LAKE BASIN DEVELOPMENT AUTHORITY

A CONCEPT PAPER ON SONDU MIRIU MULTIPURPOSE DEVELOPMENT PROGRAMME

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## PROJECT SUMMARY

<table>
<thead>
<tr>
<th>Title</th>
<th>Sondu Miriu River Development Programme.</th>
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</thead>
<tbody>
<tr>
<td>Overall Goal</td>
<td>Poverty Alleviation and Job Creation</td>
</tr>
</tbody>
</table>
| Specific Objectives | • Energy for industrial Development  
• Water Supply for domestic and Animals  
• Environmental conservation  
• Irrigation development |
| Expected Outputs | 48 MW is Completed  
4,000 ha required to utilize Phase I Power.  
95 MW additional Hydropower  
Catchment Conservation  
Water supply to Environs  
10,000 ha Irrigated Land |
| Geographical Coverage | Kisii, Nyando and Nyamira districts in Nyanza province. |
| Budget | KSH 28,430,000,000 |
| Implementation period/Schedule | Two Years preparation  
6 Year project implementation  
Two Year project hand over period |
| Source of Financing | GOK  
Donor (Multilaterals) |
| Project Sustainability | Hydropower, Water supply and Agricultural Produce. |
| Key Assumptions | Funds availability  
Participation from the stakeholders  
Good will from GOK and donors |
| Conclusions | Creating employment opportunities in the rural areas;  
Stimulating Rural development in the region.  
Providing adequate and reliable water for domestic, agricultural & industrial use. |
SONDU MIRIU MULTIPURPOSE DEVELOPMENT PROGRAMME

INTRODUCTION

Lake Basin Development Authority (LBDA) as a development agency for regional development within Lake Victoria catchment area of Kenya established through an Act of parliament (Cap 442) is mandated among other functions to develop integrated projects whose prime objective is poverty alleviation for marketing to major development partners and investors. LBDA (See LBDA Map: Figure 1) falls under the Ministry of Regional Development as one of the six Regional Development Authorities. It’s becoming increasingly clear that direct funding from the exchequer for operations within the authority is declining given the current constraints the Government experiences and the changing global trends. Therefore for LBDA to continue discharging its roles, it’s only imperative that it generates its own resources independent of the Ministry or the exchequer for funding. This phenomenon calls for innovativeness and effective resource mobilization that will focus on diversification of resource bases. The vast natural resources within the Lake Basin region must therefore be sustainably exploited for revenue generation and to equally address the high poverty level.

The Lake Basin Region is looked upon as a future Kenya's bread basket when its natural resources will have been utilized to the maximum. The Authority looks upon future possibility of creating sufficient investment as a result of implementing major projects with provision of adequate infrastructure.

The lake region has a resident population of nearly 12 million people. This accounts for approximately 40% of Kenya’s population. According to the 1999 Population and Household Census, the population growth rate in the region averages 2.76% per annum, while population density averages 350 persons per km². This compares with a national annual population growth rate of 2.9% and national population density of 49 persons per km². These estimates indicated that the population was about 15 million, with over 50% comprising the youth but have since more than doubled.

Rapid expansion in population has considerable impacts on the social and economic welfare of the region. Not only does it entail increased provision of basic amenities but it also contributes to increased land pressure, increased dependency, poverty land
degradation and deforestation. These factors have a direct bearing on accentuating poverty and environmental degradation, to mention but a few and which needs to be addressed in line with Government’s strategy of vision 2030.

The highlands of the Basin are extensively exploited with large population, resulting in degradation of catchment and environment of the forest and causing soil erosion; while the lowlands are prone to seasonal flood damages which together with occasional droughts, prevent more extensive agricultural activities in the area. The region is the least electrified in the country without having a single sizeable power plant despite the highest potential of such kind of development. It should therefore, be noted that the key to the development of the region lies in the full exploitation of its hydro-power potentials, flood control, soil conservation, irrigation and improved agricultural development.

The projects geographical coverage includes Nyando, Kisumu, Rachuonyo and Nyamira Districts in Nyanza Province. The total expected out put will be 95 MW of additional hydropower.

Based on the aforementioned, the Authority has developed Sondu Multipurpose Irrigation Development Programme proposal that is integrated and developed with a strategy that focuses on increased production, sustainable growth and development and is now seeking for funding to review the feasibility studies and to implement the proposal in full.

CURRENT STATUS

The Hydropower and Irrigation projects were studied to the full feasibility level.

Already Sondu Miriu Hydropower Project is completed partly, since the construction is over but the irrigation component for Nyakach and Kano Plains of 4,000 ha is yet to be constructed and implemented. The feasibility study will require review before subsequent implementation.

The JICA Study, carried out by Nippon Koei and completed in December 1985, focused exclusively on power development of Sondu River and utilizing Sondu waters for irrigation in the Nyakach and Kano Plains. The recommendation consists of a run-of-river diversion scheme at Miriu to be followed in the second phase, by a regulating reservoir at Magwagwa.
The feasibility Study further recommended that the project be implemented in two stages.

**Stage I:**

i) Sondu-Miriu run-of-river hydropower project to produce 60 MW  
   This component has already been completed and is operational as the power is already connected the national grid.

ii) Nyakach and Kano Plains Irrigation Project utilizing the Sondu river water to irrigate 4,000 ha.  
   This component requires funds for review before its implementation and is expected to change the lives of the rural poor.

**Stage II:**

i) Magwagwa Storage Dam and Hydropower Project to produce 94.6 MW and irrigate a further 10,000 ha on the right bank of Nyando river.  
   This component will equally require funds for review and subsequent implementation.

The design of the Sondu/Miriu run-of river project was made with a premise that the Magwagwa Project will be implemented.

The above two studies, particularly their recommendations for power development on Sondu river were reviewed in mid 1986 by Acres International Limited, as part of the World Bank funded study on Kenya’s National Power Development Plan. Acres International Review suggests that selecting the best components of the above two studies could result in an attractive element in the National Power Development Plan.

The review will have to be done again before implementation work can begin.

**OBJECTIVE**

The objective of Hydropower generation and irrigation intervention includes:

- Reducing the poverty level of the communities within the region through introduction of energy for industrial development and irrigating the land for increased production.
- Reducing the current sustainable energy deficit in the country.
- Utilization of marginal lands that would otherwise remain uncultivated.
- Water supply for domestic and animals
- Environmental conservation
Of the seven rivers in the region, Sondu River has the highest potential for hydropower generation with favourable condition for both rainfed and irrigated agriculture within its basin. A Master Plan and specific objective studies carried out in the past have identified the Sondu River as having a positive potential for both hydro-power and irrigation Development.

THE IMPLEMENTATION PLAN
The implementation plan is expected to be undertaken in three phases.

The first phase:
This phase will be undertaken within a period of 2 years and to involve project preparation which shall include review and feasibility study comprising of detailed project designs.

The second phase:
The second phase will take a total of 6 years and is expected to involve the full implementation of the project. The hydropower generation will be complete and fully connected to the national grid. The irrigation project component will be operational including Environment conservation and management.

The third phase:
The third phase will involve handing over of the project to take a total of 2 years. The project will be handed over to the implementing body and the relevant community being focused.

BUDGET
The projects total budget requirement is Kshs. **28,430,000,000** to be used as outlined below:
## Phase I (Sondu Miriu)

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation of the Project to tender</td>
<td>50,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Hydro power Development</td>
<td>Done</td>
</tr>
<tr>
<td>3</td>
<td>Irrigation Development</td>
<td>2,500,000,000</td>
</tr>
<tr>
<td>4</td>
<td>Water Supply</td>
<td>1,500,000,000</td>
</tr>
<tr>
<td>5</td>
<td>Catchment Conservation</td>
<td>1,000,000,000</td>
</tr>
<tr>
<td>6</td>
<td>Sub Total</td>
<td>5,550,000,000</td>
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<tr>
<td>7</td>
<td>Contingency @ 10%</td>
<td>555,000,000</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>5,615,000,000</strong></td>
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## Phase II (Magwagwa Hydropower)

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>1</td>
<td>Preparation of the Project to tender</td>
<td>250,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Hydro power Development</td>
<td>13,000,000,000</td>
</tr>
<tr>
<td>3</td>
<td>Irrigation Development</td>
<td>5,000,000,000</td>
</tr>
<tr>
<td>4</td>
<td>Water Supply</td>
<td>1,500,000,000</td>
</tr>
<tr>
<td>5</td>
<td>Catchment Conservation</td>
<td>1,000,000,000</td>
</tr>
<tr>
<td>6</td>
<td>Sub Total</td>
<td>20,500,000,000</td>
</tr>
<tr>
<td>7</td>
<td>Contingency @ 10%</td>
<td>2,075,000,000</td>
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<td></td>
<td><strong>Total</strong></td>
<td><strong>22,825,000,000</strong></td>
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**GRAND TOTAL:** 28,430,000,000

The project funding will be sourced from multilateral donors and GOK
JUSTIFICATION

The building of the Magwagwa dam upstream of the Sondu River is a very important part of the Sondu/Miriu multipurpose Development in the optimal development of the Sondu River. It will significantly contribute in increasing the project output of the Phase I of the hydropower generation which is already achieved.

The increase is due to the planned installation of additional generating capacity of 94.6 MW, associated with the Magwagwa dam in the upstream of the Sondu river thereby regulating the flow of water from the Magwagwa reservoir.

In Agriculture, production is highly variable given the erratic rainfall. Further annual production falls short of domestic demand for food commodities such as – rice, sugar, maize, wheat and vegetable oil. However, the value of these basic imported food commodities is small compared with that of other imports while their consumption requirement is high.

The cultivatable land area in the Lake Victoria basin region is estimated at 1.3 million hectares while the irrigable potential is about 200,000 ha. Crop production in the region is dependent on natural rainfall. Unfortunately the region suffers from unreliable rains and floods, which alternate unpredictably resulting in loss of crop.

The Project aims at extension of stabilized irrigated agriculture through the exploitation of a large scale year round irrigation system. The execution applied to the proposed project would take into account project scale, and development stage of water resources.

It would be in three stages:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Availability of Water Resources</th>
<th>Hectarage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>With Sondu Miriu Project</td>
<td>2,380</td>
</tr>
<tr>
<td>II</td>
<td>With Sondu Miriu and Magwagwa</td>
<td>4,880</td>
</tr>
<tr>
<td>III</td>
<td>Ditto</td>
<td>7,670</td>
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<tr>
<td>Total</td>
<td></td>
<td>14,930</td>
</tr>
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OUTPUT
The Sondu Miriu Multipurpose Project Programme would bring the following benefits:-

1. Establishment of agro-based industries i.e. cottage industries for value addition (Oil crops-Sunflower, cotton, soybeans,)
2. Contribution of self-sufficiencies of food crops i.e. 15,000 ha under crop production annually.
3. Saving on foreign exchange through self sufficiency in power generation
4. Saving on foreign exchange through reduction of importation of maize, rice, cotton, etc
5. Creation of employment opportunity through introduction of irrigated agriculture of up to 1000 jobs
6. Environmental Conservation undertaken
7. Activation of regional economy and contribution of regional economic growth
8. Improvement of domestic water supply of quality to the environs
9. Contribute to social dimension development programmes in the project area.

CONCLUSIONS
The Lake Basin Development Authority is best suited to undertake the implementation of the Sondu Miriu Multipurpose Project as its mandate covers the development of both hydropower and irrigation within the Lake Basin Region. The Authority is also mandated to undertake the development of both the social and economic life of the region of which it is best placed. The Authority would therefore, like to emphasize that the hydropower component of the Project be transferred back to the LBDA and funds be sought to implement the same as soon as possible in order to accelerate the realization of the benefits outlined above.