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**INDUSTRIAL ENVIRONMENTAL REVIEWS AND  
ENVIRONMENTAL LIABILITY CONSIDERATIONS  
FOR PRIVATIZATION - ZAMBIA AS A CASE STUDY**

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November 1, 1993

**Executive Summary**

Although Zambia has neither existing environmental standards nor records of current or historic site use, USAID/Zambia and its consultants have been able to determine a cost-effective and responsive mechanism for environmental review of parastatals to be privatized. Details on the new methodology and how USAID arrived at this outcome follow in the main text. In this process it was determined that environmental liability estimation methodologies appropriate for developed countries must be drastically modified to meet Third World information, cultural, and logistical conditions.

Process flow diagrams incorporated in the environmental review reports will enable new owners to more easily consider lower or non-polluting production methods as they recapitalize to bring the new companies up to speed. The clean-up recommendations resulting from reviews of the Tranche Two parastatals are proving useful in determining overall low-cost clean-up options for Zambian industry.

This approach will ensure source reduction and waste minimization by reducing "end-of-the-pipe" solutions, hence reducing the environmental liability.

**Background**

The Zambia Privatization Agency (ZPA) was formed in mid-1992 based on the Privatization Act passed at that time. ZPA is responsible for the privatization of the approximately 160 state-owned enterprises (SOEs) which represent over 80% of Zambia's formal sector economic activity. Privatization over the next five to seven years is a key requirement of Zambia's structural adjustment program. The companies to be divested range from very small firms (such as travel agencies and dry cleaners) to the country's copper mining firm, Zambia Consolidated Copper Mines.

Privatization is expected to be completed in 11 tranches, as laid out in the divestiture sequence plan. Under Tranche One nineteen

small SOEs are in some stage of negotiations, and of these six have been sold. The tranche is expected to be completed by the end of October 1993; none of the Tranche One companies has significant actual or potential pollution risks.

Four of the 32 Second Tranche parastatals -- the national sugar company, the brewery, a major metal fabricator and a major cement producer -- are in negotiations for sale to minority shareholders with pre-emptive rights. Many of these Second Tranche firms are technically complex from an environmental standpoint, and some have existing or potential pollution problems.

As environmental issues commonly come up in sales of parastatal companies worldwide, the Government of the Republic of Zambia (GRZ) and USAID commenced addressing this issue by considering the need for estimates of environmental liability. It was anticipated that the small firms in the First Tranche would have low levels of pollution risk. Therefore, focus has been directed to the second and subsequent tranches.

The environmental liability concept provides a vehicle to demonstrate the cost of correcting environmental problems. The studies provide estimates of the amounts of polluted materials or types of environmental problems on sites. The buyer or seller in a company transaction then can compare the findings to existing environmental standards to determine if remediation is required. Using the remediation cost rates applicable at the time of sale, the costs of required cleanups can be estimated. This cost can be used to adjust the sale price of the enterprise.

Environmental reviews done for divestiture have multiple uses and provide information to the buyers, sellers, lenders, insurers, and facility managers. The scope of reviews will, however, vary depending on the objectives, type of industry, existing local regulations and environmental concerns, and number of sites involved in a particular industry group. Such reviews provide a risk management tool, especially for potential foreign buyers.

Zambia enacted legislation in June, 1990 entitled "The Environmental Protection and Pollution Control Act, 1990" and created an independent monitoring body called the Environmental Inspectorate to control pollution. However, there are currently few, if any, pollution standards, no labs in Zambia or neighboring countries capable of testing for pollutants, and little funding for the Inspectorate (now known as the National Environmental Council). However, there is financial and technical support from both the World Bank and UNDP to establish a National Environmental Action Plan/ The promulgation of environmental standards has commenced.

The Director of the ZPA has stated that the costs of cleanup for parastatals being sold, if any, will be a contingent liability of any buyer, and not the burden of the State. This adds to the

importance of reviews of the existing circumstances in Zambian parastatals before sale, so both buyers and the government understand the situation at point of transfer of ownership, and are prepared for any potential costs.

### USAID Project Involvement

USAID is providing a grant of \$18,000,000 to assist the GRZ in the privatization of a projected 50 of 160 parastatals to be privatized over the next five to seven years. The project provides long- and short-term technical assistance to enable the ZPA to complete preparatory work, tender and evaluate bids, and negotiate sales of parastatal companies. The project was obligated on September 28, 1992 with a planned completion date of September 30, 1997.

As part of the project development process, an environmental analysis under the USAID environmental procedures (22CFR 216) was undertaken in September 1992. An initial environmental examination (IEE) gave the project a negative determination, meaning that no activities with major adverse environmental impact were expected under the project. However, the IEE required a series of environmental evaluations of parastatals prior to their sale, in order to assist the GRZ to deal with current or potential pollution problems.

The environmental evaluations were to be undertaken as assessments of potential environmental liability. The levels and extent of pollution (if any) on company premises and surrounding areas were to be assessed and compared to background levels, to determine the quantitative difference between the existing contamination levels and the required clean-up standards. The results of these studies would define clean-up required (if any). The GRZ or the buyer could then agree on who should perform any cleanup of the site(s) and/or surrounding areas, or modify the production process as needed.

### Preliminary Environmental Review Process

Environmental liability estimates for the purpose of property transfer were expected to be conducted for most firms when USAID commenced work. Site and company priorities were set by the divestiture tranches list. To facilitate the process, an environmental questionnaire was distributed to the management of each state-owned enterprise (SOE) by ZPA. Approximately 100 firms received this form, and 65 were returned, of which less than 15 were complete. Information gathered in this questionnaire was made available to the consulting team before the start of the field work.

In order to accomplish the purpose of environmental reviews, the original scope of work was divided into three tasks:

**Task 1: Initial Desk Study** - a review of the available records and information on each company. This included the questionnaire which was returned by the enterprise managers. From this study, it was expected that the companies could be split into those needing a Task 2 review, and those which could be considered "clean". Clean enterprises are those which do not require any environmental evaluation prior to sale, and are believed to have virtually no environmental liability. All others would proceed to Task 2.

**Task 2: Site Visits and Reviews** - a visit to the site, personal interviews with relevant staff/managers, on-site and off-site reconnaissance, documentation and report preparation. In this process, some companies would be found to have pollution problems indicating that a more detailed study was necessary. These companies would have further work completed on them under Task 3.

**Task 3: Scope of Follow-up Work** - development of scope of work for follow-up detailed environmental reviews, where needed.

A team of environmental assessors consisting of highly-experienced environmental assessors with some developing country experience or understanding was found to be most appropriate for the work to be undertaken. Environmental liability reviews require a very specific set of "brown" technical skills.

### Problems Encountered in Preliminary Review of Parastatals

The consulting team reviewed available materials from ministries about the sites, held discussions with the National Environmental Council and ZPA, interviewed relevant public and private sector officials, and attempted to visit some key sites. After the consultants had processed the available information on the parastatal environmental situation, detailed discussions were held on their progress. Key problems were raised which indicated the need for an alternative approach to that detailed in the original scope of work as defined above. It was proving infeasible to perform environmental liability estimates for the purpose of property transfer, or even to define "clean" and "dirty" companies, due to:

- 1. Lack of data:** There is a serious dearth of written information on production sites - stages of construction, production flow diagrams, site use, change of ownership/use, development/use of surrounding areas, and service inflows/outflows/changes (e.g. sewage or water services.) Government and facility records were said to exist but were found to be non-existent, which made the records search component a difficult task. There is also a lack of understanding in most companies about pollution issues, which has manifested itself in lack of company - held documentation or knowledge. Finally, there is no known licensing or environmental permits system.

**2. Need for more professional time:** In the USA, Phase One industry estimations of environmental assessments for the purpose of property transfer (reviews of areas of environmental concern, including documentation reviews and site visits but without sampling or testing) are made on the basis of approximately 40-45 hours of professional time. However, the circumstances in Zambia require a level of effort of approximately 60-65 hours per site. Visits to many offices are required to dig out background information. Sites are difficult to reach, and communications poor. Sites also have multiple uses, thus requiring more time and analysis. Finally, other cultural and physical constraints were encountered which required extension of the work schedule as well as the budget for this activity.

**3. Ballooning of number of physical sites:** The number of sites per company, previously undocumented by ZPA and assumed by them to be one per company, was determined after further investigation to be approximately six per company. The potential locations to be assessed thus increased to over 700. This number does not include larger companies which are certain to have some environmental issues needing further study, such as the utilities, the mines, the collieries, the airline, and the railroad company. Given this situation, if sites of all companies to be privatized were environmentally assessed, the cost and timing of such a process would be prohibitively expensive.

**4. Lack of standards:** There are currently no environmental standards established for groundwater, soil, or air contaminants (including noise) in Zambia, nor are there occupational health and safety standards. Under these circumstances, estimation of potential environmental liability is problematic. If there are no standards, companies cannot determine if there will be any need for remediation, and therefore it is unknown if/how much a clean-up might cost.

#### **Revised Approach - Reviewing Areas of Environmental Concern**

The above findings suggested the need for a more pragmatic approach. The first major decision made was not to allow any on-site testing. The rationale for this was that testing would be very costly, take a great deal of time, and ultimately not be useful under circumstances where standards had not been set. The preliminary evidence also suggested that it was very unlikely that hazardous waste was a problem, given the production processes for the Tranche Two firms. Therefore, risks are minimal in delaying testing until Zambian pollution standards are promulgated.

The cost of reviewing all companies even at the walk-through level was prohibitive, and many firms would not have sufficient actual or potential environmental problems to justify the expenditure on such a review. Therefore, USAID Zambia needed to determine how to

realistically separate out companies with no or low risk of pollution from those which needed a closer look. In the absence of records which could assist in this process, a more arbitrary approach needed to be determined.

USAID Zambia decided to concern itself with environmental liabilities if it could be assumed from the nature of the firm (ZCCM, for instance) that there might be an environmental problem. If there was no a priori reason to be concerned, environmental reviews were less likely to result in environmental issues which needed to be addressed. Thus, in lieu of environmental liability estimates for property transfers, USAID consultants undertook an industrial environmental review process to outline the areas of environmental concern. The second tranche of 32 companies was reviewed, and all firms selected which were considered to have high potential environmental risk. These thirteen firms had twenty production sites.

The following approach has been effective:

1. Companies are divided into the following two categories, based on company information on file at ZPA:

- a) higher potential risk: chemical companies, manufacturing, extraction, construction, high-waste processing (including but not limited to tanneries and abattoirs,) and transportation sector parastatals.
- b) lower potential risk: maize and other grinding mills, trading, hotels, tourism, farms and agricultural production, retail stores, financial sector, low-waste processing.

2. For the lower potential risk companies, environmental liability assessments will not be undertaken, and these companies will not be visited. In lieu of a review, the consultants have provided a general statement of potential areas for concern at all sites, which ZPA includes in its confidential memorandum to be distributed to bidders before sale.

3. Higher potential risk companies are reviewed according to their position on the divestiture sequence plan. Only production sites are assessed under the high potential risk group. Company professional offices or distribution points are not assessed unless there is substantive reason to believe that environmental risks may exist (eg in chemical depots.)

4. The actual review process consists of a records search, site visits, and documentation of findings. A records search is undertaken in a number of relevant ministries and other agencies. Topographical, geological and other information is gathered in order to understand and document the environmental setting.

At the site, consultants look for evidence of any visible contamination in the buildings, plants, open land, oils, water and air. A photographic log is taken as evidence of existing conditions and areas of environmental concern. Land use, site history and other available and relevant information required for environmental evaluation purposes is gathered. Any releases of hazardous substances based on records of local authorities and the enterprise's maintenance department are also documented.

The processes that may impact the environment, and the site waste management practices, are reviewed in some detail in order to identify areas of environmental concern and to lay out process flow diagrams. The diagrams give details of material inflows and outflows, so potential sources of pollution may be identified.

The environmental reviews also included brief examinations of the process controls, equipment types and monitoring to ensure waste minimization, good housekeeping and increased plant efficiency practices are incorporated into the plant/facility operational criteria.

In addition, a reconnaissance of the area within one kilometer radius of the site is conducted, in order to document other businesses, shops, utilities, gas stations, transformers, and other entities which might have an impact on the environmental liability of the enterprise site. In these off-site checks, consultants are mainly looking for existing or potential contaminant migration from these sites to the site under evaluation.

### Results of the Reviews: Report Layout

Assessment reports contain the following major sections:

1. Scope of work
2. Methodology and Findings, which include:
  - a) Ministry record reviews and interviews with the South African Development Communities Coalition (environmental section), Ministry of Labor and Social Security, National Environmental Council, National Council for Scientific Research, World Bank natural resources economist, and the Survey Department;
  - b) review of aerial maps;
  - c) details of site visits;
  - d) facility records;
  - e) personal interviews;

- f) environmental setting - topography, geology, and hydrogeology;
- g) field reconnaissance results - utilities (electricity, water supply, sewer, stormwater control), structures, environmental effects/observations (chemicals, petroleums, and process materials, process waste streams, air emissions, pesticide/herbicide use, potentially hazardous material, waste disposal, underground/above-ground storage tanks, releases/spill controls); and
- g) conclusions and recommendations.

3. Annexes include:

- a) References list;
- b) figures, including a site plan and location map;
- c) a copy of the ZPA questionnaire, where supplied;
- d) a copy of completed environmental assessment checklist and field notes for the site;
- e) photographic documentation of the site;
- f) process flow diagram; and
- g) facility records documentation.

The 19 reports completed to date were reviewed in draft form by the USAID Regional Environmental Advisor (REA) for technical and organizational content. ZPA is forwarding one copy of each report to the management of the subject parastatal firm. Another copy will be sent to the National Environmental Council for their information after the relevant firm has been divested.

There is evidence that the buyers are considering environmental factors already. Four Tranche Two companies are in negotiations with minority owners, and of these, one has already committed in writing to follow the recommendations of the environmental review report for that parastatal.

**Results of the Reviews: General Findings**

Based on the findings of the environmental reviews, areas of environmental concern were generally as follows:

1. Diesel and petrol fuel and acids have been spilled at various locations around some facility sites. As a result surface soil, subsurface soil and groundwater conditions beneath the areas may have been adversely affected.

2. Wastewater collected in some facility stormwater collection drains contains oils and lubricants, and is acidic. Although generally wastewater goes through a filtration and/or neutralization process, the processes currently in use seem ineffective and as a result, the waste streams may potentially adversely affect offsite soil, surface water, and groundwater quality.
3. In many cases, there was evidence of leakage from both above-ground and underground storage tanks. The integrity of the storage tanks is unknown and inadequately monitored to protect the environment against possible existing or future leaks that could adversely affect soil and groundwater conditions.
4. Transformer oils at some facilities may potentially contain polychlorinated biphenyls (PCBs.) No testing for PCBs has been performed.
5. Roofing materials containing asbestos have been used at many facilities. Asbestos is a known human carcinogenic.
6. Some facilities lack environmental safety and procedures plans detailing storage, handling, cleanup, and disposal procedures for the facility, especially pertaining to the underground and aboveground storage tanks.
7. Based on the field reconnaissance of the areas surrounding facilities, generally no neighboring industries were identified by factory personnel which may potentially adversely affect the environmental conditions at the facilities.

Based on the identification of the areas of concern, the following recommendations were made:

1. Investigate soil and groundwater quality at the aboveground and underground storage tank areas and any burning stations. This investigation should include collection of soil and groundwater samples to assess the level of possible adverse effects.
2. Install additional hydrocarbon interceptors where hydrocarbons are entering storm drain systems.
3. Install adequate monitoring devices and a monitoring program such as secondary containment or vapor detection devices at underground storage tank areas and at all above-ground tanks to prevent adverse effects from possible future releases.
4. Analyze oils from facility transformers for polychlorinated biphenyls (PCBs.)

5. Conduct an asbestos survey and implement an asbestos abatement plan at relevant facilities. Storage of drums containing asbestos should be secured.
6. Develop and implement an environmental safety and procedures plan detailing storage, handling, monitoring, cleanup, and disposal procedures for the facility, especially concerning acid, oxidizers, and hydrocarbons.
7. Maintain inventory and waste disposal records specifically listing the types and quantities of chemicals, oils, fuels, and materials brought on-site and the types and quantities of materials recycled or disposed of and their disposal locations. This "cradle-to-grave" tracking of materials should be incorporated into the environmental safety and procedures program.
8. Locate all facility septic tanks and implement an environmentally sound septic tank maintenance program.
9. Monitor any neutralization plant effluent regularly to ascertain that chemicals harmful to the environment are not being released.
10. Construct adequate secondary containment structures for all of its aboveground tanks containing hazardous liquid materials.
11. Pay immediate attention to repair of tanks and transport lines containing acid or hydrocarbon materials to mitigate effects on soil or surface water conditions.
12. Conduct environmental assessments of the buildings or areas not covered by these reports due to operational or scheduling constraints.

#### Future Reviews - Need and Funding

Current estimates indicate a cost of \$3.5 million for review of the high potential risk sites alone (approximately 140 firms.) This excludes the larger, more environmentally complex firms of Zambia Consolidated Copper Mines and its subsidiary group MEMACO, PTC (posts and telecom), the coal mine, the oil refinery/pipeline/distribution companies, ZESCO (electricity), the railroad, and the airline. All of the latter firms will require more extensive environmental reviews than the proposed methodology covers.

Funding for the smaller companies will come from USAID until project funds are exhausted, and then from other donors. Financing has already been sought by USAID from collaborating donors under the privatization program, and preliminary commitments given from GTZ (German technical assistance), NORAD (Norwegian technical assistance), and the World Bank. It is anticipated that the larger

firms will be analyzed from existing World Bank or direct bilateral funding targeted to those parastatals, but this has not yet been confirmed.

Details of the development of the methodology, a confidential copy of a representative report, and a letter giving blanket recommendations for low-cost remediation of minor problems has been supplied to all donors currently supporting the privatization process in Zambia.

## Conclusions

Some of the lessons learned from the environmental review process of companies to be privatized in Zambia are summarized below:

1. Environmental reviews of this nature provide a vehicle for action to correct environmental problems rapidly, by providing information and suggested action, even in cases where there are few or no pollution standards.
2. Environmental reviews of existing parastatals provide a means of bringing environmental issues to the national agenda and help in development of National Environmental Action Plans.
3. Non-existence of environmental regulations and standards and lack of analytical testing facilities should not be an excuse to delay the environmental reviews. Rather, countries can use these reports to help trigger the development of such capabilities.
4. It may take a great deal of time to obtain any information on the historic use of the site from ministries and other organizations. This information, if found at all, may only be part of what is commonly available in the US and in Europe.
5. Facility records may be non-existent, which will make the records search component of the work a difficult task and delay report completion.
6. To facilitate the process, distribution of an advance environmental data questionnaire to the enterprises can provide useful information and save time in the execution of the work. However, it should not be relied upon as the main source of information, especially in cases of companies with high potential environmental risk.
7. It is critical to determine a financially sound and environmentally responsible mechanism for deciding which sites should be visited.
8. Parastatal enterprises may have multiple sites and each site may have multiple activities. Thus, environmental evaluations may take longer than anticipated at first.
9. Cultural (eg hesitance to share confrontational materials) and physical constraints may be encountered during the course of actual work which can force changes in the work schedule as well as the project budget.
10. Early feedback of the results of the review to managers, privatization experts, potential buyers, and environmental agencies can result in implementation of suggested improvements and allaying of fears of high-cost remediation.

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November 1, 1993