of pangasius farming. A factor limiting the adoption of LCF was the need to invest in a milling machine. The farmers that adopted LCF were mostly those who also benefited from an MMAF program that distributed these machines. The adoption of SOP by farmers was an

important factor that triggered a process that resulted in a 48% increase in production in just two years.

Districts	Pangasius farmers in the locality	Farmers trained	Extension workers trained	farmers that adopted SOP	Rate of farmer adoption (SOP trained/ SOP adopters)
Tulungagung	375	180	33	179	99
Muaro Jambi	162	95	12	64	67
Batanghari	159	80	12	50	62
Total	696	355	57	293	83

The application of SOP and LCF helped reduced costs among participating farmers while improving the fish quality. The project technical expert calculates that SOP resulted in a profit increase for the farmers that ranged from 5 to 8%, averaging approximately 50 US a Ton. Similarly, farmers that applied LCF on average saved 30% of the costs of fish feed, which represented a saving that ranged from 45 to 52 USD a ton of harvested fish.

The rates of adoption are different in the three different districts where the project operated. While farmers in the three localities had a long history in fish cultivation, were well organized and had strong links to the market, market pre-conditions and the pre-existing farmer's business models led to differences on rates and extent of adoption and production outcomes.

In the case of Tulungagung farmers have a historically produced for the national and export markets (including cultivation of ornamental fish, tilapia and other catfish species). Most of the farmers participating in the project already supplied fish to the filet processing companies and dedicated 50 to 90% of their production to the filet market. Most of the trained farmers (99%) in Tulungagung applied SOP systematically and quickly improved the quality of their fish (the produced fish with whitish meat and no muddy smell) that met the quality standards required by the filet processing companies. The ability to produce fish for filet quality led to the signing of supplier/buyer contracts between farmers and processing firms (which were also promoted by the project through the round tables). Farmer groups and fish processing companies established four of such contracts for a total of USD 2 million.

In early 2018, the governor of the East Java Province made the political decision to support the development of the Agro-Marine and Fisheries Sector through the engagement of the Bank BPD Jatim (Provincial Owned Bank of East Java Province). BPD Jatim embraced the opportunity and became the leading player in the provincial government's program financing 7,450 billion IDR to catfish and pangasius farmers in financing farmers Tulungagung in 1st Quarter of 2018. Many SMART-Fish participating farmers in Tulungagung chose to draw on such credits and to expand their ponds, also investing some

of their profits. The combination of these factors led to an increase in overall pangasius production among participating farmers from 1668 tons in 2016 to 3664 tons in 2018 (83%).

Locations	Before SOP	After SOP	Difference	Rate of growth (%)
Tulungagung	1996	3660	1664	83
Muaro Jambi	1639.06	1815.465	176	10.7
Batanghari	292.344	353.66	61.316	20.1
Total	3927.404	5829.125	1901.721	48

In the district of Mauro Jambi, the project faced different circumstances. Like the farmers in Tulungagung, fish farmers Mauro Jambi were also well articulated to the market. However, they produced for the local traditional markets. Traditional fish markets typically don't require higher quality. As the local market did not reward quality, farmers often adopted a business model that privileged quantity over quality. For example, in the ten or fifteen years before the start of the project, farmers members of the Mina Sejahtera Group in Mauro Jambi had expanded operations acquiring dozens and in some cases over one hundred ponds. By the time the project came into the region in 2016, most farmers were set in a path of an extensive production strategy and were heavily in debt, mostly with companies that supply fish feed who are the primary source of financing for the construction of ponds. Facing a cash shortage, farmers also depended heavily on credit from fish feed suppliers to pay for fish feed and other costs during the production cycle. These farmers also engage in sharecropping arrangements which allowed them to capitalize on their investments without having to pay for wage laborers. This extensive and somewhat decentralized (sharecropper based) strategy of production makes it difficult for farmers to supervise the full and rigorous application of SOP. Thus, overall production improvements in Mauro Jambi have been significantly lower than the improvements reported in Tulungagung. The production among participating farmers grew from 1639.06 tons before the application of SOP to 1815.465 tons in 2018, after the application of SOP. This represents a 10.7 % growth in pangasius production, which is much lower than the 87% growth experienced in Tulungagung.

Traders in the pangasius traditional value chains play an important role in the aggregation and the channelling of fish to the retail markets, they typically don't process the fish in a significant way. The traders that participated as partners in the project became knowledgeable of the importance of SOP and GAP to meet the newly adopted standards of pangasius. They are also well positioned to respond to the gradual market demand generated by the Indonesia pangasius branding campaigns. The project has also made it possible for traders to offer higher quality pangasius and compete in the market based on quality.

The four filet processing companies that have established contracts with farmer groups have ensured access to the raw material of the quality they need to meet regulations. In

Tulungagung, where the adoption rate of SOP by farmers was the highest, the supply of quality fish for filet processing more than doubled, from 30 ton/day into 60 to 80 tons a day by 2018. In a few cases, the project also supported processing industries in the improvement of their operations using the INSPIRED approach. In the case of PI Expravet Nasuba, the project supported a problem-solving internship through STP. The internship has helped the firm reduce undersize fish and to reduce fish mortality during transportation from the farm to the processing center from an original 50% to a 20% resulting in higher yield for filleting of up to 2% and reducing the number of rejected fish, saving the company an average of USD 50,000 a year. Starting in mid-2018, the project continues the "up-scaling" and has expanded SOP to five additional districts in the provinces of Perbaungan Medan, Kampar, Oku Timur, South Lampung, and Banjar, all of which are major pangasius production areas. By early 2019, the project had carried out socialization of SOP Pangasius in Banjar, Oku Timur, and South Lampung that included 93 farmers and 43 fisheries officers/extension workers. At this time the project was also proving technical support for the establishment of 15 self-funded demo farms as a first step towards the replication of the project achievements in the new areas.

The seaweed value chain

From the middle of 2016 to the end of 2017 the project carried out a series of seaweed demonstration trials in the districts of Sumenep, Takalar, and Bulukumba. The trials included production for *Eucheuma cottonii* (*Kappaphycus alvarezii*), *Eucheuma spinosum*, and *Gracilaria sp*, using two methods, pond, and long line method. The project hired enumerators to monitor every week the results of the trials for several parameters, including average daily growth rate (DGR), yield, gel strength (GS), purity/CAW and GM. Based on the results of these trials the project expert formulated a set Standard Operational Procedure (SOP) for the cultivation of these three algae using technologies applied to different ecological conditions.

District	Seaweed farmers in the project localities	Number of farmers trained on SOP	Number of extension workers	Number of farmers implement the SOP	Rate of farmers trained to SOP adopters (%)
Pamekasan	150	110	8	96	87
Sumenep*	485	293	16	239	82
Talakar*	410	190	2	105	55
Jeneponto	200	75	1	35	47
Bantaeng	200	75	1	30	40
Bulukumba*	300	100	1	35	35
Bone	350	100	1	35	35
Totals	2095	943	30	575	61

*Initial project locations

The project trained 943 seaweed farmers located in 24 villages or hamlets and seven subdistricts in the provinces of East Java and South Sulawesi, as of December 2018. These farmers were organized into 15 registered groups and four cooperatives and represented nearly 50% of the farmers that cultivated seaweed in the selected localities. Of the trained farmers 575 (or 61%) implemented SOP (Table 4). The project mostly introduced simple practices that were easy to follow such as the standard size racks and ropes to plant the algae, standard size of the seed, the distance in seed planting, length of growth period and new seaweed drying practices.

District	Baseline production in a ton of participating farmers in 2016 tons/year	Production of participating farmers in 2018 (after SOP) tons/year	Increase of production from baseline to 2018 (%)
Pamekasan	356.50	445.50	25
Sumenep	1258.40	1,574.00	25
Talakar	1,437.90	2,196.10	53
Jeneponto	1,392.50	1,680.50	21
Bantaeng	1,378.40	1,640.80	19
Bulukumba	1,445.20	2,080.80	44
Bone	1,388.60	1,955.60	41
Totals	8,657.50	11,573.30	34

By 2018 the production of seaweed by the participating farmers increased significantly ranging from 25% to 53% when compared with the volume of production during the baseline year (2016). This growth in the volume of production cannot be entirely attributed to the project. During these years there was a sharp increase in the price of seaweed and this was an important factor at play. However, the project also had a role, one factor that contributed to the growth of production was an increase in the average daily growth rate (DGR) of seaweeds which was a result of SOP. Average DGR in the controls using traditional technology ranged from 2.55% to 3.25 % (Table 6). This difference in DGRs depended largely on species and local ecological conditions. All localities implementing SOP experienced an increase in the average DGR which ranged from 3.35% to 4.48 %.

These increases represented productivity improvement from the baseline in the range of 21% to 44%. It also meant that farmers could significantly reduce the production cycle and the cultivation time at which seaweed reached its quality peak. The new methods introduced by the project also reduced the costs of production in by 9 to 20 %, depending on the locality and the technology used by the farmers.

The increase in the volume of production was a result of several factors of which the improvements in productivity by SOP is one. Another important factor not related to the project was the increase in the price of seaweed in the national market. The improvement in the quality of seaweed among participating farmers can be attributed to the SOP. Data

gathered by the project comparing traditional methods (baseline on 2016) with SOP indicate that seaweed produced under SOP scored higher in six key parameters used in the industry to rate seaweed quality (Table 6).

Table 6: Seaweed Quality Indicators at Baseline and After SOP			
Seaweed Quality Parameter	Value range at baseline(2016)	Value range with SOP (2018)	Difference %
DGR	[2.53 .. 3.25]	[3.35 .. 4.68]	[21 .. 44]
MC	[21.6 .. 43.80]	[18.13 .. 38.7]	[-12.2 .. -15.8]
CAW	[38.90 .. 42.60]	[44.50 .. 49.4]	[14 .. 22]
AI	[3.48 .. 6]	[2.4 .. 3.15]	[-13 .. -50.8]
AY	[9.75 .. 21]	[11 .. 24.1]	[13.5 .. 21.3]
GS KCI	380 .. 800]	[575 .. 1020]	[27.5 .. 47.4]
DGR: Average Daily Growth Rate; MC: Average Moisture Content; CAW Average Clean Anhydrous Weed; AI: Average Impurities; AY: Average Increased Yield; GS: Average Yield Average KCl Gel Strength			

Increases in production and improvements in the different parameters tracked by the project were quite diverse (also seen in Tables 5 and 6). Much of these differences were related to the intrinsic characteristics of the technology and the environmental conditions in which cultivation took place. Many farmers have also adopted SOP in stages, starting with a few wracks and gradually expanding. Cash is a limiting factor affecting extent of adoption. While requiring relatively small amounts of cash, wracks designed to promote proper nutrition and high growth rates required investments, which many farmers are gradually doing using some of their profits. The business models also influenced the farmer's decisions. In Madura Island in the district of Sumenep two groups in proximity growing the same species (*Eucheuma Cottonii*) using Bamboo Floating Rafts approached seaweed production very differently. One group in Aeng Deke Village belonged to a cooperative and had an entrepreneurial outlook and seemed to be more urban and fully integrated into the market economy. The second group in Korbi Village was composed of farmers organized in an informal group who were also engaged in the market economy but with a diversified economic strategy that included fishing, agriculture, and seaweed farming. Members of Aeng Deke Village reported that they had reinvested some of their profits from seaweed in additional seaweed racks. Women in this group had also engaged in seaweed processing and had developed several product lines that they sold in the local markets. Farmers in Korbi Village on the other indicated that they used the profit from seaweed to finance their agricultural production and few had invested in additional seaweed racks. Both felt that the project had resulted in significant benefits, yet they both incorporated seaweed farming in different ways into their livelihoods.

Seaweed traders connect farmers to the processing industry. Traders can be in the form of cooperatives, firms or individuals. Their role in the value chain is mostly to aggregate, the raw material for the processing industry or exporters. They traditionally have played no significant role in quality control. The project partnered with two Seaweed cooperatives Kospermino in Makassar and Anika Usaha in Sumenep. These coops were invited to visit demonstration farms and were part of the socialization and dissemination of SOP among

other coop members. The project trained their members and staff on the seaweed quality parameters such that they now understand the value of higher quality seaweed. In this first phase the project emphasized on simple traceability to help farmers understand the link between farming practices and raw material quality. SMART-Fish has also encouraged trader partners to purchase raw material from participating seaweed farmers, and to set prices that acknowledge seaweed quality. The two Coops reported that quality of farmers using SOP is higher and more consistent. Anika Usaha reported that prices of seaweed produced using SMART-Fish SOP were from 500 to 1500 IDR/kg higher than other seaweed. The project has also worked with farmers to carry laboratory analysis of the quality parameters of the seaweed and taught farmers to use that information to negotiate prices a premium for higher quality seaweed, which some traders that have partnered in the project are beginning to accept. Nonetheless, partner traders complained that most other traders do not acknowledge quality in their pricing practices.

On April 2018, the project began to train SMEs in the elaborations of seaweed-based food and non-food products in 9 districts in 6 provinces (Kep. Seribu, Bekasi, Jepara, Sidoarjo, Sumenep, Nunukan, Takalar, Bulukumba, Makassar). A total of 461 persons, mainly women of seaweed farmers families, were trained on seaweed processing for food, drink and non-food (cosmetics) including training on SSOP, GMP, HACCP, registration, and certification (P-IRT, Halal). By January of 2019, 247 of trainees were producing 18 products calculated at a value of USD350,000 a year; 8 Seaweed based food/drink products obtained P-IRT, and 27 products received Halal certificates. Also, 20 products were IDR certified valued at USD 1.2 million (IDR 18 billion a year). Trainees also registered 4 Brand marks with HAKI obtaining their intellectual property. Farmers have now established contacts the Departments of Health, Industry, and LPOM, and learned the processes for the registration of new products.

As indicated earlier, since the project began the seaweed processing industry in Indonesia has been facing increased competition from foreign processors. On the one hand, growing Chinese demand for seaweed has resulted in result in a higher price and lower quality of raw material (Industries reported that seems 2016 the price per ton increased from 16000 IDR to 20 000 IDR). Similarly, Chinese seaweed processors have been offering processes seaweed in Indonesia at the cost of production for local industry.

SOP implementation has provided partner industries with seaweed higher quality seaweed at a time when the overall tendency for quality seaweed has tended to drop. The project partnered with 8 seaweed processors in 6 districts (PT. Gumindo, PT. Agarindo, PT. Galic, PT. Java Biocolloids, PT. Surya Indoalgas, PT. Algalindo, CV Sri Gunting, PT. Wahyu) to improve their competitiveness by improving productivity, resource efficiency, implementing Internal Traceability as a tool for quality control and the developing blends with higher added value. Four of these companies carried out changes in their production process that reduced water usage in seaweed washing by 10% and reduced energy usage in drying by 6%, in cooking by 7% and in grinding by 3%. The project also helped build the companies capacity on hydrocolloids, blending and formulation and product development. By January 2018 the processing companies had an increase in blended/formulated products sold to 50% of their total production from 30% in 2016. On the example of the way the INSPIRED approach helped companies identify opportunities and do improve their production process and become more competitive is P.T. Agarindo. The seaweed processing company P.T. Agarindo increased profits improving by their control of the

moisture content of the product. Moisture content (MC) of agar produced by PT Agarindo used to be around 7.0 - 8.0%, despite customers only require MC at 12%. In 2016, PT Agarindo produced 1800 MT Agar, an estimated loss of 3% of agar (54 tons) at an average price of USD 15 Kg, represented a loss of USD 810,000. In 2017, PT Agarindo produced 1300 MT which represented a loss of USD 585,000. Using INSPIRED approach, PT Agarindo formed Kaizen/CI (Continuous Improvement) team to improve the milling process. One of the blades of the miller was replaced to achieve targeted MC at 11.0% in 2018. With projected production of around 1500 MT in 2018, if the company expected to increase agar MC by 3% to 11%, improve production by 45 MT at an estimated value of USD 675,000/year.

Upscaling and dissemination of SOPs are carried out not only to farmer groups but also to other traders, processing companies' members of ASTRULI and to other government officials and to disseminate locations. Data monitoring is done per individual farmer so that it can provide a more accurate picture of the data. The project has begun upscaling and dissemination of SOP in Madura Island; East Java is in the Sumenep district with Sub-districts which include: Seronggi, Talango (Talango Island), Gili Genting (Gili Raja Island), and Bluto. In Pamekasan District expansion has also taken place in the Sub-district of Pademewu, the hamlet of Jumping. All of the above areas develop *Eucheuma sp.* Socialization (or dissemination through farmer groups, extension service providers, and Coops) has also been taken place in several areas including Nunukan danb Tarakan Districts, North Kalimantan; Rote Ndao District, East Nusa Tenggara.

The project also conducted surveys to identify areas suited for expansion (including areas with high number of farmers who produce seaweeds that have a high demand in the market). This surveys identified the following potential cultivation center for further dissemination of SOP: Serang and Tangerang Districts, Banten Province; Bekasi, Karawang, Cirebon and Indramayu Districts, West Java Province; Berebes, Pematang, Tegal Districts, Central Java Province; Sidoarjo and Gresik Districts, East Jawa Province; all for the cultivation of *Gracilaria sp.* Whereas for *Eucheuma sp.* in several other areas: East Sumba District, East Nusatenggara Province; FakFak District, Papua Province; Banggai and Morowali Districts, Central Sulawesi Province; Buton District, South East Sulawesi Province. The survey also identified wild species that are not cultivated, but that have high potentials as edible seaweed and as industrial raw materials, but that require more in-depth studies. Species include *Gelidium sp.*, *Gelidiela sp.*, *Pterocladia sp.*, *Ptilopora sp.*, *Caulerpa sp.*, *Ulva sp.*, And *Sargassum sp.*

Indonesian Tropical Seaweed Innovation Network (TSIN). TSIN was an important unanticipated outcome of the project. As part of its background stakeholder studies, the project mapped existing seaweed research institutes and experts in the country. These background studies included aspects related to seaweed research in aquaculture technology, transfer of technology, and testing and certification services. This mapping identified over 150 seaweed experts in 27 centers. More than one-third of the experts are in aquaculture (63 persons). The other experts focus on seaweed taxonomy, seaweed monitoring, seaweed genetics, seaweed processing technology, seaweed biotechnology, and seaweed socioeconomics. Despite this wealth of expertise in the country, budgets and equipment in research organizations differ significantly, and research centers and experts collaborated only occasionally. The mapping also found that research collaboration with industry was limited. In a series of follow-up meetings to the mapping, the Coordinating

Ministry of Maritime Affairs, MMAF and the Ministry of Research, Technology and Higher Education, the Ministry of Industry agreed to facilitate the establishment of TSIN which is in its early stages of development.

The Pole and Line Tuna value chain

The project activities to improve productivity in the P&L Tuna value chain took place through AP2HI. The project trained AP2HI staffs and five its member in INSPIRED approach and five-member tuna companies who piloted the INSPIRED Light tool. AP2HI has indicated a strong interest in continue to promote and adapt the INSPIRED tool in particular for the small and medium sized processing companies; and the AP2HI is leading the way in promoting application of INSPIRED by its members. Tuna bait is 30% of the operational costs in P&L Tuna capture. The project through AP2HI helped fishers find an alternative bait by up-scaling milkfish farming for bait. In trials, in Bitung the project was able to improve the survival rate of fish grows out of pond from an average of 40% to an average of 90%. The project also worked with AP2HI to develop more efficient bait by mixing milkfish with wild bait. The trial results resulted in a yielded an optimal mix of 35% milkfish /65% wild bait at a cash ration (Bait; Tuna caught) of 1:4.5. This increase is near twice the rate of 100% milkfish bait/ tuna caught which was 1:2.27. In early 2019 the project started replication of the experience in Maumere.

IV.1.3 Component 3: Educational Program in Productive and Innovation

The initial objective of this component was to develop a master's level education program; at inception, it was changed to develop add-on modules on productivity and innovation in the university curriculum. During implementation, this was further modified to focus on four subcomponents: 1) mainstreaming sustainability, productivity, and innovation across the university curriculum, 2) the improvement of technical and research capacities of STP Staff. 3) The development of a problem-oriented internship program for STP students and 4) development of robust internal quality of the university.

This project component took place in close collaboration with the University of Tasmania in Australia (UTAS). The UNIDO and UTAS signed a cooperation agreement in February 2016. Soon after UTAS engaged with STP in a program to review the full curriculum of the university. During the following months, the UTAS and STP staffs jointly reviewed the course outlines of the existing curriculum (2013) to fully incorporated sustainability, productivity, and innovation. MMAF changed and approved the new curriculum in November 2017. At this point, based on the technical requirements necessary to develop the course outlines for the new curriculum, the project adopted a more intense involvement of UTAS in the development of course outlines and the strengthening of capacities in STP. By Early 2018 this new collaborative arrangement had resulted in the development of 91 course outlines out of a total expected of 120. The remainder were in the process of completion, and some course outlines were still under translation. MMAF decided to upscale the STP experience in 9 other fisheries technical and vocational universities across Indonesia (namely the internship model and the curriculum). For this, the ministry has also decided to allocate funds. During last days of May, UNIDO supported the MMAF and STP on the development of an

upscaling strategy to this end. Also, a Memorandum of Understanding (MoU) between UTAS and the University was signed in early April 2019 to establish a long-term collaboration between the two institutions beyond the program.

The project proceeded to build capacities in STP by training 37 STP staff and implement seven specific research projects on sustainability, innovation, and productivity. Initial courses for STP staff focused on research skills with emphasis on data collection, data analysis and evidence-based evaluation of research. The project provided modest financing for data collection to carry out research projects, and UTAS and advisors based in Jakarta provided technical support and monitoring. Subsequently, UTAS conducted workshops referencing and editing tools to improve manuscripts. As a result, participating staff submitted five manuscripts for publication, two of which were accepted.

As part of the overhaul of the educational program at STP, the project also supported pilot problem-solving internships by which 18 of the best students were selected to work as interns with industry, farmers or provincial offices of MMAF to identify and resolve specific problems. While STP had an internship program before the project, those internships typically did not respond to the needs of the firm or host institution. As a result, host institutions often saw interns as a burden. The problem-solving internships focused in applying the INSPIRED approach and the early identification of problems and in finding solutions that worked for the host firm or institution. STP faculty supervised the interns, which opened opportunities for STP staff to interact with industry and other stakeholders engaged in the three value chains. These internships often came up with solutions that improve the productivity of partner firms. During interviews carried out for this evaluation, several host companies expressed their appreciation for their contribution and their willingness to hire students. As part of the "upscaling" phase, STP some partner industries agreed to 50 more internships. The project is providing partial support to 20 of these internships. The project also supported STP participate in the Asian Productivity Council and the National Productivity Council to expand its outreach in the promotion of productivity, competitiveness, and sustainability. The students and the university lecturers (iPRIDE4fish) have been invited to the World Seafood Forum in Penang, Malaysia in September 2019 sponsored by Institute of Productivity (IoP) the UK and also International Association of Fish Inspectors.

IV.1.4 Component 4: Traceability

Traceability provides reliable information on the origins of raw materials and the elaboration processes of products as they move through a value chain. Traceability helps to keep track and reward quality across the value chain. The objective of the project was to develop an affordable traceability system that meets the requirements of Indonesia and importing countries which were meant to reduce the noncompliance with traceability requirements in importing countries. The project inception report included traceability for the P&L Tuna and pangasius value chains. During implementation, considering the need for reliable information on seaweed production and quality, the PSC gave priority to the seaweed value chain, providing also support to internal traceability to the P&L Tuna value chain. The project carried out a pilot of internal traceability in the P&L Tuna value chain with the participation of five companies' members of AP2HI located in Bitung, Larantuka,

and Maumere. This pilot included tracing the origin of raw material at the initial point of the value chain.

The project is in its last stages in piloting External Traceability for Seaweed Value Chain or SeaweedTrace (<https://apps.seaweedtrace.com>). This pilot involves one multinational company that is a significant buyer or seaweed globally five Indonesia seaweed processors, five seaweed traders and co-operative and over 3000 seaweed farmers in 14 locations all over Indonesia.

The pilot was expected to be completed by March 2019. External traceability drew on existing expertise in the country and on CocoaTrace, a traceability system for the cocoa value that SECO helped established during previous years. After the project closes, the service provider, PT Koltiva will manage the platform. Hence after the piloting, seaweed companies members of ASTRULI are expected to subscribe to the system and pay a nominal fee to the service provider to maintain the system.

Meanwhile, MMAF can get access to aggregate data. Once established across the country, traceability can provide more reliable information on seaweed production in Indonesia. The project has also developed internal traceability INSPIRED Light Tool app as part of a web-based system that is expected to provide real-time information on seaweed traceability, productivity, and resource efficiency at the company level. This INSPIRED based system has been also linked to external traceability. This will allow firms to link quality and productivity of seaweed to the quality of the products.

IV.1.5 Component 5: Sustainability/Eco-labelling

The objective of the Sustainability component was to help build capacities for internationally recognized (accredited) national certification services for the selected schemes such as the Marine Stewardship Council (MSC) or the Aquaculture Stewardship Council (ASC).

By 2016 when the project began implementation, there were several certification efforts on their way. Under these conditions, the project approach was to support these processes by jointly funding or coordinating activities with other donors and international NGOs. In the Inception Report, the PSC also directed to project to monitor activities at the ASEAN level to establish a regional eco-labelling scheme for tuna.

With regards to pangasius, the project supported APCI and its members to obtain industry certifications from Indonesian Good Aquaculture Practices Certificate (CBIB). The project also contributed to IndoGAP, an aquaculture ecolabelling scheme developed by MMAF. The project also supported the benchmarking and preassessment of IndoGAP to meet the global requirements for sustainability certification.

Figure 4

Indonesian Seaweed Certifications



In the seaweed value chain, the RTDs were part of the process that led to the adoption of the ASC-MCS Seaweed Standard which covers five principles sustainable wild populations, environmental impacts, effective management, social responsibility, and community relations and interactions. The project also collaborated with other patterns to improve awareness on ASC-MSC Seaweed Production Standards.

In the P&L value chain, the Indonesian tuna company PT. Citra Raja Ampat Cannery (CRAC) of Sorong has obtained MSC certificate in early 2018. By the time this evaluation took place, AP2HI was in the process of obtaining MSC certification. The project also supported the establishment of ASEAN Tuna Eco-Label (ATEL) and sponsored the participation of Indonesian stakeholders from MMAF, one from AP2HI and one from ASTUIN (Tuna Association of Indonesia) in ASEAN meeting in Bitung in 2019. SMART-Fish support to AP2H to improve milkfish farming for bait as a substitute for declining wild marine bait also, in the long run, can improve its sustainability.

Figure 5

Indonesian P&L Tuna Certifications



IV.1.6 Component 6: Promotion

The objective of this component in the original project document was to support the capacities of the National Agency for Export Development (NAFED) to provide information to SMEs in the fishing sector on exporting opportunities and market requirements and to promote the capacity of export promotion bodies such as chambers and associations. By the time of the inception report, MMAF had significantly increased its involvement in the promotion and marketing of fisheries products at the international level. The project focus was thus to complement the work carried out by MMAF, and to cooperate with SIPPO on joint promotions and networking events. The project also shifted its orientation towards the establishment of trademarks and promotion of the three value chains.

The project helped the three associations develop generic brands for Indonesian Pangasius, Seaweed and P&L Tuna and helped them improve their websites to promote these three value chains (www.indonesianpangsius.com; www.indonesiaseaweed.com; www.indonesiantuna.com). The project has also carried out training and capacity building for AP2HI, ASTRULI and APCI members on online marketing and developed 13 templates websites for association members. Pangasius and Seaweed Brands were launched at SIAL Interfood in Jakarta in November and SEAFEX Dubai in October 2018. Indonesia Seaweed

Brand was also re-launched at International Seaweed Forum (ISS) 2019 in Jeju Island, S. Korea on 28/4 2019. Tuna brand was launched at SENA Boston Show in April this 2019, then relaunched at SEG in Brussels in May 2019.

The program supported APCI for participation at SEAFEX Dubai and Indonesia Trade Expo in Jeddah in October and November 2018 to promote Indonesian Pangasius brand in the Middle East market. With the support of MMAF and the Ministry of Religious Affairs, APCI also held a series of business meetings with an official from Saudi Arabia for supplying pangasius for Hajj pilgrims from Indonesia. Conversations have identified business opportunities that could amount to USD 36 million. While it is unlikely that APCI members can supply that amount, this was a step that has led to the opening of new markets and has provided additional incentives in Indonesia to produce pangasius fillet of high quality. On May 27th, the first export consignment was shipped to Saudi Arabia of a total business agreement of 200 tons valued at USD 472,000 by PT. Adib Global Food.

The project also sponsored a series of workshops by international experts that provided local producers insights and global market intelligence relevant to future investments. Experts also discussed other products from Indonesia cultivated seaweed. Some of these workshops trained seaweed processing companies on blending/formulation and develop new products for human consumption for the first time in Indonesia, such as *Caulerpa sp.* and *Ulva sp.* for human consumption.

IV.2 Project relevance

IV.2.1 Country relevance

The project objectives and results were highly relevant to most participating country stakeholders. From the start, UNIDO sought to involve the key stakeholders in the sector in studies and meetings during project identification and preparation of the project. The project, in consultation with national stakeholder and based on a series of technical studies identified the specific project components and value chains. The project was particularly well-aligned with policies and maritime and fisheries priorities of the new government. The project's main contribution to Indonesia is that it tested and demonstrated the utility of the value chain orientation as a policy tool to create value, improve competitiveness and for all stakeholders involved in the fisheries sector. Particularly significant is the extent to which the value chain approach helped improve the standards of living of some of the poorest populations involved in the sector. The project directly addressed the sustainability policy objectives of MMAF through an emphasis on the improvement of competitiveness of the value chains, on the generation of value at all stages of the chains and cleaner production and efficient use of resources. The project addressed sovereignty by promoting quality controls of foodstuffs and standards that would have to be met by foreign suppliers. During implementation, in response to GoI priorities, the project also supported the improvement of pangasius value chains producing for the national markets. The project's emphasis on technology development, and capacity building at research and academic institutions also directly supported the MMAF prosperity objectives. For STP the support provided by the project was particularly relevant and timely as it allowed it to reinvent its educational program more in line with the policies of the new administration.

Investments by SMART Fish Partners on Productivity or Marketing							
	Seaweed		Pangacius		P&L Tuna		Total
Farmers	Purchase of materials for SOP adoption (ropes, racks, drying racks) difficult to quantify	Difficult to quantify	Expansion of fish ponds	353000			353000
Processors	Investments in equipment to implement recommendations	5,980 000	New plants and renovation of equipment by Adib, Nasuba, KMM, Belinda	874800	Scaling-up milk fish farming(S MS & KCBS)	34,050	6888850
Government	MMAF budget for farmers: seeds, inputs, facilities	679000	Feed mashine to farmers, Pangasius procesing, promotion	3,135,683	Promotion by SENA	614916	4429599
Total		6656000		4363483		684966	11671449

The project's emphasis on increasing value across the value chain, the introduction of improved practices and the emphasis of removal of market barriers also made the project highly relevant to processors associations. The quick delivery of benefits of the project's intervention maintained most stakeholders highly engaged during implementation; this was the case among most of the partners in the processing industry and participating P& L Tuna fishers and seaweed farmers. The project was also highly relevant to most pangasius farmers. One indicator of the relevance of the results of the project to the national stakeholders is the extent to which stakeholders are willing to invest their resources in implementing the advice from the program experts and consultants, adopting INSPIRED approach and SOP or supporting the efforts of the project for the development of markets. Project partners invested at least USD 11.7 million to follow up or in support of project activities (Table 7). These investments are three times the full amount of the SECO project grant.

IV.2.2 Donor relevance

Donor relevance of project objectives and results were also high. The Programme aligned well its components and the intervention to SECO's trade cooperation program in Indonesia which focused on increasing competitiveness of enterprises, enhancing trade infrastructure, reducing technical barriers to trade, and integration into the world economy, which are thematic priorities of SECO. Several components of the Programme also contributed to SECO's objective to improve overall framework conditions for businesses, in particular, SMEs. A key objective of for SECO in supporting this project was to build capacities in meeting standards on the sustainable use of maritime resources and to promote the sustainable use of natural resources and preservation of biodiversity. The initial intention was improving quality to allow Indonesia's fisheries products to access the European market. While no exports pangasius exports to Europe are on the short-term, overall the project results ultimately contributed to the adoption of environmental

standards and the development of new external market opportunities in the Middle East. The project also coordinated activities with other Swiss-funded programs such as SIPPO, RECP to promote exports in Indonesia and fully incorporated RECP into the INSPIRED approach developed by the project.

IV.2.3 Relevance to UNIDO

Relevance to UNIDO's core capacities and mandate was also high. The project was also well suited to UNIDO's mandate. The project focused on trade capacity development in the supply side, the development of trade standards and the development of compliance related support services all of which are core thematic competences of UNIDO.

IV.3 Project efficiency

Efficiency seeks to assess how the project converts resources/inputs (funds, expertise, time, etc.) to results. Project efficiency was high when considering the conversion of project funds and expertise to project outputs and outcomes. Table 8 presents an illustrative summary of the results of the project. With 3.8 million dollars the project was able to address many of the barriers identified during design. These investments have led to business opportunities that amount to USD 43.7million and have reduced costs of production or increased profits by over USD 2 million a year to project partners (mostly to farmers and processors). These are just the immediate achievements that the evaluation could estimate in dollars. Most of the results of the project are difficult to monetize but are critical for the transformation of the value chain over the long run. For example, an investment of just over USD 336,000 enabled policy dialogue that already influenced regulation and standards for the three value chains concerned by the project. The promotion component also supported a process that led to USD 8 million in contracts between pangasius farmers and processors. These new contracts provided new business opportunities for the participating farmers and fillet processors and have benefited others by stabilizing the local prices of raw material for quality fillet. The project achieved these results in collaboration with project partners who also contributed with expertise and funds.

Similarly, in the case of Component 2, related to the support to the pangasius and seaweed value chain, the project investment of USD 588 000 helped over 1000 farmers and 12 processing companies to increase profits by over USD 2 million, improve production and become more competitive. However, most importantly, the project introduced and tested new technologies, developed capacities among extension officers and developed handbooks, apps, and online resources to disseminate the new practices. In Component 3, with USD469 000, the project completely transformed the curriculum (121 courses), trained 15 master level experts on the INSPIRED approach and reform the universities internship program to make it more responsive to the business community. While the transformation of Valcapfish to a service provider did not work out, the project did help to create iPRIDE4Fish, a new think tank formed by the 15 experts trained by the project in STP to continue to support technology development and providing services to the industry. These achievements are not entirely attributed to the project. As indicated in Table 7, the partners of the project also made considerable investments. Nonetheless in all cases the

project played a critical role in facilitating access to technical knowledge, convening different stakeholders and helping speed up and catalyze the process.

Concerning the use of time, the project had a slow start. Initially, it took one year to get the signature of MMAF. It also took UNIDO longer than expected to hire the qualified staff. The first tender was declared deserted due to the absence of qualified applicants. Having hired the project coordinator, the project had to select the right partners, another task that took time. The care is taken in the identification of the right persons to lead the project, and the identification of the right partners was time well spent. By 2015 the project was running well. Given the early delays, the PSC granted an 18-month extension to June 2019, an extension which the project will very likely meet. By May 2019 the project had only 95 915 dollars to spend until project closure (table 1).

Table 8: SMART Fish: Value for money	
Component and cost	RESULTS
Round tables USD 336,240	Industry input to multiple regulations and measures -Campaign on “dory mislabelling” helped expanded demand for Indonesian pangasius -Standards for seaweed and pangasius Business matching: Contracts farmers/processors (amounting to 8’ USD) Good communication MMAF/Associations Tropical Seaweed Innovation Network (TSIN)
Quality and productivity USDD 588,188	<u>Seaweed</u> 590 farmers are implementing SOP with prod. & quality improvement: USD1.8 Million 4 companies (INSPIRED) annual savings -energy/water USD 953,000 -moisture management USD 858,750 (PT Agarindo and Surya) -SOP printed handbooks, apps, and online resources <u>MSE Seaweed processing</u> -247 women SMEs with USD350,000 annual income - certified products for USD 1.2 million annual value <u>Pangasius</u> 70 farmers using LCF can save USD45 to USD 52 per ton 293 farmers implementing SOP have an additional USD186,000 annual profits Processor reduced fish mortality with a USD 50,000 annual savings SOP/LCF printed handbooks, apps, online resources
Educational program USD 468,574	iPride4Fish: a new think tank for technology innovation and promotion 121 course outlines mainstreaming SIP/Sustainability, Innovation, and Productivity 15 faculty trained on SIP Internship SOP, protocols & training modules 68 internships in fisheries On May 2019 the MMAF decided to make the budgetary resources available to upscale the curricula changes and the internship program to 9 other technical a vocational fisheries universities across the country. MoU for long term collaboration between STP and Univ. of Tasmania signed
Traceability USD 378,126	2 Electronic traceability platforms -SeaweedTrace with 8 companies that control 80% of seaweed processing in Indonesia; more than 3000 farmers, in 14 locations across the country.

Table 8: SMART Fish: Value for money	
	Cargill and Agarindo signed in May 2019 business agreements with PT Koltiva, a service provider, to mainstream SeaweedTrace and INSPIRED across their operations. -Excel based INSPIRED Light Tool for 5 tuna companies
Certification USD 328,825	Contribution to ASC-MSC Seaweed Standard Development and awareness raising MSC Chain of Custody Traceability gap assessment for AP2HI members and workshop to develop the work plan for improvement for the members (guided by AP2HI) Milkfish as alternative bait: Producing 1,700,000 fries/bait value at USD12140
Promotion and branding USD 460.021	3 generic brands launched Improved websites for ASTRULI, APCI, and AP2HI 15 website template for members of the associations Opportunities for pangasius export to middle east markets (potentially USD 32 million / USD 8 million considering capacities of pangasius processing by APCI members) Opportunities for Tuna exports by AP2HI member companies for Tuna of USD 350,000 – 800,000 at SEG 2018 (Brussels) On May 2019 Abid Global Food, one of the partners of SMART-Fish shipped almost 200 tons of frozen pangasius fillet, valued at USD 472,000 to Saudi Arabia.

IV.4 Progress towards Impact

Impact refers to the positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention. Having examined the extent to which the project contributed to improvements in the value chains, impact in this evaluation looks at the effects of the project on the livelihood of people and the environment. At the scales of the farmers family and the trader and processors companies, the increases of value across the value chain had the immediate effect of higher income or more security. However, the extent to which different stakeholders benefited from SOP and the new market opportunities has varied. The differences in the benefits derived by the various stakeholders were mostly influenced by circumstances that were not under the control of the project.

An important factor at play was the extent to which these stakeholders invested additional resources to enhance production. In absolute terms, stakeholders downstream of the value chain tended to derive the highest increase in income. Processing firms that invested in the improvement of their equipment tended to benefit the most. As indicated in the previous section the increases in revenue derived by processing from the implementation of INSPIRED recommendations ranged from the hundreds of thousands to the millions of dollars a year for each participating firm. In relative terms, the more significant gains took place in the upstream sections of the value chain, among the seaweed and pangasius farmers. The project reported an increase of profit for seaweed farmers ranging from 20 to 50%, depending on the location, species of seaweed, and technology applied. Also, as indicated earlier access to capital often was a major factor in the extent to which farmers adopted SOPs, most farmers moving gradually in the process of adoption. Among pangasius farmer groups the differences of the income before and after the application of SOPs were even more substantial. The farmers' groups in Tulungagung derived the highest profit

which ranged from 25% to 45% higher as we have seen these farmers benefited from the provincial bank credit program and produced for high-value markets with prices that rewarded fish quality. Farmers groups in Mauro Jambi, on the other extreme, saw a drop in their profit from ranging from -6 % to - 43% per ton, as they are dependent mostly on feed suppliers to finance production and are locked into a market that does not reward high-quality fish. While farmers at Mauro Jambi did see some increases in productivity, these increases were not big nor did they compensate for the drop in the local prices of fish. Pangasius farmers in Batangari, who are further away from the influence of fish feed suppliers and traditional fish traders saw an increase in their profits at an average of 13 % per ton.⁵

Despite these disparities in the additional income, most farmers interviewed reported that they derived substantial benefits from the project in the form of higher productivity and income. The evaluation interacted with 86 men and women involved with pangasius and seaweed farming that were members of 26 farmer groups, coops or villages. When asked about what difference the project has made in their lives, their independent responses were strikingly similar. They all referred to important improvements in their standards of living. They responded that they had been able to build a new home and pointed at the building in which the interview took place. Many of the respondents (both seaweed and pangasius) also indicated that they were now able to send their children to high school or university or pursue further training themselves. While some seaweed farmers also reported investing some of their profits in the expansion of seaweed racks. Some pangasius farmers, mostly in Tulungagung reported investments in the expansion of fish ponds. The women members of the PT. Wahyu seaweed processing in Makasar reported that before the project they only had access to part-time informal jobs, which in rural Indonesia pay much less than the minimum wage. By contrast in just a year, seaweed food processing already provided them with a steady income that was more than to the official minimum salary for the district⁶. With excellent prospects of expansion of operations, this additional and growing source of income provided them and their household not just higher income but more economic security.

In Mauro Jambi, it was the most impoverished farmers who reported the highest impact of the project. In this district, it is common for fish farmers to engage in share coping arrangements as a way to mitigate the need for cash during the production cycle. Sharecropping is a business model by which the farmer owning the ponds transfers some of the risks of production to laborers, who are remunerated not by a wage but by a portion of the crop. Sharecroppers, those who supply the labour in this arrangement, tend to be some of the poorest people in rural areas. The Tunas Baru Group is formed by ex-sharecroppers who implemented SOP and who together invested some of the additional income from the implementation of SOP in renting and building their ponds. Thus, becoming farmers, themselves. The group when asked how their situation would be different had the project not taken place, one immediately responded, "we would have continued to be sharecroppers the rest of their lives," and everyone nodded. This group was

⁵ Data provided by the Project Management Unit.

⁶ The average income from seaweed processing in January 2019 was approximately 123 USD a month, this is more than the minimum wage in East Java Province which is 115 USD a month or 1,630,000 IDR).

very motivated in adopting SOP; it was also the group in Mauro Jambi that saw the smallest reduction in their profit per ton (-6%) in 2018.

Most of the added value generated by the support of the project is taking place in the downstream sections of the value chain. However, by also targeting the upstream sections of the value chain, the project contributed significant increases in the income of more than 1000 small farmers (men and women) and their families to derive more secure income, improve their lives and pull themselves out of poverty.

SOP and INSPIRED are introducing practices across the value chain that not only improve productivity and competitiveness, these practices are also designed to make more efficient use of natural resources, improve the use of energy and reduce waste. In seaweed processing, for example, the project has helped processing companies reduce the use of energy and water. In the cultivation of pangasius, the use of probiotics in reducing discharges of antibiotics and other chemicals to the environment. The improvement of seaweed cultivation is also helping to increase the capture of carbon. As production increases, there will be a need for more efficient ways to use water (a factor that is already limiting production to some seaweed processing forms) and monetize more fully the by-products of pangasius. There will also be a need to develop regulations on the density of seaweed farms to ensure that farms remain within the local ecosystems carrying capacity.

IV.5 Scaling and the extent of adoption of the innovations

The transformation of complex systems such as the fisheries value chains in Indonesia requires a combination of simultaneous and phased interventions in different domains and at multiple scales. However, it is not enough to intervene at different scales; to be effective projects must also link processes across scales. Thus, when seeking to change such systems, there is a double challenge. Projects need to put in place "top-down" mechanisms to ensure that interventions at higher scales influence the behaviour of agents operating at lower scales. Simultaneously, projects must also put in place "bottom-up" mechanisms to ensure that changes initiated at lower scales are adopted broadly across the system (or up-scaled).

From the "top down" perspective, at the national and international scales, the project supported the development of standards and regulations and helped develop market opportunities for and within the three value chains. These required that agents across the value chain contributed to a specified set of conditions (the quality standards and volumes of production that met market requirements). In the case of seaweed, for example, the traceability system is a mechanism that links the requirements at the higher scales (standards and quality requirements of the international markets) with behavioural changes needed at different scales of the system. *SeaweedTrace* is designed to monitor the extent of compliance with standards and quality by agents across the value chain and to provide reliable information on the volume and quality of seaweed produced in the country. To be effective, the trial of *SeaweedTrace* must include the participation of a critical mass of stakeholders across the value chain at different scales and in different localities. The project has partnered with five seaweed processing companies that represent around 80% of the seaweed processing capacity in the country and with 3000 farmers in 14 locations across the country. Not all the seaweed handled by participating companies is part of the trials, but the high market share of the partner companies is likely to draw the rest of the

processors once the participating companies mainstream traceability into their operations. Similarly, the project is seeking to contribute to the competitiveness of Indonesian P&L Tuna in the world markets by supporting AP2HI as a mechanism through which P&L Tuna fishers can certify their product and meet the higher value international markets market requirements.

From the “bottom up” perspective there is a need for a mechanism to up-scale innovations tested at the lower scales. In the case of SMART Fish, the adoption of improved practices (SOP and GAP) by farmers, traders, and processors are critical for the transformation of the value chains. However, these agents are engaged in different ways in the value chain, and they have different challenges that require different solutions. For example, processors and farmers in the three value chains face different production and market challenges and different types of risks. To address various conditions, the project developed an up-scaling strategy that was flexible enough to meet the needs of farmers, traders, and processors and to help each increase the value along the chain. This strategy incorporated different stakeholders in a phased process and consisted of the following steps:

- ✓ **Step 1.** Diagnosis of challenges facing farmers and processors. Studies were carried out as part of project preparation, inception and during the first couple of years of implementation with the participation of national and international experts.
- ✓ **Step 2.** Selection of partners to carry out trials. In consultation with the producer associations and MMAF the project identified important localities that produced seaweed and pangasius and identified farmers, processors and traders willing to participate in the trials. This process included initial workshops with the associations and MMAF and the involvement of local government officials in the selection of specific groups of farmers. The farmers selected in seaweed used different technologies and grew different species of seaweed. The selection of pangasius farmers included farmers that produced for fillet market and farmers that produced for the traditional local markets.
- ✓ **Step 3.** Demonstration of technology. During this step, the project technicians worked with a few farmers and processors to test and demonstrate improved practices and technologies and developed standard operating procedures (SOP) to help to replicate the new practices widely. Given the diversity of challenges faced by the farmers and processors, the project followed different approaches for the three value chains. This step also included the participation of staff from STP, local extension officers, and in some cases also involving problem-solving interns.
 - In the case of seaweed, the project focused on five packages of technologies that were suited for different seaweed species grown under different conditions. This package included simple practices that could significantly improve productivity and quality, for example, size and quality of seed, the distance of seed planting, length of seaweed ropes, harvest periods, and seaweed drying practices to minimize impurities.
 - For pangasius, the focus was to increase productivity quality by introducing good aquaculture practices and fish feeding monitoring, and by reducing costs of feed through the introduction of least cost feed formulas.
 - In the case of P&L Tuna, the focus was mostly in the milkfish as an alternative to live

bait, especially in the testing of the proportion of milkfish/live bait.

- In the case of processors (pangasius and seaweed) the project adopted a Kaizen continuous improvement approach combined with RECP. These are approaches that are designed to improve efficiency and reduce waste across the production cycle and are not focused on the introduction of any specific technology. This approach eventually was blended with Traceability into the INSPIRED Light approach.
- ✓ **Step 4.** Socialization of trial and initial implementation. The next step was the socialization of the results of the trials with other members of the association, group members and other farmers in the locality. Socialization required the development materials instructions in the form of pamphlets and posters related to SOP for pangasius and seaweed and the development of web-based applications that users could download. Socialization was carried out in collaboration with the associations and with the participation of MMAF, the local extension workers. Socialization was carried out mostly by the farmers themselves with the support of project technicians, faculty from STP and local extension workers. The results obtained in processing companies were shared and socialized through meetings of the associations.

Table 9					
Farmers and Extensionist Trained and Practicing SOP					
	Farmers Trained	Framers that Adopted	The ration of Antioption %	Extensionists Trained	Number of localities
Seaweed	988	575	58%	31	13
Pangasius	551	364	66%	93	19
Total	1539	939	61.00%	124	32

- ✓ **Step 5.** Replication. From late 2017 through January 2019, the project, in consultation with MMAF and the associations gradually identified areas of high priority to expand the program and approached groups and farmers to start trials. By January of 2019, the project trained 1950 in the SOP of which 1201 had implemented SOP practices in 32 localities across Indonesia. Farmers that were applying SOP represent over 60% of the farmers trained or that participated in the socialization events sponsored by the project. Also, the project had trained 124 extension officers/workers to continue to provide support to train and support farmer in the adoption of SOP. As indicated earlier, farmers tended to adopt SOP gradually, so the extent of SOP adoption is likely to increase over time. In a small number of cases, there are indications that farmers might decide to drop certain element of SOP, such as in the case of Mina Sejahtera Group in Mauro Jambi who face a market that does not reward fish quality and that had adopted an extensive volume-oriented business model.

The project helped build capacities in many different sectors and scales to continue expanding the changes introduced by the project in the three value chains. The project showed record to the evaluation team indicating that from July 2014 to December 2018 it had carried out 124 capacity building events (workshops, conferences, training seminars) to which 5281 persons attended, 1621 persons from the government and 2690 persons in other sectors.

While it is difficult to precisely assess the extent of SOP adoption beyond the farmers initially targeted by the project, the evaluation looked for indicators to assess the extent to which SOP replication is expanding beyond the original project niche. By January of 2019, there were several indications that pangasius and seaweed farmers and extensions services providers that did not participate in the project were interested in the SOP. During the evaluation, most farmer groups interviewed by the evaluation team reported that on the last few months they had three or four requests a month for information on SOP and visits from groups of farmers from other towns.

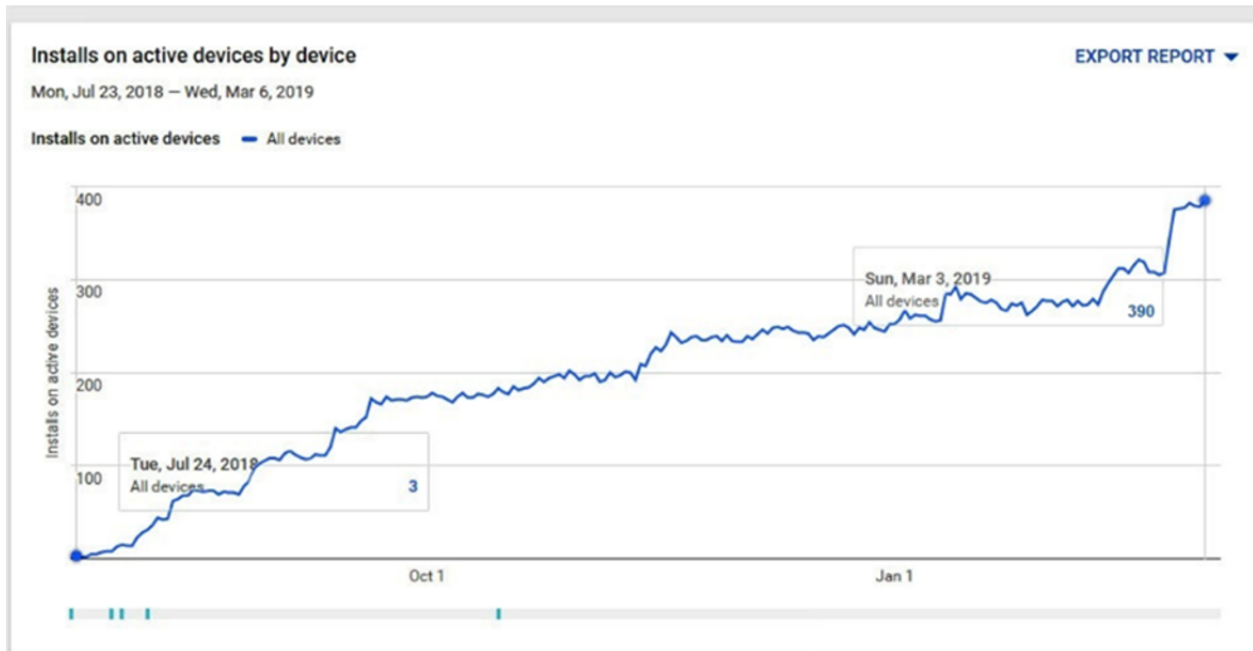
The traffic and activity of the SMART Fish website provide an indicator of the interest in the SOP and other related applications developed by the project. In the 12 months before March 18, 2019, the website registered a total of 21140-page views and 9490 visitors coming into the site. This traffic is an average of 26 visitors who spend time consulting the website.

The project posted five SOP apps on the WEB in March 2018. These apps are freely available online. By March 2019 there were 390 downloads of the applications. With the number steadily increased over that period (Figure 6). Many of the downloaded application has remained active, which indicated that they are in use. While most of the active applications are from users in areas where the project operated, there are also active downloads in areas where the project has not operated, which indicates that some adoption is taking place in the area that was not initially targeted by the project (Figure 7).

The project support to the revision of the STP curricula was designed to upscale capacity building through training new university graduates. Instead of just focusing on training students, the focus on curricula reform ensured that in the coming years new generations of train professionals will join the labour market. The multiplier effect of curricula reform was further magnified when in May of 2019 the MMAF decided to mainstream this curriculum in all 9 fisheries universities and technical schools across the country.

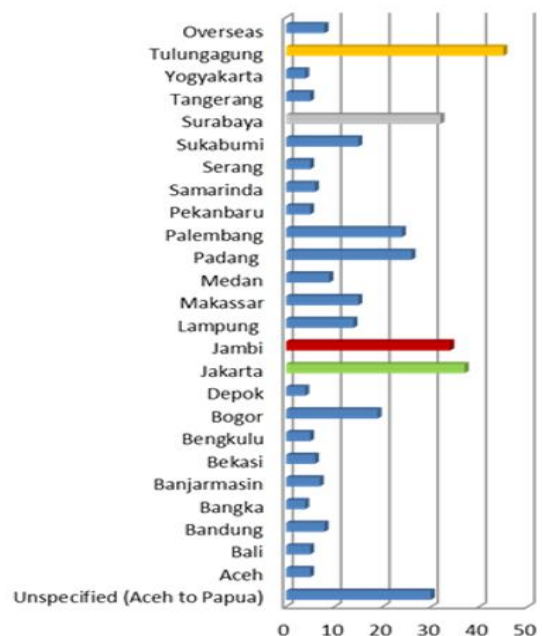
Figure 6

SOP active SMART Fish SOP applications from July 2018 to March 6, 2019



The three partner associations have facilitated the socialization of the experience of the pangasius, seaweed, and P&L tuna processors that partnered with the program. The expansion of the STP problem-solving internships is also designed to promote the expansion of the application of INSPIRED approach among seaweed and pangasius processors. With regards to P&L Tuna, PT. SMS in Bitung and PT KCBS in Maumere are the first partners of P&L Tuna companies implementing an internal plan to extend and intensify the use of the milkfish bait program in Bitung and Maumere coastal areas. Similarly, by July 2018 AP2HI had organized a workshop in Bitung, North Sulawesi, to train 11 AP2HI members on the application of the INSPIRED Light tool. The project has also disseminated information on SOP through the participation in workshops and another event with other programs (e.g., SIPPO, CBI, World Bank, FAFI, NICHE) to reach out to wider stakeholders nationwide.

Figure 7
Active Downloaders Graphic



IV.6 Sustainability of project results

Sustainability refers to be the likelihood that the project achievements persist after the project ends. The assessment of sustainability assesses the risks that are likely to affect the continuation of project outcomes. UNIDO calls for attention to four risks factors to sustainability (socio-political, financial, institutional and governance, and environmental) and used four sustainability ratings. Figure 8 presents a visual depiction of the assessment of the risks factors to the benefits and accomplishments of the project for key sets of stakeholders in the system.

Socio-Political are mostly negligible

Risks to the benefits and accomplishments generated for the various stakeholders are mostly negligible. In all cases, there is strong ownership in of the approaches introduced by the project. Only in the case of seaweed, there is a constituency of seaweed exporters who are supporting the current seaweed export policies that are driving prices of seaweed regardless of quality. Carrageen seaweed processors are the most negatively affected as they are not able to compete with Chinese seaweed processors who often use Indonesian raw materials but have very favourable terms.

Financial and economic risks are moderate

These risks are not generalized across the value chains; they affect mostly carrageenan seaweed processors and pangasius farmers producing for the traditional market. The high costs and low quality of raw material are a risk to carrageenan seaweed processors. Some of these firms reported that during the last couple of years they have operated under capacity due to low supply of raw material of the necessary quality. As a result, some have been unable to meet their orders. Pangasius farmers who produce for the traditional market and who are tied to feed providers for loans also face financial risks. The most extreme case is in Mauro Jambi were farmers see much of the added value of their production siphoned to fish feed merchants. The extent to which traditional markets can absorb increases of production might also pose a risk on farmers. While the farmer can mitigate fluctuations in by harvesting fish at different stages of growth, the surge in production can result in an oversupply of pangasius in the local traditional markets; a situation which is likely to depress prices and further strengthened farmers dependence on fish feed providers and traders.

Two of the partner associations AP2HI and ASTRULI are also going through important developmental transitions in which finances could represent constraints to continue delivering the services they deliver to their members. AP2HI is in the last phase of support from several private foundations and is now expected to finance its operations through MSC certification service fees to its members. In the case of ASTRULI, the organization members are aware of the benefits the organization delivered through promotion and branding, have agreed to pull resources and have hired a full-time person to manage the organization. There are no risks to the curriculum changes in STP and the intern program as both have proven to be popular among faculty, students and partner institutions. iPRIDE4Fish is a new institution that will draw on the capacities the project helped to build in STP. The recently signed MOU with UTAS and the links with the ASEAN and National Productivity Centers are factors that lend credibility to iPRIDE4 Fish. Nonetheless, some

uncertainty remains as iPRIDE4Fish is a recent institution that has not been tested.

Institutional and governance risks are moderate

Moderate risks are apparent for the accomplishment with the seaweed processors and the extension service. As indicated, the financial risks faced by carrageenan seaweed processors are mostly related to the export regulations of seaweed. At the root of these policies is the seaweed production data that MMAF uses to set its policies. ASTRULI contends that the data greatly overestimates production. The impact these policies are having is considerable. Some companies reported to the evaluation that if policies are not changed, they will have to switch to exporting raw material instead of processing seaweed. These developments would undermine the objective of adding value across the value chains. The risk is rated as moderate because MMAF and MoI have agreed to review the data on seaweed production, an important first step to arrive at a common understanding of the sector.

The accomplishments in the extension service also face a moderate risk in as far as the MMAF and the local governments face multiple demands for extension services but have limited human and fiscal resources. It is possible that, particularly in the case of seaweed, once the project ends there remains no incentive for the extension system and local governments to continue dedicating their scarce resources to supporting this activity. The risk of diverting pangasius extensions services is much lower as fish production and aquaculture are a food security priority of the MMAF and the government.

Environmental risks are moderate

The lack of zonation and allocation of seaweed parcels among seaweed farmers is likely to result in overcrowded conditions that can obstruct water flow and delivery of nutrients to the seaweed. This, in turn, would affect growth rates and seaweed quality. Seaweed processors have reported that in some areas water scarcity has been a factor containing production. Current practices among pangasius processors leave much room for monetarization of by-products and reduction of waste and pollution.

IV.7 Progress toward the transformation of the value chains

With the help of representatives from the different stakeholders of the project, the evaluation team assessed the extent to which the project helped steer the value chains toward the desired transformations in each of the three value chains. Participants in a workshop and three focus groups assessed how and to what extent the project contributed to the 32 necessary pre-conditions for the transformation of the value chains included in the SMART-Fish Theory of Change (TOC) model.

The evaluation team used this information to assess SMART Fish contributions to the process by establishing the causal links between project activities and the changes reported. The approach followed ensured that all the relevant perspectives were represented, thus helping to mitigate biases in the assessment. The evaluation team also drew on the independently gathered information obtained during the desk review, field interviews and field observations.

The exercise assumes that change (or lack of change) in the system is not entirely attributed to the SMART Fish project as there were other projects, factors, and actors that also influenced the changes that took place. Thus, this analysis does not seek to attribute changes to the SMART Fish project, but to assess the extent to which the project contributed to the necessary conditions to steer the value chains towards the direction of the desired transformation.

Contributions of SMART-Fish to the connections among stakeholders in the system.

Social systems tend to be more effective and efficient when the elements of the system are well connected and when information, support and other values are efficiently exchanged among the system elements. The evaluation sought to assess the contributions of the project to the strengthening of the connections among key stakeholders in the system through the stakeholder's workshop. During the workshop, stakeholders were asked to verify the 32 pre-conditions identified TOC model. They also identified the critical conditions, agents and contributions of SMART Fish in strengthening agents and the links among agents in the system.

Participating stakeholders reported that the project had contributed to strengthening the relations among stakeholders in the three value chains. The specific links that were strengthened vary considerably (Figure 9). In the pangasius value chain, the network of the pangasius farmers benefited the most, followed by MMAF and the Association of Indonesian of Catfish Producers (APCI), the pangasius association. The farmers strengthened their links the most with the processing industry, buyers, local government, extension service, Universities. The project also helped farmers strengthen links to a lesser extent with MMAF and APCI. MMAF benefited by expanding their links with farmers and strengthening its links with the extension service, research centers, and APCI.

In the seaweed value chain, it was the processing industry who benefited the most followed by MMAF and the farmers. The Seaweed processing industry strengthened relations with the farmers, MMAF, research centers, certifying bodies and the association. MMAF strengthened relations with the Indonesian Seaweed Industry Association ASTRULI, the processing industry, farmers and several ministries. Farmers emerged at the end of the project with better relations to the processing industry, and district authorities and certification bodies.

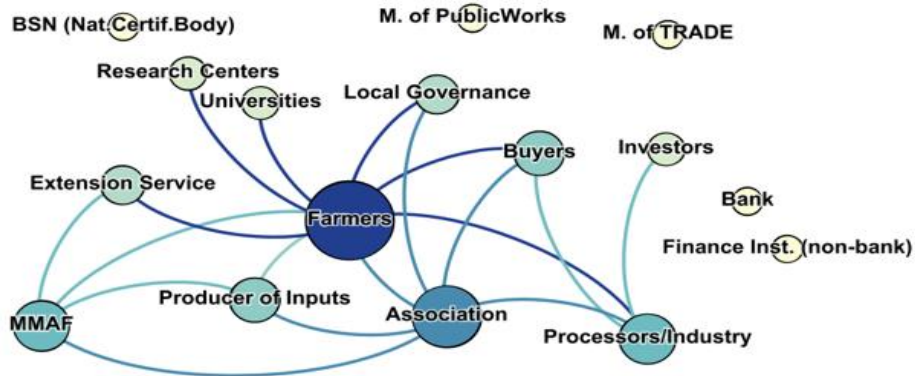
In P&L Tuna, the Pole and Handline Fisheries Association (APA2HI) and the processing industry benefited the most. The association expanded its links to new buyers, improved their relations with fishers and NGOs, research centers and industry processors. Industry processors, in addition to improving its relationship with the association also linked to research centers and Buyers. Stakeholders also reported missing relevant institutions from the networks supported by the project. The most important institutions were Banks, Ministry of Finance, Ministry of Trade, Ministry of Public Works and Ministry of Transport (Table 10).

Table10			
Relevant stakeholders not involved in the project's Value Chain Networks of Pangasius, Seaweed and P&L Tuna			
Institution	Pangasius	Seaweed	P&L Tuna
Banks/Financial institutions	X	X	X
Ministry of Finance	X	X	X
Ministry of Trade	X	X	
Ministry of Public works	X		
Ministry of transport			X
National Cert. Body	X		
Ministry of Research and Higher Education		X	
Navy			X
Water Policy Body			X

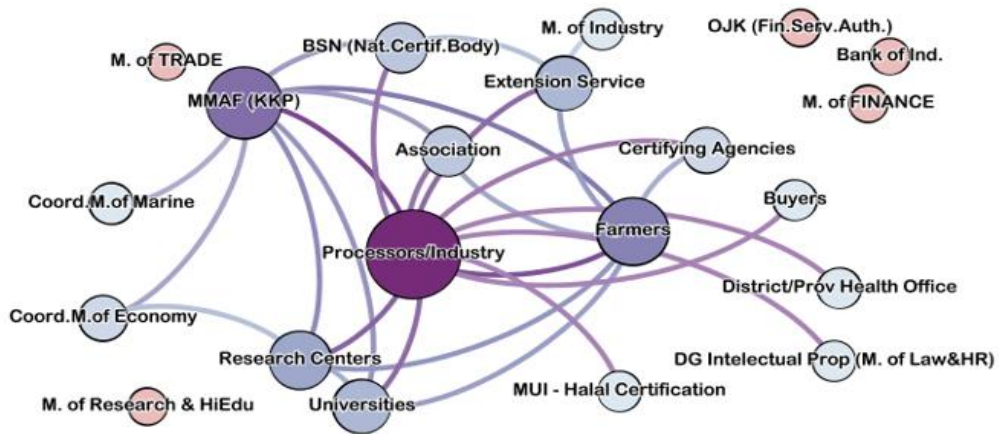
Figure 8: Stakeholder Networks in the Value Chains

Stakeholder Networks in the Value Chains

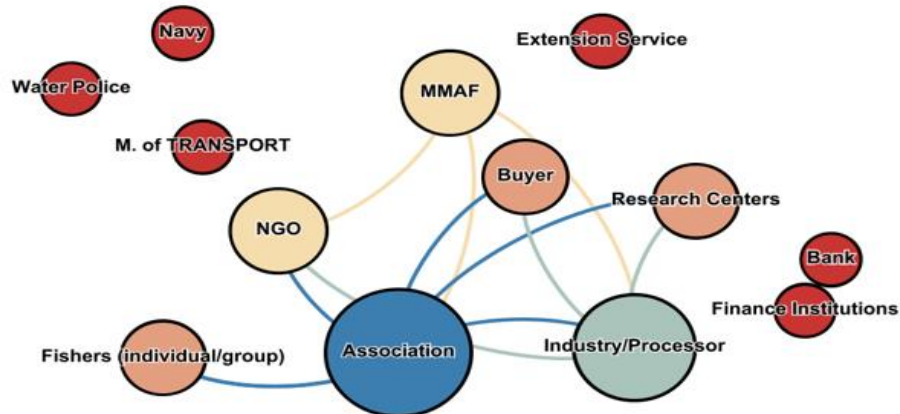
Pangasius



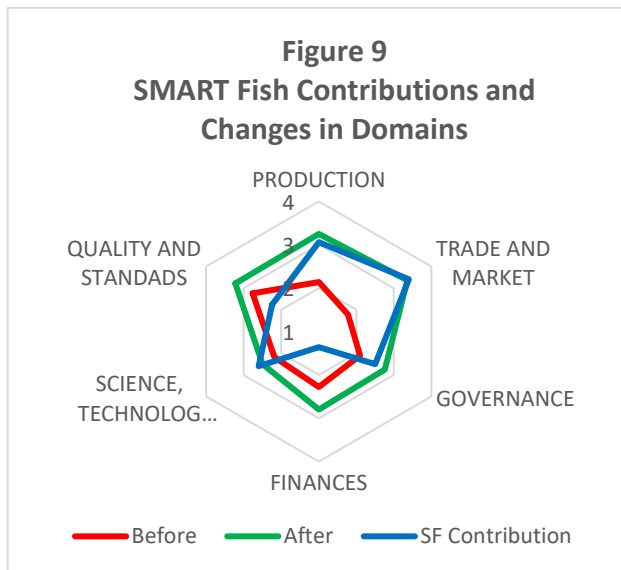
Seaweed



P&L Tuna



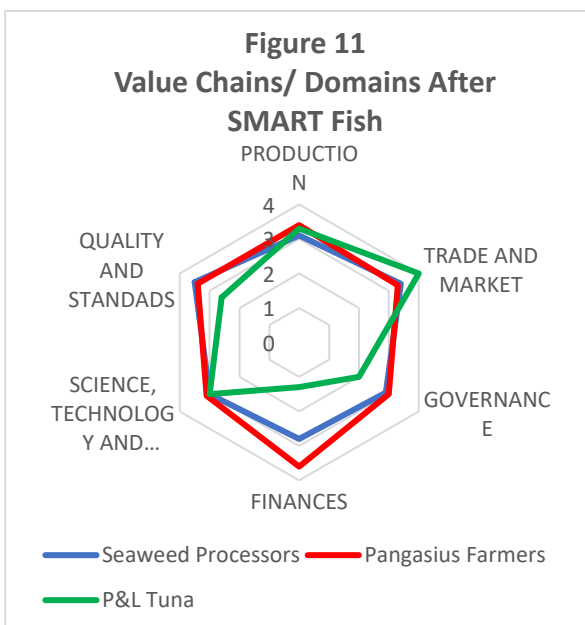
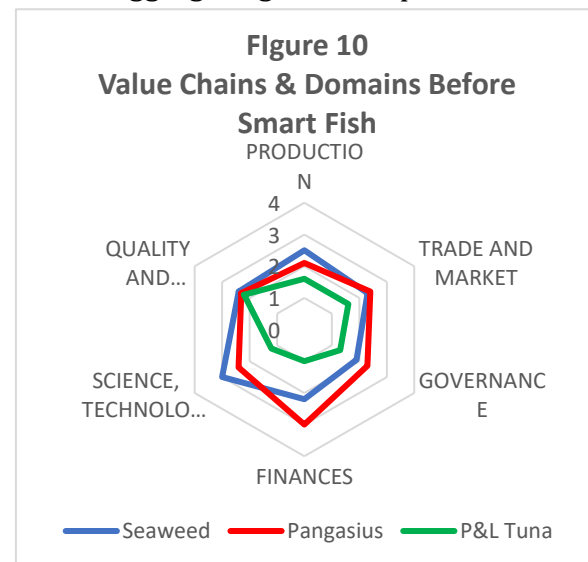
Contributions of SMART-Fish to the overall domain conditions for transformation



three value chains, changes in the direction of the desired transformation were most pronounced in the domains of trade and markets, governance, and production (Figure 9). These were three domains that the project targeted most actively and in which stakeholders reported SMART Fish making its most substantial contribution. Pertaining

In the focus groups discussions, which took place at a different time, stakeholders rated the before and after project situation for each of the 32 pre-conditions for the transformation of the three value chains. Participants also assessed the extent and forms by which SMART Fish contributed to the changes reported in each of the 32 pre-conditions.⁷ Subsequently, the evaluation team used Excel, NodeXL, and GEPHI to analyse network parameters and visualize responses.

When aggregating the responses of the



trade and markets, stakeholders reported progress on nearly all the five pre-conditions identified in the TOC model, with the most progress taking place on the development of demand (pre-condition 8) and effective marketing strategies (pre-condition 9). In the production domain, the most substantial contributions were to the adoption of technologies and best practices (pre-condition 2) and the availability of inputs at competitive

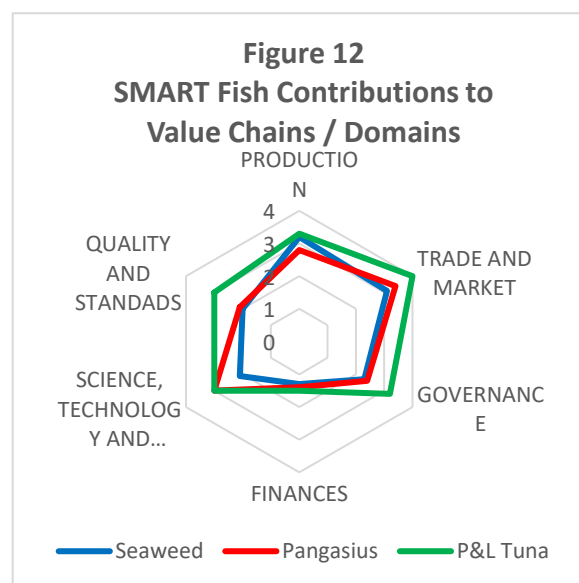
⁷Participants in the focus groups were asked to rate the situation of the 32 conditions using a scale of four ratings: Not present or minimal (0 < 1), Present in a moderate extent (1 < 2) significantly present (2 < 3), and Fully present (3 < 4). Ratings of SMART Fish contributions were: No or minimal contribution, Moderate contribution, Significant contribution, and Large contribution.

prices and quality (pre-condition 3). Stakeholders also acknowledged the contribution of SMART Fish in the area of science, technology, and innovation, but also reported that the progress made in this domain was relatively small compared to the needs in the area. Stakeholders reported lower progress in the domain of quality and standards. The changes in the finance domain were modest with no or very small contributions from SMART-Fish. The project was not designed to address the financial dimension of the value chains.

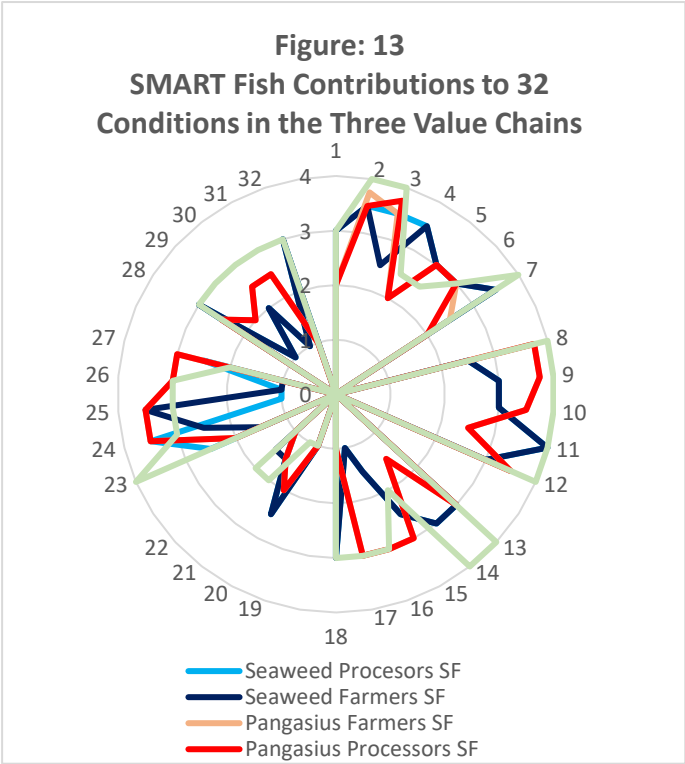
The stakeholders reported significant differences among the three value chains in their starting situations, on the changes that took place in the different domains, and on the extent of the contributions by SMART Fish to overall domain conditions for the different value chains. Figure 10 presents the comparative ratings of the domains conditions before the project started. Stakeholders in the P&L Tuna value chain reported that they were in a very unfavourable situation when compared with the other two groups, they felt that only in the domain of quality and standards were there domain conditions moderately favourable for the transformation. The ratings reported by the stakeholders in the other two value chains, while better, also tended to low. The stakeholder's recollection is that the most part; the domain conditions were not favourable for the transformation. Stakeholders rated only two conditions of moderately present. These are science, technology, and innovation for the seaweed value chain and finances for the pangasius value chains. Stakeholders rated the domain conditions related to production, trade and market and governance were present to a smaller extent.

By early 2019, when the project was getting ready to close, all value chains reported significant improvement in most of the domains (Figure 11). P&L Tuna stakeholders reported the most improvement, particularly in the domains of trade and market, production, and science and technology, with some improvements in the domains of quality standards and governance. This marked improvement in the various overall domain conditions of the P&L Tuna value chain is explained by the high level of support to this value chain from multiple donors since 2013. Stakeholders in the pangasius value chain also reported significant improvement across the board with and particularly in the domains related to trade and market, finances, and production, and to a lesser extent in governance. Seaweed stakeholders reported similar improvements in all domains, except for finances which was perceived as less favourable than by pangasius stakeholders but significantly more favourable than P&L Line stakeholders.

The three groups reported significant contributions of the project to the improvements registered. The P&L Tuna stakeholders rated the highest the project's contributions to the domains of Trade & Market and Production. P&L Tuna and Pangasius rated as moderate the contribution to science, technology, and innovation. The SMART-Fish project contributions corresponded



to the areas in which progress had taken place. Only in the financial domain were contributions of the project rated as negligible (Figure 12).



When examining the responses of stakeholder on the 32 pre-conditions a much more complex picture emerges, with different value chains benefiting from the project in different ways. However, some patterns emerged (Figure 13). The most prevalent contributions to specific preconditions across three value chains are in the domains of trade and market, and production (1-7). Contributions to preconditions related to Finances (19-22), and science and technology (23-27) are low across the three value chains.

A close analysis of the project contributions to the 32 pre-conditions indicated that the project helped seaweed farmers develop with stronger capacities to respond and adapt to megatrends (see dark blue line by pre-condition 25 in Figure 13). This change is a considerable accomplishment considering that seaweed farmers are the most vulnerable among the value chains supported by the project.

The catalytic effect of project support

As part of the inception process, the evaluation team and the project management team at UNIDO's headquarters identified the critical interactions among the 32 pre-conditions (or nodes). Subsequently using Social Network Analysis, the team developed a model that included a total of 236 interactions (or edges). The evaluation team subsequently ran a series of tests to identify the most influential pre-conditions in the system and (see Annex 4). Five pre-conditions (of vertices) scored the highest and most likely to contribute to the strengthening other pre-conditions across the system; these are:

- 23 Awareness and shared understanding of the challenges, opportunities, and trends in the fisheries sector
- 13 Sector policies conducive to sustainable fisheries development
- 14 Inter-sectoral policy coherence and coordination
- 24 Robust science, technology and innovation capacity that generates knowledge in the sector
- 15 Legal and regulatory frameworks supportive of sustainable fisheries

Figure 14
Reach of five Catalytic Conditions for the Transformation of the Fisheries Value Chains

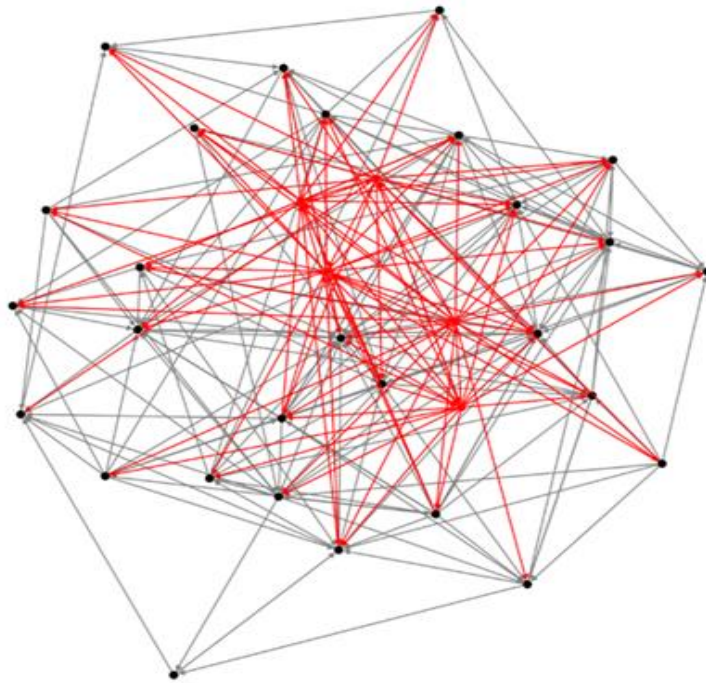
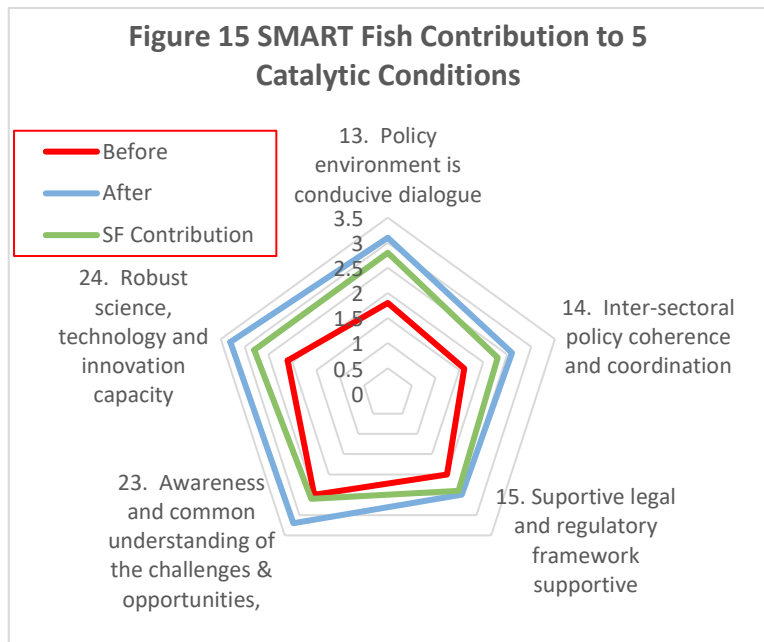


Figure 14 depicts the reach and density of outgoing links of these five pre-conditions. Direct links of the five catalytic pre-conditions missed only one of the other pre-conditions located at the bottom of figure 14. This is pre-condition number 10. “The market recognizes sector compliance with quality, standards, costs and delivers requirements of target markets.”

Next, the evaluation team assessed the extent to which the project had contributed to the five catalytic pre-conditions using the database generated during the focus groups and the workshop. The stakeholders reported significant improvement in three pre-conditions: Pre-

condition 13.- Sector policies conducive to sustainable fisheries development; Pre-condition 23.- Awareness and shared understanding of the challenges, opportunities, and trends in the fisheries sector; and Pre-condition 24.- Robust science, technology, and innovation capacity that generates knowledge in the sector (Figure 15).

Stakeholders reported lower project contributions to pre-condition 14- Inter-sectoral policy coherence and coordination as well as pre-condition 15; Legal and regulatory frameworks supportive of sustainable fisheries. It is interesting to notice that even in these pre-conditions, SMART-Fish contributions closely match the conditions in which most change had taken place, indicating that it is very likely that the project was a factor in the progress made in all the five catalytic contributions.



IV.8 Factors affecting project contributions to system transformation

IV.8.1 Factors internal to the project

Comprehensive project design. The project implemented activities in mutually supportive ways that address multiple dimensions of challenges faced by stakeholders. The integration of project activities also allowed the project to devise more comprehensive and practical solutions to problems identified.

UNIDO Implementation approach followed by the project had several attributes that contribute to success. First was a balanced mixture of centralized and decentralized management by which the UNIDO team in Vienna provided technical and administrative support allowing the CTA in Jakarta and his team to focus on the implementation of activities. There was also timely support and proper coordination with the UNIDO office in Jakarta. The second was the choice of partners. The project was delayed in its early stages while selecting the right staff and partners. The time invested earlier on worked well as the project ran smoothly the rest of the time. Partners proved to be critical for the implementation strategy of the project. Third, the project cultivated ownership by introducing innovations that increased quality and productivity and by regularly involving partners and collaborators in project activities such as workshops, conferences and demonstration visits.

Donor support by SECO. SECO's willingness to set the project objective at high level (export competitiveness and livelihood improvement) and allowing longer duration (5 years) than other SECO projects, where important factors which strongly contributed to design of a comprehensive program with the possibility to pursue transformational change. Also SECO's flexibility and ongoing participation in the Project Steering Committee was a factor that facilitated adjustments to the project as circumstances required. Delegating of project monitoring to the local SECO office and the continuity of the SECO staff involved in the project were also key aspects that help develop a better understanding of the project within SECO.

The support of MMAF. The regular participation of MMAF officers in project events was key to building stakeholders confidence on round tables. MMAF engagement of provincial offices was also critical to mobilizing extension officers and other local resources in support of the project. Despite three changes in the General Directors (project technical counterparts) under MMAF, project coordination and support to the project was satisfactory.

Synergies with other programs and organizations. The project was very proactive in establishing partnerships, collaboration in events and exchanging information with related initiatives of other organization. In total, the project has cosponsored with other organizations at least 21 events that include workshops, seminars and study tours. The project also has coordinated activities with SIPPO on trade promotion and a Networking event during SEG Brussels 2018 on aspects related to the promotion. More recently the project has coordinated seaweed related activities with the new SIPPO project. The project

carried out joint workshops with the RECP Indonesia project on topics related to cleaner production and collaborated in the development of dissemination materials. The project coordinated activities on seaweed, P&L Tuna, pangasius, and training with programs of multilateral and bilateral organizations, private foundations and international NGOs.

Gender Strategy

Early during project implementation UNIDO carried out a review of the opportunities related to gender in the project localities. On the basis of this review the project designed and implemented a set of gender focused activities that were well integrated into the overall project objectives. Thus, there are women beneficiaries in all value chains supported by the project. The project did not keep a record of the gender distinction among beneficiaries. However, women were present and actively participated in most group interviews held by the evaluation team with farmers groups, extension services, associations, and government officials. The support provided to SMEs in seaweed processing targeted almost exclusively of women stakeholders. This activity training 369 persons (mostly women) of whom 247 persons, belonging to 40 different groups in 10 different localities, have processes and sold seaweed products. This highly successful intervention in just one year resulted in significant income increases to those involved. In Tulungagung the project also supported several women's groups farming pangasius. The women interviewed during the evaluation reported that they have control of the administration of the income generated from seaweed food processing and that this income has allowed them to improve the standards of living in the form of the construction of new housed, improved education for their children and financial security.

Project M&E and adaptive management

The project document called for reporting by UNIDO to SECO and the MMAF every three months and for an annual report once a year. Also, considering the complexity and pilot nature of the intervention, UNIDO incorporated independent result-oriented monitoring (ROM) as a component of the project M&E. The project document stipulated that a midterm evaluation would be conducted only on the explicit demand of UNIDO, the donor or the MMAF. Given the intensive nature of the ROM missions, the project did not include a midterm evaluation. Project document also called for an independent terminal evaluation which was financed by the project budget. PSC meeting took place twice a year, a total of 10 ROM missions followed by a report were carried out by an international evaluation expert contracted and paid by the project.

ROM missions provided short standardized reports to the Project Steering Committee (PSC) meeting. ROM followed the standard OECD evaluation guidelines. ROM provided timely recommendations and inputs input to make well informed strategic decisions and provided additional outside advice and support to the program team. Throughout the project ROM provided independent information to the PSC. A well-informed PSC that also had a broad decision-making authority allowed the project to adapt to unexpected circumstances and to manage a complex process effectively.

Project monitoring of SOP and INSPIRED trials took place meticulously, documenting before (or without) SOP and with SOP production outputs, costs and prices of pangasius and seaweed. Enumerators hired by the project visited the farmers participating in trials to

record and report changes. The project technical experts kept the information on these trials in separate databases. The separate administration of the databases resulted in differences in the parameters used for monitoring, which a central administrator could have harmonized. While the system still worked, it did require several iterations during the evaluation to obtain the information in a way that would allow consistent reporting, which the evaluators were able to do with the full cooperation of the project staff and technical experts.

IV.8.2 Factors external to the project

Policy environment

The policy environment was a critical factor that in some circumstances enabled progress to the necessary pre-conditions and in others hampered progress. At the broadest level, the high priority of the administration of President Joko Widodo on of marine and food security issues helped to raise the profile of the project among government official. The project was also closely aligned with the MMAF long term objectives of sovereignty, prosperity, and sustainability. The enabling effects of the GoI policies were most prominent in the pangasius value chain and were most apparent in MMAFs support in the branding and promotion of Indonesian Pangasius, and the stricter controls of low quality “dory” imported from Vietnam. MMAF and the Ministry of Religious Affairs also had a crucial role in the promotion of Indonesian pangasius abroad. At the provincial level, the financial support provided by the provincial bank of East Java also had a key role in the expansion of pangasius production in Tulungagung.

In the seaweed value chain, the resent seaweed export policies and regulations on direct foreign investment in the sector had a hampering effect. The recent rapid expansion of foreign investment in the country has led to a rapid increase in the demand carrageenan producing seaweed and to a high price and low-quality raw material. As the Indonesian carrageenan seaweed processing industry competes based on high-quality products, the scarcity of quality raw material and low-quality products flooding in the internal market are driving carrageenan processors out of the market. This trend, in the long run, runs the risk of undermining the policy objectives of sovereignty and prosperity for the sector.

MMAF is in the process of revising regulations that affect the P&L Tuna value chain. Stakeholders in this value chain reported that three critical issues that affect the competitiveness of the P&L Tuna are: taxation, which is higher for Tuna Pole and Line than for net fishing, lack of regulation on harvest strategy, the fishing moratorium in the Banda Sea, and vehicle registration, which is P&L Tuna stakeholders consider a key factor affecting the certainty in production.

Quality of the data used for policy decision making

The quality of the data used for decision making is at the core of at least two factors hampering development the seaweeds and P&L Tuna value chains. The seaweed processing companies argue that the MMAF data on the production seaweed greatly overestimated real production. This data on production has become a basis for the current policy of open export of seaweed that causes a high demand for seaweed leading to scarcity and low

quality of raw material for local industry and processors. In the P& Tuna value chain, stakeholders dispute the evidence used for setting the fishing moratorium in the Banda Sea. While MMAF acknowledged the concerns expressed by stakeholders, the persistence of these disputes underlines the importance of reliable and agreed upon data as a basis for policy decisions.

Infrastructure

Poor communication, specifically roads, and the high cost of land and sea transport is a factor that hampers development in the seaweed and pangasius value chains. There are many areas well suited for seaweed production in Indonesia, but transport to processing centers is too expensive. In the pangasius value chain, poor transport is also a factor that hampers pangasius production in many areas. Long transport time also results in higher fish mortality on the road. SMART Fish has developed approaches to mitigate this problem but depending on the distance of transport losses can remain high.

Differences in starting condition: Integration to the market, terms of financing and business models

The specific circumstances of farmers at the start of the project were key factors affecting the adoption of new practices. While there are similarities among the farmers in the three localities visited during the evaluation (Tulungagung, Mauro Jambi and Batanghari), there are also specific conditions in each of the three localities that contributed to the different rates and extent of adoption. Farmers tend to be similar in as far as they all had a history in the cultivation of fish for the market and in that most are organized in groups that are formally constituted and registered. In Tulungagung where adoption was the highest farmers produced fish for fillet processing. This market valued and rewarded quality. Fillet processors need higher quality raw material to meet national standards and to take advantage of external market opportunities that were emerging. In Tulungagung farmers had access to credit in favourable terms. These two conditions led to higher profits and high levels of SOP adoption among farmers and the expansion of production.

In the case of Mauro Jambi, farmers produced for a traditional local market, which unlike the fillet market does not reward quality. Farmers were also locked in with feed supply company's through credit and marketing arrangements. The availability of credit to expand ponds also locking farmers into an extensive business model was the focus to increase the volume of production with less regard to quality. This production contributed to an oversupply of pangasius in the local market and depressed prices. As a result, even though farmers were in a dynamic of expanding operations, profits were dropping. Considering that 70% of the cost of pangasius production is fish feed, this arrangement functioned to increasingly transfer value from the farmer to the fish feed suppliers. Lacking incentives to produce fish of high quality, farmers in Mauro Jambi frequently did not apply SOP systematically and tended to adopt the elements of SOP that reduced mortality or growth (such as probiotics to control ammonia in the ponds or feeding practices that ensure uniform fish size). When fish mortality dropped, they tended to relax the new practices which over time led to another high fish mortality cycle.

In the case of Batanghari, also in the province of Jambi, the ponds visited belonged to a fillet processing firm that is a vertically integrated business model and did not depend on fish feed providers to finance its operations and expansion of ponds, nor was it locked into local

traditional marketing arrangements. This firm focus is on producing high quantity and high-quality raw material and adopted SOP more consistently.

Sustainability and the sound management of natural resources

The three value chains are facing constraints related to sustainability and the management of natural resources. In the case of seaweed farming, it is necessary to develop zonation regulations and spatial planning to allocate aquaculture parcels to farmers and ensure production remains within the carrying capacity of the local ecosystem. In the case of seaweed processing, there is a need to introduce production processes that make more efficient use of water and water recycling to reduce the pressure underground water resources. In pangasius processing, there is a need to adopt further practices that reduce waste and untreated water discharges by more fully monetizing by-products. In the P&L Tuna value chain, there is a need to improve the management of fish stocks by clarifying the regulations about harvest strategy and by regulating the use of fish aggregating devices (FAD).

V. Lessons learnt

The quality of the activities the project delivered was consistent across the different localities, yet outcomes and impacts differed depending on contextual factors, including the starting conditions of the stakeholders. SOP interventions that were equally effective in transmitting knowledge to the farmers had different rates of adoption among pangasius farmers facing different circumstances and working under different business models. Attention to different starting conditions and contextual circumstances could help assess the readiness of stakeholders for the type of support provided by the project.

Collaboration among central government ministries that have seemly very different missions can be very effective when precisely targeting interventions. This was the case in SMART Fish with the involvement of the MMAF and the Ministry of Religious Affairs in the promotion of Indonesian Pangasius to Saudi Arabia for the consumption of Indonesian pilgrims. In this case, while the MMF has a strong mandate to promote markets for Indonesian fisheries, it was the Minister or Religious Affairs who had the direct contacts with the Saudi Arabian government which was able to organize a series of business meetings that resulted in several millions of dollars sales contracts.

When dealing with complex processes such as fisheries value chains, there is a trade-off between a rigorous and specific project design and flexibility during implementation. In the case of SMART Fish, the project had clear objectives at the broadest level and a specified number of project components. The boundaries of the systems that the project was targeting, the three value chains, were also well defined. Included in the project document were also several options of possible areas of support contingent on further studies to be conducted in the inception phase. The delegation of authority to the Project Steering Committee that had the representation of the funder, the GoI and UNIDO were also key. So too was ROM which provided independent information to the PSC. The PSC made several changes to the project during inception, some to narrow down areas of support and project the activities. Other changes made by the PSC substituted activities that after a couple of years were no longer relevant. This structure of decision making also allowed the project to take advantage of opportunities that could not have been anticipated during project design.

Confident on the information provided by the ROM missions, the PSC was fully able to meet its project steering functions in the face of continually changing circumstances.

VI. Recommendations

Recommendation 1: SECO and UNIDO should make allowances to continue supporting, through SMART Fish II, the key mechanisms for the upscaling of results achieved during SMART Fish I, which have yet to reach maturity. While the project was very successful in establishing the foundations for the value chains transformations, it is important to acknowledge that the actual transformations take place over time and that in this process there is a need for ongoing accompaniment and support the key mechanisms that will continue upscaling project results in an integrated way. The mechanisms that require accompaniment are:

- The associations, including ASTRULI, AP2HI, and APCI in their role as conveners of round tables and leaders in the promotion of their respective value chains.
- iPride4Fish in its role of providing support services to stakeholders in the three value chains by further development and promotion of the INSPIRED approach and the problem-solving internships with industry.
- The extension service in seaweed and pangasius as a mechanism to more effectively transfer the new, improved technologies to farmers.

Recommendation 2. MMAF should give a high priority to the ongoing efforts to resolve the disputes pertaining data used to set export policies for seaweed and to regulate foreign investment in the sector and pertaining the information used for the tuna fishing moratorium in the Banda Sea.

Recommendation 3. MMAF should mainstream the improved fisheries curriculum among other fisheries universities across Indonesia, including the internship programme and centres such as iPride4Fish and should also mainstream training of extension services in SOPs.

Recommendation 4. MMAF, SECO and UNIDO should ensure that SMART Fish II and in subsequent project pertaining value chains, more attention should be given to the sustainable management of resources such as local zonation of seaweed farming, efficient use of water in seaweed processing, management in P&L fisheries and more effective monetarization of pangasius by-products.

Recommendation 5. Seaweed processing industry companies should put in place supplier development programs to establish long-term business relations with the farmers, improve quality and productivity and secure market access to the farmers.

Recommendation 6. MMAF should expedite the signature and endorsement of SMART Fish II to help ensure the quick transition and prevent the delays that took place during the early phases of SMART Fish I.

Recommendation 7. SECO and UNIDO should continue the adaptive management approach developed in SMART Fish I consisting on regular Result Oriented Monitoring (ROM) missions that feed independent information to a Project Steering Committee that

composed by representatives of UNIDO, SECO, and MMAF and which is fully empowered to make decisions to adapt the project to emerging conditions.

Recommendation 8. ASTRULI, AP2HI, and APCI in their role of conveners of future Round Table Dialogues should invite all the key relevant institutions that have incidence in the conditions necessary for the transformation of their value chain. Key stakeholder missing that were identified by current Round Table participants are the Ministry of Finances, Ministry of Trade, Banks, Ministry of Public Works and Ministry of Transport.

Recommendation 9. UNIDO should ensure that in SMART Fish II project monitoring records and databases are in a centralized database that is administered by the project management.

Annex 1: Country Visit Agenda

Date/Time	Agenda	Venue/Location
Mon 25/2		
09:00-10:30	Briefing with MMAF/Courtesy call	MMAF Office Jakarta
11:30-16:00	Briefing and discussion with PSO staffs on the overall programme, to provide feedback and verify the TOC	PSO office, STP Ps. Minggu, Jakarta; Participants: All PSO staffs, Intl and National Evaluators
Tues,26/2		
08:30-11:00	Meeting with AP2HI (P&L tuna association)	AP2HI office, Jakarta
11:30-12:30	Courtesy call with UR (UNIDO Rep)	UNIDO Office, Jakarta
14:00-15:00	Meeting SECO	SECO office/Swiss Embassy
Wed, 27/2		
09:00-12:00	Meet and discuss with STP/iPRIDE4fish	STP Ps. Minggu, Jakarta
18:05 - 19:50	Flight Jakarta - Surabaya GA 324	1 hour flight, stay in Surabaya
		Jana, Aaron, Agus, Jimi, Yudha.
		Prof. Jana
	Stay in Best Western Papilio Hotel	0812-1016094
	Jl. Ahmad Yani no. 176-178	0815-74631599 (WA)
	T: 031 990 43000 990, +62 9900 3065.	
	WA : +62 31 990 43000	Pak Agus 0811-1491-749
		Pak Jimi 0821-1034-3515
		Pak Yudha 0898-8634-319
Thurs,28/2		
09:00-12:00	Meeting with ASTRULI members (Seaweed association)	Prof. Jana
		in Ikan Bakar Cianjur Restaurant, Pandaan.
	Meet/visit seaweed processor in Sidoarjo or Pandaan	Aaron, Agus, Jana, Jimi, Yudha.
14:00-17:00		
	Back to Surabaya	

Date/Time	Agenda	Venue/Location
		Stay in Surabaya
19:00		
Fri, 1/3		
07:00-16:00	Pangasius farmers in Tulungagung (2 groups)	Mr. Imza 0812-1110155
	Meet local fisheries officers/extension workers	Surabaya-Tulungagung-Surabaya by Road
	Visit local pangasius processor	Aaron, Agus, Imza, Jimi, Yudha.
		Stay in Surabaya
18:00	Back to Surabaya	
Sat, 2/3		
07:30-10:00	Travel Surabaya - Pamekasan with car	Prof. Jana
		0812-1016094
		0815-74631599 (WA)
		Aaron, Agus, Jana, Jimi, Yudha.
10:00-12:00	Meet Seaweed farmers in Pamekasan	Jumiang, Pamekasan
13:00-15:00	Meet Seaweed farmers in Sumenep	Seronggi, Sumenep
	Stay overnight Sumenep, Musdalifah Hotel	
Sun, 3/3		
08:00-11:00	Visit seaweed co-operative (Koperasi Anika Usaha) and micro seaweed based food processors	Prof. Jana
		Aengdake, Sumenep
	Flight Sumenep-Surabaya with Wings IW 1809	Aaron, Agus, Jana, Jimi, Yudha.
13:45-14:20	Flight Surabaya- Makassar with GA 367	Aaron, Agus, Jana, Jimi, Yudha.
18:00 - 20:45	Stay in Makassar	Aaron, Agus, Jana, Jimi.
	Best Western Plus Makassar Beach	
	Jl. Botolempangan No. 67	Aaron, Agus, Jana.
Mon, 4/3		
07:00-08:30	Travel Makassar to Takalar by car	Prof. Jana

Date/Time	Agenda	Venue/Location
		Aaron, Agus, Jana, Jimi, Hendar.
		Hendar: 0811-222-544
09:00-11:30	Meet seaweed farmers Takalar (Hati Mulia and Setia Maju)	Ujung Baji, Takalar
	Lunch and travel to Jeneponto	
11:30-13:30		
	Meet seaweed farmers (cottonii) Jeneponto	
13:30-15:00		Jeneponto
	Return to Makassar	
15:00		Stay in Makassar
		Aaron, Agus, Jana, Jimi, Hendar.
Tues, 5/3		
09:00-12:00	Visit PT. Wahyu, Makassar	Prof. Jana
		Aaron, Agus, Jana, Jimi, Hendar.
16:05-17:25	Flight Makassar-Jakarta with GA 643	Aaron, Agus, Jimi, Hendar.
20:00-22:15	Flight Jakarta - Medan with GA 196	Aaron, Agus, Jimi, Hendar.
	Stay in Santika Hotel Jl. Kapten Maulana Lubis No.7, Petisah Tengah, Medan	Aaron, Agus, Jimi, Hendar, Imza
Wed, 6/3		
09:00-15:00	Visit PT. Expravet Nasuba (Pangasius farm and processing)	Mr. Imza - Medan
	Flight Medan to Jakarta with GA 193	
18:35-21:00		Imza, Aaron, Agus, Jimi, Hendar.
	Stay at Ibis Budget Hotel (Airport Jakarta)	
		Imza, Aaron, Agus.
Thurs, 7/3		
05:45-07:15	Flight Jakarta to Jambi with GA 130	Imza, Aaron, Agus, Jimi, Hendar.
08:00-16:00	Visit Batanghari (pangasius farmers)	Batanghari
	Stay at Luminor Hotel Jambi	Imza, Aaron, Agus, Jimi, Hendar.
	Jl. Mpu Gandring No.72, Kebun Jeruk, Jambi	

Date/Time	Agenda	Venue/Location
Fri, 8/3		
08:00-12:00	Visit Muaro Jambi (pangasius farmers) -Jambi	Imza, Aaron, Agus, Jimi, Hendar.
17:40-19:00	Flight Jambi to Jakarta with GA 135	Return to Jakarta
Sat-Sun	Break/No activity	Stay in Jakarta
09.10.03		
Mon, 11/3		
08:00-16:00	Visit Seaweed processing companies around Jakarta, PT. Agarindo	Tangerang
		Jana, Aaron, Agus, Jimi, Hendar/Yudha.
	Stay in Salak The Heritage Hotel, Bogor.	Aaron and Agus.
Tues-Wed		
12-13/3	Focus Group Discussion with value chains stakeholders and beneficiaries of the programme: MMAF, ASTRULI, APCI, AP2HI, RLC, National Experts, STP/iPRIDE4fish, value chain experts (outside the project)	Bogor (participants to stay overnight in Bogor);
09:00-16:00		Salak The Heritage Hotel, Bogor.
Thurs 14/3	Debriefing:	
09:00-11:00	SECO	Swiss Embassy
14:00-16:00	MMAF	MMAF office
Friday		
15.Mar		
09:00-11:30	Debriefing with PSO staffs	PSO office/MTB?

Annex 2: Stakeholders interviewed

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
JAKARTA							
	MMAF/KKP						
	Erwin Dwiyana	M	Deputy Director, Directorate of Promotion, DG of Aqua-culture	MMAF	1st briefing 25 Feb 2019		
	Anik Wijayati	F	Staff, Directorate of Fish Feed and Medicine	MMAF	1st briefing 25 Feb 2019		
	Debora Prihatmajanti	F	Staff, Directorate of Production and Business	MMAF	1st briefing 25 Feb 2019		
	Santi Roelina	F	Staff, Directorate of Production and Business	MMAF	1st briefing 25 Feb 2019		
	Eliza Manty	F	Staff, Cooperation Division, DG of Supervision/ Monitoring of Marine and Fisheries Resources	MMAF	1st briefing 25 Feb 2019		
	Ida Bagus Nyoman Suyana	M	Staff, Division of Legal, Cooperation and Public Relations, DG of Aqua-culture	MMAF	1st briefing 25 Feb 2019		
	Anindita Laksminati	F	Staff, Bureau of Legal and Foreign Cooperation, Secretary General Office	MMAF	1st briefing 25 Feb 2019		
	Ridwan Yudhaprayoga	M	Planning Bureau, Secretary General Office	MMAF	1st briefing 25 Feb 2019, joint field visit 26 Feb -3 march 2019		
	Erna Yuniarsih	F	Staff, Secretariat of DG Aqua-culture	MMAF	1st briefing 25 Feb 2019		
	Jimmy Wea	M	Staff, Directorate of Promotion, DG of Aqua-culture	MMAF	Join the field visit all site, full schedule		
	Hendar	M	Planning Bureau, Secretary General Office	MMAF	Join the Field Visit, 4-8 Mar 2019	11	

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	UNIDO						
	Esam Alqararah	M	Representative for Indonesia and Timor Leste	UNIDO	26.Feb.19		
	Sudari Pawiro	M	Chief Technical Adviser	UNIDO	All the time in Jakarta		
	Ray Purnama	F	National, Program Officer	UNIDO	All the time in Jakarta		
	Nahrudin Alie	M	National Program Officer, RECP	UNIDO	26.Feb.19		
	Imza Hermawan	M	National Consultant/Expert on Pangasius	UNIDO	Join the Field Visit All site of Pangasius		
	Jana Tjahjana Anggadiredja	M	National Consultant/Expert on Seaweed	UNIDO	Join the Field Visit All site of Seaweed		
	Salil Dutt	M	Chief Technical Adviser RECP Indonesia Project	UNIDO		7	
	AP2HI						
	Candra NW	M	Training Coordinator	AP2HI	26.Feb.19	5	
	Alfian Mustopa	M	Database Coordinator	AP2HI	26.Feb.19		
	Ilham Alhaq	M	Project Manager	AP2HI	26.Feb.19		
	Abdul Muis Sulaiman	M	General Manager	AP2HI	26.Feb.19		
	Janti Djuari	F	Chair	AP2HI	26.Feb.19		
	SECO						
	Remy Duiven	M	Counsellor	SECO	Debriefing - 14 Mar 2019		
	Dewi Suyenti Tio	F	National Program Officer	SECO	26.Feb.19	2	
	STP/iPRIDE4FISH						
	Ani Seilani	F	Deputy Head of School on Academic	STP	27.Feb.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Ilham	M	Head of Unit for International Cooperation/Head of Digital Center	STP	27.Feb.19		
	Fitriska Hapsyani	F	Secretary, Program Study of Technology for Fisheries Resource Management	STP	27.Feb.19		
	M. Noor Auliya	F	Head of Sub-Division of Education and Cooperation	STP	27.Feb.19		
	Mochamad Nurhudah	M	Director of Graduate Studies	STP	27.Feb.19	5	
Surabaya	SEAWEED						
	Mc Donny W. Nagasan	M	ASTRULI, Chairman also Processors (PT. Java Biocolloid)	Seaweed, Processor	28.Feb.19	1	
	Milka Ari Gustini	F	CV. Agar Sari Jaya	Seaweed, Processor	28.Feb.19	1	
	Gunawan	M	PT. Surya Indoalgas	Seaweed, Processor	28.Feb.19	2	
	Melania	F	PT. Surya Indoalgas	Seaweed, Processor	28.Feb.19		
	Valen	F	CV Srigunting	Seaweed, Processor	28.Feb.19	1	
	Agus	M	Hakiki	Seaweed, Processor	28.Feb.19		
	Wahyu	M	Hakiki	Seaweed, Processor	28.Feb.19	2	
Tulungagung	PANGASius						
	DitRICT Office for Fisheries						
	Sigit Setiawan	M	DitRICT Office for Fisheries		01.Mar.19		
	Iwan S.	M	DitRICT Office for Fisheries		01.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Harwanto	M	DitRICT Office for Fisheries	Extension Service	01.Mar.19		
	Sigit Yopurwo	M	DitRICT Office for Fisheries	Extension Service	01.Mar.19		
	Lilis Prasetiawati	F	DitRICT Office for Fisheries	Extension Service	01.Mar.19		
	Ambarwati	F	DitRICT Office for Fisheries		01.Mar.19		
	Andra R.R.	M	DitRICT Office for Fisheries		01.Mar.19		
	Muthoharah	M	Extension Service		01.Mar.19	8	
	Totok Erdianto	M	PT. Delta Mina Perkasa	Processor	01.Mar.19	1	
	Ibu Siti	F	Mina Lestari Group	Pangasius Farmer	01.Mar.19		
	Ibu Hindun	F	Mina Lestari Group	Pangasius Farmer	01.Mar.19	2	
	Eni Setiawati	F	Mina Makmur	Pangasius Farmer	01.Mar.19		
	Ismail	M	Mina Makmur	Pangasius Farmer	01.Mar.19		
	Ali Ma'rup	M	Mina Makmur	Pangasius Farmer	01.Mar.19		
	Makrus	M	Mina Makmur	Pangasius Farmer	01.Mar.19		
	Eny Maslikah	F	Mina Makmur	Pangasius Farmer	01.Mar.19	5	
Madura Island, East Java Province	SEAWEED						
Sumenep District	Sophana	M	Korbi Village	Seaweed, Farmer	02.Mar.19		
	Juma'a	M	Korbi Village	Seaweed, Farmer	02.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Nasrun	M	Korbi Village	Seaweed, Farmer	02.Mar.19		
	Fathor	M	Korbi Village	Seaweed, Farmer	02.Mar.19		
	Sulhan	M	Korbi Village	Seaweed, Farmer	02.Mar.19	5	
	Mashuri	M	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19		
	Ibu Suatin	F	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19		
	Ibu Hamid	F	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19		
	Ibu Laili	F	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19		
	Ibu Kis	F	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19		
	Ibu Aliah	F	Aeng Dake Village	Seaweed, Farmer, and Home-based processors	03.Mar.19	6	
Pamekasan District	Moh Sukra	M	Mitra Bintang Timur Group, Jumiang Village	Seaweed, Farmer	02.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Amirullah	M	Mitra Bersama Group , Jumiang Village	Seaweed, Farmer	02.Mar.19	1	
	M. Tohir	M	Mitra Jumiang Tanjung Group, Jumiang Village	Seaweed, Farmer	02.Mar.19	1	
	Moh. Halil	M	Mitra Bersama Group, Jumiang Village	Seaweed, Farmer	02.Mar.19	1	
	Suwandi	M	Mitra Bintang Timur Group, Jumiang Village	Seaweed, Farmer	02.Mar.19	1	
	Hamidi	M	Local Enumerator - UNIDO	Seaweed, Farmer	02.Mar.19	2	
	Pak Sobun	M	Head of Village	Seaweed, Farmer	02.Mar.19	1	
Makassar, SOUTH SULAWESI	SEAWEED						
	M. Dg. Siana	M	Cooperative, executive. SINAR MAJU	Seaweed, Farmer	04.Mar.19	1	
	Muh Iqbal	M	District Office		04.Mar.19	1	
	Sahrul	M	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19		
	Sahrir	M	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19		
	Sadaruddin	M	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19	3	
	Kadir Daeng Naga	M	Co-operative, Executive, Makkio Dalle	Seaweed, Farmer	04.Mar.19	1	
	Nurtina	F	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19		
	Nurlindayat	F	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19		
	Dg Bambong	M	Seaweed, Farmer	Seaweed, Farmer	04.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Deden	M	Local Enumerator, UNIDO	Staff	04.Mar.19		
	Yalfe	M	Local Enumerator, UNIDO	staff	04.Mar.19		2
	Paulus Sentosa	M	PT. Wahyu	Seaweed Processor	05.Mar.19	4	
Medan, NORTH SUMATERA	PANGASIUS						
	Suryany	F	Owner, PT. Expravet Nasuba	Pangasius Processor	06.Mar.19		
	Pak Cipto	M	QC Manager, PT. Expravet Nasuba	Pangasius Processor	06.Mar.19		
	Pak Johnny	M	Manager, PT. Expravet Nasuba	Pangasius Processor	06.Mar.19		
	Pak Surya	M	Manager, PT. Expravet Nasuba	Pangasius Processor	06.Mar.19	4	
JAMBI	PANGASIUS						
<i>District Batanghari</i>	Hadori	M	Empat Putrature Group - Chairman of Group	Pangasius Farmer	07.Mar.19	1	
	Ernawati	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Syaiful Amraif	M	Lopak Kepayang Group	Pangasius Farmer	07.Mar.19	1	
	Ettikus Yeni	F	Bina Sejati Group	Pangasius Farmer	07.Mar.19	1	
	Supriyono	M	Bina Bersama	Pangasius Farmer	07.Mar.19	1	
	Rifa'i	M	Sumber Harapan Group	Pangasius Farmer	07.Mar.19	1	
	M. Banik	M	Payo Perupuk Group	Pangasius Farmer	07.Mar.19	1	

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Julkifli	M	Payo Jati Group, Chairman	Pangasius Farmer	07.Mar.19	1	
	Muhammad Hamdi	M	Empat Putra Ture Group	Pangasius Farmer	07.Mar.19	1	
	Isrowiyah	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Supartini	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Siti Mutmainah	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Ponisih	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Suhaina	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Jumiati	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Kasihah	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Hemi	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Patmawati	F	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Oskar	M	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Yahmin	M	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Supardi	M	Harapan Maju Group	Pangasius Farmer	07.Mar.19		
	Rido	M	Harapan Maju Group	Pangasius Farmer	07.Mar.19	14	
	Bambang Irawan						
	Darno						

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Suci Wulandari	F	Extension Service	Pangasius Extensionist	07.Mar.19		
	Kartika Jasriani	F	Extension Service	Pangasius Extensionist	07.Mar.19		
	Raden Suhaimi	M	Extension Service	Pangasius Extensionist	07.Mar.19		
	Dian Eriadi	F	Extension Service	Pangasius Extensionist	07.Mar.19	4	
	Ediwarman	M	District Office, Staff of BPBAT	Pangasius Extensionist	07.Mar.19	1	
	Najarudin	M	District office of Fisheries	Pangasius Extensionist	07.Mar.19	1	
	Pak Sofyan	M	District Office for Fisheries and Food Security, Head of Division of Fisheries Production	Director	07.Mar.19	1	
	Aipda Aang	M	Local Police Officer	Officer	07.Mar.19	1	
	<i>District Muaro Jambi</i>						
	Enggal	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Herman	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Surya Darma	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Deddy F Hsp	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Khairul Irfan	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Edi Saputra	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Fiki Ardiansyah	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Lukman H	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Hendri	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Heri Wahyudi	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Erwin	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Muhammad Wira	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Aang Sanjaya	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Cahyo Gumilang	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Rio Syaputra	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Joni Anwar	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19		
	Zulkipli	M	Mina Sejahtera Group,	Pangasius Farmer	08.Mar.19	17	
	Puwadi	M	Tunas Baru Group	Pangasius Farmer	08.Mar.19		
	Rusli	M	Tunas Baru Group	Pangasius Farmer	08.Mar.19		
	Mugiman	M	Tunas Baru Group	Pangasius Farmer	08.Mar.19		
	Timan	M	Tunas Baru Group	Pangasius Farmer	08.Mar.19		
	Rohan	M	Tunas Baru Group	Pangasius Farmer	08.Mar.19		
	Abdul Azis	M	Mega Buana Group	Pangasius Farmer	08.Mar.19		

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Muhammad Yanto	M	-	Pangasius Farmer	08.Mar.19	7	
	M. Arif	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Maruki	M	Panila Group	Pangasius Farmer	08.Mar.19		
	A. Tohar	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Bambang Irawan	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Anisa	F	Panila Group	Pangasius Farmer	08.Mar.19		
	Fauzi	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Budiyanto	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Heri Kusmanto	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Acok	M	Panila Group	Pangasius Farmer	08.Mar.19		
	Rio	M	Panila Group	Pangasius Farmer	08.Mar.19	8	
	Luqman	M	Extension Service	Pangasius Extensionist	08.Mar.19		
	Muhammad Afrizal	M	Extension Service	Pangasius Extensionist	08.Mar.19		
	Asrianti Elfin	F	Extension Service	Pangasius Extensionist	08.Mar.19	3	
	David	M	District Office for Fisheries	Staff	08.Mar.19		
	Arifin	M	District Office for Fisheries	Staff	08.Mar.19		
	Muklisin	M	District Heath Officer	Staff	08.Mar.19	3	

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
Jakarta- TANGERANG	SEAWEED						
	Anthonius Wibowo,	M	Managing Director	Director	11.Mar.19		
	Offi Muahmmad Kafi	M	Plant and Production Manager	Staff	11.Mar.19		
	Budi Basuki	M	Advisor	Staff	11.Mar.19		
	Halimi	F	HRD Division	Staff	11.Mar.19		
	Sigit	M	Quality Control Division	Staff	11.Mar.19		
	Rizal	M	Production Division	Staff	11.Mar.19	6	
BOGOR	FGD Workshop				12.Mar.19		
	Heri Purwono	M	Resource person from BPPT				
	Sigit Yupurwo	M	Extension Serice, Fisheries District Office of Tulungagung				
	Soenan HP	M	Expert Board of APCI (Association of Catfish Indonesia)				
	Artati W.	F	Staff,	DG of PDS, MMAF/ KKP			
	Syofyan AM	M	Staff	Batanghari District Office for Fsheries			
	Ramadhani Putri	F	Staff	East Java Provincial Office for Fisheries			
	Dedi Jusadi	M	Expert from Univeristy (IPB)				
	Antonius Wibowo	M	ASTRULI				
	Isac N. Tarigan	M	Bureau of Planning	MMAF/ KKP			
	Jimmy Oy Wea	M	Staff,	DG of PDS, MMAF/ KKP			
	Ria Komalasari	F	Staff,	DG of PB, MMAF/ KKP			
	Anik Wijayati	F	DJPB – KKP				

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Janti D.	F	AP2HI				
	Ilham Alhaq	M	AP2HI				
	Desryanti	F	Bureau of Pubic Affair and Cooperation	MMAF/ KKP			
	Tsaqif H.	M	Staff	Provincial District Office for Fisheries			
	Mario Gigih	M	Head o Division for Cooperation	RCL (Seaweed Farmer Association)			
	Hendar S.	M	Bureau of Planning	MMAF/ KKP			
	Devi Setya	M	Staff	Promotion Directorate, MMAF/KKP			
	Paruhuman Lubis	M	Head of Fisheries District Office	Muaro Jambi District Office for Fisheries			
	Kurnia N	M	Staff	MMAF/ KKP			
	Denny J.	M	Staff	MMAF/ KKP		1	
	Debora Prihatmijanti	F	Staff	DG Aquaculture, KKP			
	Setiawan	M	Functional Staff	DG Aquaculture, KKP			
	Noorhidayat Abdul	F	Head of Division	Takalar District Office for Fisheries			
	Sujono	M	Member	APCI (Association of Catfish Indonesia)		1	

LOCATION	NAME	Gender	Title/Group	Organization/ Group/ Notes	Date	Column1	Column2
	Ilham	M	Head of iPRIDE4 FISH	Fisheries University		1	34
	Sudari	M	CTA of SMARTFISH Program	UNIDO			
	Ray Chandra	F	NPO, UNIDO	UNIDO			
	Jana T. A.	M	Seaweed Expert,	UNIDO			
	Imza H.	M	Pangasius Expert	UNIDO			
	Heru S.	M	Expert ,SMART-FISH,	UNIDO			
	Eko Ruddy	M	Impact Evaluation Expert,	UNIDO			
	B. Dwiagus Stepantoro	M	Independent Evaluator				
	Aaron Zazueta	M	Independent Evaluator				
	Bayu P	M	CharProd				
	Charis Ananto	M	CharProd				
	M. Rizal	M	CharProd				
	Adji	M	CharProd				
	Kozim Damiri	M	CharProd				

Annex 3: Questions used during field work

SMART Fish Evaluation

- a. What did the project contribute to your firm or operations?
- b. What benefits did you derived from the program?
- c. Did you get other sources of support that contributed to these benefits?
- d. For farmers: In what way has the project affected wellbeing?
- e. For firms: What were the savings or improvements in productivity of the project - monetary indicator or productivity measures?
- f. In what way would things be different had the project not taken place?

Annex 4: Six domains and 32 conditions in the SMART-Fish TOC model

Six domains and 32 conditions in the SMART-Fish TOC model	
A. PRODUCTION	
1.	Infrastructure and utilities to support production processes are in place.
2.	Suitable technologies and best practices adopted by relevant actors across the sector
3.	Inputs, at the necessary quality, competitive price, and quantities, available to producers
4.	Investment in sustainable fisheries take place
5.	Suitable business models for sustainable fisheries exist
6.	Qualified labour is available
7.	Compliance on quality, environmental, health, and labour standards across the production process.
B. TRADE (Market)	
8.	Effective demand for sustainable fisheries products (consumption).
9.	Effective market development strategies are implemented by the sector
10.	The market recognizes sector complies with quality, standards, costs and delivers requirements of target markets.
11.	Functioning infrastructure (physical and virtual) facilitates the trade of fisheries products.
12.	Market intelligence is available to producers
C. GOVERNANCE	
13.	The sectoral policy environment is conducive (dialogues take place and commitment among all stakeholders)
14.	Inter-sectoral policy coherence and coordination
15.	Legal and regulatory framework supportive of sustainable fisheries
16.	Trade agreements favourable to sustainable fisheries
17.	Capable institutions and clear division of roles and responsibilities
18.	Effective control and surveillance (incl. Monitoring and Evaluation) of fisheries

Six domains and 32 conditions in the SMART-Fish TOC model	
D. FINANCE	
19.	Public and private financial resources available for investment in the sustainable development of fisheries
20.	Positive investment development horizon perceived for fisheries
21.	Incentive structures to encourage investment in fisheries in place
22.	Financial business models suitable for fisheries
E. SCIENCE, TECHNOLOGY, AND INNOVATION	
23.	Awareness and common understanding of the challenges, opportunities, and trends in the fisheries sector
24.	Robust science, technology and innovation capacity that generates knowledge in the sector
25.	The capacity of the fishery sector to respond and adapt to megatrends
26.	Incentives structure that encourages adaptation
27.	Capacity to adapt to emerging standards
F. QUALITY AND STANDARDS SYSTEM	
28.	Globally harmonized national standard.
29.	Recognized and affordable conformity assessment services are available
30.	Services available to promote and support the compliance on quality, environmental, health, and labour standards across the production process
31.	Competent quality infrastructure institutions (to support conformity assessment services)
32.	Quality Policy in place

Annex 5: Analysis of catalytic conditions in the SMART-Fish TOC model

The evaluation team in conjunction with the project management team at UNIDO's headquarters identified 32 preconditions to achieve the transformation to sustainable, equitable and competitive fisheries value chains. Subsequently using Social Network Analysis, the team developed a model that linked the interactions of among these 32 preconditions (which were taken to be vertices or nodes in the network) resulting in a total of 236 interactions or edges. The evaluation subsequently ran a series of tests to identify the preconditions that were the most influential in the system based on the number and reach of outgoing links, in other words based on contributions to the strengthening of other conditions in the system). (see Table A).

Social Network Analysis was carried out using the program Node XL. This analysis included running the following tests:

- **Degree centrality** measures the number of edges of a node. Degree centrality can be considered a measure of popularity. The higher the degree the more directly connected the person is.
- **Out-degree** (points outward). The higher the out-degree, the more contributions to other nodes.
- **Betweenness centrality** is a measure of “a node’s centrality is a measure of a node’s ability to bridge different subnetworks. With the removal of nodes with high betweenness of centrality some subnetworks become disconnected. The higher the betweenness centrality score the better and it is a useful metric for understanding important nodes on the network.
- **Closeness centrality** is a measure of the average shortest distance from each vertex to each other vertex. Direct connections and shortest paths are important indicators of influence in the system. A lower closeness centrality score is better.
- **Eigenvector centrality** is a metric that measures the degrees of the nodes that a node is connected to. This metric is similar to “degree” but Eigenvector centrality extends itself to calculate how “connected” are the nodes connected node. Think of it as a way of determine how influential a some one’s friends are.

When running the model, five preconditions (of vertices) scored the highest in their contributions to other preconditions and on the influence in the overall transformation of the system, which are:

- 23. Awareness and shared understanding of the challenges, opportunities, and trends in the fisheries sector
- 13 Sector policies conducive to sustainable fisheries development
- 14 Inter-sectoral policy coherence and coordination
- 24 Robust science, technology and innovation capacity that generates knowledge in the sector
- 15 Legal and regulatory frameworks supportive of sustainable fisheries

Table A: Influence of conditions in the transformation of the fisheries value chains

Table A: Influence of conditions in the transformation of the fisheries value chains					
Precondition (Vertex)	Degree	Out-Degree	Betweenness Centrality	Closeness Centrality	Eigenvector Centrality
23. Awareness and common understanding of the challenges, opportunities, and trends in the fisheries sector	23	21	46.166	0.024	0.048
13. Sector policies conducive to sustainable fisheries development	24	18	56.445	0.025	0.049
14. Inter-sectoral policy coherence and coordination	19	16	41.079	0.022	0.038
24. Robust science, technology and innovation capacity that generates knowledge in the sector	19	16	22.411	0.022	0.043
15. Legal and regulatory framework supportive of sustainable fisheries	19	15	34.982	0.022	0.040
28. Globally harmonized national standard	15	12	9.848	0.020	0.034
32. Quality Policy in place	16	11	13.015	0.021	0.037
17. Capable institutions and clear division of roles and responsibilities	19	10	30.049	0.022	0.040
30. Services available to promote and support the compliance on quality, environmental, health, and labour standards across the production process	15	10	14.907	0.020	0.033
29. Recognized and affordable conformity assessment services are available	17	9	46.376	0.021	0.033
12. Market intelligence is available to producers	11	9	7.145	0.019	0.024
16. Trade agreements favourable to sustainable fisheries	9	8	5.297	0.018	0.020
26. Incentives structure that encourages adaptation	15	7	10.674	0.020	0.035
4. Investment in sustainable fisheries take place	14	7	23.200	0.020	0.030
19. Public and private financial resources available for investment in the sustainable development of fisheries	16	6	24.142	0.021	0.035
22. Financial business models suitable to fisheries	12	6	5.737	0.019	0.032

Table A: Influence of conditions in the transformation of the fisheries value chains

6. Qualified labour is available	9	6	4.433	0.018	0.020
21. Incentive structures to encourage investments in fisheries in place	11	5	5.132	0.018	0.026
27. Capacity to adapt to emerging standards	19	4	16.005	0.022	0.044
5. Suitable business models for sustainable fisheries exist	10	4	6.526	0.019	0.025
31. Competent quality infrastructure institutions (to support conformity assessment services)	10	4	11.498	0.018	0.020
20. Positive investment development horizon perceived for fisheries	18	3	27.319	0.022	0.039
7. Compliance on quality, environmental, health, and labour standards across the production process.	15	3	22.223	0.021	0.033
9. Effective market development strategies are implemented by the sector (supportive to condition no.8).	14	3	33.319	0.020	0.031
11. Functioning infrastructure (physical and virtual) facilitates the trade of fisheries products.	9	3	10.784	0.019	0.024
18. Effective control and surveillance of fisheries	8	3	2.071	0.018	0.020
1. Infrastructure and utilities to support production processes are in place.	7	3	3.015	0.017	0.014
25. The capacity of the fishery sector to respond and adapt to megatrends	23	2	34.257	0.024	0.048
2. Suitable technologies and best practices adopted by relevant actors across the sector	13	2	9.136	0.019	0.027
8. Effective demand for sustainable fisheries products.	10	2	22.136	0.019	0.017
3. Inputs of the necessary quality, competitive price, and quantities available to producers.	8	2	3.927	0.018	0.021
10. The market recognizes sector complies with quality, standards, costs and delivers requirements of target markets.	4	2	0.751	0.015	0.006

Annex 6: Terms of Reference



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Terms of Reference

Independent terminal evaluation of UNIDO project:

SMART Fish

UNIDO Project ID: 120110

2018

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I. Project background and context⁸

1. Project factsheet:

Project title	Increasing trade capacities of selected value chains within the fisheries sector in Indonesia
UNIDO Project ID	120110
Region	Asia
Country	Indonesia
Project donor(s)	SECO
Project approval date	2012
Project implementation start date	1 March 2013
Expected duration at project approval	5 years
Expected implementation end date	31 May 2019
Other executing Partners	n/a
Executing partners	n/a
Donor funding	USD 4.5 Million
Project approval date	n/a
UNIDO input (in kind, USD)	n/a
Co-financing:	n/a
Total project cost (USD)	USD 4.5 Million
Mid-term review date:	n/a
Planned terminal evaluation date	February 2019

(Source: Project document)

2. Project context

Programme background and preparation

The Programme originates in a request of the Indonesian government to UNIDO for assistance in strengthening the trade capacity of the fisheries sector. Within an 18-months preparatory assistance⁸ under UNIDO core budget funding, UNIDO conducted a comprehensive participatory needs' assessment involving a wide range of stakeholders. The work done focused on identifying the barriers that are preventing Indonesia from growing export volume and value for the seafood sector and identifying actions needed to overcome these barriers.

Programme identification and formulation also benefited from a comprehensive study of the Indonesian fishery export sector⁹, which analyzed the **value chains** for selected Indonesian fisheries products and identified ways in which the overall chain could be re-configured and particular value chain activities enhanced. This work was undertaken with close involvement of all relevant stakeholders, in particular the private sector, and included in-depth research on the demand for fishery products, the supply side, and the existing policy framework. In support to this preparatory assistance, **MMAF** also conducted comprehensive sector studies for selected products (shrimp, tuna, catfish and seaweeds), which were also used as a basis to design this Programme.

⁸ Data in this chapter is to be validated by the Consultant against the project document and any changes should be reflected in the evaluation report.

This resulted in a tentative programme outline¹⁰, which was submitted to the Swiss State Secretariat for Economic Affairs (SECO) for possible funding. Feed-back received was taken into account. A formulation mission with the purpose to translate the outline into a programme document was conducted in August 2010.

The Programme objective, its components and content are fully endorsed by key stakeholders from the private sector, relating ministries and academia.

Key challenges identified and proposed ways to address them include:

- f. **Policy level:** A strategy to systematically develop the fishery export sector, while sustainably manage the available resource, is not yet in place. Developing a specific sector export strategy for fisheries products would serve as a basis for establishing enabling policies and an appropriate support infrastructure. Institutionalizing a coordinated and participatory approach to fisheries management based on a public/private partnership could serve as a framework to advocate for support from the government.
- g. **Supply side:** Value added potential of fishery export products is not fully realized. A lack of appropriate technology and skills inhibits the shift from low value/high volume production to high value/high volume production. Weak vertical integration into supply chains, i.e. process raw material locally is one reason. Enhancing value added to export products at the company level would require **business support services** (meso level) in areas relevant to enhance value added (e.g. productivity, packaging, marketing).
- h. **Trade promotion in the sector** need to be improved. A provision of fisheries specific trade support services (meso-level), including the facilitation of a systematic approach to market development through a **key account strategy** directed to main buyers in targeted markets, and coupled with the development of **marketing/branding skills** would allow for linking-up local producers with potential trading partners, based on clearly identified product IDs or requirements (trade corridor approach). This will further expand on SECO financed SIPPO activities which started in 2008 (see B 5.c).
- i. **Gaps in compliance services** (testing, certification) result in rejections by importing countries, which in turn affect the reputation of Indonesian fishery products. Testing capacities are addressed by an on-going EU TSP II programme. National capacities to implement major certification schemes for sustainability standards required by customers (including certifications for sustainable use of maritime resources, social standards) are not yet available. There is also no suitable systematic traceability system in place, which is required for exports to all major markets, including the EU. National certification and traceability schemes are to be developed towards their international acceptance.
- j. **Lack of skilled labour** prevents the private sector and the government to fully take advantage of the development potentials of the sector through a high-value added, international high-end market driven export development strategy. Upstream post graduate education tailored to the fisheries sector, together with meso-level provision of training services for fisheries sector worker level would address this gap.

3. Project objective:

The Programme aims at **strengthening selected value chains within the Indonesian fisheries export sector**. Through the development of sustainability certification schemes for the targeted export products/value chains, the programme encourages the sustainable use of maritime resources, thereby indirectly contributing to the preservation of biodiversity. This is done through

increasing the value of exports by providing advice to the government on enacting policies for creating favourable framework conditions for exports, strengthening the supply side (improving competitiveness of products in terms of price and quality, enhancing compliance with international market requirements) and facilitating entry into global value chains.

The six main interventions of the programme are:

Component 1: Institutionalize public-private sector dialogue in the fisheries sector through a participatory consultation mechanism (fisheries roundtable) to identify key challenges of fisheries exports for selected value chains and support the national stakeholders in drafting a related fisheries export strategy and action plan for consideration of the GoI.

Component 2: Strengthen local business support services to exporting SMEs in selected fisheries and marine products value chains in order to improve product quality, compliance with mandatory and voluntary standards, productivity and value added to exports.

Component 3: Development of educational programmes in productivity & innovation for fisheries.

Component 4: Establish pilot traceability systems for fisheries- and other maritime products.

Component 5: Support certification to sustainability standards for key markets.

Component 6: Improve the promotion of Indonesian fisheries exports from selected value chains in key markets.

4. Project implementation arrangements

The estimated **duration of the Programme is 4.5 years** (including 6 months inception phase) with a **budget of USD 4'500'000** (including agency support costs).

Executing agency: The Programme will be implemented by UNIDO in cooperation with the ITC for selected outputs. **UNIDO will assume the overall responsibility of implementation.**

Government counterpart: The direct counterpart will be the MMAF. Selected outputs will be coordinated with the MoT and MoI. The relationship with other agencies, institutions, STP and associations benefiting from the Programme will be stipulated in Memoranda of Understandings (MoUs).

The Programme will be **governed by a Steering Committee**, which will include UNIDO, SECO and MMAF as voting members and selected other counterparts/beneficiaries as observers with consultative voice. The Steering Committee will meet twice a year in Jakarta.

The **UNIDO Office in Jakarta** will oversee the Programme and provide strategic support. Further, the UNIDO Office in Jakarta will provide administrative support (including local disbursements and recruitments). The UNIDO Representative (UR) will also facilitate coordination among UNIDO projects, including in the area of Cleaner Production and initiate monitoring site visits and contribute in the preparation of the periodic progress reports.

A **Programme Manager** (not funded by the project) will assume **overall responsibility on behalf of UNIDO**, supported by a project assistant (also not project funded).

A **full-time National Chief Technical Advisor (CTA)** based in Jakarta with a trade-related background and management experience will **coordinate technical input locally**.

The Programme will be supported by a full-time **Junior Expert (JE) at UNIDO Headquarters**.

Operational management on a daily basis will be as much as possible delegated to a dedicated **(full-time) National Programme Coordinator (NPC)** with proven management skills who will

be based at the Quality & Productivity Centre located in the University of Fisheries and receive support from a **full-time Programme Assistant**.

The Quality & Productivity Center will have an own institutional structure, which is integrated into the University of Fisheries. The Programme will not cover staff salaries of the Center.

The Embassy of Switzerland in Jakarta will strategically monitor the Programme on behalf of SECO, assist with coordination among Swiss-funded projects and represent the interests of the donor in the Steering Committee. Otherwise, SECO will not have an operational role in the Programme.

Periodic external Result-Oriented Monitoring (ROM) by a team of technical and evaluation experts will provide the Steering Committee with a timely basis for decision making.

Programme design and organization takes explicitly into consideration **lessons learned from the UNIDO Expert Group Meeting (EGM) on “Revisiting the UNIDO TCB Approach”, held in Vienna in November 2009, which was jointly funded by SECO and NORAD, and from the recent Thematic Evaluation in the area of SMTQ conducted by UNIDO in 2009/2010 (co-funded by SECO)**. The joint lessons and recommendations have been integrated by UNIDO in a Joint Management Response that has been referred to in the elaboration of this present Programme.

Inception phase: At the outset of the Programme, an **inception phase of 6 months is planned**, which aims at finalizing programme preparation and establishing a detailed implementation plan. **UNIDO** will be responsible for the following key outputs of the inception phase:

- **Recruitment of permanent programme staff** (JE, CTA, NPC, Programme Assistant); physical set-up of the Programme Support Unit.
- **Final decision on selected value chains/product species and regions to be supported by the project.**
- **Demand/supply analysis** for quality & productivity services, certification of sustainability standards. Selection of services that will receive support. Identify possible hosting institutions for the traceability system and bodies that could be accredited to certify sustainability standards.
- **Detailed needs assessment of beneficiary institutions;**
- **Update the logical framework** (including defining performance indicators and baseline data for each of the indicators).
- **A detailed list of short-term experts** to be hired under the Programme (including job descriptions, **ToRs of assignment for each expert**).
- **A detailed implementation plan**, including updated budgets and timeline;
- Institutional arrangements and agreements with counterparts and partner institutions; Define detailed **programme governance and management structure/procedures** (roles and responsibilities);
- Agreements with SIPPO and the Swiss Federal Institute of Intellectual Property (on how to coordinate inputs).

All of this will be integrated in an inception report, which will be submitted to the first Steering Committee Meeting for discussion and approval. **The inception report will be the basis to implement, monitor and evaluate the programme.** Implementation plan and budgets (not the logical framework) will be **regularly updated prior to each Steering Committee Meeting.**

5. Budget information:

Table 1. Financing plan summary - Outcome breakdown (Original budget, excl. 10% support costs⁹)

Project outcomes/components	Total (USD)
Component 1	416,693
Component 2	462,033
Component 3	480,693
Component 4	234,561
Component 5	591,893
Component 6	350,595
Project management	1,248,113 ¹⁰
Final Independent Evaluation	157,720
Direct Support Cost (@3%)	119,469
Total	4,061,770

Final Budget, excluding 10% support costs¹¹

Project outcomes/components	Total (USD)
Component 1	336,240.31
Component 2	588,188.01
Component 3	468,546.92
Component 4	378,124.85
Component 5	328,824.89
Component 6	460,021.03
Project management	957,469.06
Final Independent Evaluation	157,719.88
Direct Support Cost (@3%)	111,454.05
Total	3,786,589.00

II. Evaluation purpose and scope

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of future programmes and projects.

The evaluation has two specific objectives:

- (i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact;
- (ii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

The independent terminal evaluation (TE) will cover the whole duration of the project from its starting date in to the estimated completion date in 12/31/2017, including the food safety extension which was approved at the end of 2013, as well as the no-cost extension for 2017.

⁹ Source: Original project budget as per the project document

¹⁰ Including a contingency budget of USD 281,837

¹¹ Source: Latest budget as approved by the donor and the counterpart

III. Evaluation approach and methodology

The TE will be conducted in accordance with the UNIDO Evaluation Policy¹² and the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle¹³.

The evaluation will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project will be informed and consulted throughout the evaluation. The evaluation team leader will liaise with the UNIDO Independent Evaluation Division (ODG/EVQ/IEV) on the conduct of the evaluation and methodological issues.

The evaluation will use a theory of change approach and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

The theory of change will identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, and drivers as well as barriers to achieve them. The learning from this analysis will be useful to feed into the design of the future projects so that the management team can effectively manage them based on results.

1. Data collection methods

Following are the main instruments for data collection:

- (a) **Desk and literature review** of documents related to the project, including but not limited to:
 - The original project document, monitoring reports (such as progress and financial reports, mid-term review report, output reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
 - Notes from the meetings of committees involved in the project.
- (b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:
 - UNIDO Management and staff involved in the project; and
 - Representatives of donors and counterparts.
- (c) **Field visit** to project sites in Indonesia in order to meet with the project's main counterparts and beneficiaries.

2. Evaluation key questions and criteria

The key evaluation questions are the following:

- (a) What are the key drivers and barriers to achieve the long term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long term objectives?
- (b) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money?
- (c) What have been the project's key results (outputs, outcome and impact, if possible)? To what extent have the expected results been achieved or are likely to be achieved against the project design? To what extent the achieved results will sustain after the completion of the project?
- (d) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

¹² UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

¹³ UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

The evaluation will assess the likelihood of sustainability of the project results after the project completion. The assessment will identify key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and explain how these risks may affect the continuation of results after the project ends. Table 1 below provides the key evaluation criteria to be assessed by the evaluation. The details questions to assess each evaluation criterion are in annex 2.

Table 1. Project evaluation criteria

#	Evaluation criteria	Mandatory rating
A	Impact (or progress toward impact)	Yes
B	Project design	Yes
1	• Overall design	Yes
2	• Logframe	Yes
C	Project performance	Yes
1	• Relevance	Yes
2	• Effectiveness	Yes
3	• Efficiency	Yes
4	• Sustainability of benefits	Yes
D	Cross-cutting performance criteria	
1	• Gender mainstreaming	Yes
2	• M&E: ✓ M&E design ✓ M&E implementation	Yes
3	• Results-based Management (RBM)	Yes
E	Performance of partners	
1	• UNIDO	Yes
2	• National counterparts	Yes
3	• Donor	Yes
F	Overall assessment	Yes

3. Rating system

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Division uses a six-point rating system, where 6 is the highest score (highly satisfactory) and 1 is the lowest (highly unsatisfactory) as per Table 2.

Table 2. Project rating criteria

Score		Definition	Category
6	Highly satisfactory	Level of achievement clearly exceeds expectations and there is no shortcoming.	SATISFACTORY
5	Satisfactory	Level of achievement meets expectations (indicatively, over 80-95 per cent) and there is no or minor shortcoming.	
4	Moderately satisfactory	Level of achievement more or less meets expectations (indicatively, 60 to 80 per cent) and there are some shortcomings.	

Score		Definition	Category
3	Moderately unsatisfactory	Level of achievement is somewhat lower than expected (indicatively, less than 60 per cent) and there are significant shortcomings.	UNSATISFACTORY
2	Unsatisfactory	Level of achievement is substantially lower than expected and there are major shortcomings.	
1	Highly unsatisfactory	Level of achievement is negligible and there are severe shortcomings.	

IV. Evaluation process

The evaluation will be implemented in five phases which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

- i. Inception phase: The evaluation team leader will prepare the inception report providing details on the methodology for the evaluation and include an evaluation matrix with specific issues for the evaluation; the specific site visits will be determined during the inception phase.
- ii. Desk review and data analysis;
- iii. Interviews, survey and literature review;
- iv. Field visits;
- v. Data analysis and report writing.

V. Time schedule and deliverables

The evaluation is scheduled to take place from 8 October 2018 to 30 March 2019. The evaluation field mission to Indonesia is tentatively planned for February 2019. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project.

After the evaluation field mission, the evaluation team leader will visit UNIDO HQ for debriefing and presentation of the preliminary findings of the terminal evaluation. The draft TE report will be submitted to UNIDO 3 weeks after the end of the mission. The draft TE report is to be shared with the UNIDO IEV, UNIDO Project Manager, SECO and other stakeholders for comments and verification of factual and interpretation errors. The TE leader is expected to revise the draft TE report based on the comments received, edit the language and form and submit the final version in accordance with UNIDO ODG/EVQ/IEV standards.

Table 3. Tentative schedule

Timelines	Tasks
October 2018	Desk review and preparation of inception report
October - November 2018	Briefing with UNIDO Project Manager and experts based in Vienna – through Skype
February 2019	Field visits
February 2019	Debriefing in Vienna Preparation of first draft evaluation report
March 2019	Preparation of first draft evaluation report

Timelines	Tasks
	Internal peer review of the report by the UNIDO ODG/EVQ/IEV and other stakeholders comments to draft evaluation report
March 2019	Final evaluation report

VI. Evaluation team composition

The evaluation team will be composed of one international evaluation consultant acting as the team leader. The evaluation team will possess relevant strong experience and expertise on evaluation and on quality infrastructure. Both consultants will be contracted by UNIDO.

The tasks of each team member are specified in the job descriptions annexed to these terms of reference.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation.

An evaluation manager from UNIDO ODG/EVQ/IEV will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Manager and national project teams will act as resourced persons and provide support to the evaluation team and the evaluation manager. The UNIDO Project Manager and the project team in Indonesia will provide logistical and administrative support the evaluation team to prepare for the field visits. The project team will provide a proposed list of stakeholders (e.g. government officials, private sector representatives and other relevant individuals) to the evaluation team who will make the final decision on who to consult. The project team will arrange the meetings and prepare field visit schedule for the evaluation team, following their request, prior to the field visit.

The evaluation team will maintain close liaison with the representatives of UNIDO, other UN agencies as well as with the concerned national agencies, and with national and international project staff. The evaluation team is free to discuss with the authorities concerned anything relevant to its assignment. However, it is not authorized to make any commitments on behalf of the Government, the donor or UNIDO.

VII. Reporting

Inception report

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the Team Leader will prepare, in collaboration with the team member, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework (“evaluation matrix”); division of work between the team leader and

team members; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable¹⁴.

Evaluation report format and review procedures

The draft report will be delivered to ODG/EVQ/IEV (the suggested report outline is in Annex 4) and circulated to UNIDO staff and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to UNIDO ODG/EVA for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

The evaluation team will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ after the field mission.

The TE report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English, with an executive summary in English, and follow the outline given in annex 1.

VIII. Quality assurance

All UNIDO evaluations are subject to quality assessments by UNIDO ODG/EVQ/IEV. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO ODG/EVQ/IEV, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO ODG/EVQ/IEV).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as Annex 4. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO ODG/EVQ/IEV should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO ODG/EVQ/IEV, which will submit the report to the donor and circulate it within UNIDO together with a management response sheet.

¹⁴ The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO ODG/EVQ/IEV.

Annex 1: Project Results Framework¹⁵

The detailed Monitoring and Evaluation Plan, and Risk Assessment Plan, which were both developed and implemented for this project will be shared with the evaluation expert once recruited.

The table below is as per the approved project document. However, some details of activities and outputs were reviewed and adjusted following the inception phase.

SMART-Fish (120110) - CAUSAL CHAIN OF RESULTS	
Development Objective	
Contribute to strengthening the trade capacity of selected value chains within a sustainable Indonesian fisheries sector	
COMPONENT 1	
	<i>Institutionalize public-private sector dialogue in the fisheries sector. Through a participatory consultation mechanism (fisheries roundtable), identify key challenges of fisheries exports and draft a fisheries export strategy and action plan for consideration of the GoI, which incorporates aspects of sustainable use of maritime resources and safeguarding biodiversity.</i>
	Outputs
	<ul style="list-style-type: none"> • <i>Fishery Roundtables</i> • <i>Advocacy workshops on selected topics relevant to sustainable and high-value added fisheries exports.</i> • <i>Expert reports (specified below)</i> • <i>Donor mapping (report)</i> • <i>Draft strategy on sustainable fisheries exports.</i>
	<i>1.1 8 fisheries roundtables with 30 – 50 representatives of main stakeholders (government, industry) in different parts of the country. UNIDO will provide international expertise in order to share experience from other countries.</i>
	<i>1.2 Advocacy workshop for decision makers on how to mainstream poverty focus in the national fisheries development plan (vulnerable groups, income generation for rural poor, gender aspects).</i>
	<i>1.3 Advocacy workshop for decision makers on sustainable management of fisheries resources and biodiversity.</i>
	<i>1.4 Assessment of the sustainability risk for present national fisheries resources and its biodiversity (expert report and workshop).</i>

¹⁵ As per the initial approved project document

SMART-Fish (120110) - CAUSAL CHAIN OF RESULTS	
	<i>1.5 Identification of good practice examples for sustainable fisheries resource management and linkages with development of high value added products (report, workshop).</i>
	<i>1.6 Conduct mapping of existing national and donor-funded support programmes (report).</i>
	<i>1.7 Identification of root causes of non-compliances with import regulations of key importing countries. Establish recommendation on how to address those problems.</i>
	<i>1.8 Identify key challenges for the development of fisheries exports based on the summary of proceedings from the Fisheries roundtable (expert report).</i>
	<i>1.9 Development of a national fisheries export strategy and an action plan for implementation.</i>
COMPONENT 2	
	<i>Strengthen local business support services to SMEs in the fisheries sector through the Quality & Productivity Center at the Universities of Fisheries</i>
	Outputs
	<i>Following international best practice an independent national accreditation body is established and internationally/regionally recognized.</i>
	<i>2.1 Conduct a comprehensive market study (supply and demand for quality & productivity services for the fisheries sector in Indonesia).</i>
	<i>2.2 Institutional assessment of Center; identify capacity building needs and propose ways on how to address them by the Programme.</i>
	<i>2.3 Propose a sound business plan according to best practices in business planning prior to the establishment of the centre. This will be done during the inception phase. BOD of the centre and first Steering committee meeting to revise and approve business plan.</i>
	<i>2.4 Technical upgrading of the center (equipment needed for training and service provision).</i>
	<i>2.5 Awareness-raising, education, management development of the Center, with focus on fisheries products.</i>
	<i>2.6 Conduct 50 pilot consulting projects and trainings (on quality and productivity) to be implemented by the center for the purpose of creating demand and capacity building.</i>
	<i>2.7 Conduct 16 hands-on training activities on selected topics in different parts of Indonesia. Depending on the topic, the programme might provide external expertise.</i>

SMART-Fish (120110) - CAUSAL CHAIN OF RESULTS

COMPONENT 3

Development of a master's level education in productivity & innovation for fisheries;

Outputs

At least 4 professors have successfully completed in-depth training in teaching productivity & innovation for fisheries, curriculum established.

3.1 Design concept of course (including capacities and staff training needs) during inception phase (report with recommendations and work plan).

3.2 Provide in-depth training to at least 4 teachers (scholarship) at an internationally renowned university that offers training in the area of productivity & innovation for fisheries.

3.3 Establish the curriculum and teaching material (no printing)

3.4 Fund 8 fellowships (international professors) to teach selected courses in Indonesia.

3.5 Partially fund 20 internships for students of the Master Course in leading fish processing factories abroad (in order to familiarize them with best practices).

3.6 Pilot the master course, evaluate results, fine-tuning of curriculum.

COMPONENT 4

Establish and traceability system for fisheries- and other maritime products.

Outputs

Design and pilot implementation of an electronic catch-identification system (traceability), to be hosted by a (private sector) institution; system usable by illiterate fishermen.

4.1 Conduct study visits (12 staff of possible hosting institutions) to selected countries with well-established traceability systems.

4.2 Select institutions/associations that could host the database.

4.3 Establish traceability software that is useable by illiterate fishermen.

4.4 Conduct 20 traceability pilot projects for fish processing companies (through the Quality & Productivity Center).

COMPONENT 5

Build accredited certification capacities for sustainability schemes required by key clients

Outputs

SMART-Fish (120110) - CAUSAL CHAIN OF RESULTS	
	<i>Selected certification provider(s) are ready for accreditation.</i>
	<i>5.1 Assess demand (by import markets) and supply for major certification schemes (such as e.g. MS Council and others). Select schemes that are most relevant to exporters and where local certification in Indonesia is not yet available or not affordable for local SMEs.</i>
	<i>5.2 Conduct awareness raising seminars on certification schemes identified in 5.1.</i>
	<i>5.3 Identify host institutions (possible certification providers) and assess their technical and institutional capabilities to supply certification services on a technically and financially sustainable basis (in the form of a business plan).</i>
	<i>5.4 Train 20 internationally certified auditors;</i>
	<i>5.5 Conduct 20 pilot projects for the selected certification schemes.</i>
	<i>5.6 Support 3 suitable institutions to get accredited for certification of the schemes.</i>
COMPONENT 6	
	<i>Improve the promotion Indonesian fisheries exports from selected value chains in key markets</i>
	Outputs
	<ul style="list-style-type: none"> • <i>Staff trainings for NAFED in providing market information to exporting SMEs in the fisheries sector.</i> • <i>Knowledge of buyer sourcing considerations among exporters is increased;</i> • <i>Updated database at NAFED on export markets' rules and regulation (standards, technical regulations etc.).</i> • <i>Feasibility study on quality mark and/or geographical indications established; concept for quality mark elaborated.</i> • <i>Skills for account mgmt developed</i> • <i>At least 10 companies that have not yet exported before attend trade fares and/or other networking events.</i>
	<i>6.1 Strengthen advisory services on exports' market rules and regulations provided by NAFED (trainings for staff).</i>
	<i>6.2 Capacity-building for export promotion bodies, chambers, associations in support to (potentially) exporting enterprises (specifically relating to fisheries exports), trainings to be implemented by NAFED, while the programme will fund experts.</i>
	<i>6.3 Feasibility study and concept for a possible quality mark for Indonesian fisheries product.</i>
	<i>6.4 Support awareness rising for implementation of the quality mark.</i>
	<i>6.5 Support associations to prepare for participation in trade fares and/or other networking events (pilot activity in order to build capacities "selling" Indonesian products in developed markets; trial the implementation of the marketing strategy.</i>
	<i>6.6 Awareness training for key account managers</i>

Annex 2: Detailed questions to assess evaluation criteria

The evaluation team will assess the project performance guided by the questions below. It should be noted that these are the guiding questions. In the inception report, the evaluator will specify key issues and key questions for the evaluation to focus on.

#	<u>Evaluation criteria</u>
A	<p>Progress to impact</p> <ul style="list-style-type: none"> ✓ <u>Mainstreaming</u>: To what extent information, lessons or specific results of the project are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations and project? ✓ <u>Replication</u>: To what extent the project's specific results (e.g. methodology, technology, lessons and etc) are reproduced or adopted ✓ <u>Scaling-up</u>: To what extent the project's initiatives and results are implemented at larger geographical scale? ✓ What difference has the project made to the beneficiaries? ✓ What is the change attributable to the project? To what extent? ✓ What are the social, economic, environmental and other effects, either short-, medium- or long-term, on a micro- or macro-level? ✓ What effects are intended or unintended, positive or negative? <p>Three UNIDO impact dimensions are:</p> <ul style="list-style-type: none"> ✓ <u>Safeguarding environment</u>: To what extent the project contributes to changes in the status of environment? ✓ <u>Economic performance</u>: To what extent the project contributes to changes in the economic performance (finances, income, costs saving, expenditure and etc) of individuals, groups and entities? ✓ <u>Social inclusiveness</u>: To what extent the project contributes to changes in capacity and capability of individuals, groups and entities in society, including vulnerable groups, and hence generating employment and access to education and training?
B	<p>Project design</p> <p>1</p> <ul style="list-style-type: none"> • <u>Overall design</u> ✓ The problem, need or gap to be addressed by the project is clearly identified, with clear target beneficiaries? ✓ The project design was adequate to address the problems at hand? ✓ Is the project consistent with the Country's priorities, in the work plan of the lead national counterpart? Does it meet the needs of the target group? Is it consistent with UNIDO's Inclusive and Sustainable Industrial Development? Does it adequately reflect lessons learnt from past projects? Is it in line with the donor's priorities and policies? ✓ Is the applied project approach sound and appropriate? Is the design technically feasible and based on best practices? Does UNIDO have in-house technical expertise and experience for this type of intervention? ✓ To what extent the project design (in terms of funding, institutional arrangement, implementation arrangements...) as foreseen in the project document still valid and relevant? ✓ Does it include M&E plan and adequate budget for M&E activities?

#	Evaluation criteria
	<ul style="list-style-type: none"> ✓ Risk management: Are critical risks related to financial, social-political, institutional, environmental and implementation aspects identified with specific risk ratings? Are their mitigation measures identified? Where possible, are the mitigation measures included in project activities/outputs and monitored under the M&E plan?
2	<ul style="list-style-type: none"> • <u>Logframe</u> ✓ Expected results: Is the expected result-chain (impact, outcomes and outputs) clear and logical? Does impact describe a desired long-term change or benefit to a society or community (not as a mean or process), do outcomes describe change in target group's behaviour/performance or system/institutional performance, do outputs describe deliverables that project will produce to achieve outcomes? Are the expected results realistic, measurable and not a reformulation or summary of lower level results? Do outputs plus assumptions lead to outcomes, do outcomes plus assumptions lead to impact? Can all outputs be delivered by the project, are outcomes outside UNIDO's control but within its influence? ✓ Indicators: Do indicators describe and specify expected results (impact, outcomes and outputs) in terms of quantity, quality and time? Do indicators change at each level of results and independent from indicators at higher and lower levels? Do indicators not restate expected results and not cause them? Are indicators necessary and sufficient and do they provide enough triangulation (cross-checking)? Are they indicators sex-disaggregated, if applicable? Are the indicator SMART? ✓ Sources of verification: Are the sources of verification/data able to verify status of indicators, are they cost-effective and reliable? Are the sources of verification/data able to verify status of output and outcome indicators before project completion? ✓ Are key assumptions properly summarized and reflecting the proper level in the results chain in the logframe?
C	Project performance
1	<ul style="list-style-type: none"> • <u>Relevance</u> ✓ How does the project fulfil the urgent target group needs? ✓ To what extent is the project aligned with the development priorities of the country (national poverty reduction strategy, sector development strategy)? ✓ How does project reflect donor policies and priorities? ✓ Is the project a technically adequate solution to the development problem? Does it eliminate the cause of the problem? ✓ To what extent does the project correspond to UNIDO's comparative advantages? ✓ Are the original project objectives (expected results) still valid and pertinent to the target groups? If not, have they been revised? Are the revised objectives still valid in today's context?
2	<ul style="list-style-type: none"> • <u>Effectiveness</u> ✓ What are the main results (mainly outputs and outcomes) of the project? What have been the quantifiable results of the project? ✓ To what extent did the project achieve their objectives (outputs and outcomes), against the original/revised target(s)? ✓ What are the reasons for the achievement/non-achievement of the project objectives? ✓ What is the quality of the results? How do the stakeholders perceive them? What is the feedback of the beneficiaries and the stakeholders on the project effectiveness?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ✓ To what extent is the identified progress result of the project attributable to the intervention rather than to external factors? ✓ What can be done to make the project more effective? ✓ Were the right target groups reached?
3	<ul style="list-style-type: none"> • <u>Efficiency</u> ✓ How economically are the project resources/inputs (concerning funding, expertise, time...) being used to produce results? ✓ To what extent were expected results achieved within the original budget and timeframe? If no, please explain why. ✓ Are the results being achieved at an acceptable cost? Would alternative approaches accomplish the same results at less cost? ✓ What measures have been taken during planning and implementation to ensure that resources are efficiently used? Were the project expenditures in line with budgets? ✓ Could more have been achieved with the same input? ✓ Could the same have been achieved with less input? ✓ How timely was the project in producing outputs and outcomes? Comment on the delay or acceleration of the project's implementation period. ✓ To what extent were the project's activities in line with the schedule of activities as defined by the Project Team and annual Work Plans? ✓ Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements?
4	<ul style="list-style-type: none"> • <u>Sustainability of benefits</u> ✓ Will the project results and benefits be sustained after the end of donor funding? ✓ Does the project have an exit strategy? ✓ To what extent the outputs and results have been institutionalized? <i>Financial risks:</i> ✓ What is the likelihood of financial and economic resources not being available once the project ends? <i>Socio-political risks:</i> ✓ Are there any social or political risks that may jeopardize the sustainability of project outcomes? ✓ What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? ✓ Do the various key stakeholders see that it is in their interest that project benefits continue to flow? ✓ Is there sufficient public/stakeholder awareness in support of the project's long-term objectives? <i>Institutional framework and governance risks:</i> ✓ Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize the sustainability of project benefits? ✓ Are requisite systems for accountability and transparency and required technical know-how in place? <i>Environmental risks:</i>

#	Evaluation criteria
	<ul style="list-style-type: none"> ✓ Are there any environmental risks that may jeopardize the sustainability of project outcomes? ✓ Are there any project outputs or higher level results that are likely to have adverse environmental impacts, which, in turn, might affect the sustainability of project benefits?
D	Cross-cutting performance criteria
1	<ul style="list-style-type: none"> • Gender mainstreaming ✓ Did the project design adequately consider the gender dimensions in its interventions? Was the gender marker assigned correctly at entry? ✓ Was a gender analysis included in a baseline study or needs assessment (if any)? Were there gender-related project indicators? ✓ Are women/gender-focused groups, associations or gender units in partner organizations consulted/ included in the project? ✓ How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries? ✓ Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)? ✓ To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?
2	<ul style="list-style-type: none"> ○ M&E: ○ M&E design ○ Was the M&E plan included in the project document? Was it practical and sufficient at the point of project approval? ○ Did it include baseline data and specify clear targets and appropriate indicators to track environmental, gender, and socio economic results? ○ Did it include a proper M&E methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection; ○ Does the M&E plan specify what, who and how frequent monitoring, review, evaluations and data collection will take place? Is the M&E plan consistent with the logframe (especially indicators and sources of verification)? ○ Does it allocate adequate budget for M&E activities? ○ M&E implementation ○ How was the information from M&E system used during the project implementation? Was an M&E system in place and did it facilitate timely tracking of progress toward project results by collecting information on selected indicators continually throughout the project implementation period? Did project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? ○ Are annual/progress project reports complete, accurate and timely? ○ Was the information provided by the M&E system used to improve performance and adapt to changing needs? Was information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the Project team and managers and PSC regularly ask for performance and results information?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ○ Are monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impact in the logframe? Do performance monitoring and reviews take place regularly? ○ Were resources for M&E sufficient? ○ How has the logframe been used for Monitoring and Evaluation purposes (developing M&E plan, setting M&E system, determining baseline and targets, annual implementation review by the Project Steering Committee...) to monitor progress towards expected outputs and outcomes? ○ How well have risks outlined the project document and in the logframe been monitored and managed? How often have risks been reviewed and updated? Has a risk management mechanism been put in place?
3	<ul style="list-style-type: none"> ○ <u>Results-based management (RBM)</u> <i>Results-Based work planning</i> <ul style="list-style-type: none"> ○ Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved. ○ Are there any annual work plans? Are work-planning processes results-based? Has the logframe been used to determine the annual work plan (including key activities and milestone)? ○ Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start. <i>Results-based monitoring and evaluation</i> <ul style="list-style-type: none"> ○ Verify whether an M&E system is in place and facilitated timely tracking of progress toward project objectives by collecting information on selected indicators continually throughout the project implementation period; ○ Review the monitoring tool currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? ○ Do project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? Is information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the Project team and managers and PSC regularly ask for performance and results information? <i>Results-based reporting</i> <ul style="list-style-type: none"> ○ Assess how adaptive management changes have been reported by the project management and shared with the PSC. ○ Assess how well the Project Team and partners undertake and fulfil donor and UNIDO reporting requirements (i.e. how have they addressed delays or poor performance, if applicable?) ○ Assess how results and lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
E	Performance of partners
1	<ul style="list-style-type: none"> ○ <u>UNIDO</u> ○ Mobilization of adequate technical expertise for project design ○ Inclusiveness of project design (with national counterparts)

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ○ Previous evaluative evidence shaping project design ○ Planning for M&E and ensuring sufficient M&E budget ○ Timely recruitment of project staff ○ Project modifications following changes in context or after the Mid-Term Review ○ Follow-up to address implementation bottlenecks ○ Role of UNIDO country presence (if applicable) supporting the project ○ Engagement in policy dialogue to ensure up-scaling of innovations ○ Coordination function ○ Exit strategy, planned together with the government ○ Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement. ○ To what extent the project has a proper and operational governance system (e.g. PSC with clear roles and responsibilities)? ○ Review whether the national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)? ○ The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?
2	<ul style="list-style-type: none"> ● <u>National counterparts</u> ✓ Design ○ Responsiveness to UNIDO's invitation for engagement in designing the project ✓ Implementation ○ Ownership of the project ○ Provide financial contribution as planned (cash or in-kind) ○ Support to the project, based on actions and policies ○ Counterpart funding ○ Internal government coordination ○ Exit strategy, planned together with UNIDO, or arrangements for continued funding of certain activities ○ Facilitation of the participation of Non-Governmental Organizations(NGOs), civil society and the private sector where appropriate ○ Suitable procurement procedures for timely project implementation ○ Engagement with UNIDO in policy dialogue to promote the up-scaling or replication of innovations
3	<ul style="list-style-type: none"> ● <u>Donor</u>

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ✓ Timely disbursement of project funds ✓ Feedback to progress reports, including Mid-Term Evaluation, if applicable ✓ Support by the donor's country presence (if applicable) supporting the project for example through engagement in policy dialogue
F	<p>Overall assessment</p> <ul style="list-style-type: none"> ✓ Overarching assessment of the project, drawing upon the analysis made under Project performance and Progress to Impact criteria above but not an average of ratings.

Annex 3: Job descriptions



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	Independent Senior Evaluator, team leader
Main Duty Station and Location:	Home-based
Missions:	Missions to Vienna, Austria and Indonesia
Start of Contract (EOD):	8 October 2018
End of Contract (COB):	30 March 2019
Number of Working Days:	54 working days spread over the above-mentioned period

1. ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division (ODG/EIO/IED) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. ODG/EIO/IED is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

2. PROJECT CONTEXT

Detailed background information of the project can be found the terms of reference (TOR) for the terminal evaluation.

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
<p>1. Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data), including the proposal for phase II of the project and the Global Quality and Standard Programme (GQSP) which will include part of the phase II of this project.</p> <p>Define technical issues and questions to be addressed by the national technical evaluator prior to the field visit.</p> <p>Determine key data to collect in the field and adjust the key data collection instrument if needed.</p>	<ul style="list-style-type: none"> Adjusted table of evaluation questions, depending on country specific context; Draft list of stakeholders to interview during the field missions. Identify issues and questions to be addressed by the local technical expert 	8 days	Home-based

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
In coordination with the project manager, the project management team and the national technical evaluator, determine the suitable sites to be visited and stakeholders to be interviewed.			
<p>2. Prepare an inception report which streamlines the specific questions to address the key issues in the TOR, specific methods that will be used and data to collect in the field visits, confirm the evaluation methodology, draft theory of change, and tentative agenda for field work.</p> <p>Provide guidance to the national evaluator to prepare initial draft of output analysis and review technical inputs prepared by national evaluator, prior to field mission.</p>	<ul style="list-style-type: none"> • Draft inception report including the theory of change (TOC) and Evaluation framework to submit to the Evaluation Manager for clearance. • Guidance to the national evaluator to prepare output analysis and technical reports 	8 days	Home based
<p>3. Interact with the UNIDO project manager and project team to reconstruct the TOCs of the project and Programme, with Independent Evaluation Division and other key stakeholders at UNIDO HQ (included is preparation of presentation).</p> <p>Discuss and validate the TOCs with project team and staff of the Standards and Quality Infrastructure Division</p>	<ul style="list-style-type: none"> • TOCs reconstructed and validated with project team and staff of the Standards and Quality Infrastructure Division • Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to interview and site visits); mission planning; • Tools for the national consultant to collect data in the field 	5 days	Vienna (13-20 November 2018)
4. Conduct field mission to Indonesia in Feb 2019 ¹⁶ .	<ul style="list-style-type: none"> • Conduct meetings with relevant project stakeholders, beneficiaries, etc. for the collection of data and clarifications; • Agreement with the National Consultant on the structure and content of the evaluation report and 	14 days	Indonesia (specific project site to be identified at inception phase)

¹⁶ The exact mission dates will be decided in agreement with the Consultant, UNIDO HQ, and the country counterparts.

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
	<p>the distribution of writing tasks;</p> <ul style="list-style-type: none"> • Evaluation presentation of the evaluation's preliminary findings, conclusions and recommendations to stakeholders in the country, at the end of the mission. 		
5. Present overall findings and recommendations to the stakeholders at UNIDO HQ	<ul style="list-style-type: none"> • After field mission(s): Presentation slides, feedback from stakeholders obtained and discussed. 	2 day	Vienna, Austria
6. Prepare the evaluation report, with inputs from the National Consultant, according to the TOR; Coordinate the inputs from the National Consultant and combine with her/his own inputs into the draft evaluation report. Share the evaluation report with UNIDO HQ and national stakeholders for feedback and comments.	<ul style="list-style-type: none"> • Draft evaluation report. 	14 day	Home-based
7. Revise the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.	<ul style="list-style-type: none"> • Final evaluation report. 	3 day	Home-based
	OTAL	54 days	

REQUIRED COMPETENCIES

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Team orientation
5. Client orientation
6. Organizational development and innovation

Managerial competencies (as applicable):

1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making
4. Conflict resolution

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education:

Advanced degree in environment, energy, engineering, development studies or related areas.

Technical and functional experience:

- Minimum of 15 years of experience in the field of evaluation, and knowledge of quality infrastructure is a plus;
- Knowledge and experience in developing Theory of Change and Complex System Thinking
- A minimum of ten years practical experience in the field of development at the international level involving technical cooperation in developing countries;
- Knowledge about UNIDO operational programs and strategies and about relevant UNIDO policies such as those on project life cycle, M&E, incremental costs, and fiduciary standards
- Experience in the evaluation of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries.

Languages:

Fluency in written and spoken English is required.

All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.

Annex 4- Outline of an in-depth project evaluation report

Executive summary (maximum 5 pages)

Evaluation purpose and methodology

Key findings

Conclusions and recommendations

Project ratings

Tabular overview of key findings – conclusions – recommendations

1. Introduction

1.1. Evaluation objectives and scope

1.2. Overview of the Project Context

1.3. Overview of the Project

1.4. Theory of Change

1.5. Evaluation Methodology

1.6. Limitations of the Evaluation

2. Project's contribution to Development Results - Effectiveness and Impact

2.1. Project's achieved results and overall effectiveness

2.2. Progress towards impact

2.2.1. Behavioural change

2.2.1.1. Economically competitive - Advancing economic competitiveness

2.2.1.2. Environmentally sound – Safeguarding environment

2.2.1.3. Socially inclusive – Creating shared prosperity

2.2.2. Broader adoption

2.2.2.1. Mainstreaming

2.2.2.2. Replication

2.2.2.3. Scaling-up

3. Project's quality and performance

3.1. Design

3.2. Relevance

3.3. Efficiency

3.4. Sustainability

3.5. Gender mainstreaming

4. Performance of Partners

4.1. UNIDO

4.2. National counterparts

4.3. Donor

5. Factors facilitating or limiting the achievement of results

5.1. Monitoring & evaluation

5.2. Results-Based Management

5.3. Other factors

5.4. Overarching assessment and rating table

6. Conclusions, recommendations and lessons learned

6.1. Conclusions

6.2. Recommendations

6.3. Lessons learned

6.4. Good practices

Annexes (to be put online separately later)

- Evaluation Terms of Reference
- Evaluation framework
- List of documentation reviewed
- List of stakeholders consulted
- Project logframe/Theory of Change
- Primary data collection instruments: evaluation survey/questionnaire
- Statistical data from evaluation survey/questionnaire analysis

Annex 5: Checklist on evaluation report quality

Project Title:

UNIDO Project ID:

Evaluation team:

Quality review done by:

Date:

Report quality criteria	UNIDO IEV assessment notes	Rating
a. Was the report well-structured and properly written? (Clear language, correct grammar, clear and logical structure)		
b. Was the evaluation objective clearly stated and the methodology appropriately defined?		
c. Did the report present an assessment of relevant outcomes and achievement of project objectives?		
d. Was the report consistent with the ToR and was the evidence complete and convincing?		
e. Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible? (Including assessment of assumptions, risks and impact drivers)		
f. Did the evidence presented support the lessons and recommendations? Are these directly based on findings?		
g. Did the report include the actual project costs (total, per activity, per source)?		
h. Did the report include an assessment of the quality of both the M&E plan at entry and the system used during the implementation? Was the M&E sufficiently budgeted for during preparation and properly funded during implementation?		
i. Quality of the lessons: were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
j. Quality of the recommendations: did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can these be immediately implemented with current resources?		
k. Are the main cross-cutting issues, such as gender, human rights and environment, appropriately covered?		
l. Was the report delivered in a timely manner? (Observance of deadlines)		

Rating system for quality of evaluation reports

A rating scale of 1-6 is used for each criterion: Highly satisfactory = 6, Satisfactory = 5, Moderately satisfactory = 4, Moderately unsatisfactory = 3, Unsatisfactory = 2, Highly unsatisfactory = 1, and unable to assess = 0.

Annex 7: References

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