

AFRICAN DEVELOPMENT BANK



ZAMBIA

AQUACULTURE ENTERPRISE DEVELOPMENT PROJECT

OSAN/SARC/ZMFO

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CURRENCY AND MEASURES

Currency units

1 UA	:	1.39434 USD
1 UA	:	14.3119 ZMW
1 USD	:	10.2643 ZMW

Effective rate in August 2016

GOVERNMENT FISCAL YEAR

1st January to 31st December

WEIGHTS AND MEASURES

1 metric tonne	=	1,000 kilograms
1 hectare (ha)	=	2.471 acres
1 acre	=	0.405 ha
1 square kilometre (km ²)	=	100 ha

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Acronyms and Abbreviations

ADAZ	Aquaculture Development Association of Zambia
AfDB	African Development Bank Group
CAADP	Comprehensive Africa Agricultural Development Program
CP	Cooperating Partners
CPIA	Country Policy and Institutional Assessment
CPPR	Country Portfolio Performance Review
CSP	Country Strategy Paper
CSO	Central Statistics Office
DFID	Department for International Development (UK)
EA	Executing Agency
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ESMP	Environmental and Social Management Plan
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIRR	Financial Internal Rate of Return
GRZ	Government of Republic of Zambia
GIZ	German Development Cooperation
HEST	Higher Education Science and Technologies
JASZ	Joint Assistance Strategy for Zambia
JICA	Japanese International Corporation Agency
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILO	International Labour Organisation
PRODAP	Lake Tanganyika Development Program
LTDP	Lake Tanganyika Development Project
M&E	Monitoring and Evaluation
MT	Metric Tonnes
NAIP	National Agriculture Investment Plan
NAP	National Agricultural Policy
NPV	Net Present Value
PCT	Project Core Team
R-SNDP	Revised Sixth National Development Bank
SIP	Small-scale Irrigation Project
NRWSSP	National Rural Water Supply and Sanitation Project
UA	Unit of Account
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USD	United States Dollars
WB	World Bank
WFP	World Food Program
ZAEDP	Zambia Aquaculture Enterprise Development Project
ZEMA	Zambia Environmental Management Authority
ZMFO	AfDB Zambia Country Office
ZMW	Zambian Kwacha

Loan Information

Client's information

BORROWER:	Republic of Zambia
EXECUTING AGENCY:	Ministry of Fisheries & Livestock

Financing plan

Source	Amount (USD)	Instrument
ADB	45.4 million	Loan
GRZ	5.49 million	Counterpart contribution
TOTAL COST	50.89 million	

ADB's key financing information

Loan Currency	USD
Loan Type	Fully Flexible Loan
Tenor	20 years inclusive of grace period
Grace period	5 years
Average Loan Maturity	12.75 years (function of the amortization profile)
Repayments	30 (Consecutive semi-annual payments after grace period)
Interest Rate	Base Rate +Funding Cost Margin+ Lending Margin + Maturity Premium if applicable
Base Rate	Floating Base Rate (6-month USD LIBOR reset each 1 st February and 1 st August). A free option to fix the Base Rate is available.
Funding Cost Margin	The Bank funding cost margin as determined each 1 st January and 1 st July and applied to the Base Rate each 1 st February and 1 st August
Lending Margin	80 basis points (0.8%)
Maturity Premium	0%
Front-end fees	0.25% of the loan amount payable at latest at signature of the loan agreement
Commitment fees	0.25% of the undisbursed amount. Commitment fees start accruing 60 days after signature of the loan agreement and are payable on Payment dates
Option to convert the Base Rate*	In addition to the free option to fix the floating Base Rate, the borrower may reconvert the fix rate to floating or refix it on part or full disbursed amount. Transaction fees are payable.
Option to cap or collar the Base Rate*	The borrower may cap or set both cap and floor on the Base Rate to be applied on part or full disbursed amount. Transaction fees are payable.
Option to convert loan currency	The borrower may convert the loan currency for both undisbursed or disbursed amounts in full or part to another approved lending currency of the Bank. Transaction fees are payable.

* Conversion options and transaction fees are subject to the Bank Conversion Guidelines available:
<http://www.afdb.org/fr/documents/document/guidelines-for-conversion-of-loan-terms-july-2014-87643/>

**if applicable*

Timeframe - Main Milestones (expected)

Concept Note approval	November 2015
Project Appraisal	February 2016
Board Approval	November 2016
Effectiveness	December 2016
Last Disbursement	June 2022
Completion	December, 2021
Last repayment	December 2041

Project Summary

1. Project Overview:

1.1. The Zambia Aquaculture Enterprise Development Project (ZAEDP) aims at stimulating a viable aquaculture subsector in Zambia in order to promote economic diversification, food security and sustainable employment generation, all of which are central priorities of the Government of Zambia. The development goal is to develop a domestic aquaculture subsector which serves as viable and inclusive business opportunity through enhanced production and productivity to improve the livelihoods of men and women beneficiaries along the aquaculture value chain. The project, which will be executed in the identified Aquaculture High Potential Zones across the country (especially Siavonga, *Chipepo*, *Bangwelu*, *Kasempa*, *Rufunsa* and *Mungwi*) will be implemented over a period of five (5) years (2017-2021). The project has three (3) components namely: a) Support to Aquaculture Entrepreneurs; b) Support to Growth Enabling Infrastructure and c) Project Management and Institutional Capacity Building. The total project cost is USD 50.89 million with an ADB loan of USD 45.4 million (89.2%) and GRZ contribution of USD 5.49 million (10.8%).

2. Needs Assessment:

1.2. Although Zambia is endowed with natural water resources that offer significant opportunities to supply fish to meet its national demands, the growth in the Aquaculture and Fisheries sector has not matched the ever-increasing demand for fish, due to a number of reasons: Firstly, the Zambian capture fisheries sub-sector is operating at fully exploited or over-exploited levels. Capture fisheries will therefore, not be able to produce enough fish in Zambia to meet with the national demand. Secondly, aquaculture production has not been able to respond to the increase in demands of fish, because the quality and quantity of fingerlings produced in Zambia are low; there is a lack of dedicated fish feeds, and more importantly its business opportunities as a profit generating sector, has not been fully explored by the financial institutions because of the perceived associated risks.

1.3 Current fish production estimate (both Capture Fisheries and Aquaculture) is about 100,107 Metric Tonnes per annum (2014) as against demand of 185,000 MT per annum. This implies that about 46% of the estimated demand is unmet by local production. While fisheries contribute significantly to agricultural sector GDP through capture fisheries and aquaculture, fish demand continues to grow due to the rising human population, increased preference of consumers and high costs of other protein sources such as beef. The per capita consumption of fish was 14.9 kg in 1971¹, but has reduced to 6 kg in the recent past. This dramatic decrease in fish per capita consumption is likely due to a combination of factors including rapid population growth, declining capture fisheries, and an aquaculture sector that is yet to fulfil its potential. Poor fish handling, poor fish farming husbandry techniques, inadequate nutrition education and insufficient value addition to fish and fish products compound the problem.

2.2 The rationale for this intervention is premised on the fact that Zambia is endowed with abundant water resources, which support largely fresh water capture fisheries and in recent

¹ FAO. 2013. Seafood Markets in Southern Africa: Potential of regional trade and aquaculture development. GLOBEFISH Research Programme, Vol. 109.

years, aquaculture. The potential of the major lakes of Tanganyika, Mweru-Luapula, Bangweulu, Kariba and Itzhi-tezhi (the latter two man-made) and major rivers of Zambezi, Kafue, Chambeshi and Luangwa as well as Lukanga swamps, which can readily support both capture and aquaculture fisheries development, have not been fully tapped. Also, Zambia's National Aquaculture Strategy (NAS) 2014-2024, National Aquaculture Development Plan 2015–2020, National Agricultural Policy (NAP), Sixth National Development Plan (SNDP) and National Agriculture Investment Plan (NAIP), are all commitments by Government of Zambia to diversify its economy, by bolstering investments that will support the aquaculture sector to increase its contribution to the national economy. Growing the aquaculture sector will also assist the Government of Zambia to tackle the so-called “youth bulge” which is a manifestation of the growing “army” of unemployed youth. According to ILO data, Zambia's unemployment rate was 13.30% in 2013 and specifically youth unemployment rate stood 24.60% in the same year. The project will seek to create new jobs to ensure socio economic empowerment, amongst the youth particularly and women, by supporting them along the aquaculture value chain.

3. Bank's Added Value:

3.1 The Bank has accumulated notable experience through successful management of agro allied portfolios in various Regional Member Countries (RMCs) including Zambia. The Bank has adequate lessons, from previously funded and ongoing projects in the fisheries sector, and more specifically in aquaculture, which were used during the identification and preparation of ZAEDP. Lessons were drawn from Lake Tanganyika Development Program (PRODAP) and Lake Tanganyika Development Project (LTDP). The Bank's comparative advantage stems from its technical capacity to provide a rigorous definition and planning of project activities, based on its long experience in the implementation of development projects. The Bank has also gathered experience supporting the Fisheries sector in quite a number of African countries including Rwanda, Malawi, Sierra Leone, Uganda etc.

4. Knowledge Management:

4.1 The project will support research and knowledge development in collaboration with the WorldFish Center (a member of the CGIAR) and national universities to develop: i) a fish genetics improvement program (genetic mapping exercise) and ii) the development of foundation breed stock which will lead to the improvement of the indigenous *Oreochromis andersonii* fish species. Research outcomes will also promote the clean-up on the Nile tilapia, *Oreochromis niloticus*. The knowledge generated from the research will be disseminated amongst the practicing and selected fish farmers for better productivity at the farm level. Experiences from setting up outgrower schemes (including the legal environment), will be documented and publicized for use in other aquaculture development programmes. Also a document with respect to best practices for African Aquaculture Development will be produced and disseminated. This project will be one of the first ones in Africa to support the development of aquaculture-parks and lessons learned in this area should be documented. In addition, collaborative knowledge development will enhance the systemic development of science capacity among aquaculture researchers in Zambia.

RESULTS-BASED LOGICAL FRAMEWORK (PROJECT MATRIX)

Country and Project Name:		Zambia – Aquaculture Development Enterprise Project				
Purpose of the project:		To promote of aquaculture as a viable and inclusive business opportunity through enhanced production and productivity to improve the livelihoods of beneficiaries along the value chain				
RESULTS CHAIN		PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES
		INDICATOR (INCLUDING CSI)	BASELINE 2015	TARGET (2021)		
IMPACT	Increased incomes and living standards of households by inducing inclusive and sustainable aquaculture growth	Contribution of Fishing & Aquaculture to GDP (%)	0.4%	2.56%	Central Bureau of Statistics (CBO) Annual economic report of MOF	
		Average household income of households related to the fishery and aquaculture sector increased (USD)	600 USD	1500		
OUTCOMES	1. Increased aquaculture production and productivity	1.1. Total annual aquaculture production (tons)	1.1. 20,200	1.1.40,200	DOF Statistical Bulletins Project monitoring reports/supervision missions/ Fish trade portal information	
		1.2. No. of people employed in aquaculture sub-sector(of which 50% women)	1.2. 12,210	1.2.24,210 (50% female)		
		1.3. Per capita consumption of fish	1.3. 6kg	1.3. 12kg		
	2. Market linkage and value chain for fish production	2.1 Percentage improvement in Fish handling through appropriate value chain and market linkage ;	2.1 < 5%	2.1.45%		
2.2 Percentage improvement in access to product and market information by fish producers and traders as well as service providers		2.2 0	2.2 5%			
3. Improved Fish quality	3.1 Percentage of Fish produced/imported compliant with international standards (product compliant international standards/total fish production and import)	3.1 < 5%	3.1 50%			
	I. SUPPORT TO AQUACULTURE ENTREPRENEURS					
OUTPUTS	1. Out-growers schemes established	1.1. No. of Out-grower Clusters established and functional	1.1 0	1.1 5	Project monitoring reports/supervision missions	Risk: Reneging by big Fish farmers on the out growers scheme Mitigation Measures: The cost of training those that would be incubated will be borne by the project
	2. Young Aqua-preneurs Empowerment Program established	2.1 No. of Young Aqua-preneurs selected and completed incubation sessions (of which 40% women)	2.1 0	2.1. 200(40% female)		
	3. Enhanced Input provided	3.1 No. of fingerlings production increased	3.1 57 million	3.1 98 million		

II. SUPPORT TO GROWTH ENABLING ENVIRONMENT					
4. Food safety program established	4.1 Fish standards testing laboratory established	4.1 0	4.1 1		
5. Post-Harvest Handling and Marketing Infrastructure developed	5.1. One stop shop/ Agro-service centres operational	5.1. 0	5.1. 5		
6. Aquaculture-Parks	6.1. No. of Aquaculture parks established/rehabilitated 6.2. Kilometres of roads developed in aquaculture-parks	6.1 0 6.2. 0	6.1 5 6.2 200 Km		
7. Aquaculture Research Institute	7.1 Fish Genetic Improvement Program established	7.1. 0	7.1. 1		
III PROJECT MANAGEMENT AND INSTITUTIONAL CAPACITY BUILDING					
8. Establishment of Aquaculture Statistics Database	8.1. No. of Aquaculture Statistics surveys conducted 8.2. National Aquaculture Statistics Database website operational (Website user traffic/month)	8.1 0 8.2 0	8.1 18 8.2. 100	CSO Monthly Bulletins	Risk: • Possible delay in project implementation
9. Capacity Building	9.1. Number of technical assistance staff trained	9.1 0	9.1 15(50 female)	Project monitoring reports/ supervision missions	Mitigation Measures: Project staffing will be done on the basis experience of candidates in project implementation, in addition to staff training
10. Project Management	10.1 No. of steering committee meetings organized	10.1 0	10.4 12		
COMPONENTS					INPUTS
KEY ACTIVITIES	Component 1: Support to Aquaculture Entrepreneurs: USD 30.94 million				Financing sources ADB Loan: USD 45.4 million GRZ: USD 5.49 million Total: USD 50.89 million
	1. Out-growers schemes established				
	2. Young Aqua-preneurs Empowerment Program established				
	3. Enhanced Input provided				
	Component 2: Support to Growth Enabling Infrastructure USD 17.73 million				
1. Food safety program established					
2. Post-Harvest Handling and Marketing Infrastructure developed					
3. Aquaculture-Parks					
4. Aquaculture Research Institute					
Component 3: Project Management & Institutional Capacity Building USD 2.22 million					
1. Establishment of Aquaculture Statistics Database					
2. Capacity Building					
3 Project M&E activities					
4 Project planning and coordination					
5. Project steering committee					

Project Timeframe

N°	ACTIVITES	PROJECT IMPLEMENTATION YEARS								
		2016	2017	2018	2019	2020	2021	2022		
1.	Negotiations, Board Approval of Loan	■								
2.	Signature of Loan Agreements		■							
3.	Recruitment of Project Staff		■							
4.	Authorization of 1 st Disbursement		■							
5.	Project Launching & Sensitization		■							
6.	Finalisation of the revised works designs		■							
7.	Approval of 1 st Competitive Bidding & SL		■							
8.	Invitation to Bids		■							
9.	Project coordination		■							
10.	Mid-term Review of Project				■					
11.	Completion Report of the Governments							■		
12.	Bank Completion Report								■	
13.	Audits			■	■	■	■		■	
14.	Last project disbursement								■	

REPORT AND RECOMMENDATION OF THE MANAGEMENT TO THE BOARD OF DIRECTORS ON A PROPOSED ADB LOAN TO THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA FOR THE AQUACULTURE ENTERPRISE DEVELOPMENT PROJECT (ZAEDP)

Management hereby submits this Report and Recommendation of an ADB loan of USD 45.4 million from the Bank to the Government of Zambia to finance the Aquaculture Enterprise Development Project.

I – STRATEGIC THRUST & RATIONALE

1.1 Project linkages with Country Strategy and Objectives

1.1.1 Despite the recent expansion in domestic production, a notable deficit remains in the Zambia market which is largely met by imports of frozen fish products from Asia. Latent market demand is high, mainly constrained by production. Limitation to domestic production arises principally from insufficient access to (i) quality fish-feed (ii) quality fingerlings (healthy and monosex) and (iii) affordable finance. The National Aquaculture Development Strategy (2004) provides the strategic framework for the development objectives of the sub-sector. The NADS seeks to promote an enabling environment to attract private sector-led growth in order to attain increased domestic fish production. The project is well aligned with the National Agriculture Development Policy (2004-2015) and the National Agriculture Investment Plan (NAIP, 2014-2018) both of which place emphasis on the private sector growth. The Zambian government is revising the fisheries legislation to include aquaculture development. The Sixth National Development Plan (SNDP, 2013-2016) is also in support of strategies for increased production and productivity, value addition through sustainable and efficient management of aquaculture and private sector driven growth among others gives impetus to sub-sectors within agriculture to open avenues for growth. For the fisheries sector, the strategy also clearly stresses out the priority that should be given to fish farming to increase the continent's fish production. The project will safeguard supply of fish to all Zambians, especially poor rural and urban consumers and improve access to nutritious food for the total population; and reduce fishing pressure on lakes, rivers and floodplains, thus making significant contribution to Zambia's efforts to achieving the Sustainable Development Goals (SDGs), especially SDGs 1, 2 and 14². It also aligns with the Zambia Country Strategy Paper (CSP: 2016-2021) priorities which has two strategic pillars: (i) Support to Infrastructure Development: Enhance productivity and trade competitiveness; and (ii) Support to Private Sector Development: Diversifying the economy and improving the regulatory environment. This project will support the development of infrastructure that will create the environment for the private sector to tap on the potential offered by fish farming. The Project is in line with Zambia's National Agriculture Policy (NAP 2004), National Gender Policy (2000), Gender Strategy (2014–2016), National Strategy on Industrialization and Job Creation (2013).

² SDG 1: End poverty in all its forms everywhere; SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture; SDG 14: Conserve and sustainably use the oceans, seas and marine (and inland fisheries) resources for sustainable development.

1.2 Rationale for Bank's involvement

1.2.1 The fisheries sector is important in Zambia for employment, earnings and as a source of food and nutrition. It is estimated that fish products account for over 30%³ of protein consumption particularly for low-income Zambian households. Current production averages 100,107 metric tonnes/year against total domestic demand of 185,000 metric tonnes. Due to significant levels of pressure of natural fish stock as a result of over-fishing, capture fisheries is unable to meet growing consumer demand. Aquaculture currently contributes approximately 10%⁴ of total production. Given the substantial freshwater endowment of Lakes Bangweulu, Itezhi-tezhi, Kariba, Mweru and Tanganyika and the country's climate, Zambia has significant potential for expanding the development of aquaculture into a viable business sector that can sustainably fill the supply gap while creating employment along the value chain.

1.2.2 Aquaculture commenced in Zambia in the 1950s mainly driven by Government investment in research stations, hatcheries and demonstration projects. Several small to medium scale private sector actors predominantly focused on pond fishery entered the sector as from the 1980s. Over the past few years, Zambia's aquaculture sector has attracted major aquaculture companies particularly in the Copperbelt, Lusaka and Southern provinces, who have invested heavily in large scale cage-based fish farming facilities. The small-scale farmers are family based and labour extensive, carrying out extensive culture and producing between 1-2 tonnes/ha/year. Fish production is very important in rural Zambia. The two main fish species farmed in Zambia are the exotic Nile tilapia *Oreochromis niloticus* and to a lesser extent the indigenous *Oreochromis andersonii*.

1.2.3 While fisheries contribute significantly to the agriculture sector through capture fisheries and aquaculture, fish demand continues to grow due to the rising human population, increased preference of consumers and high costs of other protein sources such as beef. The per capita consumption of fish was 14.9 kg in 1971, but has reduced to 6 kg in the recent past. Poor fish handling, bad fish farming techniques, inadequate nutrition education and insufficient value addition to fish and fish products compound the problem.

1.2.4 With the volatility in copper prices in recent times, the need to diversify the economic base of Zambia becomes more compelling and indeed imperative. The project will promote inclusive economic development by targeting areas where fish farming is already an activity but has not been taken to its full economic and business potentials. To this end, the project will serve as bridge between the existing major players and medium to small scale producers through a customized out-growers scheme with technical assistance, feed fingerlings and finance. These anchor farmers have been identified and have agreed to partner with the project. The project seeks to ensure socio economic empowerment, increase the involvement of both genders in the advancement of the aquaculture sector in Zambia; create conditions for equitable access by men and women to project resources and increase decision-making for women along the aquaculture value chain. Project interventions will thus deliberately target not less than 40% women and 20% youth as beneficiaries and will promote value addition that offers immense opportunities to increasing household income levels.

1.2.5 The project therefore, is in line with the Bank's Country Strategy Paper as it will induce a great level of private sector participation in the sector's development and overall economy at

³ Aquaculture Fish Policy Report (2008)

⁴ Department of Fisheries (2015)

large. Furthermore, the project aligns with the AfDB's Feed Africa Strategy (2016-2025) which aims to transform African Agriculture into a globally competitive, inclusive and business-oriented sector that creates wealth, generates gainful employment, and improves quality of life. Moreover, the Project is in conformity with the Bank's Ten Years Strategy (2013-2022), and the Bank's Gender Strategy (2014-2018) as it promotes inclusive growth and environmentally sustainable development. These have made the Bank's involvement more compelling.

1.3 Donor Coordination

1.3.1 The Bank engages in dialogue with CPs under the guidance of the aid effectiveness principles embodied in the Paris Declaration, Accra Agenda for Action and Millennium Development Goal 8 - "Develop a Global Partnership for Development". The newly adopted United Nations Sustainable Development Goal No. **17; Strengthen the means of implementation and revitalize the global partnership for sustainable development**, encourages facilitation of this dialogue. The CPs have hitherto signed a Joint Assistance Strategy for Zambia II (JASZ II: 2011-2015) that outlines the necessary actions needed to improve mutual accountability, aid effectiveness and management of official development aid. The division of labour matrix allows CP coordination of streamlined efforts at sector level.

1.3.2 The Bank is an active participant in the CP Group and other diverse micro and thematic advisory groups. The Agriculture Sector CP Group comprises EU, FAO, Finland, AfDB, JICA, World Bank, WFP, IFAD, USAID, Sweden and Norway. The Environmental and Natural Resources CP Group comprises USAID, DfID, World Bank, Finland and AfDB. It has played a key role in the design of policies and strategies for economic diversification and sustainable management of natural resources. The Bank attends monthly meetings of the CP groups as hosted by the different CPs. The main milestones of AfDB's participation in the aid coordination framework are (i) the approval of two co-financed Projects Kazungula Bridge Project with JICA and Nacala Road Corridor Project Phase II with EU, AFD and EIB), (ii) the assumption of the lead role in the Agriculture and Water & Sanitation working groups, (iii) the signing of Joint Agricultural Strategy for Zambia (JASZ) II, (iv) signing of CAADP Compact, (v) joint management of the Small-holder Irrigation Project (SIP) (AfDB and Finland), (vi) implementation of the National Rural Water Supply and Sanitation Project (NRWSSP) (AfDB, Denmark and GTZ), (vii) design of the Pilot Program on Climate Resilience (AfDB, WB, UNDP, IFC); and (viii) design of Higher Education Science and Technology (HEST) Project (AfDB, Netherlands, JICA, Denmark).

II – PROJECT DESCRIPTION

2.1 Project Objectives

2.1.1 The sector goal is to contribute to economic growth as well as food and nutrition security in Zambia. The project development objective is to advance the aquaculture sub-sector as a viable and inclusive business opportunity, through enhanced production and productivity, in order to improve the livelihoods of beneficiaries along the aquaculture value chain.

2.1.2 These objectives would be achieved through: a) support and promotion of reliable access to quality input and output markets; b) competitively-priced risk sharing access to finance and c) creation of an enabling infrastructure environment, which in turn is expected to facilitate the entry of new actors and expansion of business opportunities by the existing players

in the industry. Specifically targeted Fish farmers will improve their business and managerial skills and the quality of their productive systems in order to increase output, efficiently, while keeping fish prices affordable and meet growing demand from the lucrative domestic market.

2.1.3 The project consists of the following components: a) *Support to Aquaculture Entrepreneurs*; b) *Support to Growth Enabling Infrastructure* and c) *Project Management and Institutional Capacity Building*.

The details are presented in the table below:

Table 2.1: Description of Project Components and Sub-components

Notes: i. Unless stated otherwise, for each activity, the Project is targeting at least 50% of the beneficiaries will be women.
ii. Details of the activities are provided in Project Appraisal Report Volume II Technical Annex

No.	Components	Cost (USD, Million)	Sub-Component Description, Cost (USD million) and % allocation
	Support to Aquaculture Entrepreneurs	30.94	<p><i>Sub-component 1.1: Out-growers Development Scheme</i></p> <p>The development of an out-grower scheme will be part of the project. (i) Development of the legal framework with respect to out-grower schemes/contract farming will be reviewed. (ii) Selection & training/incubation of 50 fish entrepreneurs; a practical training period of 6 months will be offered to people lacking the practical knowledge of fish farm operations, with the assistance of and on commercial fish farms including the major farms including <i>Yalelo, Kafue Brim Farm, Lake Harvest, Bauer Farms, Kalimba and Mpende Fisheries</i> etc. After the practical training period, selected and willing candidates will be supported in producing business plans and with acquiring loans (at reasonable rate through the de-risking facility) from commercial banks, to start up either their independent business, or an out-grower operation linked to an already existing commercial farm (possibly where they did the practical training period).</p> <p><i>Sub-component 1.2: Enhancement of aquaculture input production systems:</i></p> <p>i) Support to <i>fingerling production</i>: this involves rehabilitation/construction of five (5) existing hatcheries (and nurseries) in Chipepo, Rufunsa, Mungwe, Kasempa and Balumba/Mkwere. The management of these hatcheries will be contracted out to run as viable business venture (ii) Finalization of aquaculture regulations to enable enforcement and compliance (iii) Technical support to Aquaculture Extension Services System including the provision of motorcycles, field extension training materials and equipment, ICT equipment and capacity building (iv) Development of Aquaculture Inputs Certification system for public and private hatcheries (Establish hygiene inspection, certification and regulation system and for Fish Feed quality in cooperation with the University of Zambia) and the development of feed and aquaculture product standards, in collaboration with the Zambia Bureau of Standards.</p> <p><i>Sub-component 1.3: Aqua-preneurs Empowerment Program (with special focus on youth and women)</i></p> <p>This involves (i) Intensive incubation and internship (skills and training) of 6 months for youth that are passionate and highly committed to running an <i>aquaculture business</i>, but lacking practical skills (50 aqua-preneurs per annum per farm at the 4 farms) (ii) Technical support to design a technically sound and financially viable aquaculture production system that can be ready for financing; (iii) Financial support to start up the incubated graduands through an incentive-based risk sharing financing scheme between the Government financed Aquaculture Development Fund, the project and local commercial banks) to set up and manage ponds and/or cage enterprises. The project will provide a seed fund of USD 27.4 million domiciled with the Bank of Zambia and will be ring-fenced and serve to anchor a risk-sharing mechanism which leverages additional funds from participating commercial banks. The risk sharing facility will provide a negotiated guarantee to the commercial banks to provide loans to the aqua-preneurs financed from the balance sheet</p>

			of the participating commercial banks; (iv) training for commercial banks on aquaculture modules and related risk identification in the sector.
	Support to Growth Enabling Infrastructure	17.73	<p><i>Sub-component 2.1: Aquaculture-Parks and Processing Zone Development</i> (i) Development of aquaculture parks through provisions of enabling and critical key infrastructure including feeder roads, water reservoirs, hatcheries/nurseries canals, electricity systems and markets). (ii) Development of site specific ESMP/ESIA. (iii) Promote awareness campaigns and disease control measures.</p> <p><i>Sub-component 2.2: Food safety program</i> (i) Construction and operationalization (equipment & personnel) of ISO compliant Food Safety Laboratory in Chilanga (ii) Capacity Building/Training of inspectors (iii) Revision of Fisheries Act to include fish standards. When required, the project will engage FAO for Technical Assistance provision with respect to capacity building and standards development.</p> <p><i>Sub-component 2.3: Fisheries Sector Research and Development</i> (i) Rehabilitation of 5 existing national aquaculture research (ii) in cooperation with the WorldFish Center in the development of a genetic Improvement program (Genetic mapping exercise, Development of founder breed stock, improvement of the indigenous fish species. (iii) Research grants to Masters and Ph.D. students.</p> <p><i>Sub-component 2.4: Support to National Aquatic Health System</i> A National Aquatic Health System will be incorporated as Project activity to stem the possible tide of the outbreak of epidemic fish diseases. The Project will therefore support: (i) Develop and implement a National Strategy on Aquatic Animal Health Management in Zambia (ii) Establishment of National Aquatic Animal Health Laboratory (iii) Support for continued implementation of an active surveillance for Epizootic Ulcerative Syndrome (EUS) as well as design surveillance system for the newly discovered Tilapia Lake Virus (TiLV).</p>
3	Project Management & Institutional Capacity Building	2.22	<p>The component aims to support (i) Capacity building of the Department of Fisheries and other key stakeholders particularly the direct beneficiaries. This will involve upgrade of the working environment of the Department of Fisheries through the renovation of the office and the supply of office and IT equipment (ii) Development of an up-to-date Result-Based monitoring and evaluation framework which will support the generation, collection, analysis and utilization of aquaculture statistics. This will ensure reliable statistics of aquaculture are regularly sourced and fed-back into decision-making and project /national management information system. (iii) A Project Core Team, which will include: a) A qualified Project Coordinator; b) Procurement Specialist, c) a Monitoring & Evaluation specialist; d) an Accountant and e) Social/Gender Specialist These positions would be nationally advertised and recruitment done on a competitive basis. The Project Core Team (PCT) would be reporting to the Director of Fisheries and would be charged with the management and coordination of the Project's activities. (v)The component would support the attachment of Peace Corp volunteers to Aquaculture Parks to extend the extension and outreach capacity of the Department of Fisheries. (vi) The project will also fund the necessary IT and office equipment as well as field vehicles to facilitate supervision and coordination activities.</p>
Total		50.89	

2.2. Technical solutions retained and other alternatives explored

2.2.1 The technical solutions which were retained comprises hatchery production of fingerlings which will ensure sustained supply of fingerlings for the ponds and cages. Risk sharing mechanism was also retained to de-risk and leverage additional resources from commercial banks to provide loans to aqua-preneurs. Two alternatives to the Investment approach were considered and rejected are as follows:

Table 2.2: Project Alternatives Considered and Reasons for Rejection

Alternative Option	Brief Description	Reason for Rejection
i. Providing lines of credit to commercial banks to support the aquapreneurs and other business along the aquaculture value chain.	Providing development finance to the commercial banks targeting the aquaculture sector.	This method is not sustainable because it is easy for the commercial banks to divert the resource for other sectors and not the real sector. Besides, there would be no incentive to recover the money as the financing are not coming from the commercial banks' resources. The option retained allows for risk sharing between the Project and the commercial banks to ensure sustainability.
ii. Project to support artisanal fisher-folks.	Continued support to capture fisheries	The existing water bodies in Zambia are experiencing unsustainable harvesting of fish and that has led to lower productivity over the years.

2.3 Project Type

2.3.1 This intervention is designed in the form of a stand-alone Investment Project with the main aim of supporting business development models for the transformation of the aquaculture sub sector.

2.4 Project Cost and Financing Arrangements

2.4.1 **Project Costs:** The total cost of the project is estimated at USD 50.89 million, net of taxes, and based on 2016 prices, comprising of 62% of the total cost in foreign cost, and 38 % in local costs. The project cost comprises of an ADB loan of USD 45.4 million (89.2%) and GRZ contribution of USD 5.49 million (10.8%). This cost is inclusive of physical and price contingencies estimated at average rates of 4% and 3% respectively. The price contingencies were estimated on the basis of actual and projected levels of local and foreign inflation rates of about 5.5% and 2.2% per annum, respectively. The physical contingencies are estimated from 0 to 15%, based on common practices. A summary of the project cost estimates by components and expenditure accounts is shown in Tables 2.3, 2.4 and 2.5 below, while details are provided in the Technical Annexes – Volume II of the appraisal report.

Table 2.3:- Summary Project Cost by Component (USD/ZKW'000)

COMPONENTS	Local	(ZMW) Foreign	Total	Local	(USD) Foreign	Total	%Foreign Exchange	% Total Base Costs
A. Support to Aquaculture Entrepreneurs	126,796.49	187,120.22	313,916.71	12,353.13	18,230.16	30,583.29	60	64
B. Support to Growth Enabling Environment	49,611.83	106,332.36	155,944.20	4,833.43	10,359.42	15,192.84	68	32
C. Coordination and Project Management	8,352.74	11,981.09	20,333.82	813.76	1,167.26	1,981.02	59	4
Total Baseline Costs	184,761.06	305,433.67	490,194.73	18,000.32	29,756.83	47,757.16	62	100
Physical Contingencies	5,204.66	12,997.66	18,202.32	507.06	1,266.30	1,773.36	71	4
Price Contingencies	8,175.95	5,796.50	13,972.45	796.54	564.72	1,361.26	41	3
Total PROJECT COSTS	198,141.66	324,227.84	522,369.50	19,303.92	31,587.85	50,891.78	62	107

Table 2.4:- Summary Project Cost by Expenditure Categories /USD/ZKW'000)

COMPONENTS	(ZMW)			(USD)			%Foreign Exchange	%Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
I. INVESTMENT COSTS								
A. Works	24,359.56	73,078.69	97,438.25	2,373.23	7,119.68	9,492.91	75	20
B. Goods	4,268.81	18,726.44	22,995.26	415.89	1,824.42	2,240.31	81	5
C. Services	34,548.86	39,521.49	74,070.36	3,365.92	3,850.38	7,216.29	53	15
D. Miscellaneous	112,543.22	168,814.84	281,358.06	10,964.51	16,446.76	27,411.27	60	57
Total Investment Costs	175,720.47	300,141.46	475,861.93	17,119.54	29,241.24	46,360.78	63	97
II. RECURRENT COSTS	9,040.59	5,292.21	14,332.80	880.78	515.59	1,396.37	37	3
Total Baseline Costs	184,761.06	305,433.67	490,194.73	18,000.32	29,756.83	47,757.16	62	100
Physical Contingencies	5,204.66	12,997.66	18,202.32	507.06	1,266.30	1,773.36	71	4
Price Contingencies	8,175.95	5,796.50	13,972.45	796.54	564.72	1,361.26	41	3
Total PROJECT COSTS	198,141.66	324,227.84	522,369.50	19,303.92	31,587.85	50,891.78	62	107

Table 2.5: Summary Project Cost Schedule by Components (USD 000)

COMPONENTS	Base Cost					
	2016	2017	2018	2019	2020	Total
A. Support to Aquaculture Entrepreneurs	6,788.88	6,355.01	5,813.13	5,813.13	5,813.13	30,583.29
B. Support to Growth Enabling Environment	5,137.56	4,633.11	2,646.01	2,146.42	629.75	15,192.84
C. Project Mgt. and Inst. Capacity Bldg.	851.36	392.02	245.88	245.88	245.88	1,981.02
Total Baseline Costs	12,777.81	11,380.13	8,705.02	8,205.43	6,688.76	47,757.16
Physical Contingencies	486.59	625.96	334.36	267.94	58.51	1,773.36
Price Contingencies	131.34	315.35	308.22	376.00	230.35	1,361.26
Total PROJECT COSTS	13,395.74	12,321.44	9,347.60	8,849.37	6,977.63	50,891.78

2.4.2 Project Financing Arrangement:

Table 2.6:- Project Costs by Financing Sources (USD)

FINANCING SOURCE	(USD '000)			Percent
	Foreign	Local	Total	
ADB Loan	28,289.74	17,105.72	45,395.47	89.2
Government of Zambia	3,297.78	2,198.53	5,496.31	10.8
Total	31,587.53	19,304.25	50,891.78	100

2.5 Project's target area and population

2.5.1 Project Areas: The project interventions will be implemented in the designated High Potential Zones aquaculture parks in Southern Zambia (Chipepo & Siavonga), Lusaka (Rufunsa), Luapula (Bangweulu), North-Western (Kasempa) and Northern (Mungwi) Provinces. These areas were selected following initial technical recommendations and also after the stakeholder consultations and based on the criteria of (i) potential for successful aquaculture production (ii) market proximity (iii) population and poverty incidence.

2.5.2 Project Beneficiaries: The estimated number of direct beneficiaries is about 12,000 fish farmers and entrepreneurs of which 50% are women in the high potential targeted regions/zones.

2.6 Participatory process for project identification, design and implementation

2.6.1 The Project was conceived following GRZ request to the AfDB to support a full-fledged Aquaculture Development Project in 2014. On the strength of this formal request, the Bank mounted an identification Mission between 22 February & 7 March 2015, and was followed subsequently by a preparation mission from 17 – 28 August 2015. An appraisal mission was mounted between 17 & 27 February 2016 to fine-tune the project. The proposed project is the result of wide and detailed consultations with the various stakeholders including the Department of Fisheries (DoF), major fresh fish producers at the small-scale emerging and commercial levels, private sector actors within the fish value-chain fish-feed millers, the Aquaculture Development Association of Zambia (ADAZ), the Zambia Environment Management Agency (ZEMA), various Commercial Banks, and wide range of Development Partners.

2.6.2 The consultative process continued during the appraisal mission during which the ministries of Gender, NGOs (including working on women issues) were well represented and there was consensus on what the Project should fund in addressing the problems. In effect, the project design and its listed activities were the outcome of broad-based consultations (meetings and discussions, and validation workshops) with all the stakeholders who expressed their views in what the project should aimed at achieving. The Project consultative process clearly identified lack of quality fingerlings, feed and finance as three key challenges to the development of the aquaculture sector. The components of the project are therefore addressing the problems identified during consultations.

2.7. Bank Group experience, lessons reflected in project design

2.7.1 The Bank's on-going portfolio comprises 19 operations with total value of UA 569,507 million (Annex 1). Five operations are in the Agricultural Sector worth UA 55.5 million including the Lake Tanganyika Development Project which has some activities in promoting aquaculture. The 2014 Country Portfolio Performance Review (CPPR) assessed the overall performance of the Zambian portfolio as *Satisfactory*, with Implementation Objectives and Development Outcomes of 2.19 and 2.52 respectively. The CPPR rated Government's performance as *Moderately Satisfactory* since there are challenges in existing project implementation including procurement, contract management and M&E. The CPPR recommended that the Bank should continue improving portfolio quality through advisory services to project implementation agencies. There is no project at risk. The overall supervision rating is Non-PP/Non-PPP. The Country Policy and Institutional Assessment (CPIA) rating is 3.58 for 2014 (4th Quintile). There is no Project Completion Report (PCR) backlog for closed Projects.

2.7.2 The Bank has considerable experience in the implementation of infrastructure, private sector and entrepreneurship projects in Zambia. The Bank has gained experiences in the agricultural sector and has brought into focus these designs and implementation experiences in the formulating this project. The CPPR review highlighted some valuable lessons, which have been incorporated under this project.

No	Lessons Learnt	Actions Incorporated in the Project Design
1	Availability of designs/drawings infrastructure for the required civil works at project start-up are important to avoid implementation delays	The Government of Zambia has produced a detailed design of the critical infrastructure planned for the Aquaculture Parks.
2	Adequate consultation with stakeholders in selection of sites to address lack of ownership of project facilities	Project sites selected were in full consultations with the various stakeholders
3	The need to strengthen weak M&E system in order to improve monitoring of implementation progress	The Project is strengthening the M & E framework by supporting the generation, collection, analysis and utilization of aquaculture statistics. This will ensure reliable statistics of aquaculture are regularly sourced and fed-back into decision-making and project /national management information system.

2.8. Key performance indicators

2.8.1 The main performance indicators as per the project logical framework are: i) poverty reduction; (ii) improve income (disaggregated along gender lines); (iii) provision of basic infrastructures; (iv) improvement in fish safety and quality, (v) improvement in fish quantity and (vi) stabilization of fish prices (including input prices); (vii) the number of entrepreneurs disaggregated by gender and type of technology system adopted; (viii) number of kilometers of rural access roads developed; (ix) number of beneficiaries (males and females) benefiting from capacity building programs, and (x) percentage of women in different committees and occupying leadership position established/strengthened by the project; (xi) Percentage of resources allocated for gender activities; (xii) improved market linkages, upgraded value chain and enhanced aggregate incomes with data stratified by gender. The project will also support the implementation, monitoring and evaluation of activities based on the results based logical framework. The presence of the Bank's field office will significantly improve project implementation performance

III – PROJECT FEASIBILITY

3.1. Economic and financial performance

3.1.1 A financial assessment of the project was undertaken using activity models, and on the basis of prevailing market prices. The key assumptions underlying the analyses include: (i) Additional 20,000 tonnes of fish will be produced at full capacity of the project; (ii) production of fingerlings will increase to 98 million to sustain stocking of the ponds and cages (ii) a 20-year time period was used to measure the incremental benefits from the project; (iii) Survival rates for fingerlings is 65% of initial stock; Feed Conversion Ratio is 1.7 throughout the project life. Farm gate prices were used in estimating the total revenue from the project. (iv) the opportunity cost of capital (OCC) used for discounting future benefits was estimated to be 12%. For the economic analysis, (v) hired labour value was adjusted by a conversion factor of 0.75; (vi) the price of fish waste was assumed to be 2% of farm gate price of fresh fish. These analyses were carried-out with financial and economic costs generated using Costab 32. Summary of financial and economic analysis is in Annex VII and further elaborated in Annex B6 in Volume II of the appraisal report.

3.1.2 On the basis of the above-captured assumptions, the project is expected to generate the following benefits: (i) Increase aquaculture production and productivity resulting in total annual aquaculture production of 40,200 tons; (ii) improve market linkage and value chain for fish production; (iii) improved fish quality; (iv) improve average household income of

beneficiaries to USD 1500; (v) provide employment for 12,000 fish farmers and entrepreneurs; and (vi) increased per capita household fish consumption.

Table 3.1: key economic and financial figures

FIRR : 19% NPV (base case) is 230,195,044 ZMW

EIRR : 20% NPV (base case) is 276,695,065 ZMW

NB: detailed calculations are available in Annex B7

3.1.3 **Financial analysis:**

Based on the above assumptions, the financial analysis generated Net Present Value (NPV) of 230,195,044 ZMW and internal rate of return (IRR) of 19%, as captured in the technical annexes (B6). Based on the above analysis, the project is deemed financially feasible. The IRR of 19% is higher than the opportunity cost of capital (12%).

3.1.4 **Economic analysis:**

The economic analysis was conducted using the same approach as the financial analysis, on the basis of shadow prices (prices in conditions of the efficient market operation) of tradable goods and total cost of project. In addition, other indirect benefits were also expected, such as, easy access to markets through market linkages; provision of agro-service centre, reliable market information system and business developments from the incubation trainings. However, these additional benefits were difficult to value in monetary terms due to the limited scope of this report, hence they could not be adequately captured in the analysis. In these conditions, the economic analysis yielded an NPV of 276,695,065 ZMW and IRR of 20% as captured in the technical annexes.

3.1.5 **Sensitivity Analysis:**

The results of the sensitivity analysis indicate that with 5%, 10% and 15% decrease in production the FIRR decreases to 18%, 17% and 16% respectively. The same exercise was carried out for successive decrease in prices by 5, 10, and 20% with a combination of yield decline. A decrease in output prices by 20% (switching values) would have to occur before the project's economic benefits reduces to break-even point at 12%, the opportunity cost of capital. A combined 10% decrease in output price and 15% decrease in output will break-even at 12%, the opportunity cost of capital.

3.2. **Environmental and Social impacts**

3.2.1 **Environment:** In accordance with Bank's Integrated Safeguards System (ISS), the Project has been assigned an environmental risk category 2 by ORQR.3 indicating that it has limited negative impacts, which can be mitigated by incorporating specific measures in the design. In accordance with the Zambia Environmental Management Agency (ZEMA) regulations, medium and large size aquaculture enterprises have to develop and submit for clearance, EIAs before starting their businesses. The development of EIAs have been cited by entrepreneurs as major constraint (in cost and time delay) in doing aquaculture businesses in Zambia. With respect to the goal of creating an enabling environment of doing business, the project will develop thoroughly conducted EIAs covering Lakes Bangweulu, Mweru-Luapula, Kariba, Itezhi tezhi, Mweru - Wantipa and Lusiwasi. Entrepreneurs selected in the YEAP program or private actors who desire to develop aquaculture businesses in the project areas will have to respect the environmental measures recommended in the EIAs or develop additional plans to consider aspects that have not been covered. The elaboration of EIAs in project areas can be viewed as an attractive factor towards doing business. To better integrate environmental and social considerations in the aquaculture sector in Zambia, the project will also assist ZEMA to develop a Strategic Environmental Assessment (SEA).

3.2.2 An Environmental and Social Management Plan (ESMP) has been prepared to mitigate the largely localised and reversible negative environmental effects resulting from implementing the project. ESMP proposed mitigation measures and the proposed mitigation measures have been assessed and the cost estimated captured as part of the Project detailed costing amounting to UA 959,500. The ESMP's report has been reviewed and cleared by ORQR.3 and its summary posted on Bank's website. The summary is also included in the technical annexes (Annex B8)

3.2.3 *Climate Change:* The Lakes and River systems within Zambia are subjected to annual variability of rainfall and inflows due to climate change phenomenon. Climate change may potentially have a relatively strong impact on the hydrology of these water bodies. Of interest are forecasts of both temperature and precipitation increases and how these changes are likely to impact on river flows and the water balance of the lakes, especially in terms of future water levels; all of which have implications on the development of aquaculture. The Project will therefore, ensure that catchment management interventions, which could help to reduce the impact of flooding as well as other water management mechanisms and investments to help smoothen the cyclical impacts of droughts and floods, will be deliberately mainstreamed into the project activities. The Bank is currently implementing a PPCR project (Strengthening Climate Resilience in the Kafue Basin) in Zambia that will help make climate change adaptation and resilience an intrinsic part of economic development with participatory, learning-by-doing approach. A Forest Investment Program is currently under preparation and will also strengthen climate resiliency for some activities of the project. Farming of fish will reduce fishing pressure on natural water bodies. If fishing effort is too high, stocks may become over-exploited which may have an effect on the biodiversity in lakes and rivers. Water reservoirs and fishponds are water-harvesting structures that help store water during good rainy seasons and charge the soil and underground water systems. The stored water can subsequently be used for irrigation and water animals. Therefore, these water-harvesting structures are essential in raising the overall per unit productivity of water in water-stressed watersheds. Improved processing using solar and electricity will reduce the use of firewood and cutting of down of trees. The project is an example of Blue Growth, as defined by FAO of the UN, as it is a holistic approach towards a sustainable increase of fishery products resulting in the improvement of Food Security and Nutrition, and livelihoods, optimizing the ecosystem services available, through improvements in aquaculture and post-harvest techniques.

3.2.4 *Gender:* Feminization of poverty remains the broad characteristic of Zambian poverty profile: statistics show that of the 68 percent poverty levels, 80 percent of these are women mainly small-scale farmers. Gender inequality in rural areas of Zambia stems from social and cultural norms that restrict women's access to land and other natural resources, including fish.

3.2.5 Given the critical importance of greater gender equality within rural communities, its mainstreaming is integrated into each component. The project aims at 50% beneficiaries being women involved fish farming, marketing and processing. The project therefore will empower women along the aquaculture value chain in order for them to better control over the benefits.

3.2.6 The project will promote a gender transformative approach by combining: (i) Support to research institute to carry out gender sensitive adaptive research along the value chain in order to identify business opportunity and utilization of new methodologies for increased production; (ii) develop criteria for targeting youth/women as well as potential private sector champions and mentors' participation; (iii) facilitating women led business cooperatives/ SMES and the development of their technical, leadership entrepreneurial skills; (v) Promote

gender sensitive information education communication; (vi) promote gender sensitive approach in Public-Private Sector agreements; (vii) Gender disaggregation data will be a regular process for all the activities of the project; (viii) deliberate efforts would be made to have a gender balance in the PCT composition. Partnership will be established with other ongoing projects like “High Impact Now Program” of the Ministry of Gender and other stakeholders’ such as World Fish.

3.2.7 There is a potential risk that the women encountered barrier in assessing leadership position in newly organizations. The mitigation measure will support this change by training in administrative, technical and entrepreneur skills for women in order to reduce inequalities and to encourage and enable them to take leadership roles. The need to reduce inequalities applies also to the question of access to and ownership of assets, as well as the issue of access to income-earning opportunities but also by promoting gender sensitive Social Corporate Responsibility in commercial, medium-scale companies to improve the conditions of women workers and small fish farmers;

3.2.8 Social: The project will have more positive than negative social impacts and will generate considerable economic benefits to the communities. The Project will lead to increased fish production and food/nutrition security at household level and enhanced fish farmers’ income. It will also have indirect benefits to traders, consumers, transporters and agro-processors. Improved market linkages and value chain addition will lead to increased income opportunities and creation of employment. However, the Project in the process can promote communicable and water-borne diseases which will be mitigated through awareness campaigns and disease control measures.

3.2.9 HIV/AIDS: continues to be a major social problem in Zambia. According to the National AIDS Strategic Framework 2011-2015, the epidemic has a gender bias with more than 16.1% women living with HIV and AIDS compared to 12.3% men. Women’s workload is increasing as they nurse AIDS patients over extended periods since traditionally, they care for the sick and they also have the burden of caring for orphans single handed. The 2013/14 Zambia Demographic and Health Survey (ZDHS) Nationwide, 13.3% of adults (women and men aged 15-49) are HIV positive. Rates are higher in women than men nationwide and in both urban and rural areas. Among youth age 15-24, HIV prevalence is 6.6%. HIV prevalence is higher among urban youths (9.1%) than youths in rural areas (4.2%). HIV prevalence is higher among young women (7.7%) than young men (5.4%). The project will provide for awareness campaigns on HIV/AIDS and STDs for project beneficiaries. Farmers will be encouraged to establish committees which will be trained on HIV/AIDS and STDs, and will act as coordinators, with the service providers, for organization and delivery of awareness campaigns.

3.2.10 Green Growth: Zambian society, economy and environment are interlinked in that the majority of rural people are dependent on agriculture and the larger society is dependent on rural people to properly manage land and water resources for sustained food and water supply. By investing in social and economic infrastructure, ZAEDP will enhance fish production and marketing potential by minimizing the supply constraints, lowering production costs, enhancing agro-processing and market linkages. Farmed fish has relatively better prices; higher protein levels; and lower water footprints (tilapia is 0.75 litres/kg biomass) compared to terrestrial animals (chicken meat is 4,325 litres/kg) and crops (maize is 1,031 litres/kg). In addition, tilapias are low food chain consumers and therefore require relatively low protein content in their feed. The Project will contribute to economic growth of youth and women by utilizing resources in a sustainable manner and thereby mitigating the adverse impacts to

environmental change, resource constraints and through watershed management, promotion of pasture development and rangeland management. The Project has incorporated solutions to the negative impact on environmental changes such as land degradation, natural resource depletion and climate change which will result in improved well-being of participating beneficiaries and also social equity.

3.2.11 Involuntary Resettlement: There will be no resettlement as the project will focus on small infrastructure. Any proposed infrastructure will be located in areas which have no land disputes. No land acquisition is envisaged under this Project

IV – IMPLEMENTATION

4.1 Implementation arrangements

4.1.1 Executing and Implementing Agencies: The Executing Agency is the Ministry of Fisheries and Livestock. The Department of Fisheries will be the implementing agency. The day to day running of the Project activities will be the responsibility of the Project Core Team, which will include: a) A qualified Project Coordinator; b) Procurement Specialist, c) a Monitoring & Evaluation specialist, d) Accountant and e) Social/Gender Specialist. The Project Core Team (PCT) would be reporting to the Director of Fisheries and would be charged with the management and coordination of the Project's activities. These positions would be advertised and candidates recruited on a competitive basis. The cost of these positions shall be funded by the Project resources.

4.1.2 A *National Project Steering Committee (NPSC)* will be constituted comprising Permanent Secretaries from the actively involved line ministries namely Ministry of Fisheries & Livestock, Ministry of agriculture and Ministry of Commerce Trade and Industry and the chairperson of PTC (Project Technical Committee). The Chair of the NPSC will be the Permanent Secretary of the Ministry of Fisheries & Livestock. The NPSC will also have representation of ADAZ, Farmers Union, and Private Operators along the Fish value chain and Women Fish Farmers/Traders. The NPSC will be convened by the Chair on a semi-annual basis. The NPSC will be mainly responsible for: (i) policy guidance on all issues relating to the project; (ii) approval of project investments; (iii) approval and monitoring of project annual work plans and budgets; and (iv) resolving implementation bottlenecks and providing positive impetus to facilitate achievement of the project's development objectives (results/outcomes). The Project Core Team on behalf of the Director of Fisheries, will convene the NPSC meetings and act as its Secretariat.

4.1.3 *Project Technical Committee (PTC)*: The PTC will report to the Chairperson of Project Steering Committee. A performance contract would be formulated for core project staff, consistent with the Bank regulations, which would be assessed annually and renewed based on performance. The Project Core Team will be assisted by the Project Technical Committee (PTC) comprising experts from institutions assisting with technical advice such as hatchery management, aquatic animal health and genetic improvement

4.2 Procurement and Financial Management Arrangements

4.2.1 *Procurement Arrangements*: Procurement of goods (including non-consultancy services), works and the acquisition of consulting services, financed by the Bank for the project, will be carried out in accordance with the "*Procurement Policy and Methodology for Bank*

Group Funded Operations” (BPM), dated October 2015 and following the provisions stated in the Financing Agreement. Specifically, Procurement would be carried out as follows:

- **Borrower Procurement System (BPS):** Specific Procurement Methods and Procedures (PMPs) under BPS comprising its Laws and Regulations as per the Public Procurement Act of 2008 and the Public Procurement Regulations of 2011, using the national Standard Solicitation Documents (SSDs) acceptable to the Bank.
- **Bank Procurement Policy and Methodology (BPM):** Bank standard PMPs, using the relevant Bank Standard Solicitation Documents (SSDs), for contracts where the BPS shall not apply for specific transaction or group of transactions as BPM have been found to be the best fit for purpose.

4.2.2 Procurement Risks and Capacity Assessment (PRCA): the assessment of procurement risks at the Country, Sector, and Project levels and of procurement capacity at the Executing Agency (EA), were undertaken and the findings have been considered to arrive at decisions on the various procurement regimes to be used for specific transactions or groups of similar transactions under the project. The appropriate risks mitigation measures have been included in the procurement PRCA action plan proposed in Annex B5.

4.2.3 FAO and the WorldFish Center have been identified as specialized agencies which are well placed to continue supporting the Government of Zambia with specific tasks. These specialized organizations will therefore be *directly contracted* for the specific tasks: (WorldFish Center: genetic improvement of local species programme, FAO: Food safety activities, Aquatic Animal Health management, Training of commercial banks with respect to aquaculture and related risks, feed certification laboratory and capacity, national statistics and information).

4.2.4 The Project Core Team under the Ministry will be responsible for the day to day running of the project as well as the overall responsibility for procurement management. The civil works, though scattered in the various provinces and districts, shall be clubbed together for better procurement management and in line with market capacity to attract credible contractors. The role and support of the provincial and district offices will be critical in the monitoring and coordination of issues related to implementation of procured activities.

4.2.5 Financial Management: The Financial Management (FM) assessment of the Ministry of Fisheries and Livestock (MoFL) (EA) and the Department of Fisheries was undertaken accordance with Bank fiduciary policies and guidelines namely African Development Group financed operations (2014), and the Financial Management Implementation Guidelines for Bank Group Operations (2014). The objective of the assessment was to determine whether the Ministry of Fisheries and Livestock (MoFL) as the Execution Agency, has acceptable Financial Management (FM) arrangements, capable of (i) correctly and completely recording all transactions and balances relating to the project; (ii) facilitating the preparation of regular, timely and reliable financial statements; (iii) safeguarding the project’s assets; and (iv) can be subjected to auditing arrangements acceptable to the Bank. The overall conclusion of the assessment is that MoFL’s capacity (including capacity at the provincial and the district levels) to handle the FM aspects of the project, satisfies the Bank’s minimum requirements as laid out in the Bank’s FM guidelines, and the implementation of agreed FM actions would further strengthen the existing system. The overall FM risk for the project is assessed as Moderate.

4.2.6 Disbursement Arrangement: The project would make use of the Bank's various disbursement methods including (i) Direct Payment, (ii) Special Account (SA) and (iii) Reimbursement methods in accordance with Bank rules and procedures as laid out in the Disbursement Handbook as applicable. The Bank will issue a Disbursement Letter of which the content will be discussed and agreed with GRZ during negotiations. The Project will open one Special Account (SA) in foreign currency and a Local Currency (Kwacha) Holding Account (LCHA) at Bank of Zambia (BoZ) to be operated by MoFL and used for financing eligible operating costs under the project. One Mirror sub-account in local currency will be opened at local commercial banks acceptable to the Bank in Lusaka to be managed by MoFL, to facilitate payment of eligible operating and local costs of the project. The opening of foreign and local currency special accounts will be a condition precedent to first disbursement of the loan. The special account will be replenished through submission of Withdrawal Applications (at least every six months) supported by Statements of Expenditures (SOE) while direct payment method will be used for payments in respect to contracts for equipment, supplies and services (including audit and consultancy).

4.2.7 In accordance with the Bank's financial reporting and audit requirements, the project will be required to prepare and submit to the Bank Interim Quarterly Financial Progress report (IQFPR) not later than forty-five (45) days after the end of each calendar quarter. The results of the assessment and the agreed FM, disbursement and auditing arrangements for the proposed project are included as annex B4 and B6 in the technical annexes (PAR Vol. II)

Financial Reporting and External Audit:

4.2.8 External Audit: In accordance with the requirements of the Finance Act (2004), all government ministries and agencies are required to prepare their annual audited financial statements as part of the entire government national accounts for audit purposes. Even though the MoFL is a newly created ministry, information from the Office of the Auditor General (OAG) indicates the defunct MoA out of which the MoFL was created, complied with their reporting requirements over the years and there are no outstanding reports. In accordance with the Bank's auditing requirements, the ZAED project, a separate annual financial statements will be prepared and audited by the OAG as per their mandate. The final signed audited financial statements together with the audit management letter would be submitted to the Bank by MoFL within six (6) months after the end of respective financial years throughout the project implementation period. The audit of the project can be subcontracted (where necessary) to a private audit firm to be procured through short-lists (with the involvement of OAG) using Bank's rules and procedures for procurement and the cost of audit will be financed from the loan if carried out by a private firm. The Bank has already shared a copy of the draft audit TOR with MoFL as a guide.

4.3 Monitoring

4.3.1 The M&E system will be developed and managed by the M&E Officer, within the framework of the project log frame. The M&E Officer will regularly track, document and report the ZAEDP results and progress, facilitate knowledge building, and share knowledge with key stakeholders. The monitoring and reporting plans will be developed based on the log frame which will have gender disaggregated indicators. It will be part of the obligation of all project implementers to provide reports in prescribed format on outputs and outcomes achieved within the implementation agreements. The Project will provide financial resources to facilitate training, proper data gathering, processing and reporting.

4.3.2 The Project’s reports and key milestones are indicated in the table below. The Bank will supervise the implementation of the Project through regular Supervision Missions which will be undertaken at least twice a year. The Missions will verify implementation progress to ensure that key verifiable indicators, including gender specific indicators, related to the outputs, outcomes and impacts are being monitored. The M&E activities, including implementation progress and expenditure will therefore be an integral part of the project implementing agency, as a regular management function through the PCT’s M&E Specialist. The PCT will submit to the Bank progress reports, annual work plans and budgets, and annual procurement plans using Bank’s format. The quarterly progress report will be submitted to the Bank within two months after the end of the reporting period, whilst the annual progress report will be submitted within three months after the end of reporting period.

Time-Frame	Milestones	Monitoring Process (Feedback Loop)
Year 1	Baseline Survey	PCT and Consultant.
Years 1 to 5	Project Implementation	Beneficiaries , project implementers and PCT.
	Financial Audit Reports	PCT, External Audit Firm (Annually).
Year 3	Mid-Term Review	Communities, MoFL, PCT and Consultant.
	Gender Audit	Communities, MoFL, PCT and Consultants.
Year 4	Beneficiary Impact Assessment	Beneficiaries, PCT and Consultant.
Year 5	Project Completion Review (PCR)	Communities, MoFL, PCT and Consultant.

4.4 Governance

4.4.1 Using the Mo Ibrahim Index of African Governance (IAG), Zambia has improved its governance rating since 2000, especially in the category of participation and human rights which measures the protection of human rights, civil and political participation, and gender issues. Zambia has also significantly improved its accountability and transparency ratings and indicators of governance including corruption control, rule of law, regulatory quality and Government effectiveness. The 2015 Mo Ibrahim Index of African Governance (IIAG) ranked Zambia 12th out of 52 African countries. The 2013 IIAG provided Zambia’s performance across four categories of governance namely (a) Safety & Rule of Law (10th out of 52), (b) National Security (1st out of 52), (c) Gender (30th out of 52), and (d) Human Development (21st out of 52). Zambia’s average score was 59.6 out of 100 which was higher than the continental average of 51.6. Using the World Bank Institute’s 2012 Worldwide Governance Indicators, the Zambia’s rating (0 = low and 1 = high) per category is as follows: (a) voice and accountability = 0.44; (b) political stability and absence of violence = 0.65; (c) Government effectiveness = 0.38; (d) regulatory quality = 0.36; (e) rule of law = 0.42; and (f) control of corruption = 0.46.

4.4.2 However, the weaknesses that persist are in budget management, weak compliance with internal control regulations, timely follow-up and implementation of both internal and external audit recommendations and suspected corruption and delays in public procurement. Mitigation measures to address these issues include: (i) recruitment of qualified and experience procurement experts (ii) provision of a financial management manual to guide Project staff; (iii) utilisation of Internal Audit capacity to identify pre-audit transaction challenges; and (iv) provision of an off-the-shelf accounting package for financial transactions, possibly with interface with IFMIS, and (v) regular submission of progress reports.

4.5 Sustainability

4.5.1 One of the key aspects of the Project is commercial orientation. This implies bringing out the business opportunities in the aquaculture sector. The project activities will lead to the emergence of business oriented aqua-preneurs who are expected to run their businesses as a going-concern with the enhanced capacity they will received from the Project. This will lead to economic sustainability of the project. Also, the participatory approach adopted during the design stage of Project will continue even at implementation in order to enhance ownership by beneficiaries thus ensuring sustainability. Implementation through government line ministries will ensure that project activities are in line with broader government programmes. All the critical enabling infrastructure that the Project would invest in will have in place, a management arrangement that would ensure that they are run on commercial basis by private operators under special management agreement with the Directorate of Fisheries. Furthermore the risk sharing mechanism would ensure commitment of the commercial bank in sustaining the Project as the perceived risk in investing in the aquaculture will be shared with the Project.

4.6 Risk management

4.6.1 Political changes which may inform changes in priorities by different Governments is high risk. The risk is being mitigated by the fact that the project falls within the bigger umbrella of the Zambia government as encapsulated in its Vision 2030, which amongst other emphasize the need for the diversification of the economy. All political parties are in full agreement for the diversification of the economy of Zambia.

4.6.2 Another risk is the failure of the big players to renege on the out growers scheme arrangement. The mitigation here is that they would not offer the service free but the project will pay for the incubation of the identified entrepreneurs who will form satellite farms for the anchor investors.

4.6.3 The Fund management arrangement and likely default in the repayment may hinder the intended expansion of investment by the aqua-preneurs. The mitigation is that Funds will be managed by a carefully selected funds manager and also the risk for default by borrowers limited as the cost of borrowing will be significantly reduced by the innovative approach of de-risking the loan facilities. The risk sharing facility will provide a negotiated guarantee to the commercial banks to provide loans to the aqua-preneurs financed from the balance sheet of the participating commercial banks.

Potential Risks and Mitigation Measures

No	Potential Risks	Rating	Mitigation Measures
1.	Political Changes	Medium	All political parties have subscribed to the need to diversify the economy through the Vision 2030
2.	Reneging by Big Fish farmers on the out growers scheme	Medium	The cost of training those that would be incubated will be borne by the Project
3.	Funds Management & likely default	Medium	The Project will put in the de-risking facilities which in turn will help lower the cost of capital to invest.

4.7 Knowledge building

4.7.1 The project will support research through cooperation with the WorldFish Center in the development of a genetic improvement program (genetic mapping exercise) and the development of foundation breed stock which will lead to the improvement of the indigenous

fish species namely *Oreochromis andersonii*. Research development will also assist in the clean-up on the Nile tilapia, *Oreochromis niloticus*. The knowledge generated from the research will be disseminated amongst the practicing and selected fish farmers for better productivity at the farm level. In addition, collaborative knowledge development will enhance the systemic development of science capacity among aquaculture researchers in Zambia. The project being the first of its kind financed by the Bank will also be valuable to design further interventions in aquaculture.

V – LEGAL INSTRUMENTS AND AUTHORITY

5.1 Legal instrument

5.1.1 The legal instruments for the Project will be a loan agreement between the Republic of Zambia and the Bank.

5.2 Conditions associated with Bank’s intervention

5.2.1 **Conditions Precedent to entry into force of the Loan Agreement:** It shall be a condition precedent to entry into force of the Agreement that the Borrower shall have fulfilled the conditions of section 12.01 of the General Conditions of the Bank Applicable to Loan Agreements and Guarantee Agreements.

5.2.2 **Conditions Precedent to First Disbursement:** The Borrower, shall provide evidence of: a) opening a Special Account in Bank of Zambia where disbursements from the Bank will be deposited;

5.2.3 **Undertakings:** The project will be expected to produce the updated detailed technical designs, Bill of Quantities and Tender Documents for all Aquaculture Park Infrastructure within six months after effectiveness. The Project will within six months of months of its effectiveness provide to the Bank the detailed document specifying the detailed arrangement for the management of the seed fund for the risk sharing facility.

5.3 Compliance with Bank Policies

5.3.1 This project complies with all applicable Bank policies.

VI – RECOMMENDATION

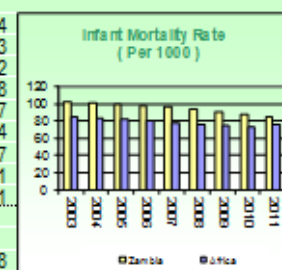
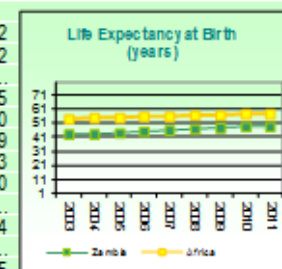
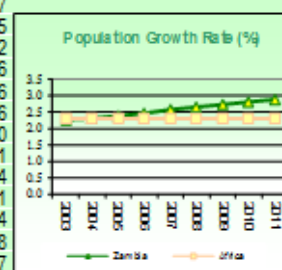
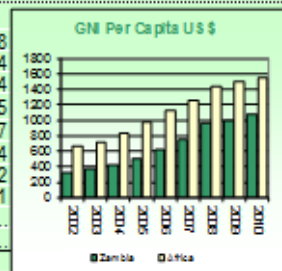
The Management recommends that the Board of Directors approve the proposal to award an ADB loan of USD 45.4 million to the Republic of Zambia for the above mentioned purpose and in accordance with the conditions specified in this report.

APPENDICES

Appendix I:

Country's comparative socio-economic indicators

	Year	Zambia	Africa	Developing Countries	Developed Countries
Basic Indicators					
Area / 1000 Km ²	2011	753	30.323	80.976	54.658
Total Population (millions)	2011	13.5	1,044.3	5,733.7	1,240.4
Urban Population / % of Total	2011	35.9	40.4	45.5	75.4
Population Density (per Km ²)	2011	18.1	36.1	59.9	36.5
GNI per Capita (US \$)	2010	1 070	1 549	3 304	38 657
Labor Force Participation - Total (%)	2011	63.6	74.7	65.0	60.4
Labor Force Participation - Female (%)	2011	45.7	42.5	49.2	50.2
Gender-Related Development Index Value	2007	0.473	0.502	0.694	0.911
Human Develop. Index (Rank among 187 countries)	2011	164
Popul. Living Below \$ 1.25 a Day (% of Population)	2007-09	68.5	40.0	22.4	...
Demographic Indicators					
Population Growth Rate - Total (%)	2011	2.9	2.3	1.3	0.4
Population Growth Rate - Urban (%)	2011	3.5	3.4	2.3	0.7
Population < 15 years (%)	2011	46.5	40.4	28.7	16.5
Population >= 65 years (%)	2011	3.1	3.4	5.9	16.2
Dependency Ratio (%)	2011	98.4	78.1	53.0	48.6
Sex Ratio (per 100 female)	2011	100.5	99.5	103.4	94.6
Female Population 15-49 years (% of total population)	2011	22.1	24.4	26.2	23.6
Life Expectancy at Birth - Total (years)	2011	49.0	57.7	77.7	67.0
Life Expectancy at Birth - Female (years)	2011	49.4	58.9	68.9	81.1
Crude Birth Rate (per 1,000)	2011	45.9	34.5	21.1	11.4
Crude Death Rate (per 1,000)	2011	15.3	11.1	7.8	10.1
Infant Mortality Rate (per 1,000)	2011	85.3	76.0	44.7	5.4
Child Mortality Rate (per 1,000)	2011	138.3	119.5	67.8	7.8
Total Fertility Rate (per woman)	2011	6.3	4.4	2.6	1.7
Maternal Mortality Rate (per 100,000)	2010	440.0	530.7	230.0	13.7
Women's Work Contribution (%)	2007	40.8	28.6	61.2	72.4
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2007-09	5.5	57.8	112.0	276.2
Nurses (per 100,000 people)	2007-09	70.6	134.7	186.8	708.2
Births attended by Trained Health Personnel (%)	2009	60.2	53.7	65.3	...
Access to Safe Water (% of Population)	2010	61.0	65.7	86.3	99.5
Access to Health Services (% of Population)	2007-09	90.2	65.2	80.0	100.0
Access to Sanitation (% of Population)	2010	48.0	39.8	56.1	99.9
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2009	13.5	4.3	0.9	0.3
Incidence of Tuberculosis (per 100,000)	2010	462.0	241.9	150.0	14.0
Child Immunization Against Tuberculosis (%)	2010	89.0	85.5	95.4	...
Child Immunization Against Measles (%)	2010	91.0	78.5	84.3	93.4
Underweight Children (% of children under 5 years)	2007	14.9	30.9	17.9	...
Daily Calorie Supply per Capita	2007	1 873	2 462	2 675	3 285
Public Expenditure on Health (as % of GDP)	2009	2.5	2.4	2.9	7.4
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2010	115.3	101.4	107.8	101.4
Primary School - Female	2010	116.0	97.6	105.6	101.3
Secondary School - Total	2007-09	...	47.5	64.0	100.2
Secondary School - Female	2007-09	...	44.3	62.6	99.8
Primary School Female Teaching Staff (% of Total)	2010	50.8	44.3	60.7	81.7
Adult Literacy Rate - Total (%)	2010	71.2	67.0	80.3	98.4
Adult Literacy Rate - Male (%)	2010	80.7	75.8	86.0	98.7
Adult Literacy Rate - Female (%)	2010	61.7	58.3	74.9	98.1
Percentage of GDP. Reversion Education	2008	1.3	4.6	4.1	5.1
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2009	4.5	7.6	10.7	10.8
Annual Rate of Deforestation (%)	2007-09	2.4	0.6	0.4	-0.2
Forest (as % of Total Land Area)	2010	66.5	23.0	28.7	40.4
Per Capita CO2 Emissions (metric tons)	2009	0.2	1.1	2.9	12.5



Sources : A/DB Statistics Department Databases; World Bank: World Development Indicators;

last update : June 2012

UNAIDS: UNSD: WHO: UNICEF: WRI: UNDP: Country Reports.

Note : n.a. : Not Applicable : ... : Data Not Available.

Appendix II:
RESULTS-BASED LOGICAL FRAMEWORK (PROJECT MATRIX)

Country and Project Name:		Zambia – Aquaculture Development Enterprise Project				
Purpose of the project:		To promote of aquaculture as a viable and inclusive business opportunity through enhanced production and productivity to improve the livelihoods of beneficiaries along the value chain				
RESULTS CHAIN		PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES
		INDICATOR (INCLUDING CSI)	BASELINE 2015	TARGET (2021)		
IMPACT	Increased incomes and living standards of households by inducing inclusive and sustainable aquaculture growth	Contribution of Fishing & Aquaculture to GDP (%)	0.4%	2.56%	Central Bureau of Statistics (CBO)	
		Average household income of households related to the fishery and aquaculture sector increased (USD)	600 USD	1500	Annual economic report of MOF	
OUTCOMES	1. Increased aquaculture production and productivity	1.4. Total annual aquaculture production (tons)	1.4. 20,200	1.1.40,200	DOF Statistical Bulletins Project monitoring reports/supervision missions/ Fish trade portal information	
		1.5. No. of people employed in aquaculture sub-sector(of which 50% women)	1.5. 12,210	1.2.24,210 (50% female)		
	2. Market linkage and value chain for fish production	1.6. Per capita consumption of fish	1.6. 6kg	1.3. 12kg		
		2.1 < 5%	2.1. 45%			
	3. Improved Fish quality	2.3 Percentage improvement in Fish handling through appropriate value chain and market linkage ;	2.2 0	2.2 5%		
		2.4 Percentage improvement in access to product and market information by fish producers and traders as well as service providers	3.1 < 5%	3.1 50%		
	3.2 Percentage of Fish produced/imported compliant with international standards (product compliant international standards/total fish production and import)					

OUTPUTS		I. SUPPORT TO AQUACULTURE ENTREPRENEURS					
OUTPUTS	1.Out-growers schemes established	1.1. No. of Out-grower Clusters established and functional	1.1 0	1.1 5	Project monitoring reports/supervision missions	<p>Risk: Reneging by big Fish farmers on the out growers scheme</p> <p>Mitigation Measures: The cost of training those that would be incubated will be borne by the project</p> <p>Risk: Funds mismanagement and likely default</p> <p>Mitigation Measures: The Project will put in the de-risking facilities which in turn will help lower the cost of capital to invest.</p>	
		1.2 No. of Emerging (Small & Medium Scale) aquaculture enterprises operational (of which 40% women)	1.2 0	1.2 25			
	2. Young Aqua-preneurs Empowerment Program established	Number of women at decision making level of Out-grower clusters.	2.1 0	2.1. 200(40% female)			
		2.1 No. of Young Aqua-preneurs selected and completed incubation sessions (of which women)	2.2 0	2.2. 120(40% female)			
		2.2 No. of Proposals from Young Aqua-preneurs submitted, approved and & operational	2.3 0	2.3 USD 10 million			
		2.3 Volume of Funds released by financial institutions to YAEP	2.4 0	2.4 10			
	3. Enhanced Input provided	2.5 No. technical assistance sessions provided	2.5 0	2.5 5			
		2.4 No. of business development training	3.1 57 million	3.1 98 million			
		3.1 Fingerlings production increased	3.2 0	3.2 10			
		3.2 No. of PPP Hatcheries completed and functional	3.3 5	3.3 15			
		3.3 No. of Private Sector Hatcheries	3.4 0	3.4 1			
		3.4 Hatcheries quality certification system established	3.5 0	3.5 1			
		3.5 Feed testing unit established and operational					
	II. SUPPORT TO GROWTH ENABLING ENVIRONMENT						
	4.Food safety program established	4.1 Mandatory standardization for fish/seafood attained	4.1 0	4.1 1			
	4.2 Fish standards testing laboratory established	4.2 0	4.2 1				
	4.3. No. of inspectors trained	4.3 0	4.3 50 (50% female)				
5. Post-Harvest Handling and Marketing Infrastructure developed	5.1. One stop shop/ Agro-service centres operational	5.1. 0	5.1. 5				
6. Aquaculture-Parks	6.1. No. of Aquaculture parks established/rehabilitated	6.1 0	6.1 5				
	6.2. Kilometres of roads developed in aquaculture-parks	6.2. 0	6.2 200 Km				
	6.3. No. of fish market facilities developed	6.3 0	6.3 5				
	6.4. No. of weirs Constructed/rehabilitated	6.4. 0	6.4 10				
	6.5. No. of water reservoirs constructed and rehabilitated	6.5 0	6.5 15				
	6.6 No. of ponds developed by fish farmers	6.6 0	6.6 5000				
	6.7 No. of fish cages established by farmers	6.7 0	6.7 2000				
7.Aquaculture Research Institute	7.1 Fish Genetic Improvement Program established	7.1. 0	7.1. 1				
	7.2. No of Laboratories rehabilitated and equipped	7.2 0	7.2 5				
	7.3. No. of Quarantine facilities established	7.3 0	7.3 1				
	7.4 No of fish health lab established	7.4 0	7.4 1				

III PROJECT MANAGEMENT AND INSTITUTIONAL CAPACITY BUILDING

KEY ACTIVITIES	8.Establishment of Aquaculture Statistics Database	8.1. No. of Aquaculture Statistics surveys conducted 8.2. National Aquaculture Statistics Database website operational (Website user traffic/month) 8.3. No. of information bulletins disseminated	8.1 0 8.2 0 8.3	8.1 18 8.2. 100 8.3 12	CSO Monthly Bulletins	Risk: • Possible delay in project implementation
	9.Capacity Building	9.1. Number of technical assistance staff trained 9.2. Aquaculture Curricula reviewed and improved/developed 9.3. No. of study tours conducted 9.4. No of Fish Health Strategy developed 9.5 No of fish geneticists trained	9.1 0 9.2 0 9.3 0 9.4 0 9.5 0	9.1 15(50 female) 9.2 3 9.3 5 9.4 1 9.5 4	Project monitoring reports/supervision missions	Mitigation Measures: Project staffing will be done on the basis experience of candidates in project implementation, in addition to staff training
	10. Project Management	10.1 No. of progress reports produced 10.2 No. of audit reports produced 10.3 Work plans and budgets produced 10.4. No. of steering committee meetings organized	10.1 0 10.2 0 10.3 0 10.4 0	10.1 6 10.2 6 10.3 11 10.4 12		

COMPONENTS

INPUTS

Component 1: Support to Aquaculture Entrepreneurs: USD 30.94 million

1. Out-growers schemes established
2. Young Aqua-preneurs Empowerment Program established
3. Enhanced Input provided

Component 2: Support to Growth Enabling Infrastructure USD 17.73 million

1. Food safety program established
2. Post-Harvest Handling and Marketing Infrastructure developed
3. Aquaculture-Parks
4. Aquaculture Research Institute

Component 3: Project Mgt and Inst. Capacity Building USD 2.22 million

1. Establishment of Aquaculture Statistics Database
2. Capacity Building
- 3 Project M&E activities
- 4 Project planning and coordination
5. Project steering committee

Financing sources
 ADB Loan: USD 45.4 million
 GRZ: USD 5.49 million
Total: USD 50.89 million

Appendix III: AfDB's Active Portfolio

SN	Long name	Loan Number	ApprovalDte	Commit.dte	ComplDate	Sector Name	Source of Fund ^a	Loan Amt	Disbursed Amt	Disb.Ratio
1	MULTIPURPOSE SMALL DAMS	5600155002951	4-Sep-12	28-May-13	28-Nov-17	Water Sup/Sanit	AWFF	758,562	227,569	30.00
2	FEASIBILITY STUDY FOR UPSCALING SMALLHOLDER IRRIGATION SYSTE	5600155004601	20-Jun-16		31-Dec-17	Agriculture	AWFF	1,117,881	-	0.00
3	LINE OF CREDIT TO DEVELOPMENT BANK OF ZAMBIA	2000200000351	21-Sep-16		18-Sep-24	Finance	ADB	18,114,367	-	0.00
4	CHINSALI - NAKONDE ROAD REHABILITATION PROJECT (NORTH-SOUTH	2000130013830	10-Jul-15	28-Jan-16	31-Dec-20	Transport	ADB	139,842,912	24,178	0.02
5	CHINSALI - NAKONDE ROAD REHABILITATION PROJECT (NORTH-SOUTH	5050130000051	10-Jul-15	28-Jan-16	31-Dec-20	Transport	AGTF	36,228,734	-	0.00
6	BOTSWANA/ZAMBIA-KAZUNGULA BRIDGE PROJECT	2100150025694	7-Dec-11	10-Feb-12	31-Dec-19	Transport	ADF	51,000,000	1,032,899	2.03
7	POWER TRANSMISSION PROJECT	2100150027396	13-Jun-12	19-Dec-12	31-Dec-18	Power	ADF	30,000,000	21,043,330	70.14
8	POWER TRANSMISSION PROJECT	2200160000989	13-Jun-12	19-Dec-12	31-Dec-18	Power	NTF	6,400,000	4,295,127	67.11
9	KARIBA DAM REHABILITATION	2100150032548	15-Dec-14	20-Feb-15	30-Jun-26	Power	ADF	25,200,000	-	0.00
10	LINE OF CREDIT TO FRB SUBSIDIARY, FIRST NATIONAL BANK OF ZAM	2000130012980	12-Dec-12	26-Mar-15	21-May-22	Finance	ADB	31,858,099	31,858,099	100.00
11	ITEZHI-TEZHI HYDROPOWER PROJECT	2000130008981	13-Jun-12	14-Apr-14	31-Dec-18	Power	ADB	25,360,114	25,067,918	98.85
12	MIC TAF GRANT YOUTH IN AGRIBUSINESS AND AGRICULTURE COMMODIT	5500155010401	26-Apr-16	10-Aug-16	31-Dec-17	Agriculture	MICF	790,000	-	0.00
13	MIC TAF GRANT LUSWISHI FARM BLOCK	5500155010151	22-Mar-16	6-Jul-16	31-Aug-17	Agriculture	MICF	720,000	-	0.00
14	LIVESTOCK INFRASTRUCTURE SUPPORT PROJECT (LISP)	2100150029293	19-Jun-13	8-Aug-13	31-Dec-18	Agriculture	ADF	12,000,000	2,755,969	22.97
15	GAFSP-AGRICULTURE PRODUCTIVITY AND MARKET ENHANCEMENT PROJEC	5570155000501	26-Mar-14	10-Jun-14	30-Jun-20	Agriculture	GAFSP	22,548,764	2,405,704	10.67
16	CASHEW INFRASTRUCTURE DEVELOPMENT PROJECT (CIDP)	2000130014431	4-Nov-15	29-Mar-16	31-Dec-21	Agriculture	ADB	32,605,860	543,576	1.67
17	STRENGTHENING CLIMATE RESILIENCE IN THE KAFUE BASIN	5565130000151	18-Oct-13	18-Dec-13	30-Jun-19	Environment	SCF	12,680,057	174,103	1.37
18	STRENGTHENING CLIMATE RESILIENCE IN THE KAFUE BASIN	5565155000501	18-Oct-13	18-Dec-13	30-Jun-19	Environment	SCF	14,853,781	2,014,070	13.56
19	LAKE TANGANYIKA DEVELOPMENT PROJ	2000130012932	18-Dec-14	10-Aug-15	30-Jun-20	Agriculture	ADB	16,293,511	1,122,802	6.89
20	LAKE TANGANYIKA DEVELOPMENT PROJ	5550155000501	18-Dec-14	10-Aug-15	30-Jun-20	Agriculture	GEF	5,072,023	-	0.00
21	SKILLS DEVELOPMENT AND ENTREPRENEURSHIP PROJECT - SUPPORTIN	2000130014280	14-Oct-15	29-Mar-16	31-Dec-20	Social	ADB	21,737,240	72,457	0.33

22	SUPPORT FOR SCIENCE AND TECHNOLOGY EDUCATION PROJECT (SSTEP/	2100150030194	20-Nov-13	2-Jun-14	31-Dec-19	Social	ADF	22,220,000	4,555,098	20.50
23	TRANSFORMING RURAL LIVELIHOODS IN WESTERN ZAMBIA - NATIONAL	2000130012430	10-Sep-14	12-Jun-15	31-Dec-19	Water Sup/Sanit	ADB	11,230,907	288,887	2.57
24	TRANSFORMING RURAL LIVELIHOODS IN WESTERN ZAMBIA - NATIONAL	5800155001401	10-Sep-14	7-Jan-15	31-Dec-19	Water Sup/Sanit	RWSS	2,794,701	652,867	23.36
25	LUSAKA SANITATION PROGRAM	2000130013680	24-Jun-15	29-Mar-16	31-Dec-20	Water Sup/Sanit	ADB	36,228,734	506,678	1.40
TOTAL								577,656,246	98,641,331	17.1%

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- AWFF – Africa Water Facility Fund
 - ADF - African Development Fund
 - ADB - African Development Bank
 - NTF - Nigerian Trust Fund
 - AGTF – Africa Growing Together Fund
 - MICF - Middle Inc Countries Fund
 - GEF - Global Environmental Facility
 - SCF - Strategic Climate Fund
 - RWSS - Rural Water Supply & Sanitation fund

Appendix IV: Map of the Project Area



APPENDIX V:

Risk Mitigating Measures Summary for Country/Sector and Project levels

Country Level

Risk Factor #1: Procurement Legal and Regulatory Framework

Risk	Mitigation Measure
<i>Description: Lack of a Comprehensive and Independent Complaint Mechanism</i>	<i>Description: Bank Rules will apply to high value contracts while only low value contracts will use the National Procurement Law in which international firms may not be interested.</i>
<i>Description: Restrictive Eligibility Requirements and Preferences for specific Groups</i>	<i>Description: Bank Rules will apply to high value contracts while only low value contracts will use the National Procurement Law in which international firms may not be interested.</i>
<i>Description: Mandatory Joint Venture Requirements</i>	<i>Description: Bank Rules will apply to high value contracts while only low value contracts will use the National Procurement Law in which international firms may not be interested.</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>

Risk Factor #2: Systemic Prohibited practices

Risk (None)	Mitigation Measure
<i>Description:</i>	<i>Description:</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>

Sector Level

Risk Factor #3: Capacity of the Sector

Risk	Mitigation Measure
<i>Description: Low Sector Capacity to support technically the execution of the high scope of the Project</i>	<i>Description: Institutional Arrangements well defined and technical assistance incorporated in the project design.</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>

Risk Factor #4: Capacity of Local Industry

Risk	Mitigation Measure
<i>Description: Inadequate capacity to support technically the execution of the scope of the Project by local contractors</i>	<i>Description: Institutional Arrangements well defined and technical assistance and capacity of local contractors, project complexity and scope considered in procurement arrangements and methods</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>

Project Level

Risk Factor #5: Project Design Risks

Risk	Mitigation Measure
<i>Description: Distant locations and Specialized works requiring specific Engineering and Technical skills in design and execution</i>	<i>Description: Technical support put in place. Technical capacity of implementing agencies enhanced through training and support. Project Coordinator and Procurement Specialist Competitively recruited on the Project.</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>

Risk Factor #6: Delivery Quality Risks

Risk	Mitigation Measure
<i>Description: Poor Capacity of Local Contractors and Poor Technical Capacity to manage and supervise the project</i>	<i>Description: Enhanced Technical Capacity to credibly evaluate contractors bids based on practical criteria and ensure engagement of competent contractors. Project Coordinator and Procurement Specialist Competitively recruited on the Project.</i>
<i>Rating at Appraisal:</i>	<i>Status on [date]</i>
<i>Rating at Negotiations:</i>	<i>Status on [date]</i>
<i>Rating at Credit/Loan Effectiveness:</i>	<i>Status on [date]</i>
<i>Rating at Mid-Term Review (or Supervision):</i>	<i>Status on [date]</i>
<i>Rating at Completion of Project</i>	<i>Status on [date]</i>