



African Water Facility
Facilité africaine de l'eau

Mobilising Resources for Water in Africa
Mobiliser des ressources pour l'eau en Afrique



REPUBLIC OF ZAMBIA

UPSCALING SMALLHOLDER IRRIGATION

PROJECT APPRAISAL REPORT

May 2016

African Water Facility | Facilité africaine de l'eau

African Development Bank | Banque africaine de développement

BP 1387 Abidjan 01, Côte d'Ivoire, Immeuble CCIA,

Avenue Jean Paul II | CCIA 10th Floor, 10 R

africanwaterfacility@afdb.org

www.africanwaterfacility.org

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LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
AWF	African Water Facility
BoQs	Bills of Quantities
ESAP	Environmental and Social Assessment Procedures
ESIA	Environmental and Social Impact Assessment
GAPSP	Global Agriculture and Food Security Programme
GDP	Gross Domestic Product
GAFSP	Global Agriculture and Food Security Programme
GoZ	Government of the Republic of Zambia
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
MoA	Ministry of Agriculture
MoF	Ministry of Finance
O&M	Operation & Maintenance
PIU	Project Implementation Unit
PPP	Public Private Partnership
PSC	Project Steering Committee
QCBS	Quality and Cost Based Selection
SIP	Small-Scale Irrigation Project
SME	Small to Medium sized Enterprises
TOR	Terms of Reference
ZEMA	Zambia Environmental Management Authority
ZNFU	Zambia National Farmers Union
ZDA	Zambia Development Agency

CURRENCY

Local Currency.....	Zambian Kwacha (ZMK)
1 Euro (€)	11.3417 ZMK (March 2016)

Results Based Logical Framework Analysis

Country and project name: Republic of Zambia, Up-scaling Smallholder Irrigation

Purpose of the project: Preparation of an up-scaling project for investments in climate-smart irrigated commercial agriculture in the Republic of Zambia

RESULTS CHAIN		PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES
		Indicator	Baseline (2015)	Target		
IMPACT	Improved livelihood conditions, commercial engagement and climate change resilience of smallholder farmers in the Republic of Zambia.	Average per capita income	USD450.00	2025: USD1,500.00	CSO Living Conditions Monitoring Survey	Assumption: Zambia continues to pursue irrigated agriculture as key strategy to support climate change adaptation and economic growth
	Increased investments in climate change adaptation and irrigated commercial agriculture.	Amount of additional financing pledged.	Nil (0)	2018: €20,000,000 2022: €60,000,000	Signed Financing Agreements Annual Progress Reports Project Completion Report	Risks/Assumptions: Financiers respond to request for financing. Zambia's appetite and capacity to borrow remains high

RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES	
	Indicator	Baseline	Targets (2018)			
OUTPUTS	Component 1: Pre-Feasibility and Feasibility Studies			Progress Reports.	Risk 1: Delays in procurement of consultancy services reduces the efficiency of project implementation. Mitigating measure: Recruitment of a qualified and experienced Procurement specialist to <ul style="list-style-type: none"> • Prepare draft TOR in advance • Issue the SPN in advance • Evaluation of proposals and submission to the Bank to be done timely • Review of project procurement documents and issuance of No Objections to be done timely 	
	Pre-Feasibility Studies for smallholder irrigation schemes reviewed and completed	Number of schemes Potential area of additional smallholder irrigation (ha) Potential number of direct beneficiary households	Nil (0)	25		Pre-feasibility study Report
	Feasibility Studies for smallholder irrigation schemes completed		Nil (0)	9,560		Feasibility Study Report
	Detailed Design and Tender Documents developed and agreed by stakeholders	Number of Schemes	Nil (0)	4,800		Project Completion Report
	Component 2: Integrated Safeguards System					
	Proposed investments comply with the best-practice social and environmental safeguard standards.	Environmental impact and risk assessment, and appropriate plans developed	No	Yes	Approved Integrated Safeguards (ISS) Reports by ZEMA	Risk 2: Quality of consultant outputs is low. Mitigating measure: Package the required services in such a way that the contract is attractive to more experienced international consultants Undertake international competitive bidding
		Climate Change Adaptation Review and Evaluation Procedures mainstreamed	No	Yes		
	Component 3: Project Management					
	Timely delivery of project outcomes and outputs.	Number of procurements conducted on time.	Nil (0)	1 by 2016	Resources are released on time	Risk 3: Lack of government counterpart funds restricts effective project management Mitigating measure: The existing Project Implementation Unit is currently adequately financed, and actively seeks to broaden its financial base.
		Number of Annual Progress Reports submitted to AWF on time.	Nil (0)	1 per year		
Number of Quarterly Progress Reports		Nil (0)	4 per year			
Completion Report submitted to AWF on time.		Nil (0)	1			

COMPONENT COSTS BY FINANCING SOURCES AND MAJOR ACTIVITIES	Cost (€)		
	AWF	MoA	Total
Component 1: Prefeasibility and Feasibility Studies	1,105,410	0	1,105,410
Sub-Component 1-1: Review, updating and completing of Prefeasibility Studies			
Sub-Component 1-2: Feasibility Studies			
Sub-Component 1-3: Detailed Design and Tender Documents			
Component 2: Integrated Safeguard System	206,640	0	206,640
Sub-Component 2-1: Environmental and Social Safeguard Screening			
Sub-Component 2-2: Environmental and Social Framework Assessment			
Sub-Component 2-3: Climate Change Assessment			
Sub-Component 2-4: Environmental and Social Impact Assessment			
Component 3: Project Management	0	200,000	200,000
Base Cost	1,312,050	200,000	1,512,050
Contingencies	87,950	0	87,950
TOTAL AWF-FINANCED PROJECT COST (net of taxes and duties)			1,400,000
TOTAL PROJECT COST			1,600,000

Executive Summary

The Republic of Zambia, like most countries in sub-Saharan Africa, is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods. Since 1960, the mean annual temperature increased by 1.3 °C, while it is currently estimated that temperature would further increase by 0.6 °C every decade. Further, it has been shown that the frequency of extreme weather events, including floods and droughts, has significantly increased over the last two decades.

The National Climate Change Response Strategy promulgates to ensure that the most vulnerable sectors of the economy are climate-proofed, and that sustainable development is achieved through the promotion of a low-carbon pathway. Increased irrigation investments and the promotion of appropriate irrigation technologies suitable for different agro-ecological regions, is also an integral part of the strategy. In particular, this strategy targets to put an additional 75,000 ha of additional land under irrigation by 2030. As a contribution to achieving these ambitious government targets, the Government of Zambia, through its Ministry of Agriculture, requested AWF financing for the preparation of a project for up-scaling smallholder irrigation, with a particular focus on irrigation as a strategy for climate change adaptation.

The overall objective of the project is the preparation of an irrigation investment project that would upscale the successful interventions introduced under the Small-Scale Irrigation Project, while incorporating valuable lessons-learned. This is expected to contribute to improved livelihood conditions and climate change resilience of smallholder farmers in the Republic of Zambia. In particular, the project will increase investments in climate change adaptation and irrigated commercial agriculture, and targets to secure financing of no less than € 60 million by 2022. The anticipated downstream investment project would extend irrigated agriculture by an additional area of 9,560 ha, and benefit 4,800 households in poor rural communities which are vulnerable to the impacts of climate change. These investments will consider improved commercial and value chain linkages to large operators through outgrower linkages, and to improve institutional management of these schemes through Public Private Sector arrangements.

The project supports the Zambian national priorities as expressed in i.e. the Revised Sixth National Development Plan (2013-2016) and the Medium-Term Expenditure Framework (2016-2018), where irrigation development is prioritized. The project is also directly in line with the High Five initiative of the Bank. It supports directly Food Security, and Improvement of Livelihood and through establishing SME also Industrialisation.

The duration of the project is 24 months from the time of project effectiveness, and the total project cost of the proposed intervention is € 1,600,000, out of which the African Water Facility would finance € 1,400,000 (88%) net of taxes and duties, while the Government of the Republic of Zambia would contribute € 200,000 (12%; in-kind and in-cash).

1 BACKGROUND

1.1 PROJECT RATIONAL AND ORIGIN

The Republic of Zambia, like most countries in sub-Saharan Africa, is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods. Since 1960, the mean annual temperature increased by 1.3 °C, while it is currently estimated that temperature would further increase by 0.6 °C every decade. Further, it has been shown that the frequency of extreme weather events, including floods and droughts, has significantly increased over the last two decades.

The impacts of these changes already show important negative consequences, particular on the quality of life of vulnerable groups, such as subsistence farmers. Agriculture and food security, energy and water, human health, natural resources and wildlife have been identified as the most vulnerable sectors to climate change and variability¹. Importantly, climate change and variability has had a pronounced negative effect on economic growth, with an estimated reduction of the country's GDP growth rate by 0.4 points per year, which could result in macroeconomic losses of USD 4.33 – 5.33 billion over a 10-year period (2006-2016). At the same time, the population growth rate of Zambia is currently estimated at 2.8% per annum, which may result in doubling the current population to 30 million by 2030. Rain fed subsistence agriculture, widely practiced in Zambia, is increasingly under pressure from erratic rainfall patterns, and has failed to significantly raise crop productivity, or to smoothen out seasonal cycles of hunger and food insecurity. Weak integration in commercial markets tends to worsen the situation by reducing market incentives for investments in irrigated farming.

In view of the above, the Government of the Republic of Zambia (GoZ) has prioritized investments in land and water resources development in general, and irrigation in particular, as a means of strengthening the adaptive capacity farmers and the rural poor.

1.2 SECTOR STATUS AND PRIORITIES

According to Zambia's Vision 2013, the GoZ aspires to become a prosperous middle income country by the year 2030. The sector vision for agriculture is to attain an efficient, competitive, sustainable and export-led agriculture sector that assures food security and increased income by 2030. To facilitate this process, the country's strategy includes increasing the area under irrigation.

The Revised Sixth National Development Plan (2013-2016) and the Medium-Term Expenditure Framework (2016-2018), as medium term instruments, have prioritized irrigation development. In addition, the Strategic Plan for the Ministry of Agriculture (2014-2016) aims – inter alia – to develop, promote and strengthen efficient and effective management of agricultural production and productivity (including through investments into irrigation), in order to ensure sustainable household and national food and nutrition security, and increase income.

The National Climate Change Response Strategy promulgates to ensure that the most vulnerable sectors of the economy are climate-proofed, and that sustainable development is

¹Reference: Ministry of Tourism, Environment and Natural Resources, 2007 (NAPA)

achieved through the promotion of a low-carbon pathway. Increased irrigation investments and the promotion of appropriate irrigation technologies suitable for different agro-ecological regions, is also an integral part of the strategy. In particular, this strategy targets to put an additional 200,000 ha of additional land under irrigation by 2030².

In addition, and most recently, the Ministry of Finance has re-affirmed its commitment to increasing the coverage of irrigated agriculture in the 2016 budget address, delivered to the National Assembly on 9 October 2015³.

1.3 IRRIGATION AND CLIMATE CHANGE ADAPTATION

While Zambia has abundant arable land, only 14 percent of land suitable for agricultural production is being cultivated. At the same time, less than 30 percent of the land suitable for irrigation has been developed. The dominant crops in Zambia, both by volume and value, are maize, cassava and sugar cane, with vegetables, rice, cottonseed, soybeans, groundnuts, wheat and sweet potatoes also making a substantial contributions. Cassava and maize are staple foods for most households.

Agricultural production in Zambia is dominated by small-scale farmers, even though the country has a relatively strong commercial sector in comparison to other countries in the region. An estimated 600,000 smallholder farmers produce most of the country's cassava, cotton, millet and sorghum, as well as over 90% of its maize. Yet, current production systems in the majority of cases are highly vulnerable to fluctuations in rainfall. Irrigation expansion is constrained by weak market integration and commercialised operations.

1.4 PAST AND ON-GOING PROJECTS

There is a significant number of past and on-going government implemented projects which directly relate to the theme of this project, including:

- (a) The Small-Scale Irrigation Project (SIP, approved 2000), financed by AfDB and Finland was aimed at contributing to the growth of GDP and insure food security and poverty alleviation, by opening 1300 ha and increasing food production and farm income to 1,650 households.
- (b) Irrigation Development and Support Project (IDSP), financed by World Bank, aims to open 5000 ha and increase output and volume of products marketed by smallholders benefiting from irrigation investments; and
- (c) The Strategic Program for Climate Resilience Zambia, which comprises three investment projects in the Barotse Sub-Basin (IBRD, US\$ 50 million); the Kafue River Basin (AfDB, US\$45 million); and private sector support to climate resilience (IFC, US\$15 million). It includes irrigation and water management as one of its adaption activities.
- (d) The Agriculture Productivity and Market Enhancement Project (APMEP) that is financed by the Global Agriculture and Food Security Programme (GAFSP) through

² GoZ 2010. National Climate Change Response Strategy. Ministry of Tourism, Environment and Natural Resources. Government of Zambia. December 2010.

³2016 Budget Address by Hon. Alexander B. Chikwanda M.P., Minister of Finance, delivered to the National Assembly on Friday 9th October 2015

the AfDB aims to open 2900 ha and bring over 8500 smallholder householders into irrigated agriculture through both capital intensive schemes and small mini schemes at community levels.

In particular the SIP has given valuable lessons that will be incorporated into the Feasibility Study – Detailed Design and the preparation of the downstream investment project. Of particular relevance is:

That detailed engineering and feasibility studies should be undertaken prior to project appraisal. The SIP project was executed without these studies and the project was delayed by nearly 2 years and costs were found to be higher than estimated.

Other include: -Project sites shall be available at all times; -dropping key components should entail a redirection study; -midterm review should be a opportunity for redirection; M&E activities shall be a continuous process; -supervision mission shall be staffed with adequate skills; -delays and inflations shall be anticipated; -Government and beneficiaries contribution shall not be left to last moment

In addition, the Climate Change Facilitation Unit (CCFU) under the Environment and Natural Resources Department (Ministry of Tourism, Environment and Natural Resources) is implementing projects that respond to the National Adaptation Plan for Action. And the Zambia Meteorological Department (ZMD) is implementing a project aimed to promote national preparedness through real-time weather forecasting.

Over the last decade, the African Water Facility has further financed two projects in the Republic of Zambia, which were considered for lessons-learnt in terms of project design and efficient implementation arrangements:

- (e) Community Water Management Improvement Project for Traditional Farmers in Mkushi, Kapiri, Mposhi, Masaiti and Chingola Districts (€ 0.719 million; approved 2009), implemented by the eligible NGO Development Aid from People to People, which aimed to strengthen traditional farmers' ability to efficiently manage on-farm water resources for enhanced productivity and income generation, thereby facilitating the transition from subsistence farming to a more efficient and commercially oriented mode of production; and
- (f) Development of Operational Guidelines for Investments in Multi-purpose Small Dams, which aimed to support the GoZ to develop, test and adopt guidelines for programming, design, financing, construction, and Operation and maintenance of such water infrastructure (€ 0.95 million, approved 2012).

1.5 PROBLEM DEFINITION

The Zambian smallholder farming community is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods.

In addition, weak commercial linkages to markets have constrained the expansion of irrigated agriculture in Zambia, given its capital intensive nature. Out of the 2.75 million hectare

estimated as the overall irrigation potential, 423,000⁴ hectare are considered economically viable for development. However, the total irrigation area in the country is currently only slightly above 150,000 hectare.

Importantly, most of the irrigated area in the Republic of Zambia services large-scale commercial farming enterprises, while small-holder farmers are yet to benefit from significant investments in the sector. And while large-scale farms have a significant role in terms of overall production and job creation, their direct contribution to poverty alleviation has proven insignificant.

To improve sector performance, and to help lift farmers out of poverty, the government has focused on policy support for outgrowers in irrigated agriculture since the Fifth National Development Plan (2008-2010), which focuses – inter alia – on “economic infrastructure and human resources”. The government has passed a Public-Private Partnership Bill focusing on developing agriculture as a business along with a model of inclusive agriculture development that puts emphasis on core agricultural constraints. In essence: this model aims to link small-holder farmers to commercial markets, by mobilizing idle assets readily available to smallholder farmers (land, family labour and water) and combining them with scarce assets not available to small-holders (finance, technical expertise, commercial skills). Over the last decade, several models of outgrower schemes have emerged in Zambia, and recent research⁵ has shown that there is a general understanding that schemes have increased farmer incomes and significantly contributed to improving livelihood conditions. Importantly, and while there is no single best model that suits all situations, the government acknowledge the need to further refine PPP models and associated governance arrangements, as it works towards increasing the country’s total area under irrigation.

In addition, and despite its great potential for irrigation, Zambia has not identified and appraised sufficient available sites, to boost irrigation coverage in the country. There is currently insufficient feasibility studies (including technical, market, economic, financial analysis) available to GoZ to make informed investment decisions, which in turn is a considerable bottleneck, as the GoZ aims to realise the aspirational targets it has set in its strategies.

1.6 BENEFICIARIES AND STAKEHOLDERS

The direct beneficiaries of this project comprise various authorities of the Government of the Republic of Zambia, by providing a sound information base for making investment decisions in irrigation and water management.

Ultimate beneficiaries of the envisioned downstream investment program would comprise poor rural communities across Zambia who are susceptible to the negative impacts of climate change and are highly dependent on rainfed subsistent agriculture. The proposed intervention offers an opportunity to identify, characterise and prepare potential irrigation investments in 25 sites leading to the opening of an additional 9,560 ha of irrigated land for 4,800 smallholder households.

⁴ IWMI Working Paper 150: Investing in Agricultural Water Management to Benefit Smallholder Farmers in Zambia. Refers to MoA/FAO 2004

⁵ Bangwe L. and B. van Koppen, 2012. Smallholder Outgrowers in Irrigated Agriculture in Zambia. AgWater Solutions Project.

1.7 JUSTIFICATION FOR AWF INTERVENTION

The project was submitted to AWF under a *Call for Proposal for the Preparation of Climate-Smart Investment Projects and Programmes*, launched in September 2014. The project proposal was fully aligned with the strategic priorities of the African Water Facility in general, and the objectives of the Call for Proposal in particular.

The Project aims to prepare a downstream investment project leveraging at least € 60 Million from AfDB and other resources, thereby contributing directly to AWF's core objective of increase water sector investments across Africa. The resulting leveraging factor of 1:45 is higher than the AWF's long-term average, and provides a solid justification for the preparation of required investment studies.

The long-term impact of the project is clearly in support of the AfDB priorities under the High Five initiative. The High Fives 'Feed Africa', 'Industrialise Africa' and 'Improve the Quality of Life for all Africans' is being supported directly through increased food production, and indirectly through establishment of commercial agriculture and SMEs. It is also consistent with the Bank's Ten Year Strategy 2013-2022, which focuses on two objectives "to improve the quality of Africa's growth: inclusive growth, and the transition to green growth".

In addition, the project will directly contribute to the required preparation work for an African Development Bank programmed pipeline project in Zambia (Expansion of Irrigation Schemes in Farm Blocks), by financing the preparation of feasibility-grade studies in Copperbelt province.

2 THE PROJECT

2.1 IMPACT AND OUTCOMES

The overall objective of the Project is the preparation of an irrigation investment project that would upscale the successful interventions introduced under the Small-Scale Irrigation Project, while incorporating valuable lessons-learned. The impact of the project will be improved livelihood conditions and climate change resilience of smallholder farmers in the Republic of Zambia.

The outcome of the Project will be increased investments in climate change adaptation and irrigated commercial agriculture, and targets to secure financing of no less than € 60 million by 2018. In addition, the anticipated downstream investment project would extend irrigated agriculture by an additional area of 9,560 ha, and reaching 4,800 households in poor rural communities which are vulnerable to the impacts of climate change. The investments will consider improved commercial and value chain linkages to large operators through outgrower linkages, and to improve institutional management of these schemes through Public Private Sector arrangements. This model has been tested under the SIP project.

Impact and outcome indicators, including baseline values, targets, and means of verification are detailed in the Results-Based Logical Framework.

2.2 PROJECT COMPONENTS, OUTPUTS AND ACTIVITIES

The Government has formally identified and characterised 25 potential irrigation sites in Zambia. The Project will finance all technical, social, environmental and cross-cutting studies, necessary to conduct pre-feasibility and feasibility analyses, that are critical to the bankable project. It will be implemented through three (3) components, including:

PAR: Zambia, Smallholder Irrigation / Feasibility and Detailed Design

- (i) Component 1: Prefeasibility, Feasibility Studies and Detailed Designs;
- (ii) Component 2: Integrated Safeguard System Studies; and
- (iii) Component 3: Project Management.

In an effort to identify potential sites for irrigation development, the Government of the Republic of Zambia (with financial support by the Government of Finland) has engaged in preparing pre-feasibility studies to upscale the Small-Scale Irrigation Project. In particular, these pre-feasibility studies prepared a preliminary estimate of the suitability of 19 proposed sites for irrigation development, alongside socio-economic profiles of potential beneficiary communities. In addition, the Ministry of Agriculture of the Republic of Zambia has identified an additional 6 sites that it considers of suitable quality. A list of these selected sites is in Table 1 (below).

Table 1: Proposed Sites for Potential Irrigation development

#	Site	District	Province	Area (ha)
1	Makungwa	Chipita	Eastern Province	100
2	Lukuzye	Chipita	Eastern Province	120
3	Bwanyunka	Chipita	Eastern Province	150
4	Lusangazi	Lundazi	Eastern Province	120
5	Mukomba	Lundazi	Eastern Province	100
6	Luwesi/Emusa	Lundazi	Eastern Province	100
7	Lusowe	Petauke	Eastern Province	150
8	Kaulu	Petauke	Eastern Province	150
9	Chipompo	Kasama	Northern Province	200
10	Nseluka	Kasama	Northern Province	600
11	Mwenda	Mbala	Northern Province	500
12	Ipusukilo	Luwingu	Northern Province	200
13	Lubasenshi	Luwingu	Northern Province	300
14	Luwalizi	Isoka	Muchinga Province	400
15	Lubu	Chinsali	Muchinga Province	400
16	Manshya	Shiwang'andu	Muchinga Province	500
17	Lufunsa	Lufunsa	Lusaka Province	800
18	Chiawa	Kafue	Lusaka Province	450
19	Lusuwishi	Lufwanyama	Copperbelt Province	1,000
20	Chifuwe East	Manyinga	North-Western	450
21	Chizera	Mufumbwe	North-Western	510
22	Chembe	Chembe	Luapula Province	480
23	Luongo	Chipili	Luapula Province	650
24	Mutenda-Muchinshi	Chingola	Copperbelt Province	510
25	Mulungushi	Kabwe	Central Province	620
Total Area				9,560

Under the close supervision of the GoZ, Component 1 and 2 will be conducted by two different consultancy firms, which will be procured as part of this project. Detailed Terms of Reference for component 1 and 2 are presented in Annex 6:

Component 1: Prefeasibility, Feasibility Studies and Detailed Designs

Component 1 will be implemented through three sub-components, and in three subsequent phases, to produce feasibility-grade studies and detailed designs of a bankable investment for 10-12 irrigation sites, which will serve the GoZ to make an informed decision on future irrigation investment, and to allow it to mobilize downstream financing.

Sub-Component 1-1: Pre-Feasibility Studies.

The Project will review, complement and complete the prepared pre-feasibility studies, covering both technical, commercial and institutional aspects which may constraint future irrigation development. 25 irrigation sites are going to be included in this sub-component. In particular, these studies will provide a preliminary assessment, including but not limited to: (i) land and water resources availability/suitability; (ii) markets for additional agricultural produce; (iii) farm models; (iv) preliminary social and environmental risks/opportunities; (v) available technical options for irrigation, including preliminary technical designs and cost estimates; (vi) preliminary economic assessments of available options; and (vii) a preliminary assessment of required institutional arrangements (including O&M and revenue-sharing).

Tasks associated with Component 1-1 completion are expected to be undertaken through:

- Producing an inception report for the Feasibility Study
- Ensuring full involvement of key stakeholders, including potential investors, farm owners, smallholder farmers, community leaders, local authorities and MoA staff during all stages of the consultancy. The irrigation structures' locations, design and management should be identified together with key stakeholders having considered all other development aspects and options.
- A desk-review of available information produced by the Ministry of Agriculture and other stakeholders;
- Rapid field surveys, conducted by small inter-disciplinary teams, to ascertain information earlier collected, and fill critical information gaps to complete the available studies; and
- Compilation of a Draft Pre-feasibility Report, which would be finalized with comments received from the GoZ.
- Stakeholder Workshop to discuss the recommendations of Sub-component 1-1. The workshop shall agree on which sites shall be retained for feasibility studies in Sub-component 1-2

Output 1-1: Pre-Feasibility Studies, will be reviewed by the Steering Committee of the Project, and cleared by the Ministry of Agriculture, prior to commencement of detailed feasibility studies of the 25 sub-projects.

Sub-Component 1-2: Feasibility Studies.

Based on the pre-feasibility study findings, and confirmed technical, economic and environmental soundness at pre-feasibility level, the Consultant will prepare feasibility studies of selected sites. The selected sites shall cover 3,000 Ha to 3,500 Ha for irrigation divided into 12 to 15 separate irrigation schemes.

Feasibility studies for small-holder irrigation schemes will be conducted in accordance with generally recognized international best practices, but with due consideration of the scale of individual downstream investments and include – inter alia:

Agriculture and Marketing Studies

- (i) Crop Production
- (ii) Market Assessment
- (iii) Technical Assessment
- (iv) Engineering Studies
- (v) Engineering Design of Schemes
- (vi) Institutional arrangements
- (vii) Socio-Economic Assessment
- (viii) Gender assessment/survey
- (ix) Scheme Operation and Maintenance Plan
- (x) Estimation of investment costs and benefits
- (xi) Economic analysis
- (xii) Financial Analysis
- (xiii) Mobilisation of Irrigation Finance

The feasibility report would provide (i) a summary document, detailing all findings of the feasibility assessments; (ii) and include more detailed assessments, including sub-project descriptions in annexes, as required. The feasibility report will include recommendation of which sites shall be included in Sub-component 1-3.

The Feasibility report will be presented and discussed at a Stakeholder Workshop before continuing to Sub-component 1-3. The recommendations shall be approved by the Ministry of Agriculture.

Sub-Component 1-3: Detailed Design and Tender Documents.

The expected output of Component 1-3 is a Detailed Design / Tender Document Report for 10 to 12 smallholder irrigation systems, following international best-practice, and of sufficient detail to facilitate the GoZ decision-making process, and to allow prospective financiers (government, bilateral donors, multilateral financing institutes, etc.) to appraise an investment project/programme in smallholder irrigated agriculture. This will include, that findings of ESIA study are duly factored into the project design and that preferred implementation arrangements (detail design, safeguards, procurement, engineering, construction supervision) are proposed to allow the expedient start of a downstream investment. Tender Documents will be prepared following the procedures of GoZ and must be acceptable to the AfDB.

The task is to define the current status and problem areas and suggest ways in which these could be addressed, and come up with detailed designs, construction drawings, and tender documents of the proposed infrastructure. This will include, technical specifications, Bills of

Quantities (BoQs), Engineer's cost estimates, tender documents including procurement packages.

Activities will include:

- i. Irrigation Scheme Development
- ii. Rural Roads, Electrification and Communication Networks
- iii. Industry Scoping and Market Analysis of Strategic Agricultural Value Chains
- iv. Outgrower Models
- v. Cadastral Survey and Land Demarcation
- vi. Tender Documents.

Component 1 will in addition to the above described have activities regarding capacity building for government staff. The activities will be integrated in the technical activities and include: Counterpart training, Stakeholder Engagement and development of Guidelines for Pre-feasibility Studies

Component 2: Safeguards Studies

To ensure bankability of the proposed interventions, the Project will finance necessary studies to comply with Government of Zambia regulations, and best-practice integrated safeguard standards⁶, as related to environmental and social safeguard standards. Further, and in following the African Development Bank's Integrated Safeguard System, the study will encompass analytical work to estimate climate change risks and ensure that appropriate risk management and adaptation measures are fully integrated in into the project design.

The Project will ensure that adequate environmental and social assessments are conducted, that alternative development and design options are duly considered, and that appropriate mitigation measures are factored into the most feasible project designs. In particular, the project will ensure compliance of sub-projects with relevant national legislation and standards, and equivalent international standards.

Given the nature of the project (small-scale irrigation), and in following the Bank's Environment and Social Assessment Procedures (ESAP)⁷, the appraisal suggests that most downstream investments are likely to be of a nature classified as Category 2. However, some larger sub-projects may also require safeguard assessments, associated with Category 1 projects.

Sub-Component 2-1: Environmental and Social Safeguards Screening

The project will conduct preliminary assessments during the implementation of Component 1-1, to complement the updated technical studies in this vital aspect. In particular, the project will consider the size, likely technical options, and will determine the range of likely potential risks and impacts. It will further provide guidance on specific requirements based on the

⁶ Such as the African Development Bank Group, 2013. Integrated Safeguard System: Policy Statement and Operational Safeguards. Quality Assurance and Results Department.

⁷ African Development Bank Group, 2015. Environmental and Social Assessment Procedures (ESAP). Quality and Results Department.

GoZ's applicable legislation and equivalent international best-practice such as the AfDB's safeguard policies and procedures. This would include a preliminary estimate of the number of people that may be displaced with a loss of assets or restriction of access to assets, to ensure that adequately detailed resettlement action plans are developed in subsequent phases of the project. The project will further ensure, that the findings of this review are fully incorporated into the final feasibility designs.

Output 2-1: Environmental and Social Screening Report. The project will produce a screening report, which will form an integral part, and annexed to the pre-Feasibility Report (Output 1-1). In particular, this report will include, inter alia: (i) a preliminary assessment of the likely categorizations; (ii) a description of the range of potential risks and impacts; and (iii) Terms of Reference for required environmental and social assessments and an associated updated workplan.

Sub-Component 2-2: Detailed Safeguard Studies

Given the scope of the indicative list of sub-projects, and the programmatic nature of the anticipated downstream investment, which may comprise a number of individual investments, the project will prepare assessments that serve the preparation of an Environmental and Social Management Framework, which comprises a set of procedures, methodologies and management measures to ensure that the environmental and social impacts of sub-projects are addressed in an appropriate manner. Site-specific Environmental Management Plans, or other requirements as determined by national legislation, are expected to be developed during the detailed design of sub-project investments, within the downstream investment. Equally, adequately detailed resettlement action plans will be developed as part of the detailed design phase.

Output 2-2 would comprise:

- (i) An Environmental and Social Management Framework Assessment; and
- (ii) Detailed TORs for consultancy services for detailed environmental and social assessments during a subsequent design phase for downstream investments, for sites where Detailed Design is not prepared during the project

Given some uncertainty with regards to individual sub-projects, and potential deviations from the preliminary estimates conducted during appraisal, the Project has allocated an adequate contingency to allow for changes to the scope of consultancy services stemming from findings under Sub-component 2-1.

Sub-Component 2-3: Climate Change Assessment

For the purpose of conducting the Climate Change Evaluation and Risk Management and Adaptation Plan, the consultant is expected to; (i) conduct a screening process (as provided in Component 2-1); and (ii) conduct assessments in line with the Adaptation review and Evaluation Procedures of the AfDB. The screening for climate change risks will follow the Bank's Climate Safeguard System, which provides a category for project climate change risks, and propose the application of Adaptation Review and Evaluation Procedures that are commensurate with that category.

A preliminary assessment during the appraisal of the project suggests that individual sub-projects may be vulnerable to climate risks, and the objective of the work of the consultant would be to propose practical risk management and adaptation options which would be

integrated into the project design and implementation plans. Such assessments are expected to be carried out with due consideration of the size of individual sub-projects.

The output will be Climate Change Evaluation and Risk Management and Adaptation Plan

Sub-Component 2-4: Environmental and Social Impact Assessment

For schemes where detailed design is being made an environmental screening shall be undertaken to determine the category of project in accordance with the AfDB Integrated Safeguard System. Depending on the determined category the consultant shall conduct a Full ESIA for Category 1 projects and a limited ESIA for Category projects. Most projects are expected to be Category 2.

Site-specific Environmental Management Plans, adequately detailed Resettlement Action Plans or other requirements as determined by national legislation, are expected to be developed during the detailed design of sub-project investments, within the downstream investment. Equally, will be develop as part of the detailed design phase

Component 3: Project Management

Component 3 ensures efficient and effective utilization of AWF grant proceeds, and the timely delivery of project outcomes and outputs. Towards this end, the Executing Agency, through the established Project Implementation Unit (PIU), would execute key management functions including, (i) project administration, (ii) ensuring the timely submission of deliverables from consultants, (iii) procurement of services, (iv) monitoring and evaluation, (v) reporting, and (vi) facilitating mobilization of financing for downstream investments. Overall day-to-day operations would be under the responsibility of the Project Manager, assigned under the Small-Scale Irrigation Project (SIP). The existing PIU is fully funded, and all costs associated with Component 3 are a contribution of the Government of the Republic of Zambia (GoZ) towards total project costs. The project will be audited as described in chapter 3.5

2.3 COSTS AND FINANCING

The total project cost of the proposed intervention is € 1,600,000, out of which the African Water Facility would finance € 1,400,000 (87.5%) (net of taxes and duties), while the Government of the Republic of Zambia would contribute € 200,000 (12.5%; in-kind and in-cash).

The costing of required consultancy services is based on estimated person-months of expert inputs, and associated operational overheads for transport and other logistical arrangements. A detailed cost estimate is attached in Annex 3:

Table 2: Project Cost Estimate by Component and Sources of Financing (Amounts in €)

Categories	AWF	MOA	Sub-Total
Component 1	1,105,410		1,105,410
Component 2	206,640		206,640
Component 3		200,000	200,000
Base Cost	1,312,050	200,000	1,512,050
Contingency (approximately 6.7%)	87,950		87,950
TOTAL PROJECT COSTS	1,400,000	200,000	1,600,000

Table 3: Project Cost by Category of Expenditure and Source of Financing (Amounts in €)

Category of Expenditure	AWF	MOA	Sub-Total
Works			
Goods			
Services	1,312,050		1,312,050
Operating Costs			
Meetings and Events		50,000	50,000
Office Equipment and Consumables		50,000	50,000
Project Management		100,000	100,000
Base Cost	1,312,050	200,000	1,512,050
Contingency (approximately 6.7%)	87,950		87,950
Total Project Cost	1,400,000	200,000	1,600,000

As a result of the nature of this preparatory project, no traditional cost-benefit analysis was carried out. However, the project will carry out detailed cost benefit analysis (to establish economic rates of return, and associated risks and sensitivity), to provide guidance to the GoZ in selecting the most efficient and effective solutions for irrigation development.

3 PROJECT IMPLEMENTATION

3.1 GRANT RECIPIENT AND EXECUTING AGENCY

The grant recipient of the project is the Republic of Zambia. The Executing Agency of the project would be the Ministry of Agriculture (MoA), which would assign a Project Implementation Unit (PIU) to implement the project, and manage day-to-day operations. This PIU has already been established under the recently completed Small-Scale Irrigation Project, and has adequate human and financial resources to carry out the necessary tasks as outlined in this Appraisal Report.

3.2 IMPLEMENTING ARRANGEMENTS

Project Implementation Unit. The Executing Agency will assign a Project Manager with an engineering background, within the established Project Implementation Unit (PIU) at SIP, who will be responsible for: (i) day-to-day administration of the project; (ii) ensuring the timely submission of deliverables by the consultant; (iii) developing work plans and budgets; (iv) coordination; (v) procurement of consultancy services; (vi) financial management; (vii) monitoring and evaluation; and (viii) reporting. The Project Manager with experience in managing procurements in line with AfDB's rules and procedures. He will be assisted by the Socio-Economist who will also be acting as the Monitoring and Evaluation Officer, an Accountant, and support staff. Both Project Manager and Accountant shall be acceptable to the African Development Bank.

Project Steering Committee. A Project Steering Committee (PSC) will be established to provide guidance and strategic support to the Project Implementation Unit, comprising the following: (i) Director of Agriculture MoA; (ii) Director of Policy and Planning, MoA; (iii) Chief Accountant MoA; (iv) Ministry of Finance; (v) Zambia National Farmer Union; (vi) Head of Procurement and Supplies Unit MoA; (vii) Zambia Environmental Management Authority (ZEMA); (viii) Ministry of Health; (ix) Ministry of Tourism Environment and

Natural Resources; and (x) Zambia Development Agency (ZDA) . The PSC will be chaired by the Director of Agriculture from the Ministry of Agriculture, and the PIU will serve as the Secretariat of the PSC.

3.3 IMPLEMENTATION SCHEDULE

The duration of the project would be 24 months from the time of project effectiveness, including: (i) Project Start-up (procurement); 9 months; (ii) studies; 14 months; and (iii) project completion activities (3 months).

An indicative implementation schedule, detailing component progress and milestone is presented in Annex 2. Key milestones include: (i) Inception report, including completed pre-feasibility studies; (ii) finalisation of the draft feasibility reports; (iii) finalization of the draft ESMP; (iv) finalisation of Detailed Design and Tender documents; and (v) submission of the Project Completion Report to the African Water Facility. Table 4 below presents the performance schedule, with the main project milestones.

Table 4 Performance Schedule

MAIN ACTIVITIES/KEY EVENT	INDICATIVE END TIME OF ACHIEVEMENT
FS and ESIA ToR for EA review	M0-2
Request for Advance Acquisition Actions (AAA) and launch of the procurement process	M0-2
Project/funding Approval	M0
Signature of the grant agreement	M0+2
Fulfilling of the condition before disbursement	M0+3
Award of Consultant contract for Feasibility Studies	M0+8
Award of Consultant contract for ESIA Studies	M0+10
Completion of ESIA Studies	M0+19
Completion of Feasibility Studies	M0+22
Elaboration of the project completion report by the Executing Agency	M0+24
Final Audit and AWF project completion report	M0+24

3.4 PROCUREMENT ARRANGEMENTS

The Ministry of Agriculture, as the Executing Agency, will have the overall responsibility for procurement management. The Project will be implemented through using the existing Government decentralized structures. To meet the objective of the Bank’s new procurement policy, the Bank has carried out an assessment of the ministry’s procurement capacity and the necessary mitigation measures will be incorporated in the project document. It is noted that the Ministry has had adequate capacity in procurement management and is currently managing some AfDB financed projects. However, the Ministry is undergoing restructuring and this may affect its capacity in terms of staff numbers to effectively manage procurement actions for the project. For this reason, in the absence of a conclusive picture on the structure

of the new ministry after the on-going changes, there is need to take caution and allow for support to the procurement section.

A comprehensive risk assessment has been undertaken at various levels and the overall risk rating is *moderate* which should reduce to *low* after implementing the recommendations or cited mitigation measures. The mitigation of the risks is essential for effective Project implementation. The following are some of the proposed mitigation measures; (i) recruitment of qualified specific Project staff (Project Coordinator and Procurement Specialist) to support implementation on a day to day basis; (ii) implementation arrangements to be designed such that procurement processing and decision making are not only accountable but also efficient to enhance timely implementation; (iii) undertaking procurement training for all Project staff; and (iv) low value contracts to be subject to post review to reduce procurement processing time while most of the goods and works contracts will be procured by full use of the Borrower’s Procurement System following the National Procurement Procedures.

Table 5: Summary of Project Procurements Arrangements

Category	AWF GRANT	Non – Bank Funded	Procurement Method
Consultancy Services			
Prefeasibility and Feasibility Studies	€ 1,179,508		Shortlist - QCBS
Safeguard Studies	€ 220,492		Shortlist - QCBS
Other Operational Costs			
Project Management (Salary of PIU Staff)		€ 100,000	GoZ procedures
Meetings and Events		€ 50,000	GoZ procedures
Office Equipment and Consumables		€ 50,000	GoZ procedures
TOTAL	€ 1,400,000	€ 200,000	

Procurement of the main consultancy package will be in accordance with the African Development Bank’s “Rules and Procedures for the use of Consultants” (May, 2008 edition and Revised in July 2012), which is available on the Bank’s website at <http://www.afdb.org>. The consultant will be procured through Quality-and-Cost Based Selection (QCBS), using the AfDB Standard Bidding Documents and the provisions stipulated in the Financing Agreement. Procurement of other operation costs, financed by the GoZ as a contribution to the project, will be procured in line with national rules and regulations. A summary of procurements under the project is in Table 5. A detailed first procurement plan will be submitted to AWF as a condition precedent to first disbursement. This procurement plan may be updated as required by the Grant Recipient, but at least on an annual basis, attached to the Annual Report to be submitted to AWF. A first draft is in Table 7.

Table 6 Procurement rules / consultancy services

Consulting Services: Prior/Post review Threshold

Selection Method	Prior review Threshold (UA equiv.)	Post review Threshold (UA equiv.)	Frequency of Review
1. Competitive methods (firms)	>200.000		All
2. Competitive methods (individuals)	>50.000		All
3. SSS			All
4. Competitive methods (firms)		<200.000	All
5. Competitive Methods (individuals)		<50.000	All

Table 7 Procurement Plan

Consulting Services: Selection Method and Time schedule for 18 Months

Description	Selection Method	Lump sum or Time-Based	Estimated Amount in EURO	Prior/Post Review	EOI Publication Date	Contract Start Date	Comments
Pre Feasibility and Feasibility Studies and Detailed Designs	QCBS	Lump sum	1,179,508	Prior	1/06/2016	1/12/2016	
Environmental and Social Studies	QCBS	Lump Sum	220,492	Prior	1/07/2016	1/03/2017	
Total Cost			1,400,000				

Consultancy Services. The Project will procure the services of two consultancy firms. One to carry out the activities under Component 1 – The Technical Studies, and one to carry out the activities under component 2 – The Social and Environmental Studies

Shopping/other Methods. To facilitate implementation of the Project, the GoZ will finance (i) salary and associated costs of PIU staff (€ 100,000); (ii) meetings and workshops (€ 50,000); and (iii) office equipment and consumables (€ 50,000). These procurements will follow applicable rules and procedures of the Government of the Republic of Zambia.

Review by AWF/AfDB. All procurements financed from AWF grant proceeds will be subject to prior review.

3.5 FINANCIAL MANAGEMENT AND DISBURSEMENT ARRANGEMENTS

Financial Management Assessment. As part of the appraisal mission, the Bank carried out a Financial Management (FM) capacity assessment of the Ministry of Agriculture (MoA) in accordance with the Bank’s FM Policies and Guidelines (2014) to determine whether MoA as the designated Executing Agency (EA), has acceptable FM systems 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, FM systems in MoA meets the Bank’s minimum requirements to ensure judicious and efficient utilization of project financial resources for the intended purpose. Detailed agreed accounting, disbursement, reporting and external audit arrangements are included as Annex 4.

Audit requirements

The Internal Audit Departments of the Executing Agency will include the project in the internal audit program and audit the project financial transactions regularly. The internal audit reports will be shared with the Bank during supervision missions.

The Executing Agency will produce quarterly progress reports, including all sources of financing the study expenditures (within 45 days after the end of each quarter). As required by African Water Facility (AWF) Operation Procedures, the Project financial statements will be audited by an Independent audit firm appointed by AWF in accordance to the audit Terms of Reference approved by the Bank. The audit shall be conducted within 3 months of completing

the Study activities. The costs of such audits shall be borne by the AWF and shall not be part of the Grant.

However the Executing Agency institutional annual financial audit, where the Study activities are included, should be made available to the AWF within 6 months from the end of the relevant financial year.

In accordance with rules and procedures of the African Water Facility, the AWF will select an external auditor, who would undertake mid-term and final audit (including post-procurement review) of all project related activities at a date to be determined and agreed between the Fund and GoZ; and the audit would be conducted in accordance with the Bank's approved Terms of Reference.

Disbursements. All disbursement from AWF grant proceeds will be through direct payments and in accordance with the disbursement schedule that will be detailed in the contract between the Executing Agency and the consultants. Payment will be approved by the Executing Agency based on the successful delivery of key deliverables. Precedent to the first disbursement of AWF Grant Proceeds, the Executing Agency will avail the following documents to AWF:

- A detailed procurement plan for the first 18 months; and
- Evidence of the appointment or recruitment of a Project Manager and Procurement Specialist, both acceptable to the bank.

3.6 MONITORING AND REPORTING ARRANGEMENTS

The Project Implementation Unit will be responsible for monitoring and reporting on all aspects relevant to successful project implementation. It will develop a monitoring and evaluation system of sufficient detail to ascertain progress towards achieving project outputs, outcomes and impact throughout the duration of the project, and collect relevant information from available sources. Further, the Executing Agency will furnish AWF with: (i) Quarterly Progress Reports, no later than 45 days after the end of each Quarter; (ii) Annual Progress Report, no later than 45 days after the end of each calendar year; and (iii) a Project Completion Report, following the AWF/AfDB template.

For monitoring and follow-up purposes, the AfDB/AWF will appoint a Task Manager who will supervise the project and carry out follow-up procedures. The AWF will consider at any time the need for undertaking field supervision missions to check if the specific outputs of the AWF grant funding have been timely delivered with the required quality and if the expenditures are in agreement with the budgets and schedules.

3.7 VISIBILITY GUIDELINES

To ensure visibility of the African Water Facility and its financial contributors, the Executing Agency will ensure compliance with the AWF Visibility Guidelines for all activities financed by the project (Annex 6). Further, the Executing Agency will furnish digital copies of press releases, articles and other media content to AWF for its information.

3.8 RISKS AND MITIGATION MEASURES

Several potential risks associated with the successful implementation of the project have been identified during appraisal and re-appraisal. Mitigation measures were discussed in detail and incorporated into the project design. A summary of project risks, mitigation measures and assumed risk levels is detailed in Annex 4:

Table 8: Project risks and mitigation measures

Risk	Mitigation Measures	Risk Level
1: Delays in procurement of consultancy services reduces the efficiency of project implementation	Recruitment of a qualified and experienced Procurement specialist to <ul style="list-style-type: none"> ●Prepare draft TOR in advance ●Issue the SPN in advance ●Evaluation of proposals and submission to the Bank to be done timely ●Review of project procurement documents and issuance of No Objections to be done timely 	Low
2: Quality of consultant and staff	Package the required services in such a way that the contract is attractive to more experienced international consultants. Undertake international competitive bidding	Medium
3: Lack of or inadequate GoZ counterpart funds	The existing Project Implementation Unit is currently adequately financed, and actively seeks to broaden its financial base.	Low

4 EFFECTIVENESS, SUSTAINABILITY AND CLIMATE CHANGE

Increasing irrigation investments in Zambia is a key government priority, and the project is design to strengthen efficient and effective irrigation sector investments, by supporting the selection and preparation of economically viable agricultural investment projects. The project is further designed to consider both technical and non-technical aspects, including the governance and management of future irrigation developments.

Sustainability of the Project is ensured by close consultation with key stakeholders, including the early identification of potential financiers of prepared downstream investments, including the African Development Bank and the Embassy of Finland to Zambia. Studies are designed to fully consider environmental and social safeguards, and to provide guidance to the government in terms of long-term Operation and Maintenance of potential downstream investments.

Climate change impacts will be evaluated during the course of the studies, and the appropriate risk management and adaptation measures (including, but not limited to: selection of crops and appropriate cropping practices, water efficiency measures, optimization of land preparation, management arrangements, etc.) would be fully integrated into the design of downstream investments. It is anticipated that a potential downstream project would bring significant positive adaptation benefits to rural communities currently most vulnerable to the impacts of climate change.

5 LEGAL INSTRUMENT AND AUTHORITY

5.1 LEGAL INSTRUMENT

The Project will be financed pursuant to the signing of a Protocol of Agreement between the the Republic of Zambia as the “Recipient” and the African Development Bank (the “Bank”) as Trustee for the African Water Facility Special Fund.

5.2 CONDITIONS ASSOCIATED WITH THE BANK'S INTERVENTION

Entry into force of the Protocol of Agreement: The Protocol of Agreement will enter into force on the date of its signature by the Recipient and the African Development Bank.

Conditions precedent to first disbursement of the grant: The obligation of the Bank to make the first disbursement of the grant shall be conditional upon the entry into force of the Protocol of Agreement and the fulfilment by the Grantee, in form and substance satisfactory to the Bank of the following condition: Provide evidence of (i) designation or recruitment of a qualified Project Manager and (ii) a Procurement Specialist whose qualifications and experience are acceptable to the Bank.

5.3 COMPLIANCE WITH BANK POLICIES

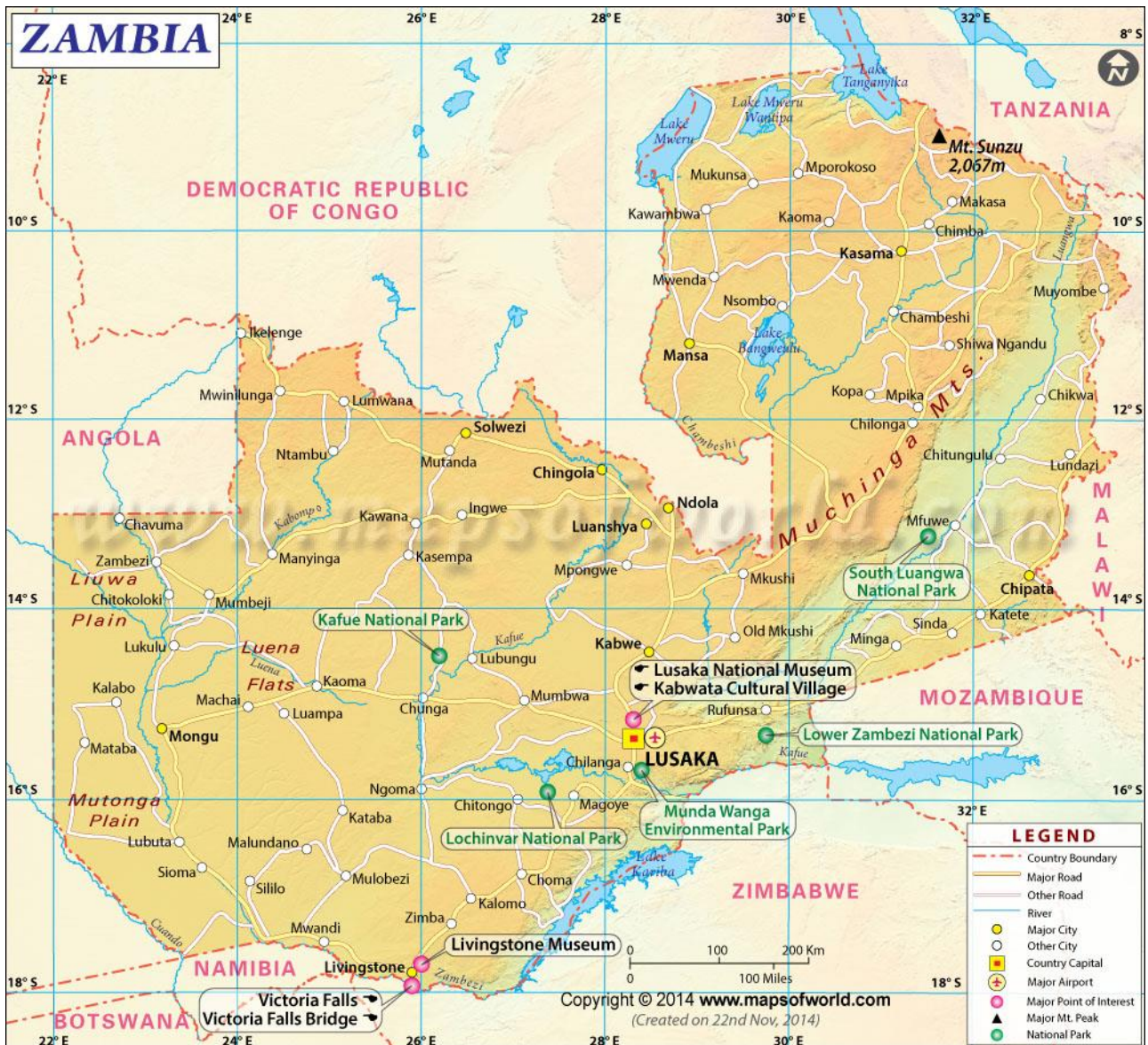
This project complies with all applicable Bank policies and the AWF strategy and operational procedures

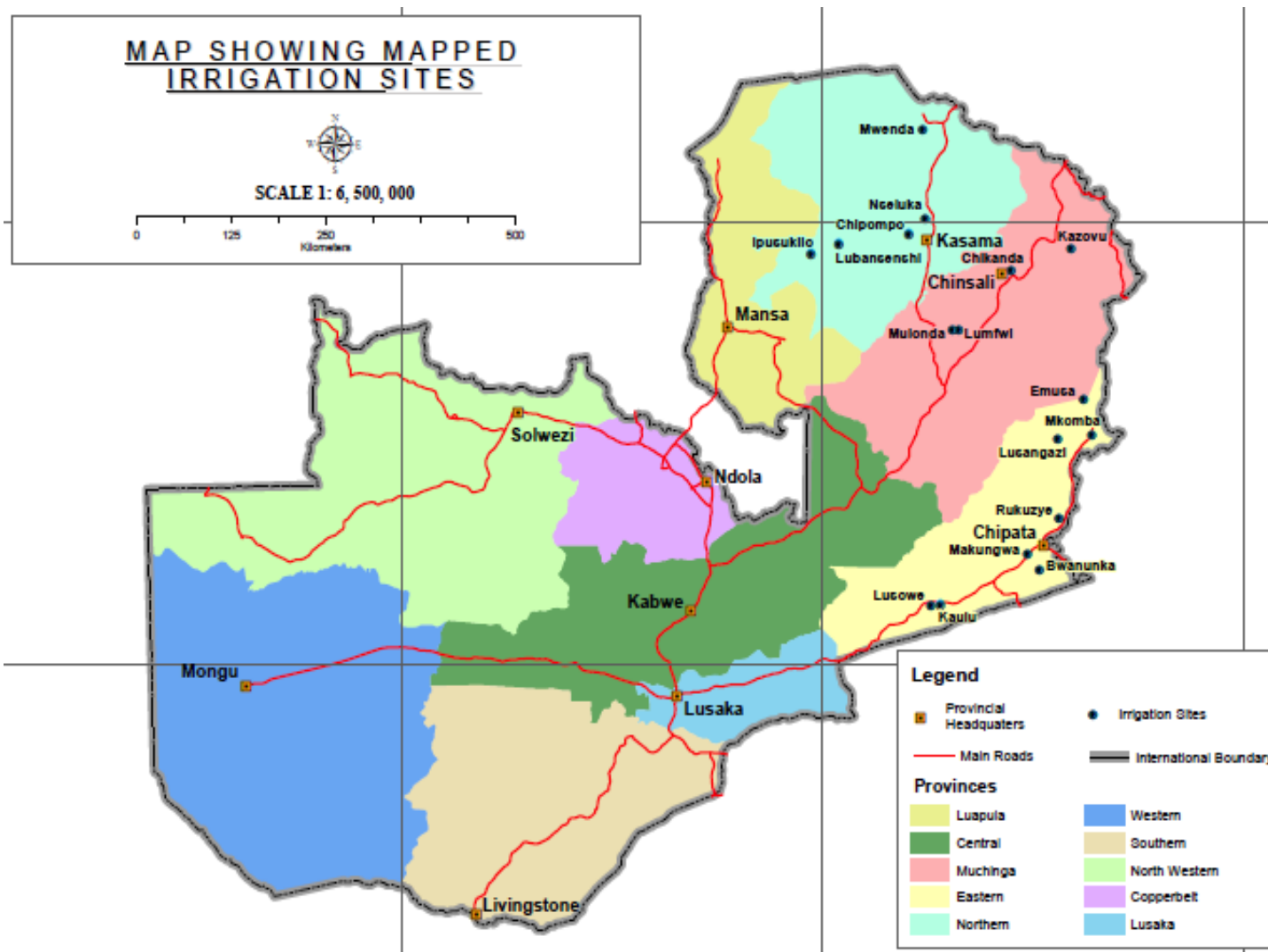
6 CONCLUSIONS AND RECOMMENDATIONS

When the 25 irrigation projects are implemented, this project will impact very positively on the livelihood of 4.800 households in rural Zambia through increasing food security, climate change resilience and improved commercialisation of the agriculture activities in the communities. The project is clearly in support of the AfDB priorities under the High Five initiative directly – food security, industrialisation and livelihood improvement, and is equally in support of national priorities. With the downstream investments in smallholder irrigation the leverage factor for this study is approximately 1:45.

It is recommended that a grant not exceeding € **1,400,000**, from AWF resources be extended to the Republic of Zambia for the implementation of the project and subject to the conditions stipulated in this appraisal report.

Annex 1: Map of Zambia





Annex 2: Implementation Schedule

	A+0	A+1	A+2	A+3	A+4	A+5	A+6	A+7	A+8	A+9	A+10	A+11	A+12	A+13	A+14	A+15	A+16	A+17	A+18	A+19	A+20	A+21	A+22	A+23	A+24	A+25	A+26
Project Start-up Approval Project Effective Procurement of Consultancy Services																											
Component 1 - Prefeasibility and Feasibility Study Mobilization of Consultant Report 0.1: Inception Report Sub-Component 1.1 - Pre-feasibility Studies Activity 1.1.1: Review of Existing Pre-Feasibility Studies Activity 1.1.2: Updating of Existing Pre-Feasibility Studies Activity 1.1.3: Review of Copperbelt Scheme Activity 1.1.4: Pre-Feasibility Study (Copperbelt) Report 1.1: Inception Report Approval 1.1: Inception Report																											
Sub-Component 1.2 - Feasibility Studies Activity 1.2.1: Feasibility Studies (Small schemes 100-200 ha) Activity 1.2.2: Feasibility Studies (Small schemes 200+ ha) Activity 1.2.3: Feasibility Studies (Copperbelt) Report 1.2: Draft Feasibility Report Approval 1.2: Final Study Report																											
Sub-Component 1.3 - Detailed Design and Tender Documents Activity 1.3.1: Technical Designs Activity 1.3.2: Farming models and market analysis etc. Activity 1.3.3: Tender Documents Approval 1.3/E Detailed Design and Tender Documents																											
Component 2 - Safeguard Studies Sub-Component 2.1 - Environmental and Social Safeguard Screening Activity 2.1.1: Initial Environmental/Social/CC Assessment Report 2.1: Initial Safeguards Assessment Approval 2.1: Initial Safeguards Assessment																											
Sub-Component 2.2 - Detailed Safeguard Studies Activity 2.2.1: Assessments (Small schemes 100-200 ha) Activity 2.2.2: Assessments (Small schemes 200+ ha) Activity 2.2.3: Assessments (Copperbelt) Report 2.2: Draft Environmental and Social Management Framework Approval 2.2: Final ESMF																											
Component 3 - Project Management Sub-Component 3.1 - Project Management Report 3.1 - Quarterly Progress Report Report 3.2 - Annual Progress Report Report 3.3 - Project Completion Report																											

Annex 3: Detailed Costing

Position	Unit Rate	Amount
Component 1 - Pre-Feasibility, Feasibility Studies and Detailed Design		
Agricultural Engineer / Team Leader (International)	€ 18,000	€ 248,400
Agricultural Engineer (Local)	€ 6,000	€ 114,000
Water Resources Engineer / Hydrologist (International)	€ 12,500	€ 30,000
Water Resources Engineer (Local)	€ 6,000	€ -
Hydrologist /Groundwater-Surface Water (Local)	€ 6,000	€ 52,500
Irrigation Management Specialist (International)	€ 12,500	€ 36,250
Agronomist / Production (Local)	€ 6,000	€ 28,500
Business Development Specialist / Agricultural Markets (International)	€ 12,500	€ 33,125
Business Development Specialist / Agricultural Markets (Local)	€ 6,000	€ 98,400
Soil Specialist (Local)	€ 6,000	€ 14,400
Private Sector / PPP Specialist (International)	€ 12,500	€ 17,500
Legal / Governance (Local)	€ 6,000	€ 15,000
Economist (International)	€ 12,500	€ 26,875
Agricultural Economist (Local)	€ 6,000	€ 122,400
GIS/CAD Technician (Local)	€ 2,000	€ 38,400
Sub-Total		€ 875,750
Component 2 - Safeguard Studies		
Social Safeguard Specialist / Team Leader (International)	€ 18,000	€ 30,600
Social Safeguard Expert / Resettlement (Local)	€ 6,000	€ 31,500
Environmental Safeguards Expert (International)	€ 12,500	€ 20,000
Environmental Safeguard Expert (Local)	€ 6,000	€ 31,500
Climate Change Specialist (International)	€ 12,500	€ 20,000
Climate Change Specialist / Adaptation (Local)	€ 6,000	€ 11,700
Agricultural Engineer (Local)	€ 6,000	€ 10,500
Wildlife /Biodiversity Expert (Local)	€ 6,000	€ 10,500
Sub-Total		€ 166,300

Other Costs	Units	Unit Rate	Amount
Travel			€ 130,000
Local Travel (Land)	LS	€ 100,000	€ 100,000
Local Travel (Air)	LS	€ 15,000	€ 15,000
International Travel (Air)	LS	€ 15,000	€ 15,000
Topographical Survey (Sat.-based)	25	€ 1,000	€ 25,000
Soil Survey	1	€ 50,000	€ 50,000
Socio-Economic Survey	1	€ 35,000	€ 35,000
Geotechnical Survey	1	€ 30,000	€ 30,000
Sub-Total			€ 270,000

Annex 4: Financial Management Assessment

Introduction

A Financial Management (FM) assessment of the Ministry of Agriculture (MAL) was carried out by Bank's Fiduciary Services Division (ORPF.2) in accordance with the Financial Management Policy in African Development Group financed operations (2014), the Financial Management manual for Bank Group Public Sector Operations (2014), the and Financial Management Implementation Guidelines for Bank Group Operations (2014). The objective of the assessment was to determine whether MAL 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.

This initial FM assessment was done during the month of May 2015 as part of the project appraisal mission. The results of the assessment and the agreed FM, disbursement and auditing arrangements for the proposed study are documented below.

Executive Summary

The project's FM will be managed within MAL's by the existing Project Implementing Unit (PIU) set up within the Department of Agriculture in the Ministry of Agriculture (MoA). The PIU would coordinate all project FM-related issues using the existing country fiduciary systems. The overall conclusion of the assessment is that MoA's capacity to handle all the FM aspects of the project, satisfies Bank minimum requirements as laid out in the Bank's FM guidelines. The PIU has prior experience in implementing the recently ended Bank-financed Small-Scale Irrigation Project, and all financial reports (including audited financial statements from the Office of the Auditor General (OAG) were found acceptable to the Bank. The overall FM risk for the project is assessed as Low. Detailed results from the assessment and the agreed FM, disbursement and auditing arrangements for the proposed project are documented below.

Summary Project Description

The overall objective of the proposed intervention is to prepare an irrigation investment plan that would help upscale the successful interventions introduced under the Small-Scale Irrigation project, while incorporating lessons learnt. The study which is estimated to cost about EUR 1.35 million has three main components namely: (i) Prefeasibility and Feasibility Studies; (ii) Safeguard Studies; and (iii) Project Management; and will be implemented over a period of twenty five (25) months.

Use of Country Systems

Zambia continue to make progress in the Country's PFM system following implementation of reform activities with the support of Cooperating Partners (CPs), even though with slower pace than anticipated. Despite these progress, weaknesses still remain which on-going reforms is seeking to address. With the level of progress made in addressing the weaknesses identified and the renewed commitment on the part of Government to implement the revised reform activities, the proposed project will make use of aspects of the country's PFM systems for managing the project (including, Internal Controls and Internal Audit - using the existing national rules and financial control procedures when implementing the project etc.) with appropriate mitigation measures. The Bank's recently closed Small-Scale Irrigation Project was implemented using the existing set-up which has been assessed to be satisfactory and

robust enough to handle and account for Bank resources in a required manner; hence, the FM arrangements for the proposed study will make use of the existing PIU within the EA.

Harmonization with Other Donors

This study is a stand-alone non-investment project to be financed and implemented using AWF resources and GoZ counterpart funds, and no other donor is involved in its implementation. Consequently, FM-related issues and reporting requirements are tailored in line with the Bank and GoZ requirements.

Executing Agency

The project's FM will be handled within the existing Project Implementing Unit (PIU) set up within the Directorate of Agriculture MoA. The PIU which has full staff compliment including a Project Manager, Monitoring and Evaluation Officer, Accountant and other support staff, has the requisite experience from implementing the just ended Bank-funded Small-Scale Irrigation Project. Despite some few weaknesses highlighted in the Auditor General's reports for previous project, all the audited financial statements prepared and submitted by the project throughout the implementation period, received unqualified (clean) audit opinion and were found acceptable by the Bank. With the level of fiduciary performance by the PIU from the previous project, we do not anticipate any serious fiduciary challenges under the proposed study; however and as required, the Bank's fiduciary team would continue to provide the necessary guidance and support to the project team to further strengthen the control environment to improve accountability processes under the project.

Summary of assessed financial management arrangements

The results from the assessment of the various FM elements regarding their adequacy are documented below:

Budgeting System: MoA as a government ministry follows a comprehensive laid-down national budgeting process and procedures as contained in the national budget law; which requires all ministries annual budget to be prepared in consultation with various technical departments and incorporated as part of the country's annual budget, and subject to parliamentary approval. The project will follow the existing laid down budgeting processes. The PIU will prepare an annual work plan and budget for implementing project activities taking into account the specific components of this project, and submit to the Project's Steering Committee (PSC) for approval and thereafter to the Bank for review and endorsement.

Accounting Systems: Accounting for the proceeds of the project will follow the existing GoZ's accounting policies, taking into consideration Bank requirements. Transaction processing will rely on the existing internal transaction processing procedures, authorization, approval, and payment procedures.

Internal Control and GAC: As required under the Finance Act (2004) and Financial Regulations (2006), all GoZ Ministries, Departments and Agencies (MDAs) are governed under the existing internal control rules and regulations. The project which would be implemented with MoA's existing set-up (PIU) would therefore be covered by MoA's internal audit department's periodic reviews.

Funds flow and disbursements: The PIU has prior experience in the use of various Bank disbursement methods following successful implementation of Bank-funded Small-Scale Irrigation Project. The Unit currently operates various Bank account for different operational activities and fund management processes within the PIU seem comprehensive. In this regard, all Bank funds to be disbursed under the project would be in accordance with rules and procedures as set out in the Bank's Disbursement Handbook (that can be accessed from the Bank's website) as applicable. Specifically, direct payment method would be used to disburse all Bank resources to be made available to finance all project activities (mainly studies). Upon receipt and approval of consultants' report and invoice, the PIU would prepare and submit appropriate direct disbursement request with relevant documentations for the Bank to make direct payment to the consultants' in accordance with the payment schedule contained in the consultants' contract with the PIU/MoA. Consequently, no special account would be opened for the project. Figure 1 below summarizes funds flow arrangement for the Bank resources under the project.

Counterpart contribution: GoZ is expected to contribute about EUR 200,000.00 to finance all operating costs under the project; and it was noted and confirmed by the PIU that funds have already being made available by GoZ to the PIU's bank account and ring-fenced pending the approval of the study by the Bank. Other forms of counterpart contributions will be in-kind in the form of salaries of GoZ officials appointed or seconded to work on the project, office space and utilities, and vehicle running expenses etc.

Financial Reporting system: The PIU currently prepares monthly and quarterly management reports covering the department's ongoing development activities as well as for the on-going Finnish-financed project using excel spreadsheets. Review of these financial reports revealed they are comprehensive. With the familiarity and experience gained from handling the Bank-financed Small-Scale Irrigation project coupled with the fact that the all AWF resources would be disbursed using the direct payment method, the PIU would be able to adequately handle the project financial resources using the existing reporting system, and generate financial reports in the required manner. In accordance with the Bank's financial reporting and audit requirements, the project will be required to prepare and submit to the Bank Interim financial quarterly progress report no later than 45 days after the end of each calendar quarter. The quarterly financial reports will include a statement of sources and uses of funds, with the uses of funds analysed by activities/components and categories, with notes explaining any significant variations in expenditures.

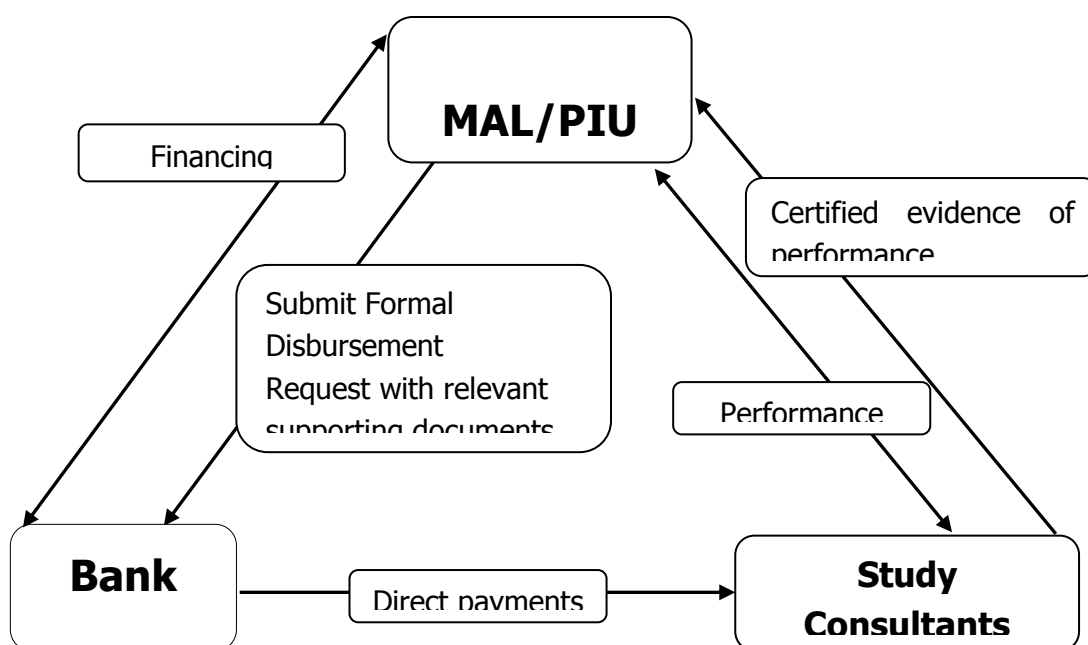


Figure 1: Funds Flow Diagram (AWF Resources)

External Audit: MoA as the executing agency undergo annual statutory audit as part of the overall GoZ audit by the Office of the Auditor General (OAG) Zambia as per their mandate. The audit for the Department of Agriculture (i.e. hosting the PIU) which is part of the overall MoA and the latest GoZ’s annual audit was for financial year 2013. No serious specific adverse findings were made by the OAG’s report against the department. In line with the Bank’s auditing requirements for AWF-financed project, an AWF appointed private external auditors would be required to undertake annual audit of the project and submit the audited financial statements and the management letter to the Bank no later than six (6) months after the end of each financial year; or alternatively, the audit shall be carried out and the final reports submitted to the Bank at periodic intervals and dates to be agreed between the Bank (AWF) and MoA in the financing agreement; and the audit shall be carried out in accordance with the Bank’s approved Terms of Reference. In this regard, the PIU will ensure that all project financial records and transactions are processed up to date throughout project implementation period and in readiness for the audit.

FM Action Plan: There are no specific FM action except for MoA to ensure the existence of the project accountant within the PIU throughout project implementation to handle financial management issues in the required manner.

FM Supervision Plan: The frequency of FM supervision is determined by the outcome of the assessed risk rating. The project would be implemented in a “Low” environment and hence, subject to one supervision per year. Other supervision activities would be desk reviews of the IQFRs, annual audit reports, and management letters for follow-up actions. The outcome of these reviews would inform the intensity of subsequent FM supervision.

Annex 5: Communication and Visibility Guidelines

Communication and brand visibility greatly matter to the AWF. The AWF views communication as a strategic function firmly tied to its strategies and business objectives. Steady communication with AWF stakeholders helps build credibility and secure their trust and esteem, which in turn, helps AWF build and protect its reputation. Communications is also about disclosure. The AWF is a multi-donor fund, and is accountable to a Governing Council that expects the AWF to hold itself to the highest level of accountability and transparency. The AWF is committed to making every effort to disclose, share and report information useful and relevant to its stakeholders and the greater public. This entails effectively communicating its achievements, progress, and results by using all means available, in a timely manner. All these elements are important for business and essential to attract and retain donors, and for AWF to maintaining its social license to operate.

Brand awareness is about making sure the public knows AWF exists and can tell the AWF apart from other water funds or organizations. The brand is a visual, memorable trigger, or a logo, that embodies the AWF and captures its core identity. Brand awareness is achieved over time, through activities meant to increase brand visibility, by repeated use and exposure of the logo at strategic places and times. The AWF logo is used as a seal or a signature used to signal AWF financial support or special collaboration.

The AWF has established Communication and Visibility Guidelines to the attention of partners, AfDB regional offices and grant recipients to help AWF more effectively achieve its brand and communications objectives, as laid out in the AWF Long Term Communications Strategy 2006 approved by the AWF Governing Council in 2006.

General Requirements

At an early stage, when preparing communication activities related to an AWF supported event or project, contact the Communication Officer at AWF Secretariat, copying the AWF Project Manager.

At a minimum, and wherever possible, the AWF logo should be applied to outreach materials that pertain to AWF supported projects or events. The proper use of the logo should be discussed with the AWF Communication Officer.

The AWF should be verbally mentioned as donor of the project it is funding at public speaking events where the project is discussed, and also be mentioned as donor in any Power Point presentations relevant to the project funded by the AWF, using the name and the logo of the AWF appropriately.

The logo is to be obtained upon request from the AWF Communication Officer. Documents and publications related to an AWF supported project or sponsored publication should contain the AWF logo, as well as this phrase on the cover page: "This project/program/study is funded by the African Water Facility".

Implementing and executing agencies should always have a link to the AWF website on the page of their website relevant to an AWF-funded project/activity. The website is: www.africanwaterfacility.org

The AWF asks that grant recipients report back to the AWF Secretariat, any special mention, award nominations or recognition that the project may have received.

Validation Process

The AWF management is responsible for the final clearance of AWF communications products/outputs.

Press Releases & Media Advisories

The AWF will issue an AWF-branded press release every time a project is approved and/or signed, and when completed (handover).

AWF press releases must always include a quote from the Coordinator of the AWF, which must be cleared by the Coordinator.

The AWF encourages and appreciates initiatives to issue joint press releases with its grant recipients. A standard joint press release can be issued at any time agreed with the AWF (between launch and completion).

When the grant recipient wishes to produce a press release, liaising with the AWF Communication Officer is required, as well as receiving a quote from the AWF Coordinator, as appropriate, and getting approval and clearance.

The AWF should be included in the title and/or first paragraph of the press release, as appropriate.

The press release should incorporate the AWF logo, mention that funding was provided by the AWF, and mention the amount of the AWF funding.

If a press conference is planned, the press release should include the name of an AWF senior representative who will be present at the press conference, when relevant.

All press releases must bear the name and contact information of the AWF Communication Officer, and if possible that of the communication/media representative from the grant recipient.

The AWF boilerplate text (“About the AWF”) must be added to the text, including the AWF web site address. Please contact the AWF Communication Officer for the latest version.

The AWF has final validation of all its press releases, following a review process involving reviewers.

The rules above also apply to media advisories.

Press Conferences

Press conferences to launch projects funded by the AWF should be organized in cooperation with the AWF, as much as possible.

The invitations should bear an AWF logo.

The AWF logo of a visible size should appear on any banner or poster to be displayed at the site of the conference.

Press kits need to include a press release with the AWF logo.

Whenever possible, an AWF banner should be on hand and set up to serve as a backdrop for TV and photo purposes.

Press Visits

When appropriate, journalists should be invited to visit the project funded by AWF, accompanied by representatives of the AWF or the AWF Focal Point in the respective authority / government of the grant recipient.

Visits by Government Officials, AWF Donors

Visits to projects by government officials and AWF donors are encouraged. Those should be prepared in coordination with the AWF and the AWF Focal Points of the host government. This can include meetings with local beneficiaries.

These visits may also include government officials and AWF donors' participation to roundtables and other events, as relevant.

Leaflets, Brochures and Newsletters

All leaflets and brochures relevant to the project/program financed by AWF should incorporate the basic elements of the AWF visual identity, i.e. the AWF logo -with or without tagline.

Leaflets and brochures produced by a grant recipient must also incorporate a definition of the AWF (boilerplate text).

The cover page of all documents pertaining to the project financed by the AWF must clearly identify the activity as being part of an AWF-funded activity.

Copies, including electronic copies of the publications, should be made available to the AWF.

Electronic Communication

Electronic communication disseminating information on AWF-funded projects including websites, newsletter, and social media platforms, should link to the AWF website.

Signage

The grant recipient should produce display panels, posters or banners to promote their AWF-funded or AWF-related activities at exhibitions and other events, placed in strategic locations for all to see.

Vehicles, Supplies and Equipment

AWF generally requests that vehicles, supplies and equipment funded by AWF be clearly identified, and visibly carry the AWF logo and the phrase "Provided with the support of the African Water Facility" in English, French or Portuguese, as relevant.

This requirement is subject to negotiation between AWF and the grant recipient as some supplies and equipment may be exempt.

The grant recipient must provide evidence of compliance with this rule (digital photos sent by email are recommended.)

Photographs and Audiovisual Productions

Professional high resolutions (300 Dpi) digital photographs of the project funded by AWF should be supplied to the AWF throughout the different phases of the project, to document the progress of actions and events related to these, and to be used in print and online publications.

All photos should be submitted with full caption and credit information.

The AWF will be entitled to use or reproduce photos submitted to it without payment of royalties.

Whenever relevant, audio-visual materials should acknowledge AWF support, by featuring the AWF logo at the beginning and/or end of the movie/documentary.

Copies of the movie(s) / documentary (ies) should be supplied to the AWF.

Commemorative Plaques or Signage

Whenever relevant, the grant recipient should place a permanent plaque, or some other type of large, commemorative signage on the most visible part of the building, infrastructure or nearby the project site, which received funding by AWF, beside the name of the implementing agency and/or name of the project, for visitors to see.

When appropriate, the plaque or signage could contain the following sentence: “This [name of the infrastructure] was funded by the African Water Facility” alongside the AWF logo.

Promotional Items

Before taking any decision on the production of such items, the Communication Officer at the AWF should be consulted.

Promotional items bearing the AWF logo can be distributed to support communications activities related to the project funded by AWF. This may include T-shirts, caps, pens, notebooks, USB keys etc.

**TERMS OF REFERENCE FOR
FEASIBILITY STUDY AND DETAILED
DESIGN**

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1 INTRODUCTION

1.1 BACKGROUND

The Government of the Republic of Zambia (GoZ) has received a grant from the African Water Facility (AWF), a multi-donor trust fund hosted and administered by the African Development Bank (AfDB), to implement a project aiming to prepare investments project/programme to upscale smallholder irrigation in the country, with particular focus on incorporating climate change considerations into project design (the Project). This Terms of Reference has been developed to guide consulting services for the preparation of a Feasibility Studies, Detailed Designs and Tender Documents for Smallholder Irrigation Systems in Zambia.

This assignment is part of the response to a request from Government of Zambia to the African Water Facility. The Government of Zambia requested support under the call for proposals related to Water Resources and Climate Change Adaptation.

The request for support from the AWF covers; -Component 1: Pre-Feasibility, Feasibility Studies and Detailed Design and; -Component 2: Integrated Safeguard Studies. These TOR covers Component 1. A separate assignment will be commissioned for Environmental and Social studies and Climate Change Screening. This study will run in parallel and the consultants for both assignments are expected to collaborate closely and coordinate scheduling of their respective activities.

The Republic of Zambia, like most countries in sub-Saharan Africa, is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods. Since 1960, the mean annual temperature increased by 1.3 °C, while it is currently estimated that temperature would further increase by 0.6 °C every decade. Further, it has been shown that the frequency of extreme weather events, including floods and droughts, has significantly increased over the last two decades.

The impacts of these changes already show important negative consequences, particular on the quality of life of vulnerable groups, such as subsistence farmers. Agriculture and food security, energy and water, human health, natural resources and wildlife have been identified as the most vulnerable sectors to climate change and variability⁸. Importantly, climate change and variability has had a pronounced negative effect on economic growth, with an estimated reduction of the country's GDP growth rate by 0.4 points per year, which could result in macroeconomic losses of USD 4.33 – 5.33 billion over a 10-year period (2006-2016). At the same time, the population growth rate of Zambia is currently estimated at 2.8% per annum, which may result in doubling the current population to 30 million by 2030. Rainfed subsistence agriculture, widely practiced in Zambia, is increasingly under pressure from erratic rainfall patterns, and has failed to significantly raise crop productivity, or to smoothen out seasonal cycles of hunger and food insecurity. Weak integration in commercial markets tends to worsen the situation by reducing market incentives for investments in irrigated farming.

⁸Reference: Ministry of Tourism, Environment and Natural Resources, 2007 (NAPA)
PAR: Zambia, Smallholder Irrigation / Feasibility and Detailed Design

In view of the above, the Government of the Republic of Zambia (GoZ) has prioritized investments in land and water resources development in general, and irrigation in particular, as a means of strengthening the adaptive capacity farmers and the rural poor.

1.1 SECTOR CONTEXT / PROBLEM DEFINITION

The Zambian smallholder farming community is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods.

In addition, weak commercial linkages to markets have constrained the expansion of irrigated agriculture in Zambia, given its capital intensive nature. Out of the 2.75 million hectare estimated as the overall irrigation potential, 423,000 hectare are considered economically viable for development. However, the total irrigation area in the country is currently only slightly above 150,000 hectare.

Importantly, most of the irrigated area in the Republic of Zambia services large-scale commercial farming enterprises, while small-holder farmers are yet to benefit from significant investments in the sector. And while large-scale farms have a significant role in terms of overall production and job creation, their direct contribution to poverty alleviation has proven not significant.

To improve sector performance, and to help lift farmers out of poverty, the government has focused on policy support for outgrowers in irrigated agriculture since the Sixth National Development Plan (2011-2016), which focuses – inter alia – on “economic infrastructure and human resources”. The government has passed a Public-Private Partnership Bill focusing on developing agriculture as a business along with a model of inclusive agriculture development that puts emphasis on core agricultural constraints. In essence: this model aims to link smallholder farmers to commercial markets, by mobilizing idle assets readily available to smallholder farmers (land, family labour and water) and combining them with scarce assets not available to small-holders (finance, technical expertise, commercial skills). Over the last decade, several models of outgrower schemes have emerged in Zambia, and recent research⁹ has shown that there is a general understanding that schemes have increased farmer incomes and significantly contributed to improving livelihood conditions. Importantly, and while there is no single best model that suits all situations, the government acknowledge the need to further refine PPP models and associated governance arrangements, as it works towards increasing the country’s total area under irrigation.

In addition, and despite its great potential for irrigation, Zambia has not identified and appraised sufficient available sites, to boost irrigation coverage in the country. There is currently insufficient feasibility studies (including technical, market, economic, financial analysis) available to GoZ to make informed investment decisions, which in turn is a considerable bottleneck, as the GoZ aims to realise the aspirational targets it has set in its strategies.

2 THE ASSIGNMENT

2.1 THE AIM OF THE ASSIGNMENT

⁹ Bangwe L. and B. van Koppen, 2012. Smallholder Outgrowers in Irrigated Agriculture in Zambia. AgWater Solutions Project.

The objective of this assignment is to prepare pre-feasibility, feasibility-grade analytical studies and detailed design and tender documents, to design, bill of quantities and tender documents for selected high potential schemes, and to assist the government in leveraging financing for the implementation of an irrigation project/programme that would increase irrigation area coverage across the country

The overall objective of the Project is the preparation of an irrigation investment project that would upscale the successful interventions introduced under the Small-Scale Irrigation Project, while incorporating valuable lessons-learned. The impact of the project will be improved livelihood conditions and climate change resilience of smallholder farmers in the Republic of Zambia.

The outcome of the Project will be increased investments in climate change adaptation and irrigated commercial agriculture, and targets to secure financing of no less than € 60 million by 2018. In addition, the anticipated downstream investment project would extend irrigated agriculture by an additional area of 9,560 ha, and reaching 4,800 households in poor rural communities which are vulnerable to the impacts of climate change. The investments will consider improved commercial and value chain linkages to large operators through outgrower linkages, and to improve institutional management of these schemes through Public Private Sector arrangements. This model has been tested under the SIP project.

2.2 SCOPE OF SERVICES

The Government has formally identified and characterised 25 potential irrigation sites in Zambia. The support from AWF will finance all technical, social, environmental and cross-cutting studies, necessary to conduct pre-feasibility and feasibility analyses, and in preparation of a bankable project. Based on a ranking of feasibility, a selected number of high potential schemes will be designed with bill of quantities and tender documents. The sites are listed below:

Table 9: Potential irrigation sites

#	Site	District	Province	Area (ha)
1	Makungwa	Chipita	Eastern Province	100
2	Lukuzye	Chipita	Eastern Province	120
3	Bwanyunka	Chipita	Eastern Province	150
4	Lusangazi	Lundazi	Eastern Province	120
5	Mukomba	Lundazi	Eastern Province	100
6	Luwesi/Emusa	Lundazi	Eastern Province	100
7	Lusowe	Petauke	Eastern Province	150
8	Kaulu	Petauke	Eastern Province	150
9	Chipompo	Kasama	Northern Province	200
10	Nseluka	Kasama	Northern Province	600
11	Mwenda	Mbala	Northern Province	500
12	Ipusukilo	Luwingu	Northern Province	200
13	Lubasenshi	Luwingu	Northern Province	300
14	Luwalizi	Isoka	Muchinga Province	400
15	Lubu	Chinsali	Muchinga Province	400
16	Manshya	Shiwang'andu	Muchinga Province	500
17	Lufunsa	Lufunsa	Lusaka Province	800
18	Chiawa	Kafue	Lusaka Province	450
19	Lusuwishi	Lufwanyama	Copperbelt Province	1,000

20	Chifuwe East	Manyinga	North-Western	450
21	Chizera	Mufumbwe	North-Western	510
22	Chembe	Chembe	Luapula Province	480
23	Luongo	Chipili	Luapula Province	650
24	Mutenda-Muchinshi	Chingola	Copperbelt Province	510
25	Mulungushi	Kabwe	Central Province	620
Total Area				9,560

The Consultant shall carry out the feasibility studies and design assignment in 3 sub-components. The output will be; i) Pre-feasibility studies; ii) Feasibility Studies; and iii) Detailed Design Bill of Quantities and Tender Documents for top ranked schemes. The geographical scope of the 3 sub-components will be different. Pre-feasibility will cover all 25 proposed sites (9,560 Ha), Feasibility is expected to be prepared for app 12-15 sites (approximately 5,500 Ha), and Detailed Designs and Tender Documents is expected to be prepared for 10-12 sites (approximately 4,500 Ha). After each sub-component a Stakeholder Workshop will discuss and agree on which sites shall continue into the next phase. This will serve the GoZ to make an informed decision on future irrigation investment, and to allow it to mobilize downstream financing.

2.2.1 Sub-Component 1-1: Pre-Feasibility Studies.

The Consultant will review, complement and complete the already prepared initial pre-feasibility studies, covering technical, commercial and institutional aspects, which may constraint future irrigation development. The pre-feasibility studies shall cover all 25 potential irrigation sites listed in Table 9. In particular, these studies will provide a preliminary assessment and ranking, including but not limited to:

- i) land and water resources availability/suitability;
- ii) assessment of the soils suitability for irrigation
- iii) markets for additional agricultural produce;
- iv) farm models, and enterprise, budgets and profitability;
- v) preliminary social and environmental risks/opportunities;
- vi) preliminary gender analysis providing details of how the proposed Project will affect gender dimensions in terms of income, resources, quality of life, and distribution of the benefits including the positive and negative impacts expected during the implementation phase and during the Project lifetime.
- vii) baseline survey and the associated reports must have gender-disaggregated data
- viii) For each infrastructure, indicate appropriate value chain development activities and their impact on job creation, enhancement of income and poverty alleviation for participating rural communities especially youth and women.
- ix) Justify the appropriateness of each proposed infrastructure in terms of usage which should be backed up by appropriate and up-to-date agricultural and social statistics. Prioritize the type of irrigation infrastructure and their numbers with emphasis on infrastructure development that adds real value to the agricultural operation
- x) Based on participatory assessment tools:

- confirm the list and number of backbone infrastructure to be developed by the future Project, together with MoA officials and key stakeholders. Indicate approximate location using acceptable coordinates, preferably using GPS, and the shortest distance (km) from the nearest all-weather road.
 - carry out detailed assessments of backbone infrastructures' requirements including availability of potable water and electricity.
 - assess the availability of construction/rehabilitation materials within the vicinity of the proposed location of the infrastructures.
 - define scope of works and estimate the most realistic and extent of beneficiary contributions, specifically community structures.
 - produce preliminary designs/drawings, bills of quantities including Engineer's cost estimates, tender documents, and technical specifications for each type of the proposed backbone infrastructure.
 - assess and produce manual on institutional arrangement for the management system/structure for each type of the proposed backbone infrastructure. Where new institutions are required to manage, propose a timeframe for the registration and constitution of the management entities before project completion.
 - produce standard operation and maintenance manual for each backbone infrastructure.
 - prepare preliminary procurement packaging (for tendering purpose).
 - prioritise the backbone infrastructures so as to easily align them within the available development budget.
 - produce the tentative construction schedule taking into account the time available for construction/rehabilitation works and the potential civil works Contractors' capacities.;
- xi) preliminary economic assessments of available options; and carry out Preliminary Economic and Financial Analysis of the proposed investments. Provide the associated financial and economic rates of return, net positive values and assumptions
- xii) prepare technical proposal for the **small-scale community processing facilities** to be managed by rural women and youth in order to promote job creation and income generation. Indicate all the required start-up capital, tools/equipment, training, number of jobs to be created, gross margins and sustainability
- xiii) assess mechanism for outgrower arrangements especially targeting the smallholder farmers and core ventures
- xiv) a preliminary assessment of required institutional arrangements (including O&M and revenue-sharing), with options for private-public partnerships
- xv) The sites shall be selected for feasibility studies based on agreed criteria including value for money, social benefit, option for SMS establishment.

Based on the issues indicated above, prepare and submit a pre-feasibility report to the Client, in an acceptable format, which will include, but not be limited to:

- Pre-feasibility study report including all aspects of the terms of reference, design assumptions and calculations;
- preliminary designs/drawings of all proposed infrastructure;
- preliminary technical specifications;
- Engineer's cost estimates;
- Recommendation of which sites shall be used for feasibility studies;

Task associated with completing the Component 1-1 are expected to be undertaken by:

- Produce an Inception Report for the Study.
- Ensure full involvement of key stakeholders, including potential investors, farm owners, smallholder farmers, community leaders, local authorities and MoA staff during all stages of the consultancy. The irrigation structures' locations, design and management should be identified together with key stakeholders having considered all other development aspects and options.
- Developing guidelines and a methodology for conducting pre-feasibility studies.
- Training local engineers and extension staff on how to apply the guidelines. Using these trained staff to:
 - Conduct a desk-review of available information produced by the Ministry of Agriculture and other stakeholders;
 - Rapid field surveys, conducted by small inter-disciplinary teams, to ascertain information earlier collected, and fill critical information gaps to complete the available studies; and
 - Compilation of a Draft Pre-feasibility Report, which would be finalized with comments received from the GoZ.
- Stakeholder Workshop to discuss the recommendations of Sub-component 1-1. The workshop shall agree on which sites shall be retained for feasibility studies in Sub-component 1-2

Output 1-1: Pre-Feasibility studies.: The Project would complete pre-feasibility studies for the 25 sites identified by the Government of the Republic of Zambia. The Pre-feasibility study report shall include a recommendation of which sites shall be used in the Feasibility Studies.

Output 1-1 will be reviewed by the Steering Committee of the Project, and cleared by the Ministry of Agriculture, prior to commencement of detailed feasibility studies of the 25 sub-projects.

2.2.2 Sub-Component 1-2: Feasibility Studies.

Based on the pre-feasibility study findings and rankings, and confirmed technical, economic and environmental soundness at pre-feasibility level, the Consultant will develop a methodology for conducting feasibility studies and use this to further train local engineers and extension staff on how to apply the methodology. Using these trained staff the consultant shall undertake detailed feasibility studies for 12-15 selected high potential schemes sites (app

5,500 Ha). Feasibility studies for small-holder irrigation schemes will be conducted in accordance with generally recognized international best practices, but with due consideration of the scale of individual downstream investments, and include – inter alia:

- i) Technical Assessment, Engineering Studies and Designs: The intention will be to undertake investigations, and to formulate and analyse and select the best options for developing the proposed downstream projects. The analysis should consider the most viable for options of sources of bulk water supply for each site – either surface or groundwater. For the viable option selected, the analysis should thus prepare designs and engineering specifications. In general, this task shall consist of the technical design of the proposed bulk water supply development including conveyance facilities, as well as the infield irrigation systems in line with engineering best practice and cost efficiency

The work would include preliminary engineering designs for scheme layout, main structures and water supply/drainage systems, with due consideration of (i) agricultural and market potentials, and (ii) findings of the climate change adaptation review conducted under component 2 of this study.

The consultant will develop a technical description of the engineering and non-engineering aspects of the project. This will include field site surveys of the selected 12 to 15 project sites, analysis of hydrological and environmental conditions (including effect of climate change) that are likely to impact on the technical design, and engineering designs of infrastructure required to provide the project outputs. This should consider alternative design options.

In general, this task shall consist of the technical design of the proposed headwork's and bulk water transfer facilities, as well as the infield irrigation systems in line with engineering best practice and cost efficiency. The output will be of sufficient detail and scope to provide a clear basis for the preparation of tender documentation.

Specifically, activities may include:

- a) Assessment of the availability of adequate water resources at each site and feasible options for abstraction, including within anticipated scenarios of climate change,
 - b) Soil suitability and irrigability in the selected sites, and
 - c) Technical design requirements of the preferred irrigation option.
 - d) Drawings and technical specifications of bulk water supply in readiness for tendering of smaller works, and/or detail design of works.
- ii) Land Use and Crop Production Assessment: Based on a few selected crops, the consultant shall develop cropping patterns, and determine the crop water requirements for each site, using the appropriate computer model, and recommend the most suitable crops for the schemes. An analysis of current land-use, farm sizes, farming systems and practices, crop varieties and yields; use of inputs and degree of mechanization; and other aspects which may impact on the establishment of viable irrigated farming practices.

- iii) Agricultural Marketing and Commercial Assessment: In addition, this would including; (i) an assessment of market demand and opportunities for individual sub-projects; (ii) definition of the implication of potential cropping patterns; (iii) respective roles of the public and private sector in terms of input supply and marketing; and (iv) the scope for cost recovery, including contributions towards capital costs and marketing. In collaboration with Zambia Development Agency (ZDA), Zambia National Farmers Union (ZNFU), and Zambia Export Growers Association (ZEGA), the Agricultural Economist, and Business Development Specialists shall carry out a detailed market assessment and demand analysis for the commodities expected from the irrigation schemes, focusing on consumers in Zambia, in the SADC, and COMESA regions.
- iv) Institutional Arrangements, scheme Operations and Maintenance Plan: including all PPP arrangements such governance, revenue sharing, operation and maintenance; this would ensure that implementation requirements of the sub-projects would match local institutional capacity, and identify any gaps that may need to be addressed in the course of implementation of downstream investments, including contractual and legal aspects. The Government will have no direct involvement in the day-to-day running of the schemes after commissioning and hand-over. Instead, the Operation and Maintenance function will be left to the farmers themselves with assistance from irrigation companies to be created and owned by farmers. However, the infrastructure will remain the property of the Government, but will be leased out to farmers through a Public Private Partnership (PPP) agreement. The PPP Specialist, and the Legal/Governance Expert, Irrigation Management Specialist, and the Business Development Specialists will review this model, and propose the most suitable concession period. With reference to current legal framework of the Country, the consultants will also analyse the possibility of farmers buying off the infrastructure from the Government in the medium to long term.
- v) Financial and economic analysis: The consultant would undertake an estimation of investment costs and benefits. Costs estimate would be prepared for the various project components, which may include items such as: (i) irrigation and drainage infrastructure; (ii) institutional support; (iii) crop development; (iv) input supplies; (v) other social infrastructure; and (vi) project coordination. These costs may further be broken down into cost categories as appropriate. Benefits of the project would be analysed in terms of incremental outputs of the project, by comparing a without-project to a with-project case.

The Economist, Agricultural Economist, and Business Development Specialists shall make an assessment of whether the overall Project is financially and economically feasible. The Economist, supported by the Sociologist and Team Leader, as necessary, will initially make an initial assessment of the project options in terms of i) benchmarking of preliminary cost estimates; and ii) the preliminary legal and institutional context. The aim shall be to inform the scope of the proposed schemes and the remainder of the work ensuring that final project design is financially sustainable and feasible. Subsequently, the Economist will undertake the necessary cost-benefit analysis, based on AWF guidelines. The intention of these tasks will be to finalise the Business Case for the overall irrigation programme, based on the findings of the outline Business Case. The Economist, Agricultural Economist, and Business

Development Specialists shall make an assessment of whether the overall Project is financially and economically feasible.

The economic analysis will determine whether there is an economic case for the investment decision. In the economic feasibility, the consultant will be expected to cover the economic benefits from the project, and the economic costs of the project; and the balance of these expressed in present value terms (the net economic benefit). The consultant shall analyse project impacts that will not have a market price and positive and negative impacts expected to be experienced by people who are not the direct consumers of products from the schemes. Benefits and costs to be analysed will include secondary or spill-over costs and benefits that have an impact beyond the project itself (externalities), such as the impacts from the project on the broader economy (GDP).

- vi) Mobilisation of Irrigation Finance: The consultant should investigate the available financing options on the market that may be accessed to cover production related costs in the business plan, including procurement of inputs, hire of equipment, and other operating costs. The Economist will make sure that a sufficient quantity of long-term funds is available to finance the projected volume of irrigation lending in the project.

Structure of the Feasibility Study Report:

The feasibility study would provide (i) a summary document, detailing all findings of the feasibility assessments; (ii) and include more detailed assessments, including sub-project descriptions in annexes, as required. The feasibility report will include a feasibility ranking and recommendation of which sites shall be included in Sub-component 1-3. The Feasibility report will be presented and discussed at a Stakeholder Workshop before continuing to Sub-component 1-3. The recommendations shall be approved by the Ministry of Agriculture.

2.2.3 Sub-Component 1-3: Detailed Design and tender Documents.

The expected output of Component 1-3 is a Detailed Designs, construction drawings, Engineers cost estimates and Bill of Quantities and Tender Documents and procurement packages of the proposed infrastructure in the prioritised high potential irrigation sites, following international best-practice, and of sufficient detail to; (i) facilitate the GoZ decision-making process; and (ii) allow prospective financiers (government, bilateral donors, multilateral financing institutes, etc.) to appraise an investment project/programme in smallholder irrigated agriculture and; (iii) allow for timely procurement of works. The findings of ESIA study shall be duly factored into the project design and that preferred implementation arrangements to allow the expedient start of a downstream investment. Tender Documents will be prepared following the procedures of the AfDB templates and guidelines as published on its website.

Specific activities will include:

2.2.3.1 Irrigation Scheme Development

After the feasibility study and ranking, the consultant will focus on developing 10 to 12 irrigation schemes, covering a total gross area of 4,500 hectares (ha) to full design. The Consultant will carry out the necessary field surveys which will include mapping, topographical and geo-technical surveys, and hydrological analysis. The consultant will assess the water availability for each proposed irrigation scheme and if need be, recommend water

storage structures, conveyance systems and irrigation technology required for each site. Analyses of soil and climate-related data for the irrigation-potential area, selection of suitable crops, cropping patterns, calculation of crop water requirements and suitable irrigation schedules.

The Consultant will proceed to prepare detailed engineering designs for each irrigation scheme, paying attention to alternative water distribution options consistent with different irrigation water demands, efficient irrigation and application systems – appropriate to the proposed crop types and water demand, abstraction method – including type of pumping station, diesel powered or solar pumps, and need for back up pumps, alternative storage arrangements which could streamline the distribution and management of water at the irrigation schemes, detailed designs including specifications and priced bill of quantities for the selected irrigation systems with due consideration to all factors and characteristics. The

Consultant will assess the possibility of drilling boreholes within the irrigation sites for both industrial use and domestic water supply. For domestic water supply including utilisation of hand-pumps commonly used in Zambia whilst for industrial use, consider either solar power or electrical submersible pumps. Produce groundwater investigation report and indicate actual locations/coordinates for proposed borehole sites including standard borehole designs with respect to existing aquifer formation. The boreholes should be strategically located and easily accessible to many beneficiaries. Propose associated sanitation facilities to be linked and promoted at each borehole site and to be replicated in the surrounding communities.

The consultant will assess institutional and management capacity and recommend management systems for the infrastructure that will remain the property of the Government, but will propose the most suitable concession arrangements. The Consultant will analyse the possibility of farmers buying off the infrastructure from the Government bearing in mind the legal framework, social and financial issues.

2.2.3.2 Access Infrastructure - Rural Roads, Electrification and Communication Networks

The consultant will assess, identify and design related or facilitating infrastructure requirements for each scheme site such as in field feeder roads, power sources, offices, workshops, markets, health, education and communication networks. He will quantify the lengths, quality and cost of these infrastructure based on standard unit costs for Zambia.

2.2.3.3 Industry Scoping and Market Analysis of Strategic Agricultural Value Chains

The consultant will assess and recommend the most suitable value chain commodity for each scheme site and in collaboration with Zambia Development Agency (ZDA), Zambia National Farmers Union (ZNFU), and Zambia Export Growers Association (ZEGA) carry out detailed industry scoping, market assessment and demand analysis for these strategic value chains and commodities expected from the irrigation schemes, focusing on consumers within Zambia, SADC and COMESA. Only schemes that have a clear market link shall be prioritised. The consultant shall review and recommend for each scheme, the products and potential for increased productivity, processing and market opportunities. He will assess and map presence or proximity to agro-processors and agro-industries where primary produce or value added produce can be sold for further value addition. The Consultant will assess the size of markets, volume of sales, market integration/segmentation, market actors (consumers, sellers, traders, middle-men, employers). Review of market structure and enabling environment (e.g. industry standards and quality requirements, warehousing, logistics and haulage services available for

delivery, road). He will recommend suitable win-win outgrower scheme models to link the irrigators to commercial or industrial operators.

2.2.3.4 Outgrower Models

The consultant is expected to design and establish an outgrower scheme. Consequently design a scalable, replicable business model for the outgrower scheme, which in future can be applied by other potential core venture(s). Pay attention to ensuring outgrower farmers have fair and transparent contracts and pricing mechanisms, access to inputs, extension services, technical assistance and credit, post-harvest logistics and conflict resolution mechanisms, amongst others.

- Identify best practices and conditions for successful setting up outgrower schemes for the viable strategic crops (based on industry scoping).
- Assess the characteristics of effective outgrower schemes and other types of out-grower/contract farming systems, including the modus operandi, strengths and weaknesses affecting success of each arrangement, taking into account the extensive experience that has been gained internationally and in Zambia with various approaches to the design and implementation of such systems.
- Assess existing legal, institutional, policy, economic and social frameworks and factors affecting the operations of out-grower schemes and contract farming in Zambia, identifying strengths, weaknesses and opportunities.
- Interview local communities, smallholder farmer associations, women and youth groups in the project area which could be potential participants of the outgrower scheme to determine their views, opinions and ideas on proposed outgrower scheme/contract farming.
- Based on analysis, propose an appropriate model(s) for the outgrower scheme/contract farming arrangement providing frameworks for contractual arrangement (including contract formats), and administration, production performance, monitoring, technical support, training, and pricing policies.
- Identify critical issues (administrative, land arrangements, technical, social, cultural, gender) that require key stakeholder inputs to outgrower scheme/contract farming and propose recommendations on potential conflict resolution mechanisms for parties to the scheme.
- Develop a generic framework and operational manual for the outgrower scheme business model.

2.2.3.5 Cadastral Survey and Land Demarcation

The consultant will include in the design, cadastral surveys and design layouts for plots to ensure machinery movement and the same time assure each farmer a minimum of one hectare of irrigated land. The size allocated will depend on the scheme site and enterprises selected. Land demarcation and plot numbering will establish the physical boundaries between properties to among others reduce incidences of land conflicts and will include but not limited to beaconing, opening up cadastral/cut lines for surveyed properties and production of survey diagrams to facilitate access to title deeds. The detailed survey report will summarize the survey works covering, but not limited to, the following; (i) survey diagrams showing co-

ordinates for each of the properties; (ii) size for each of the properties in hectares (ha); (iii) separate survey report to the Survey General to lodge the survey; and (iv) additional map showing the length of road network and total length of the cut lines in kilometres (km).

3 CAPACITY BUILDING AND TRANSFER OF KNOWLEDGE

The consultant shall be provided with Government Counterpart staff to be trained in various aspects of the assignment, especially prefeasibility and feasibility study. The Consultant will provide a detailed on-the-job training programme for the Counterpart Staff at the beginning of each phase. It should be noted that the operational costs of the counterpart staff will fully be covered by the counterpart contribution from GoZ and not the Consultant..

4 STAKEHOLDER ENGAGEMENT

Stakeholder engagement shall be undertaken during the prefeasibility, feasibility study and design phases of the project. The farming community and local leadership shall be actively engaged to provide inputs in land allocation, beneficiary selection, scheme assessment and design. The interim reports shall be subjected to review by local level stakeholders including the local Government offices, District Commissioner's office, and Chiefs to clarify project details in order to incorporate indigenous knowledge. The Ministry of Agriculture shall organise a final stakeholders' workshop, at least 10 calendar days before the end of the assignment. The Consultant shall present the draft reports and drawings to the key stakeholders, including the Government, and intended beneficiaries. The draft report and drawings (hard and e-copies, as indicated below) shall be submitted to the Client, at least, five (5) working days before the workshop.

4.1 GUIDELINES FOR PREPARATION OF PRE-FEASIBILITY

Based on the experience from the Pre-feasibility phase, the consultant will prepare guidelines for preparation of pre-feasibility studies. The guidelines shall include a step by step approach and a standard TOR for cases where GoZ decides to use consultants for the pre-feasibility studies. The guidelines shall be workshopped with key stakeholders including community representatives.

5 DELIVERABLES AND MILESTONES

During the assignment, the consultant is expected to produce reports, in English language and in a format acceptable to the client, as per the following schedule:

- i. **Inception Report:** no later than 4 weeks after signature of the contract.
- ii. **Draft Pre-feasibility Studies:** no later than two (2) calendar months after signature of the contract, summarizing the consultant's findings under sub-component 1-1 pre-feasibility studies;
- iii. **Final Pre-feasibility Report:** no later than three (3) calendar months after signature of the contract.
- iv. **Guideline on Preparing Pre-Feasibility Study.** no later than five (5) calendar months after signature of the contract.

- v. **Draft Feasibility Report:** no later than Ten (10) calendar months after signature of the contract.
- vi. **Final Feasibility Report (Feasibility Studies):** no later than Fourteen (11) calendar months after signature of the contract.
- vii. **Draft Detailed Design, Bill of Quantities and Tender Documents:** no later than Eighteen (14) calendar months after signature of the contract.
- viii. **Final Detailed Design, Bill of Quantities and Tender Documents:** no later than Twenty (15) calendar months after signature of the contract.

All reports shall be submitted in hard copies (1 original and 5 copies) and an e-copy (in CD or memory stick/ card).

6 IMPLEMENTING ARRANGEMENTS

Project Implementation Unit. The consultant will report to the Director of Agriculture on behalf of the Ministry of Agriculture as the Executing Agency. The Director will assign a Project Manager with an engineering background, within the established Project Implementation Unit at SIP, who will (i) conduct day-to-day administration of the project; (ii) ensure the timely submission of deliverables by the consultant; (iii) develop work plans and budgets; (iv) coordination of meetings; (v) procurement of consultancy services; (vi) financial management; (vii) monitoring and evaluation; and (viii) reporting. The Project Manager shall have experience in managing procurements in line with AfDB's rules and procedures. He will be assisted by the Socio-Economist who will also be acting as the Monitoring and Evaluation Officer, an Accountant, and support staff.

Project Technical Committee. A Project Technical Committee will be established to provide technical and strategic guidance to the Project Implementation Unit and the consultant. It will comprise technical experts from the following: (i) Director of Agriculture, MoA (ii) Director of Policy and Planning, MoA (iii) Chief Accountant, MoA (iv) Ministry of Finance (v) Zambia National Farmer Union (vi) Head of Procurement and Supplies Unit, MoA (vii) Zambia Environmental Management Authority (ZEMA) (viii) Ministry of Commerce Trade and Industry (ix) Ministry of Tourism Environment and Natural Resources (x) Zambia Development Agency (ZDA).

7 STAFFING AND OTHER RESOURCES

7.1 KEY PROFESSIONAL STAFF

The GoZ seeks to engage a consultancy firm with extensive experience in conducting feasibility and detailed design studies for irrigation development in sub-Saharan Africa. It is estimated that the overall inputs required would be approximately 120 person-months, including 25 person-months for international experts and 55 person-months of locally-recruited experts.

For the execution of the Project, the Consultant shall provide a broad range of expertise as indicated in the table below, and the team should preferably have a balanced composition of local and international experts. The consultant shall make available personnel with the qualifications and experience necessary to perform project tasks to a high standard necessary

for the completion of each project component and the entire Project. It will be advantageous for the consultant to provide experts who are knowledgeable in more than one discipline such that the various crosscutting issues of the Project could be managed efficiently.

- Agricultural Economist

The project is an integrated development initiative that requires a multi-sectoral approach in its implementation. As such, the Team Leader shall have a multi-disciplinary experience in the interventions on the detailed design works of projects/programmes. In particular, The Team Leader should have:

At least a Masters Degree in Agricultural economy or similar with a minimum of 20 years international experience “in relevant fields; Proven capabilities in handling multi-disciplinary donor funded projects of this nature; Must have worked in African or Developing countries especially SADC Region and preferably in Zambia; and at least 10 years experience as a Manager.

- Civil/Irrigation Engineer

As a minimum Master's Degree in Civil / Irrigation Engineering with at least 15 years of relevant experience in irrigation planning, design and implementation particularly in Africa.

- Water Resources Engineer / Hydrologist

The Hydrologist shall be a professional with proven experience in hydrological data analysis and modelling in connection with irrigation development and dam designs in developing countries, and experience in factoring in effects of projected climate change. S/he shall have a minimum MSc degree qualification in a relevant field with a minimum of fifteen (15) years overall experience and ten years (10) years relevant experience.

- Irrigation Management Specialist

As a minimum Master's Degree in Irrigation Engineering and Management with at least 15 years of relevant experience in irrigation planning, design and implementation particularly in Africa.

- Business Development Specialist / Agricultural Markets

A minimum of Master's Degree in agronomy or agro-economics with a minimum of 10 years of experience in the socio-economic evaluation and design of agriculture projects in developing countries.

- Private Sector / PPP Specialist

The Private Sector / PPP Specialist shall have at least a MSc degree in a relevant financial / business field. S/he shall have at least 120 years of relevant experience working with agri-business / SME

- Economist

The Economist shall have a minimum MA degree qualification in economy –as well as relevant post-graduate qualifications. S/he shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience. S/he shall have proven experience in the economic analysis related to construction of large multi-

purpose schemes and, cost benefit analysis, and multi-purpose benefit modelling of water projects including economic benefits attributed to irrigation development, tourism, water supply for domestic and economic uses.

In addition, the consultancy team may incorporate various experts in civil engineering, quantity survey, environmentalist, sociologist, soil scientist, cadastral surveyor, legal and governance expert, GIS/CAD technicians, as well as those technical skills required for the assignment to be concluded satisfactorily.

Besides the technical skills of the experts, the Consultant is encouraged to consider communication and management skills and appreciation and understanding of the local context when selecting the proposed staff. These attributes are particularly important in the consultation activities and for the process of presenting the findings, recommendations and building consensus and support for the proposals amongst key stakeholders.

7.2 HOME OFFICE SUPPORT

The Consultant should provide the necessary technical, administrative and logistical support required for successful implementation of the assignment. The Consultant should outline in their proposals how such home office support will be provided. Home Office Support is to be covered under the overhead part of Consultants fee.

7.3 DURATION AND COSTS

The duration of the assignment is 14 months from the time of mobilization to completion of the final feasibility report, as described in the scope of services. A detailed implementation plan is included as Annex 2

All of the Consultant's costs incurred in their participation, the costs of specialized sub-contractors for surveys, costs for supporting the arrangement of national and regional workshops must be included in the consultant's financial proposal.

8 RESPONSIBILITIES OF THE CLIENT

The Client will provide the required coordination through the Project Coordination Unit (PIU) under the Ministry of Agriculture (MoA). The PIU and other MoA staff will assist in (a) mobilization of beneficiary for meetings; (b) provide or assist the consultant obtain relevant data and background information that may be required.

The Client will provide the consultants with reports and other documents related to the assignment without withhold any information pertinent to the consultant's work. The Client will assist the consultant in all relevant local matters in order to ensure the smooth implementation of the assignment.

The Client will help to facilitate the collection of available data and reports and the coordination with other Government stakeholders for the workshops (if required). Despite this support however, the primary responsibility for data collection and organisation of workshops remains with the Consultant as defined in the scope of services. The Client will also provide timely review and comments on the draft reports and will assist to facilitate comments from other Government stakeholders.

The Client will:

- 1) Facilitate in establishing communication with the relevant institutions;

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- 2) Liaise and assist the Consultant in obtaining any other information and documents required from other government agencies in Zambia;
- 3) Provide assistance to obtain work permits for staff of the Consultant;
- 4) Provide assistance in obtaining Customs and Tax Exemptions as detailed in Special Conditions of the Consultancy Contract and General Conditions of Contract;
- 5) Arrange consultative meetings and ensure linkage with relevant regional authorities; and
- 6) Support the Consultant in obtaining any document on request that the Consultant may identify and require in the course of the pre-feasibility studies.
- 7) Inform the Consultant on the progress of other studies (ESIA and other studies) in order that he can coordinate and exchange information as required.

The Consultant shall operate their own project office and shall bear all accommodation, local transportation, visas, and other costs necessary to carry out the assignment.

TERMS OF REFERENCE FOR SOCIAL AND ENVIRONMENTAL STUDIES

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9 INTRODUCTION

9.1 BACKGROUND

The Government of the Republic of Zambia (GoZ) has received a grant from the African Water Facility (AWF), a multi-donor trust fund hosted and administered by the African Development Bank (AfDB), to implement a project aiming to prepare investments project/programme to upscale smallholder irrigation in the country, with particular focus on incorporating climate change considerations into project design (the Project). This Terms of Reference has been developed to guide consulting services for the preparation of a Feasibility Studies for smallholder Irrigation Systems in Zambia.

This assignment is part of the response to a request from Government of Zambia to the African Water Facility. The Government of Zambia requested support under the call for proposals related to Water Resources and Climate Change Adaptation.

The request for support from the AWF covers Component 1) Pre-Feasibility and Feasibility Studies and Component 2 Integrated Safeguard Studies. These TOR covers Component 2. A separate assignment will be commissioned for Pre-Feasibility and Feasibility Studies. This study will run in parallel and the consultants for both assignments are expected to collaborate closely.

The Republic of Zambia, like most countries in sub-Saharan Africa, is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods. Since 1960, the mean annual temperature increased by 1.3 °C, while it is currently estimated that temperature would further increase by 0.6 °C every decade. Further, it has been shown that the frequency of extreme weather events, including floods and droughts, has significantly increased over the last two decades.

The impacts of these changes already show important negative consequences, particular on the quality of life of vulnerable groups, such as subsistence farmers. Agriculture and food security, energy and water, human health, natural resources and wildlife have been identified as the most vulnerable sectors to climate change and variability¹⁰. Importantly, climate change and variability has had a pronounced negative effect on economic growth, with an estimated reduction of the country's GDP growth rate by 0.4 points per year, which could result in macroeconomic losses of USD 4.33 – 5.33 billion over a 10-year period (2006-2016). At the same time, the population growth rate of Zambia is currently estimated at 2.8% per annum, which may result in doubling the current population to 30 million by 2030. Rainfed subsistence agriculture, widely practiced in Zambia, is increasingly under pressure from erratic rainfall patterns, and has failed to significantly raise crop productivity, or to smoothen out seasonal cycles of hunger and food insecurity. Weak integration in commercial markets tends to worsen the situation by reducing market incentives for investments in irrigated farming.

In view of the above, the Government of the Republic of Zambia (GoZ) has prioritized investments in land and water resources development in general, and irrigation in particular, as a means of strengthening the adaptive capacity farmers and the rural poor.

¹⁰Reference: Ministry of Tourism, Environment and Natural Resources, 2007 (NAPA)
PAR: Zambia, Smallholder Irrigation / Feasibility and Detailed Design

1.2 SECTOR CONTEXT / PROBLEM DEFINITION

The Zambian smallholder farming community is highly vulnerable to the impacts of global warming and climate change, which poses significant challenges towards attaining water security, sustaining crop productivity and maintaining economic growth and livelihoods.

In addition, weak commercial linkages to markets have constrained the expansion of irrigated agriculture in Zambia, given its capital intensive nature. Out of the 2.75 million hectare estimated as the overall irrigation potential, 423,000 hectare are considered economically viable for development. However, the total irrigation area in the country is currently only slightly above 150,000 hectare.

Importantly, most of the irrigated area in the Republic of Zambia services large-scale commercial farming enterprises, while small-holder farmers are yet to benefit from significant investments in the sector. And while large-scale farms have a significant role in terms of overall production and job creation, their direct contribution to poverty alleviation has proven not significant.

To improve sector performance, and to help lift farmers out of poverty, the government has focused on policy support for outgrowers in irrigated agriculture since the Fifth National Development Plan (2008-2010), which focuses – inter alia – on “economic infrastructure and human resources”. The government has passed a Public-Private Partnership Bill focusing on developing agriculture as a business along with a model of inclusive agriculture development that puts emphasis on core agricultural constraints. In essence: this model aims to link smallholder farmers to commercial markets, by mobilizing idle assets readily available to smallholder farmers (land, family labour and water) and combining them with scarce assets not available to small-holders (finance, technical expertise, commercial skills). Over the last decade, several models of outgrower schemes have emerged in Zambia, and recent research¹¹ has shown that there is a general understanding that schemes have increased farmer incomes and significantly contributed to improving livelihood conditions. Importantly, and while there is no single best model that suits all situations, the government acknowledges the need to further refine PPP models and associated governance arrangements, as it works towards increasing the country’s total area under irrigation.

In addition, and despite its great potential for irrigation, Zambia has not identified and appraised sufficient available sites, to boost irrigation coverage in the country. There is currently insufficient feasibility studies (including technical, market, economic, financial analysis) available to GoZ to make informed investment decisions, which in turn is a considerable bottleneck, as the GoZ aims to realise the aspirational targets it has set in its strategies.

¹¹ Bangwe L. and B. van Koppen, 2012. Smallholder Outgrowers in Irrigated Agriculture in Zambia. AgWater Solutions Project.

10 THE ASSIGNMENT

10.1 THE AIM OF THE ASSIGNMENT

The objective of this assignment is to prepare required safeguard documents, as part of feasibility studies to assist the government in leveraging financing for the implementation of an irrigation project/programme that would increase irrigation area coverage across the country

The overall objective of the Project is the preparation of an irrigation investment project that would upscale the successful interventions introduced under the Small-Scale Irrigation Project, while incorporating valuable lessons-learnt. The impact of the project will be improved livelihood conditions and climate change resilience of smallholder farmers in the Republic of Zambia.

The outcome of the Project will be increased investments in climate change adaptation and irrigated commercial agriculture, and targets to secure financing of no less than € 60 million by 2018. In addition, the anticipated downstream investment project would extend irrigated agriculture by an additional area of 9,560 ha, and reaching 4,800 households in poor rural communities which are vulnerable to the impacts of climate change. The investments will consider improved commercial and value chain linkages to large operators through outgrower linkages, and to improve institutional management of these schemes through Public Private Sector arrangements. This model has been tested under the SIP project.

10.2 PROJECT COMPONENTS, OUTPUTS AND ACTIVITIES

The Government has formally identified and characterised 25 potential irrigation sites in Zambia. The Project will finance all technical, social, environmental and cross-cutting studies, necessary to conduct pre-feasibility and feasibility analyses, and in preparation for the preparation of a bankable project. It will be implemented through three (3) components, including:

- (i) Component 1: Prefeasibility, Feasibility Studies and Detailed Designs;
- (ii) Component 2: Integrated Safeguard System Studies; and
- (iii) Component 3: Project Management.

In an effort to identify potential sites for irrigation development, the Government of the Republic of Zambia (with financial support by the Government of Finland) has engaged in preparing pre-feasibility studies to upscale the Small-Scale Irrigation Project. In particular, these pre-feasibility studies prepared a preliminary estimate of the suitability of 19 proposed sites for irrigation development, alongside socio-economic profiles of potential beneficiary communities. In addition, the Ministry of Agriculture of the Republic of Zambia has identified an additional 6 sites that it considers of suitable quality. A list of these selected of the selected sites are in Table 1 below:

#	Site	District	Province	Area (ha)
1	Makungwa	Chipita	Eastern Province	100
2	Lukuzye	Chipita	Eastern Province	120
3	Bwanyunka	Chipita	Eastern Province	150
4	Lusangazi	Lundazi	Eastern Province	120

5	Mukomba	Lundazi	Eastern Province	100
6	Luwesi/Emusa	Lundazi	Eastern Province	100
7	Lusowe	Petauke	Eastern Province	150
8	Kaulu	Petauke	Eastern Province	150
9	Chipompo	Kasama	Northern Province	200
10	Nseluka	Kasama	Northern Province	600
11	Mwenda	Mbala	Northern Province	500
12	Ipusukilo	Luwingu	Northern Province	200
13	Lubasenshi	Luwingu	Northern Province	300
14	Luwalizi	Isoka	Muchinga Province	400
15	Lubu	Chinsali	Muchinga Province	400
16	Manshya	Shiwang'andu	Muchinga Province	500
17	Lufunsa	Lufunsa	Lusaka Province	800
18	Chiawa	Kafue	Lusaka Province	450
19	Lusuwishi	Lufwanyama	Copperbelt Province	1,000
20	Chifuwe East	Manyinga	North-Western	450
21	Chizera	Mufumbwe	North-Western	510
22	Chembe	Chembe	Luapula Province	480
23	Luongo	Chipili	Luapula Province	650
24	Mutenda-Muchinshi	Chingola	Copperbelt Province	510
25	Mulungushi	Kabwe	Central Province	620
Total Area				9,560

Pre-Feasibility Studies will be carried out for all these sites. Full Feasibility Studies will be done for 12 to 15 sites, and Detailed Design for 10 to 12 sites.

10.3 COMPONENT 2: SAFEGUARDS STUDIES

To ensure bankability of the proposed interventions, the Project will finance necessary studies to comply with Government of Zambia regulations, and best-practice integrated safeguard standards¹², as related to environmental and social safeguard standards. Further, and in following with the African Development Bank's Integrated Safeguard System, the study will encompass analytical work to estimate climate change risks and ensure that appropriate risk management and adaptation measures are fully integrated in into the project design. The Socio-Economic Assessment must be carried out in full consultation with the beneficiary community, with a focus on climate resilience and pro-poor development. The Team Leader shall comply with the requirements of the relevant legislation and must address the social aspects of the Project, ultimately ensuring that the needs of the stakeholders, particularly women and children, are considered and acted upon, and that the schemes have the broad support of the stakeholders. This will, (i) focus on gender-related aspects of the project, (ii) explain what gender-related criteria were selected to define the population target group in the project, (iii) provide details of how the project will affect gender dimensions in terms of income, resources, quality of life, distribution of the benefits, and (iv) deal with the positive and negative impacts expected during the implementation phase and during the project lifetime.

¹² Such as the African Development Bank Group, 2013. Integrated Safeguard System: Policy Statement and Operational Safeguards. Quality Assurance and Results Department.

The expected outputs include a synthesis report, which covers all required assessments, to details commensurate with the complexity of sub-projects, to allow the client and prospective donors to establish an Environmental and Social Management Framework for the implementation of downstream investments.

10.3.1 Sub-Component 2-1: Environmental and Social Safeguards Screening

To ensure bankability of individual investments studied in the course of this Project, the Consultant will ensure that adequate environmental and social assessments are conducted, that alternative development and design options are duly considered, and that appropriate mitigation measures are factored into the most feasible project designs. In particular, the project will ensure compliance of sub-projects with relevant national legislation and standards, and equivalent international standards.

Given the nature of the project (small-scale irrigation), and in following with the Bank's Environment and Social Assessment Procedures (ESAP), the appraisal suggests that most downstream investments are likely to be of a nature classified as Category 2. However, some larger sub-projects may also require safeguard assessments, associated with Category 1 projects.

The project will conduct preliminary assessments during the implementation of Component 1-1, to complement the updated technical studies in this vital aspect. In particular, the project will consider the size, likely technical options, and will determine the range of likely potential risks and impacts. It will further provide guidance on specific requirements based on the GMZ's applicable legislation and equivalent international best-practice such as the AfDB's safeguard policies and procedures. This would include a preliminary estimate of the number of people that may be displaced with a loss of assets or restriction of access to assets, to ensure that adequately detailed resettlement action plans are developed in subsequent phases of the project. In addition, this will also include a screening for climate change risks following the Bank's Climate Safeguard System, which provides a category for project climate change risks, and propose the application of Adaptation Review and Evaluation Procedures that are commensurate with that category. The project will further ensure, that the findings of this review are fully incorporated into the final feasibility designs.

Key tasks associated with the screening may include:

- Review of baseline information produced by the Ministry of Agriculture as well as other secondary literature/data sources;
- Preparation of a check-list covering thematic areas of concerns including, but not limited to, social impacts, health impacts, environmental and wildlife;
- Rapid field surveys and consultations at the 25 sub-project sites: (i) to establish a preliminary delineation of sub-project study areas for the; (ii) establish a preliminary baseline for social and environmental concerns which may require more detailed assessment under Component 2-2; (iii) to consult primary stakeholders to sensitize their views and concerns about potential sub-projects; and (iv) to collect sufficient information to make a preliminary estimate of potential climate change risks and adaptation opportunities, and inform later stages of the project.
- Identification of the policy, legal and administrative framework relevant to the project;

- And provide relevant preliminary information for the upgrading and finalization of prefeasibility reports implemented under Component 1-1.

Expected outputs include: (i) preliminary assessment of the likely range of environmental and social potential impacts as described in the African Development Bank's Integrated Safeguard System (ISS) and relevant national legislation/policies; (ii) a preliminary assessment of climate change risks and opportunities; and (iii) a detailed workplan for required ESM assessments as part of Phase 2 of this project which would detail necessary thematic assessments and processes as required.

Output 2-1: Environmental and Social Screening Report. The project will produce a screening report, which will form an integral part, and annexed to the pre-Feasibility Report of the Technical Study (Output 1-1). In particular, this report will include, inter alia: (i) a preliminary assessment of the likely categorizations; (ii) a description of the range of potential risks and impacts; and (iii) Terms of Reference for required ESM assessments and an associated updated workplan.

10.3.2 Sub-Component 2-2: Detailed Safeguard Studies

Given the scope of the indicative list of sub-projects, and the programmatic nature of the anticipated downstream investment, which may comprise a number of individual investments, the project will prepare assessments that serve the preparation of an Environmental and Social Management Framework, which comprises a set of procedures, methodologies and management measures to ensure that the environmental and social impacts of sub-projects are addressed in an appropriate manner.

The key activities encompasses:

To comply with the African Development Bank's ISS and national legislation, the consultant will prepare an Environmental and Social Management Framework Assessment comprising a set of procedures, methodologies and management measures to ensure that the environmental and social impacts of sub-projects are addressed in an appropriate manner. Equally, adequate detailed resettlement action plans will be developed as part of the detailed design phase.

The content of the Draft will follow the standard template of the AfDB, specified in the most current version of the Environmental and Social Assessment Procedures (ESAP) and include the following items, and will cover areas such as:

- A detailed description of the program, its components (especially the funded subcomponents) and implementation arrangements, paying particular attention to how subprojects will be identified, prepared, approved and implemented, and how funds will flow to approved subprojects.
- An analysis of the legislative, regulatory and administrative regime (e.g., protection of natural habitats and cultural heritage, pollution control, resettlement, etc.) within which the project will operate, with a focus on requirements applicable to the planning/design, approval and implementation of subprojects.
- Determination of institutional capacity for implementing the ESMF. This should include an analysis of the authority and capability of the relevant institutions at local, district, provincial/regional and national levels and their capacity to manage, monitor and supervise the implementation of the ESMF. Such an analysis may cover new laws and regulations or their revision, new agencies or agency functions, cross-sectoral

arrangements, management/organization procedures, training, staffing, budgeting and financial support.

- A training and capacity building program for the institutions responsible for implementing and supervising the ESMF at local, district, provincial/regional and national levels, as necessary.
- Technical assistance to communities, service providers and public-sector institutions to support the implementation of the ESMF. This may involve supporting studies examining changing access to natural resources, potential impacts upon a protected area, use of pesticides, or potential impacts upon indigenous people.
- An estimated budget for implementing the ESMF.

The consultant is further expected to duly incorporate findings under Component 2 into the final feasible-grade sub-project designs of the Technical Study;

Output 2-2 would comprise:

- (i) An Environmental and Social Management Framework Assessment; and
- (ii) Detailed environmental and social assessments for sites where Detailed Designs have been completed.

10.3.3 Component 2.3: Climate change Assessment

For the purpose of conducting the Climate Change Evaluation and Risk Management and Adaptation Plan, the consultant is expected to: (i) conduct a screening process (as provided in Component 2-1); and (ii) conduct assessments in line with the Adaptation review and Evaluation Procedures of the AfDB. The screening for climate change risks will follow the Bank's Climate Safeguard System, which provides a category for project climate change risks, and propose the application of Adaptation Review and Evaluation Procedures that are commensurate with that category.

A preliminary assessment during the appraisal of the project suggests that individual sub-projects may be vulnerable to climate risks, and the objective of the work of the consultant would be to propose practical risk management and adaptation options which would be integrated into the project design and implementation plans. Such assessments are expected to be carried out with due consideration of the size of individual sub-projects.

Tasks associated with this review may include:

- A review of available climate change policies, assessments, scenarios and related projects in the Republic of Zambia, including a desk-analysis;
- An assessment of impacts of likely climate change scenarios, with a particular focus on parameters of significant importance to agricultural production and irrigated agriculture (evapotranspiration, precipitation, temperature, water availability);
- Estimate additional costs for required infrastructure adjustments to manage climate risks;
- Prepare a climate risk management and adaptation assessment report which would be reflected in the design and operation of individual sub-projects and

a short Adaptation Evaluation Report which would summarize key findings across the 25 sub-projects.

- Advise the government on possible alternative financing possibilities from dedicated climate change mitigation funds;
- The consultant is further expected to: (i) duly incorporate findings under Component 2 into the final feasible-grade sub-project designs; (ii) conduct assessments that comply with AfDB's Climate Change Adaptation Review and Evaluation Procedures, which aim to ensure that findings of this review are duly incorporated into the project design;

Output 2-3 would comprise

- (i) Climate Change Evaluation and Risk Management and Adaptation Plan

10.3.4 Component 2-4: Environmental and Social Impact Assessment

For schemes where detailed design is being made an environmental screening shall be undertaken to determine the category of project in accordance with the AfDB Integrated Safeguard System. Depending on the determined category the consultant shall conduct a Full ESIA for Category 1 projects and a limited ESIA for Category projects. Most projects are expected to be Category 2.

Site-specific Environmental Management Plans, adequately detailed Resettlement Action Plans or other requirements as determined by national legislation, are expected to be developed during the detailed design of sub-project investments, within the downstream investment. Equally, will be develop as part of the detailed design phase.

The ESIA shall for be conducted following the guidelines of the AfDB / Integrated Safeguard System.

The key tasks in the ESIA are

- Scoping.
- Stakeholder identification.
- Project definition.
- Analysis of alternatives.
- Baseline definition.
- Impact assessment.
- Preparation of an Environmental and Social Management Plan (ESMP), including monitoring and reporting.

Output 2-4 would comprise:

- (i) Detailed Environmental and Social Impact Assessments for sites where Detailed Designs have been completed.

A template for the ESIA report are attached to these Terms of Reference.

11 DELIVERABLES AND MILESTONES

During the assignment, the consultant is expected to produce reports, in English language and in a format acceptable to the client, as per the following schedule:

- Draft Environmental and Social Management Framework: no later than twelve (11) calendar months after agreed starting date for the consultancy contract.

- Final Environmental and Social Management Framework: no later than thirteen (13) calendar months after agreed starting date for the consultancy contract.
- Climate Change Assessment and Climate Screening no later than thirteen (13) calendar months after agreed starting date for the consultancy contract.
- ESIA for priority projects no later than thirteen (15) calendar months after agreed starting date for the consultancy contract.

All reports must be submitted in hard copies (1 original and 5 copies) and an e-copy (in CD or memory stick/ card).

12 IMPLEMENTING ARRANGEMENTS

Project Implementation Unit. The Executing Agency will assign a Project Manager with an engineering background, within the established Project Implementation Unit at SIP, who will be responsible for (i) day-to-day administration of the project; (ii) ensuring the timely submission of deliverables by the consultant; (iii) developing work plans and budgets; (iv) coordination; (v) procurement of consultancy services; (vi) financial management; (vii) monitoring and evaluation; and (viii) reporting. The Project Manager with experience in managing procurements in line with AfDB's rules and procedures. He will be assisted by the Socio-Economist who will also be acting as the Monitoring and Evaluation Officer, an Accountant, and support staff.

Project Steering Committee. A Project Steering Committee will be established to provide guidance and strategic support to the Project Implementation Unit, comprising of the following: (i) Director of Agriculture, MoA (ii) Director of Policy and Planning, MoA (iii) Chief Accountant, MoA (iv) Ministry of Finance (v) Zambia National Farmer Union (vi) Head of Procurement and Supplies Unit, MoA (vii) Zambia Environmental Management Authority (ZEMA) (viii) Ministry of Health (ix) Ministry of Tourism Environment and Natural Resources (x) Zambia Development Agency (ZDA).

13 STAFFING AND OTHER RESOURCES

13.1 KEY PROFESSIONAL STAFF

The GoZ seeks to engage a consultancy firm with extensive experience in the conducting feasibility studies for irrigation development in sub-Saharan Africa. It is estimated that the overall inputs required would be approximately 30 person-months, including 10 person-months for international experts and 20 person-months of locally-recruited experts.

For the execution of the Project as one contract, the Consultant shall provide a broad range of expertise as indicated in the table below, and the team should preferably have a balanced composition of local and international experts. The consultant shall make available personnel with the qualifications and experience necessary to perform project tasks to a high standard necessary for the completion of each project component and the entire Project. It will be advantageous for the consultant to provide experts who are knowledgeable in more than one discipline such that the various crosscutting issues of the Project could be managed efficiently.

- Social Safeguard Specialist / Team Leader

At least 15 years of experience and advance degree in social and human sciences. Previous experience in participating in Socio-Environmental impacts studies and surveys in Africa for large irrigation projects.

- Environmental Specialist

At least a Masters degree in Environmental Management with 10 years relevant experience in water related projects;

- Climate Change Specialist

The Climate Change Specialist shall have at least a BSc in water resources management, agricultural management or other relevant field. S/he shall have minimum 5 years of relevant experience from irrigation / agriculture related projects working with Climate Change.

In addition, locally-recruited experts may comprise the following expertise: (i) agricultural engineering, (ii) wildlife and biodiversity;

Besides the technical skills of the experts, the Consultant is encouraged to consider communication and management skills and appreciation and understanding of the local context when selecting the proposed staff. These attributes are particularly important in the consultation activities and for the process of presenting the findings, recommendations and building consensus and support for the proposals amongst key stakeholders.

13.2 HOME OFFICE SUPPORT

The Consultant should provide the necessary technical, administrative and logistical support required for successful implementation of the assignment. The Consultant should outline in their proposals how such home office support will be provided. Home Office Support is to be covered under the overhead part of Consultants fee.

13.3 DURATION AND COSTS

The duration of the assignment is 14 months from the time of mobilization to completion of the final feasibility report, as described in the scope of services. A detailed implementation plan is included as **Erreur ! Signet non défini**.

All of the Consultant' costs incurred in their participation, the costs of specialized sub-contractors for surveys, costs for supporting the arrangement of national and regional workshops must be included in the consultant's financial proposal.

14 RESPONSIBILITIES OF THE CLIENT

The Client will provide the required coordination through the Project Coordination Unit (PIU) under the Ministry of Agriculture (MoA). The PIU and other MoA staff will assist in (a) mobilization of beneficiary for meetings; (b) provide or assist the consultant obtain relevant data and background information that may be required.

The Client will provide the consultants with reports and other documents related to the assignment without withhold any information pertinent to the consultant's work. The Client

will assist the consultant in all relevant local matters in order to ensure the smooth implementation of the assignment.

The Client will help to facilitate the collection of available data and reports and the coordination with other Government stakeholders for the workshops (if required). Despite this support however, the primary responsibility for data collection and organisation of workshops remains with the Consultant as defined in the scope of services. The Client will also provide timely review and comments on the draft reports and will assist to facilitate comments from other Government stakeholders.

The Client will:

- 8) Facilitate in establishing communication with the relevant institutions;
- 9) Liaise and assist the Consultant in obtaining any other information and documents required from other government agencies in Mozambique;
- 10) Provide assistance to obtain work permits for staff of the Consultant;
- 11) Provide assistance in obtaining Customs and Tax Exemptions as detailed in Special Conditions of the Consultancy Contract and General Conditions of Contract;
- 12) Arrange consultative meetings and ensure linkage with relevant regional authorities; and
- 13) Support the Consultant in obtaining any document on request that the Consultant may identify and require in the course of the pre-feasibility studies.
- 14) Inform the Consultant on the progress of other studies (ESIA and other studies) in order that he can coordinate and exchange information as required.

The Consultant shall operate their own project office and shall bear all accommodation, local transportation, visas, and other costs necessary to carry out the assignment.

ANNEX 1 ESIA Summary template

1. Introduction

This section shall outline the contents of the Summary.

2. Policy, Legal and Administrative Framework

This chapter summarizes the policy, legal and administrative framework within which the ESIA was carried out, including the relevant environmental and social requirements of the Bank, co-financiers (if applicable) and borrowing country. Also, it identifies relevant international environmental/social agreements that may be related to the project.

3. Project Description and Justification

The first part of this section shall present the study area and summarize the proposed project activities. The second part shall briefly justify the project: purpose and needs to be fulfilled by the project. Figures and maps, if necessary, shall be incorporated to facilitate the comprehension of the project.

4. Description of the Project Environment

This section shall provide a brief description of the main physical, biological and human (social, cultural and economic) conditions prevailing in the study area.

5. Project Alternatives

This section shall present and analyze the various alternatives considered to reach the project's objectives, including the "no action" option. Alternatives shall be compared in terms of their technical, economic, environmental and social feasibility and climate risk, including public concerns.

6. Results of Comparison of Alternatives

The alternative comparison shall address the proposed project site, technology, design, and operation, in terms of their potential environmental and social impacts and the feasibility of mitigating these impacts.

7. Potential Impacts

This section shall present the analysis of beneficial and adverse impacts of the selected project alternative on the biophysical and human (social, cultural and economic) environments. Environmental and social significant impacts including climate risk and their importance shall be summarized and irreversible or unavoidable impacts shall be clearly

identified. The analysis shall cover anticipated impacts during the construction, operation and decommissioning phases.

8. Mitigation/Enhancement Measures and Complementary Initiatives

This section shall identify and briefly describe the enhancement and mitigation measures proposed to enhance benefits or prevent, minimize, mitigate or compensate for adverse impacts. The cost of each mitigation and enhancement measure shall be estimated, including the cost for environmental and social capacity building. A clear budget line for the measures shall be provided in the detail cost breakdown.

Whenever applicable this section shall present initiatives proposed to complement the enhancement and mitigation measures previously described. For example, resettlement plans shall be summarized in this section, briefly presenting the number of displaced people, compensation and re-insertion measures, legal status, public consultations, implementation schedule as well as monitoring and evaluation procedures.

8. Expected Residual Effects and Environmental Hazard Management

Residual impacts shall be presented in this section. Whenever relevant, this section shall present a summary of the proposed security measures, contingency plan and analysis of potential technological accident risks (for projects with major technological accident risks).

9. Monitoring Program

This section shall summarize the surveillance and monitoring activities proposed in the Environmental and Social Management Plan prepared for the project. It shall identify the roles and responsibilities of stakeholders in the implementation as well as the estimated cost of the activities.

9. Public Consultations and Public Disclosure

This section shall outline the actions undertaken to consult the affected groups and other concerned key stakeholders including Civil Society Organizations. It shall identify the documents that were disclosed and subject to consultations. It shall also present major findings and outcomes of public consultations and specify how concerns were addressed.

10. ESMP

This section shall present management measures including actions, roles and responsibilities, timeframes, monitoring and cost of implementation.

11. Institutional Capacities and Strengthening plan:

This section shall address the institutional capacity within the project implementing agency to oversee the implementation of the ESMP.

12. Conclusion

The conclusion shall statute on the environmental and social acceptability of the project, taking into account the impacts and measures identified during the assessment process. It shall specify any need for environmental and/or social loan conditions or covenants to ensure that the project meets the Bank's requirements.

13. References and Contacts

The documents consulted to prepare the Summary shall be listed. In addition, the persons to contact for comments or further information shall be mentioned, as the Bank releases the Summary.

ANNEX 2 ESMP Summary template

1. Objectives of the ESMP

This section shall specify that the ESMP aims to bring the project into compliance with applicable national environmental and social legal requirements and the Bank's safeguards policies and procedures. The other objective of the ESMP is to outline the mitigating/enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts, or to enhance the project beneficial impacts. It shall also address capacity building requirements to strengthen the Borrower's safeguards capacities if necessary. Its aim is also to specify the environmental and/or social loan conditions or covenants that are part of the project loan agreements to ensure that the project meets the Bank's safeguards requirements.

2. Context

The ESMP shall briefly describe project activities and major environmental and social components that will likely be affected positively or negatively by the project. The information provided shall be concise for Category 1 projects, as the ESIA Report covers in detail this topic.

For Category 2 projects, however, the context section shall be more detailed. It shall describe and analyze the physical, biological and human conditions prevailing in the project area, highlighting relevant environmental and social issues. Within the human environment, key issues that shall be considered include population characteristics and trends, green and inclusive growth and development, revenue disparities, gender differences, health problems, natural resource access and ownership, climate risk pattern, land use patterns and civil society organization level.

Moreover, the context section shall outline existing interrelations between physical, ecological and social processes. These interrelations among components shall be mentioned to be taken into account in the impact assessment and the development of mitigation/enhancement measures.

3. Beneficial and Adverse Impacts

This section shall focus on beneficial impacts that can be enhanced to improve the project environmental and social performance as well as on adverse impacts that require mitigation measures to be minimized or compensated. For Category 1 projects, the impact description in the ESMP shall be brief and refer to the ESIA Report for further details. For Category 2 projects, the ESMP shall clearly defined the impacts and indicate their level of importance.

4. Enhancement/Mitigation Measures and Complementary Initiatives

This section shall propose feasible and cost effective measures to address the impacts previously defined, in order to accrue project benefits through enhancement measures or to reduce potentially adverse environmental and social impacts to acceptable levels (mitigation measures). Each measure shall be described in detail, providing all technical information required for its implementation such as design, equipment description and operating procedures, as appropriate).

The ESMP shall integrate or at least refer to all initiatives that are proposed to improve the project environmental or social performance. As the ESIA Report completed for Category 1 projects may include such initiatives, these shall be briefly presented in this section. Moreover, these complementary initiatives shall be taken into account in determining the responsibilities, institutional arrangements, cost estimates and implementation schedule.

5. Environmental and Social Monitoring Programme:

A monitoring program aims to ensure that mitigation and enhancement measures are implemented, that they generate intended results and that they are modified, ceased or replaced when inappropriate. Moreover, it allows to assess compliance with national environmental and social policies and standards as well as with the Bank's policies and guidelines. A monitoring program shall include two parts: surveillance and monitoring activities.

- *Surveillance activities*

The surveillance aims to ensure that the proposed mitigation and enhancement measures are effectively implemented during the construction phase.

- *Monitoring activities*

These activities consist in measuring and evaluating the project impacts on some environmental and social components of concern and to implement remedial measures, if necessary. The program shall define as clearly as possible the indicators to be used to monitor the mitigation and enhancement measures that need to be assessed during project implementation and/or operation. The monitoring program shall also provide technical details on monitoring activities such as methods to be used, sampling locations, frequency of measurements, detection limits, and definition of thresholds that will signal the need for corrective actions.

6. Consultations

The implementation and monitoring of some mitigation or enhancement measures may require that consultative mechanisms be used. In such cases, the ESMP shall first identify for which measures consultations will be undertaken as well as the goals and expected outcomes of these consultations. Then the ESMP shall specify the target groups, appropriate consultative processes, consultation frequency, reporting methods and result disclosure procedures. Information on how to carry out an effective consultation is provided in the Guidance Note on Public Consultation.

7. Responsibilities and Institutional Arrangements

The implementation of enhancement and mitigation measures and the completion of the monitoring program require to clearly establish responsibilities among the various organizations involved in project implementation and operation. Ultimately the Borrower is responsible for monitoring and reporting on achieved results, but it may need to be assisted in the implementation of the ESMP by the project team and external consultants.

Consequently, the ESMP shall identify the responsibilities of the Bank, the Borrower, the implementing agencies and other stakeholders in applying the ESMP, particularly the monitoring program. In addition, the ESMP shall propose support to the organizations that

may have insufficient capacities to fulfill their obligations. This support could be provided through various means including technical assistance, training and/or procurement.

8. Estimated Cost

This section estimates the capital and recurrent cost associated with the various proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements. The cost of each mitigation and enhancement measure shall be estimated, including the cost for environmental and social capacity building. This cost shall be estimated for each identified measure and integrated into the overall project cost discussed in section 2.3 of the main appraisal report. A clear budget line for the measures shall be provided in the detail cost breakdown by category, component, foreign and local cost provided in the technical annex B2 of the Appraisal report. The total cost of the mitigation/enhancement measures shall also be provided in Annex B8 of the Appraisal report.

Whenever applicable this section shall also present initiatives proposed to complement the enhancement and mitigation measures previously described. Whenever applicable, this section shall also present the cost associated with resettlement, displacement and compensation as a result of the project. For example, resettlement or compensation plans shall be summarized in this section, briefly presenting the number of displaced people, economic activities impacted, compensation and reinsertion measures, legal status, public consultations, implementation schedule as well as monitoring and evaluation procedures.

9. Implementation Schedule and Reporting

The ESMP shall include an implementation schedule taking into account all activities related to the proposed measures (enhancement and mitigation), the monitoring program, consultations, complementary initiatives and institutional arrangements. Moreover, the implementation schedule shall be developed by phases and in co-ordination with the overall project implementation plan.

Reporting on the progress on the implementation of the ESMP shall be incorporated into the Implementation Progress and Results Report (IPPR) (see Annex22). The section of the IPPR that reports on ESMP implementation shall outline the result achieved and any remaining E&S outstanding issues. Also reasons for non-implementation should be given as well as remedial actions that need to be taken to rectify

10. Conclusion:

The conclusion shall summarize the main expected environmental and social impacts and mitigation and enhancement measures that will ensure that the project meets the Bank's safeguards requirements. It shall also specify the environmental and/or social loan conditions or covenants that are part of the project loan agreements.

11. References and Contacts

The documents consulted to prepare the ESMP shall be listed. In addition, the persons to contact for comments or further information shall be mentioned, as the Bank releases the ESMP.

ANNEX 3 RAP Summary template

1. Description of the project, project area and area of influence

General description of the project and the area of influence.

2. Potential impacts

Description of the project components or activities that would give rise to resettlement, zone of impact of such activities, and the alternatives considered to avoid or minimize resettlement.

3. Organizational responsibility

The institutional arrangements within the executing agency and provision of adequate resources to this institution should be discussed and all inter-agency coordination should be described. The capacity and commitment of the institution to carry out the resettlement plan should also be evaluated. If necessary, strengthening of this institution should be considered and the steps that will be taken, together with a timetable and budget, should be described at the project preparation phase. There should be considerable scope for involving the local people and NGOs in planning, implementing and monitoring resettlement.

4. Community participation

A description of the consultation and participation of the displaced and hosts communities in the design and implementation of the resettlement activities including a summary of the views expressed and how these views were taken into account in preparing the resettlement plan. A review of the resettlement alternatives presented and choices made by displaced persons, including choices related to forms of compensation and resettlement assistance, to relocating as individual families or as part of pre-existing communities, and to retaining access to cultural property (e.g., places of worship, cemeteries, etc.). Description of procedures for redress of grievances by project affected people shall be accessible throughout the planning and implementation.

5. Integration with host communities

Consultations with host communities and local governments and arrangements for prompt tendering of any payments due to the hosts for land or other assets should be provided to resettlers. Arrangements for addressing any conflict that may arise between the resettlers and host communities should also be made. Appropriate measures should be taken to augment public services (e.g. education, water, health, and production) in host communities to make them comparable to services provided to resettlers.

6. Socio-economic studies

- a) A population census covering current occupants of the affected area, including the description of the production systems, household organization, baseline information on livelihoods and standards of living of the displaced population;
- b) An inventory of assets of displaced households; the magnitude of the expected loss – total or partial for individual or group assets, and the extent of physical and economic displacement;
- c) Information on disadvantaged groups or persons for whom special provisions may have to be made;
- d) Provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement;
- e) Description of land tenure systems, including common property and nontitle based land ownership or allocation system recognized locally and related issues;
- f) Public infrastructure and social services that will be affected; and
- g) Social and cultural characteristics of displaced communities.

7. Legal framework, including mechanisms for conflict resolution and appeal

- a) The applicable legal and administrative procedures, including a description of the remedies available to displaced persons in the judicial process, and the normal time frame for such procedures; and available alternative dispute resolution mechanisms that may be relevant to the project;
- b) Laws and regulations relating to the agencies responsible for implementing resettlement activities; and
- c) Any legal steps necessary to ensure the effective implementation of resettlement activities, including a process for recognizing claims to legal rights to land – including claims that derive from customary and traditional law and usage.

8. Institutional framework

- a) The identification of agencies responsible for resettlement activities and NGOs that may have a role in project implementation; and
- b) An assessment of the institutional capacity of such agencies and NGOs.

9. Eligibility

Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

10. Valuation of, and compensation for losses

- a) The methodology to be used in valuing losses to determine their replacement cost; a description of the proposed types and levels of compensation under local laws and such supplementary measures to achieve replacement cost for lost assets; and
- b) A description of the packages of compensation and other resettlement measures that will assist each category of eligible displaced persons to achieve the objectives of this policy.

11. Identification and selection of resettlement site, site preparation and relocation

- a) Institutional and technical arrangements for identifying and preparing relocation sites, for which a combination of productive potential, locational advantages, and other factors is at least comparable to the ancillary resources;
- b) Procedures for physical relocation under the project, including timetables for site preparation and transfer;
- c) Any measures to prevent influx of ineligible persons at the selected sites; and
- d) Legal arrangements for regularizing tenure and transferring titles to resettlers.

12. Shelter, infrastructure and social services

Plans to provide or finance housing, infrastructure (e.g. roads, water supply, etc.) and social services (schools, health services); plans to ensure comparable services to host populations; and any necessary site development.

13. Environmental protection

An assessment of the environmental impacts of the proposed resettlement and measures to mitigate and manage the impacts.

14. Implementation schedules

An implementation schedule covering all resettlement activities from preparation through implementation, including target dates for achievement of expected benefits to resettlers and hosts and terminating the various forms of assistance.

15. Costs and budget

Tables indicating breakdown of cost estimates for all resettlement activities, including allowances for inflation and other contingencies; timetable for expenditures; sources of funds; and arrangements for timely flow of funds.

16. Monitoring and evaluation

Arrangements for monitoring of resettlement activities by the implementing agency; supplemented by independent monitors as appropriate, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; evaluation of the impacts of resettlement for a reasonable period of time after the resettlement activities have been complete