AFR TZA/S 101/76

NATURAL SODA DEVELOPMENT IN LAKE NATRON AND RELATED TRANSPORTATION INDUSTRIES

FOLLOW-UP REPORT 1995

Project data

Region:	Africa
Country:	United Republic of Tanzania
Sector / Subsector:	Transportation / General
Code No:	AFR TZA/S 101/76
Type:	Master Plan
Counterpart Agency:	Ministry of Water Resources & Energy. (now Ministry of Water, Energy and Minerals).
Fiscal Year Completed:	1976
Consultants:	International Development Centre of Japan
Expenditure:	88,439 (¥,000)
Present Status:	Discontinued

Project site map / location

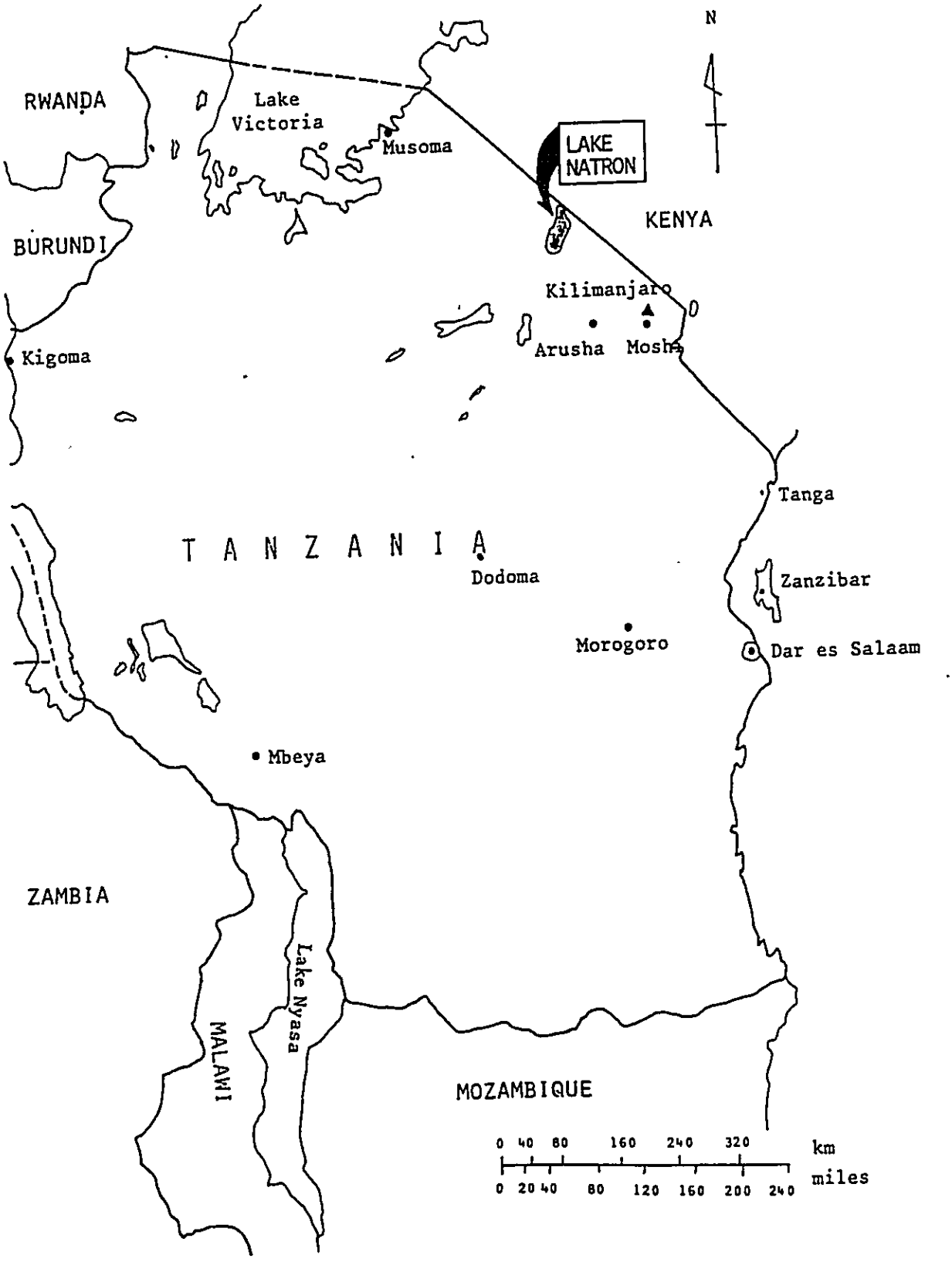

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Table of Contents

1 Executive Summary

Summary of survey results

The pre-feasibility study report on Natural Soda Development in Lake Natron and Related Transportation Facilities has not been reviewed by the Government of Tanzania since 1976-1977.

The economic basis of the scheme is not considered to be viable primarily because:

- the chemical quality of the soda ssh (Na_2CO_3), which contains around 1% of unwanted sodium fluoride (NaF) which is expensive to extract from the soda ash;
- The market price for soda ash has not increased to a point where the scheme has attracted the attention of the public or private sectors.

Conclusions

The negative environmental impact of mining in Lake Natron is a significant hindrance to the economic viability of any large scheme. The lake is an important resource for the lesser flamingo *Phoenicopterus minor* and palearctic migrants. The economic value of this wildlife resource to Tanzania's gross domestic product in the short term requires evaluation.

The concept of soda ash mining at Lake Natron will only bear further study if the world soda ash price increases significantly, the scale of operation will be necessarily large to bear the cost of infrastructural development, and the environmental impact will be severe and irreversible.

Recommendations for JICA

The most recent activity in the area was funded and carried out by French Co-operation and the African Development Bank in 1991. Their conclusions were the same as those drawn from the 1976 JICA report. Chemical analyses, economic feasibility studies, and mining technology studies all report that soda ash mining at Lake Natron is not economically viable. It is safe to conclude that if further developments are to be taken, they should be made by

the private sector working under the Government of Tanzania and be subject to clearance from the Department of the Environment in the Office of the Prime Minister. This is in line with the new Mineral Policy where paricipation of the private sector is emphasised.

To enhance legal protection and long-term appropriate management of Lake Natron, JICA may consider promoting formal international protection for the lake under the Ramsar treaty. While Lake Magadi is currently being mined, with disastrous environmental consequences, the protection of Lake Natron would complement the protection of Lake Naivasha and Lake Nakuru in Kenya.

Dissemination and following action

In addition to the JICA UK Office, it is anticipated that this report will be distributed among the relevant authorities involved in the project: The Ministry of Water, Energy and Minerals., The Ministry of Natural Resources and Tourism, and Tanzania National Parks., and the National Chemical Industries Co.

2 Results of survey: Project Design

Identification and outline of project rationale

The project was identified by the Government of Tanzania who requested that the Government of Japan fund the survey. The principal rationale was to increase national foreign exchange earnings through the export of one million tons of soda ash per year. The scheme would involve creating significant infrastructural developments in a poor region of Tanzania, and boost levels of employment in the region.

Short description of project

The JICA project outlined a number of techniques for mining the soda ash crust from the lake, by dredger, cut and pull, and by draining sections of the lake. The purification process was to be performed in a factory on site at Lake Natron; the plant would comprise conveyors, crushers, sieves and screens, washers, centrifuges, cyclones, scrubbers and calcifiers, coolers and storage hoppers for the purified soda ash.

The project would have required an upgraded road link to the rail head in Arusha (120km) and would have consumed very significant quantities of water and electricity. The plant would have to be constructed to operate in temperatures which reach 66°C.

Funding

The estimated cost of the plant in 1976 was US$208 million. The estimated cost of road, rail and port developments is unknown.

Review of project design

The JICA study predicted problems in economic viability and highlighted the risks to public health through the production of fluoride. However, no significant attention was paid to environmental considerations. The logistics of working in air temperatures of up to 66°C was not covered.

3 Results of survey: Conclusions

General comments on development

To date there have been no significant developments other than the STAMICO proposal and the French Co-operation study with the ADB. The JICA survey fills a specific role in serving as the basis for following studies, and it can be seen to be a necessary step in exploring and surveying the natural resource base of Tanzania.

Specific comments on JICA's role

JICA produced the keystone study. The survey team worked with counterpart personnel from the then Ministry of Water Resources and Energy, the training received during the survey was welcomed.

Requests for further surveys

No requests were made for additional surveys of direct relevance to natural soda ash mining at Lake Natron. A recent Environmental Impact Assessment study of soda ash mining at Lake Natron was undertaken by the National Chemical Industries, however, that report is currently unavailable.

Annex A: Interview

Interview notes from Mr Nyelo, Assistant Commissioner of Directorate of Mineral Resources, Ministry of Water Resources, Energy, and Minerals.

Note: Questions given in Italics

Were there any more studies following the JICA survey?
There were some recent studies by STAMICO, a private-sector corporation. But no public reports came out of those studies.
At present there aren't any plans to develop the scheme.

What if a proposal to develop the mine was made?
If a private company showed interest in prospecting and exploration in the area, the government would allow it.
If a private company showed interest in investing in development, the government would promote the idea.
If the scheme was put out to private tender, the contractors would still have to fulfil development regulations, such as performing a comprehensive Feasibility Study and Environmental Impact Assessment (EIA) for scrutiny before issuance of a mining licence.

What did the JICA report achieve on a technical level?
The problems included the high level of sodium fluoride in the soda ash, extracting this fluoride made production costs very high. These costs may have changed now with different extraction techniques and a market for both products.
The JICA study was also used in a local PhD study.

Annex B: Terms of reference and purpose of survey

Terms of Reference

- The JICA UK Office has requested the consultants to prepare of an independent follow-up survey in Tanzania.

- It is proposed that the work be a carried out between Thursday 9th November and Friday 22nd December, 1995.

- The survey will comprise a broad evaluation and current appraisal of thirteen (13) Master Plans, Feasibility Studies, and Basic Studies in comparison to the present and future status of the individual projects or studies.

- The scope of work will cover:
  - a) Study on Water Resources Development in the Ruvu River Basin
  - b) Study on Dar es Salaam Road Development Plan
  - c) Natural Soda Development in Lake Natron and Related Transportation Facilities
  - d) Kilimanjaro Region Integrated Development Plan
  - e) Southern Coast Link Road Project
  - f) Proposed Mahale Mountains National Park
  - g) Lower Moshi Agricultural Development Project
  - h) Mkomazi Valley Area Irrigation Development Project
  - i) Expanded Afforestation Work in the Same District of Kilimanjaro Region
  - j) Road Improvement and Maintenance in Dar es Salaam
  - k) Lower Hai and Lower Rombo Agricultural Development Project
  - l) Rehabilitation of Dar es Salaam Water Supply
  - m) Topographic Mapping of Mwanza-Geita Block in the United Republic of Tanzania

- If possible, the survey will cover recent and relevant developments in the context of each project or study.

- Where appropriate, the reports will comprise questionnaires, interviews and highlight following actions for JICA and/or the Government of Tanzania.

- The reports will contain a detailed itinerary, records of interviews made and sources of information.

- The quantity and quality of information contained in the reports will reflect the availability and accessibility of information in Tanzania.

- The reports will be prepared in draft form and presented to the relevant implementing Ministries for comments before leaving Tanzania.

- Final report texts and layouts will be completed by Friday 22nd December, 1995.

Purpose of survey

This report comprises a descriptive assessment of the progress of the project against the objectives of the project as described in the original study. The purpose of the survey is to:

1. Describe project achievements to date by their:
   A. Impacts
   B. Effectiveness
   C. Relevance
   D. Efficiency
   E. Sustainability

2. If required, produce specific and general recommendations to improve the performance of this and other similar projects

3. Further communication between funding agencies, design consultancies, implementing agencies and project beneficiaries

Annex C: Methodology and Chronological Itinerary

Methodology

As far as possible, the survey was performed by a structured process:

- Identify the authorities involved
- Identify and locate key informants within the authorities
- Locate adequate documentation and reportage
- Define aims of project
- Conduct interviews on specific and general issues
- Define indicators of achievement and/or progress
- Visit the site
- Analyse the collected data
- Prepare draft report
- Discuss the draft report with key informants
- Edit and prepare final report text

Chronological Itinerary

Tuesday, November 14th
Meeting with Ministry of Water, Energy and Minerals:
Mr Nyelo, Acting Commissioner for Mineral Resources

Annex D: References & reports used in survey

JICA (1976) Pre-Feasibility Study Report on Natural Soda Development in Lake Natron and Related Transport Facilities, Part II. August 1976