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IMPLEMENTATION COMPLETION AND RESULTS REPORT

4979-GH, TF010905-GH

ON AN

INTERNATIONAL DEVELOPMENT ASSOCIATION CREDIT

IN THE AMOUNT OF SDR 31.1 MILLION

(US$50.3 MILLION EQUIVALENT)

AND A GLOBAL ENVIRONMENT FACILITY GRANT

IN THE AMOUNT OF US$3.5 MILLION

TO THE

REPUBLIC OF GHANA

FOR A

GHANA PROJECT UNDER THE FIRST PHASE OF THE WEST AFRICA REGIONAL FISHERIES PROGRAM (P124775)

March 28, 2019

Environment and Natural Resources Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 17, 2011)

Currency Unit = SDR
SDR 0.62 = US$1
US$1.59 = SDR 1

(Exchange Rate Effective September 28, 2018)

Currency Unit = SDR
SDR 0.71 = US$1
US$1.39 = SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AIS	Automatic Identification System
CPS	Country Partnership Strategy
CPUE	Catch Per Unit Effort
CSRP	Sub-Regional Fisheries Commission (*Commission Sous-Régionale des Pêches*)
DPF	Development Policy Financing
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
EU	European Union
FAO	Food and Agriculture Organization
FCWC	Fishery Committee for the West Central Gulf of Guinea (*Comité des Pêches pour le Centre-Ouest du Golfe de Guinée*)
FEU	Fisheries Enforcement Unit
FSSD	Fisheries Scientific Survey Division
GDP	Gross Domestic Product
GEF	Global Environment Facility
GRM	Grievance Redress Mechanism
ICR	Implementation Completion and Results Report
IMO	International Maritime Organization
IRR	Internal Rate of Return
IUU	Illegal, Unregulated, and Unreported
IW	International Waters
M&E	Monitoring and Evaluation
MRAG	Marine Resources Assessment Group
MCS	Monitoring, Control, and Surveillance
MOFAD	Ministry of Fisheries and Aquaculture Development
MPA	Marine Protected Area
NAFPTA	National Fish Processors and Traders Association
NEPAD	New Partnership for Africa's Development
NPV	Net Present Value
PAD	Project Appraisal Document

PCU	Project Coordination Unit
PDO	Project Development Objective
PforR	Program-for-Results Financing
RCU	Regional Coordination Unit
RPF	Resettlement Policy Framework
SDG	Sustainable Development Goal
SOP	Series of Projects
USAID	United States Agency for International Development
VMS	Vessel Monitoring System
WARFP	West Africa Regional Fisheries Program

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P124775	Ghana - West Africa Regional Fisheries Program
Country	**Financing Instrument**
Ghana	Investment Project Financing
Original EA Category	**Revised EA Category**
Partial Assessment (B)	Partial Assessment (B)

Related Projects

Relationship	Project	Approval	Product Line
Supplement	P124812-Ghana - West Africa Regional Fisheries Program (GEF)	14-Jul-2011	Global Environment Project

Organizations

Borrower	Implementing Agency
Ministry of Finance	Fisheries Commission, Ministry of Fisheries and Aquaculture Development

Project Development Objective (PDO)

Original PDO

The Project Development Objective is to support the sustainable management of Ghana's fish and aquatic resources by: (i) strengthening the country's capacity to sustainably govern and manage the fisheries; (ii) reducing illegal fishing; (iii) increasing the valueand profitability generated by the fish resources and the proportion of that value captured by the country; and (iv) developing aquaculture.

PDO as stated in the legal agreement

The PDO as stated in the Legal Agreement is similar except for the use of the term "Recipient" instead of the terms "Ghana" and "country".

FINANCING

		Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing				
P124775	IDA-49790	50,300,000	50,300,000	31,854,192
P124812	TF-10905	3,500,000	3,461,287	3,461,287
Total		**53,800,000**	**53,761,287**	**35,315,479**
Non-World Bank Financing				
Borrower/Recipient		0	0	0
Total		**0**	**0**	**0**
Total Project Cost		**53,800,000**	**53,761,287**	**35,315,479**

KEY DATES

Project	Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
P124775	14-Jul-2011	12-Jun-2012	12-Jan-2015	31-Dec-2017	28-Sep-2018

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
27-Jun-2017	27.92	Change in Results Framework
26-Dec-2017	28.01	Change in Loan Closing Date(s)
28-Jun-2018	29.95	Change in Loan Closing Date(s)

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Unsatisfactory	Moderately Unsatisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	11-Oct-2011	Satisfactory	Satisfactory	.40
02	13-May-2012	Moderately Unsatisfactory	Moderately Unsatisfactory	.48
03	22-Mar-2013	Moderately Satisfactory	Moderately Satisfactory	5.13
04	16-Oct-2013	Moderately Satisfactory	Moderately Satisfactory	5.13
05	07-Jul-2014	Moderately Unsatisfactory	Moderately Unsatisfactory	7.44
06	20-Jan-2015	Moderately Unsatisfactory	Moderately Unsatisfactory	10.10
07	10-Aug-2015	Moderately Unsatisfactory	Moderately Unsatisfactory	12.82
08	29-Feb-2016	Moderately Unsatisfactory	Unsatisfactory	16.21
09	15-Sep-2016	Moderately Unsatisfactory	Unsatisfactory	21.95
10	23-Mar-2017	Moderately Unsatisfactory	Unsatisfactory	26.11
11	23-Oct-2017	Moderately Satisfactory	Moderately Satisfactory	28.01
12	03-May-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	28.05
13	02-Nov-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	30.23

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Agriculture, Fishing and Forestry	**100**
Fisheries	44
Public Administration - Agriculture, Fishing & Forestry	56

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Private Sector Development	**100**
Jobs	100
Finance	**3**
Finance for Development	3
Agriculture Finance	3
Urban and Rural Development	**49**
Rural Development	49
Rural Markets	3
Rural Non-farm Income Generation	17
Rural Infrastructure and service delivery	23
Land Administration and Management	6
Environment and Natural Resource Management	**81**
Climate change	31
Mitigation	31
Renewable Natural Resources Asset Management	12
Biodiversity	6
Landscape Management	6
Environmental policies and institutions	38

ADM STAFF

Role	At Approval	At ICR
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

1. The West Africa Regional Fisheries Program (WARFP) was designed as a multiphase Adaptable Programmatic Loan (APL, later changed to Series of Projects, SOP). This Implementation Completion and Results Report (ICR) covers a WARFP investment in Ghana that was complementary to the SOP (numbered SOP-3). The project was funded by a US$50.3 million IDA credit under project code P124775 and a US$3.5 million Global Environment Facility (GEF) grant under project code P124812.

A. CONTEXT AT APPRAISAL

Context

2. **Regional context.** When the WARFP was approved (in 2009), all available information suggested that despite rising production levels, most of West Africa's commercially important fish stocks, from Mauritania to Ghana, were fully exploited or overexploited. At the same time, World Bank analyses[1] showed a consistent pattern of increasing fleets and harvest costs and often declining catch rates per vessel, with profitability in many of the fisheries also declining. Another prevalent though harder to measure phenomenon was the high levels of resources lost to illegal, unregulated, and unreported (IUU) fishing - estimated at 18 percent of the subregion's total harvest. A key conclusion from the upstream analyses was also that most of the value added to fish caught in West Africa's waters happened overseas, which meant that a large portion of the economic benefits from the region's resources was not captured locally. The three key sectoral and institutional constraints for West Africa were therefore identified as (a) lack of capacity to govern and manage the resource sustainably and prevent overexploitation, (b) inability to prevent IUU fishing, and (c) failure to add value locally to caught fish. The need for a regional program emerged from a recognition that many of the important fish stocks of West Africa were shared between coastal states, as was the problem of illegal fishing. The participating countries were further linked through markets of both inputs (such as labor and fishing boats) and outputs (trade with partners within and outside the region), necessitating effective coordination between countries.

3. **WARFP.** The implementation of the program began in 2010 in Cabo Verde, Liberia, Senegal, and Sierra Leone and continued in 2011 with the approval of projects in Guinea-Bissau and Ghana and in 2015 in Guinea and Mauritania.[2] The WARFP series has been designed to build the countries' capacity for governance of the fisheries sector, combating and reducing IUU fishing, and increasing local landings and value added of fish products while taking into consideration the different circumstances in each of the participating countries. In addition, all the WARFP projects have been connected through a Regional Steering Committee of countries' directors of fisheries, setting the direction of the program and ensuring coordination between the countries on issues such as policy reform, anti-IUU fishing actions, and knowledge exchange and a Sub-Regional Fisheries Commission (*Commission Sous-Régionale des Pêches*, CSRP)-based Regional Coordination Unit (RCU) which has been providing operational support to implementing agencies, ensuring that countries have shared reform objectives, and putting in place

[1] MRAG (Marine Resources Assessment Group). 2009. *Estimation of the Cost of Illegal Fishing in West Africa*. London, United Kingdom; FAO (Food and Agricultural Organization). 2009. *Bonne Gestion et Gouvernance Durable des Pêches au sein de la CSRP*. Rome, Italy.

[2] Second phase of the WARFP projects is currently being prepared for Cabo Verde, Guinea-Bissau, Liberia, Senegal, and Sierra Leone, in addition to the first phase interventions in Côte d'Ivoire and The Gambia.

uniform sectoral data platforms. The design of the WARFP-Ghana project aimed to achieve the WARFP objectives in addition to an aquaculture development objective because of the existence of a promising aquaculture industry in the country. Refer to the project's Theory of Change and annex 8 for an illustration of the project's contribution to the WARFP objectives and the WARFP phases, respectively.

4. **Country context.** In 2011, when the WARFP-Ghana project was approved, Ghana had achieved the World Bank Group's per capita income threshold for classification as a lower-middle-income country and was in the top rankings within Africa on many performance and reform indicators. The country of 29.6 million (in 2018) was widely seen as an example of successful political and economic performance in West Africa. Nonetheless, it was recognized that Ghana faced important challenges in meeting its development goals. Gross domestic product (GDP) performance was impressive; however, some areas of agriculture, which contributed 30 percent of GDP and 50 percent of employment, did not perform well, including fisheries.

5. **Sectoral context.** At appraisal, fisheries played an important role in the Ghanaian economy: including aquaculture, the country had produced around 440,000 tons of fish each year, and fish production was worth in excess of US$1 billion in income annually. As many as 2.2 million people were dependent on the sector for their livelihoods, including some 135,000 fishers in the marine sector and 71,000 artisanal fishers operating in Lake Volta. A total of 27,000 full-time jobs were occupied by women engaged in fish processing, mainly in fish drying, smoking, and salting. A key sectoral issue, however, was heavy overexploitation of Ghana's fish resources because of the Government's failure to control fishing effort. The total fish catch from marine fisheries was in decline alongside an expansion in the number of fishing vessels and fishers, signaling overexploitation. A nascent aquaculture industry had the potential to make much greater contributions to domestic fish production; however, this potential was not expected to meet the increasing domestic demand given the prevailing trends in marine fisheries' overexploitation. Consequently, Ghana's fisheries showed decreasing profitability compared to the previous decade,[3] negatively affecting the people reliant on the sector for their livelihoods.

6. **Government strategies.** Realizing these issues, in 2009 the Government drafted the Ghana Fisheries and Aquaculture Sector Development Plan for 2011–2016, with support from the United Kingdom Department for International Development (DFID), the New Partnership for Africa's Development (NEPAD), and the World Bank with financing from the Ghana Fisheries Sub-Sector Capacity Building Project (P000962). The draft plan looked to increase revenue from, and profitability of, capture fisheries, especially in the artisanal sector, by investing in governance to control access to the resource, notably through a freeze in the size of the artisanal fishing fleet and a phased reduction in the industrial trawl fleet while maintaining capture fisheries' production levels and increasing aquaculture production. The WARFP-Ghana project aimed to implement the plan, which was well aligned with the objectives of the WARFP, by investing in first steps of a long-term fisheries governance reform program, including enforcement systems and value addition, together with increased aquaculture production.

7. **Rationale for Bank involvement.** The decision of the World Bank to tackle sustainable fisheries management through the WARFP was drawn from a 2006 World Bank publication titled 'Where is the

[3] The average income received per canoe in Ghana's artisanal fishery dropped by as much as 40 percent over the previous decade.

Wealth of Nations? Measuring Capital for the 21st Century', which highlighted the capital value of countries' natural assets and provided a strong economic justification for sustainably managing renewable resources to secure long-term contributions to growth. The World Bank also financed analytical work in the fisheries sector in several West African countries, including Ghana,[4] which showed that there were significant gains to be made by the countries by strengthening fisheries legislations and management practices and by eliminating illegal fishing. The World Bank also engaged in a policy dialogue with West African governments and the CSRP on needed policy reforms in fisheries. Importantly, the World Bank was the first development partner to offer a comprehensive approach to fisheries reform and was one of the few development agencies with the capacity to provide coordinated investments at the regional level through its Regional Integration Unit. In Ghana, the World Bank had financed the abovementioned Fisheries Sub-Sector Capacity Building Project between 1995 and 2002, which supported the Government's capacity for fisheries management and monitoring, control, and surveillance (MCS) and helped with the development of the Ghana Fisheries and Aquaculture Sector Development Plan. Finally, the World Bank facilitated the engagement of the GEF in the program, with focus on ecosystem-based approaches to fisheries resource management.

8. **Higher-level objectives to which the project contributed.** The project was to contribute to the objectives of the 2002 World Summit on Sustainable Development, which recognized overfishing as a global problem and called on donor agencies and stakeholders to create partnerships that respond to:

(a) The growing crisis in world fisheries;

(b) The overarching goal of the Fishery Committee for the West Central Gulf of Guinea (*Comité des Pêches pour le Centre-Ouest du Golfe de Guinée*, FCWC), of which Ghana is member, to ensure the sustainable development of the fisheries resources in the FCWC Convention Area, and the FCWC declarations;[5]

(c) The CSRP 2002–2010 Strategic Action Plan,[6] which called for strengthened fish resource management among its member countries and increased MCS activities to reduce illegal fishing;

(d) The World Bank 2011 Regional Integration Assistance Strategy for Sub-Saharan Africa,[7] which prioritized support for coordinated interventions in regional public goods such as fisheries; and

[4] MRAG (Marine Resources Assessment Group). 2009. *Estimation of the Cost of Illegal Fishing in West Africa*. London, United Kingdom; FAO. 2009. *Bonne Gestion et Gouvernance Durable des Pêches au sein de la CSRP*. Rome, Italy; and a quantitative bioeconomic model for Ghana's fisheries sector prepared by Prof. Gil Sylvia of Oregon State University and shared with stakeholders in Ghana through training in 2012.
[5] Ministerial Declaration of Abidjan (2006), establishing the Committee and Ministerial Declaration of Accra (2009), combating illegal fishing and adoption of the regional action plan against illegal fishing.
[6] CSRP. 2002. *Plan d'action stratégique de la CSRP (2002–2010)*. Dakar, Senegal. While Ghana is not member of the CSRP, an intergovernmental fisheries cooperation organization and a key WARFP partner, it joined the Commission's Regional Steering Committee in 2011 when joining the WARFP.
[7] Report No. 43022.

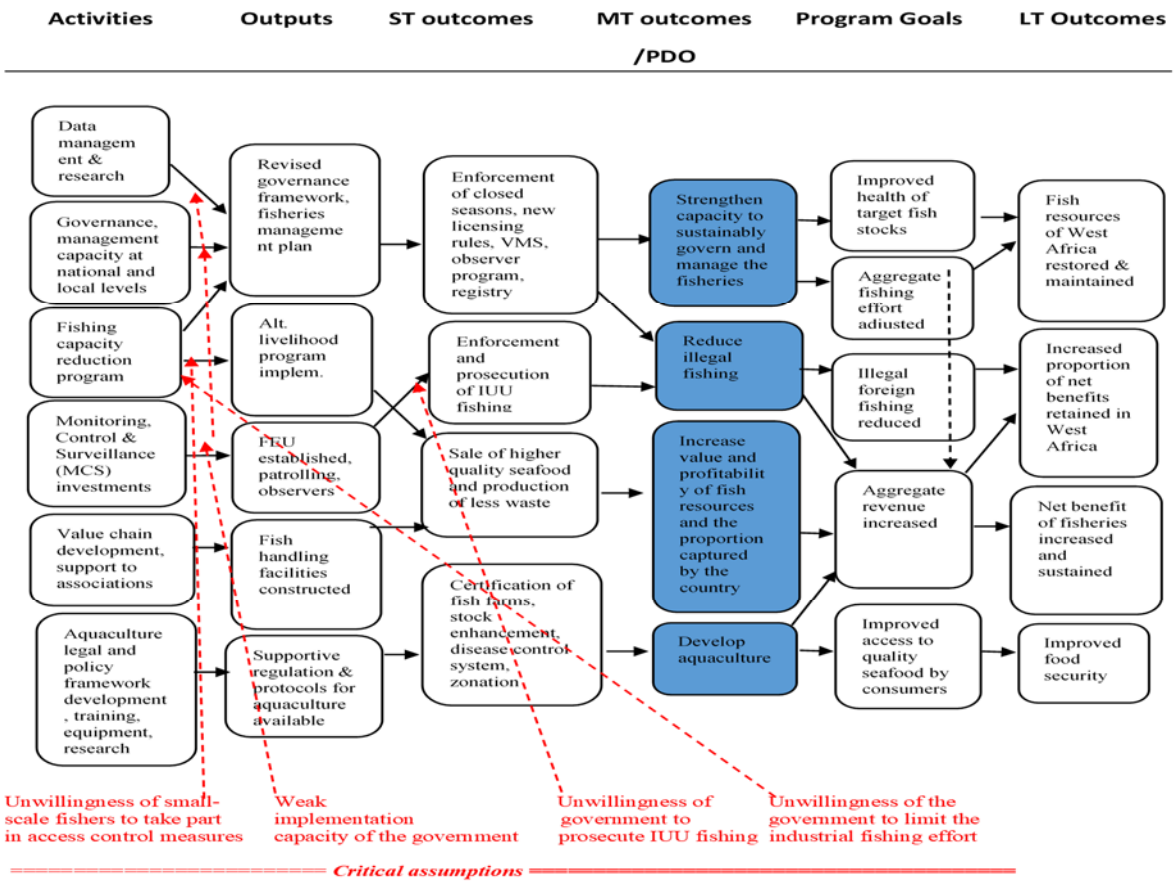
(e) The GEF-4 operational program goals under the International Waters (IW) Focal Area, of multi-state cooperation to rebuild marine fisheries and reduce pollution of coasts and large marine ecosystems while considering climate variability and change.

Theory of Change (Results Chain)

9. The project's Theory of Change is derived from the constraints and issues identified in the context section, higher-level objectives, Project Development Objectives (PDOs), outcomes, components, and description of activities in the Project Appraisal Document (PAD).[8] The long-term outcomes and program goals were reflected in the original set of PDO indicators (medium-term outcomes), which were modified later through a restructuring. These were to be achieved by reducing the fishing capacity and effort while providing alternative livelihoods to fishers, building the Government's institutional and physical capacity to enforce its IUU fishing laws, enhancing fishers and fish processors' ability to sell higher-quality seafood and reduce post-harvest losses, enhancing fish farmers' capacity to increase production, and mitigating fish diseases. These medium-term outcomes, along with future investments in the sector under follow-up projects (two additional phases were included in the WARFP design), were to improve the health of Ghana's target fish stocks,[9] adjust the aggregate fishing effort, reduce illegal fishing by foreign fleets,[10] increase the aggregate revenue to the country from fisheries,[11] and improve consumers' access to quality seafood. With these long-term outcomes achieved across the subregion, the WARFP aims, among others, to restore and maintain West Africa's fish resources, increase the proportion of retained net benefits[12] in the subregion, increase and sustain net benefits of fisheries, and improve food security. Figure 1 outlines the project's Theory of Change with its critical assumptions.

[8] Report No. 57898-GH.
[9] Improved fish stocks allow increased sustainable harvest, improved fishing efficiency, improved species composition in catch, and increased size of individual fish, all of which contribute to higher revenues, all else equal.
[10] Illegal fishing by foreign entities and fishing by domestic entities whose catch is illegally exported.
[11] Channels and sources of government revenues include licensing, vessel registration, various taxes, foreign fishing access fees, fines on violation of various regulations, and so on.
[12] Net benefits are defined as aggregate gross revenues minus aggregate costs.

Figure 1. Theory of Change



Note: FEU = Fisheries Enforcement Unit.

Project Development Objectives (PDOs)

10. The PDO, as articulated in the PAD and the IDA and GEF financing agreements, was to support the sustainable management of Ghana's fish and aquatic resources by (a) strengthening the country's capacity to sustainably govern and manage the fisheries, (b) reducing illegal fishing, (c) increasing the value and profitability generated by the fish resources and the proportion of that value captured by the country, and (d) developing aquaculture. The PDO's fisheries of focus were coastal demersal fish species (for example, croakers, groupers, and snappers); coastal shrimp; and cephalopods (for example, octopus and cuttlefish); as well as inland fisheries. The aquaculture objective targeted inland aquaculture, essentially fish catch from Lake Volta, which mostly was, and still is, tilapia and catfish.

Key Expected Outcomes and Outcome Indicators

11. The key indicators linked to the outcomes specified in the PDO statement were the following. These indicators were replaced with a different set of indicators in a restructuring to ensure relevance and measurability (see next section):

(a) *Strengthening the country's capacity to sustainably govern and manage the fisheries*

- Total landings per unit of fishing capacity: marine canoe fisheries, non-motorized; marine canoe fisheries, motorized; Lake Volta canoe fisheries (tons)

(b) *Reducing illegal fishing*

- Total patrol days at sea per year in coastal fisheries (days)

(c) *Increasing the value and profitability generated by the fish resources and the proportion of that value captured by the country*

- Annual net economic benefits[13] from targeted fisheries: marine canoe fisheries, non-motorized; marine canoe fisheries, motorized; Lake Volta fisheries (US$, millions)

(d) *Developing aquaculture*

- Total annual aquaculture production (tons)

12. A core indicator on the number of direct beneficiaries, disaggregated by gender, was included.

Components

13. The project was structured around four components which correlated to the four PDO outcomes, as well as a fifth project management, monitoring and evaluation (M&E), and regional coordination component as follows.[14] The components and their IDA and GEF allocations were not changed during implementation.

(a) **Component 1: Good Governance and Sustainable Management of the Fisheries (Original allocation: US$15.20 million IDA and US$3.50 million GEF; Actual cost: US$6.47 million IDA and US$3.46 million GEF).** Building the capacity of the Government and stakeholders to develop and implement policies that ensure that fish resources are used in an environmentally sustainable, socially equitable, and economically profitable manner by (i) developing the legal and operational policy to enable the implementation of the Ghana Fisheries and Aquaculture Sector Development Plan; (ii) strengthening fisheries management, including fishing rights and stakeholder-based management and ensuring necessary research activities for sustainable exploitation; (iii) aligning fishing capacity and effort to sustainable catch levels; and (iv) providing social marketing, communication, and transparency.

(b) **Component 2: Reduction of Illegal Fishing (Original allocation: US$10.90 million IDA; Actual cost: US$9.30 million IDA).** Reducing illegal fishing activities threatening the

[13] Annual net economic benefits were defined as net returns to fishing vessel owners, labor, and the Government from targeted fisheries.
[14] Total disbursement is US$394,195, lower than the total disbursement figures presented in the ICR Datasheet because of exchange rate losses which are not reflected in the World Bank Portal.

sustainable management of the country's fish resources by strengthening fisheries' MCS systems.

(c) **Component 3: Increasing the Contribution of the Fish Resources to the National Economy (Original allocation: US$12.10 million IDA; Actual cost: US$4.59 million IDA).** Identifying and implementing measures to increase Ghana's benefits from its fish resources through (i) value chain development and (ii) enhancement of fish product trade and information systems.

(d) **Component 4: Aquaculture Development (Original allocation: US$8.0 million IDA; Actual cost: US$5.58 million IDA).** Setting a framework for increased investment in inland aquaculture by (i) developing an aquaculture policy and legal framework; (ii) improving the genetic quality of tilapia fingerlings and brood-stock. (iii) catalyzing aquaculture development for medium- and large-scale enterprises, (iv) carrying out marketing and technical studies, and (v) providing support for small-scale aquaculture development.

(e) **Component 5: Project Management, Monitoring and Evaluation, and Regional Coordination (Original allocation: US$4.10 million IDA;[15] Actual cost: US$5.52 million IDA).** Supporting project implementation and regional coordination with other WARFP countries and ensuring that regular M&E is conducted and that results are fed back into decision making and project management.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

14. The project underwent three Level 2 restructurings: in June 2017, in December 2017, and in June 2018. Details on these restructurings and their underlying reasons are as detailed in the following paragraphs:

Revised PDOs and Outcome Targets

15. The PDO was not changed; however, the four thematic PDO indicators were revised in the June 2017 restructuring while maintaining the core indicator on direct beneficiaries.

Revised PDO Indicators

16. The following revised set of PDO Indicators was adopted in the June 2017 restructuring:

- Fisheries management plan of the marine fisheries sector of Ghana implemented (yes/no)
- Average infraction reported per unit of enforcement activity (number)
- Number of fish health labs established (number)
- Scoring on aquaculture enabling environment: 1. Disease control 2. Policy framework (number)

[15] Component 5 allocation includes US$1.51 million to the CSRP for technical and operational support.

- Direct project beneficiaries (number), of which female (percentage)

17. The intermediate results indicators were also changed during the June 2017 restructuring: of the ten original indicators, three were maintained, six were revised, and one was dropped. In addition, 11 new intermediate results indicators were added under Components 1–4. These changes did not affect the GEF's scope of support or financing, Component 1. Refer to annex 7 for details on Results Framework changes and the reasons behind these changes and section IV.A for an assessment of project M&E performance.

Revised Components

18. The components were not revised.

Other Changes

19. The project's closing date was extended twice for a total of nine months: in December 2017 it was extended from December 31, 2017, to June 29, 2018, and in June 2018 it was extended to September 28, 2018.

Rationale for Changes and Their Implication on the Original Theory of Change

20. The PDO Indicators were changed because they required data that were either unavailable or unreliable, were deemed irrelevant to the stated objectives, and had attribution issues. The intermediate indicators were changed to make the Results Framework more relevant to the expected project results and to better reflect key project-financed achievements. These modifications did not change the original Theory of Change, and the scope of the project was not reduced.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

Rating: High

21. At the global level, the project's objective is relevant to the United Nations General Assembly Sustainable Development Goal (SDG) 14 to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development' and the 2012 United Nations Conference on Sustainable Development (Rio+20), which identified the urgent need to return ocean stocks to sustainable levels, and assist developing countries build their national capacities to conserve, sustainably manage, and realize the benefits of fisheries. At the regional level, the project is relevant to and supportive of the Abidjan Convention and its regional approach to meeting transboundary marine environmental challenges; the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa that was endorsed by the Second Conference of African Ministers of Fisheries and Aquaculture in April 2014; and the African Union's June 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. Nationally, the project was a key implementation instrument of the 2011–2016 Fisheries and Aquaculture Sector Development Plan with its key targets of maintaining current production, increasing revenue and profitability, increasing aquaculture production, strengthening

landing and processing capabilities, and sustainably managing the fisheries by controlling commercial fishing efforts.

22. The project is highly relevant to the World Bank's priorities for the region as articulated in the Africa Regional Update for 2019[16] of affecting structural reforms to enhance productivity and boost economic growth and boosting the continent's natural capital; the FY18–FY23 Africa Regional Integration and Cooperation Assistance Strategy's[17] objective to support sustainable management and financing of transboundary water, coastal, and marine resources; the World Bank's strategic vision on fisheries (PROFISH 2005)[18] to strengthen governance of the world's fisheries; the 2016 Africa Climate Business Plan's[19] agenda of monitoring fisheries, incorporating climate variations into scientific evidence overmanning fisheries management, and developing alternative livelihood streams for coastal communities; and the World Bank 2017 Blue Economy Development Framework,[20] which recognizes the significant potential of marine and freshwater ecosystems' contribution to achieving the SDGs and delivering smart, sustainable, and inclusive growth globally. Finally, the project is highly relevant to the GEF objective of 'Enhancing multi-state cooperation and catalyzing investments to foster sustainable fisheries, restore and protect coastal habitats, and reduce pollution of coasts and Large Marine Ecosystems'.

23. At appraisal the project was aligned with the FY08–FY11 Country Assistance Strategy[21] and its broad objectives of increasing growth and decreasing poverty and inequality. The project particularly supported Pillar 1 (Private Sector Competitiveness), which sought, among others, to promote the productivity of aquaculture, improve food security and invest in supply chain development, and provide support to natural resources and environmental governance in line with emerging government priorities for fisheries, including combating IUU fishing. In the subsequent Country Partnership Strategy (CPS) for FY13–FY16 (extended to FY18),[22] the project was aligned with Pillar 1 (Improving Economic Institutions) and the objective of enhancing natural resource governance as a driver of economic growth and poverty reduction and Pillar 2 (Improving Competitiveness and Job Creation) and the call for diversification and improved links to value chains in agriculture, especially for small-scale fisheries, with the WARFP identified in the CPS' Results Framework as the key World Bank investment under both pillars.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

24. Achievement of the PDO outcomes is evaluated before and after the June 2017 restructuring using the original and revised indicators, as well as other important results attributed to the project. Annex

[16] World Bank. 2019. *Africa Regional Update 2019: Eradicating Poverty and Boosting Shared Prosperity in Africa*. Washington, DC: World Bank.
[17] Report No. 121912-AFR.
[18] PROFISH was established in 2005 with key donors and stakeholders to engage the World Bank in improving the sustainability and economic performance in the world's fisheries, with a focus on the welfare of the poor in coastal and fisheries communities in the developing world.
[19] Report No. 101130.
[20] Report No. 113787.
[21] Report No. 39822-GH.
[22] Report No. 76369-GH. A new CPS for FY19 onwards has not been yet approved.

1 provides specific details on achievements, while sections III.A and III.B explain, respectively, the key design and implementation factors behind outcomes' achievement levels.

Outcome 1: Strengthening the country's capacity to sustainably govern and manage the fisheries

25. The first outcome was measured by stabilization in landing per unit of fishing capacity in the artisanal segment,[23] with intermediate results of full registration and licensing of marine canoes and stabilization in their number, reduction in the number of industrial trawl vessels, and signing of fisheries co-management agreements between the Government and selected fishing communities. This outcome was also measured by the establishment of an electronic dashboard of key environmental, social, and economic fisheries statistics at the Fisheries Commission, linked to a CSRP-based regional dashboard, and publicly accessible.[24] After the June 2017 restructuring, the outcome was measured by the implementation of key actions of a national Fisheries Management Plan that was developed by the project in 2015: reduction of the demersal fishing fleet by 50 percent, establishment of a new licensing scheme, closed season for industrial vessels, and removal of inactive boats from the registry. with intermediate results being the registration and embossment (attachment of a license plate, which is the final licensing step) of all marine canoes, reduction in the fishing effort of trawlers, tuna vessels and semi-industrial (inshore) vessels, provision of alternative livelihood means to fishing communities, the national Dashboard, as well as three new results: preparation of vessel registration and licensing guidelines, development of the Fisheries Management Plan and its submission for approval to the Cabinet, and preparation and submission to the Cabinet of a framework and strategy for establishment of Marine Protected Areas (MPAs).

26. Most of component 1 activities were implemented before the June 2017 restructuring, resulting in a partially achieved outcome. Landing per unit of fishing capacity in the artisanal segment decreased instead of stabilizing due to an increase in the number of active canoes (around 13,500 canoes compared to a baseline of 11,213 units), which contributed to a decrease in stocks' biomass.[25] Figure 1 below shows this trend, with annual landings of small pelagic stocks (fish caught largely by the artisanal segment) declining as fishing effort increases. In October 2015, a 2015–2019 national Fisheries Management Plan was adopted and approved by the Cabinet, and its implementation began in 2016, showing mixed results:

(a) There was a 43 percent increase instead of a decrease in the number of trawlers despite a moratorium declared by the Government in 2012 (95 vessels compared to 67 vessels at appraisal and more than double the target of 40 units).

(b) Several changes were made to the national fishing licensing scheme: quarterly instead of annual renewal for trawlers; mandatory International Maritime Organization (IMO) numbering; an observer program covering 100 percent of trawlers; and vessel monitoring

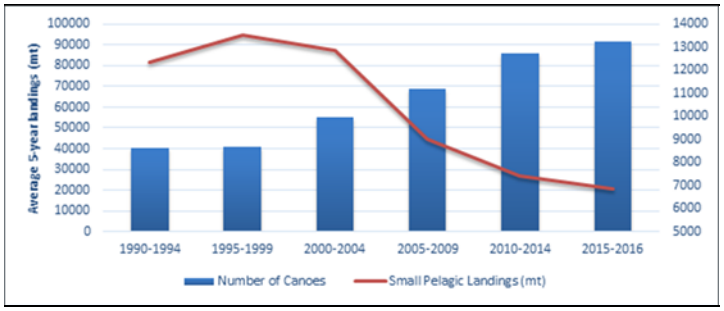
[23] In this context, a unit of fishing capacity refers to the type of fishing vessel as explained in the PAD: motorized marine canoes, nonmotorized marine canoes, and canoes fishing in Lake Volta.
[24] This indicator was placed under Component 5 as it measured regional coordination and data transparency. The ICR proposes to map this indicator to the first outcome because the dashboard contributes to fisheries governance.
[25] Biomass decrease is also a result of the changing marine climatic conditions as noted in the draft World Bank Country Environmental Analysis for Ghana: *Marine and Inland Ecosystem Health and Status of Commercial Fish Stocks,* by Kwame A. Koranteng and Lionel Awity.

system (VMS) on trawlers, allowing enforcement of no industrial fishing in less than 30 m depth—an outcome of high importance to artisanal fisheries (see next outcome).

(c) Two closed seasons were enforced in 2016–2017 for industrial fishing with full compliance recorded on the VMS.

27. The timing of the closed seasons was not fully aligned with the scientific recommendation in the Fisheries Management Plan and was the result of negotiations between the Government and the National Trawler Association, and inactive boats were not removed from the registry. At the intermediate level, a web-based vessel registry for both industrial and semi-industrial vessels was established in 2013 and made functional, allowing stricter monitoring of fishing activities, and vessel registration guidelines were prepared and finalized in November 2013 in consultation with relevant stakeholders as planned. Dashboard establishment was partially achieved with software installed and operated by a CSRP-trained Ministry of Fisheries and Aquaculture Development (MOFAD) staff, entry of sectoral data, and links to the regional dashboard.[26] Some historical data are still missing, and the information was not made public as planned. The licensing, registration, and embossment of canoes benefitted fishers because it allowed the insurance of canoes and identification of lost vessels. It also helped with enforcement because it enabled fishers to give information on IUU fishing to the police. In July 2013, the Fisheries Commission published a list of all industrial and semi-industrial licensed vessels, making it possible, for the first time, for any stakeholder to know if a vessel fishing in the country's waters was doing so legally and significantly increasing the sector's transparency. Industrial and semi-industrial licenses' information was published only until project closing.

Figure 2. Landings of Small Pelagic Stocks (sardinella, anchovy, and mackerel) (orange line, in metric tons) and Effort (number of canoes targeting small pelagics)



Source: United States Agency for International Development (USAID) 2018.[27]

28. Important project-financed achievements before the restructuring, which were not measured by the Results Framework, are the drafting of amendments to the 2002 Fishery Act in 2014 and the drafting of a revised co-management policy for submission for approval by the Cabinet in early 2017; completion of a study on total allowable catch for demersal fisheries; and a stock assessment for deep and shallow water fisheries in collaboration with the FAO and the Norwegian Government. The project financed the

[26] See the publicly available webpage at http://portail-csrp.org/web/guest/1.

[27] Lazar, N., K. Yankson, J. Blay, P. Ofori-Danson, P. Markwei, K. Agbogah, P. Bannerman, M. Sotor, K. K. Yamoah, and W. B. Bilisini. 2018. *Status of the Small Pelagic Stocks in Ghana and Recommendations to Achieve Sustainable Fishing*. Scientific and Technical Working Group. USAID/Ghana Sustainable Fisheries Management Project. Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island, paragraph 16.

training of the MOFAD officials on the establishment of the vessel registry and the registration and embossment of canoes, the preparation of the licensing guidelines and the Fisheries Management Plan, the drafting of amendments to the 2002 Fisheries Act and the co-management policy, continuous awareness raising of government officials, and the dashboard's software. It also provided co-financing for the 2016 stock assessment.

29. After the restructuring, the outcome was also partially achieved. Although official numbers are not yet available (USAID is expected to release the new figures in mid-2019), it is expected that the landing per unit of fishing capacity in the artisanal segment continued to decrease in 2017 and 2018 because the Government did not prevent the entry of new active canoes, which, at closing, totaled 14,717. On the other hand, the implementation of the Fisheries Management Plan improved with a decrease in the number of licensed trawlers to 73 units at closing. While the number is still above sustainable levels (82 percent above the target), the reduction in the fleet's size from early 2017 to the time of project closing is attributed to actions taken by a new MOFAD Minister in 2017 to reduce the number of fishing licenses sold to foreign trawlers by denying license renewals to trawlers committing illegal fishing practices. There was also a reduction in the number of licensed tuna vessels from 37 to 29 units and in the number of semi-industrial vessels from 401 to 201 units, overall exceeding these vessels' targets.[28] The Government enforced another closed season in early 2018 and, in early 2019, the MOFAD introduced to the Parliament a Cabinet-approved proposal for a 200 percent license fee increase as agreed to in the Fisheries Management Plan, pending Parliament approval. Co-management agreements were not signed during the project's lifetime because of continuous delays, the alternative livelihoods program was not implemented despite several preparatory actions taken, and the MPA framework and strategy were not submitted to the Cabinet for approval as planned also because of implementation delays.[29]

30. Important post-restructuring achievements which were not measured by the Results Framework, are another stock assessment in 2017; refurbishment of a fisheries data and documentation center at the Fisheries Scientific Survey Division (FSSD) (the fisheries research arm of the Fisheries Commission); establishment of data centers in the Volta, Greater Accra, Western, and Central regional offices with trained data management officers; and rehabilitation of the Greater Accra regional office building. In addition, the project raised public awareness about the importance of sustainable fisheries management and aquaculture good practices by carrying out an extensive communication and social marketing program, with 40 paid persons (four in each coastal zone) delivering messages; a quarterly news bulletins distributed to stakeholders; and other means of awareness raising in fishing communities, such as soccer

[28] It should be noted that the reduction in the number of semi-industrial vessels is calculated based on a baseline that includes both active and non-active units. When looking at the trend of active semi-industrial vessels only, one sees an increase from 120 units in 2016 to 201 units at closing. This is explained by the closed seasons imposed on industrial vessels since 2016, which opened a space for semi-industrial fishing. See annex 1 for further information.

[29] The alternative livelihoods program took several first steps: (a) project-paid feasibility analyses were done for several livelihood options, with recommendations for salt iodization and plastic pelleting; (b) District Assemblies in Central, Western, Volta, and Greater Accra regions selected six fishing communities to benefit from the support; (c) an Alternative Livelihoods Compensation Management Board was set up to review applications based on established criteria; (d) machines and equipment were purchased by the project; and (e) orientation on the use of the machines was carried out for the communities by project-paid experts. However, at closing the machines were not installed and the hands-on training was not delivered to potential users because of the local government officials' indecision on land and housing issues. An MPA strategy was drafted by a project-paid consultant; however, it was not submitted to the Cabinet for approval.

games, quizzes, and boat racing tournaments.[30] Baseline and impact assessments were not carried out to evaluate project impact; however, anecdotal evidence indicates the acceptance of these messages by locals with a village chief banning certain illegal practices and an overall trend of women processors refusing to purchase illegally caught fish.[31] The project co-financed the second stock assessment and paid for the new and refurbished offices and data centers and the communication activities.

31. GEF financing contributed to Component 1, aiming at incorporating sustainable governance mechanisms into project-supported local economic development activities. While not all planned outputs were achieved, that is, capping of the canoe segment; reducing the industrial fleet's size and co-management systems; GEF-financed activities meeting several important governance targets, that is, a draft legal and operational framework to enable implementation of the Ghana Fisheries and Aquaculture Sector Development Plan, registration and licensing, a national dashboard, and the Fisheries Management Plan.

Outcome 2: Reducing illegal fishing

32. Before the June 2017 restructuring, the second outcome was measured by an increase in the total number of fisheries-dedicated annual sea patrol days within 20 miles off the coast, with intermediate results of establishing a FEU in accordance with the 2002 Fisheries Act,[32] and continuous monitoring of the 200-mile Exclusive Economic Zone using VMS and aerial patrols, of which there had been none. After the restructuring, the outcome was measured by a threefold reduction in the average infractions reported per unit of enforcement activity (sea and land patrols, beachcombing on the coast and in Lake Volta, and VMS monitoring), and intermediate results were supplemented with the establishment of four functional fisheries watch committees and the number of infractions they report on. The aerial patrols were replaced with a more general group of enforcement activities because of their high cost and irrelevance once the VMS was installed.

33. Most Component 2 activities were implemented before the restructuring, resulting in a substantially achieved outcome. According to the World Bank mission reports, 50 fisheries-focused patrols at sea were carried out in March 2017 compared to a baseline of 13 and a target of 19 (263 percent achievement). However, the average infraction per unit of enforcement activity increased by 60 percent instead of decreasing.[33] At the intermediate level, the FEU was established in 2012 in accordance with the 2002 Fisheries Act with headquarters in Tema, and a marine fisheries FEU branch in Takoradi and an inland fisheries FEU branch in Volta Region were inaugurated in October 2013. Since 2014, an MCS was set up with an operational VMS and a control room at the FEU headquarters, and VMS transponders were

[30] See videos on communication activities at https://www.youtube.com/watch?v=LHGszunrMRw&list=UU6yqVHLSekkV7Jf5oRB4uag&index=2. https://www.youtube.com/watch?v=PosxdccIA1o&list=UU6yqVHLSekkV7Jf5oRB4uag&index=*3.*

[31] Source: Project bulletins, discussion with the Ghana Project Coordination Unit (PCU) and members of the National Fish Processors and Traders Association (NAFPTA).

[32] The act described the following with regard to the establishment of the FEU: (a) the FEU is responsible for the MCS of the fishing operations within the fishery waters and enforcement of the 2002 Act, the regulations, and any other related enactment; (b) it includes personnel from the Ghana Navy, Ghana Air Force, and the Secretariat of the Fisheries Commission as determined by the MOFAD Minister in consultation with the Minister of Defense; (c) it is assigned an attorney from the Ministry of Justice; and (d) the MOFAD Minister appoints the head of the FEU in consultation with the Minister of Defense.

[33] A total of 804 infractions compared to a baseline of 500 and a target of 180, comprising patrol days at land, beachcombing at coast, use of the VMS, and beachcombing on the Lake Volta shore.

installed on all industrial vessels starting in the same year as planned, making it possible to identify and track offenders. A team of FEU staff was trained by the Government of Iceland and operated the system's basic functions continuously according to World Bank reports. Another project-financed result was the establishment of an observer program with 52 trained observers. The project paid for sea and land patrol fuel, the FEU infrastructure and equipment (including the VMS), training of the FEU staff in addition to the training paid for by Iceland, and training and salaries of the observers.

34. The outcome was substantially achieved also after the restructuring. There was a reduction in the average number of infractions reported that exceeded the target (141 infractions compared to a target of 180), which can be attributed to project-financed support, notably the establishment and operationalization of the FEU, development and implementation of an MCS plan, and the operationalization of the observer program which, since March 1, 2018, has been providing full coverage of industrial trawlers using a digitized application to collect and transmit information. A total of 748 annual law enforcement activities were carried out (sea patrols, beachcombing, and inspections at quayside) compared to a target of 750. The VMS continued to operate as planned and two volunteer-based watch committees were established and made operational compared to a target of four, reporting 24 local infractions compared to a target of 40 because of their late establishment. The project continued to pay for patrol fuel, preparation of the MCS plan, training and salaries of observers, the digitized application, and training of the watch committees' volunteers.

35. Importantly, the establishment of the FEU and the implementation of various MCS instruments considerably improved the Fisheries Commission's capacity to monitor and control its Exclusive Economic Zone, as well as trawlers' compliance with the law and minimized illegal (that is, unlicensed) fishing of trawlers within the banned fishing area of below 30 m depth line, thereby providing space for artisanal fishers to fish and reducing conflict in these fishing areas. At the local level, feedback from fishing communities[34] indicates that prosecutions and penalties for illegal light fishing resulting from the work of the two watch committees deterred this practice in several areas, including the Great Accra Region, Teshie, and Nungua. Women processors interviewed indicated that saeko fishing[35] was considerably reduced in their regions owing to project-financed local enforcement.

36. Although it was not part of the PDO, the industrial fishing segment remained mostly underreported and underregulated. In April 2017, a World Bank mission identified issues such as a large gap between the number of offenses and the number of prosecutions, inconsistent prosecution amounts, provision of penalty waivers without clear reasons, license renewal for offenders, irregular infraction reporting and follow-up, and high proportion of uncollected fines.[36] The World Bank also pointed to an overall disinclination of authorities to make use of the abundant information generated by the VMS

[34] Gathered by the author during a completion mission in June 2018. Also see a video on communities' support of the watch committees at https://www.youtube.com/watch?v=rDZMGrX_B0c&list=UU6yqVHLSekkV7Jf5oRB4uag&index=7.
[35] Saeko fishing is an artisanal form of transshipping known in Ghana, which is conducted by local fishers who go out in canoes to meet foreign vessels and transport boxes of frozen fish to processors who wait onshore. This practice is illegal under Ghanaian fisheries laws.
[36] According to the May 2018 World Bank/CSRP mission Aide Memoire, a total of GHS 13,665,503 (US$2,869,755) fines had been issued, while fines collected reached GHS 6,438,023 (US$1,351,985)—47 percent of the total amount of fines issued. The outstanding amount comprised fines from three trawlers who refused to pay and whose license renewal was consequently denied.

despite support from an adviser to the World Bank, who demonstrated to staff how to extract data from the server and use a Geographic Information System software to prepare maps of the fishing effort and annual trawling hours.

Outcome 3: Increasing the value and profitability generated by the fish resources and the proportion of that value captured by the country

37. This outcome was measured by stable annual net economic benefits[37] to fishing vessel owners, labor, and the Government from targeted fisheries – an indicator which was dropped due to attribution problems and lack of data, with an intermediate result of nine pilot integrated fish landing clusters with functioning services such as electricity and water. In the June 2017 restructuring, the PDO indicator was replaced with one measuring the establishment of two fish health laboratories, and the landing sites' services were replaced with construction of 300 improved fish smoking ovens and establishment of a functioning national association of fish processors and traders to give processors and traders a platform for advocating a sustainable fish processing and trading industry.

38. This third outcome was not achieved before the restructuring. Because of the unavailability of reliable data on returns from fisheries, net economic benefits were measured once by the PCU (in 2014), showing an increased compared to the baseline; however, the World Bank questioned the raw data and calculation methodology used and concluded that it was unlikely that the overall increase in fishing capacity and continued decline of fish stocks resulted in increased profitability, and that the project also had not made sufficient progress to account for such increases. At the intermediate level, the NAFPTA was inaugurated in March 2015 in Koforidua, Eastern Region, as an umbrella of 41 local fish processor associations, with regional and district branches. With its 14,700 members, of which 99 percent are women, NAFPTA has been carrying out policy advocacy and research and has served as a platform for members' engagement with the Government as planned. The establishment of NAFPTA was supported by a project-paid consultant, and the association's management was provided with a project-paid bus and training on business management, fee handling, marketing, group dynamics, and hygienic fish-handling practices.

39. Most post-harvest activities were implemented after the restructuring, resulting in a partially achieved outcome. Instead of two fish health laboratories, five were established in Accra, Cape Coast, Koforidua, Kumasi, and Takoradi, and the World Bank visits to the sites in September 2018 noted the works' good quality; sensitization and training were carried out in several communities on improved fish handling, fisheries regulations, group dynamics, and small business management; 204 of the 300 ovens were fully constructed while 46 units were partially constructed (overall completion rate of 68 percent); and a user handbook was developed for the ovens and distributed among fish processors. Only one landing site of the nine planned was constructed (in Anloga, Volta Region), where local market's sheds were converted into fish landing platforms, and fish processing facilities, electricity, wash rooms, fencing, and a site management office were constructed.[38] A World Bank visit to the site in September 2018 reported the works' overall good quality, and a site management plan was prepared for joint management

[37] These are annual net returns, that is, after costs are subtracted. Increases were expected to occur for all types of fisheries only after the project's life-span, within a 10-year period, as stated in the PAD.
[38] A short video of the new Anloga landing site is available at https://www.youtube.com/watch?v=4rgQBvijOHk&list=UU6yqVHLSekkV7Jf5oRB4uag. The reasons for the reduced construction scale are detailed in section III.B.

by community members and the Fisheries Commission. The project paid for the construction of the facilities in Anloga and the site's management plan; the construction and equipment of the fish health labs; sensitization and training of communities; and the Ahotor ovens' parts, construction, and user handbook.

40. An impact assessment[39] carried out in November 2017 found that the establishment of NAFPTA and the training provided to its management had improved members' awareness of Ghana's declining fish stocks and changed its members' attitude toward IUU fishing with some beginning to reject illegal juvenile catches. The interviewed fish processors[40] indicated a 30 percent to 50 percent increase in their products' prices because of improved practices that they acquired with the support of the project such as hygienic and healthier storage and product wrapping practices[41] and sale of added value products such as fish powder, labeling, and business registration that allowed them to sell their products to other businesses and engage in export. NAFPTA has been spearheading the call for stopping illegal fishing and imposing closed seasons in the artisanal segment. Functional ovens are expected to have an important positive impact on women processors in terms of their products' value and their work conditions as these ovens produce products of higher quality than commonly used fish smoking ovens and generate considerably less smoke. Finally, the impact of the new facilities in Anloga cannot be evaluated as of yet because the construction was completed near the closing of the project.

Outcome 4: Developing aquaculture

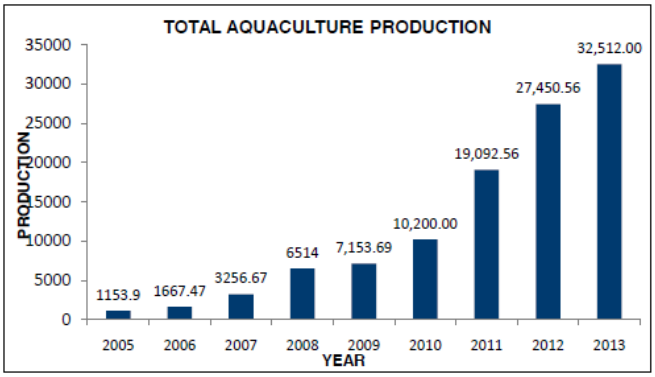
41. Aquaculture development was to materialize through increased annual aquaculture production (from 9,000 tons to 35,000 tons at closing, mostly of tilapia) and establishment of a zoning regime for Lake Volta as an intermediate result. After the restructuring, production-level measurements were replaced with a scoring system for an aquaculture enabling environment for large and small investors, comprising an aquaculture policy framework[42] and disease control measures. The zoning regime establishment was replaced with the development of a zoning plan for Lake Volta as guidance for aquaculture development in this area and four intermediate result indicators were added, looking at the establishment of a functional early warning system and a database for diseases and development of aquaculture and fish health policies and their submission to the Cabinet for approval.

42. The total aquaculture production in Ghana increased from 19,092 tons in 2011 to 57,000 tons at closing;[43] however, this trend cannot be attributed to project-financed interventions. Figure 3 shows a consistent increase in total aquaculture production before project-financed investments in aquaculture, which began in 2016. Moreover, aquaculture production increases in Ghana have been driven by several large-scale private investors and are not because of government interventions. These arguments were presented in several World Bank reports[44] and led to the replacement of this PDO indicator in the

[39] The assessment was led by the PCU M&E specialist, focusing on the project's impact on fish processors and traders. Data were collected from trained and untrained local executives and staff; fishers; and District Assemblies in Azizanya, Elimina, Axim, Keta, and Yeji.
[40] Gathered by the author during a completion mission in June 2018.
[41] For example, women were using used cement paper bags to wrap fish, and this practice was beginning to disappear with the understanding of this paper's toxicity.
[42] To replace a 2012–2016 Ghana National Aquaculture Development Plan.
[43] Amenyogbe, E., G. Chen, et al. 2018. "A Review of Ghana's Aquaculture Industry." *Journal of Aquaculture Research and Development* 9 (8). DOI:10.4172/2155-9546.1000545.
[44] See, for example, the January 2015 midterm Aide Memoire and the May 2018 Aide Memoire.

restructuring. At the intermediate level, before the restructuring, the zoning plan was 50 percent achieved with the zonation report not being converted to a plan by the Government because of ongoing delays and Aquaculture and Aquatic Animal Health policies were drafted. A result that was not measured by the Results Framework is the training of 60 fisheries officers from the Fisheries Commission on various aspects of Nile Tilapia farming in the Volta and Western Regions. The project financed the Lake Volta zonation report and the training of officers.

Figure 3. Total Aquaculture Production in 2005–2013 (metric tons)



Source: FSSD.

43. After the restructuring, the aquaculture development outcome was partially achieved. An enabling environment was mostly put in place (83 percent according to the scoring system), including an Aquaculture Policy and an Aquatic Animal Health Policy, approval of the latter by the Cabinet in March 2018, development and validation of health and sanitation protocols for certification of fish farms and hatcheries, certification of 12 fish farms, and training for stakeholders. At the intermediate level, the disease early warning system and database were not developed; however, an aquaculture disease outbreak diagnosis study was carried out in collaboration with the Norwegian Veterinary Institute. Results which were not measured by the Results Framework are rehabilitation of aquaculture demonstration and research centers in Ashaiman, Akosombo, Kona Odumase, and Vea at various completion rates, serving as bases for training and scaling up of farms' aquaculture production and provision of support to the National Aquaculture Association by trainings 100 farmers on related subjects. The project also financed a genetic comparison study for tilapia strains and conducted stock enhancements in 50 dams and reservoirs before closing. The project financed the preparation of the policies and protocols, training to stakeholders and farmers, rehabilitation of the demonstration and research centers, the genetic comparison study and the stock enhancement activities. It also co-financed the disease diagnosis study.

44. Despite the partial completion of planned activities, the project had an important impact on fish farmers' skills as testified by the interviewed farmers.[45] The trained fish farmers gained an understanding of their practices' shortfalls and were expecting to see increases in production as a result. A large fish farmer from Kumah Farms in Ashanti Region who participated in fish farm management training and a study tour to Nigeria (both financed by the project) indicated that he had been using his new skills to train other farmers in his facility, and that he had begun using a new processing and packaging technology which he learned about in Nigeria, resulting in reduced mortality and added value to his fish such that he

[45] By the ICR author and the PCU's M&E specialist.

began exporting them to Europe and other countries. He also had improved his hatchery practices and was able to sell fingerlings to other farmers. The recommendation of the genetic comparison study led the Government to ban the use of genetically improved farmed tilapia in mid-2018.[46]

Justification of Overall Efficacy Rating

Overall rating before restructuring: Modest
Overall rating after restructuring: Modest

45. The ICR presents a split rating of efficacy because the original PDO indicators are different from the ones approved in the June 2017 restructuring even though the PDO and financed activities did not change. Overall efficacy before the restructuring is rated Modest as the project partially achieved the fisheries management outcome, substantially achieved the illegal fishing reduction outcome, did not achieve the increased value outcome, and did not contribute to the aquaculture development outcome. Overall efficacy was also Modest after the restructuring, as the project partially achieved the fisheries management, increased value and aquaculture development outcomes, and substantially achieved the illegal fishing reduction outcome. The rating also reflects the higher importance attached at appraisal to the fisheries management and reduced illegal fishing outcomes compared to the increased value and aquaculture outcomes, noting that the root cause of the declining profitability of Ghana's fisheries lay in the failure of the Government to control access to the resources.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Negligible

Economic Analysis

46. The PAD presented a combined financial/economic benefits model that estimated quantifiable direct project benefits. Available data were used to estimate the current net economic benefit for marine fisheries, freshwater fisheries, aquaculture, and processing subsectors. Business-as-usual and investment scenarios were modelled for each subsector to estimate future benefits over 30 years, with the latter scenario incorporating economic, behavioral, and production expectations and assumptions based on project investments and associated project-induced reforms. The model showed significant benefits to the nonmotorized and motorized canoe segments and to the semi-industrial and industrial segments as well as the aquaculture subsector compared to the business-as-usual scenario under a 10 percent discount rate. A sensitivity analysis of the net present value (NPV) for all the subsectors over 30 years showed that the difference of the NPV for the net economic benefit was over US$140 million with a 10 percent discount rate, significantly higher than the project's cost. The internal rate of return (IRR) was expected to be 3.7 percent in Year 5, 17.9 percent in Year 10, and 49.6 percent in Year 30. Considering that fish stocks take time to recover, this result was expected to justify the investments of the project.

47. Because of data unavailability, the same methodology cannot be repeated in the ICR. However, several conclusions can be made about the economic benefits of project-financed achievements on the one hand and missed economic opportunities because of unattained results on the other hand. Analysis of project performance from biological, economic, and social perspectives demonstrates that the overall

[46] See https://thefishsite.com/articles/ghana-bans-tilapia-and-ornamental-fish-imports.

fisheries' biomass declined during the project period, as did the species' mix and landings in the artisanal subsector, therefore not resulting in the expected economic benefits from this subsector. Moreover, the Government did not benefit from trawler license revenues at the level expected and was not successful in making expected gains from fines imposed on illegal activities compared to other countries in the subregion with similar sectoral settings. On the other hand, the economic analysis demonstrates that once it is approved by the Parliament, the license fee increase would bring much higher economic benefits to Ghana in the years to come and help reduce the industrial segment's fishing effort, which in turn could improve fisheries' biological performance. Further, the smoking ovens are expected to generate economic benefits for local fish processors which are over five times the construction cost. The NPV for the improved smoking ovens will be US$3.4 million or US$4.1 million at 20 percent and 15 percent discount rate, respectively, for a 10-year scenario. Finally, while the project did not directly influence aquaculture production increases, it helped create an enabling environment for aquaculture development, expected to result in cost savings and improved revenues for farmers, and it resulted in several social benefits, such as empowerment of women processors, and overall stronger awareness of local stakeholders of sectoral laws and improved handling practices. See annex 4 for the full economic analysis.

48. With a 65 percent disbursement at closing, the project demonstrated several inefficiencies, mainly in cost efficiency of MCS activities and equipment and unused equipment and consultancy services. The May 2018 World Bank mission reported that for three years the project had paid about US$1 million annually on fuel, rations, and maintenance for fisheries-dedicated patrols by the Navy, while a patrol vessel of the size needed, conducting fisheries-related patrols on a full-time basis should cost around US$480,000 per year, as is the case in Sierra Leone where a similar number of industrial vessels fish. In the case of Ghana, patrolling costs could have been further reduced since the Navy patrol are co-financed by offshore oil companies. In addition, the October 2017 mission reported that the contract set up by the MOFAD for the supply, installation, training, and commissioning of Automatic Identification System (AIS) on trawlers for an amount of US$962,487.90 was excessively costly and could have been negotiated to a much more reasonable cost with fewer hardware and services suitable for the current capacity in Ghana.

49. The project spent US$208,387 on four fiberglass boats that were meant to be used to conduct an inland canoe frame survey but were of unacceptable design, quality, and safety levels (expenses are to be refunded to the World Bank). Commissioned consultancies whose deliverables were not used/accepted included the drafting of an Aquaculture Policy (US$65,505), the engineering company's landing sites' designs, which did not receive the World Bank no-objection on the basis of realism and quality (a total of US$18,997), and safeguard consultancies, which produced instrument for sites not constructed (US$147,313). An in-depth financial management supervision review carried out by the World Bank in August 2018 for January 2015 to July 2018 may have discovered several ineligible expenditures and other expenditures which are presently being clarified (see further details under section IV.B). The project management costs were reasonable at 9 percent of the total project costs at closing even though Component 5 exceeded the original allocation by 35 percent because of the extension of the project period and a large communication program financed under this component.[47] Finally, according to World Bank records, the project lost a total of US$6,848,013 because of exchange rate fluctuations.

[47] The 9 percent reflects the total disbursement of Component 5 without the costs of external audits (US$31,236), communication and outreach activities (US$931,681), and the regional support provided by the CSRP under the subsidiary agreement (US$1,514,773).

50. From the GEF's perspective, the PAD showed that for an incremental cost of US$3.5 million (GEF contribution), the project would generate domestic benefits, such as capacity to implement sustainable fisheries management, reduced illegal fishing, increased local landing and processing of fish products, and increased domestic fish production and global benefits, such as reduction in fishing pressure on globally significant and overexploited fish stocks. As shown earlier, the Government has put in place important mechanisms for fish resource management, such as the fisheries management plan and the vessel registry and reduced illegal fishing; however, the project did not facilitate increased fish production, landings, and processing and did not alleviate the pressure on fish stocks as planned. The project leveraged grant financing from Iceland in the amount of US$215,000 and similar amounts from Norway, USAID, and the European Union (EU) to support interventions in illegal fishing, fish disease research, and use of the VMS.

Implementation Efficiency

51. The partial achievement of project results during its six-year period could be explained in part by recurring implementation delays: a 10-month start-up delay was because of the December 2012 elections, changes in the location of the PCU's offices and delays related to World Bank task team leader transition. Further implementation delays were caused by changes within the PCU and late recruitment of specialists.[48] Post-harvest facilities were not completed as planned with the construction works beginning in 2018 instead of 2015 as envisioned in the Results Framework because of delays in deciding on the sites, unsatisfactory designs of the facilities, and unacceptable safeguard instruments prepared for most sites. The construction of Ahotor ovens was also done in the last project year because of delays in delivering the needed oven parts to the identified communities. These investments and others were also delayed because of long procurement processes, insufficient capacities of the procurement specialists, and the use of both the procedures of the World Bank and those of the Government of Ghana according to the law in Ghana. See section III.B for further details on implementation delays and other factors affecting project performance.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Unsatisfactory

52. The overall outcome rating considers the high relevance of the project objectives to global, regional, national, and World Bank priorities at closing, the modest efficacy of the project as measured by the original and revised indicators after the June 2017 restructuring, and the negligible efficiency of the project. Before restructuring the overall outcome, rating is Unsatisfactory with 80 percent disbursement of total disbursements at the time of the restructuring. After restructuring, the project disbursed the remaining 20 percent, with the overall outcome also rated Unsatisfactory. Applying the World Bank's split rating evaluation methodology results in an overall outcome rating of Unsatisfactory.

[48] The first project coordinator was replaced in 2017 because of poor performance, the communication specialist was replaced in June 2016, and the PCU was missing an M&E specialist for 15 months after the first specialist passed away following an accident. The infrastructure and aquaculture specialists were recruited only in 2015, and the social and environmental safeguard specialists joined the PCU only in February and March 2016, respectively, further contributing to implementation delays.

E. OTHER OUTCOMES AND IMPACTS

Gender

53. While most fishing is carried out by men, almost all fish handling, processing, and trade in Ghana are conducted by women, called 'fish mummies' and 'fish queen mothers'. The impact of the project on women was in providing them with a national platform, NAFPTA, through which they gained awareness and new skills, resulting at times in sale price increases. The Anloga landing site is also expected to affect women as the quality of sold fish will be improved. In total, 42,005 women benefitted from project-financed interventions directly, 14.5 percent of the total number of direct beneficiaries. This low rate of female participation (in comparison to the regional average sector participation rate of 27.3[49] but higher than estimated at appraisal by 2.4 percent) is explained by the relatively limited scope of post-harvest interventions financed by the project, only 13 percent of the total disbursed amount. It should be noted, however, that the project's design did not specifically seek to close a gender gap in the sector, although the sex-disaggregated core indicator on direct project beneficiaries was included in the Results Framework. See annex 1 for detailed information on direct and indirect project beneficiaries.

Institutional Strengthening

54. The project invested considerably in the Government's ability to implement the 2011–2016 Fisheries and Aquaculture Sector Development Plan. Under Component 1, key fisheries management instruments were put in place or modernized: the 2015–2019 National Fisheries Management Plan, registration upgraded from notebook to computerized database, embossment and licensing of vessels registries, and the national dashboard. A Fishery Act and a Co-Management Policy were drafted for further processing and a fundamental knowledge gap about the industrial segment was filled with improved transparency by various means. Under Component 2, an MCS agency was established with the necessary monitoring technologies, infrastructure, and equipment to carry out law enforcement activities alongside a newly formed observer program and the Navy, which reinforced its fishery-specific patrols with project support. Component 3 financed the establishment of fish health and research laboratories to increase the Government's capacity to monitor products' quality. Component 4 helped put in place a more conducive environment for government support in aquaculture development through a dedicated and approved policy, certification protocols, demonstration centers, and new knowledge on farmed tilapia strains. The government staff were trained on relevant subjects to allow the use and enforcement of these new governance instruments. The rate at which these instruments will be put into use in the future depends on the Government's commitment to do so, including through allocation of appropriate budgets.

Mobilizing Private Sector Financing

55. The project did not mobilize financing from the private sector nor did it intend to as the focus was on strengthening the Government's ability to implement its sectoral development plan. Nevertheless, the strengthened aquaculture enabling environment is expected to draw new private entrants and expansion

[49] de Graaf, G., and L. Garibaldi. 2014. *The Value of African Fisheries.* FAO Fisheries and Aquaculture Circular. No. 1093. Rome, Italy.

of existing systems, and the new fish health laboratories may encourage more private companies to land and process their catch in the country instead of doing so overseas.

Poverty Reduction and Shared Prosperity

56. Most of the planned community-level activities were not implemented or partially implemented, such as the establishment of co-management systems, the alternative livelihoods program, Ahotor ovens' construction, and landing infrastructure. However, artisanal fishers and coastal communities in general benefitted from the relative reduction in industrial illegal fishing, which provided more space for canoe fishing within the area under 30 m depth. Women traders and processors, as well as fish farmers, saw increases in their products' quality and costs and new business opportunities. The women interviewed indicated that the training they received increased their incomes, allowing them for the first time to set aside some money for business development, household and child education expenses, and payment to non-family workers. The biggest issue remains the overcapacity of all fishing segments, resulting in a continued decline of fish stocks.

Other Unintended Outcomes and Impacts

57. The development and approval of the National Fisheries Management Plan and project-financed actions to reduce illegal fishing prevented the extension of a 'yellow card' warning by the EU to the Government and the closing of EU markets to fish caught in Ghana. The use of brown wrapping paper instead of cement paper likely reduced fish contamination and a reduced illegal use of dynamite and Dichlorodiphenyltrichloroethane (DDT) fishing had both positive health and safety impacts. Finally, data generated by the VMS reportedly helped resolve a boundary dispute between Ghana and Côte d'Ivoire.[50]

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

58. **Soundness of background analysis.** The design of the project was informed by previous World Bank engagement in Ghana's fisheries sector, regional studies that were carried out during the program's preparation phase in 2008–2009, country-specific studies and analyses carried out from 2008 to 2011, and discussions with a broad group of national stakeholders. Analytical information produced by the World Bank, the FAO, and hired consultants for the program informed key governance, social, and economic dimensions of fisheries in the subregion, with some of the information specific to Ghana.[51] The World Bank engagement in the Ghana Fisheries Sub-Sector Capacity Building Project and the resulting

[50] In 2017, project-financed VMS reports helped demonstrate to the International Tribunal of the Law of the Seas that Ghana had not violated the sovereign rights of Côte d'Ivoire in conducting oil and gas explorations. For further information, see http://citifmonline.com/2017/12/18/fisheries-sector-transformation-saves-ghanas-oil-gas-industry-article/.

[51] Including (a) an estimation of the cost of illegal fishing (MRAG. 2009. Estimation of the Cost of Illegal Fishing in West Africa. London, United Kingdom); (b) analysis of key elements of sustainable fisheries management and governance (FAO. 2008 *Bonne Gestion et Gouvernance Durable des Pêches au sein de la CSRP* - WARFP: Ghana. Rome, Italy); (c) analysis of required measures against illegal fishing (FAO. 2009. *Port State Measures to Control Illegal Fishing*. Rome, Italy); and (d) a review of socioeconomic conditions of fishing communities in selected West African countries (World Bank. 2008. *Literature Review of Documents Focusing on Socio-Economic Conditions of Fishing Communities in Selected West African Countries*. Washington, DC).

draft Fisheries and Aquaculture Sector Development Plan further strategized project interventions, and with support from NEPAD, in 2010–2011 the Government conducted stakeholder consultations and commissioned detailed technical studies[52] that provided the basis for a detailed project design. The background analysis however did not include an in-depth analysis of the political economy risks to project outcomes and shedding light on the complexity of addressing various stakeholders' behaviors, especially toward reductions in the industrial fishing effort.

59. **Reflection of lessons learned.** The WARFP and this project in specific were informed by global good practices[53] on the importance of investing primarily in governance interventions as a precondition to investments in sector development and local value added and the need to partner with a regional organization to ensure a coherent regional approach to fisheries management and enforcement. Other lessons reflected in the project were from the Senegal Sustainable Management of Fish Resources Project (P105881), which led to the inclusion of alternative livelihood strategies for affected fishers and co-management as an essential mechanism for environmentally sustainable and economically profitable fisheries sector. Preliminary lessons from ongoing WARFP projects and from the Ghana Fisheries Sub-Sector Capacity Building Project on the Governments' uneven political will to pursue reform led to the setting of multiple covenants and conditions related to key government actions, such as a moratorium on the issuance of new licenses in the industrial and semi-industrial segments to reduce the fishing capacity of these segments.

60. **Assessment of risks.** The risk to the achievement of the PDO was rated High with the main factors correctly identified as external pressure on the Government to not enforce semi-industrial and trawler fishing effort reduction measures and anti-IUU regulations, loss of jobs from the reduction of fleets' size, reluctance of artisanal fishers to participate in access control activities, and low implementation capacity of the Government. The mitigation measures proposed were partially effective:

(a) Publication of sectoral data and setting of covenants and conditions, in addition to the covenants and conditions, were not sufficient to negate external political pressure.

(b) The increase in the Government's capacity to conduct MCS and the establishment of an observer program reduced illegal activities considerably but did not translate into effective monitoring and control functions (as discussed).

(c) The provision of alternative livelihoods to people losing their incomes did not materialize; however, it could have been effective judging from experience in Senegal.[54]

[52] Including the bioeconomic model and assessment of the costs and benefits of implementing the draft plan, a technology and infrastructure economic feasibility analysis, a fishing fleet rationalization analysis; a fisheries MCS needs assessment; and an MCS plan approved in 2011, which provided the framework for the new FEU, an aquaculture development plan, and a social survey of coastal fishing communities (financed directly by the World Bank).
[53] World Bank. 2004. *Saving Fish and Fisheries: Towards Sustainable and Equitable Governance of the Global Fishing Sector.* Washington, DC. This paper was written in recognition of the mounting challenges that the World Bank and the developing world had faced in meeting the fishery sector-related Millennium Development Goals and the outcomes of the 2002 World Summit on Sustainable Development.
[54] See the ICR for WARFP-Senegal (P106063/P108941), Report No. ICR00004008.

(d) Community education was not the mitigating factor leading to the high level of artisanal vessel registration, rather fishers' expectation of an upcoming freeze of new entries.

(e) The considerable training to government staff increased implementation capacity; however, it was not able to overcome the issue of the external political pressure identified at appraisal.

61. **Appropriateness of project design.** The project design was based on the background analysis and discussions with stakeholders and development partners and reflected available lessons; however, it did not sufficiently reflect the strong influence of the fishing industry on political decisions, especially the industrial segment, and the difficulty to achieve control over this segment's capacity. Indeed, discussions with the World Bank preparation team show that it did not fully understand the political economy of the Ghana fisheries sector, and although it knew the reform could be challenged by stakeholders (therefore rating this risk high and setting covenants and conditions), it did not appreciate the level of complexity that was experienced during implementation. Another design setback was the inclusion of several unmeasurable indicators in the Results Framework which the team attributes to lack of enough experience in designing realistic and attributable M&E systems for fisheries management investments.

62. **Preparation of safeguards, financial management, and procurement instruments.** The Government prepared and publicly disclosed the necessary safeguards instruments, an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), and a Process Framework.[55] The World Bank disclosed these instruments through the InfoShop.[56] Procurement, financial management, and safeguard capacity assessments and action plans were carried out before appraisal and reflected in the PAD, including a detailed Procurement Plan for the first 18 months of the project.

63. **Appropriateness of financing instrument.** The WARFP was approved as a series of three overlapping APLs, each APL having two phases of five years.[57] The program was not designed as a Program-for-Results Financing (PforR) as it was approved before PforR became available (in 2012) and even so, the MOFAD was not strong enough for a PforR. While the legal framework aspects could have been addressed under a Development Policy Financing (DPF), a DPF alone would not have been able to address surveillance activities. The APL instrument was well suited to support the long-term nature of envisioned reforms. The IDA credit of US$50.3 million was supplemented with a US$3.5 million grant from the GEF-4 replenishment, dedicated to governance-related investments under Component 1, thus increasing the project's financial envelope. A subsidiary agreement between the Government and the CSRP (SDR 1,000,000) provided an opportunity for the CSRP to strengthen its connection, accountability, and communication with the Government and provide technical and operational support to the PCU in a consistent manner across the region.

64. **Adequacy of government commitment.** The Government's commitment to the objectives of the WARFP was a prerequisite for joining the program, and Ghana qualified in this regard as it had identified the fisheries sector as one of the drivers for its 2010–2013 Ghana Shared Growth and Development Agenda and drafted the Fisheries and Aquaculture Sector Development Plan. The PAD also noted that the Office of the Vice President had expressed the Government's commitment to monitoring project-

[55] The instruments were disclosed on April 7, 2011, in The Ghanaian Times.
[56] The ESMF (Report No. E2738) was submitted to the InfoShop on March 25, 2011, and the RPF (Report No. Rp1123 v1) and Process Framework (Report No. Rp1123 v2) were submitted to the InfoShop on April 4, 2011.
[57] The terminology later changed, identifying the WARFP as a framework of multicountry, multiphase SOP.

supported sector reforms. On the other hand, multiple covenants and conditions were put in place to ensure the Government's continued commitment after signing. The central role of Ghana in the subregion's fisheries and the deterioration of its stocks were additional reasons for bringing Ghana into the program.

65. **Readiness for implementation.** The project was prepared in a reasonable time (15.1 months from concept to approval); however, afterward it experienced an eleven-month delay in effectiveness (July 2011 to June 2012) as the parties had to wait six months for the Parliament to return from recess and approve the project before signing the agreements, and there were delays in the signing of the subsidiary agreement with the CSRP. At effectiveness, the project had in place a Project Implementation Manual, an 18-month Procurement Plan, and a final and adopted Fisheries and Aquaculture Sector Development Plan, setting the stage for the beginning of implementation.

B. KEY FACTORS DURING IMPLEMENTATION

66. **Project start-up**. Delays continued after effectiveness because of the December 2012 national elections and a resulting restructuring of the implementing agency, late assembly of the Steering Committee (in March 2013), late recruitment of PCU staff, changes in the location of the PCU's offices, and delays related to World Bank's task team leader transition. Consequently, the first year's work program was only approved in April 2013, 10 months after effectiveness.

67. **Government commitment.** A fundamental constraint to the achievement of the project objectives was the Government's weak commitment to reducing the industrial segment's fishing capacity during the project's first five years, which seemed highly influenced by forces within the industrial segment. The interest of the industrial segment was to maximize gains from fishing, which was likely influenced by an increasing global demand for seafood and effort control measures imposed by nearby countries. Key examples of the Government's weak commitment are the continued licensing of new industrial vessels, which in 2014 reached a peak of 103, instead of reducing it as agreed under a 2012 moratorium published by the MOFAD; the less-than-agreed scale of law enforcement actions; the partial prosecution of offenses and collection of fines; weak enforcement of international laws by allowing vessels to register in Ghana and not investigating their beneficial ownership; the fact that the list of licensed vessels was not made public after project closing; and the continued delays in approving the trawler license fee increase, making it the lowest in the region and standing in the way of capacity reduction and economic benefits from this segment (see table 1).

68. A new government formed in early 2017 marked a shift in the Government's approach with a gradual reduction in the number of trawlers, provision of VMS data to the World Bank, and personnel changes in the Fisheries Commission and PCU, among other necessary actions.[58] This led to a restructuring of the Results Framework in June 2017 and an upgrade of the PDO and implementation progress ratings in the October 2017 Implementation Status and Results Report from Moderately Unsatisfactory and Unsatisfactory, respectively, to Moderately Satisfactory for both, with an expectation for a considerable performance improvement. However, a steep learning curve of the new administration and continued internal and external pressures resulted in a renewed increase in trawler licensing and further

[58] See a video on the inauguration of a new Fisheries Commission Board by the new Minister, Mrs. Elizabeth Afoley Quaye, at *https://www.youtube.com/watch?v=9buEBznyXC4&index=5&list=UU6yqVHLSekkV7Jf5oRB4uag.*

implementation delays, leading the World Bank to again downgrade the PDO and IP ratings to Moderately Unsatisfactory at closing.

Table 1. Comparison of License Charges in WARFP Participating Countries (US$/Gross Registered Tonnage, as of 2016)

Licence Charges				Revenue State
	Shrimp	Cephalopod	Demersal	Average
WARFP	US$/GRT	US$/GRT	US$/GRT	200 GRT
Mauritania			$125/tonne	87,500
Senegal	289	261	147	29,412
Guinea-Bissau	409	332	307	61,353
Guinea	430	350	315	63,000
Sierra Leone	200	150	150	45,000
Liberia	10% ex V	10% ex V	10% ex V	150,000
Ghana			35	7,000

Source: Countries' relevant legislation.

69. **Cooperation of the artisanal segment.** While local law enforcement was quite successful owing to the observer program and a considerable education and communication program, artisanal fishers rejected efforts to freeze registration of new canoes and enforce closed seasons during spawning seasons as specified in the National Fisheries Management Plan, because of a sense of competition with the industrial segment, whose size the Government had failed to control. Discussions with members of the artisanal fishers' association also revealed their discontent with the level of dialogue between canoe owners and the Government, further discouraging them from collaborating on control access measures.

70. **Post-harvest facilities.** The project was to finance basic onshore facilities at eleven marine and two inland fish landing sites, such as sanitation, power, lighting, and improved access, to increase the value of landed fish. More elaborate landing infrastructure was not planned because of Ghana's rough shoreline conditions which necessitate highly elaborate and expensive interventions. At closing, only the Anloga site was constructed, hampering the achievement of the third project outcome. The reasons for the partial implementation are the following:

(a) While facilities' general locations were identified in the PAD,[59] a final list of sites was agreed on by the Government only in early 2015. At that point, the World Bank decided to reduce the scope of works to six sites where co-management was to be supported as there was insufficient time to complete all the sites.

[59] Ada, Axim, Dixcove, Fete, Jamestown, Keta, Moree, Mumford, Senya-Beraku, Teshi, and Winneba for marine sites and Abotoase and Dzemeni for inland sites. The sites were identified based on a technology and infrastructure economic feasibility analysis during project preparation.

(b) The list was further reduced to three sites (Anloga, Teshie, and Mumford) following the failure of the sites' design company to deliver satisfactory designs,[60] a long procurement process, and submission of unacceptable Environmental and Social Impact Assessments (ESIAs). In addition, a forced displacement that took place by the Accra municipality in November 2015 in the vicinity of one site (in Jamestown) resulted in its removal from the list.

(c) The sites of Mumford and Teshie were eventually not addressed because their designs and ESIAs were not satisfactory to the World Bank, and only a scaled-down design in Anloga, prepared by a World Bank-hired fisheries adviser and the supervision engineer, was implemented. The construction of Ahotor ovens was incomplete at closing because of delays caused by the contractor in delivering the needed oven parts to the identified communities.

71. **Project coordination.** Insufficient capacities, late recruitment of several PCU staff members, and long procurement processes further affected project performance. The first coordinator was a consultant who lacked in-depth understanding of the project and the sector, did not have adequate leadership skills, and did not perform the needed oversight on project expenses. In February 2016, the World Bank team discussed this with the MOFAD Minister, who did not act to replace the coordinator even when the contract renewal request did not receive World Bank no-objection, and the PCU stopped communicating with the World Bank for six months as a result (between September 2016 and February 2017). In February 2017, the new minister replaced the coordinator with a government-paid Fisheries Commission staff who was unable to overcome past delays. The infrastructure, aquaculture, and safeguard specialists were hired only in 2015 and 2016 as mentioned, and the procurement processes were long[61] and included several approval stages beyond the World Bank requirements even for small expenses such as travel fuel because of the need to also follow government procurement procedures. Procurement and financial management were not conducted in full compliance with World Bank guidelines, as elaborated in section IV.B.

72. **Project restructuring.** The three project restructurings facilitated the evaluation of project performance; however, they did not resolve the above key project constraints and, therefore, had a limited impact on the performance of the project. Review of progress during the January 2015 midterm mission culminated in a decision of the MOFAD and the World Bank to conduct a Level 1 restructuring to refocus the PDO, indicators, and activities on actions which could be achieved within the original project's lifetime, such as fisheries management actions and aquaculture development. The restructuring was also to reflect a cancellation of US$10 million IDA credit agreed on between the World Bank and the Ministry of Finance as part of a broader portfolio restructuring. The Level 1 restructuring was eventually not processed because by the time a decision was made by the Government on the US$10 million IDA

[60] The company developed designs for elaborate landing sites which were not in the project design, whose costs were not within the project's budget and were not justified by catch rates. Further, discussions with the World Bank task team and ports engineer indicate that several designs were copied from a site in Liberia without due attention to sites' physical conditions and that queries sent to the company to improve the designs, were not properly answered.

[61] For example, the April 2013 World Bank mission requested the Government to start the recruitment of an aquaculture consultant, but the terms of reference for this position was sent 13 months later and the hiring was completed after two years overall.

cancellation,[62] the World Bank had found that the Government was in breach of a legal covenant[63] and was considering suspending the project. The actions of the new government in early 2017 led the World Bank to believe that performance could be improved if it created a strong partnership with the new minister, resulting in a decision to not suspend the project and instead take a precautionary approach to restructuring by first making changes to the Results Framework, followed by the Level 1 restructuring and an 18-month extension. Other reasons for not suspending the project was a wish to maximize project results to the extent possible and concerns that fish stocks would deplete beyond repair without the project. When performance did not improve as expected, the World Bank decided to not proceed with the Level 1 restructuring and only extend the closing date by six months to allow the completion of priority activities. In June 2018, another extension of three months was approved to finish the ongoing civil works and oven installations as these were considered simple to complete and highly beneficial to local communities.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

Rating: Modest

M&E Design

73. The design of the M&E plan demonstrated several shortcomings, which made the evaluation of project performance challenging. At the PDO level (a) the indicators for fisheries management and increased value and profitability were too difficult to measure with available data and the latter was to demonstrate progress only after project closing,[64] (b) the indicator for reduced illegal fishing (PDO Indicator 2: Total patrol days at sea per year in coastal fisheries) measured an input rather than an outcome, (c) the indicator for aquaculture development was irrelevant for reasons of attribution as discussed, and (d) the target for direct beneficiaries was set on the basis of sectoral numbers rather than the number of people expected to directly benefit from the project. At the intermediate result level, the absolute numbers of registered and licensed vessels were used instead of percentages, which could have better demonstrated progress in a dynamic sector such as Ghana's fisheries but were more difficult to access; a definition of 'zoning regime' was missing for Lake Volta; and the Results Framework did not include indicators for other key project-financed results, such as the alternative livelihoods program, policies for co-management and MPAs, observer program, fish processing and health inspection procedures and facilities, NAFPTA, and an aquaculture legal and policy framework.

74. The revised Results Framework facilitated measurement and better reflected the wide span of project-financed interventions. It also included PDO indicators which were agreed on by all WARFP countries and were to facilitate aggregation of achievement at the program level and comparison

[62] A year-long delay was due to further discussions between the Ministry of Finance and the World Bank on the cancellation of the US$10 million. The Ministry of Finance eventually decided not to reallocate the IDA amount.
[63] The World Bank team had suspected a moratorium breach in early 2016 after reviewing vessel licensing data, and these suspicions were confirmed by an audit later in the year.
[64] The net economic benefit PDO indicator had similar baseline and targets with the explanation that an increase in net economic benefits was to materialize within five years after project completion (see annex 1 of the PAD).

between countries. However, the restructured Results Framework demonstrated several weaknesses: (a) the new indicator for increased value and profitability measured an output (new fish health laboratories) instead of an outcome and was better placed at the intermediate level and (b) the new aquaculture development indicator lacked clarity within the proposed scoring system.[65] At the intermediate level, embossment targets were not disaggregated per vessel type as required and the baseline presented a mistake,[66] the target set for licensed trawlers was different from the target set at the PDO level as mentioned and the baseline for semi-industrial vessels included non-active units, and an indicator was added to measure the functionality of the VMS although it had already been included in the Results Framework.

M&E Implementation

75. M&E was carried out by the two M&E specialists with support from the RCU as planned, with improved quality after the joining of the second M&E specialist in 2016. Both the PCU and the World Bank team's ability to evaluate progress as defined in the Results Framework were constrained by the quality of the indicators and accuracy of data provided by the PCU, which was at times questioned by the World Bank team as mentioned.[67] Nonetheless, the second M&E specialist in particular made considerable efforts to carry out M&E and reporting duties through impact evaluations and surveys, frequent field visits, training and sensitization of stakeholders on M&E methods, development of data collection and reporting templates, and regular discussions with the various divisions and units of the Fisheries Commission. Sectoral data were fed into the national dashboard with links to the regional dashboard by an assigned MOFAD staff, and the GEF IW tracking tool was used to report on GEF-related corporate indicators as required. The PCU did not share lessons learned from the project through the GEF IW: LEARN website;[68] however GEF funds were used to finance participation in regional fisheries-related conferences and develop a new website of the MOFAD in line with IW: LEARN guidelines.[69]

M&E Utilization

76. The M&E actions were used by the PCU to prepare semiannual and annual progress reports, with varying levels of quality and timeliness, and by consultants to prepare midterm and completion evaluations (see annex 5 for a summary of the recipient's completion report's key messages). Reports and evaluations carried out by the World Bank and the RCU during missions served as a basis for decisions on restructurings and communication between the Government and World Bank management on issues needing particular attention, such as the number of licensed trawlers, progress in developing post-landing facilities, and needed changes in the PCU. M&E was also used to report on project progress to ministers and directors of fisheries of other WARFP countries though the WARFP Regional Steering Committee, to aggregate program level results and determine the type and scale of needed technical and operational support. Finally, comparison of reported results with project expenses prompted the World Bank's

[65] The term 'disease control regimes' was not defined.
[66] Set as 11,231 instead of 11,213 as in the original indicator at appraisal.
[67] Discussions with the World Bank team also indicated an uncertainty about the ongoing operation of VMS, which relied on feedback from the FEU and periodic World Bank visits to Tema.
[68] https://iwlearn.net/.
[69] The guidelines look to establish websites that incorporate usability, accessibility, and metadata standards. The website is currently inactive.

technical team to request in-depth reviews of the project's fiduciary performance as described in the following paragraphs.

Justification of Overall Rating of M&E Quality

77. The M&E quality is rated Modest because of the design shortcomings on the one hand and the considerable attempts of the M&E specialist to gather information and conduct impact evaluations in a data-poor environment, on the other hand.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

Environmental and Social

78. The project triggered the Environmental Assessment (OP/BP 4.01, Category B), Involuntary Resettlement (OP/BP 4.12), and Projects on International Waterways (OP/BP 7.50) safeguard policies based on expected civil works, possible restrictions of access to natural resource use, and the fact that Lake Volta was part of the internationally shared Volta Basin. The required safeguard instruments, ESMF, RPF, and Process Framework were prepared at appraisal, and countries sharing the Volta Basin were notified according to the policy without any resulting comments or objections. During implementation, there were several minor cases of noncompliance: (a) in early 2017, several small rehabilitation works began without submitting the necessary safeguard documents for approval and disclosure; however, these were stopped by the Government when asked by the World Bank and were given an exceptional greenlight to complete without the documents because of a minimal environmental impact; (b) health and safety guidelines were not properly followed in the rehabilitation of an aquaculture demonstration and research center in Vea; and (c) fencing in the Kono Odumase pilot aquaculture center began without a plan. These cases did not result in negative environmental or social impacts or complaints according to World Bank reports.

79. Setting up a grievance redress mechanism (GRM) was included in the RPF in the context of displaced people receiving compensation; however, a grievance mechanism was only established in 2016 when the social specialist was hired. The mechanism included a manual, a logbook, and a bottom-up structure composed of redress accepting functions at the local, zonal, regional, and national levels. Several complaints were recorded on compensation delays for relocated traders in Anloga which were later adequately addressed, and on delays in the implementation of several local interventions, such as the fish smoking ovens and the landing facilities discussed previously. According to the PCU's social specialist's completion report (June 2018), confirmed by a review of the logbook by the ICR author, a total of 33 grievances were recorded since the GRM was put in place and addressed. Stakeholder consultation during implementation was reportedly extensive; however, it was insufficient to prevent the complaints.

Procurement

80. The project was not in full compliance with procurement procedures, it experienced consistent procurement delays, and it demonstrated low value for money and weak contract management. Cases of noncompliance included the unauthorized extension of the first coordinator's contract and beginning of several civil works without prior World Bank no-objection. The 2018 in-depth review found that the procurement of several items lacked competition, contracts were poorly managed, and a lack of signed

memoranda of understanding with executing agencies prevented proper supervision of expenditures against achievements. Ratings ranged between Satisfactory and Moderately Satisfactory during the first half the project, to be later downgraded to Moderately Unsatisfactory. Reasons for the weak procurement performance were weak compliance with the World Bank procedures by the first project coordinator, procurement specialists' insufficient experience despite several trainings provided by the World Bank, and the Government's requirement that all purchases receive prior authorizations at the level of the PCU, Fisheries Commission, MOFAD, and Ministry of Finance, taking considerable time.

Financial Management

81. Financial management was also not in full compliance with procedures and demonstrated shortcomings and several ineligible expenditures. The accounting system was operated manually, financial records were incomplete and unreliable in part, the petty cash was inadequately managed, and the recommendations of external audits were not properly addressed. The 2018 in-depth review found that within sampled (35 percent) transactions for January 2015–July 2018 alone, there were suspected ineligible expenditures and several other expenditures, for which clarifications are currently being sought. In addition, two payments were erroneously made to fraudulent accounts for a total of US$207,595 after false invoices were submitted to the PCU, indicating lack of due diligence in the payment process.[70] Quarterly interim unaudited financial reports were produced and submitted to the World Bank on time; however, they were not always signed and dated by responsible officials and lacked supporting documentation. Annual external audits were submitted as required. Ratings ranged from Satisfactory to Moderately Satisfactory during most of the project and downgraded to Moderately Unsatisfactory when the above fraud was discovered and after the initial results of the in-depth review at closing.

Compliance with Legal Covenants

82. As mentioned, the project was not in compliance with all the financing agreement's legal covenants. Of nine covenants, two were complied with (no access restriction to designated parks and protected areas and no use of the MCS project proceeds for unrelated purposes);[71] two were complied with delays (appointment of a project accountant and adoption of a financial management manual and making the FEU operational); two were partially complied with (registration of all industrial and semi-industrial fishing vessels and registration of all canoes and closing the registration to new entrants); two were not complied with (an effective moratorium on the issuance of new industrial and semi-industrial licenses and ensuring that the entire active licensed industrial trawl fleet was in full compliance with the Fisheries Act, safety and health regulations, and all applicable license conditions);[72] and one was irrelevant (related to the management of the alternative livelihoods program).

[70] The Government refunded the two payment amounts and a dialogue is ongoing between the Government and World Bank on the findings of the in-depth review.
[71] Such as military purposes, criminal investigations, prosecutions, or proceedings.
[72] To find out the status of this covenant, a task force was established by the Minister of MOFAD in May 2017 and a memorandum was sent by the Attorney General to the Minister of MOFAD, recommending denial or suspension of non-compliant vessels; however, this memo was not followed through and noncompliant vessels' licenses were renewed after some time according to a May 2018 World Bank/CSRP mission.

C. BANK PERFORMANCE

Rating: Moderately Unsatisfactory

Quality at Entry

83. A team of in-house fiduciary experts, environment, social, fisheries, and natural management specialists backed by technical consultants and the CSRP supported the design of a project which was, and still is, highly relevant to the basic challenges faced by the fisheries sector, as well as national, regional, and global priorities. The World Bank adequately fulfilled its fiduciary role by carrying out procurement and financial management assessments of the implementing agency and by ensuring the development and disclosure of necessary safeguard documents before appraisal. It also ensured that several women-focused activities were financed so that women benefit from the project and are given a stronger voice in the sector. Numerous background analyses, studies, and consultations informed a technically sound design. However, the background analysis did not provide a deep understanding of the political economy of Ghana's fisheries sector. Another quality at entry setback was the M&E plan design weaknesses, as discussed earlier.

Quality of Supervision

84. Implementation support missions were conducted at a frequency of one to two per year, with several missions being carried out in-between by the World Bank and CSRP specialists and hired consultants, focusing on safeguards, procurement, financial management, post-harvest infrastructure, and aquaculture. Most missions were conducted jointly with the CSRP and comprised operational and technical meetings with government stakeholders, nongovernment entities, and key development partners; field visits; and high-level discussions with government officials. The World Bank team worked in cooperation with programs of USAID, the EU, Norway, and Iceland, and collaborated with partners' illegal fishing investments, fish disease studies, and training on the VMS. Aide Memoires contained considerable detail on progress, results, and achievement of outcomes and presented frank evaluation of technical challenges with concrete action plans. Videoconferences took place on a regular basis between the World Bank team and the PCU in-between missions to follow up on agreed action plans, with a six-month halt in communication as mentioned. Missions and videoconferences informed official communication between the Ghanaian Government and World Bank management on key issues and overall progress, as well as management's participation in missions and field visits.

85. On the other hand, the World Bank did not take firm and timely decisions on the future of the project, and procurement and financial management reviews did not adequately reflect fiduciary setbacks. The year-long discussion with the Ministry of Finance on the cancellation of US$10 million of IDA resources delayed the restructuring. The decision to not suspend the project after a legal covenant was breached, as mentioned earlier, but instead restructure the project in a piecemeal manner, did not prove effective in turning around the project. Financial and procurement reviews, including a comprehensive review carried out by the financial management team in December 2016 at the request of the World Bank technical team, did not detect most of the ineligible expenditures suggested by the 2018 in-depth review, and presented ratings which were not justified during certain project periods. Other procurement supervision challenges were the maintenance of prior review thresholds until October 2017 despite risk and performance rating downgrades at midterm and the fact that threshold changes were

not reflected in the 2018 Procurement Plan. The latter was an oversight of the team, allowing many items to be procured without prior review.

86. Discussions with the PCU staff show varied levels appreciation of the support provided by the World Bank: while financial management, procurement, and safeguard support was said to have been readily available (including through training), the PCU members indicated that feedback from the World Bank technical team lacked clarity and was delayed at times. Issues noted were delayed no-objection responses, piecemeal approvals of the 2017 work plan, and lack of clarity on the status of discussed restructurings. According to the PCU, this led to the launch of several unauthorized investments and the making of unfulfilled promises to local stakeholders. It should be noted, though, that an analysis carried out by the World Bank in April 2017 found that the World Bank no-objection responses were provided at a reasonable average time (11 days) while the PCU follow-ups were considerably delayed.

Justification of Overall Rating of Bank Performance

87. The World Bank performance is rated Moderately Unsatisfactory to reflect the relevance of the project to the time it was prepared and to current days and the considerable effort made in preparing and supervising the project on the one hand. On the other hand, the rating reflects the 'soft' and delayed decisions on project restructuring which had a limited impact on the performance of the project, the incomplete background analysis of the fisheries sector, M&E design weaknesses, and the fiduciary supervision challenges.

D. RISK TO DEVELOPMENT OUTCOME

88. Several project-financed investments are expected to be sustained without external support, such as the vessel registry, which is managed by the National Information Technology Agency and gets updated quarterly with the licensing of vessels; the observer program, which is paid for by vessel owners; fish quality laboratories and aquaculture centers, whose staff are civil servants paid by the Government; the Anloga landing site infrastructure, whose maintenance will be managed by a local management committee with user fees; and NAFPTA, using membership fees. The construction of the Ahotor ovens is expected to be completed by the Government which has set aside a budget for this purpose, especially in view of complaints voiced on delays and the upcoming general elections in which fishers and fish processors are an important voter block. If made operational by the Government, the salt iodization and plastic pelleting machinery could be put to profitable use as shown in the management plans and because of the availability of raw material and expressed interest by the private sector for the products. Aquaculture is expected to grow with the private sector continuing to be the main engine of this growth, and the considerable capacity generated by the project within the Government could be put to use for better managing the sector in the future.

89. However, the sector's transparency and key fisheries management elements—control over the fishing effort in the industrial and artisanal segments and the MCS—require strengthened commitment translated into action by the current and future governments. The low industrial demersal license charges imposed in Ghana and the partial collection of fines and penalty fees keep revenue from fisheries at a low level, thereby discouraging the Ministry of Finance to find the financial resources to support the FEU. In the event of no further external financing, the MCS activities should be prioritized to maintain basic operation, should license fees increase significantly, and fines need to be followed through. Even if the

MCS is sustained, Ghana's fisheries will be at risk if enforcement activities are not accompanied by a continued reduction in the fishing effort of both industrial, semi-industrial, and artisanal segments, an action which requires political courage and a profound behavioral change within the administration and stakeholders. Climate change impacts on marine and inland fisheries need to be further studied and mitigation and adaptation measures should to be put in place to negate such impacts for long-term sustainability.

90. Prospects for a follow-on WARFP project are uncertain;[73] however, the World Bank has been engaged in discussions between Norway and the Government of Ghana on a program of support (titled Fish for Development Program), which is expected to be launched by Norway in the spring of 2019 and will include data collection, stock assessments, enforcement actions, engagement with the industry, and support to aquaculture. The World Bank is looking to ensure that this new program continues to support as many WARFP investments as possible and incorporates lessons learned from the WARFP-Ghana project.

V. LESSONS AND RECOMMENDATIONS

91. **Study the sector's political economy during project preparation.** A key impediment to the achievement of the project's governance objective was weak political commitment to transition to more sustainable fisheries management, which invariably required a reduction in the fishing effort in both the artisanal and industrial segments. Indeed, political interests influenced by short-term gains overpowered long-term considerations even though most stakeholders were aware of such tradeoffs. The World Bank did not fully understand the sector's deep rooted interests during preparation, which ultimately affected the project's ability to fully achieve its objectives. Projects aiming to affect sectoral reforms where conflicting interests are identified or suspected should thoroughly analyze the sector's political economy to undercover stakeholders' interests and incentives and put in place adequate measures to address these findings.

92. **Consider a comprehensive set of incentives to foster political commitment and initiate direct dialogue with foreign fishing nations.** The project showed that making sectoral information available to the public was not an effective mitigation measure for the industry's interests and its impact on politicians. In such cases, a more comprehensive set of incentives should be incorporated into the project's design. One type of incentive is results-based payments whereby disbursement of a portion of the funding and training to key civil servant staff are conditional on the achievement of agreed key results. This has been piloted with success by the WARFP projects in Mauritania and Guinea. Another option is to compensate governments for lost license revenues when foreign industrial vessels are reduced, for example, through budget support, and develop compensation programs for domestic companies and users when local fleets are reduced. Transparency measures should be added to regulatory frameworks to make sure they are maintained. A further option is to sequence reform interventions such that domestic policy gaps are addressed before tacking interventions in the post-harvest and aquaculture subsectors, which often are high priorities for governments. In parallel, the World Bank in partnership with relevant development

[73] During the May 2018 World Bank mission, the Government and World Bank agreed on several conditions for preparing a second phase project, including reduction of the fishing effort by half, changes to the licensing scheme, and sector transparency actions; however, several of these actions have not been completed to date.

partners should consider initiating a dialogue with foreign fishing nations on solutions for the increasing global demand for seafood, which do not exacerbate resource depletion.

93. **Where high-level commitment cannot be secured, put more emphasis on local actions.** Local interaction with stakeholders had meaningful impacts on their fishing practices and behaviors, such as the observer program and its impact on local illegal fishing activities, education of fish traders and processors and their changed behavior toward illegally caught fish, and the impact of training on fish farmers' profitability. If a government does not demonstrate a firm commitment to controlling the industrial segment, an alternative approach to improving the health of fisheries and fishing communities' livelihoods could be a focus on providing fishing communities with legal access rights and promoting co-management systems in as many fishing communities as feasible. This mechanism has been proven effective in Senegal and Liberia, where fishing communities with legal access rights introduced new harvesting rules, local surveillance, stock enhancement measures, and local site monitoring, resulting in increased catch rates and the reappearance of species. This, however, requires considerable time and support to communities to succeed.[74]

94. **An internal discussion is needed on how the World Bank addresses breach of covenants.** The decision of the World Bank to negotiate a restructuring with the newly elected government, while evidence showed a breach of the 2012 moratorium, demonstrated flexibility and commitment to supporting the sector in specific and the region's fisheries more broadly. However, it was not able to turn around the project and may have sent a conflicting message on the seriousness of the World Bank in enforcing signed agreements with clients. A structured discussion should take place within the World Bank on the appropriateness of legal covenants and conditions in affecting clients' actions, including an exit strategy when these are breached versus other mechanisms such as financial incentives.

[74] See SOP-A1's ICR as reference (Report No. ICR00004008). In Senegal, where co-management was piloted the longest, it took more than 10 years and considerable field-level efforts in raising awareness and building the capacities of local actors for this system to become effective.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Strengthening the country's capacity to sustainably govern and manage the fisheries

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Fisheries management plan of the marine fisheries sector of Ghana implemented	Yes/No	N 01-Jul-2010	Y 29-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

Comments (achievements against targets): NOT ACHIEVED (30%). The target was to be achieved if the following conditions were met: (i) reduction of demersal fishing fleet by 50 percent over a five-year period; (ii) establishment of a new licensing scheme; (iii) closed season for industrial vessels; and (iv) deletion of boats inactive for one year. At closing: (i) the trawler demersal fishing fleet increased by 9 percent from 67 at appraisal to 73 (not achieved); (ii) a new licensing scheme was not established as specified in the Fisheries Management Plan, however several key actions were taken to upgrade the existing scheme: the frequency of industrial trawler licensing was increased from annual to quarterly for closer follow up of trawler activities, a proposal for licensing fee increase was made by the government however not implemented, International Maritime Organization (IMO) numbers became a requirement for licensing, partly enforced, an observer program was established and implemented, covering 100 percent of trawlers, trawler owners were required to pay for Vessel Monitoring System (VMS) and Automatic Identification System (AIS) airtime costs as a condition for license renewal, and a web-based vessel registry was established and made functional (partially achieved); (iii) a closed season for industrial trawler vessels has been in place since 2016 (in November 2016, February and March 2017 and January and February 2018). The timing of the closing is a result of negotiations between the government and the National Trawler Association and not as recommended in the Fisheries Management Plan, except for the closing in November 2016. The agreed August 2018 closing was postponed. When closed seasons were in effect, they were fully enforced (partially achieved); (iv) inactive boats were not deleted from the vessel registry (not achieved). The new licensing practices, observer program and the

vessel registry were a direct result of capacity building of the government financed by the project and agreed to in the Management Plan. The closed season principle was agreed to in the Management Plan and enforced thanks to the project-financed VMS. Data Source: Fisheries Commission Vessel Registry for the number of trawlers and confirmed by the VMS; Fisheries Commission, vessel observers and World Bank team for the licensing actions and vessel registry; VMS for enforcement of the closed season. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Objective/Outcome: Reducing illegal fishing

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Average infraction reported per unit of enforcement activity	Number	500.00 14-Jul-2011	180.00 31-Dec-2017	180.00 29-Jun-2018	141.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (127%). The 180 target was calculated as the sum of the following averages: 5 infractions reported by sea patrol, 100 infractions reported by land patrol, 10 infractions reported by beachcombing at coast, 25 infractions reported by the VMS and 40 infractions reported by beachcombing in Lake Volta. The result at closing is the sum of the following averages: 37 infractions reported by sea patrol in 2014-2018, 12 infractions reported by land patrol in 2016-2018, 52 infractions reported by beachcombing at coast in 2018, 40 infractions reported by VMS in 2014-2018, and zero infractions reported by beachcombing in Lake Volta in 2017-2018. The low rate of infractions and the ability to report on them can be attributed to project-financed support under Component 2, notably the establishment and operationalization of the Fisheries Enforcement Unit (FEU, including equipment, training, VMS and AIS coverage), development and implementation of a Monitoring, Control and Surveillance (MCS) plan, and establishment and operationalization of an observer program. Data source: 2018 FEU report and infractions reported from the VMS. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Objective/Outcome: Increasing the value and profitability generated by the fish resources and the proportion of that value captured by the country

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

Number of fish health labs established	Number	0.00 07-Jul-2011	2.00 31-Dec-2017	2.00 29-Jun-2018	5.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (250%). The project established fish health laboratories in Accra, Cape Coast, Koforidua, Kumasi and Takoradi with facilities, equipment and training on management and use of equipment. World Bank reports indicated good quality of works in these laboratories. All these inputs were financed by the project, with co-financing from USAID in Cape Coast. Data source: Fisheries Commission and World Bank reports. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Objective/Outcome: Developing aquaculture

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Scoring on aquaculture enabling environment: 1. Disease control 2. Policy framework	Number	0.00 30-Jun-2011	3.00 31-Dec-2017	3.00 29-Jun-2018	2.50 28-Sep-2018

Comments (achievements against targets): SUBSTANTIALLY ACHIEVED (83%). The target was composed of three results: development of an aquaculture policy and a fish health policy (score: 1), approval by Cabinet of the two policies (score: 1), and disease control (hatchery and farm certification) regimes in place (score: 1). At closing, a fish health policy (titled Aquatic Animal Health Policy - see Intermediate Indicator below) and a national aquaculture policy were developed (score: 1); the fish health policy was approved by Cabinet in March 2018, while the aquaculture policy was not submitted for approval (score: 0.50); health and sanitation protocols for certification of fish farms and hatcheries were developed and validated by the Fisheries Commission and other relevant stakeholder agencies, there was sensitization of fish farmers and hatchery operators on the protocols, twelve farms received certification in accordance with the protocols, other fish farms were inspected by the Fish Health Unit in accordance with the protocols, and farm owners received training in government training centers on meeting set protocol standards (score: 1). The project financed the drafting of the two policies, the preparation of the protocols, sensitization

activities, training, and rehabilitation of several government training centers and a hatchery in Vea in the Upper East Region (infrastructure and equipment - the training centers and the hatchery were partially completed at project closing). Feedback from a World Bank aquaculture specialist indicated poor quality of the draft aquaculture policy, meriting additional work before it can be submitted for approval. Data source: Fisheries Commission, World Bank reports and review of the policies and protocols. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Pl. refer to PDO Indicators (same indicators)	Number	0.00 01-Jul-2010	0.00 31-Dec-2017	0.00	0.00 28-Sep-2018

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	233000.00 14-Jul-2011	233000.00 31-Dec-2017	233000.00 29-Jun-2018	493182.00 28-Sep-2018
Female beneficiaries	Percentage	12.00 14-Jul-2011	12.00 31-Dec-2017	12.00 29-Jun-2018	3.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). The target for direct beneficiaries and percent of female beneficiaries was set on the basis of an estimate of the country's marine and Lake Volta fishers, fish processors and fish farmers, disaggregated by sex (processors were considered to be female as this is the common practice in Ghana). The achieved target was calculated using the same methodology. This

indicator is not considered overly achieved due to the lower than planned percentage of female beneficiaries and the fact that the increase in the overall number of beneficiaries is a result of the sector's growth rather than project-financed interventions. A more accurate calculation of direct project beneficiaries shows a total of 288,796 people, 14.5% of which are female, which are higher numbers than estimated at appraisal. Direct beneficiaries were fish processors and traders who benefitted from training on fish processing, trading, handling, group dynamics, business management, food safety and hygiene, and compliance to processing as members of a newly formed National Association of Fish Processors and Traders (NAFPTA, see more below) (a total of 14,700, 99% female); fish smokers who benefitted from new Ahotor fish smoking ovens (408 - two per oven, 100% female); Fisheries Commission staff who received training on fisheries laws and regulations, aquaculture production and management, social and environmental safeguards, M&E, GIS and GPS, VMS and AIS operations and data analysis, computer software, procurement, post-harvest management, and fish health management (336, 25% female); unemployed graduates and several Fisheries Commission staff who were enrolled in the observer program (170, 0 female); artisanal fishers and crew and other people who were exposed to radio, television and community sensitization programs on registration and embossment of canoes, IUU fishing, gear technologies, fisheries regulations and the closed seasons (estimated at 268,640, 10% female); industrial vessel owners and crew who received training on VMS and AIS operation and the establishment of the FEU (2,242, 0 female); and fish farmers and hatchery operators who received training on hatchery management, farm certification protocols, site selection, water quality testing, feed preparation, fish health management, post-harvest handling and preservation, and relevant policies (2,300, 7% female). All these inputs were financed by the project. A calculation of indirect project beneficiaries shows a total of 721,990 persons. This calculation is based on multiplication of the number of direct beneficiaries by the average household size (3.5) reduced by one to avoid double counting the direct beneficiaries. Source of data: Sectoral numbers are from the Fisheries Commission and the FAO Fisheries and Aquaculture 2016 report. The number of direct beneficiaries was calculated by the Project Coordination Unit (PCU) M&E specialist with the advice of the ICR author. The average household size is from the Ghana 2014 Demographic and Health Survey (see http://dhsprogram.com/pubs/pdf/FR307/FR307.pdf). This is an original indictor.

A.2 Intermediate Results Indicators

Component: Aquaculture Development

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

Zoning plan for Lake Volta developed	Yes/No	N 14-Jul-2011	Y 31-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (50%). A report on zonation of Lake Volta was finalized in September 2016 and submitted to the Fisheries Commission in 2018 for conversion into a plan by a Minister-appointed committee. It identified suitable sites for aquaculture on the Lake Volta taking into consideration environmental, social and economic factors, and estimated the environmental carrying capacity of the lake. It was accompanied by socio-economic and farm survey reports. The zonation report was not converted into a plan at the closing of the project. The project paid for the consultancy which generated the report. Data Source: Review of the Lake Volta zonation report and socio-economic and farm survey reports. This is a revised indicator which replaced the indicator "Zoning regime for Lake Volta established". The revision was made in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Early warning system on disease outbreak established and functional	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

Comments (achievements against targets): NOT ACHIEVED (0%). An early warning system on disease outbreak is described in the Fish Health Policy (see below), however at project closing it was not established. Data Source: World Bank mission reports and the Fisheries Commission. This new indicator introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Database for disease of economic importance established and functional	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

Comments (achievements against targets): NOT ACHIEVED (0%). A project-financed disease diagnosis study was prepared to identify diseases source and solutions, however a database was not established by project completion. Data Source: World Bank mission reports. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Aquaculture policy developed and submitted to relevant authority for approval	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (50%). The Aquaculture Policy was drafted and validated by stakeholders, however at project closing it was not submitted for approval. The drafting of the Policy was financed by the project and feedback from a World Bank aquaculture specialist indicates that it is currently unfit for approval. Data Source: World Bank mission reports and review of the draft policy. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Fish Health policy developed and submitted to the Cabinet for approval	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	Y 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). An Aquatic Animal Health Policy for 2018-2021 was developed with project support and submitted to the Cabinet for approval. The Policy was approved by the Cabinet in March 2018. The project financed the consultancy and stakeholder consultation. Data Source: World Bank mission reports and review of the policy. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Component: Good Governance and Sustainable Management of the Fisheries

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Marine fishing canoes that are registered and embossed (disaggregated motorized and non-motorized)	Number	11231.00 14-Jul-2011	26000.00 31-Dec-2017	26000.00 29-Jun-2018	25024.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (96%). 14,717 canoes were registered as of August 2018 (11,597 motorized canoes and 3,120 non-motorized canoes), and 10,307 canoes were embossed compared to a target of 13,000 registered and 13,000 embossed canoes. Disaggregated information for embossment is unavailable. The project financed the registration and embossment of the canoes. The higher than planned number of registered canoes could be an indication of lack of reliable data on the number of active canoes at the time the indicator was added to the results framework or an indication of the increase in the fishing effort between the time the indicator was added and the closing of the project. Data Source: Vessel registry of the Fisheries Commission's Marine Fisheries Management Division. This revised indicator replaced the indicator "Marine fishing canoes (motorized and nonmotorized) that are registered and licensed" (target: 11,213). The baseline is likely a mistake and should also be 11,213. The revision was made in the June 2017 restructuring.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of licensed industrial and semi-industrial vessels (disaggregated industrial and semi-industrial)	Number	541.00 16-Feb-2016	312.00 31-Dec-2017	312.00 29-Jun-2018	303.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (105%). At closing, the reduction in licensed vessels exceeded the target by 5 percent: 73 trawlers, 29 tuna vessels and 201 semi-industrial vessels were licensed compared to a target of 75 trawlers, 37 tuna vessels and 200 semi-industrial vessels. The overachievement of this indicator could seem contradictory to the project's lack of success in reducing the trawler's

segment size (part of the measurements of PDO Indicator 1); however, this indicator also includes reductions in the number of licensed tuna and semi-industrial vessels, it has a 2016 baseline which is higher than the appraisal baseline for trawlers (103 trawlers in 2016 instead of 67 trawlers at appraisal), and it sets a different target than the PDO-level target (75 licensed industrial vessels instead of 33). The reduction in the industrial and tuna fleets' size compared to 2016 is attributed to the continuous pressure put by the World Bank and consequent actions taken by a new MOFAD minister in 2017 to reduce the number of fishing licenses sold to foreign trawlers (by canceling licenses of vessels with multiple offenses and vessels not meeting hygiene and sanitation and safety requirement). It should also be noted that the reduction in the number of semi-industrial vessels is calculated based on a baseline that includes both active and non-active units. When looking at the trend of active semi-industrial vessels only, one sees an increase from 120 units in 2016 to 201 units at closing. This is explained by the closed seasons imposed on industrial vessels since 2016, which opened a space for semi-industrial fishing. See Annex 1 for further information. Data Source: Fisheries Commission's Marine Fisheries Management Division. This revised indicator replaced the indicator "Active licensed industrial trawl vessels" (target: 40) to measure capacity reduction in the three segments. The revision was made in the June 2017 restructuring.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of communities supported with enhanced means of livelihoods to promote stakeholder-based co-management of fisheries resources	Number	0.00 14-Jul-2011	11.00 31-Dec-2017	11.00 29-Jun-2018	0.00 28-Sep-2018

Comments (achievements against targets): NOT ACHIEVED (0%). A baseline study and a needs assessment were carried out in 2017, however implementation did not begin at project closing. This revised indicator replaced the indicator "Agreements signed between Government and communities for stakeholder management of fisheries" (target: 12). The revision was made in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Fishing Vessel Registration and Licensing Guidelines prepared by Fisheries Commission	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	Y 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). The guidelines were prepared in November 2013, and a web-based vessel registry was established afterwards. The project financed the preparation of the guidelines. Data Source: Guidelines' launch report and review of the guidelines. This indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Fisheries Management Plan developed and submitted to Cabinet for approval	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	Y 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). A 2015-2019 Fisheries Management Plan was developed and submitted to the Cabinet for approval in early 2015, and was approved and gazetted by the Cabinet in October 2015. Several action prescribed by the Management Plan have since been implemented (see first PDO indicator). The preparation of the Fisheries Management Plan was financed by the project. Data Source: Review of the Fisheries Management Plan. This indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Framework and strategy for establishment of Marine protected areas (MPAs) prepared and submitted to the	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	N 28-Sep-2018

cabinet for approval					

Comments (achievements against targets): NOT ACHIEVED (37%). The framework was to include an identification of possible MPA sites based on set criteria and a sites' map, and the strategy was to "set-up the MPAs" and propose a Cabinet Paper. The framework and strategy were prepared with the above content except for a Cabinet Paper in May 2018, and at project closing the report was with the Ministry of Fisheries and Aquaculture Development (MOFAD) pending submission to the Cabinet for approval. "MPA set-up" is considered done as the report describes well the various actions needed to bring the MPA strategy into action from a legislative, institutional, communication and outreach, capacity and law enforcement perspectives. The framework and strategy were prepared by a project-financed consultant. Data Source: Review of the MPA framework and strategy. This indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of fisheries watch committees established and functional	Number	0.00 14-Jul-2011	4.00 29-Dec-2017	4.00 29-Jun-2018	2.00 28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (50%). Two fisheries watch committees were established in Jamestown and Patukope communities in the Great Accra Region and are functional, i.e., detecting infractions. Their actions led to the arrest and prosecution of 24 people by the Ada Circuit Court. While the participation in the watch committees is voluntary, the project financed the sensitization of participants and their training. Data Source: Fisheries Commission and World Bank mission reports. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Component: Reduction of Illegal Fishing

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of fisheries watch	Number	0.00	4.00	4.00	2.00

committees established and functional		14-Jul-2011	29-Dec-2017	29-Jun-2018	28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (50%). Two fisheries watch committees were established in Jamestown and Patukope communities in the Great Accra Region and are functional, i.e., detecting infractions. Their actions led to the arrest and prosecution of 24 people by the Ada Circuit Court. While the participation in the watch committees is voluntary, the project financed the sensitization of participants and their training. Data Source: Fisheries Commission and World Bank mission reports. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Fishing enforcement unit established as described in 202 fisheries act	Text	No 14-Jul-2011	Yes 31-Dec-2017	Yes 29-Jun-2018	Yes 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). The 2002 Fisheries Act described the following with regard to the establishment of the FEU: (i) the FEU is responsible for MCS of the fishing operations within the fishery waters and enforcement of the 2002 Act, the regulations and any other related enactment; (ii) the FEU includes personnel from the Ghana Navy, Ghana Air Force and the Secretariat of the Fisheries Commission as determined by the MOFAD Minister in consultation with the Minister of Defense; (iii) the FEU is assigned an attorney from the Ministry of Justice; and (iv) the MOFAD Minister appoints the head of the FEU in consultation with the Minister of Defense. These were fulfilled in September 2013, and the FEU is established in Tema. Its composition also includes the Ghana Marine Police and the Ghana Police Service as additional members of the FEU to ensure stronger collaboration across the various national law enforcement units. The project financed the construction of three FEU offices (two coastal and one inland), the purchase and installment of a VMS (see more below), rehabilitated several MCS facilities, purchased relevant equipment and vehicles, trained inspectors and covered the costs of the FEU (personnel and operating costs) since its establishment. Data Source: World Bank mission reports. This is an original indicator.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Satellite based fishing vessel monitoring system is in place for the 200 mile exclusive economic zone and monitoring 24 hrs/day	Text	No 14-Jul-2011	Yes 31-Dec-2017	Yes 29-Jun-2018	Yes 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). A VMS was installed in 2014 at the FEU Tema headquarters' control room, monitoring all industrial and semi-industrial vessels and tracking offenses 24 hours a day (see next indicator) within the 200 mile Exclusive Economic Zone. 120 AIS transponders were installed on industrial and semi-industrial vessels as a condition for a license. Training was provided to FEU staff on the use of the VMS. The project financed these inputs. Data Source: World Bank mission reports, review of VMS supply receipt and periodical entries into the VMS. This is an original indicator.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Average daily operation of vessel monitoring system	Hours	0.00 07-Jul-2011	24.00 29-Dec-2017	24.00 29-Jun-2018	24.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). The VMS has been in place and operational since 2014. It operates 24 hours per day from the FEU Tema headquarters. Management reports are not generated from the collected data due to lack of sufficient capacity of FEU staff, however it has been used to keep vessels outside a 30-meter depth contour with high compliance level recorded. The project financed the purchase of the system, its maintenance, service and data storage. It had also financed the airtime until these costs were transferred to vessel owners, as well as allowances to FEU staff for operating the system. Data Source: World Bank mission reports and periodical entries into the VMS. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Annual law enforcement activities:	Number	0.00 14-Jul-2011	750.00 31-Dec-2017	750.00 29-Jun-2018	748.00 28-Sep-2018

Comments (achievements against targets): ACHIEVED (99%). The target was composed of 288 patrol days at sea, 150 patrol days at land, 300 kilometers of beachcombing at the coast and in Lake Volta, and 35 vessels inspected at quayside (Note: these numbers total 773, which could indicate a mistake in setting the target). At closing, there were 13 patrol days at sea, 27 patrol days at land, 52 km of beachcombing in Tema and Takardo, and 656 vessels inspected at quayside. These law enforcement activities were financed by the project, including the establishment and operationalization of the FEU, development and implementation of an MCS plan, and establishment and operationalization of the observer program. Data Source: Fisheries Commission's MCS Division. This indicator is a revised version of the indicator "total aerial patrol hours per year in coastal fisheries" (target: 750). The revision was introduced in the June 2017 restructuring, with a zero baseline as of the date of project appraisal. The zero baseline was likely set by mistake as the baseline details in the restructuring paper indicate a baseline of 75 law enforcement activities. The 750 target was also likely set by mistake as explained above.

Component: Increasing the Contribution of the Fish Resources to the National Economy

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Construction of improved smoke ovens for fish	Number	0.00 14-Jul-2011	300.00 31-Dec-2017	300.00 29-Jun-2018	204.00 28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (68%). 204 Ahotor ovens were completed while 64 were partially constructed, missing oil collectors. The project financed the purchase of the ovens' materials and the construction work by a contractor. Data source: World Bank site visits and the contractor’s completion report. This indicator is a revised version of the indicator "Pilot integrated fish landing site clusters with functioning basic services (e.g., electricity, water, etc." (target: 9). The revision was introduced in the June 2017 restructuring with a project appraisal baseline.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
National association of fish processors and traders established and functional	Yes/No	N 07-Jul-2011	Y 29-Dec-2017	Y 29-Jun-2018	Y 28-Sep-2018

Comments (achievements against targets): ACHIEVED (100%). NAFPTA was inaugurated in March 2015 in Koforidua, Eastern Region, and has been active since by collecting membership fees and providing training to its members. The project financed the rehabilitation of an office for the national president of NAFPTA, and technical assistance and training to the Association's management. Data Source: Discussion with NAFPTA members and review of supporting consultant's completion report. This new indicator was introduced in the June 2017 restructuring with a project appraisal baseline.

Component: Regional Coordination, Monitoring and Evaluation and Project Management

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
An electronic #dashboard# of key environmental, social and economic fisheries statistics established at the Secretariat of the Fisheries Commission and linked to the CSRP, and publicly accessible	Yes/No	N 14-Jul-2011	Y 31-Dec-2017	Y 29-Jun-2018	Y 28-Sep-2018

Comments (achievements against targets): PARTIALLY ACHIEVED (66%). The Dashboard software is installed at the Fisheries Commission and is overseen by a committee and operated by an administrator who is a Ministry staff. It contains data on registered vessels, aquaculture operators, production figures and landings of industrial, semi-industrial and canoe landings. The Dashboard is linked to the regional

Dashboard and feeds it with data. Some historical data gaps exist, and the information is not publicly accessible. The project financed the software and training . Data Source: World Bank mission reports and review of the Dashboard. This is an original indicator.

* The indicator “Fishing enforcement unit established as described in 202 fisheries act” should read “Fishing enforcement unit established as described in the 2002 fisheries act”.
** The indicator “Number of fisheries watch committees established and functional” is repeated twice because of a system errror.
*** The system-generated RF is missing an intermediate results indicator, which has been added manually:

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of infractions reported by the fisheries watch committees at the community level	Number	0	40 31-Dec-2017	40 29-Jun-2018	24 28-Sep-2018
Comments (achievements against targets): PARTIALLY ACHIEVED (60%). The two established watch committees reported on 24 community-level infractions, mostly related to illegal light fishing in the Great Accra Region. The project financed the training of the watch committee volunteers. Data source: World Bank mission reports. This indicator was introduced in the June 2017 restructuring without a baseline date.					

B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: Strengthening the country’s capacity to sustainably govern and manage the fisheries	
Outcome Indicators	1. Fisheries management plan of the marine fisheries sector of Ghana implemented

Intermediate Results Indicators	1. Marine fishing canoes that are registered and embossed (disaggregated motorized and non-motorized) 2. Number of licensed industrial and semi-industrial vessels (disaggregated industrial and semi-industrial) 3. Number of communities supported with enhanced means of livelihoods to promote stakeholder-based co-management of fisheries resources 4. Fishing vessel registration and licensing guidelines prepared by Fisheries Commission 5. Fisheries Management Plan developed and submitted to the Cabinet for approval 6. Framework and strategy for establishment of Marine protected areas (MPAs) prepared and submitted to the Cabinet for approval 7. An electronic 'dashboard' of key environmental, social, and economic fisheries statistics established at the Secretariat of the Fisheries Commission, linked to the Sub-Regional Fisheries Commission (CSRP), and publicly accessible
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	***Component 1*** 1. Registration of 14,717 canoes and embossment of 10,307 canoes 2. Licensing of 73 industrial vessels, 29 tuna vessels, and 201 semi-industrial vessels 3. Published information on licensing of industrial and semi-industrial vessels 4. A marine canoe frame survey in August 2016 (number of canoes and gear types in the different regions) as a basis for canoe registration 5. An electronic registration system for industrial and artisanal vessels modernized in 2013 6. Vessel registration guidelines prepared in consultation with relevant stakeholders in 2013 7. Changes to the trawler licensing scheme: quarterly renewals instead of semiannual renewals, mandatory IMO numbering 8. A 2015–2019 Fisheries Management Plan, adopted and approved by the Cabinet in October 2015 9. Enforced three closed fishing seasons for the industrial segment in 2016–2018 10. A draft new Fisheries Act and a revised co-management policy 11. A booklet on fisheries regulations addressing unsustainable fisheries-related practices in several local languages

	12. Two stock assessments in Ghana's coastal waters, covering resources in both shallow and deep waters: in 2016 and in 2017 in collaboration with FAO and the Norwegian Government and a study on total allowable catch for demersal fisheries 13. A fisheries data and documentation center by refurbishing the FSSD, the arm of the Fisheries Commission responsible for fisheries research) building, establishing a computerized library and providing office and field equipment, including five well-equipped information vans 14. Data centers in the Volta, Greater Accra, Western, and Central regional offices and trained data management officers 15. Rehabilitated Greater Accra regional office building ***Component 5*** 15. Dashboard software installed and operated by a ministry staff, some sectoral data entered, and linkages made to the regional dashboard (see http://portail-csrp.org/web/guest/ghana) 16. A modern website for the MOFAD with updated communication materials (currently inactive) 17. An extensive communication and social marketing program on the importance of sustainable fisheries management and aquaculture good practices
Objective/Outcome 2: **Reducing illegal fishing**	
Outcome Indicators	1. Average infractions reported per unit of enforcement activity
Intermediate Results Indicators	1. FEU established as described in 2002 Fisheries Act 2. A satellite-based fishing vessel monitoring system is in place for the 200-mile Exclusive Economic Zone and monitoring 24 hours/day 3. Annual law enforcement activities 4. Number of fisheries watch committees established and functional 5. Number of infractions reported by the fisheries watch committees at the community level 6. Average daily operation of vessel monitoring system
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	***Component 2*** 1. An operational FEU in accordance with the 2002 Fisheries Act, with offices and trained staff in headquarters in Tema and branches in Takoradi and Volta Region (for inland fisheries)

	2. VMS installed in the FEU control room in Tema and VMS transponders installed on all industrial vessels 3. Sea and land patrols in collaboration with the Ghana Navy and training to FEU staff. 4. Two operational watch committees reporting on infractions 5. An MCS sustainability plan 6. Training of Chief State Attorney, magistrates and judges on marine laws and related dispute settling 7. Observer program on trawlers established in 2018 with 170 trained community members. Reporting migrated from paper to web-based reporting on tablets and phones, sending real time data to the Fisheries Commission on infractions at sea
Objective/Outcome 3: Increasing the value and profitability generated by the fish resources and the proportion of that value captured by the country	
Outcome Indicators	1. Number of fish health labs established
Intermediate Results Indicators	1. Construction of improved smoke ovens for fish 2. National association of fish processors and traders established and functional
Key Outputs by Component (linked to the achievement of the Objective/Outcome 3)	***Component 3*** 1. Full construction of 204 Ahotor fish smoking ovens and partial construction (missing oil collectors) of additional 46 unit. 2. A National Fish Processors and Traders Association (NAFPTA), an umbrella association for all fish processor and traders' associations in the country. 3. Training provided to post-harvest stakeholders, especially NAFPTA members: in business development, identification of safe fish and fish products, group dynamics, entrepreneurship, marketing and trade, state of fisheries and role of processors, improved fish handling and preservation, exposure visit to an improved fish processing center in Nigeria, Western Region (213 participants, of which 197 female). 4. Anloga landing site: fish landing platforms, fish processing facilities (display and washing tables, running water), electricity, wash rooms, concrete boxes for iced fish, fencing of the landing site, and a small site management office. New sheds were constructed for sellers whose sheds were used in the construction of the landing site.

	5. Rehabilitated fish health laboratories in Cape Coast, Kumasi, Koforidua, and Takoradi, and a new laboratory in Accra (a prefabricated structure), provided with fish health monitoring equipment, test kits, and supplies. 6. Technical studies on fish processing improvements for women. 7. A refurbished office for the Fisheries Commission's post-harvest unit.
Objective/Outcome 4: Developing aquaculture	
Outcome Indicators	1. Scoring on aquaculture enabling environment: 1. Disease control; 2. Policy framework
Intermediate Results Indicators	1. Zoning plan for Lake Volta developed 2. Early warning system on disease outbreak established and functional 3. Database for disease of economic importance established and functional 4. Aquaculture policy developed and submitted to relevant authority for approval 5. Fish Health policy developed and submitted to the Cabinet for approval
Key Outputs by Component (linked to the achievement of the Objective/Outcome 4)	***Component 4*** 1. Lake Volta zonation report prepared. 2. An aquaculture disease outbreak diagnosis study, prepared in collaboration with the Norwegian Veterinary Institute. 3. Aquaculture Policy validated by stakeholders. 4. Fish Health Policy approved by the Cabinet. 5. Validated health and sanitation protocols for certification for (a) aquatic animal farms, (b) hatcheries, (c) fish feed meal operations, (d) exportation of live aquatic animals and their products, and (e) importation of live aquatic animals and their products. 6. Certification of 12 fish farms. 7. Hands-on training of fish farmers on fish farm management, feeding, and flood management. 8. Study tours to fish farmers. 9. Training to Fisheries Commission officers, including regional directors and zonal officers, on various aquaculture disciplines, including tilapia farming, and the Aquaculture Code of Conduct.

	10. Rehabilitated aquaculture demonstration and research centers: (a) Ashaiman aquaculture demonstration center in Greater Accra Region: concrete fish tanks, water tanks, fencing, a borehole, a gate house, a feed mill machine, office block, and hatchery (76 percent completion); (b) Akosombo research center: conference facilities, a hostel and fish tanks (100 percent completion); (c) Pilot Aquaculture Center in Kona Odumase: renovation of the building with rooms and toilets, concrete and fiberglass fish tanks, earthen ponds, a borehole, fencing, a gate house, desilting of stream (100 percent completion); and (d) Vea Pilot Aquaculture Center: renovation of an old hatchery building, concrete fish tanks, a borehole, toilets, and fencing (75 percent completion). 11. A national aquaculture survey of the status of aquaculture development in the country and the profitability of different types of fish farming. 12. Support to the National Aquaculture Association by trainings 100 farmers on related subjects. 13. A genetic comparison study for different strains of tilapia. 14. Stock enhancements in 50 dams and reservoirs.

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
John Virdin, John Fraser Stewart	Task Team Leaders
Michael Arbuckle, Randall Brummet	Fisheries Specialists
Victor Bundi Mosoti, Caludia Pardiñas Ocaña	Counsels
Robert Wallace DeGraft-Hanson	Financial Management Specialist
Adu-Gyamfi Abuyewa, Thomas Kwasi Siaw Anang	Procurement specialists
Luis M. Schwarz	Finance Officer
Carolyn Winter, Beatrix Allah-Mensah	Social Development Specialists
Jose de Luna Martinez	Financial Economist
Jan Joost Nijhoff	Agricultural Economist
Jingjie Chu	Natural Resource Economist
Flavio Chaves	Natural Resource Management Specialist
Ellen Tynan	Environmental Specialist
Alyson Kleine	Operations Analyst
Gayatri Kanungo	GEF Technical Specialist
Anders Jensen	Monitoring and Evaluation Specialist
Ernestine Aboah-Ndow, Virginie Vaselopolus, Victoria Bruce-Goga, Salimatou Drame-Bah	Program Assistants
Supervision/ICR	
Berengere P. C. Prince, Jingjie Chu	Task Team Leaders
Sachiko Kondo, Nyaneba E. Nkrumah, Flavio Chaves	Natural Resource Management Specialists and Acting Task Team Leaders
Michael Arbuckle, Steinar Ingi Matthiasson	Fisheries Specialists
Randall Brummet	Aquaculture Specialist
Nightingale Rukuba-Ngaiza	Counsel
Charles John Aryee Ashong, Adu-Gyamfi Abuyewa, Mary Asanato-Adiwu, Charles Taylor	Procurement Specialists

Robert Wallace DeGraft-Hanson, Elvis A. Amenyitor	Financial Management Specialists
Martin Fodor	Natural Resource Management Specialist
Demba Balde, Charles Ankisiba, Beatrix Allah-Mensah, Alexandra Bezeredi	Social Development Specialists
Anita Bimunka Takura Tingbani, Asferachew Abate Abebe, Melissa C. Landesz	Environmental Specialists
Nevena Ilieva	Operations Advisor
Carolina Giovannelli	Operations Analyst
Anders Jensen	Sr. Monitoring and Evaluation Specialist
Kafu Kofi Tsikata	Communications Specialist
Charity Boafo-Portuphy, Aurore Simbananiye	Program Assistants
Esther Bea, Esther Awume	Team Assistants
John Virdin, Issa Braimah, Stephen Akester, Ragnar Arnason	Fisheries Consultants
Lionel Awitty	Aquaculture Consultant
Ayala Peled Ben Ari	ICR Author

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
Total	**0.00**	**0.00**
Supervision/ICR		
FY12	8.838	59,330.37
FY13	3.600	94,916.86
FY14	28.878	147,467.31
FY15	46.117	251,436.97
FY16	44.199	213,115.88
FY17	34.653	189,064.48

FY18	24.532	156,409.96
FY19	12.815	100,970.23
Total	**203.63**	**1,212,712.06**

ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US$, millions) [a]		Actual at Project Closing (US$, millions)		Percentage of Approval (%)	
	IDA	GEF	IDA	GEF	IDA	GEF
Component 1: Good Governance and Sustainable Management of the Fisheries	15.20	3.50	6.47	3.46	43	99
Component 2: Reduction of Illegal Fishing	10.90	0.00	9.30	0.00	85	—
Component 3: Increasing the Contribution of the Fish Resources to the National Economy	12.10	0.00	4.59	0.00	38	—
Component 4: Aquaculture Development	8.00	0.00	5.58	0.00	70	—
Component 5: Project Management, Monitoring and Evaluation, and Regional Coordination	4.10[b]	0.00	5.52	0.00	135	—
Total	**50.30**	**3.50**	**31.46**	**3.46**	**63**	**99**
Grand Total	**53.80**		**34.92[c]**		**65**	

Note: a. Source: WARFP-Ghana PAD.

b. Component 5 allocation includes US$1.51 million to the CSRP for technical and operational support. Source: PAD of the WARFP-Ghana project.

c. Total disbursement is US$394,195 lower than the total disbursement figures presented in the ICR Datasheet due to exchange rate losses which are not reflected in the World Bank portal.

ANNEX 4. EFFICIENCY ANALYSIS

1. The PAD presented a combined financial/economic benefits model that estimated quantifiable direct project benefits. Available data were used to estimate the current net economic benefits for the marine fisheries, freshwater fisheries, aquaculture, and processing subsectors. Business-as-usual and investment scenarios were modelled for each subsector to estimate future benefits over 30 years, with the latter scenario incorporating economic, behavioral, and production expectations and assumptions based on project investments and associated project-induced reforms. These assumptions were largely related to the global or national economy and environment, as well as assumptions on production, behavior, input/output prices, and long-term investment support.

2. In the business-as-usual scenario, the nonmotorized canoe subsector showed an NPV of US$512 million over 30 years under a 10 percent discount rate, the motorized canoe subsector showed an NPV of US$923 million, the semi-industrial subsector had an NPV of over US$38 million of the net economic benefit, and the industrial subsector showed a resource rent loss of over US$70 million. The freshwater subsector was expected to bring US$764 million net economic benefits, which were to generate US$263 million in resource rent, and the aquaculture NPV of the economic benefit was US$157 million.

3. In the investment scenario, by licensing and capping the artisanal fleet, the fishery stock had a chance to recover and the economic performance of the artisanal fishery subsector was expected to improve. The total landings and revenue and net economic benefit were expected to increase, adding US$57 million of net economic benefit to the nonmotorized canoe subsector and US$103 million to the motorized canoe subsector. Over US$70 million of the resource rent were to be captured for both subsectors during a 30-year period. In addition, the catch per unit effort (CPUE) was to increase compared to the business-as-usual case for both motorized and nonmotorized canoes. In the semi-industrial subsector, both the net economic benefits and resource rent were expected to be cut in half because of a reduction in the size of the fleet, with returns to the Government from license fees, estimated at US$43,000 per year, with a total NPV of US$242,000. For the freshwater fishery, both the net economic benefits and resource rent were expected to increase, generating, by Year 30, nearly US$90 million in net economic benefits and over US$30 million in resource rent, about 13 percent higher than the business-as-usual case. The net difference of NPV over 30 years with 10 percent discount rate was calculated at US$26 million for net economic benefits and US$9 million for resource rent. For the aquaculture subsector, by Year 30, the investment case was to bring US$6.5 million more in benefits to owners than the business-as-usual case, and for the processing subsector, by Year 30, additional US$64 million were to be generated compared to the business-as-usual case and additional US$4 million in net economic benefits.

4. A sensitivity analysis of the NPV for all the subsectors over 30 years showed that the difference of the NPV for the net economic benefit was over US$140 million with a 10 percent discount rate, significantly higher than the project's cost. The IRR was expected to be 3.7 percent in Year 5, 17.9 percent in Year 10, and 49.6 percent in Year 30. Considering that fish stocks take time to recover, this result was expected to justify the investments of the project.

5. The project was designed to help recover fishery stocks and bring more economic benefits to the country. It was expected that the recovery of stocks would improve the natural endowment of marine resources, which in turn would result in higher catch and income to fishing communities. The following paragraphs provide an economic perspective on project performance.

Verification of Assumptions

6. At appraisal, a net economic benefit analysis was used to show the project's impact using a bioeconomic model. However, because of data unavailability, the same methodology cannot be repeated in the ICR. Table 4.1 outlines the economic analysis' assumptions, which were not met during project implementation.

Table 4.1. Comparison between the PAD's Economic Analysis Assumptions and Existing Conditions

Assumptions	Reality during Project Period
Marine and freshwater landings total 470,000 MT in Year 1 (320,000 MT marine and 150,000 MT freshwater).	Landing has declined: marine and freshwater landings totaled 331,500 MT in 2014 (203,000 MT marine and 128,500 MT freshwater).
An investment of US$55.04 million over five years in equal to US$11 million increments.	Disbursement was on average US$4.3 million per year.
Management approaches developed and implemented because the investments are adequately funded and maintained into the future. It is assumed that a portion of this funding is derived from licensing revenue in the form of transfer payment.	Management approaches were developed; however, revenue from licensing is not enough to maintain the management function.
Canoe fleets are licensed and capped at 12,000 canoes.	The number of canoes was not capped. The total registered number increased to 14,717, and embossed canoes numbered 10,307.
'Capital stuffing' or investment per canoe is only partially controlled (for example, there may be caps on vessel length but not necessarily on other capital inputs, including engines, nets, capture gear, electronic equipment, and so on).	There was no control over the canoe segment except on illegal fishing nets and gear, use of dynamite and light fishing.,
All trawl vessels are decommissioned regardless of specific harvest strategies (for example, demersal or mid-water finfish, shrimp, pair trawling, and so on).	Trawlers were not decommissioned.
One half (120) of semi-industrial vessels are bought out with the investment.	No semi-industrial vessels were bought out.
Effects of investments phased over 27 years (Years 3–30) with most biological effects in the first 10 years given the relatively fast growth of pelagic stocks, which dominate the fishery.	A bioeconomic model was not used.
Harvest and food grade usable catch increase by 5 percent over a 10-year period because of improvements in vessel operation and reduction in discards, improved enforcement and a decrease in IUU activities (including dynamiting and light fishing), improvements in benthic habitat and associated fish stocks, and improvements in port infrastructure.	Illegal activities decreased; however, the benthic habitat did not improve. Landing infrastructure was improved in one location (Anloga).
These effects more than compensate for losses associated with buying out trawlers and a portion of the semi-industrial fleet. The PAD	There was no buy-back program for trawlers or semi-industrial vessels.

Assumptions	Reality during Project Period
assumed that at least half of fish available from reductions of trawl and semi-industrial fleets are harvested by the remaining fleets and the canoe segment.	
Ex-vessel price increases by 2 percent over 10 years because of higher quality and related increases in export.	Industrial and artisanal subsectors demonstrated overcapacity.
Aquaculture costs decrease by 1 percent per year for 10 years and a 0.5 percent during the remaining 20 years because of results of investment in supporting training and improved production practices.	The project did not have a direct influence on aquaculture production and processing; however, it improved the enabling environment for aquaculture production and increased farmers' capacities.
Tilapia prices remain flat until Year 10 and then decrease by 1 percent per year for the next 20 years (approach international price).	Training of farmers is likely to influence the price of their aquaculture products.
Increase in processor recovery of 3 percent because of reduced harvest waste and higher sanitary standards	Port infrastructure was improved in Anloga, where better water supply and higher sanitary standards are expected. In addition, fish health laboratories were established to help conduct seafood quality testing for exports and fish disease diagnosis.
Output processor prices increase by 2 percent because of higher quality and greater proportion of exports.	

7. The economic analysis assumed that fisheries' stocks would recover and that the economic performance of the artisanal fishery segment would improve through better landings (biological), better revenue to the government (fiscal), and better income for fishers (economic and social). The following paragraphs provide an analysis of project performance from these three perspectives.

(i) Biological Performance

8. Looking at the status of small pelagic fishery stocks (mainly anchovy and sardinella), which is one of the most important fisheries in Ghana in terms of protein supply and employment of artisanal fishers and post-harvest fish processors and traders, the landings per unit of effort declined during the project period (see figure 1 in section II.B). The species' mix, which is another indicator of a fishery's health status, also did not improve: based on information from R/V Fridtjof Nansen up to 2016, the proportion of high-value and long-life species such as grouper, snapper, and croaker did not recover. Table 4.2 demonstrates this overall trend, with the highest biomass marked in red.

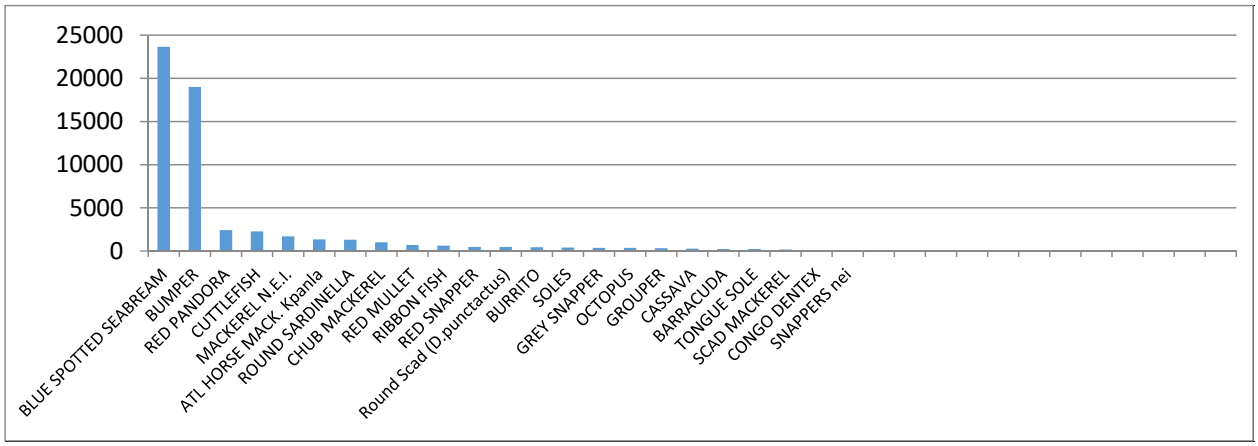
Table 4.2. High-value Species' Biomass Survey Results

Group/ Species	Biomass (tonnes)								2016/the highest	2016/2007
	1999	20001	2002	2004	2005	2006	2007	2016		
Seabreams	8 478	13 346	14 181	16187	15 690	15 166	13604	12959	80%	95%
Grunts	1 431	4397	1 168	326	2 261	140	806	620	14%	77%
Croakers	125	1046	850	286	821	664	1011	567	54%	56%
Groupers	557	1921	254	220	235	674	169	452	24%	267%
Snappers	151	5322	422	200	413	1 366	771	1450	27%	188%
Bigeye grunt	70314	9120	21 182	13 866	27 896	7 296	5121	12301	17%	240%
Barracudas	1 084	915	1 999	1 589	2 201	2554	1333	2522	99%	189%
Cephalopods	4 400	4900	2 000	2 600	2 181	3 208	1067	3314	68%	311%

Source: R/V Fridtjof Nansen, 2016.

9. Figure 4.3 shows that the majority (66 percent) of the harvest in 2017 came only from two species, which is another indicator of an unhealthy stock.

Figure 4.3. Total Landing by Species in 2017 (MT)



Source: FSSD, Ghana Fisheries Commission.

(ii) Economic Performance

10. Economic benefits were to accrue because of higher revenues to fishers as a result of larger catches of bigger fish with the recovery of stocks and an increase in government revenue from the sector. Because the project was not successful in controlling the fishing effort, economic benefits did not materialize as expected. The following paragraphs provide a more detailed analysis of the economic performance of each fishing segment, as well as the sector's contribution to GDP, revenue from fines, and benefits to the post-harvest and aquaculture subsectors.

Trawler Segment

11. While the project increased the Government's knowledge about the industrial trawler segment and reduced illegal fishing (fishing without a license) considerably, the low license fee (US$35 per GRT)

constrained the economic benefits from this segment. A typical 200 GRT industrial vessel pays US$7,000 a year to fish in Ghana, which is about 0.3 percent of the landing value compared to 7 percent in Sierra Leone and 10 percent in Liberia. The annual license fee revenue was less than US$600,000 in 2017, while in Sierra Leone it was over US$7 million with a similar number of trawlers. After the project closed, a fee increase proposal to US$200 per GRT was approved by the Cabinet and was submitted to the Parliament in early 2019. Once this proposal is passed, the same vessel will pay nearly six times the current price, thereby bringing much higher economic benefits to Ghana in the years to come. It is also expected that higher license fees will help reduce this segment's fishing effort, which in turn could improve fisheries' biological performance. Finally, because the stocks did not recover and the trawler fishing effort was not reduced, the CPUE in the industrial segment did not increase as assumed at appraisal. The total fine revenue to the Government was nearly US$1.5 million. Before the project, there was no information about the scale of illegal fishing in Ghana and the degree of economic damage it caused. After the project, industrial vessels came to Ghana to purchase licenses and were required to have at least half Ghanaian crews on board, which helped generate jobs for the locals. These vessels also land part of their catch in Ghana, which helps with the local market seafood supply and creates more jobs in the post-harvest sector.

Semi-industrial Segment

12. The semi-industrial segment shrank by 50 percent during the project's lifetime (from 401 to 201 vessels) because of pressure from the industrial segment, which targets the same species and fishing grounds. While this trend was positive from an effort reduction perspective, it was negative from a domestic point of view because the industrial sector is dominated by foreign owners, while the semi-segment is mostly owned by Ghanaians. It should be noted that the number of active semi-industrial vessels was smaller in 2016 (120 active vessels) because of the profitability drop with the competition from the industrial sector; however, it increased to the current number after the closed seasons were enforced on industrial vessels in 2016–2018, which provided more space for semi-industrial vessels. This segment's CPUE has been relatively stable compared to the other segments, and its current capacity is within the acceptable range.

Artisanal Segment

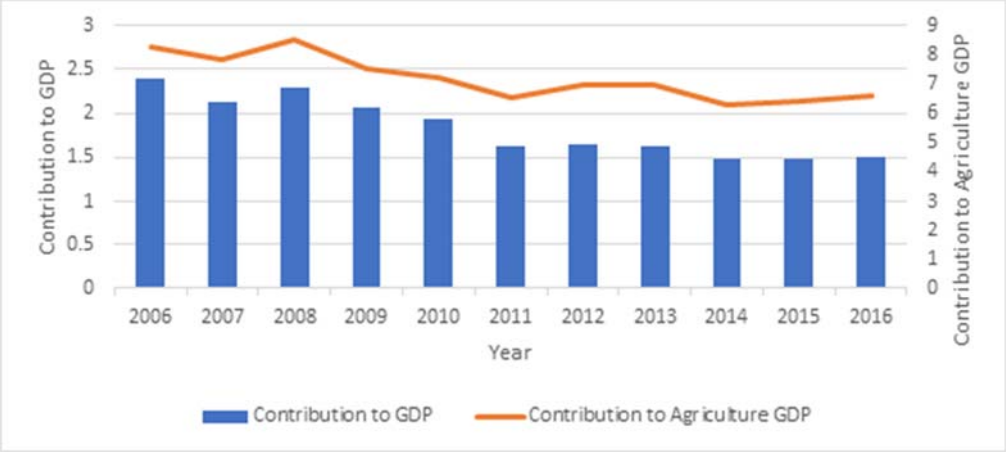
13. The artisanal segment showed decreasing landings per unit of effort because the number of canoes increased (14,717 registered canoes at project closing compared to 11,213 active canoes during project appraisal). The economic performance of this segment therefore did not improve as expected. However, the project has invested in communication campaigns and awareness raising among coastal communities, which has helped change attitudes of fishers toward illegal fishing. The NAFPTA has conducted training in various communities which helped further convey project messages against illegal fishing. The volunteer watch committees set up in two communities have worked closely with local communities and the police to monitor illegal fishing practices.

Contribution to GDP and Export Revenue

14. Over the last decade, marine and inland capture fisheries have accounted for a significant portion of agricultural GDP, however at an overall declining rate as shown in figure 4.4, with stabilization noted between 2014 and 2016 (2017–2018 figures are unavailable). It is worth noting, though, that the sector's contribution to GDP is likely much higher when the entire fish value chain is considered, including

processing, retailing, boat construction, and engines and gear repairs. Based on an estimated multiplier effect of 2.5,[75] the contribution to agricultural GDP and total GDP in 2016 could have been as high as 5.50 and 3.75 percent, respectively. Furthermore, fisheries in Ghana generate more than one half of nontraditional export earnings. Between 2014 and 2016, the average annual exports revenue exceeded US$140 million, based on data from the Fisheries Commission. This is significantly higher than the average government revenue from the sector on licensing fee, which is less than US$600,000 and the project's cost. Setting up of fish laboratories, developing certification protocols, and conducting trainings helped facilitate the export certification process.

Figure 4.4. Contribution of Fish to Agriculture GDP and Total GDP in Ghana (2006–2016)



Source: Fisheries Commission.

Revenue from Fines

15. Ghana was not successful in making gains from fines imposed on illegal activities: the project spent US$9.2 million on monitoring and surveillance while collecting less than US$2 million in fines. By comparison, Liberia, which has similar sectoral settings, spent US$2.5 million on monitoring and surveillance during its WARFP period while collecting around US$6.5 million in fines. The low prosecution and fine collection rates contributed to this result.

Benefits to the Post-harvest Subsector

16. The project supported landing infrastructure in Anloga and provided improved fish smoking ovens to households in several coastal communities. The Anloga landing site will help bring better quality products, which are difficult to monetize at this point as the facility has only recently become active. The smoking ovens are expected to generate clear economic benefits for local fish processors. Although not all the 300 ovens were constructed as planned, it is expected that the Fisheries Commission will help achieve this target as the demand is high and fish processors are an important political force in Ghana. The ovens' fuel efficiency (50 percent to 70 percent savings) and improved product quality are expected

[75] See Chimatiro, S. 2010. "Post-Compact Interventions through the International Partnership for African Fisheries Governance and Trade." Partnership for African Fisheries (PAF), Unpublished.

to result in 11–16 percent price increase of products (the total fuel cost saving from all the 300 ovens will be US$684,000 a year,[76] and the price benefit will be US$136,800 a year).[77] With a construction cost of US$141,659, the benefit from fuel saving and price increases in one year will be over five times the construction cost. The NPV for the improved smoking ovens will be US$3.4 million or US$4.1 million at 20 percent and 15 percent discount rate for a 10-year scenario. This is a significant gain resulting from the project

Benefits to the Aquaculture Subsector

17. The total aquaculture production increased from 19,092 tons in 2011 to 57,000 tons at closing.[78] However, this trend had begun before the project started investing in aquaculture and was driven mostly by the private sector. The project, nonetheless, helped create an enabling environment for aquaculture development with training to fish farmers, draft fishery health and aquaculture policies, fish quality laboratories, a disease diagnosis study, and certification of fish farms and hatcheries. With the new laboratory set up, seafood samples can be analyzed at a cheaper cost in Ghana instead of using more expensive facilities abroad, and trained fish farmers are in a better position to set up their businesses. Aquaculture investments could have affected more significant benefits had all intended activities been completed.

(iii) Social Performance

18. During the project's lifetime, fish remained a main source of animal protein for Ghanaians and an important source of essential vitamins, phosphorus, magnesium, selenium, and iodine. The increased rate of aquaculture production and fish imports likely facilitated this trend despite the decline in fish stocks. The sector continued to attract an increasing proportion of the active labor force because the entry cost remained low and a low level of education in fishing communities kept people from seeking other employment opportunities. Income from other sources did not materialize as planned because the alternative livelihood program was not launched. The NAFPTA empowered women involved in the fishery sector, particularly along the value chain. Women are also expected to benefit from the Ahotor ovens in terms of revenue and health impacts once the ovens put to use. Finally, project-financed social marketing helped educate fishers and fish processors on fishery laws, the impact of illegal fishing, and hygienic handling of fish and improved the transparency of the fishery sector.

[76] For each oven, processors spent GHC 70 per day for smoking and now they spend GHC 30 per day. Assuming that women work 300 days a year with 300 ovens, the cost savings will be GHC 40 per day × 300 days × 300 ovens × 0.19 exchange rate = US$684,000.
[77] The price was GHC 180 per basket and now it is GHC 200–GHC 210 per basket because the quality, look, and taste of the smoked fish are improved. Assuming that each woman can sell 10 baskets a month, the price benefit for 300 ovens a year will be GHC 20 × 10 basket/month × 12 months × 300 ovens × 0.19 exchange rate = US$136,800.
[78] Amenyogbe, E., G. Chen, et al. 2018. "A Review of Ghana's Aquaculture Industry." *Journal of Aquaculture Research and Development* 9 (8). DOI:10.4172/2155-9546.1000545.

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

1. The draft ICR was shared with MOFAD and the Fisheries Commission. Comments originating from the Fisheries Commission are as follows:[79]

2. Many thanks for the ICR report. I have shared some two comments in lieu of the covenants and the current status of the semi-industrial fleet. Let me state unequivocally that as far as I am concerned, the report represents a true and fair assessment of the implementation of the Project. I have shared the report with other colleagues and will make their comments available when received:

(a) A project intervention aimed at turning a fishery which is generally overfished and specifically facing a major collapse of its sustainability fishery (small pelagic) is no mean business, and, therefore, the dated covenants were very relevant. This notwithstanding, however, the integrity of the data upon which covenantal decisions are made must be accurate, for example the baseline for existing industrial vessels indicated in the PAD (67) was actually the ACTIVE INDUSTRIAL VESSLS and not the TOTAL (EXISTING VESSELS). For the avoidance of doubt, existing vessels will comprise the active vessels plus the inactive but serviceable vessels. This is not to say that the numbers did not already over and above the requisite frame for maximum sustainable yield (MSY) (indicated in the marine fisheries management plan (MFMP)) but to indicate that it will have given the magnitude of the problem to be dealt with and provided caution for over ambitious plans.

(b) It is becoming increasingly obvious that the current and future financial economic and technological viability of this fleet compared to the industrial and artisanal canoe fleet is in dire straits. They no longer have drydocks and safe beaching equipment to carry out repairs and maintenance. They nowadays rely on heavy truck engines for propulsion. Sea going personnel for the sector are becoming endangered; not only this but training arrangements for the personnel is a problem-indeed in this state they are un- insurable. The issue of meeting licensing conditions still lingers. Alongside exploring the use of technology to manage their effort must attract the immediate attention of policy makers as to their future existence and role in a modernized fisheries management regime.

(c) Not only that but we have large (more than 10m length overall (LOA)) semi-industrial vessels (SIV) and small (less than 10m LOA) number. The SIV both do purse seining competing with the canoes. when they trawl, they compete with the long-distance (industrial) trawlers. Together the large and small SIVs are sandwiched between the long-distance trawlers and canoes. Whichever way, it makes national sense to protect the semi-industrial vessels (Ghanaian beneficiaries) more than the long-distance trawlers (legally owned by Ghanaians but benefits foreigners).

3. Below is a summary of the Recipient's project completion report:[80]

4. The report rated the overall project Satisfactory, with a Highly Satisfactory achievement of all the original and revised PDO indicators, Highly Satisfactory rating of Components 1 and 2, Satisfactory rating of Components 3 and 5, and Marginally Unsatisfactory rating of Component 4. The components' ratings

[79] Acronyms are detailed by the author.
[80] The report was prepared by Dr. Paul Boadu and Dr. Nelson Obirih-Opareh in July 2018.

were based only on the revised intermediate results indicators. Effectiveness was rated Highly Satisfactory despite comments on the lack of coordination between implementing partners, which hampered effective implementation of activities and the reporting system. On the other hand, the report stressed that many institutions were involved in various aspects of project implementation, resulting in ownership of the project over the implementation period.

5. Project relevance was rated Highly Satisfactory because of the importance of the project to Ghana's development goals and food security and continental, regional, and national strategies. Efficiency was rated Satisfactory and was discussed in the context of organizational effectiveness, staff capacity, and productivity, noting delays because of the replacement of the M&E specialist, 'resignation' of the first project coordinator, and long expense approval processes; high efficiency of financial management, procurement, and M&E functions; full compliance with safeguard policies; and an economic analysis that was not conducted due to lack of sufficient data. A lack of memoranda of understanding with the executing agencies was noted as a reason for insufficient reporting. The Government of Ghana and the World Bank were said to have "adhered to all their obligations" (Government of Ghana: recruitment/payment for project staff at both the PCU and the microimplementation levels; provision of working space/offices; adherence to the guidelines in the Project Implementation Manual with respect to procurement, financial management, and so on according to the external audit reports; and timely preparation/submission of project progress reports to the stakeholders; World Bank: carrying out supervision missions and disbursement).

6. Sustainability was rated Satisfactory because, on the one hand, the project's design and implementation provided the Fisheries Commission with institutional and human capacities to move the process forward and the Government paid the salaries of the agencies involved in executing the project, and on the other hand, there was insufficient funding to sustain project momentum and fish farmers faced difficulties in purchasing affordable feed.

7. The report's recommendations were to (a) address fish farmers' concerns about high feed costs either through a public-private partnership or through support to an existing implementing partner to establish feed production facilities using local materials, (b) develop quarterly work plans on the basis of executing agencies to minimize delays and ensure funds' availability, and (c) prepare a cash flow based on the work plan and use it to manage requests for funds.

8. The full completion report is available in WBDocs.

ANNEX 6. SUPPORTING DOCUMENTS

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- MFAD (September 2017) Ghana Aquatic Animal Health Policy and Implementation Action Plan (2018–2021).
- MFAD Fisheries Management Plan of Ghana - A National Policy for the Management of the Marine Fisheries Sector 2015–2019.
- MFAD (August 2015) Zoning of Volta Lake for Sustainable Aquaculture: Social and Economic Implications for Riparian Communities in Ghana.
- Ministry of Food and Agriculture (January 2012) Press Release on Suspension of Licensing of New Fishing Vessels.
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- Project bulletins.
- Prof. F. K. E Nunoo. 2018. *Marine Protected Areas in Ghana - Strategies, Action Plan and Implementation Framework*.
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ANNEX 7. RESULTS FRAMEWORK CHANGES

Original Indicators	Revised Indicators (following June 2017 Restructuring)	Rationale for Change
Total landings per unit of fishing capacity	Dropped	This indicator could not be measured because it required unavailable information on tons of fish landed per type of fishing vessel annually.
	New: Fisheries management plan of the marine fisheries sector of Ghana implemented[81]	This indicator replaced the above PDO indicator and was considered easier to measure and more comprehensive in measuring sustainable fisheries management. In addition, it was approved by the World Bank as a core results indicator for the sector and was agreed on by the WARFP projects as the PDO indicator to measure improved fisheries management for purposes of regional aggregation and comparison of progress between countries.
Total patrol days at sea per year in coastal fisheries	Dropped	The indicator did not reflect the outcome of strengthened enforcement but rather measured an input.
	New: Average infractions reported per unit of enforcement activity	This indicator better measured improved enforcement of IUU fishing.
Annual net economic benefits from targeted fisheries	Dropped	This indicator could not be measured because it required unavailable (and when available, unreliable) information on fish landings, price, cost, and effort and it lacked attribution.
	New: Number of fish health labs established	Setting up labs was considered a key instrument for minimizing economic losses of aquaculture from disease outbreaks and promoting the export certification process of marine fisheries.
Total annual aquaculture production	Dropped	The indicator was dropped because of attribution issues: aquaculture production was driven by the private sector before the project invested in any related activities.
	New: Scoring on aquaculture enabling environment: 1. Disease control; 2. Policy framework	This indicator better reflected the outcome of project-financed investments in aquaculture development and had been agreed on by WARFP countries as the PDO indicator to measure improvements in aquaculture for the abovementioned purposes.
Direct project beneficiaries, of which are female	Unchanged	
Component 1		
Marine fishing canoes (motorized and non-motorized) that are registered and licensed	Revised: Marine fishing canoes that are registered and embossed (disaggregated	The revised indicator was considered clearer as it spelled out the final stage of licensing (embossment).

[81] The wording of the indicator did not follow the Core Indicator guidelines from OPCS.

Original Indicators	Revised Indicators (following June 2017 Restructuring)	Rationale for Change
	motorized and non-motorized)	
Active marine fishing canoes	Dropped	The indicator was dropped because it was redundant with the above revised indicator on registration and embossment of canoes and because it provided a clearer evaluation of the size of this segment (registration and embossment instead of active).
Active licensed industrial trawl vessels	Revised: Number of licensed industrial and semi-industrial vessels (disaggregated industrial and semi-industrial)	The revised indicator measured also the semi-industrial segment and provided a clear evaluation of the size of these segments (licensing instead of active).
Agreements signed between Government and communities for stakeholder management of fisheries	Revised: Number of communities supported with enhanced means of livelihoods to promote stakeholder-based co-management of fisheries resources	Since co-management agreements were not expected to be signed by project closing because of delays, the original indicator was replaced with a measurement of a project-financed activity which was identified under Component 2 in the PAD but was not included in the original Results Framework. This indicator had also been agreed on by the WARFP countries as the indicator to measure investments in alternative livelihoods to fishers losing their income because of new access control measures financed by the project, for the abovementioned purposes.
	New: Fishing Vessel Registration and Licensing Guidelines prepared by Fisheries Commission	This indicator was added to measure an activity, which was considered in the PAD as key in the effort to change the licensing system in Ghana and thereby control the fishing effort; however, was not included in the original Results Framework.
	New: Fisheries Management Plan developed and submitted to Cabinet for approval	This indicator was added to measure progress toward achieving the revised first PDO indicator and following a decision of the WARFP countries to add this indicator in all projects for the abovementioned purposes.
	New: Framework and strategy for establishment of Marine protected areas (MPAs) prepared and submitted to the Cabinet for approval	While this activity was included in the work plan and budget as an investment which would enable the implementation of the Ghana Fisheries and Aquaculture Sector Development Plan, it had not been assigned an indicator in the original Results Framework.
Component 2		
Fisheries Enforcement Unit established as described in 2002 Fisheries Act	Unchanged	

Original Indicators	Revised Indicators (following June 2017 Restructuring)	Rationale for Change
A satellite-based fishing vessel monitoring system is in place for the 200-mile Exclusive Economic Zone and monitoring 24 hours/day	Unchanged	
	New: Number of fisheries watch committees established and functional	This activity was not spelled out in the PAD; however, it was considered essential for achieving the second project outcome. The restructuring provided an opportunity to measure this new activity.
	New: Number of infractions reported by the fisheries watch committees at the community level	This indicator was added to measure the effectiveness of the new watch committees.
	New: Average daily operation of vessel monitoring system	This indicator was added to measure the ongoing functioning of the VMS (although this was already included in the original VMS indicator, so the addition of this indicator was likely an oversight).
Total aerial patrol hours per year in coastal fisheries	Revised: Annual law enforcement activities	The revised indicator measured a wider range of enforcement activities, excluding aerial patrols which the project eventually did not finance because of their high cost and irrelevance once the VMS was installed, that is, sea patrols, beachcombing, and inspections at quayside.
Component 3		
Pilot integrated fish landing site clusters with functioning basic services (e.g. electricity, water, etc.)	Revised: Construction of improved smoke ovens for fish	The indicator was replaced because the target was considered unattainable in the remaining project period (because of delays described in the ICR) and to measure project investments in fish processing technology improvements for women as agreed on in the PAD but not included in the original Results Framework.
	New: National association of fish processors and traders established and functional	This indicator was added to reflect project investments in strengthening fisheries associations, as identified in the PAD but not included in the original Results Framework, and to reflect the project's contribution to the World Bank gender agenda.
Component 4		
Zoning regime for Lake Volta established	Revised: Zoning plan for Lake Volta developed	The indicator was replaced for better alignment with the financed activity (development of a zoning plan) as identified in the PAD.
	New: Early warning system on disease	These disease control measures were added as indicators following a tilapia disease outbreak in Lake Volta Region in

Original Indicators	Revised Indicators (following June 2017 Restructuring)	Rationale for Change
	outbreak established and functional	2016 and 2017 and the recognition that the project could contribute to mitigating future events by putting in place a disease early warning system and a database of fish diseases of economic importance.
	New: Database for disease of economic importance established and functional	
	New: Aquaculture policy developed and submitted to relevant authority for approval	These indicators were added to measure elements of sustainability of the aquaculture sector and evaluate project-financed investments that had not been reflected in the original results framework.
	New: Fish Health policy developed and submitted to the Cabinet for approval	
Component 5		
An electronic "dashboard" of key environmental, social and economic fisheries statistics established at the Secretariat of the Fisheries Commission and linked to the CSRP, and publicly accessible	Unchanged	

ANNEX 8. WARFP PHASES AND FOCUS