

12. Tanzania: Study of Past Investments

I. Background

In 1986, Tanzania embarked on the Economic Recovery Programme (ERP), which was supported by the World Bank and the IMF. The ERP focused on trade reforms on export-oriented industries, liberalisation of agricultural marketing and economic liberalisation through promoting the role of the private sector in the economy.

Through an ambitious privatisation programme 222 companies, out of 401 earmarked, had been privatised by the end of 1998. In late October 1999, the government announced further measures to strengthen the development of the private sector.

The liberalisation programme is also supported by a US\$25 million loan from the World Bank to strengthen the capital markets and to create a privatisation trust unit. The Trust will control the government's remaining stake in divested companies and will also enable the general public to participate in divestitures of parastatals.

The recent announcement of Tanzania being admitted into the World Bank/IMF's Heavily Indebted Poor Countries (HIPC) initiative is also expected to free up resources, which is expected to be channelled to priority sectors and infrastructure projects.

Most of the enterprises in this survey, with the exception of a few, were started prior to the ERP when the concepts of globalisation, liberalisation, cleaner production and even export oriented industrialisation were new or unheard of. It is in the context of this that pollution abatement/minimisation and energy efficiency of the past investments must be examined.

This study of past CP investments focusses mainly on the textile, tannery and food processing (in particular fish processing) sectors. The inclusion of 'other industries' is to broaden the coverage of business activity for this study, whilst acknowledging the decline of the leather and textile industries.

The Tanzanian tanning industry is not highly developed, as only a few leather projects currently exist. The industry is thought to employ about 900 workers. Out of the four existing tannery companies in Tanzania, only two are in operation. This is partly due to the disruption of recent privatisation. For this reason, only one tannery agreed to participate in this survey. The sector is therefore poorly represented.

The textile industry in Tanzania has been in decline in recent years, with production of fabrics generally decreasing since the late-1980s. The industry is made up of ten mills, with most either not in operation or running below full capacity. Many of the mills, which were under public control, are currently undergoing privatisation. Most of mills producing knitted fabrics have been closed due to competition from the importation of used clothes. Bearing this in mind, three out of six textile mills responded.

Tanzania has nine fish processing companies, all of which are located in Lake Victoria, the largest lake in Africa. Almost all the output of the fish processing industry is exported, which equalled 25,721 million tonnes of fish fillets in 1998. The industry has been identified as a high growth market, with every fish processing plant having expansion plans in the near future.

In August 1997, the European Union (EU) banned freshwater fish imports from the member states of East African Co-operation (EAC), which includes Uganda, Tanzania, Kenya and Mozambique. The ban is partly due to fishermen in East Africa using toxins to kill large quantities of fish supplied to processing points. At the time of gathering this data, the European Union (EU) was still imposing a ban on export of fillets.

The EU is insisting that the processors must comply with HACCP Principles. HACCP is a systematic approach to food safety consisting of seven principles (refer to Annex A). Consequently, the ban has prompted some companies to work with Cleaner Production Centre of Tanzania (CPCT) to assist in the integration of ISO 9002 and HACCP into one management system.

The ban has prompted fish producers to form a regulatory body, the Lake Victoria Fish Processors' Association (LVFA), which has been set up to ensure export quality standards. LVFA monitors processors, packagers and exporters, although limited resources have prevented it from achieving an industry discipline originally envisaged.

II. Overview of projects

Listed below is an overview of the selected projects which were targeted, according to sector and the number of respondents.

| Response rate by sector | | |
|--------------------------------|------------------------------------|--------------------|
| Sector | Targeted project/enterprise | Respondents |
| Textiles | 6 | 3 |
| Tanneries | 3 | 1 |
| Food processing | 12 | 7 |
| Other | 14 | 9 |
| Total | 35 | 20 |

Project venture

The projects are categorised according to three types of ventures. These are:

- New construction sites (greenfield or brownfield)
- Plant expansions
- Retrofits.

Out of a total of 20 projects evaluated, 14 projects were identified as new construction, five were plant expansion and one was a retrofit.

Environmental Characteristics

Environmental characteristics of the projects fall into three groups. They include:

- Cleaner production
- End-of-pipe
- Other general industrial projects.

Listed below is a general break down of the projects according these characteristics. Some companies also incorporated minor or secondary-related changes and techniques into the industrial project, which may not be captured in the table below.

| Environmental characteristics according to sector | | | |
|--|-----------|--------------------|---------------------------|
| | CP | End-of-pipe | General Industries |
| Textiles | - | 3 | - |
| Tanneries | - | 1 | - |
| Food processing | 4 | 2 | 1 |
| Other | 5 | 4 | - |
| No. of projects | 9 | 10 | 1 |

The environmental characteristics of projects in the textile sector are all categorised as end-of-pipe. The same is true for the one tannery project evaluated. As for the food processing industry, four projects were identified as cleaner production, two as end-of-pipe and one as general industry. Among the other industrial sectors, a majority (5) of the projects are CP and four are considered end-of-pipe.

In terms of considering alternative technical designs to end-of-pipe, only two companies explored other options. However, it is unclear whether the considered alternative options included CP technology and/or techniques. Of the companies which chose the CP option, only three considered alternative technical designs, which was implicit in the fact that they had previously made similar investments and were extremely knowledgeable about the market and best available technology.

Project description (including economic, environmental and social considerations)

Textiles

| Overview | |
|------------------------------|---|
| Number of enterprises | 3 |

| | |
|----------------------------------|--|
| Target market | Local and export markets |
| Project description* | <ul style="list-style-type: none"> • Wastewater treatment plants • Energy efficiency techniques |
| Known drivers for change# | <ul style="list-style-type: none"> • Intervention by National Environment Management Commission • Production efficiency (i.e. cost savings) • Public scrutiny of environmental track record |

* Companies can have more than one project carried out simultaneously, many of which are inter-related.

Drivers for change are not listed in order of priority.

The textile industry is represented by responses from three mills (two of which were established in the 1960's). The mills are engaged in the production of dyed and printed fabrics and yarns for both the local and export markets.

Textile mills are known to generate effluent, which pollutes the environment. All three of the mills invested in the instalment of wastewater effluent treatment plants. In the case of two companies, untreated wastewater was being pumped into nearby oxidation ponds and the sewage system, resulting in serious environmental concerns to the nearby community. The third company, which was previously equipped with a treatment plant, decided to construct an even larger wastewater treatment facility.

Two out of three enterprises also identified the need for better energy efficiency although it was not clear if this resulted in implementing any solutions. It was also unclear if the need for energy efficiency was prompted by the considerations of cost savings, concern for the environment or a combination of both.

Intervention by Tanzania's National Environment Management Council prompted one company to approach the CPCT to carry out an environmental audit. The aim of the audit was to assist in the introduction of cleaner production techniques and technology at the plant.

Social concerns stemmed mainly from occupational health problems arising from the inhalation of dust in the weaving and spinning sections of the mills. It was unclear whether any of the mills provide medical check-ups and protective gears as a preventative measure.

Tanneries

| Overview | |
|----------------------------------|--|
| Number of enterprises | 1 |
| Target market | Export markets (Europe & Far East) |
| Project description* | <ul style="list-style-type: none"> • Effluent and industrial waste treatment system • Energy efficiency techniques |
| Known drivers for change# | <ul style="list-style-type: none"> • Production efficiency (i.e. cost savings) • Securing competitive advantage |

* Companies can have more than one project carried out simultaneously, many of which are inter-related.

Drivers for change are not listed in order of priority.

At the time of data collection, only one tannery was operational. The Tanzanian government and a private company own the enterprise. The tannery produces wet blue/finished leather for exporting to Europe and East Asia.

A wastewater treatment facility was semi-built when private ownership was recently acquired. The existing structure had design faults, which demanded substantial additional investment. The re-designed facility is now said to be operating effectively, although it could not be ascertained to what extent pollution is mitigated, as the facilities are not monitored.

Environmental issues are said to have been the primary concern of the new private owners. Second to this was the concern for efficiency and reduced cost of production due to the pressures of international competitors.

The tanning industry in Tanzania is known for discharging polluting substances, which result in environmental degradation. These pollutants include leather dust, H₂S and CO₂ emissions, chromium sludge heaps and contaminated process water containing a high level of organic lead and chrome, sulphide, ammonia and other salts.

The company's liquid waste comprises mainly of sulphides and solid wastes (i.e. fleshing and leather cuttings). The liquid waste is now treated in the new facility while the municipality discards fleshings by burying in the nearby dumping ground.

With the exception of equipping employees with uniforms and gear, there were no other social considerations identified by the tannery.

Food processing

| Overview | |
|----------------------------------|---|
| Number of enterprises | 7 |
| Target market | Local and export markets (US, Europe & Middle East) |
| Project description* | <ul style="list-style-type: none"> • Implementation of HACCP and/or ISO 9002 principles • Wastewater treatment plants • Energy efficiency techniques • CP Power generation • Reuse/Recycling waste by-products |
| Known drivers for change# | <ul style="list-style-type: none"> • Intervention by Tanzania's Lake Zone fisheries authorities and others • Production efficiency (i.e. cost savings) • Securing competitive advantage |

* Companies can have more than one project carried out simultaneously, many of which are inter-related.

Drivers for change are not listed in order of priority.

Seven companies represent the food processing industry. Of the seven companies, three process fish products (mainly fillets), three produce edible oils and fats and one produces pasteurised and homogenised milk, cream, yoghurt and mozzarella cheese.

The three fish processing enterprises cater mostly to US, Europe and Middle East export markets. At the time of data collection, the European Union (EU) had imposed a ban on export of fillets from Tanzania, Kenya and Uganda due to pollution-related incidents within the fishing industry.

Lake Zone Fisheries authorities frequently visits one fish processor. The visits may have prompted the company to pursue a more rigorous management system, although this was not confirmed.

The investments have focused mainly on the integration of ISO 9002 and HACCP principles into one management system, which has been brought on by the EU ban. Companies have begun to identify the implementation of the HACCP/ISO principles as a way of remaining competitive by ensuring uninterrupted exports in the future.

In addition to implementing management systems, factories are installing wastewater treatment facilities to reduce the levels of bacteria content in effluent. A wastewater recycling system is under proposal in one company. As for the two other companies, water is collected in septic tanks or wastewater settling tanks. Only one of the two companies claims to treat and regularly test the level of bacteria content before dumping wastewater in Lake Victoria or elsewhere.

Other investments among fish processing plants include energy efficiency technology. One company installed 'power-factor correction' equipment for power efficiency.

Social concerns among the industry mostly relate to occupational health and safety standards. In two factories, employees were provided protective clothing. A health officer has also been appointed to monitor workers' health in one of the companies.

Three companies, which produce edible oils and fats, have focussed mainly on wastewater treatment facilities. One company has taken steps to procure best available technology throughout its operations. This has resulted in no wastes due to all inputs and outputs being accounted for during the process of producing oils.

Further examples of steps that the company has taken include:

- Cottonseed husks decorticated and 100% utilised as fuel in generation of steam.
- Soap-stock, a by-product of refining oil, is sold to external users for soap making.
- Effluents are monitored by measuring the input and output samples of the effluent treatment system and results are compared with limits as per government specifications.

Whilst economic benefit is usually an underlying incentive for companies considering CP technology and processes, the return on investment is not always immediate. CP techniques can be expensive, as two companies found out. They embarked on CP-related projects, yet were unable to fully implement all of the options available, such as adopting ISO 9000, due to financial constraints. The companies, therefore, carried out only certain aspects of the management system principles and techniques, which provided the most immediate economic return on investment.

Environmental considerations mostly included the effects of untreated liquid waste. With the exception of occupational health and safety standards, there were no social considerations identified.

A company, which produces pasteurised and homogenised milk, cream, yoghurt and mozzarella cheese, has designed its factory to run off cleaner electricity. However, no details about the design were provided.

As part of the company’s daily operations, detergents used for cleaning dairy equipment. Environmental concerns for the impact of the detergents into the wastewater was identified as a concern. The company is considering CP options for the future.

Other sectors

| Overview | |
|----------------------------------|--|
| Number of enterprises | 9 |
| Project description* | <ul style="list-style-type: none"> • Implementation of HACCP and/or ISO 9002 principles • Wastewater treatment plants • Water efficiency techniques • Air pollution abatement technology/techniques • Energy efficiency techniques • Reuse/Recycling waste by-products |
| Known drivers for change# | <ul style="list-style-type: none"> • Production efficiency (i.e. cost savings) • Securing competitive advantage |

* Companies can have more than one project carried out simultaneously, many of which are inter-related.

Drivers for change are not listed in order of priority.

The group of companies listed below have been included in this survey to provide a broad spectrum of business activities in Tanzania. This group is made up of nine companies, whose activities include:

- Brewery (1)
- Essential oils (1)
- Soap (4)
- Bicycle and bicycle parts (involving electroplating) (1)
- Glass manufacturing (1)

- Pharmaceuticals (1).

Most projects concentrated on wastewater treatment. A majority of companies opted for either recycling of waste or end-of-pipe technologies and discharge rather than CP techniques and technologies. This is particularly true for the soap industry. The CP options were not considered due to financial constraints.

Other investments focus on minimising energy consumption and gaseous emissions through the instalment of fuel-efficient furnaces or boilers.

Two companies specifically identified ISO 9000 as means to access export markets and, therefore, are working to achieve certification.

Social considerations have played a role in some companies’ decisions to invest in CP or end-of-pipe techniques and technologies. The considerations ranged from implementing solutions for air pollution, which has affected nearby local communities, to the provision of safety equipment for employees.

III. Type of financing

An essential aspect of implementing CP project(s), as with any other type of project, is the provision of finance. However, misconceptions about the economic benefits of investing in environmental protection are not uncommon. The business community usually identifies environmental projects as a cost-incurring activity rather than a profitable business decision. CP can result in both environmental and economic benefits, while reducing health risks to workers and the local population.

Whilst companies in Tanzania are at the early stages of considering CP investments as an essential part of conducting business, they are reluctant to be transparent about their needs for environmental protection. Regardless of CP, end-of-pipe or general industry investments in technologies and processes, few companies were willing to provide information regarding the financial aspects of their projects. Companies pointed out that they operate in highly competitive markets and disclosing detailed financial information could put them at a disadvantage. However, some general financial information was gathered.

As you can see in the table below, a majority of companies have invested in projects that fall into the category of ‘\$500,000 and more’. All investments have been identified by the owner/operators as profitable but no further details have been provided.

| Size of projects according to industry (US Dollars) | | | | |
|--|---------------------------|----------------|-----------|---------------------------|
| Industry | 500,000 & more | 100,000 | to | 100,000 & less |

| | | 500,000 | |
|-----------------|-----------|----------------|----------|
| Textiles | 2 | 0 | 1 |
| Tanneries | 1 | 0 | 0 |
| Food processing | 6 | 1 | 0 |
| Other sectors | 9 | 0 | 0 |
| TOTAL | 18 | 1 | 1 |

Listed below is information, albeit incomplete, which assists in providing some background into the nature of the investments.

Textiles

The average level of investment amongst the three textile companies, which responded to the survey, was \$6 million.

All three companies declined to provide detailed financial information about their investments, with exception of the following:

- Two of the three projects were internally financed
- The third company was provided a Tanzanian shillings TSh60 million grant from the Chinese Government in 1966-68 for the \$12 million construction of the mill
- All companies confirmed that the projects were profitable.

Tanneries

Soon after privatisation, the new owners of the tannery plant decided to spend their own funds to relocate some machines to improve efficiency. The plant, which included a semi-built plant for effluent treatment, was redesigned and built. The project required US\$1.2 million in investment and is reported to now be operating effectively.

Food processing

Each of the three fish processing companies financed projects worth approximately US\$2 million each. Two of the three companies secured funding for their projects through shareholders.

The producers (3) of edible oils and fats invested an average of approximately US\$4.5 million in new construction projects. Only two of the three companies commented that the projects were financed from internal company resources. One of the companies also received additional funding from Barclays Bank but no further details were provided.

A manufacturer of dairy products financed the design of a new plant, which uses CP electricity, for US\$500,000, which was self-financed. No other financial information was provided.

Other sectors

With the exception of indicating the level of investment (i.e. 'over \$500,000') and the source of finance, four of the nine enterprises did not comment on the financial background of their projects with the exception of the following:

- One company received financial assistance through private and government loans
- Another company self-financed its project.

The remaining five companies made investments ranging from US\$2 million to US\$31 million. Two of the companies received a loan from the East African Development Bank, although they did not divulge information about the interest rate at which it was borrowed. Another company internally financed the project while another received a national government loan, which was provided through bilateral support. Another company financed its projects through a combination of foreign direct investment and existing shareholders.

IV. Conclusions

Whilst information about the 20 projects can be considered incomplete, listed below are some general conclusions.

Firstly, the CP concept is fairly new to Tanzania. This is attributed to the stage of Tanzania's development as it is with the lack of understanding and knowledge about CP and related financial benefits. The enterprises in this survey, with the exception of a few, were started prior to the Tanzania's Economic Recovery Programme (ERP) in 1986. The concepts of cleaner production were either new or unheard of at the time of their establishment. It is in the context of this that pollution abatement/minimisation and energy efficiency of the past development and investments in manufacturing were examined.

Of the 20 projects examined, only 10 were considered to be cleaner production. However, the CP concept is wide ranging. It can encapsulate anything linked to preventative environmental strategies to processes, products and services.

The nature of this concept, therefore, can be considered ambiguous. The projects described in this survey cover a wide spectrum of complexity and financial requirements. Not all projects described in this study are strictly CP, but rather a combination of end-of-pipe and CP. For instance, some projects may have elements of CP embedded in an overall end-of-pipe solution.

Without ambitious educational and marketing programmes, companies are unlikely to perceive CP as a financially viable alternative to end-of-pipe. Only two out of 10 companies, which chose end-of-pipe options, explored alternative technical designs. It is unclear whether the companies considered CP

technology and/or techniques as the alternative option. Greater education and marketing of the CP option, however, may have influenced a larger number of companies to invest differently.

Consequently, the drive for efficiency and cost savings appears to be an underlying reason why a majority of companies made investments in either new construction sites, expansion or retrofits which include CP solutions. Marketing the CP concept to companies as a way of gaining competitive advantage and maximising efficiency will undoubtedly be a strong position to take in the more highly competitive markets of Tanzania.

The European ban on fish fillet exports from east Africa certainly will have prompted the adoption of a combination of ISO 9000 and HACCP principles. However, a small but growing number of companies identify the systems as a prerequisite for accessing international export markets. As a result of the EU ban, Lake Victoria Fish Processors' Association (LVFA) was formed to ensure export quality standards. LVFA is in a strong position to promote the CP concept and specific, tangible technologies and techniques, which are likely to reinforce the need for companies to gain competitive advantage.

A majority of owners/operators of the companies were unwilling to share detailed information about project financing, extent of profitability and performance. This is mostly attributed to the following:

- Enterprises did not believe the relevance of gathering financial data, especially when they understood that the main objective of the survey was to gather information with respect to the environment.
- Companies are suffering from questionnaire fatigue, which may have attributed to the low response rate.
- Most past parastatal investments occurred in the 1970s – 80s. After privatisation, new owners/operators were unable to trace information on the financial background of projects.
- Government loans are loosely related to privatisation programmes, rather than environmentally-specific investment schemes. Therefore, it is difficult to trace the extent to which the government focusses on the need for businesses to make environmental investments.

Nevertheless, financial requirements for CP technologies and techniques are amongst of the greatest barriers for its take-up. The harsh reality for the business community in Tanzania is that there is a lack of financial support from the commercial banking sector and government supported investment schemes.

However, Tanzania's liberalisation programmes provide a unique opportunity for the government to build environmental considerations into existing measures that promote the role of the private sector alongside the need for good environmental performance. For instance, conditional on the purchase of parastatals, companies could be required to invest in CP techniques and technologies as a means of modernising the manufacturing sectors.

The recently created Privatisation Trust Unit, which controls the government's remaining stake in divested companies, could also stipulate that companies must consider CP options during the process of modernisation.

Also as part of the government's programme to strengthen the capital markets, environmental/CP investment schemes and facilities could be created for long-term loans as distinct from short-term finance.

Appendix A to Tanzania Study on Past Investments

HACCP is a systematic approach to food safety consisting of the following seven principles:

1. **Conduct a hazard analysis.** Prepare a list of steps in the process where hazards occur and list the preventive measures to control these hazards. Determine the significant hazards.
2. **Identify the critical control points (CCPs) in the Process.** CCPs steps at which control can be applied and are essential to prevent or eliminate a food safety hazard or to reduce it to an acceptable level.
3. **Establish critical limits for preventive measures associated with each identified CCP.** Critical limits are the boundaries of safety. When a critical limit is violated, it is likely that the product is unsafe.
4. **Establish monitoring requirements.** Monitor the critical limits at each CCP.
5. **Establish corrective actions to be taken when monitoring indicates that there is deviation from an established critical limit.** Bring the process back under control and determine the proper product disposition.
6. **Establish effective record keeping procedures that document the HACCP system.** Monitoring and corrective actions are recorded, the development of the HACCP plan is recorded, and verification activities are recorded to ensure the HACCP system is working.
7. **Establish procedures to verify that the HACCP system is working correctly.** These procedures are scheduled for each CCP as well as for the entire HACC plan.

HACCP divides the food service process into specific steps. Each step can contain critical points that may allow bacteria entry into the system. The steps include: purchasing, receiving, storing, preparing, cooking, serving and holding, cooling and reheating.