

INTEGRATED SAFEGUARDS DATA SHEET

APPRAISAL STAGE

Report No.: ISDSA1043

Date ISDS Prepared/Updated: 08-Nov-2014

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I. BASIC INFORMATION

1. Basic Project Data

Country:	Africa	Project ID:	P146515
Project Name:	Kariba Dam Rehabilitation Project (P146515)		
Task Team Leader:	Marcus J. Wishart		
Estimated Appraisal Date:	28-Oct-2014	Estimated Board Date:	11-Dec-2014
Managing Unit:	GWADR	Lending Instrument:	Investment Project Financing
Sector(s):	Hydropower (60%), Flood protection (20%), General water, sanitation and flood protection sector (20%)		
Theme(s):	Water resource management (60%), Natural disaster management (40%)		
Is this project processed under OP 8.50 (Emergency Recovery) or OP 8.00 (Rapid Response to Crises and Emergencies)?			No
Financing (In USD Million)			
Total Project Cost:	294.20	Total Bank Financing:	75.00
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			19.20
International Development Association (IDA)			75.00
African Development Bank			75.00
EC European Development Fund (EDF)			100.00
Free-standing Single Purpose Trust Fund			25.00
Total			294.20
Environmental Category:	A - Full Assessment		
Is this a Repeater project?	No		

2. Project Development Objective(s)

The Project Development Objective is to assist in improving the safety and reliability of the Kariba

Dam.

3. Project Description

The Kariba Dam Rehabilitation Project will assist ZRA in financing implementation and oversight of those components required for the rehabilitation of the Kariba Dam.

Component 1: Institutional Project Support (estimated cost US\$ 70.0 million)

The objective of this component is to provide the necessary support to assist in securing the long-term safety and reliability of the Kariba Dam Hydro-Electric Scheme.

This component would be co-financed by IDA, Sweden, the African Development Bank and the European Development Fund through a combination of joint co-financing and parallel co-financing of individual activities. Activities to be financed include: (i) Technical Services and Supervision Consultant; (ii) Dam Break Analysis; (iii) Panel of Experts; (iv) Dispute Adjudication Board; (v) Environmental and Social Assessment; and, (vi) Audits, Evaluations and other Studies. Financing under this component would be used for: (i) consultants services; (ii) goods, equipment and non-consulting services; and, (iii) operating costs associated with enhanced project implementation, management and monitoring.

Component 2: Plunge Pool Reshaping (estimated cost US\$ 100.0 million)

The objective of this component is to stabilize the plunge pool and prevent further scouring, particularly along the weak fault / shear zone towards the dam foundations. While the plunge pool was originally intended to be formed from the natural scour, the hole has progressively widened and deepened vertically to create an 80m deep scour hole in the bedrock immediately downstream of the dam foundations. A 3D FEM model has been established to assess how the plunge pool scouring progress and excavation works would affect the stress field of the dam foundation. In the absence of measures to prevent the current trend, the scouring would only be controlled if the spillway is operated with no more than three, non-adjacent gates open, which would however limit the spillway discharge capacity during large floods. The limit on the number of useable gates requires lowering of the maximum safe reservoir level, which in turn reduces power generation capacity from the dam.

This component would be financed by the European Development Fund (EDF11) in parallel to the other components of the Kariba Dam Rehabilitation Project. Activities to be financed include: (i) Plunge Pool Reshaping Civil Works; (ii) carrying out of additional engineering studies, investigations and surveys, and supply of equipment as might be needed during implementation; (iii) provision of technical services for the monitoring of the plunge pool reshaping; and, (iv) carrying out of visibility and communications activities. The measures required to reshape the plunge pool include construction of a downstream coffer dam to enable the blasting and excavation of an estimated volume of 300,000 m³ of rock from the downstream face and north and south bank sides of the pool. This will create a stepped profile to increase the energy dissipation and guide the spilling water in the downstream direction, away from the dam foundations. The Technical Audit Consultant to the EU is responsible for undertaking regular missions to provide factual reporting and technical advices during implementation. This will be achieved through the audit of the organizational, technical, contractual and financial aspects of the plunge pool, along with the result achieved during the implementation. Financing under this component would be used for: (i) goods, works and non-consulting services; and (ii) consultants services.

Component 3: Spillway Refurbishment (estimated cost US\$ 124.6 million)

The objective of this component is to improve the operation and prevent potential failure of the

spillway control facility. Advanced deterioration of the built-in structures and secondary concrete due to cavitation and Alkali-Aggregate Reaction has the potential to limit the function of the spillway gates. Without installing a new emergency gate, the current stop beam cannot be closed in the event of a downstream flood gate failure. In the event that the downstream flood gate jams and cannot be closed there would be no way to stop water flow. The water level in such case may go down to the sill of the spillway, well below the minimum operating level, during which period no power production would be possible. If the flood gate were to jam under its closed or middle position during a large flood it could limit the ability to ensure safe passage of the flood waters and result in overtopping of the dam.

This component would be jointly co-financed by IDA, Sweden, and the African Development Bank. The activities to be financed include: (i) Spillway Refurbishment Contract; and (ii) Additional Engineering Studies, Investigations, Surveys and Equipment as may be required. The Spillway Refurbishment would include the fabrication and installation of emergency gates and a new gantry, with refurbishment of associated built-in structure and replacement of secondary concrete. This would include installing a new fixed roller gate that would have an independent opening/closing function for the upstream sluice opening irrespective of downstream gate position/flow condition. The current stop beams cannot be closed under flowing condition. The existing gantry crane will also be replaced with a higher capacity gantry in order to operate the new emergency gate under water flowing condition. Financing under this component would be used for goods (supply and installation of hydro-mechanical equipment), civil works and non-consulting services associated with the refurbishment of the spillway.

4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The Kariba Dam is located roughly in the middle of the Zambezi River basin, at the border of Zambia and Zimbabwe. The drainage basin area is approximately 663,848 km² of savannah-dry forest and lies in the territories of five of the eight riparian states: Angola, Botswana, Namibia, Zambia and Zimbabwe.

The project includes two rehabilitation components both of which require works in situ on existing infrastructure to secure operations in accordance with international dam safety standards and avoid a potential catastrophic failure of the dam.

5. Environmental and Social Safeguards Specialists

Kristine Schwebach (GSURR)

Sanjay Srivastava (GENDR)

6. Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/ BP 4.01	Yes	The rehabilitation measures are not expected to have any significant adverse environmental impacts. The plunge pool reshaping involves excavation of an estimated 300,000m ³ of material within 200m immediately downstream from the toe of the dam wall. The works area for the plunge pool is located immediately under the spillway gates, limiting the reshaping works to the “non-spillage period”. Any potential impacts

		are likely to be associated with site specific rehabilitation works and temporary in nature, limited to the construction phase. All potential environment and social impacts related to proposed project activities, including construction impacts associated with noise and dust, soil erosion, access roads, health and safety of workers, etc. are being assessed through an ESIA scheduled to be completed in March, 2015. The ESIA will include an Environment and Social management Plan (ESMP) to ensure necessary measures required to prevent, minimize, mitigate, or compensate for any potential adverse environment and social impacts during implementation. Specific provisions are to be included in the tender documents to guide the contractors. During the period of construction, instream flows will be maintained through the continued release of water through the power station outlets. The cofferdam to enable excavation of the plunge pool works (<12m) will be constructed below the plunge pool but above the outlets.
Natural Habitats OP/BP 4.04	No	The policy is not triggered. The rehabilitation works will take place in situ and will not lead to the significant loss or degradation of any critical natural habitats.
Forests OP/BP 4.36	No	The policy is not triggered. The project is limited to rehabilitation of the existing dam and will not impact on the health and quality of any forests; affect the rights and welfare of people and their level of dependence upon or interaction with forests; nor will it bring about changes in the management, protection, or utilization of natural forests or plantations.
Pest Management OP 4.09	No	The project does not involve the use of pesticides and agro-chemicals. Thus the policy is not triggered.
Physical Cultural Resources OP/ BP 4.11	Yes	The rehabilitation includes civil works and so provisions governing chance find procedures are being incorporated in the Environmental and Social Management Plan.
Indigenous Peoples OP/BP 4.10	No	The policy is not triggered. There are no Indigenous Peoples in the project area.
Involuntary Resettlement OP/BP 4.12	Yes	The project includes two rehabilitation components both of which require works in situ

		on existing infrastructure to secure operations in accordance with international dam safety standards and avoid a potential catastrophic failure of the dam. As a result, the rehabilitation measures are not expected to have any significant adverse social impacts. There is not expected to be any physical relocation and only limited, if any, land acquisition leading to involuntary resettlement and/or restrictions of access to resources or livelihoods. However, the World Bank involuntary resettlement policy has been triggered and the ESIA Consultants are preparing a Resettlement Policy Framework to ensure prior agreement on a transparent mechanism in the event that any land acquisition is required for waste dumps, access routes or construction sites, etc..
Safety of Dams OP/BP 4.37	Yes	<p>The project is aimed at ensuring appropriate measures are implemented and sufficient resources provided for the continued safety of the Kariba Dam. The ZRA carries out five yearly inspections of the dam by internationally reputable consultants and the rehabilitation works will be carried out in compliance with the OP/BP. The regular inspection reports have been reviewed and ZRA has conducted or is conducting required actions as per the policy in a satisfactory manner.</p> <p>The ZRA has Standing Operations Procedures of the Kariba Dam and Reservoir that are sufficient in terms of the provisions of the policy and cover the reservoir operation procedure, instrumentation plan, operation and maintenance procedure of equipment, etc. The EPP framework is also included in the procedures. The Standing Operations Procedures will be reviewed, and revised, as needed, as part of the tendering process to align the procedures with the necessary actions during implementation of the works, and revised further to finalize not later than six months before commissioning of all refurbishment works in the case of the Operation and Maintenance Plan, and 12 months before commissioning of all refurbishment works in the case of the Emergency Preparedness Procedures.</p>
Projects on International	Yes	Notification has been made by the ZRA in

Waterways OP/BP 7.50		accordance with provisions of the ZAMCOM Agreement along with the Revised SADC Protocol on Shared Watercourses in compliance with OP/BP 4.37. No new works will be undertaken and the rehabilitation is not anticipated to adversely change the quality or quantity of water flows to other riparians in the Zambezi River basin, nor will it adversely affect water use by the other riparians. The rehabilitation works will not exceed the original scheme, change its nature, or so alter or expand its scope and extent as to make it appear a new or different scheme.
Projects in Disputed Areas OP/BP 7.60	No	The policy is not triggered. The dam has been under joint operation under the current arrangements since 1987 and there are no disputes over the project area.

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

<p>1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:</p> <p>The project includes two rehabilitation components both of which require works in situ on existing infrastructure to secure operations in accordance with international dam safety standards and avoid a potential catastrophic failure of the dam. The rehabilitation measures will be confined/restricted to existing dam facilities and its immediate surroundings and are not expected to have any significant large scale adverse or irreversible environmental or social impacts.</p> <p>The Plunge Pool Reshaping works consist in the enlargement of the plunge pool scoured in the riverbed, mainly downstream but also on both banks. Therefore, it consists mainly of rock excavation performed in the riverbed. These impacts are limited to the construction phase and not expected to have any long-term impacts. An ESIA is under preparation and will include an ESMP to govern handling and management of construction waste, air and noise pollution, increased sediments causing turbidity, health and safety of workers, etc..</p> <p>The World Bank was involved in supporting the initial financing and development of the Kariba Dam between 1954 and 1959 through an IBRD loan to the Federation of Rhodesia and Nyasaland (Malawi, Zambia and Zimbabwe). This predates the current operational safeguard policies and the project involved the resettlement of 57,000 Gwembe-Tonga peoples; 34,000 people were resettled in Zambia. While the rehabilitation project is not directly addressing the historical issues associated with the original dam construction, and these do not meet the criteria outlined in the World Bank's "Guidelines for Addressing Legacy issues in World Bank Projects", the ZRA is undertaking an assessment of the impact and efficacy of the ZVDF. This is being carried out as part of the Batoka Gorge HES ESIA and will be used to inform any Government responses to associated historical issues.</p>
<p>2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:</p>

<p>The project activities are not expected to have any indirect or irreversible long-term environmental or social impacts.</p>
<p>3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.</p>
<p>The most recent dam safety assessment has identified the proposed measures as Category I interventions requiring immediate attention and the alternative to the project would be to continue to operate the dam below internationally accepted safety standards.</p>
<p>4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.</p>
<p>The Borrower has limited experience with World Bank safeguard policies. There is a dedicated water resources and environmental management department that carries out routine monitoring and community relations. The ZRA also manages the Zambezi Valley Development Fund which was established in 1997 to enhance the socio-economic status of people displaced during construction of the Kariba Dam.</p> <p>The ZRA has contracted an Environmental and Social Service Provider to carry out an ESIA for the Kariba dam rehabilitation works, along with Environmental and Social Management Plans (ESMPs) and Resettlement Policy Framework (RPF). The ESIA is expected to be completed by March 2015, prior to commencement of any of the associated works and in time to incorporate the necessary provision in the tender documents for the contractors.</p> <p>The ZRA will be supported in implementation of the project by a Technical Services and Supervision Consultant, who will be responsible for oversight of the works, including compliance with the provisions of the ESMP and RPF. An independent Panel of Experts is also being recruited to provide international experience and oversight during implementation. This includes both environment and social expertise.</p>
<p>5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.</p>
<p>The rehabilitation measures will be confined/restricted to existing dam facilities and its immediate surroundings. However, media speculation around the safety of the Kariba Dam has generated significant interest in a wide range of stakeholders. The ZRA has been working on stakeholder engagement with government officials through the Zambezi Watercourse Commission, SADC structures, and bilateral relationships. A communications strategy is being developed with support from the financing partners to ensure clear, consistent and transparent messages during the preparation and implementation of the project. This is being coupled with a series of targeted site visits to explain the project.</p> <p>The environmental and social impact assessment also includes a strong consultative and participatory emphasis. The same firm is currently undertaking the ESIA for the Batoka Gorge Hydro-Electric Scheme under a parallel process with ZRA. Located immediately upstream of the Kariba Dam, the synergies between the two projects allows for a comprehensive consultative process with clear and consistent messages.</p> <p>In preparation for the ESIA the ZRA undertook a series of public consultations on the scope of the ToRs with a range of stakeholders in the project area. Given the nature of the rehabilitation works and the concerns raised through the media reports to date, the process of undertaking the consultations and the ESIA is committed to public participation, with specific provisions to</p>

ensure that the procedure of data acquisition, analysis and interpretation is conducted in a transparent manner according to accepted international standards and practice.

The ToRs for the ESIA have been subject to a series of public consultations in locations around the dam, reservoir and downstream areas, and disclosed through the InfoShop.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other	
Date of receipt by the Bank	30-Mar-2015
Date of submission to InfoShop	31-Mar-2015
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	31-Mar-2015
"In country" Disclosure	
Zambia and Zimbabwe	26-Jun-2014
<i>Comments:</i> The ToRs for the ESIA were subjected to a consultative process with stakeholders in the project area in June 2014, with an emphasis on public participation and specific provisions to ensure that the procedure of data acquisition, analysis and interpretation is conducted in a transparent manner according to accepted international standards and practice. The ToRs were subsequently disclosed through the InfoShop on September 24, 2014.	
Resettlement Action Plan/Framework/Policy Process	
Date of receipt by the Bank	30-Mar-2015
Date of submission to InfoShop	31-Mar-2015
"In country" Disclosure	
Zambia and Zimbabwe	26-Jun-2014
<i>Comments:</i> The ToRs for the ESIA were subjected to a consultative process with stakeholders in the project area in June 2014, with an emphasis on public participation and specific provisions to ensure that the procedure of data acquisition, analysis and interpretation is conducted in a transparent manner according to accepted international standards and practice. The ToRs were subsequently disclosed through the InfoShop on September 24, 2014.	
If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.	
If in-country disclosure of any of the above documents is not expected, please explain why:	
<p>The project is being processed in accordance with OP 10.00 Investment Project Financing Paragraph 12 for Projects in Situations of Urgent Need of Assistance. This provides for the environmental and social requirements set out in the following safeguard policies triggered by the Kariba Dam Rehabilitation Project that are normally applicable to the preparation phase to be deferred to the Project implementation phase: OP/BP 4.01 (Environmental Assessment), OP/BP 4.11 (Physical Cultural Resources), OP/BP 4.12 (Involuntary Resettlement).</p> <p>An Environmental and Social Prospectus has been prepared by ZRA with support from the Technical Advisors. This outlines the broad context and provides the framework within which the ESIA must be undertaken. An ESIA Consultant has been appointed to evaluate the design of the</p>	

Kariba Dam rehabilitation works, undertake the required Environmental and Social Impact Assessment and prepare an integrated Environmental and Social Management Plan, along with associated instruments to ensure the sustainability of project through appropriate preventive, mitigation and monitoring interventions. The ToRs were subjected to a consultative process with stakeholders in the project area in June 2014, with an emphasis on public participation and specific provisions to ensure that the procedure of data acquisition, analysis and interpretation is conducted in a transparent manner according to accepted international standards and practice. The ToRs were subsequently disclosed through the InfoShop on September 24, 2014.

The Environmental and Social Impact Assessment is expected to be completed by March 2015, prior to commencement of any of the associated works. A framework ESMF has already been received and specific provisions have been included in the financing agreement to ensure that no works will commence before the necessary safeguard instruments have been subject to review and approval by the World Bank, disclosed in country and through the World Bank's Infoshop and that the project is implemented in accordance with the Safeguard Instruments.

C. Compliance Monitoring Indicators at the Corporate Level

OP/BP/GP 4.01 - Environment Assessment			
Does the project require a stand-alone EA (including EMP) report?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]
If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input checked="" type="checkbox"/>]
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]
OP/BP 4.11 - Physical Cultural Resources			
Does the EA include adequate measures related to cultural property?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input checked="" type="checkbox"/>]
Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input checked="" type="checkbox"/>]
OP/BP 4.12 - Involuntary Resettlement			
Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input checked="" type="checkbox"/>]
If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input checked="" type="checkbox"/>]
OP/BP 4.37 - Safety of Dams			
Have dam safety plans been prepared?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]
Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]
Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]
OP 7.50 - Projects on International Waterways			
Have the other riparians been notified of the project?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	NA [<input type="checkbox"/>]

If the project falls under one of the exceptions to the notification requirement, has this been cleared with the Legal Department, and the memo to the RVP prepared and sent?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
Has the RVP approved such an exception?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
The World Bank Policy on Disclosure of Information	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]
All Safeguard Policies	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]
Have costs related to safeguard policy measures been included in the project cost?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] NA [<input type="checkbox"/>]

III. APPROVALS

Task Team Leader:	Name: Marcus J. Wishart	
<i>Approved By</i>		
Regional Safeguards Advisor:	Name: Alexandra C. Bezeredi (RSA)	Date: 08-Nov-2014
Practice Manager/Manager:	Name: Alexander E. Bakalian (PMGR)	Date: 14-Nov-2014